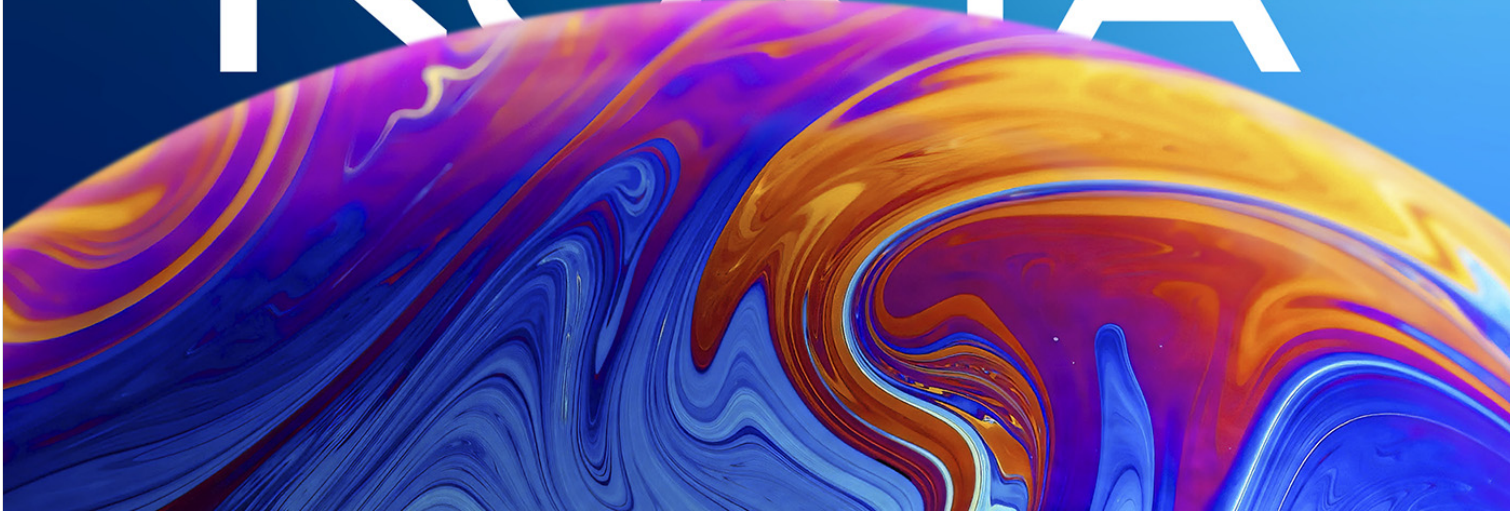


Nokia Annual Report
on Form 20-F 2023

NOKIA



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 20-F

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended 31 December 2023

Commission file number 1-13202

Nokia Corporation

(Exact name of Registrant as specified in its charter)

Republic of Finland

(Jurisdiction of incorporation)

Karakaari 7 FI-02610 Espoo, Finland

(Address of principal executive offices)

Johanna Mandelin, Global Head of Corporate Legal, Telephone: +358 (0) 104 488 000, Facsimile: +358 (0) 104 481 002,

Karakaari 7, FI-02610 Espoo, Finland

(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934 (the "Exchange Act"):

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
American Depositary Shares	NOK	New York Stock Exchange
Shares		New York Stock Exchange ⁽¹⁾

(1) Not for trading, but only in connection with the registration of American Depositary Shares representing these shares, pursuant to the requirements of the Securities and Exchange Commission.

Securities registered pursuant to Section 12(g) of the Exchange Act: **None**

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Exchange Act: **None**

Indicate the number of outstanding shares of each of the registrant's classes of capital or common stock as of the close of the period covered by the annual report. Shares: 5 613 496 565 .

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Exchange Act. Yes No

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" or "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer
Non-accelerated filer Smaller reporting company
Emerging growth company

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

International Financial Reporting Standards as issued by the International Accounting Standards Board U.S. GAAP
Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17 Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

Cross-reference table to Form 20-F

Form 20-F Item Number	Form 20-F Heading	Section in Document
ITEM 1	IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS	N/A
ITEM 2	OFFER STATISTICS AND EXPECTED TIMETABLE	N/A
ITEM 3	KEY INFORMATION	
3A	[Reserved]	
3B	Capitalization and Indebtedness	N/A
3C	Reasons for the Offer and Use of Proceeds	N/A
3D	Risk Factors	Operating and financial review and prospects—Risk factors
ITEM 4	INFORMATION ON THE COMPANY	
4A	History and Development of the Company	Cover page; Business overview; Introduction and use of certain terms; Business overview—Our history; Operating and financial review and prospects—Liquidity and capital resources; General Facts on Nokia—Alternative performance measures; Operating and financial review and prospects—Significant subsequent events; Other information—Investor information
4B	Business Overview	Business overview—Nokia in 2023; Business overview—Our strategy; Business Overview—Our business groups; Financial statements—Notes to the consolidated financial statements—Note 2.2. Segment information ; General facts on Nokia—Government regulation
4C	Organizational Structure	Business overview—Nokia in 2023; Financial statements—Notes to the consolidated financial statements—Note 2.2. Segment information ; Financial statements—Notes to the consolidated financial statements—Note 6.2. Principal Group companies ; Financial statements—Notes to the consolidated financial statements—Note 6.3. Significant partly-owned subsidiaries
4D	Property, Plants and Equipment	Financial statements—Notes to the consolidated financial statements—Note 4.2. Property, plant and equipment ; Financial statements—Notes to the consolidated financial statements—Note 4.3. Leases ; Business overview—Supply chain, sourcing and manufacturing
4A	UNRESOLVED STAFF COMMENTS	None
ITEM 5	OPERATING AND FINANCIAL REVIEW AND PROSPECTS	
5A	Operating Results	Business overview—Our strategy; General facts on Nokia—Government regulation; Financial statements—Notes to the consolidated financial statements—Section 2. Results for the year; Financial statements—Notes to the consolidated financial statements—Note 5.4. Financial risk management ; Operating and financial review and prospects—Operating and financial review
5B	Liquidity and Capital Resources	Operating and financial review and prospects—Liquidity and capital resources; Financial statements—Notes to the consolidated financial statements—Note 5.2. Financial assets and liabilities ; Financial statements—Notes to the consolidated financial statements—Note 5.3. Derivative and firm commitment assets and liabilities ; Financial statements—Notes to the consolidated financial statements—Note 6.1. Commitments, contingencies and legal proceedings ; Financial statements—Notes to the consolidated financial statements—Note 5.4. Financial risk management
5C	Research and Development, Patents and Licenses etc.	Business overview—Our strategy; Business overview—Nokia Technologies; Operating and financial review and prospects—Results of operations; Operating and financial review and prospects—Results of segments
5D	Trend Information	Business overview—Nokia in 2023; Business overview—Our strategy
5E	Critical Accounting Estimates	N/A
ITEM 6	DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES	
6A	Directors and senior management	Corporate governance—Corporate Governance Statement
6B	Compensation	Corporate governance—Compensation; Financial statements—Notes to the consolidated financial statements—Note 3.2. Remuneration of key management ; Corporate Governance—Remuneration; Financial Statements—Notes to the consolidated financial statements—Note 6.4. Related party transactions ; Corporate Governance—Remuneration of key management
6C	Board Practices	Corporate governance—Corporate governance statement; Corporate governance—Remuneration—Remuneration governance
6D	Employees	Operating and financial review and prospects—Sustainability and corporate responsibility
6E	Share Ownership	Business Overview—Nokia in 2023; Corporate governance—Remuneration—Remuneration Report 2023; Corporate governance—Corporate governance statement; Financial statements—Notes to the consolidated financial statements—Note 3.3. Share-based payments

Form 20-F Item Number	Form 20-F Heading	Section in Document
6F	Disclosure of a registrant's action to recover erroneously awarded compensation	N/A
ITEM 7	MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS	
7A	Major Shareholders	Operating and financial review and prospects—Shares and shareholders
7B	Related Party Transactions	Financial statements—Notes to the consolidated financial statements—Note 6.4. Related party transactions
7C	Interests of Experts and Counsel	N/A
ITEM 8	FINANCIAL INFORMATION	
8A	Consolidated Statements and Other Financial Information	Financial statements; Reports of independent registered public accounting firm; Operating and financial review and prospects—Shares and shareholders—Dividend and share buybacks; Financial statements—Notes to the consolidated financial statements—Note 6.1. Commitments, contingencies and legal proceedings
8B	Significant Changes	Operating and financial review and prospects—Significant subsequent events; Financial statements—Notes to the consolidated financial statements—Notes 6.5. Subsequent events
ITEM 9	THE OFFER AND LISTING	
9A	Offer and Listing Details	Operating and financial review and prospects—Shares and shareholders; Other information—Investor information—Stock exchanges
9B	Plan of Distribution	N/A
9C	Markets	Operating and financial review and prospects—Shares and shareholders; Financial statements—Notes to the consolidated financial statements—Note 1.1. Corporate information ; Investor information; Other information—Investor information—Stock exchanges
9D	Selling Shareholders	N/A
9E	Dilution	N/A
9F	Expenses of the Issue	N/A
ITEM 10	ADDITIONAL INFORMATION	
10A	Share capital	N/A
10B	Memorandum and Articles of Association	Operating and financial review and prospects—Articles of Association; Other information—Exhibits
10C	Material Contracts	N/A
10D	Exchange Controls	General facts on Nokia—Controls and procedures—Exchange controls
10E	Taxation	General facts on Nokia—Taxation
10F	Dividends and Paying Agents	N/A
10G	Statement by Experts	N/A
10H	Documents on Display	Other information—Investor information—Documents on display
10I	Subsidiary Information	N/A
ITEM 11	QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK	Business overview—Our strategy; Operating and financial review and prospects—Risk factors—Financial and tax-related uncertainties; Financial statements—Notes to the consolidated financial statements—Note 5.4. Financial risk management ; Financial statements—Notes to the consolidated financial statements—Note 4.5. Trade receivables and other customer-related balances
ITEM 12	DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES	
12A	Debt Securities	N/A
12B	Warrants and Rights	N/A
12C	Other Securities	N/A
12D	American Depositary Shares	General facts on Nokia—American Depositary Shares; Introduction and use of certain terms
ITEM 13	DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES	None

Form 20-F

Item Number	Form 20-F Heading	Section in Document
ITEM 14	MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS	None
ITEM 15	CONTROLS AND PROCEDURES	Corporate governance—Corporate governance statement—Risk management, internal control and internal audit functions at Nokia; General facts on Nokia—Controls and procedures
ITEM 16	[Reserved]	
16A	AUDIT COMMITTEE FINANCIAL EXPERT	Corporate governance—Corporate governance statement—Board of Directors—Committees of the Board of Directors
16B	CODE OF ETHICS	Corporate governance—Corporate governance statement—Regulatory Framework; Operating and financial review and prospects—Sustainability and corporate responsibility; Other information—Exhibits
16C	PRINCIPAL ACCOUNTANT FEES AND SERVICES	Corporate governance—Corporate governance statement—Auditor fees and services; Corporate governance—Corporate governance statement—Audit Committee pre-approval policies and procedures
16D	EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES	None
16E	PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS	Operating and financial review and prospects—Shares and shareholders—Purchases of equity securities by the Company and affiliated purchasers Corporate Governance—Compensation
16F	CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT	N/A
16G	CORPORATE GOVERNANCE	Corporate governance—Corporate governance statement—Regulatory framework
16H	MINE SAFETY DISCLOSURE	None
16I	DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS	N/A
16I	INSIDER TRADING POLICIES	N/A
16K	CYBERSECURITY	Corporate governance—Corporate Governance Statement—Risk management, internal control and internal audit functions at Nokia; Operating and financial review and prospects—Risk factors—Risks impacting our competitiveness
ITEM 17	FINANCIAL STATEMENTS	Financial statements
ITEM 18	FINANCIAL STATEMENTS	Financial statements
ITEM 19	EXHIBITS	Other information—Exhibits

Forward-looking statements

Certain statements contained in this report constitute "forward-looking statements." Forward-looking statements provide Nokia's current expectations of future events and trends based on certain assumptions and include any statement that does not directly relate to any current or historical fact. The words "believe," "expect," "expectations," "anticipate," "foresee," "see," "target," "estimate," "designed," "aim," "plan," "intend," "influence," "assumption," "focus," "continue," "project," "should," "is to," "will," "strive," "may," "could," "forecast," or similar expressions as they relate to us or our management are intended to identify these forward-looking statements, as well as statements regarding:

- a) business strategies, projects, market expansion, growth management, and future industry trends and megatrends and our plans to address them;
- b) future performance of our businesses and any future distributions and dividends;
- c) expectations and targets regarding financial performance, results, operating expenses, cash flows, taxes, currency exchange rates, hedging, cost savings and competitiveness, as well as results of operations including targeted synergies and those related to market share, prices, net sales, income and margins;
- d) *expectations*, plans, timelines or benefits related to changes in our organizational and operational structure;
- e) market developments in our current and future markets and their seasonality and cyclicity, including the communications service provider market, as well as general economic conditions, future regulatory developments and the expected impact, timing and duration of potential global pandemics and geopolitical conflicts on our businesses, our supply chain, our customers' businesses and the general market and economic conditions;
- f) our position in the market, including product portfolio and geographical reach, and our ability to use the same to develop the relevant business or market and maintain our order pipeline over time;
- g) any future collaboration or business collaboration agreements or patent license agreements or arbitration awards, including income from any collaboration or partnership, agreement or award;

- h) timing of the development and delivery of our products and services;
- i) the outcome of pending and threatened litigation, arbitration, disputes, regulatory proceedings or investigations by authorities;
- j) restructurings, investments, capital structure optimization efforts, divestments and our ability to achieve the financial and operational targets set in connection with any such restructurings, investments, and capital structure optimization efforts including our ongoing cost savings program;
- k) future capital expenditures, temporary incremental expenditures or other R&D expenditures to develop or rollout new products; and
- l) sustainability and corporate responsibility.

These statements are based on management's best assumptions and beliefs in light of the information currently available to it and are subject to a number of risks and uncertainties, many of which are beyond our control, which could cause actual results to differ materially from such statements. These statements are only predictions based upon our current expectations and views of future events and developments and are subject to risks and uncertainties that are difficult to predict because they relate to events and depend on circumstances that will occur in the future. Risks and uncertainties that could affect these statements include but are not limited to the risk factors specified under the section "Risk factors" of this report and in our other filings or documents furnished with the U.S. Securities and Exchange Commission. Other unknown or unpredictable factors or underlying assumptions subsequently proven to be incorrect could cause actual results to differ materially from those in the forward-looking statements. We do not undertake any obligation to publicly update or revise forward-looking statements, whether as a result of new information, future events or otherwise, except to the extent legally required.

Introduction and use of certain terms

Nokia Corporation is a public limited liability company incorporated under the laws of the Republic of Finland and registered to the Finnish Trade Register since 1896. In this Annual Report on Form 20-F, any reference to “we,” “us,” “the Group,” “the company” or “Nokia” means Nokia Corporation and its consolidated subsidiaries and generally Nokia’s continuing operations, except where we separately specify that the term means Nokia Corporation or a particular subsidiary or business segment only or our discontinued operations. References to “our shares,” matters relating to our shares or matters of corporate governance refer to the shares and corporate governance of Nokia Corporation.

Nokia Corporation has published its consolidated financial statements in euro for periods beginning on or after 1 January 1999. In this Annual Report on Form 20-F, references to “EUR,” “euro” or “€” are to the common currency of the European Economic and Monetary Union, references to “dollars,” “US dollars,” “USD” or “\$” are to the currency of the United States, and references to “Chinese yuan” or “Chinese yuan renminbi” or “CNY” are to the official currency of the People’s Republic of China.

Additional terms are defined in the “Glossary.”

The information contained in, or accessible through, the websites linked throughout this Annual Report on Form 20-F is not incorporated by reference into this document and should not be considered a part of this document.

Nokia Corporation furnishes Citibank, N.A., as Depositary, with its consolidated financial statements and a related audit opinion of our independent auditors annually. These financial statements are prepared on the basis of International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board and in conformity with IFRS as adopted by the European Union. In accordance with the rules and regulations of the SEC, we do not provide a reconciliation of our consolidated financial statements to the generally accepted accounting principles in the US, or US GAAP.

We also furnish the Depositary with quarterly reports containing unaudited financial information prepared on the basis of IFRS, as well as all notices of shareholders’ meetings and other reports and communications that are made available generally to our shareholders. The Depositary makes these notices, reports and communications available for inspection by record holders of American Depositary Receipts (ADRs), evidencing American Depositary Shares (ADSs), and distributes to all record holders of ADR notices of shareholders’ meetings received by the Depositary.

In addition to the materials delivered to holders of ADRs by the Depositary, holders can access our consolidated financial statements, and other information included in our annual reports and proxy materials, at nokia.com/financials. This Annual Report on Form 20-F is also available at nokia.com/financials as well as on Citibank’s website at <https://app.irdirect.net/company/49733/hotline/>. Holders may also request a hard copy of this annual report by calling the toll-free number 1-877-NOKIA-ADR (1-877-665-4223), or by directing a written request to Citibank, N.A., Shareholder Services, PO Box 43077, Providence, RI 02940-3081, United States. With each annual distribution of our proxy materials, we offer our record holders of ADRs the option of receiving all of these documents electronically in the future.

In this report

Business overview

Nokia in 2023	3
Letter from our President and CEO	9
Our customers	13
Our strategy	15
Our history	21
Business groups	23
Network Infrastructure	23
Mobile Networks	25
Cloud and Network Services	27
Nokia Technologies	29
Supply chain, sourcing and manufacturing	31

Corporate governance

Corporate governance statement	34
Remuneration	56

Operating and financial review and prospects

Selected financial data	73
Operating and financial review	74
Sustainability and corporate responsibility	85
Shares and shareholders	107
Articles of Association	111
Risk factors	113
Significant subsequent events	130

General facts on Nokia

American Depositary Shares	132
Controls and procedures	132
Government regulation	133
Sales in United States-sanctioned countries	133
Taxation	134
Key ratios	137
Alternative performance measures	138

Financial statements

Consolidated financial statements	142
Notes to the consolidated financial statements	147

Reports of independent registered public accounting firm

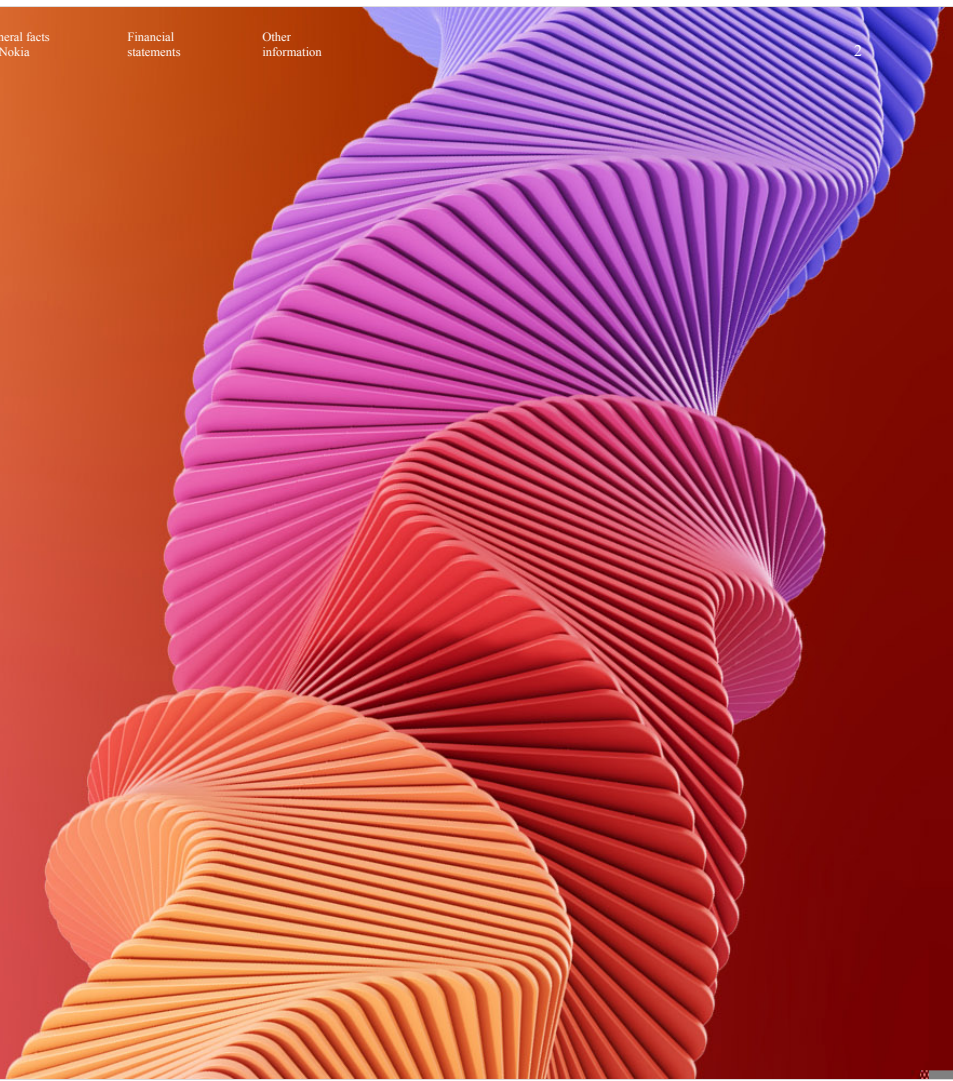
204

Other information

Exhibits	208
Glossary	209
Investor information	212
Signatures	213

Business overview

Nokia in 2023	3
Letter from our President and CEO	9
Our customers	13
Our strategy	15
Our history	21
Business groups	23
Network Infrastructure	23
Mobile Networks	25
Cloud and Network Services	27
Nokia Technologies	29
Supply chain, sourcing and manufacturing	31



The platform for our future

The Nokia platform guides everything we do across our global organization. Its three elements shape our ambition, our strategy and our culture.

Our purpose

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

While our lives may be getting longer, healthier and richer, the world is facing fundamental challenges: Productivity is stalling, pressure on the planet is increasing and access to opportunity remains stubbornly unequal.

Digitalization is central to the solution.

We see the potential of digital to transform business, industry and society. When the world's organizations, machines and devices are in sync with each other and the people they serve, a new capability unfolds to create a more productive, sustainable and accessible future.

Our commitment

We are delivering the next evolution in critical networking through technology leadership and trusted partnerships.

We are meeting the new demands placed on networks through the next evolution of networking where networks meet cloud with 'networks that sense, think and act'.

These networks go beyond connecting people and things, bits and bytes. They're adaptable, autonomous, and consumable. They're 'alive with intelligence' and enable people, machines and devices to interact in real time, like never before.

Critically, 'networks that sense, think and act' are creating new opportunities for our customers and partners, both existing and new, to access and harness the full power of networking like never before. How?

- By 'sensing' and understanding human and machine parameters using next generation mobile and optical technologies
- By 'thinking' of actions before a fault occurs in the network or in an enterprise using next generation analytics and AI
- By 'acting' to connect humans and machines alike by enabling wide area or local area networks.

Essentials

Our essentials highlight the culture we are creating for our people, customers and partners.

As we seek to realize the full potential of digital in every industry, acting as a collaborative partner to our customers and pioneering the next evolution of networks, we are creating the culture needed to drive the future growth of Nokia.

- **Open** – in mindset, to opportunity, with transparency
- **Fearless** – bringing authenticity, sharing ideas and opinions, embracing collaboration
- **Empowered** – to make decisions, to act with clear accountability.

Nokia in 2023 continued

Helping the world act together

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

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

Our products, solutions and services can drive social, environmental, and economic progress. Digitalization and connectivity can have a critical role in solving some of the world's greatest challenges including stalled productivity, climate change and unequal access to opportunity. Our products and solutions bring digitalization to physical industries and cities, helping them decarbonize and increase efficiency, productivity and safety.

Shareholder distributions

Dividend proposed in respect
of 2023 ⁽²⁾

EUR0.13

per share

Share buyback program announced in
January 2024 to return up to

EUR 600m

over 2 years

Financial highlights

For the year ended 31 December

EURm	2023	2022	2021
Net sales	22 258	24 911	22 202
Gross profit	8 687	10 222	8 834
Gross margin	39.0 %	41.0 %	39.8 %
Operating profit	1 688	2 318	2 158
Operating margin	7.6 %	9.3 %	9.7 %
Profit for the year ⁽¹⁾	674	4 210	1 654

EUR

Earnings per share, diluted ⁽¹⁾	0.12	0.74	0.29
Proposed dividend per share ⁽²⁾	0.13	0.12	0.08

At 31 December

EURm	2023	2022	2021
Net cash and interest-bearing financial investments ⁽³⁾	4 323	4 767	4 615

- (1) From continuing operations.
(2) The Board of Directors proposes to the Annual General Meeting to be authorized to decide in its discretion on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity.
(3) Non-IFRS measure. For the definition and reconciliation of non-IFRS measures to the most directly comparable IFRS measures, refer to the "Alternative performance measures" section.

Nokia in 2023 continued

Global reach

Our technology solutions enable critical networks for communications service providers (CSPs) and enterprises around the world.

Net sales in 2023

EUR 22.3bn

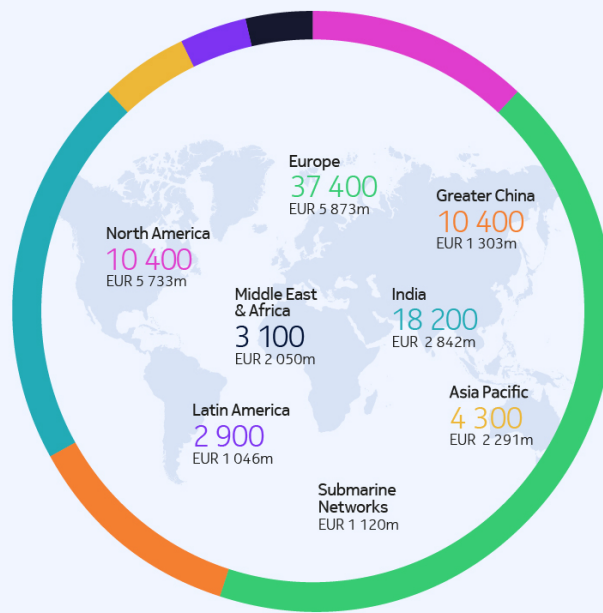
Countries of operation

~130

Average number of employees in 2023

~86 700

Regional split of employees and net sales ⁽¹⁾



(1) Regional net sales figures exclude net sales of Submarine Networks business.

Strengthening our technology leadership

R&D investment since 2000

EUR ~150bn

Patent families declared as essential to 5G standard

6 000+

Nobel Prizes awarded for ground-breaking achievements in global innovation

10

Nokia in 2023 continued

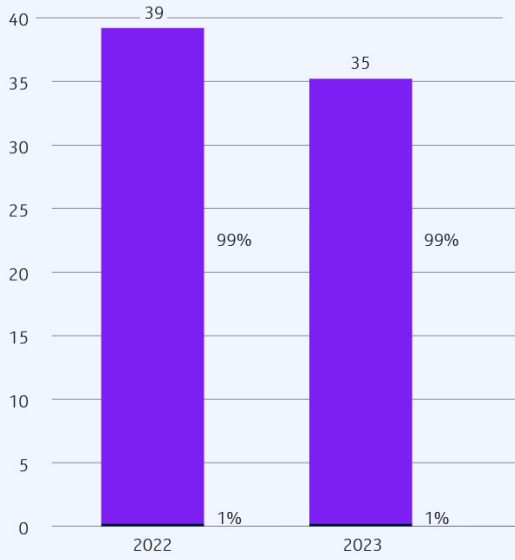
Key ESG data for 2023

We have gathered a visual summary of key ESG (environmental, social and governance) data points and a view of our recognitions from external ratings organizations. This provides a snapshot with more information in the “Sustainability and corporate responsibility” section of this report.

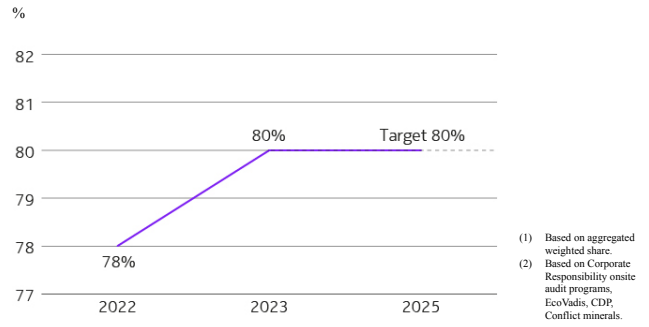
Nokia carbon footprint in 2023

Million metric tons CO₂e / %

● Scope 1, 2 ● Scope 3

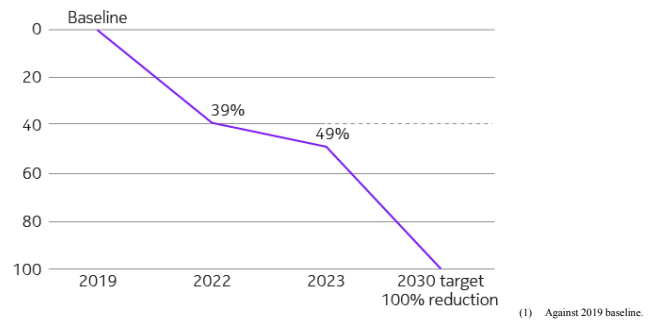


Share of suppliers achieving satisfactory sustainability score ⁽¹⁾ from supplier performance evaluation ⁽²⁾



Share of CO₂e reduction achieved by final assembly suppliers towards zero emissions target ⁽¹⁾

Million metric tons CO₂e / %

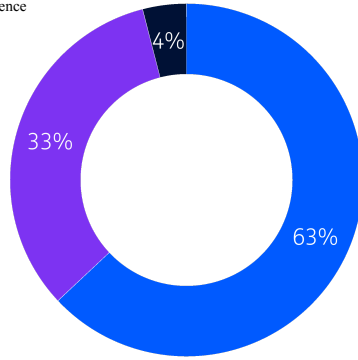


Nokia in 2023 continued

Human Rights Due Diligence cases

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

- Go
- Go with conditions
- No go



Gender split at the end of 2023

18 900 Female 62 100 Male 3 500 Blank⁽¹⁾

(1) Detail on employee level not collected or is blank

A-

Nokia again achieved a ranking of A- from CDP⁽²⁾ for its work on climate change

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


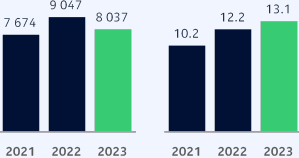

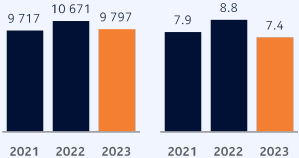

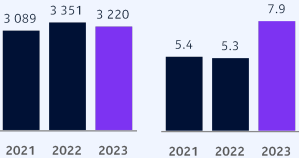

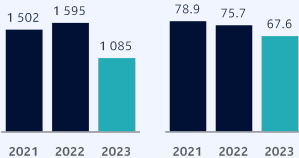
ESG Rankings and ratings	Score (range: top/bottom)	Latest result
S&P Global ESG Index 2023	83.03% (industry average: 72.36%)	2023 Jan
Clean 200	82nd out of 200	2023 Feb
World Benchmarking Alliance	24th out of 200	2023 Mar
ecovadis 2023	Top 1% – Platinum	2023 Mar
ETHICAL COMPANIES & THISPHERE 7-TIME HONOREE	Recognized as one of the 2023 World's Most Ethical Companies ®	2023 Mar
FTSE4Good	ESG Score 4.7/5.0	2023 Jun
MSCI ESG RATINGS AAA	AAA (AAA/CCC)	2023 Aug
S&P ESG Prime	Prime, B- (A+/D-)	2023 Oct
Ambassador status	Ambassador status	2023 Oct
SUSTAINALYTICS	11.2 (low risk of experiencing material financial impacts from ESG factors). Jan 2024: Sustainalytics' 2024 Top-Rated ESG Companies List ⁽³⁾	2024 Jan
CDP Climate Change 2023	A- (A-/D-)	2024 Feb

(3) Refers to 2023 result, received in January 2024.

Nokia in 2023 continued

Our business groups

Nokia has four business groups with each of them aiming to become a technology and market leader in their respective sector.

<h3>Network Infrastructure</h3>  <p>FEDERICO GUILLÉN PRESIDENT, NETWORK INFRASTRUCTURE</p> <p>Network Infrastructure provides the equipment, software and services that enable all of the physical links that power networks. Its product offering includes IP routing and switching products, and the equipment to power fiber networks along with subsea and terrestrial optical networks. Its customers include communications service providers, webscales and hyperscalers, digital industries and governments.</p> <table border="1"> <tr> <td>Segment net sales (EURm)</td> <td>Segment operating margin (%)</td> </tr> <tr> <td>-11%</td> <td>+90 bps</td> </tr> </table>  <p>2021: 7,674 2022: 9,047 2023: 8,037</p> <p>2021: 10.2 2022: 12.2 2023: 13.1</p> <p>READ MORE ON PAGES 23 TO 24 →</p>	Segment net sales (EURm)	Segment operating margin (%)	-11%	+90 bps	<h3>Mobile Networks</h3>  <p>TOMMI UITTO PRESIDENT, MOBILE NETWORKS</p> <p>Mobile Networks creates products and services covering all mobile technology generations. Its portfolio includes products for radio access networks (RAN) and microwave radio (MWR) links for transport networks, solutions for network management, as well as network planning, optimization, network deployment and technical support services.</p> <table border="1"> <tr> <td>Segment net sales (EURm)</td> <td>Segment operating margin (%)</td> </tr> <tr> <td>-8%</td> <td>-140 bps</td> </tr> </table>  <p>2021: 9,717 2022: 10,671 2023: 9,797</p> <p>2021: 7.9 2022: 8.8 2023: 7.4</p> <p>READ MORE ON PAGES 25 TO 26 →</p>	Segment net sales (EURm)	Segment operating margin (%)	-8%	-140 bps	<h3>Cloud and Network Services</h3>  <p>RAGHAV SAHGAL PRESIDENT, CLOUD AND NETWORK SERVICES</p> <p>Cloud and Network Services enables communications service providers (CSPs) and enterprises to deploy and monetize 5G, cloud-native software and as-a-service delivery models.</p> <table border="1"> <tr> <td>Segment net sales (EURm)</td> <td>Segment operating margin (%)</td> </tr> <tr> <td>-4%</td> <td>+260 bps</td> </tr> </table>  <p>2021: 3,089 2022: 3,351 2023: 3,220</p> <p>2021: 5.4 2022: 5.3 2023: 7.9</p> <p>READ MORE ON PAGES 27 TO 28 →</p>	Segment net sales (EURm)	Segment operating margin (%)	-4%	+260 bps	<h3>Nokia Technologies</h3>  <p>JENNI LUKANDER PRESIDENT, NOKIA TECHNOLOGIES</p> <p>Nokia Technologies is responsible for managing Nokia's patent portfolio and monetizing Nokia's intellectual property including patents, technologies and the Nokia brand.</p> <table border="1"> <tr> <td>Segment net sales (EURm)</td> <td>Segment operating margin (%)</td> </tr> <tr> <td>-32%</td> <td>-810 bps</td> </tr> </table>  <p>2021: 1,502 2022: 1,595 2023: 1,085</p> <p>2021: 78.9 2022: 75.7 2023: 67.6</p> <p>READ MORE ON PAGES 29 TO 30 →</p>	Segment net sales (EURm)	Segment operating margin (%)	-32%	-810 bps
Segment net sales (EURm)	Segment operating margin (%)																		
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Letter from our President and CEO

Progress in a challenging environment

A meaningful shift in customer spending impacted our industry in 2023, with more caution due to the macroeconomic environment, high interest rates, and customers working down elevated inventories accumulated during the pandemic-related supply chain crisis. The demand environment was much more challenging than we had expected at the start of the year, particularly in North America, meaning we ended with a full-year net sales decline.

However, due to the proactive cost actions we took across our organization, we were able to protect our profitability while still continuing to invest in R&D. All three of our networks business groups delivered within the ranges we targeted at the start of the year despite the net sales headwinds. Delays in signing renewal agreements meant Nokia Technologies' profitability was below the targeted range.

Given our strong cash position at the end of 2023, the Board of Directors proposed an increase in the dividend from EUR 12 cents to EUR 13 cents and initiated a new share buyback program to return up to EUR 600 million to shareholders over the next two years.

Considering the scale of the market challenges we faced in 2023, I am pleased with the resilience of our financial performance and the significant achievements across our business groups.

“Despite the challenging market environment in 2023, we delivered a resilient financial performance, made progress on our strategy, and continued to create world-leading technology.”

PEKKA LUNDMARK,
PRESIDENT AND CEO



Letter from our President and CEO continued

Network Infrastructure's net sales were negatively impacted by market uncertainty during the year, but profitability was robust and there was strong order intake across the business in the last quarter. Network Infrastructure ended the year with improving orders for IP Networks from webscale customers and good momentum in Fixed Networks from government initiatives for broadband deployments. Network Infrastructure also continued to advance its technology leadership with the launch of its PSE-6s solution for optical networking, which went live in customer network trials, setting a new record of 800Gbps per wavelength transmission over 6 600km. The introduction of the 7730 Service Interconnect Router brought the power of our advanced routing silicon to more parts of the network.

Mobile Networks' full-year net sales declined as rapid 5G deployment in India was not enough to offset a reduction in spending in North America. The net sales decline and regional mix led to a modest decline in margins. However, Mobile Networks has increased its 5G market share significantly in recent years and has continued to grow in private wireless and diversify into new segments. The business group also continued to improve its technology competitiveness with new additions to its AirScale radio access network portfolio, powered by the latest ReefShark System-on-Chip technology. Those additions included new high-performance massive MIMO radios as well as new baseband capacity and control cards, ready for 5G-Advanced and delivering unprecedented connectivity, capacity, and energy efficiency. Mobile Networks also launched anyRAN, a revolutionary approach to Cloud RAN giving operators and enterprises high performance, energy efficiency and resiliency.

Cloud and Network Services had a strong year with progress in profitability despite a net sales decline. It introduced the Network as Code platform with a developer portal to accelerate network programmability and monetization, closing the year with nine commercial agreements. Cloud and Network Services also made strides in the management of its portfolio, including the announcement of Red Hat as the primary infrastructure platform for Nokia Core Network applications, the agreed sale of its Device Management and Service Management Platform businesses, and the divestment of its VitalQIP products.

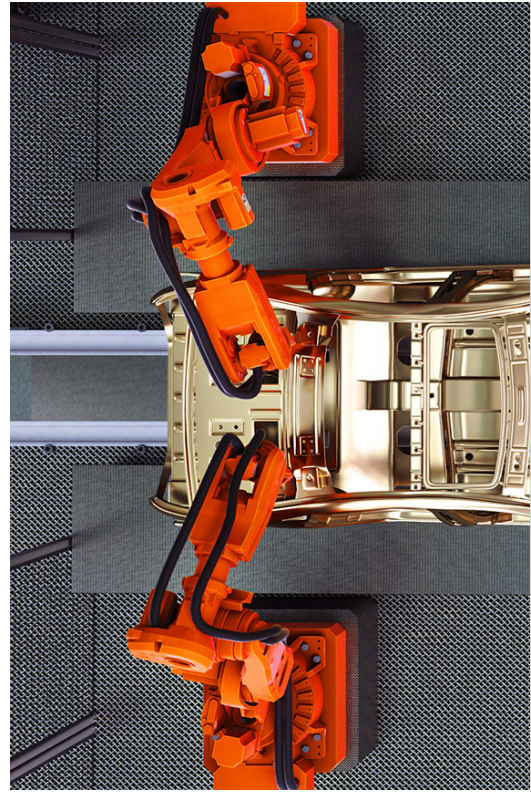
Nokia Technologies experienced a net sales decline as the prior year benefited from a significant one-off and as some of its major patent licensing agreements were still outstanding at the end of 2023. However, Nokia Technologies signed more than 50 deals, including Apple and Samsung, during the year and filed patents on more than 2 300 new inventions to continue building our industry-leading patent portfolio. It also continued to grow in new focus areas, including automotive, consumer electronics, and IoT. In early 2024, Nokia Technologies concluded its smartphone patent license renewal cycle which began in 2021, entering a period of stability.

Strategic progress

Early in 2023 we refreshed our corporate strategy to better position Nokia for longer-term growth opportunities. Sweeping digitalization, advances in artificial intelligence (AI) and the expansion of cloud computing will require significant investments in networks with vastly improved capabilities. To ensure Nokia capitalizes on those growth opportunities, we announced six strategic pillars in February, and by the end of the year we had made clearly identifiable progress on all of them.

For instance, we meaningfully increased our market share in mobile networks and in optical networks. We also continued to diversify and expand the share of enterprise in our customer mix, with enterprise customers making up more than 10% of our Group net sales in 2023. And we made several moves to actively manage our portfolio this year, including the aforementioned divestments in Cloud and Network Services, and Mobile Networks announcing the acquisition of Fenix Group to strengthen our offer to the defense sector in the United States.

Business longevity in Nokia Technologies was boosted with the conclusion of the smartphone patent license renewal cycle in early 2024, as well as through continued expansion into new areas. We also continued to develop new business models, with Cloud and Network Services leading the industry on programmable networks and growing its Software-as-a-Service operations fivefold to more than 40 customers.



Letter from our President and CEO continued

Finally, we made solid progress in developing our environmental, social, and governance (ESG) strengths into a competitive advantage for Nokia. We received another top ranking in Sustainalytics' 2023 ESG Top-Rated Companies list, and MSCI ESG Ratings gave us the highest-level AAA rating. Both of these ratings provide information to investors on financially relevant ESG matters. We also issued our first-ever sustainability-linked bond.

Nokia became the first telecom company to announce the manufacture of fiber broadband optical modules in the United States for the Broadband Equity, Access, and Deployment (BEAD) program, working with partners to bridge the digital divide. And Nokia represented European businesses at a G7 Summit side event in May looking at how to increase cooperation to strengthen digital infrastructure in developing economies.

Renewing our brand

Along with the six strategic pillars, we announced four enablers to support our strategic execution: developing future-fit talent; investing in long-term research in key domains; digitalizing our operations; and renewing our brand to establish a clear position for Nokia as a B2B technology innovation leader.

One of the highlights of the year was the unveiling of our renewed brand at Mobile World Congress in February, which has helped reset how key audiences view our company. Our brand will continue to be an important enabler of our strategy and long-term business goals.

Changes in operating model

To accelerate our strategic execution and navigate market uncertainty, in October we announced plans to give our business groups increased operational autonomy and agility so they could diversify faster, build new ecosystem partnerships, implement new business models, and invest in technology leadership.

As part of this, we streamlined our operating model through embedding sales and other go-to-market teams into the business groups from the start of 2024. Our aim was to increase the agility and speed of decision-making and enable our business groups to better seize growth opportunities with existing and new customers.

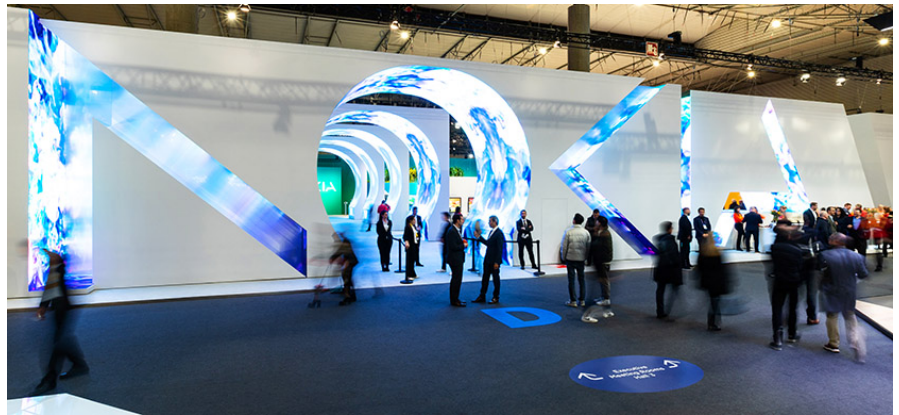
Due to ongoing market uncertainty, we also announced a plan to reset our cost base to help protect profitability. We aim to lower our cost base on a gross basis by between EUR 800 million and EUR 1 200 million by the end of 2026, compared to 2023, assuming on-target variable pay in both periods.

Technology leadership drives our business

Since we committed to increasing our R&D funding in 2020, our strengthened technology competitiveness has helped drive market share gains and has contributed to significantly improved customer satisfaction scores.

We updated our Technology Strategy 2030 in October to guide our product and services development as well as our customers' network transformation, with the aim of positioning Nokia as a leader for the 5G era and beyond.

Our innovation is spearheaded by Nokia Bell Labs, which continued to make technological breakthroughs last year including in optical networking and 6G. Two other highlights included UNEXT (Unified Networking Experience), a Nokia Bell Labs research initiative that promises to redefine network software and systems. And our participation in a US Defense Advanced Research Projects Agency (DARPA) initiative to design a future network architecture for the Moon.



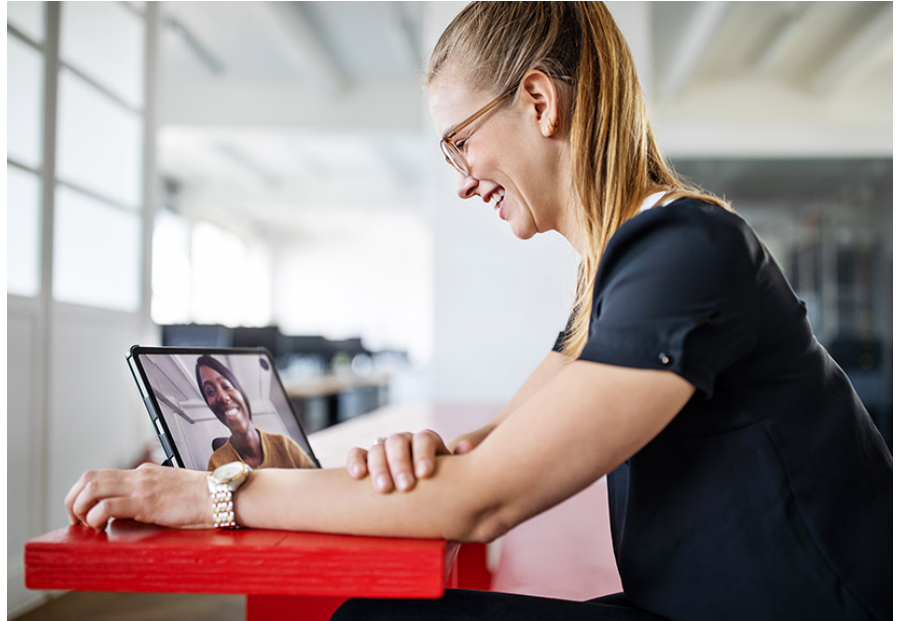
[Letter from our President and CEO](#) continued

To maximize the commercial potential of Nokia Bell Labs' innovations, we embarked on new venture partnerships and a new venture studio. We are now working with America's Frontier Fund, Roadrunner Venture Studios, and Celesta Capital to create and invest in strategic start-ups and to commercialize Nokia Bell Labs' research.

Looking ahead

Despite the challenging market environment, we delivered a resilient financial performance, made progress on our strategy, and continued to create world-leading technology. Nevertheless, it was a challenging year in terms of our share price development, and of course we can't be content with that. Our foremost priority is to create value for our shareholders. We took several steps in pursuit of that goal in 2023 and we will be relentless on improving shareholder value creation going forward. I would like to thank the entire Nokia team for everything they have done this year and their determination to strengthen our position for the future.

Pekka Lundmark
President and CEO



Our customers

Our customers

We serve three customer segments: communications service providers, enterprises and licensees.

Networks play an increasingly important role in the economy and in society. As a result, we serve a growing number of customers who provide critical services to end-users. We distinguish three customer segments that we serve with our hardware, software and services portfolio: communications services providers and enterprises, therein enterprise verticals and webscalers. In addition, we license our intellectual property to industries that benefit from our fundamental innovations, primarily in the mobile devices, automotive, consumer electronics and IoT industries.

Our analysis of the evolution of these segments is set out below.

1 Communications service providers (CSPs)

The CSPs estimated total addressable market (TAM) declined 6% to EUR 96 billion from 2022 to 2023.

A communications service provider offers telecommunications services such as voice and/or data services through fixed and/or mobile connectivity to consumers, enterprises, governments and other communications service providers. Nokia maintains a consolidated view of the Nokia total addressable market based on multiple external analyst reports, customer and key competitor reported and announced insights as well as Nokia internal insights. We estimate that in 2023, the CSPs estimated total addressable market (excluding Russia and Belarus) for Nokia was EUR 96 billion, having declined by 6% from 2022 to 2023 as the macro-environment, high interest rates and inventory build-up during 2022 combined to see operators reduce their spending meaningfully.

We expect it to only grow moderately, at a 1% compound annual growth rate (CAGR) between 2023 and 2028 excluding the impact of changes in foreign currency exchange rates.

We expect that fixed wireless access, fiber, IP routing and optical networks will grow faster than the overall CSP market, driven by the continuous demand for higher speed access technologies at homes and workplaces. The 5G cycle will also yield growth in software, namely in 5G Core and in all software segments supporting 5G operability and monetization.

CSPs have kept their capital expenditure intensity flat, but increased their earnings through automation, digitalization, shifts in channel mix, outsourcing and asset sales. We expect them to remain focused on the monetization of their connectivity strengths, and on cost optimization. They are also considering divesting from passive infrastructure and transitioning towards network sharing models. In areas in which the network is built for coverage, this might reduce demand for network vendor equipment. We have also seen the first examples of CSPs relying on webscalers to lead the transition to cloud-based operational and business models. When combined with open RAN standards that aim at splitting a base transceiver station into subcomponents with open interfaces, this may allow for new entrants into the market and increase competition. Conversely, it should also serve to accelerate innovation and create opportunities for market share gains for those investing in the technology, including for Nokia.

Geopolitics and environmental criteria increasingly influence investment and vendor decisions. Security and sovereignty have become important factors across the vendor landscape. Government-funded broadband initiatives also provide additional funding for investments, for example in rural areas. Sustainability considerations such as green energy use, energy consumption reduction plans and circular economy approaches also shift the criteria for vendor selection.

2 Enterprises

Enterprise estimated TAM grew by 7% to EUR 16 billion from 2022 to 2023.

Enterprise TAM includes enterprise verticals and webscaler markets. In 2023, the estimated enterprise TAM (excluding Russia and Belarus) was EUR 16 billion, having grown by 7% from 2022 to 2023 excluding the impact of changes in foreign currency exchange rates. We forecast this market to grow strongly, at 7% CAGR until 2028 excluding the impact of changes in foreign currency exchange rates, with the private wireless market reaching 22% CAGR.

Enterprise verticals

An enterprise vertical represents a grouping of companies by an industry that offers products and services that meet specific needs. We primarily focus on transportation and logistics, energy, manufacturing, and public sector verticals. This reflects our assessment that these are seeing the most significant digitalization over the coming years, as they automate many aspects of their operations. We project that growth will mainly be driven by private wireless and wireline networks in manufacturing, as well as in the public sector and in energy. We estimate that IP routing and optical networks will also continue to grow moderately in these segments.

Our customers continued

Webscalers

Webscaler refers to companies that provide cloud-based, scalable solutions and services. Alphabet (Google Cloud Platform), Amazon (Amazon Web Services) and Microsoft (Azure) are the largest cloud players – also referred to as hyperscalers – operating on a global scale. Our TAM for webscalers consists mainly of optical networks and IP routing. Within optical networks, we expect that data center interconnect (DCI) will be a strong growth driver, while the increasing webscaler data traffic requires adoption of higher bit rate technologies also in IP routing.

The largest global webscalers are also assuming an increasingly important role within the telecommunications domain. They target edge computing as the next growth engine for industrial automation workloads and low-latency applications. They also partner with CSPs to co-locate edge stacks on-premises and at metro sites. Additionally, they aim to run telecommunications network workloads on their cloud infrastructure. As such, webscalers are customers and partners, as well as potential competitors in some areas.

3 Licensees

Licensees refers to companies who have agreed licenses to use Nokia's intellectual property. This includes the licensing of Nokia's patent portfolio, the licensing of technologies for integration into consumer devices and licensing of the Nokia brand. The majority of Nokia Technologies' revenues comes from patent licensing where we have agreements with most major smartphone vendors as well as licensing programs for consumer electronics, video services, automotive and the wider IoT domain. In total, we have more than 200 licensees across all our programs, including companies like Apple, Samsung and Lenovo.

1

CSPs

Focus on connectivity strengths and using cost optimization via automation and asset carve outs to fund both fiber and 5G investments

Favoring cloud strengths in vendor and partner ecosystem

Network monetization targeting enterprise and edge use cases

2

Enterprise

Enterprise verticals
Digitalization and automation of operations in industrial segments

Transition to software-centric operations and adoption of industrial operational technology (OT) edge and on-premise clouds

Energy and manufacturing as early adopters of private wireless and automation solutions

Federal, state government and cities network modernization acceleration

Webscalers

Edge computing as a growth engine – industrial automation workloads across on-premise, edge, public cloud

Partnering with CSPs to co-locate edge stacks and building an ecosystem for low-latency apps

Targeting telco and network workloads to run on their cloud infrastructure

Collaborating with CSPs in the transformation of network operations

3

Licensees

Patent portfolio with long lifetime the vast majority of Nokia's patents still in force in ten years' time

New inventions every year
In 2023, Nokia filed patent applications on more than 2 300 new inventions, enabling 5G networks, connected 5G devices and more

Annual number of patent filings expected to grow due to continued investments in R&D and standardization

Entire industries powered by our fundamental cellular and multimedia inventions providing us with the opportunity to expand our licensing coverage; we are making good progress in our growth areas of consumer electronics, automotive and IoT

Our strategy

Our strategy

Networks are the key enabler for the digitalization of industries and the realization of the broader potential of the metaverse.

In 2021, Nokia set out its strategy to deliver sustainable, profitable growth by becoming a B2B technology innovation leader, accompanied by a new purpose and operating model. In 2023, Nokia made an evolution in this strategy and how we deliver against it with the introduction of six strategic pillars. These pillars are the key objectives that will define Nokia's success in the future and enable it to achieve its long-term ambitions. Each of Nokia's business groups which will be introduced in the following sections, are focused on implementing these strategic pillars in their respective businesses.

The six pillars are:

Grow CSP business faster than market 1	Expand the share of enterprise in our business 2	Actively manage our portfolio 3
<p>CSPs will continue to be our biggest customer segment. We will leverage our strong technological position, investment in technology leadership and emerging opportunities to grow our share in key markets, with geopolitical considerations supporting this ambition.</p>	<p>Enterprise verticals and webscalers are deploying campus networks, wide area private wireless networks, enterprise physical networks and data centers at an accelerated rate to digitalize their operations. Being a technology leader in all these domains, we pursue these opportunities to grow our enterprise business.</p>	<p>Maintaining our portfolio segments at number one or number two position, through several routes including active portfolio management, is critical for a profitable and sustainable business. There may be cases where a leadership position is not possible and for these cases, we will consider alternatives.</p>
Secure business longevity in Nokia Technologies 4	Build new business models 5	Develop ESG into a competitive advantage 6
<p>We are investing to ensure the sustained competitiveness of our patent portfolio. We will continue to pursue opportunities from sectors outside mobile devices, such as automotive, consumer electronics, IoT and video services.</p>	<p>To broaden our customer base and change our margin profile, we see potential in new platform business models within the broader ecosystem. We engage with service providers, webscalers, industrial giants and emerging players like app developers and start-ups, to drive the creation of new products, services, and solutions, and to explore new business models including Cloud RAN, Network as Code and as-a-Service.</p>	<p>ESG is increasingly important for customers, investors, regulators, partners and Nokia employees. There is space in our industry to become the 'trusted provider' and Nokia aims to claim this position. Our ESG strategy lays out how we will do this and our specific areas of focus.</p>

The six pillars are underpinned by four enablers:

Develop future-fit-talent	Invest in long-term research	Digitalize our own operations	Refresh our brand
<p>We have launched and are executing a new people strategy focused on growth, skills and development. We build the right future skills for our employees in the technical domains identified in our technology vision and strategy, and the commercial skills to support our expansion into new domains.</p>	<p>Sustained technology leadership is a key driver of our success: it requires us to anticipate, shape and invest in the next technology waves and breakthroughs. We continue to invest in long-term research to ensure a leadership position in line with our Technology Vision 2030. We are also deeply engaged in leading and influencing standards and developing standard essential patents.</p>	<p>We are increasing the digitalization of our own operations to lead by example with a set of ambitious, company-wide strategic initiatives to increase the company's performance and competitiveness, focused on efficiency, productivity and agility in internal operations, customer experience and R&D.</p>	<p>To ensure Nokia is recognized as a B2B technology innovation leader, we refreshed our brand in 2023. Our new visual identity is emblematic of an energized, dynamic and modern Nokia.</p>

Our strategy continued

Accelerating strategy execution – providing business groups with greater autonomy

In 2021, Nokia significantly streamlined its operating model, moving from a matrix organization and creating four P&L-responsible business groups structured around unique customer offerings. Since then, its business groups have increased investments in R&D, strengthened their technology leadership, and rebalanced their portfolio while growing faster than the market and expanding into new growth areas.

- Network Infrastructure has extended its technology leadership position and is growing faster than the market
- Mobile Networks substantially improved the competitiveness of its products, taking a leadership position in 5G and gaining market share
- Cloud and Network Services has grown faster than the market in its five growth segments, including Enterprise private wireless, while rebalancing its portfolio
- Nokia Technologies has expanded into areas such as automotive, multimedia and consumer electronics, and has signed new patent license agreements with Apple and Samsung

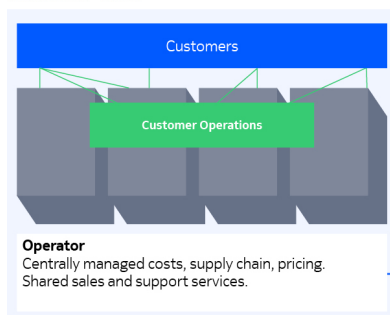
In Q4 2023, Nokia accelerated its strategy execution through providing its four business groups with increased operational autonomy and agility along with embedding sales teams directly into the business rather than the central sales organization the company has utilized until now. This will enable the business groups to better address opportunities in their distinctive markets with our existing and new customers. They will be empowered to diversify faster, build new ecosystem partnerships, implement new business models and invest for technology leadership.

Dedicated sales teams with a strong product and customer connection will enable business groups to better seize growth opportunities with our existing and new customers and diversify into enterprise, webscale and government sectors. This change will bring highly empowered teams in front of customers that are able to make quicker decisions based on their needs. Sales teams will collaborate across Nokia to ensure customers continue to benefit from the breadth of all Nokia offers.

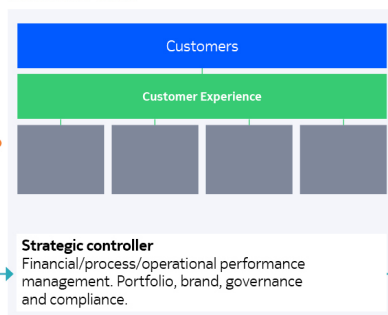
Nokia's lean corporate center will act as a strategic architect, providing oversight in key areas, including target setting and performance management and portfolio development along with governance and compliance. The company will continue its commitment to long-term research through Nokia Bell Labs, as evidenced by its recent announcement of a new venture studio and venture capital partnerships to unleash the full commercial potential of Nokia Bell Labs technologies beyond the needs of Nokia's business groups.

Accompanying the move towards more autonomous business groups and to provide investors with greater transparency in assessing their financial performance, Nokia will begin reporting a cash flow metric and regional sales at the business group level in 2024.

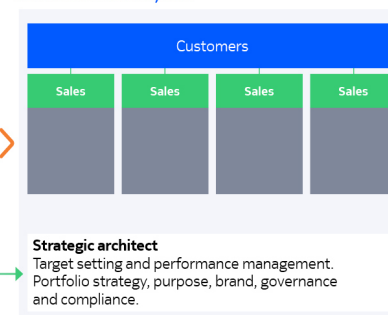
Nokia 2016–2020



Nokia 2021–2023



Nokia 2024 and beyond



Our strategy continued

Our path to continued technology leadership

As one of the industry's leading investors in communication technology research and development (R&D), we drive innovation across a comprehensive portfolio of network equipment, software, services and licensing opportunities .

Nokia's world-leading research and development

We have a global network of R&D centers, each with specialties and ecosystems built around both competencies and technologies. Most of our near- to mid-term R&D is conducted within the business groups' structures and is further elaborated in the business group-specific sections of this report.

Laying the path for Nokia's future technology innovation and identifying the most promising areas for new value creation

Beyond the R&D of our business groups, Nokia's dedicated Strategy and Technology (S&T) organization is focused on longer-term technology cycles. S&T is responsible for formulating a coherent corporate strategy and establishing a technology and architecture vision across the company. It is also overseeing the implementation of this vision in partnership with Nokia's business groups.

S&T drives company-wide internal technology alignment and, through the transfer of technologies to the business groups, contributes to the evolution of Nokia's portfolio to enable continued technology leadership.

Nokia Annual Report on Form 20-F 2023



Nokia Bell Labs

As Nokia's industrial research lab, Nokia Bell Labs solves human needs through the power of human intellect. Throughout its nearly 100-year history, Nokia Bell Labs has been bringing together the brightest minds in mathematics, physics, computing and engineering to work on the world's biggest scientific challenges. In 2023, we added our 10th Nobel Prize for work completed at Bell Labs with the Nobel Prize in Chemistry awarded to our alumnus Louis Brus.

Nokia Bell Labs' primary research areas are network fundamentals, automation, semiconductors and devices, AI and software systems. As an industrial research lab, we innovate with purpose, pursuing responsible, sustainable technologies that will have a demonstrable impact on society. Nokia Bell Labs believes

that the best research is done in an inclusive, collaborative manner, taking multiple diverse points of view into account.

With Nokia Bell Labs, we continue our heritage of pioneering significant innovations in the essential technologies driving communication networks and systems. Many of the fundamental technologies that are used in 5G standards were invented at Nokia, and now we are focused on technology leadership beyond 5G. We are finalizing standardization work for the first release of the 5G-Advanced era, known as 3GPP Release 18, and have started to work on the upcoming Release 19.

Our strategy continued

Nokia continues to be at the forefront of 6G research. Since January 2023, we have led Hexa-X-II, the second phase of the European Commission's flagship 6G initiative for research into the next generation of wireless networks. In 2023, Nokia also launched a first-of-its-kind 6G Lab in India to research foundational 6G technologies like network as a sensor, network exposure and automation.

In 2023, we achieved two key technological milestones on the path to 6G. First, the implementation of AI and machine learning (ML) into the radio air interface, effectively granting 6G radios the ability to learn. Secondly, we utilized new sub-terahertz (sub-THz) spectrum frequencies to substantially increase network capacity. At the 2023 Mobile World Congress, we presented a live demonstration of a 6G joint communication and sensing proof-of-concept.

In 2023, Nokia Bell Labs also set four new world records for submarine optical communications, and optical and fixed networks with research that set a path to long-term technology leadership in the next generation of network infrastructures.

Nokia Bell Labs is also at the forefront of non-traditional network research with a focus on AI and machine learning that is needed for future advanced communication capabilities. We believe it is important to develop AI in an ethical, responsible and sustainable way, and this led us to create a cross-organization AI Center of Excellence.

Nokia Bell Labs has had recent success in collaborating with government agencies and businesses on distinct commercial contracts. This includes additional funded agreements with the US Government for the future of space communication and lunar communication architecture studies with Nokia Bell Labs being chosen by DARPA for the Luna-10 Capability Study to design an integrated multi-service architecture to support a thriving economy on the Moon in the next decade and beyond. Nokia Bell Labs is regarded as a leading industry and thought leader on lunar surface communication networks, which NASA recently recognized by giving it the FY2023 NASA Langley Research Center Large Business Prime Contractor of the Year Award. Nokia Bell Labs also signed a memorandum of understanding with Aramco Digital for joint R&D collaboration and innovation on digitalization and industrial automation use cases.



Nokia Bell Labs continues to explore new concepts that could lead to growth in both neighboring and nascent markets. We launched UNEXT, a new research initiative for a future Network Software System that creates a unified networking experience for autonomous service creation leveraging distributed computing and new business environments. Just as Bell Labs' invention of UNIX transformed computing, our UNEXT research initiative is poised to transform networking, by breaking down barriers that have traditionally prevented network elements from interoperating.

Nokia is actively engaged in leading and influencing standards and developing new standard-essential patents (SEPs), shaping future technologies and systems while strengthening its IPR portfolio.

We also pursue future growth platforms through investment in NGP Capital innovation funds, and the in-house incubation and commercialization of venture projects. In 2023, we saw our first venture projects going to market and winning their first customer deals.

We also launched new venture capital partnerships with America's Frontier Fund, Roadrunner Venture Studios and Celesta Capital to aid in the creation and funding of spinouts that can maximize the commercial potential of Nokia Bell Labs innovations and the creation of long-term value for Nokia. In S&T, we are also focused on enabling Nokia to evolve as a best-in-class digital enterprise and identifying security requirements, trends and evolving risks, to position Nokia as a trusted security partner for the 5G era and beyond.

“Nokia is actively engaged in leading and influencing standards and developing new standard-essential patents (SEPs), shaping future technologies and systems while strengthening its IPR portfolio.”

[Our strategy continued](#)

Our Technology Strategy 2030

The network is critical to realizing the enormous range of potential that emerging innovations and technologies such as AI, the metaverse and the cloud open in the communication provider, industrial, enterprise and consumer spheres as we approach 2030.

In 2023, we revealed our Technology Strategy 2030, a roadmap to emerging technologies and future network architecture. Unparalleled technological advancement will drive major changes in the way we live and work in the upcoming decade. The global rate of technology adoption will be impacted by trends such as a deepening focus on environmental sustainability, cybersecurity and inclusion. Advances in semiconductors, software, artificial intelligence and machine learning, metaverse technologies, Web3 and cloud technologies will continue to accelerate. These technologies will significantly extend the scope of what is possible, connecting and merging the human, physical and digital worlds to help solve some of the greatest global challenges we face.

Building on our Technology Vision 2030, describing how we expect emerging technologies to impact the world in the coming years, Nokia's Technology Strategy 2030 outlines the insights, priorities and actions necessary for businesses to remain proactive in response to these accelerating technological advancements and the digital economy interplay and how, together with our customers and the industry, we must evolve networks to meet the challenges of tomorrow and beyond.

Network demand continues to accelerate

Network traffic is continuing to grow and will rise dramatically as AI, ML, extended reality (XR), digital twins, automation, and billions of additional devices proliferate. According to our new Global Network Traffic 2030 report, end-user data traffic demand will increase at a compounded annual growth rate of 22% to 25% from 2022 through 2030 and global network traffic demand is expected to reach between 2 443 and 3 109 exabytes per month in 2030.

Our Technology Strategy 2030 addresses the interplay of expanding technologies, the impact on network capabilities and demand and how Nokia will stay ahead of evolving customer requirements. In the years ahead, networks will undergo significant evolution and must become cognitive and automated ecosystems capable of addressing the transformative needs and operating models of diverse organizations, industries and consumers.

Future network architecture

The network architecture of the future will need to be more dynamic and agile, to swiftly adapt to the shifting landscape of applications and service demands, as well as new business and operating models. We have developed a future network architecture that leverages network digital twin technology as a central building block. The architecture brings networks and clouds together to optimize both the user experience and resource utilization. This future network brings enhancements in management and orchestration with the help of digital twin technology and AI to deliver optimal life-cycle management of deployed assets and applications. Unified Application Programming Interfaces (APIs) facilitate the development of an ecosystem where services and applications can be easily developed, deployed, and interoperated through the network.

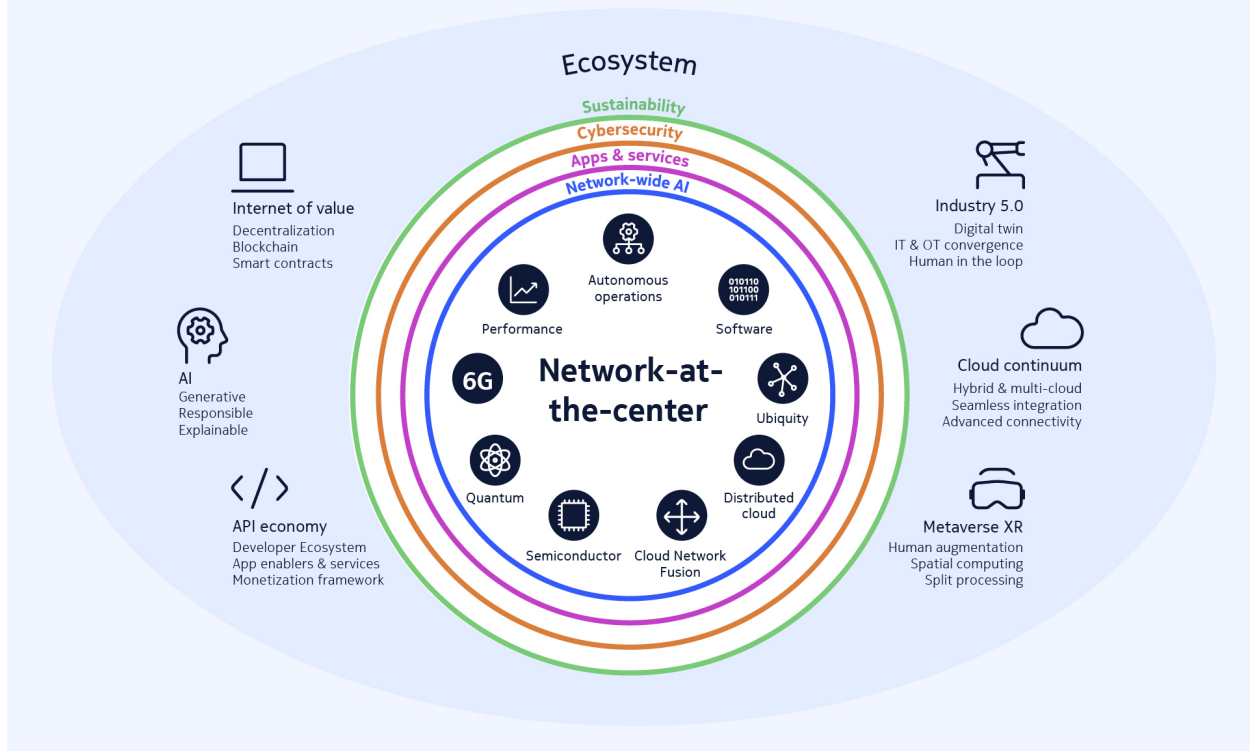
To achieve our goals over the coming years we will continue to anticipate future challenges for our customers and understand how emerging technologies impact their evolving networks, infrastructures and business models through continuous assessment, monitoring and governance of our technology strategy, which guides our portfolio development.

“Nokia’s Technology Strategy 2030 outlines the insights, priorities and actions necessary for businesses to remain proactive in response to accelerating technological advancements and the digital economy interplay and how, together with our customers and the industry, we must evolve networks to meet the challenges of tomorrow and beyond.”

Our strategy continued

The network and digital economy interplay

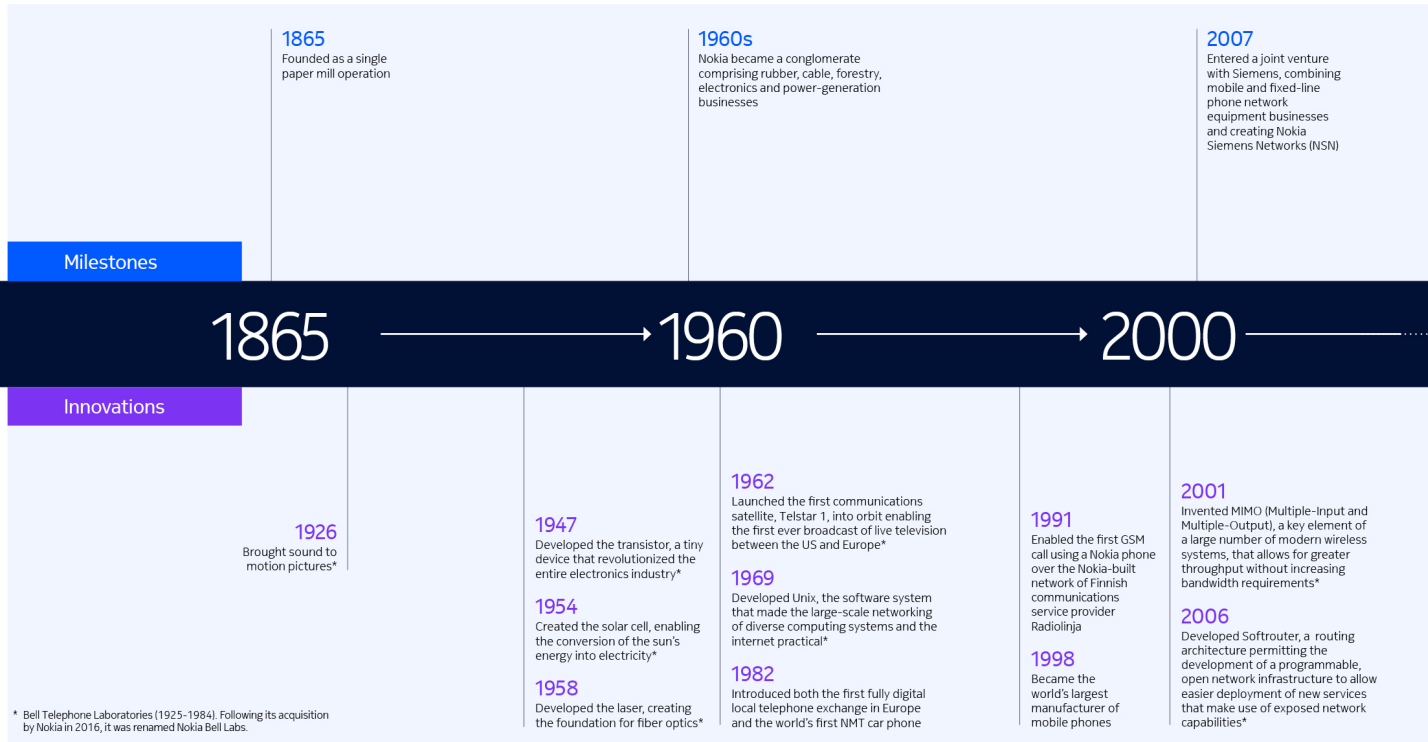
Evolution of network technologies will shape the future of the digital era



Our history

Our history

Nokia has been adapting to the needs of an ever-changing world for over 155 years.



* Bell Telephone Laboratories (1925-1984). Following its acquisition by Nokia in 2016, it was renamed Nokia Bell Labs.

Our history continued

2011

Entered a strategic partnership with Microsoft to address increasing competition from iOS and Android operating systems
Acquired the wireless network equipment division of Motorola

2013

Purchased Siemens' stake in NSN

2014

Sold the Devices and Services business to Microsoft

2016

Acquired Alcatel-Lucent, including Bell Labs, creating an innovation leader in next-generation technology and services

2017-

Additional acquisitions enhancing our technology leadership such as: Deepfield, the US-based leader in real-time analytics for IP network performance management and security; Comptel, a Finland-based telecommunications software company; Unium, a Seattle-based software company that specializes in solving complex wireless networking problems for use in mission-critical and residential Wi-Fi applications; and Elenion, a US-based company focusing on silicon photonics technology

2023

Renewed Nokia brand to establish a clear position for Nokia as a B2B technology innovation leader

Continued to actively manage its business portfolio, e.g. through the agreed sale of its Device Management and Service Management Platform businesses, and the divestment of its VitalQIP products. Announced the acquisition of Fenix Group



2014

Developed XG-FAST technology, enabling service providers to generate fiber-like speeds of more than 10Gbps over short distances using existing copper infrastructure

2017

Developed Probabilistic Constellation Shaping, an innovative technology to get the most out of each fiber, irrespective of its length and capabilities

2019

Opened the world's first live end-to-end 5G lab, the Future X Lab in Murray Hill, New Jersey, US

2020

Selected by NASA to build and deploy the first end-to-end LTE solution on the lunar surface

Enabled commercial deployment of the world's first 5G liquid cooling solution

Set the 5G speed world record

2021

Developed the Resh programming language to take control of and manage a fleet of robots

2022

Showcased the first 100Gb/s fiber broadband technology in the US

Launched the Advanced Security Testing and Research (AS TaR) lab in Dallas – the first end-to-end 5G testing lab in the US focused solely on cybersecurity

Introduced the 6 pillars of Responsible AI

2023

Achieved two key 6G technological milestones: the implementation of AI and machine learning into the radio air interface and proof-of-concept of 6G joint communication and sensing capability

Added our 10th Nobel Prize for work completed at Bell Labs, with the Nobel Prize in Chemistry awarded to our alumnus Louis Brus

World-record 2.4 Tb/s optical transmission over a single wavelength

Business groups

Network Infrastructure

Network Infrastructure delivers fixed access, IP routing, data center networks and optical transport, both terrestrial and subsea, for business-critical and mission-critical applications for CSP, enterprise and webscale customers.

2023 in brief

In 2023, Network Infrastructure's net sales declined by 11% from 2022, based on a strong first half with a more challenging latter part to the year. While a build-up in customer inventory – along with macroeconomic uncertainty – acted to depress revenue, strong demand for our technology innovation helped raise segment operating margin by 90 basis points to 13.1%.

- First to announce the manufacture of broadband network electronics products for the U.S. BEAD program
- Chosen by GFiber Labs (Google Fiber) to deliver a 20 Gig service to residential and enterprise customers with existing fiber networks
- Began Swisscom's service migration to a new high-capacity optical transport network
- Selected by OpenColo to expand data center site connectivity using 800GE routing interfaces
- Began work with Nomios Group to triple capacity for the GEANT European research network: the first research network to deploy 800GE routing interfaces
- Completed the Amitié subsea cable system – the highest capacity transoceanic communications cable ever deployed – in a project led by Aqua Comms, Meta, Microsoft and Vodafone

Nokia Annual Report on Form 20-F 2023



[↑](#)
FEDERICO GUILLÉN
PRESIDENT, NETWORK INFRASTRUCTURE

Market overview

During 2023, technology developments such as the emergence of generative AI and high profile announcements of plans for virtual reality devices underpinned our belief – supported by the research work of Nokia Bell Labs – that demand for connectivity will continue to grow over time to support pervasive technologies including digitalization and the metaverse. At the same time Network Infrastructure saw a number of short-term challenges that made for a tough latter part of the year. These range from a build-up of customer inventory in response to the recent supply chain crunch to some delays in customer investment prompted by ongoing macroeconomic uncertainty.

In the face of these challenges, Network Infrastructure's strategy remains concentrated on technology leadership and customer focus. We launched several significant new products during 2023. These include the PSE6-s photonic service engine, which delivers a competitive edge in terms of scale, performance and sustainability; the 7730 Service Interconnect Router, using our new FPcx silicon and run under Nokia SR Linux to bring significant benefits to customers in terms of security, capability, power and speed; and the industry's first carrier-grade Wi-Fi 7 product portfolio, three times faster than Wi-Fi 6 and based on our innovative Corteca software, designed to help customers monetize their networks. As a result, we have

“Network Infrastructure maintained focus in 2023 – despite market-driven challenges in the latter part of the year – continuing to bring innovative technologies to customers worldwide.”

maintained or grown market share in all of our businesses, made progress in the enterprise customer segment and laid the foundation for future profitable growth.

The estimated Network Infrastructure addressable market, excluding Submarine Networks for 2023 was EUR 43 billion.

Business overview and organization

Our business divisions are: Fixed Networks, IP Networks, Optical Networks and Submarine Networks.

Fixed Networks is a leading provider of access infrastructure (fiber and copper), in-home Wi-Fi solutions, cloud solutions and virtualization. In 2023, we maintained our leading position in passive optical networks ⁽¹⁾ and we have more than 400 fiber customers in 130 countries. We are leaders in 25G-PON (now being deployed by Google Fiber) as well as XGS-PON. Fixed Networks continues to play a leading role in the dynamic fixed wireless access market, with 50 FWA 5G deployments (including mmWave) globally. In 2023, additions to our portfolio included the industry's first carrier-grade Wi-Fi 7 product portfolio, new 5G FWA devices and extensions to our software offerings including the Corteca home connectivity solution to enable CSPs to better monetize their networks. Nokia was also the first to announce the manufacturing of broadband network electronics products for the U.S. BEAD government stimulus program.

Business groups continued

IP Networks is the leading global vendor in IP edge routing in EMEA⁽¹⁾ and holds the number two position in the global total routing market (excluding China)⁽³⁾. The business delivers high-performance IP access, aggregation, edge and core routing solutions with a focus on service provider, mission-critical enterprise, and webscale networks. Named a 'leader' and 'outperformer' in 2023 for data center fabric solutions by Gigaom, we deliver advanced data center networking solutions for telco, webscale and enterprise cloud requirements. In 2023, we continued to lead the market in next generation 800 Gigabit Ethernet IP routing, announcing wins with Nomios Group for the GÉANT European research network and with etisalat by e& UAE. We were chosen to deploy 800GE links in the world's fastest live supercomputing network showcase at the SC 2023 conference. IP Networks expanded its portfolio during the year with the launch of the 7730 Service Interconnect Router product family and FPcx fully programmable routing silicon. This will bring the power of Nokia's routing portfolio to new parts of the network and new mission-critical and CSP customers.

Optical Networks is a leader in optical transport networks for metro, regional and long-haul applications and collaborates with our Submarine Networks on innovation-led subsea applications. We hold the number two position in the optical market worldwide, excluding China⁽⁴⁾. We have more than 100 customers for our fifth generation Photonic Service Engine coherent digital signal processor, PSE-V, which was launched in 2020. And, in Q1 2023, we announced the PSE-6s, a groundbreaking new solution that sets new milestones in scale, performance and sustainability for optical transport networks. These include unmatched 2.4Tb/s scale; three times the previous reach for 800 Gigabit per second (Gb/s) wavelengths and sustainable network evolution with 60 percent less network power consumption per 100 Gbit equivalent, by comparison with earlier generations. PSE-6s was used by GlobalConnect to demonstrate a record-breaking 1.2Tb/s coherent transmission over a single wavelength in a live network and has also been demonstrated in live networks by customers including Colt and network wholesaler, Lyntia.

Submarine Networks continues to be a leader in the growing undersea telecoms networks segment⁽⁵⁾, which today carries 99% of worldwide internet traffic. As the industry's only end-to-end turnkey supplier, Submarine Networks is able to capitalize on projects from a diverse range of customers including CSPs, hyperscalers, private investors and energy solutions companies. With a substantial backlog of projects supporting demand in 2024 and 2025, Submarine Networks has significant long-term prospects, which we are addressing with investments in R&D in areas including capacity increase, terrestrial/submarine integration and solutions in the area of environmental standard development.

Competition

Our competitors include Huawei and ZTE, along with Calix and Adtran (Fixed Networks), Cisco and Juniper (IP Networks), Ciena and Infinera (Optical Networks), and Subcom and NEC (Submarine Networks).

- (1) Number one position globally in xPON OLT shipments and number one in XGS-PON OLT/ONT globally. Number one in G.fast globally. All data, Dell'Oro, September 2023.
 (2) Dell'Oro, 2023 four-quarter rolling average.
 (3) Dell'Oro 2023.
 (4) Omdia Q3 2023.
 (5) Nokia's own estimate.

2.4 Tb/s

Optical transport enabled by Nokia's new PSE-6s super coherent optical engines

150 million

Passive optical network (PON) lines shipped to broadband providers around the world by Nokia by end 2023 (includes 5 million XGS-PON and 1 million 25G PON-enabled lines)

65%

Reduction in IP network operations costs with the Nokia Network Services Platform network automation platform



Business groups continued

Mobile Networks

Mobile Networks creates products and services covering all mobile technology generations. Its portfolio includes products for radio access networks and microwave radio links for transport networks, solutions for network management, as well as network planning, optimization, network deployment and technical support services.

2023 in brief

In 2023, Mobile Networks net sales declined 8% to EUR 9.8 billion. We delivered a segment operating margin of 7.4% thanks to improved product cost competitiveness, cost control measures, lower variable pay and strong execution.

- Reached 319 commercial 5G deals and had more than 710 private wireless customers, with 159 in 5G
- Launched new AirScale massive MIMO radios and ultra-performance AirScale baseband powered by ReefShark, bringing higher capacity and connectivity, network performance, power efficiency and easy deployment
- Launched anyRAN to drive Cloud RAN partnerships enabling flexibility for mobile network operators and enterprises
- Announced acquisition of Fenix Group in the US, which strengthens our offering to the defense sector
- Developed new sales channels for Private Wireless networks via partnerships with Cisco, HPE/Athonet and Microsoft Azure

Nokia Annual Report on Form 20-F 2023



 TOMMI UITTO
PRESIDENT, MOBILE NETWORKS

Market overview

The estimated Mobile Networks addressable market ⁽¹⁾ for 2023 was EUR 43 billion and is estimated to have declined 13% in 2023. At the end of 2022 this market was expected to grow 5% in FY2023.

Nokia was impacted by industry-wide macroeconomic uncertainty in 2023, resulting in customers pausing spending, especially in North America. The resulting drop in revenues was partly offset by India's rapid 5G deployment. The market outlook continues to be uncertain, but we see a substantial need for operators to invest in 5G globally with only approximately 25% of the potential mid-band 5G high-capacity base stations so far deployed outside China. We also see opportunities to grow in Private Wireless networks, Cloud RAN, and 3GPP RAN solutions for the defense sector.

Business overview and organization

Despite the challenging macroeconomic environment and losing the RAN business with AT&T in the United States, Nokia continued to grow its Radio Access Networks market share. According to Dell'Oro, Nokia has increased its 5G RAN market share (excl. China) faster than any competitor since Q1 2022. ⁽²⁾ While continuing major 5G deployments for Bharti Airtel and Reliance Jio in India, Nokia announced new 5G deals in 2023,

“2023 saw Mobile Networks making progress in securing technology leadership with new portfolio launches for high-performance, energy-efficient wireless networks. Customer satisfaction scores reached the highest levels since 2016, and we also grew our customer base and took market share, despite the severe decline of addressable market.”

for example, with MTN in South Africa, Orange and Zain in Jordan, Antina in Singapore, Charter Communications in the United States, Eastlink in Canada, and Virgin Media O2 in the United Kingdom. Nokia was also selected by Deutsche Telekom for the deployment of a commercial Open RAN network.

This deal marks a significant return for Nokia into Deutsche Telekom's network in Germany. At the same time, against the backdrop of a challenging market outlook, we began to take proactive measures to reduce our cost base to secure long-term profitable growth.

Supporting our strategy to diversify our customer base, we shared developing new sales channels for Private Wireless networks via partnerships with Cisco, HPE/Athonet and Microsoft Azure. We also announced the acquisition of Fenix Group in the United States, which strengthens our offering to the defense sector.

In 2023, Mobile Networks launched new additions to its AirScale radio access network portfolio, powered by the latest ReefShark System-on-Chip (SoC) technology. Those include new high-performance Massive MIMO radios as well as new baseband capacity and control cards, ready for 5G-Advanced and delivering unprecedented connectivity, capacity, and energy efficiency.

Business groups continued

We also launched anyRAN, a new approach that leverages collaboration with leading cloud infrastructure and computing hardware suppliers. The approach offers flexibility of choice for operators and enterprises on their evolution path towards Cloud RAN and ensures high performance, energy efficiency, resiliency, service and feature parity, and security across hybrid networks of co-existing Cloud RAN and purpose-built RAN.

We continued integrating artificial intelligence and machine learning capabilities into our products and solutions, for example in our new network management solutions, as well as in services where AI/ML-based safety crew checks, digital site surveys and driverless acceptance solutions improve the health, safety and service delivery quality of our field teams. Furthermore, we introduced new radios in our Wavence microwave transport portfolio, which help expand 5G capacity and coverage, to support the connectivity needs of communications service providers, enterprises and industries.

Mobile Networks proactively develops new approaches to building networks. In 2023 for example, we showcased an industry-first successful aggregation of 5G Standalone spectrum using Five Components Carrier Aggregation (SCCA) in sub-6 GHz spectrum, together with Qualcomm and T-Mobile in the US. Nokia also achieved sustained average downlink speeds of over 2 Gbps using millimeter wave spectrum for 5G Fixed Wireless Access, over a distance of almost 11 kilometers. With AST SpaceMobile, we achieved 5G cellular broadband connectivity from space using everyday smartphones with Nokia technology.

Competition

The RAN market is a highly consolidated market. Our main competitors are Huawei, Ericsson, Samsung and ZTE, but there are also a number of smaller competitors competing in specific technology or regional sub-segments, such as NEC and Fujitsu. In microwave, our key competitors include Ceragon, NEC and Aviat, alongside Huawei and Ericsson.

(1) Excluding China, Russia and Belarus.

(2) Dell'Oro Group Inc., Mobile RAN quarterly report 4Q23 (rolling 4Q).

#2

in 4G/5G Radio Access Networks global market share, excluding China

319

Commercial 5G deals



Business groups continued

Cloud and Network Services

Cloud and Network Services (CNS) serves communications service providers, enterprises, hyperscale customers, digital developers and partners. Our strategy is focused on a new digital ecosystem encompassing 5G Core, secure autonomous operations, private wireless and campus edge, Network as Code and SaaS. These fast-growing areas are important to our customer base, are the focal point of CNS investment priorities, and reflect our view of the digital ecosystem that is essential to 5G value creation.

2023 in brief

Net sales declined 4% year-on-year while our operational discipline contributed to an approximately 3 percentage point increase in the segment operating margin. These results were accompanied by a host of customer wins and deployments, as well as the introduction of new products and services, including the following key developments:

- Launching our Network as Code platform to accelerate network programmability and monetization
- Introducing a new 4G and 5G Core Network software solution to meet the mission critical needs of enterprise verticals
- Seeing Nokia AVA for Energy SaaS solution chosen by O2 Telefónica Germany to curb energy use
- Adding 150 new enterprise campus private wireless customers, including Husky Terminal and The Ocean Cleanup
- Being selected by Belgium's Citymesh for our 5G-connected drone platform to establish the world's first nationwide drone network

Nokia Annual Report on Form 20-F 2023



[↑](#)
RAGHAV SAHGAL
PRESIDENT, CLOUD AND NETWORK SERVICES

Market overview

The necessity of monetizing 5G networks and services, deepening AI into network solutions and management, and transitioning to as-a-Service models requires our customers to find new ways to generate returns on their digital assets, reduce complexity, and mitigate security risks for their mission-critical networks.

We support that work by delivering cloud-native software solutions and services that strengthen network efficiency, self-protection and self-healing, and energy management; by deploying industrial solutions that drive digital transformation and Industry 4.0; and by helping our customers automate network operations and manage security.

The estimated CNS addressable market in 2023 was approximately EUR 26.8 billion.

“Our consistent focus on helping customers and partners create new value and transform their business operations enabled CNS to deliver another year of meaningful progress in executing our strategy and managing our portfolio. This was highlighted by the launch of our strategic Network as Code platform and our announcement to make Red Hat the primary infrastructure platform for our Core Network applications.”

Business overview and organization

In 2023, CNS was composed of five units: Business Applications, Cloud and Cognitive Services, Core Networks, Enterprise Campus Edge Solutions, and Network Monetization Platform.

In October 2023, Nokia announced operational changes to help the company execute more quickly on its strategy. As part of that announcement, CNS made the decision to integrate Core Networks and Business Applications into three new units: Product & Engineering, Services & Care, and Emerging Technologies. Those changes took effect 1 January 2024. The Cloud & Cognitive Services, Enterprise Campus Edge Solutions, and Network Monetization Platform units were not impacted by the organizational changes.

Our growing Software-as-a-Service (SaaS) delivery model supports each unit to help customers transition to greater network flexibility and achieve faster time to value.

The Network Monetization Platform unit introduced another critical ecosystem enabler in September 2023 with our Network as Code platform that allows application developers and CSPs to accelerate the work of producing software applications for new enterprise, industrial and consumer use cases, and monetizing 5G and 4G network assets beyond basic connectivity.

Business groups continued

During the year, we made solid progress actively managing our portfolio, with announcements to divest Nokia's VitalQIP products to Cygna Labs Corp; to make Red Hat the primary infrastructure platform for Nokia Core Network applications; and to sell Nokia's Device Management and Service Management Platform businesses to Lumine Group Inc.

Competition

The market in which we compete has vendors and other industry participants which may on occasion be a customer, a partner, or a direct competitor, depending on the nature of the engagement. We are regularly building and nurturing alliances with partners such as IT vendors, hyperscalers, and systems integrators, which are increasingly influential in this space.

The competitive environment comprises many networking companies, infrastructure and application software suppliers, services specialists, hyperscalers, cloud providers, and a wide range of industry segment businesses.

In 2023, Nokia was ranked #1 again by Omdia for our Core portfolio breadth and competitiveness strength ⁽¹⁾; rated #1 again in automated assurance by Analysys Mason ⁽²⁾; rated #1 in network automation software by Appledore Research ⁽³⁾; rated by Kaleido Intelligence as the #1 Champion in Private Network Hardware, Private Network Software, and Private Network Management ⁽⁴⁾; rated as a leader in service orchestration by GlobalData ⁽⁵⁾; and ranked as an industry leader in network security by GigaOm for our extended detection response market (XDR) security platform ⁽⁶⁾.

Nokia had the most CSP customers of 5G Standalone Core in the industry, with a total of 107 at the end of 2023.

We continued to have marketplace leadership in private wireless networking with 710 customers; of which 159 are 5G.

(1) Omdia Market Landscape: Core 2023, June 2023.

(2) Analysys Mason, Automated assurance: worldwide market shares 2022, September 2023.

(3) Appledore Research, Leading Suppliers in Network Automation Software, June 2023.

(4) Kaleido Intelligence, Connectivity Vendor Hub: Private Networks 2023, 24 October, 2023.

(5) GlobalData, Network Service Orchestration: Competitive Landscape Assessment, August 2023.

(6) GigaOM, GigaOm Radar for Extended Detection and Response (XDR), April 2023.

Nokia had the most CSP customers of 5G Standalone Core in the industry, with

107

at the end of 2023

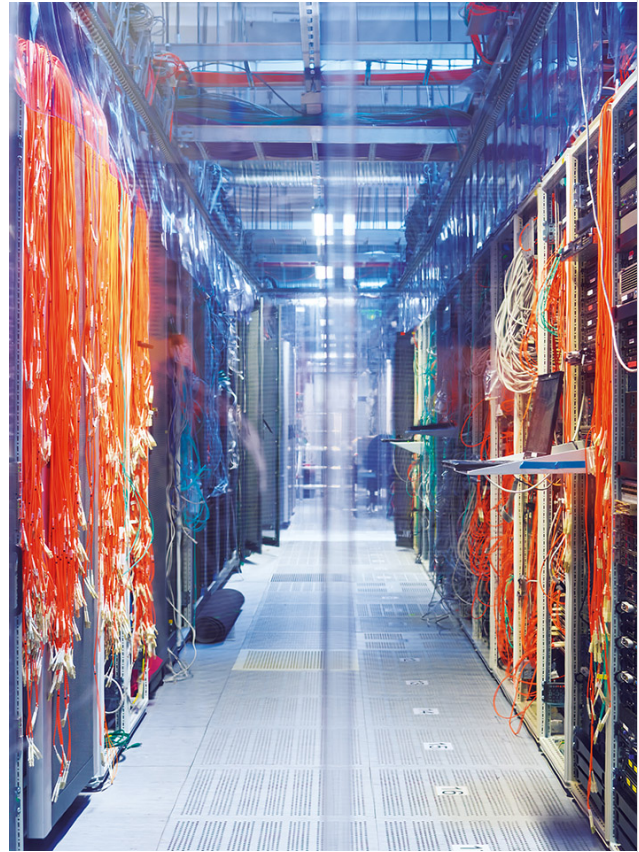
We continued to have marketplace leadership in private wireless networking with more than

710

customers; of which

159

are 5G



Business groups continued

Nokia Technologies

Nokia Technologies is responsible for managing Nokia's patent portfolio and monetizing Nokia's intellectual property, including patents, technologies and the Nokia brand.

2023 in brief

Net sales for the full year decreased 32% to EUR 1 085 million and segment operating profit decreased 39% to EUR 734 million. Significant progress was made with smartphone license renewals and expansion into growth areas:

- Drove innovation, filing patents on over 2 300 new inventions, and reaching 6 000 patent families declared as essential to the 5G standard
- Signed over 50 new patent license agreements including new agreements with Apple and Samsung
- Expanded patent licensing efforts into new areas such as video streaming
- Our voice codec was selected as the Immersive Voice and Audio Services (IVAS) standard by the Third Generation Partnership Project (3GPP)
- Commenced legal action against Amazon and HP for the unauthorized use of Nokia's video-related technologies

Nokia Annual Report on Form 20-F 2023



[↗](#)
JENNI LUKANDER
PRESIDENT, NOKIA TECHNOLOGIES

“We are delighted to have signed new patent license agreements with Apple and Samsung this year. Together these provide long-term financial stability to our licensing business.”

Market overview

Nokia Technologies is responsible for managing Nokia's patent portfolio and monetizing Nokia's intellectual property, encompassing patents, technologies and the Nokia brand. This effort builds on Nokia's continued innovation leadership, long-term investment in research and development, and decades of driving technology standards development. Licensees pay royalty fees for the use of our technology, which we reinvest, along with additional investment, into developing the next generation of inventions.

Net sales for the full year decreased 32% to EUR 1 085 million and segment operating profit decreased 39% at EUR 734 million. We signed over 50 new patent license agreements across our licensing programs, including new agreements with Apple and Samsung, and continued to make progress in our patent licensing growth areas with new deals in IoT and Multimedia. And at the beginning of 2024, we agreed new 5G cross-license agreements with OPPO and vivo, resolving all pending patent litigation between the parties. Nokia will receive royalty payments from OPPO and vivo, along with catch-up payments to cover non-payment during the dispute period.

Business overview and organization

Nokia Technologies has three business areas: Patent Licensing of Nokia's patent portfolio, Technology Licensing of Nokia's technologies for integration into consumer devices, and Brand Partnerships for licensing the Nokia brand.

Patent Licensing : We manage the Nokia patent portfolio, working with other Nokia business groups, and continue to grow our patent licensing and monetization activities, which drive most of Nokia Technologies' net sales. The core of our business is the mobile devices licensing program, where we have agreements with most major smartphone vendors. We also have patent licensing programs for automotive, consumer electronics, IoT and video services.

Technology Licensing : We license our OZO Audio and OZO Playback multimedia technologies to smartphone and camera manufacturers, and drive advanced audio and video research and standardization, along with product incubation for new, immersive voice and video solutions.

Business groups continued

Brand Partnerships : Nokia has a strategic agreement with HMD Global Oy (HMD) granting HMD an exclusive global license to create Nokia-branded mobile phones and tablets. Under the agreement, Nokia receives royalty payments from HMD for sales of Nokia branded mobile phones and tablets, covering both brand and patent licensing. The licensing agreement will expire by March 2026. In September 2023, HMD announced plans to transition to a multi-brand strategy which will include an HMD original range along with Nokia branded phones.

Innovation and standards leadership

Nokia has defined many of the fundamental technologies used in virtually all mobile devices and has a leading role in open standardization. Since 2000, Nokia has invested around EUR 150 billion in research and development (R&D). As a result, we own one of the broadest and strongest patent portfolios in the telecommunications sector with around 20 000 patent families (each family can comprise several individual patents).

We own a leading share of Standard Essential Patents (SEPs) in every generation of cellular standards, with over 6 000 patent families declared as essential to the 5G standard. Our portfolio also covers significant multimedia assets, particularly in video compression technology, which allows large files to be shared across the internet. The work of Nokia's inventors in video research and standardization has been recognized with numerous prestigious awards, including five Technology & Engineering Emmy® Awards.

Our inventors also continue to lead in voice communication. In 2023, the Third Generation Partnership Project (3GPP) selected the Immersive Voice and Audio Services (IVAS) codec, developed together with our partners, as the next generation voice coding standard. IVAS brings spatial audio to mobile communications for the first time, enabling more immersive calls by capturing and sharing the full spatial audio scene.



Nokia was one of the first companies in the world to achieve the globally recognized ISO 9001 certification for our high-quality patent portfolio management processes. Our patent portfolio has a long lifetime, with the vast majority of patents still in force in ten years' time. We continue to refresh our portfolio with new inventions every year. In 2023, we filed patent applications on more than 2 300 new inventions, enabling 5G networks, connected 5G devices and more. As we continue to invest heavily in R&D and standardization, the annual number of filings is expected to grow.

6 000+

patent families declared as essential to the 5G standard

5 000+

multimedia inventions

Supply chain, sourcing and manufacturing

Supply chain, sourcing and manufacturing

In 2023, Nokia's supply chain delivery capability was fully restored after the previous years' constraints. This year, we focused on managing customer demand and further developing our risk management capabilities. We continued to optimize our manufacturing, distribution and supplier network across the regions.

Nokia's supply chain is essential for our customers, our business, and for managing customer demand and supply for our hardware, software and contract manufactured products. Our end-to-end operations include sourcing, demand and supply planning, manufacturing, distribution and logistics.

In 2023, we purchased over EUR 13 billion worth of products and services from around 10 000 different suppliers.

While the volatile geopolitical operating environment continued to pose challenges to our supply chain management in 2023, global semiconductor shortages no longer created similar disruptions as in the past few years.

Focus on risk and cost management

Throughout 2023, we saw a softening of the global demand for our equipment, linked to the overall macroeconomic situation, as well as inventory digestion by some customers. In this context, we continued to work closely with our customers to form the best possible forecast outlook in the mid and long term. In addition, we had a strong focus on inventory management to offset potential excess risks.

Furthermore, we developed our risk management capabilities supported by increased digitalization and automation to navigate the rapidly changing business environment. Inventories and safety buffers were largely kept upstream

on a component level, increasing the flexibility to react to any potential short-term product type changes.

Cost inflation throughout the supply chain continued to impact our margins, but through sustained focus on improving our product cost and careful management of our customer pricing, we were able to keep this under control.

Building resilience through strong partnerships and a regional approach

As we further develop a robust and sustainable supply chain that can best serve our customers, maintaining focus on resilience is critical. We continuously optimize our manufacturing, distribution and supplier network across the regions in which we operate to better serve our customers. We also further leverage artificial intelligence and machine learning capabilities to better develop our supply chain and factory network.

Our geographically dispersed manufacturing network consists of both our own manufacturing (18% of the network) and contract manufacturing partners to minimize geographic and geopolitical risks. Our network is strategically located around the world which breaks down by number of sites as: Europe 23%, Asia Pacific, Japan/India 30%, China 35% and the Americas 13%. Each year our spending by location will vary depending on our regional demand and in 2023 our spending was approximately broken down as: Europe 27%, Asia Pacific, Japan/India 42%, Greater China 18% and Americas 13%. Our regional approach will not only enable us to deliver a more rapid response to our customers' needs, but also reduce transportation costs and CO₂ emissions.



Supply chain, sourcing and manufacturing continued

Sustainability enablement and innovation

We clearly communicate our Third-party Code of Conduct and Nokia Supplier Requirements, incorporating the Responsible Business Alliance (RBA) Code of Conduct requirements, to our suppliers. These include standards for responsible sourcing in key areas such as the environment and human rights. Adherence to the standards is checked through audits and EcoVadis documentation assessments, before being followed-up via one-on-one sessions and webinars on various ESG topics.

In 2023, we conducted supplier on-site audits to ensure good visibility over labor rights, health and safety and environmental issues. The number of audits significantly increased during 2023 as COVID-related restrictions were removed.

We are committed to cutting greenhouse gas emissions across our value chain by 50% by 2030, in line with our science-based target. Our own factories are on track to reach 100% renewable electricity by 2025. We also work closely with the entirety of our supply chain to develop new digital solutions and product innovations to cut emissions.

In 2023, we continued to work with our electronics manufacturing services suppliers to track their roadmap activities as we look to achieve the mutually agreed target that the Nokia portion of their manufacturing reaches net zero by 2030. We also expanded deep dives into the roadmap designs for our energy-intensive component supplier categories such as integrated circuits, semi-discretes, and printed wiring boards. As part of our circularity program, we introduced recycled material content targets to our mechanical suppliers and we recognized supplier climate and circularity innovations via our Supplier Diamond Award.

“Design for Environment” is an integral part of our supply chain sustainability strategy. It aims to ensure Nokia products are in line with our policies and goals for product stewardship and environmental sustainability. We therefore continued to collaborate with our suppliers to encourage sustainable solutions in transportation, logistics and packaging, using alternative materials and optimized designs to deliver sustainable product packaging, reducing use of virgin plastics, and increasing recycled content materials. As an example, this year we have deployed FiberFlute and honeycomb cardboard solutions to replace plastic cushions in some product deliveries. Moreover, we are piloting other fiber-based solutions to replace plastic in our repair centers and are studying implementation on a wider scale.

Supply chain logistics is one of the areas in which we constantly look for innovative ways to reduce our carbon footprint. As an example, together with DHL Global Forwarding (DGF), we redesigned one of our key intercontinental logistics routes. Using a combination of transport modes, we were able to reduce the use of air freight with a resulting 68% reduction in transport carbon emissions compared to the previous logistics model.

We are committed to prioritizing and strengthening resilience and sustainability across the end-to-end supply chain to help us deal effectively with challenges that arise. See the “Sustainability and corporate responsibility” section for more information on Nokia’s sustainability targets and achievements, including those related to supplier sustainability.

Own manufacturing

As of 31 December 2023, the production capacity for sites owned by us is noted below:

Country	Location and products ⁽¹⁾	Productive capacity, net (m ²) ²
China	Suzhou: radio frequency systems ⁽³⁾	13 500
Finland	Oulu: base stations	10 000
France	Calais: submarine cables	61 000
Germany	Hannover: radio frequency systems ⁽⁴⁾	23 500
India	Chennai: base stations, radio controllers and transmission systems, fixed networks	15 500
UK	Greenwich: submarine cables	11 000

(1) We consider the production capacity of our manufacturing network to be sufficient to meet the requirements of our business.

The extent of utilization of our manufacturing facilities varies from plant to plant and from time to time during the year. None of these facilities is subject to a material encumbrance. During 2023, Nokia disposed of the following sites: 1) Trignac: radio frequency systems (France), 7 300 m² net productive capacity; 2) Meriden: radio frequency systems (USA), 31 000 m² net productive capacity; and 3) Bydgoszcz: remanufacturing, product integration (Poland), 15 200 m² net productive capacity. During 2022, manufacturing activities ended at the following site: Kilsyth: radio frequency systems (Australia), 5 400 m² net productive capacity.

(2) Production capacity equals the total area allotted to manufacturing and to the storage of manufacturing-related materials.

(3) In December 2022, Nokia entered into an agreement regarding the disposal of this site, and during 2023, Nokia partially disposed of the site. As of 31 December 2023, the site's productive capacity totaled 27 000 m², of which the net productive capacity attributable to Nokia was 13 500 m². The disposal of the remaining net productive capacity is expected to be completed during 2024.

(4) Nokia has entered into an agreement on the disposal of this site. The disposal is expected to be completed during 2024.

Corporate governance

Corporate governance statement	34
Regulatory framework	34
Main corporate governance bodies of Nokia	35
General Meeting of Shareholders	35
Board of Directors	36
Group Leadership Team and the President and CEO	49
Risk management, internal control and internal audit functions at Nokia	53
Main procedures relating to insider administration	55
Auditor fees and services	55
Remuneration	56
Highlights	56
Remuneration Report 2023	57
Letter from the Chair of the Personnel Committee of the Board	57
Introduction	59
Remuneration of the Board of Directors	60
Remuneration of the President and CEO	61
Remuneration Policy	64
The updated Remuneration Policy for the Board of Directors	64
The updated Remuneration Policy for the President and CEO	65
Remuneration governance	68
Remuneration of the Nokia Group Leadership Team in 2023	69
Pay for performance	71
Global peer group	71



Corporate governance statement

"In 2023, we continued delivering on Nokia's commitment to strong corporate governance and related practices. To do that, the activities of the Board of Directors are structured to develop the Company's strategy and to enable the Board to support and oversee management on its delivery within a transparent governance framework."

Select highlights in our corporate governance during 2023

- Our 2023 Annual General Meeting saw a record number of shareholders and votes represented and strong shareholder support for all the Board's proposals.
- We were proud to lead the introduction of the individual director election method in the Finnish market and provide our shareholders with the opportunity to consider each candidate separately in our 2023 Annual General Meeting.
- We implemented the Executive Officer Clawback Policy, meeting the NYSE listing standards issued in response to the US Securities and Exchange Commission's 2023 rules implementing the incentive-based compensation recovery provisions of the Dodd-Frank Act. In addition, we refreshed our all-employee Clawback Policy on incentive compensation.
- We were pleased to host multiple meetings with our largest shareholders to discuss Nokia's sustainability remuneration and governance approach.

This corporate governance statement is prepared in accordance with Chapter 7, Section 7 of the Finnish Securities Markets Act (2012/746, as amended) and the Finnish Corporate Governance Code 2020 (the "Finnish Corporate Governance Code").

Regulatory framework

Our corporate governance practices comply with Finnish laws and regulations, our Articles of Association approved by the shareholders and corporate governance guidelines ("Corporate Governance Guidelines") adopted by the Board of Directors. The Corporate Governance Guidelines reflect our commitment to strong corporate governance. They include the directors' responsibilities, the composition and election of the members of the Board and its Committees, and certain other matters relating to corporate governance. We also comply with the Finnish Corporate Governance Code adopted by the Securities Market Association.

We follow the rules and recommendations of Nasdaq Helsinki and Euronext Paris as applicable to us due to the listing of our shares on these exchanges. Furthermore, as a result of the listing of our American Depositary Shares on the New York Stock Exchange (NYSE) and our registration under the US Securities Exchange Act of 1934, we follow the applicable US federal securities laws and regulations, including the Sarbanes-Oxley Act of 2002 as well as the rules of the NYSE, in particular the corporate governance standards under Section 303A of the NYSE Listed Company Manual. We comply with these standards to the extent such provisions are applicable to us as a foreign private issuer.

To the extent compliance with any non-domestic rules would conflict with the laws of Finland, we are obliged to comply with Finnish laws and applicable regulations. There are no significant differences in the corporate governance practices applied by Nokia compared with those applied by US companies under the NYSE corporate governance standards with the exception that Nokia complies with Finnish law with respect to the approval of equity compensation plans. Under Finnish law, stock option plans require shareholder approval at the time of their launch. All other plans that include the delivery of company stock in the form of newly issued shares or treasury shares require shareholder approval at the time of delivery of the shares unless shareholder approval has been granted through an authorization to the Board, a maximum of five years earlier. The NYSE corporate governance standards require that equity compensation plans are approved by the company's shareholders. Nokia aims to minimize the necessity for, or consequences of, conflicts between the laws of Finland and applicable non-domestic corporate governance standards.

In addition to the Corporate Governance Guidelines, the Committees of the Board have adopted charters that define each Committee's main duties and operating principles. The Board has also adopted the Code of Conduct that applies to directors, executives, and employees of Nokia, as well as employees of Nokia's subsidiaries and affiliated companies (such as joint ventures) in which Nokia owns a majority of the shares or exercises effective control. Furthermore, the Board has adopted the Code of Ethics and Executive Officer Clawback Policy applicable to our key executives, including the President and CEO, CFO and Corporate Controller.

Corporate governance statement continued

Corporate governance framework



Main corporate governance bodies of Nokia

Pursuant to the provisions of the Finnish Limited Liability Companies Act (2006/624, as amended) (the "Finnish Companies Act"), the legislation under which Nokia operates, and Nokia's Articles of Association, the control and management of Nokia are divided among shareholders at a general meeting, the Board, the President and CEO and the Group Leadership Team, chaired by the President and CEO.

General Meeting of Shareholders

Nokia's shareholders play a key role in corporate governance, with our Annual General Meeting offering a regular opportunity to exercise their decision-making power in Nokia. In addition, at the meeting the shareholders may exercise their right to speak and ask questions.

Each Nokia share entitles a shareholder to one vote at general meetings of Nokia. The Annual General Meeting decides, among other things, on the election and remuneration of the Board, the adoption of annual accounts, the distribution of retained

earnings shown on the balance sheet, discharging the members of the Board and the President and CEO from liability, as well as on the election and fees of the external auditor and the sustainability reporting assurer. The Remuneration Policy is presented to the general meeting at least every four years and the Remuneration Report annually. Resolutions of the general meeting regarding the policy and the report are advisory in nature.

In addition to the Annual General Meeting, an Extraordinary General Meeting may be convened when the Board considers such a meeting to be necessary, or when the provisions of the Finnish Companies Act mandate that such a meeting must be held.

The Finnish Companies Act was amended on 11 July 2022 to enable limited liability companies to hold hybrid and virtual-only general meetings. A virtual general meeting, as defined by the Finnish Companies Act, is a meeting held without a physical meeting venue, where shareholders must be able to exercise their shareholder rights in full by virtual means, including voting

in real time and asking questions orally during the meeting. We believe the Finnish legislation can be considered a leading example of protecting shareholders' rights in virtual general meetings. Once reliable technical methods for automated foreign shareholder identification become available in Finland, virtual general meetings are expected to improve the position of nominee-registered private shareholders residing outside of Finland, who may have been unable to attend the general meeting in person or be represented by proxy. The benefits of virtual general meetings would further include the ability of the Company to hold a general meeting also under extraordinary external circumstances such as navigating through restrictions on physical gatherings.

In accordance with the Finnish Companies Act, the articles of association must be amended to hold a general meeting virtually, necessitating a two-thirds qualified majority of shares and votes. After consulting with its largest shareholders, Nokia is proposing to the Annual General Meeting 2024 such amendment to its Articles of Association to allow virtual meetings in extraordinary external circumstances and to be prepared for all general meeting formats. Having the option of virtual meetings included in the Articles would not preclude in-person meetings and shareholders' rights would always be protected as a first priority regardless of the meeting format.

Annual General Meeting 2023 and 2024

The Annual General Meeting 2023 took place at Messukeskus Siipi, the Helsinki Expo and Convention Centre, on 4 April 2023. We were pleased to see the record number of votes cast as well as the strong shareholder support received for all the Board's proposals at the Meeting. For the second consecutive year, the turnout for the vote stood at a record high level. Also, a record number of 108 603 shareholders representing approximately 3 190 million shares and 56.6% of all the shares and votes in the Company participated the Annual General Meeting. On the other hand, fewer shareholders participated in person compared to the years before the COVID-pandemic as the Company was offering an opportunity to cast votes in advance and follow the meeting as well as ask questions through a live webcast. All of the Board's proposals were supported by more than 92% of the votes cast.

Nokia Corporation's Annual General Meeting 2024 is planned to be held on 3 April 2024. The Board's proposals to the Annual General Meeting 2024 were published on 25 January 2024.

Corporate governance statement [continued](#)

Board of Directors

The operations of Nokia are managed under the direction of the Board, within the framework set by the Finnish Companies Act and Nokia's Articles of Association as well as any complementary rules of procedure as defined by the Board, such as the Corporate Governance Guidelines and the charters of the Board's Committees.

Election and composition of the Board of Directors

Pursuant to the Articles of Association of Nokia, we have a Board that is composed of a minimum of seven and a maximum of 12 members. The members of the Board are elected at least annually at each Annual General Meeting. The candidates are considered individually and those receiving the most votes shall be elected pursuant to the Finnish Companies Act. The term of the Board members begins at the close of the general meeting at which they were elected, or later as resolved by the general meeting, and expires at the close of the following Annual General Meeting. The Annual General Meeting convenes by 30 June annually.

Our Board's leadership structure consists of a Chair and Vice Chair elected annually by the Board and confirmed by the independent directors of the Board from among the Board members upon the recommendation of the Corporate Governance and Nomination Committee. The Chair of the Board has certain specific duties as stipulated by Finnish law and our Corporate Governance Guidelines. The Vice Chair of the Board assumes the duties of the Chair of the Board in the event the Chair is prevented from performing his or her duties.

The independent directors of the new Board also confirm the election of the members and chairs for the Board's Committees from among the Board's independent directors upon the recommendation of the Corporate Governance and Nomination Committee and based on each Committee's member qualification standards. These elections take place at the Board's assembly meeting following the general meeting.

The Corporate Governance and Nomination Committee aims to continually renew the Board to have an efficient Board of international professionals with a diverse mix of skills, experience and other personal qualities in line with the diversity principles established by the Board. The Corporate Governance and Nomination Committee considers potential director candidates based on the short- and long-term needs of the Company. In the process of identifying and selecting the

candidates matching these needs and desired profiles, the Committee engages search firms and external advisers.

Board independence

In accordance with the Corporate Governance Guidelines adopted by the Board of Directors, the Nokia Board shall have a majority of directors who meet the criteria for independence as defined by the Finnish Corporate Governance Code (independent of both the Company and any significant shareholders who hold at least 10% or more of the total shares or voting rights of the Company) and the rules of the NYSE. Furthermore, all of the members of the Board Committees shall be independent Directors under the relevant criteria for independence required by the Finnish Corporate Governance Code and the applicable rules of the NYSE.

The Board will monitor its compliance with these requirements for director independence on an ongoing basis. Each independent director is expected to notify the Chair of the Corporate Governance and Nomination Committee, as soon as reasonably practicable, in the event that his or her personal circumstances change in a manner that may affect the Board's evaluation of such director's independence. The Board of Directors evaluates the independence of its members annually and, in addition to this, on a continuous basis with the assistance of the Corporate Governance and Nomination Committee.

Board diversity

The Board has adopted principles concerning Board diversity describing our commitment to promoting a diverse Board composition and how diversity is embedded into our processes and practices when identifying and proposing new Board candidates, as well as when proposing re-election of current Board members.

At Nokia, diversity is not a static concept but rather a relevant mix of required elements for the Board as a whole that evolves with time based on, among other things, the relevant business objectives and future needs of Nokia. Board diversity is treated as a means of improvement and development rather than an end in itself. Diversity of our Board is considered from a number of aspects including, but not limited to, skills and experience, tenure, age, nationality, ethnicity, cultural and educational backgrounds, self-declared gender identity, as well as other individual qualities.

Nokia acknowledges and supports the resolution adopted by the Finnish Government on 17 February 2015 on gender equality on the boards of directors of Finnish large and mid-cap listed companies, as well as the board gender balance directive adopted by the European Parliament on 22 November 2022 and its forthcoming national implementation in the Finnish Companies Act and in the Finnish Corporate Governance Code.

We report annually on our objectives relating to equal representation of genders, the means to achieve them, and the progress we make. We have met our aim to have at least 40% of the Director positions held by members of underrepresented genders. In the current Board composition, 50% of the Board members are female and in the Board composition proposed to the Annual General Meeting 2024, 40% of the Board members are female.

Director time commitments

The Corporate Governance and Nomination Committee monitors closely the time commitments of the Board members and annually reviews the Directors' attendance rate at the Board and Committee meetings to ensure they are able to devote the appropriate time to the Company to carry out their duties and responsibilities. The Corporate Governance Guidelines of the Board include numerical limits and a process for pre-clearance of new roles in public companies. Directors should not serve on more than four other boards of public companies in addition to the Nokia Board, and on no more than three other boards of public companies in addition to the Nokia Board, in cases where they serve as board chair or lead independent director outside the Nokia Board. The Audit Committee members should not serve on more than two other audit committees of public companies in addition to the Nokia Audit Committee. No positions in excess of these limits may be held without prior consent by the Chair of the Board and the Chair of the Corporate Governance and Nomination Committee determining that such positions would not impair the Director's service on the Nokia Board or Audit Committee.

The Corporate Governance and Nomination Committee will annually, ahead of preparing the proposal on the Board composition, review and assess the Directors' current and planned time commitments outside the Company to seek affirmation that all Directors acknowledge the time commitment principles set forth in the Corporate Governance Guidelines of the Board.

Corporate governance statement continued

Current members of the Board of Directors



The Annual General Meeting held on 4 April 2023 elected ten members to the Board for a term ending at the close of the next Annual General Meeting. Sari Baldauf, Thomas Dannenfeldt, Lisa Hook, Jeanette Horan, Thomas Saueressig, Søren Skou, Carla Smits-Nusteling and Kai Öistämö were re-elected as Board members. Timo Ahopelto and Elizabeth Crain were elected as new Board members. Following the meeting, the Board re-elected Sari Baldauf to serve as Chair and re-elected Søren Skou as the Vice Chair of the Board for the same term.

The current members of the Board are all non-executive and for the term that began at the Annual General Meeting 2023, all Board members were determined to be independent of Nokia and its significant shareholders under the Finnish Corporate Governance Code and the NYSE rules, as applicable.

There are currently six different nationalities represented on the Board and 50% of the Board members are female. In addition to biographical information of the Board members, the table in the upper right corner sets forth the number of shares and American Depositary Shares (ADS) held by the Board members. As at 31 December 2023, they held a total of 900 190 shares and ADSs in Nokia, representing approximately 0.02 % of our total shares and voting rights excluding shares held by the Nokia Group.

Biographical details of the Board members

	Gender	Year of Birth	Nationality	Tenure ⁽¹⁾	Independent of the company and major shareholders	Shares ⁽²⁾	ADSs ⁽²⁾
Sari Baldauf (Chair)	Female	1955	Finnish	5	Independent	290 575	
Søren Skou (Vice Chair)	Male	1964	Danish	4	Independent	89 325	
Timo Ahopelto	Male	1975	Finnish	0	Independent	21 418	
Elizabeth Crain	Female	1964	American	0	Independent		22 771
Thomas Dannenfeldt	Male	1966	German	3	Independent	117 597	
Lisa Hook	Female	1958	American	1	Independent		35 626
Jeanette Horan	Female	1955	British	6	Independent		116 476
Thomas Saueressig	Male	1985	German	1	Independent	34 705	
Carla Smits-Nusteling	Female	1966	Dutch	7	Independent	135 973	
Kai Öistämö	Male	1964	Finnish	1	Independent	35 724	

(1) Terms as Nokia Board member before the Annual General Meeting on 4 April 2023.

(2) The number of shares or ADSs includes shares and ADSs received as director compensation as well as shares and ADSs acquired through other means. Stock options or other equity awards that are deemed as being beneficially owned under the applicable SEC rules are not included.

Experience and skills of the Board members

	Business Exec roles with P&L responsibility	External boardroom roles/ Governance expertise	Finance and accounting	Legal /Public policy/ Compliance	Communications service provider market segment	Enterprise market segment	Technology	Cybersecurity	Environmental/ Social issues
Current Board members									
Sari Baldauf	✓	✓		✓	✓		✓		✓
Søren Skou	✓	✓		✓		✓			✓
Timo Ahopelto	✓	✓				✓	✓	✓	
Elizabeth Crain	✓	✓	✓	✓		✓	✓		
Thomas Dannenfeldt		✓	✓		✓	✓	✓		
Lisa Hook	✓	✓		✓	✓	✓	✓	✓	
Jeanette Horan		✓	✓		✓	✓	✓	✓	
Thomas Saueressig	✓	✓			✓	✓	✓	✓	✓
Carla Smits-Nusteling		✓	✓	✓	✓	✓	✓	✓	
Kai Öistämö	✓	✓			✓	✓	✓	✓	✓
Proposed new Board member									
Michael McNamara	✓	✓				✓	✓	✓	

[Corporate governance statement](#) continued**Proposed members of the Board of Directors**

Proposals of the Board of Directors to the Annual General Meeting 2024 were published on 25 January 2024. On the recommendation of the Corporate Governance and Nomination Committee, the Board proposes to the Annual General Meeting that the number of Board members be ten. Jeanette Horan informed the Committee that she will no longer be available to serve on the Nokia Board of Directors after the Annual General Meeting. Consequently, on the recommendation of the Corporate Governance and Nomination Committee, the Board proposes that the following nine current Board members be re-elected as members of the Nokia Board of Directors for a term ending at the close of the next Annual General Meeting: Timo Ahopelto, Sari Baldauf, Elizabeth Crain, Thomas Dannenfeldt, Lisa Hook, Thomas Saueressig, Søren Skou, Carla Smits-Nusteling and Kai Oistämö.

Furthermore, the Board proposes, on the recommendation of the Corporate Governance and Nomination Committee, that Michael McNamara, former Executive Vice President and Chief Information Officer of Target Corporation, be elected to the Board for a term ending at the close of the next Annual General Meeting.

The Corporate Governance and Nomination Committee will propose in the assembly meeting of the new Board of Directors that Sari Baldauf be re-elected to serve as Chair of the Board and Søren Skou be re-elected to serve as Vice Chair of the Board, subject to their election to the Board of Directors. The Board composition proposed to the Annual General Meeting 2024 has representation of six nationalities and 40% of the proposed members are female.

has

The proposed members of the Board are non-executive and for the term beginning at the Annual General Meeting 2024 they have been determined to be independent of Nokia and its significant shareholders under the Finnish Corporate Governance Code and the rules of the NYSE. Any possible changes impacting the independence assessment would be assessed as of the date of the Annual General Meeting. The Corporate Governance and Nomination Committee has prepared the composition of the Board of Directors to the Annual General Meeting 2024 after assessing proposed Directors' external time commitments, taking into account shareholders' expectations in this regard.

While the prevailing Finnish market practice is to vote on the proposed Board composition as a slate, some of our investors have expressed their preference of being able to consider each director individually in accordance with global market practice. After leading the related change in market practice, Nokia was proud to be among the first Finnish listed companies providing our shareholders with the opportunity to consider each Board member candidate individually at our Annual General Meeting 2023. We are committed to continue individual director election in our forthcoming Annual General Meeting 2024 and onwards.

Corporate governance statement continued

Biographical details of our current Board members



Chair Sari Baldauf
b. 1955

Chair of the Nokia Board since 2020. Board member since 2018. Member of the Corporate Governance and Nomination Committee, the Personnel Committee and the Technology Committee.

Master of Business Administration, Helsinki School of Economics and Business Administration, Finland. Bachelor of Science, Helsinki School of Economics and Business Administration, Finland. Honorary doctorates in Technology (Helsinki University of Technology, Finland) and Business Administration (Turku School of Economics and Business Administration and Aalto University School of Business, Finland).

Executive Vice President and General Manager, Networks Business Group, Nokia 1998–2005. Various executive positions at Nokia in Finland and in the United States 1983–1998.

Chair of the Board of the Finnish Climate Leadership Coalition (CLC). Senior Advisor of DevCo Partners Oy.

Member of the Board of Technology Industries of Finland 2021–2023. Member of the Board of Directors of Aalto University 2018–2023. Member of the Supervisory Board of Mercedes-Benz Group AG 2008–2023. Member of the Supervisory Board of Deutsche Telekom AG 2012–2018. Chair of the Board of Directors of Fortum Corporation 2011–2018. Member of the Board of Directors of Akzo Nobel 2012–2017.



Vice Chair Soren Skou
b. 1964

Vice Chair of Nokia Board since 2022. Nokia Board member since 2019. Chair of the Corporate Governance and Nomination Committee and member of the Personnel Committee.

MBA (honours), IMD, Switzerland. Bachelor of Business Administration, Copenhagen Business School, Denmark. Maersk International Shipping Education (M.I.S.E.).

Chief Executive Officer of A.P. Møller – Mærsk A/S 2016–2022. Chief Executive Officer of Maersk Line 2012–2016. Chief Executive Officer of Maersk Tankers 2001–2011. Variety of executive roles, senior positions and other roles at A.P. Møller – Mærsk since 1983.

Chair of the Board of the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (a not-for-profit foundation). Chair of the Board of HES International. Chair of the Board of Controlant hf. Chair of the Board of Bygma A/S. Member of the Board of CV Obel A/S. Senior Advisor to Global Infrastructure Partners (GIP), Chair of GIP portfolio Companies VTG GmbH and Skyborn Renewables GmbH.



Timo Ahoelto
b. 1975

Founding Partner of Lifeline Ventures and early-stage investor. Nokia Board member since 2023. Member of the Audit Committee and the Technology Committee.

Master's degree in Industrial Management, Helsinki University of Technology, Finland.

Head of Strategy and Business Development, Blyk 2006–2009. Founding CEO, Vice President of Worldwide Commercial Operations, CRF Health 2000–2006. Consultant, McKinsey & Company 1999–2000.

Chair of the Board of Directors of Lifeline SPAC I Plc. Member of the Board of Directors of Digital Workforce Services Plc. Member of the Board of Directors of Solidium Oy. Member of the Board of Finnish Business and Policy Forum EVA and Research Institute for Finnish Economy (ETLA). Chair of the Board of Finnish Startup Community. Member of the Board of Directors of Tietoevry Corporation 2017–2023. Chair of the Board of Slush Conference 2018–2023 and member of the Board 2013–2018. Member of the Board of Business Finland 2014–2020. Member of the Board, Startup Foundation 2015–2018.



Elizabeth Crain
b. 1964

Nokia Board member since 2023. Member of the Audit Committee and the Personnel Committee.

MBA, the Wharton School at the University of Pennsylvania, United States. Bachelor of Science in Economics, Arizona State University, United States.

Co-Founder of Moelis & Company; served as the Chief Operating Officer 2007–2023 and as a member of the Board of Directors of Moelis & Company 2017–2021. Managing Director, Office of the CEO at UBS Investment Bank 2005–2007. Chief Operating Officer and Chief Administrative Officer of the UBS Investment Banking Department Americas franchise 2001–2005.

Investment Principal, McCown De Leeuw & Company 2000–2001. Investment Principal, Morgan Stanley Capital Partners 1997–2000. Vice President, Investment Banking, Merrill Lynch & Co. 1994–1997. Associate, Investment Banking, J.P. Morgan Securities 1992–1994. Analyst, Merrill Lynch & Co. 1988–1990.

Member of the Board of Directors and Chair of the Audit Committee of Exscientia Plc. Trustee Emeritus, The Royal Academy Trust, London.

Committee key:
C orporate Governance and Nomination
P ersonnel
A udit
T echnology

[Corporate governance statement](#) continued

Biographical details of our current Board members continued



Thomas Dannenfeldt
b. 1966

Nokia Board member since 2020. Chair of the Personnel Committee and member of the Audit Committee

Degree in Mathematics, University of Trier, Germany.

Chief Financial Officer of Deutsche Telekom AG 2014–2018. Chief Financial Officer of Deutsche Telekom's German operations 2010–2014. Various operational positions (sales, marketing, customer care, finance and procurement in fixed and mobile business, national and international positions) at Deutsche Telekom 1992–2010.

Chair of the Supervisory Board of Ceconomy AG and Chair of the Presidential Committee and Mediation Committee. Member of the Board of Advisors at accessio GmbH.

Member of the Board of Directors of T-Mobile US 2013–2018 and Buy-In 2013–2018. Chair of the Board of Directors of T-Systems International 2013–2018 and EE Ltd. 2014–2016.



Lisa Hook
b. 1958

Nokia Board member since 2022. Member of the Personnel Committee and the Corporate Governance and Nomination Committee.

Juris Doctorate, Dickinson School of Law at Pennsylvania State University, United States. Bachelor's degree in Public Policy, Duke University, United States.

President and CEO of Neustar, Inc. 2010–2018 and COO 2008–2010. President and CEO of Sunrocket, Inc. 2006–2007. Executive positions at America Online, Inc. 2000–2004. Previous positions as Partner at Brera Capital Partners, managing director of Alpine Capital Group, LLC., various executive positions at Time Warner, Inc., legal adviser to the Chairman of the Federal Communications Commission, and General Counsel of the Cable Group at Viacom International, Inc.

Member of the Board of Directors of Fidelity National Information Services, Inc. Lead Independent Director of the Board of Directors of Philip Morris International. Member of the Board of Zayo Group. Chair of Advisory Board of Trilantic Capital Partners. Member of the US National Security Telecommunications Advisory Committee. Member of the Board of Directors of Ritchie Bros. Auctioneers Inc. 2021–2023, Ping Identity Holding Corporation 2019–2022, Partners Group Holdings 2020–2021, Unisys Corporation 2019–2021, Neustar, Inc. 2010–2019 and RELX Plc and RELX NV, 2006–2016.



Jeanette Horan
b. 1955

Nokia Board member since 2017. Member of the Audit Committee and the Technology Committee.

MBA, Business Administration and Management, Boston University, the United States. BSc, Mathematics, University of London, United Kingdom.

Various executive and managerial positions at IBM 1998–2015. Vice President of Digital Equipment Corporation 1994–1998. Vice President, Development of Open Software Foundation 1989–1994.

Member of the Supervisory Board at Wolters Kluwer, and the Chair of the Selection and Remuneration Committee. Member of the Board of Advisors at Jane Doe No More, a not-for-profit organization. Member of the Board of Directors of the Ridgefield Symphony Orchestra, a not-for-profit organization.

Member of the Board of Advisors of Cybereason 2017–2018. Member of the Board of Directors of West Corporation 2016–2017 and Microvision 2006–2017.

Committee key:
C orporate Governance and Nomination
P ersonnel
A udit
T echnology

Corporate governance statement continued

Biographical details of our current Board members continued



Thomas Saueressig
b. 1985

Member of the Executive Board of SAP SE and Global Head of SAP Product Engineering. Nokia Board member since 2022. Member of the Technology Committee.

Degree in Business Information Technology, University of Cooperative Education in Mannheim, Germany. Joint Executive MBA from ESSEC, France and Mannheim Business School, Germany.

Chief Information Officer of SAP SE 2016–2019, Vice President, Global Head of IT Services of SAP SE 2014–2016. Held various positions at SAP in Germany since 2007, including assignment in the SAP Labs Silicon Valley in Palo Alto, California, the United States.

Member of the Young Global Leaders of the World Economic Forum. Member of the Industry Advisory Board of the Munich Institute of Robotics and Machine Intelligence (MIRMI).



Carla Smits-Nusteling
b. 1966

Nokia Board member since 2016. Chair of the Audit Committee and member of the Corporate Governance and Nomination Committee.

Master's Degree in Business Economics, Erasmus University Rotterdam, the Netherlands. Executive Master of Finance and Control, Vrije University Amsterdam, the Netherlands.

Member of the Board of Directors and Chief Financial Officer of KPN 2009–2012. Various financial positions at KPN 2000–2009. Various financial and operational positions at TNT/PTT Post 1990–2000.

Member of the Board of Directors and Chair of the Audit Committee of Allegro.eu SA. Member of the Board of Directors of the Stichting Continuïteit Ahold Delhaize (SCAD) foundation.

Chair of the Board of Directors of TELE2 AB 2013–2023. Lay Judge in the Enterprise Court of the Amsterdam Court of Appeal 2015–2022. Member of the Supervisory Board and Chair of the Audit Committee of ASML 2013–2021. Member of the Management Board of the Unilever Trust Office 2015–2019.



Kai Öistämö
b. 1964

President and CEO of Vaisala Corporation. Nokia Board member since 2022. Chair of the Technology Committee and member of the Corporate Governance and Nomination Committee.

PhD in computer science, Tampere University of Technology, Finland.

Chief Operating Officer of InterDigital, Inc. 2018–2020. Executive Partner of Siris Capital Group 2016–2018. EVP, Chief Development Officer at Nokia 2010–2014. EVP, Devices at Nokia 2008–2010. EVP, Mobile Phones Business Group at Nokia 2006–2008. Several previous positions at Nokia 1991–2006.

Venture Partner of Kvanted Oy. Chairman of the Board of Fastems Group 2014–2022. Member of the Board of Directors of Sanoma Group 2010–2021. Chairman of the Board of Helvar Oy Ab 2014–2020. Member of the Board of Directors of Mavenir Plc. 2017–2018. Member of the Board of Directors of Digia / Qt Group Oyj 2015–2018. Member of the Board of Directors of InterDigital, Inc. 2015–2018. Member of the Board of Directors of Oikian solutions Oy 2014–2018. Chairman of the Board, Tampere University 2013–2017. Chairman of the Board of Directors, Tekes 2012–2014. Member of the Board of Directors of Nokian Renkaat Oyj 2008–2010.

Committee key:
C orporate Governance and Nomination
P ersonnel
A udit
T echnology

[Corporate governance statement](#) continued**Operations of the Board of Directors**

The Board represents and is accountable to the shareholders of Nokia. While its ultimate statutory accountability is to the shareholders, the Board also takes into account the interests of Nokia's other stakeholders. The Board's responsibilities are active, not passive, and include the responsibility to evaluate the strategic direction of Nokia, its management policies and the effectiveness of the implementation of such by the management on a regular basis. It is the responsibility of the members of the Board to act in good faith and with due care, so as to exercise their business judgment on an informed basis, in a manner that they reasonably and honestly believe to be in the best interests of Nokia and its shareholders. In discharging this obligation, the members of the Board must inform themselves of all relevant information reasonably available to them. The Board and each Board Committee also have the power to appoint independent legal, financial or other advisers as they deem necessary. The Company will provide sufficient funding to the Board and to each Committee to exercise their functions and provide compensation for the services of their advisers.

The Board is ultimately responsible for, and its duties include, monitoring and reviewing Nokia's financial reporting process, the effectiveness of related control and audit functions and the independence of Nokia's external auditor, as well as monitoring the Company's statutory audit. The Board's responsibilities also include overseeing the structure and composition of our top management and monitoring legal compliance and the management of risks related to our operations. In doing so, the Board may set annual ranges and/or individual limits for capital expenditures, investments and divestitures and other financial and non-financial commitments that may not be exceeded without a separate Board approval.

In risk management, the Board's role includes risk analysis and assessment in connection with financial, strategy and business reviews, updates and decision-making proposals. Risk management policies and processes are an integral part of Board deliberations and risk-related updates are provided to the Board on a recurring basis. For a more detailed description of our risk management policies and processes, refer to the "Risk management, internal control and internal audit functions at Nokia—Risk management principles" section.

The Board has the responsibility for appointing and discharging the President and Chief Executive Officer, Chief Financial Officer and Chief Legal Officer.

The Board approves and the independent directors of the Board confirm the compensation and terms of employment of the President and CEO, subject to the requirements of Finnish law, upon the recommendation of the Personnel Committee of the Board. The compensation and terms of employment of the other Group Leadership Team members are approved by the Personnel Committee upon the recommendation of the President and CEO.

Board oversight of environmental and social activities and governance practices

Under our Corporate Governance Guidelines, the Board evaluates Nokia's environmental and social activities and governance practices, related risks and target setting as well as their implementation and effectiveness across the Company. In 2023, the Board reviewed our sustainability strategy and targets, approved the targets on climate change and diversity included in the short-term incentive program and monitored them and other ESG targets, as well as the evolving ESG requirements and expectations, investor feedback, our disclosure approach, and Nokia's net zero strategy and roadmap.

In addition, the Board Committees monitor environmental and social developments and activities in the Company in their respective areas of responsibilities. During 2023, the Audit Committee's responsibilities included the continued implementation planning of new climate- and other sustainability reporting requirements, preparing the proposal for election of the auditor carrying out the assurance of the sustainability reporting, and oversight of the ethics and compliance program and cybersecurity risks and maturity. The Audit Committee also reviews sustainability disclosures annually, as well as the information on the use of conflict minerals in Nokia's products presented in the annual reports and the related regulatory filings.

The Personnel Committee oversees human capital management, including personnel policies and practices related to Nokia's culture, physical safety, employee well-being, diversity, recruiting, development and retention. In 2023, the Personnel Committee focused, among other things, on a people risk review, including physical safety and succession planning, as well as preparing Nokia's Long-Term Incentive Plan 2024–2026. The Committee recommended to the Board to include carbon emission reduction in the metrics of the long-term incentive plan as well as diversity and health and safety as metrics in the short-term incentive plan. The Corporate Governance and Nomination Committee assesses and advises the Board on ESG-related activities and practices, aiming to enhance the governance structure supporting them. The Technology Committee reviews how the Company's ESG strategy embeds into its technology strategy and roadmaps.

Board oversight of cybersecurity

Nokia group-level security is set up in four domains: product, service, information, and customer security. While the oversight of the security risks and their management, including cybersecurity, is a Board level responsibility in the Company, the detailed reviews of the different security domains are allocated to the Committees of the Board. These Committees are responsible for monitoring and assessing the security, including cybersecurity-related risks and reporting to the Board in their respective areas of responsibilities. The responsibilities of the Audit Committee include oversight of the management and processes related to the IT and services security risks and maturity, including security-related controls, compliance, incident process, disclosures and risk management. The Technology Committee oversees the product and customer security risk management. The Committees report to the Board on a regular basis and prepare recommendations to the Board, whenever deemed necessary. In addition, the Board receives regularly updates on cybersecurity.

Corporate governance statement continued

Key areas of focus for the Board's and its Committees' activities in 2023

The table below sets out a high-level overview of the key areas of focus for the Board's and its Committees' activities during the year.

	January	February/March	April	May	July	September/October	November
Board	<ul style="list-style-type: none"> Business and financial reviews Q4 and 2022 financials AGM proposals, incl. profit distribution Annual Policy and Charter review Board evaluation Review of CEO's performance, remuneration and targets 	<ul style="list-style-type: none"> Annual report and 20-F Remuneration Report 2022 	<ul style="list-style-type: none"> Annual General Meeting (AGM) and appointing Board Chair, Vice Chair and Committee members Business and financial reviews Strategy Q1 financials 	<ul style="list-style-type: none"> Business and financial reviews Strategy Geopolitical update Product and customer security update Digitalization update Ethics & compliance update Litigation update People strategy and Group Leadership Team (GLT) succession approach update 	<ul style="list-style-type: none"> Business and financial reviews Q2 financials Strategy Annual ESG review 	<ul style="list-style-type: none"> Annual strategy meeting Geographical market deep-dive Business and financial reviews Q3 financials 	<ul style="list-style-type: none"> Business and financial reviews Strategy Long-range forecast and annual target setting Key risks review GLT succession planning update Investors' feedback on governance, remuneration and sustainability
Corporate Governance and Nomination Committee	<ul style="list-style-type: none"> AGM proposals on Board composition and remuneration Independence review Corporate governance statement 		<ul style="list-style-type: none"> Committee compositions Future Board composition AGM shareholder feedback 	<ul style="list-style-type: none"> Planning of Board composition proposal 		<ul style="list-style-type: none"> Corporate governance and ESG-related developments in regulation Planning of Board composition proposal Board evaluation approach 	<ul style="list-style-type: none"> Board remuneration review and benchmarking Annual assessment of director commitments Finalizing Board composition proposal to the AGM Annual Charter review
Personnel Committee	<ul style="list-style-type: none"> Incentive achievements for 2022 CEO and GLT performance Incentive targets and objectives for 2023 Long-term Incentive Plan (LTI) grant proposal for 2023 Remuneration Report 2022 			<ul style="list-style-type: none"> LTI design for 2024–2026 Equity plan status AGM shareholder feedback GLT remuneration Culture update GLT succession approach Clawback Policy related regulation 	<ul style="list-style-type: none"> Remuneration Policy 2024 structure review Executive Clawback Policy LTI design for 2024–2026 Human capital risk review, including physical safety Committee adviser's market and benchmarking update 	<ul style="list-style-type: none"> Incentive Compensation Clawback Policy LTI design for 2024 –2026 Human capital update Remuneration Policy 2024 including shareholder consultation 	<ul style="list-style-type: none"> 2024 incentive targets LTI Plan 2024–2026 Investor feedback Planning of Remuneration Report for 2023 GLT succession planning Executive shareholder g assessment Annual Charter review
Audit Committee	<ul style="list-style-type: none"> Q4 and 2022 financials Auditor reporting Ethics and compliance, internal audit and internal controls updates AGM proposals to the Board Annual Policy review 	<ul style="list-style-type: none"> Annual report and 20-F for 2022, including Sustainability reporting Auditor reporting Internal controls update 	<ul style="list-style-type: none"> Q1 financials Auditor reporting Ethics and compliance, internal audit and internal controls updates Treasury update IT and service security update Tax update Conflict Minerals Report 		<ul style="list-style-type: none"> Q2 financials Auditor reporting Ethics and compliance, internal audit and internal controls updates Finance IT and digitalization 	<ul style="list-style-type: none"> Q3 financials Auditor reporting Ethics and compliance, internal audit and internal controls updates ESG disclosure and reporting developments, processes and controls IT and service security updates 	<ul style="list-style-type: none"> Treasury update Pensions update Audit, internal audit and internal controls updates Privacy update Annual Charter and Policy review
Technology Committee		<ul style="list-style-type: none"> Updates on major innovation and technology trends Review of strategic technology initiatives 		<ul style="list-style-type: none"> Updates on major innovation and technology trends Review of strategic technology initiatives Cybersecurity: product and customer safety 		<ul style="list-style-type: none"> Sustainability technology strategy Updates on major innovation and technology trends Review of strategic technology initiatives 	<ul style="list-style-type: none"> Updates on major innovation and technology trends Review of strategic technology initiatives Cybersecurity: product and customer security

Corporate governance statement continued

Board evaluation

In line with our Corporate Governance Guidelines, the Board conducts a comprehensive annual performance evaluation, which also includes evaluation of the Board Committees' work, the Board and Committee Chairs and individual Board members. The Board evaluation is conducted as a self-evaluation, typically with a detailed questionnaire, while an external evaluator is periodically engaged. Feedback is also requested from selected members of management as part of the Board evaluation process. The questions aim to measure and elicit feedback on the processes, structure, accountability, transparency, and effectiveness of the Board and to gain an overview of the issues that are areas of excellence, areas where the Board thinks greater focus is warranted and determining areas where the performance could be enhanced.

Each year, the results of the evaluation are discussed and analyzed by the entire Board and improvement actions are agreed based on such discussions. In 2023, the evaluation process was carried out as a thorough self-evaluation for a second consecutive year by using an external evaluation platform that included both numeric assessments and the possibility to provide more detailed written comments.

The questionnaire comprised areas such as Nokia purpose and strategy, Board agenda and meetings, and Board composition and dynamics, as well as information, reporting and risk management.

Meetings of the Board of Directors

The Board of Directors constitutes a quorum if more than half of its members are present. The Board held 15 meetings excluding Committee meetings during 2023. In total ten (67%) of these meetings were regular meetings in person or by video connection. The other five meetings were held in writing.

Directors' attendance at the Board and Committee meetings in 2023 is set forth in the table below:

Member	Board meeting attendance		Board and Committee meeting attendance ⁽¹⁾	
	Meetings	%	Meetings	%
Sari Baldauf (Chair)	15/15	100	28/28	100
Søren Skou (Vice Chair)	15/15	100	23/23	100
Timo Ahopelto (as of 4 April 2023)	11/11	100	18/18	100
Bruce Brown (until 4 April 2023)	4/4	100	8/8	100
Elizabeth Crain (as of 4 April 2023)	11/11	100	19/19	100
Thomas Dannenfeldt	15/15	100	26/26	100
Lisa Hook	15/15	100	24/24	100
Jeanette Horan	14/15	93	24/25	96
Edward Kozel (until 4 April 2023)	4/4	100	7/7	100
Thomas Saueressig	15/15	100	19/19	100
Carla Smits-Nusteling	15/15	100	26/26	100
Kai Öistämö	15/15	100	24/24	100
Average attendance (%)		99.4		99.7

(1) Any director who so wishes may attend, as a non-voting observer, meetings of committees of which they are not members. Figures exclude directors attending committee meetings as non-voting observers.

Directors meet without management in connection with each regularly scheduled meeting. According to Board practices, meetings without management present are only attended by non-executive directors. These meetings are chaired by the non-executive Chair of the Board. In cases where the non-executive Chair of the Board is unable to chair these meetings, the non-executive Vice Chair of the Board chairs the meeting. Additionally, the independent directors would meet separately at least once annually. In 2023, all members of the Board were non-executive and determined to be independent from Nokia and significant shareholders under the Finnish Corporate Governance Code and the rules of the NYSE.

Committees of the Board of Directors

In 2023, the Board of Directors had four Committees that assisted the Board in its duties pursuant to their respective Committee charters. The Board may also establish new or ad hoc committees for detailed reviews or consideration of particular topics to be proposed for the approval of the Board. Any director who so wishes may attend, as a non-voting observer, meetings of Committees of which they are not members.

Corporate governance statement continued

The Audit Committee

The following table sets forth the members of the Audit Committee and their meeting attendance in 2023 :

Member	Attendance (meetings)	Attendance (%)
Carla Smits-Nusteling (Chair)	6/6	100
Timo Ahopelto (as of 4 April 2023)	4/4	100
Elizabeth Crain (as of 4 April 2023)	4/4	100
Thomas Dannenfeldt	6/6	100
Lisa Hook (until 4 April 2023)	2/2	100
Jeanette Horan	6/6	100
Edward Kozel (until 4 April 2023)	2/2	100
Average attendance (%)		100

The Committee consists of a minimum of three members of the Board who meet all applicable independence, financial literacy and other requirements as stipulated by Finnish law, the Finnish Corporate Governance Code and the rules of the NYSE. As of 4 April 2023, the Audit Committee has consisted of the following five members of the Board: Carla Smits-Nusteling (Chair), Timo Ahopelto, Elizabeth Crain, Thomas Dannenfeldt and Jeanette Horan.

The Committee is responsible for assisting the Board in the oversight of:

- the quality and integrity of the Company's financial and non-financial reporting and related disclosures;
- the statutory audit of the Company's financial statements; including the sustainability reporting therein;
- the external auditor's qualifications and independence;
- the performance of the external auditor subject to the requirements of Finnish law;
- the performance of the Company's internal controls, risk management and the assurance function;
- the performance of the internal audit function;
- the Company's compliance with legal and regulatory requirements, including the performance of its ethics and compliance program;
- the monitoring and assessment of any related party transactions;
- the pension liabilities and taxation of the Company; and

- the processes and management related to the cybersecurity of the Company, including IT and services security.

In discharging its oversight role, the Audit Committee has full access to all Company books, records, facilities and personnel.

The Audit Committee also maintains procedures for the receipt, retention and treatment of complaints received by Nokia regarding accounting, internal controls, or auditing matters and for the confidential, anonymous submission by our employees of concerns relating to accounting or auditing matters. Nokia's disclosure controls and procedures, which are reviewed by the Audit Committee and approved by the President and CEO and the Chief Financial Officer, as well as the internal controls over financial reporting, are designed to provide reasonable assurance regarding the quality and integrity of Nokia's financial statements and related disclosures. For further information on internal control over financial reporting, refer to the section "Risk management, internal control and internal audit functions at Nokia-Description of internal control procedures in relation to the financial reporting process".

Under the Finnish Companies Act, an external auditor is elected by a simple majority vote of the shareholders at the Annual General Meeting for one year at a time. The Audit Committee prepares the proposal to the shareholders for the election or re-election of the nominee, upon its evaluation of the qualifications and independence of the external auditor. Under Finnish law, the fees of the external auditor are also approved by the shareholders by a simple majority vote at the Annual General Meeting. The Committee prepares the proposal to the shareholders in respect of the fees of the external auditor, and approves the external auditor's annual audit fees under the guidance given by the Annual General Meeting. For information about the fees paid to Nokia's external auditor, Deloitte Oy, during 2023 refer to the section "Auditor fees and services".

The Board has determined that all members of the Audit Committee, including its Chair, Carla Smits-Nusteling, are "audit committee financial experts" as defined in the requirements of Item 16A of the Annual Report on Form 20-F filed with the US Securities and Exchange Commission (SEC). Carla Smits-Nusteling and each of the other members of the Audit Committee are "independent directors" as defined by Finnish law, the Finnish Corporate Governance Code and in Section 303A.02 of the NYSE Listed Company Manual.

The Audit Committee meets a minimum of four times a year. The Committee meets separately with the representatives of Nokia's management, heads of the internal audit, and ethics and compliance functions, and the external auditor in connection with each regularly scheduled meeting. The head of the internal audit function has, at all times, direct access to the Audit Committee, without the involvement of management.

Audit Committee pre-approval policies and procedures

The Audit Committee of the Board is responsible, among other matters, for oversight of the external auditor's independence, subject to the requirements of applicable legislation. The Audit Committee has adopted a policy regarding an approval procedure of audit services performed by the external auditors of the Nokia Group and permissible non-audit services performed by the principal external auditor of the Nokia Group (the "Pre-approval Policy").

Under the Pre-approval Policy, proposed services either:

- (i) may be pre-approved by the Audit Committee in accordance with certain service categories described in the Pre-approval Policy (general pre-approval); or (ii) require the specific pre-approval of the Audit Committee (specific pre-approval). The Pre-approval Policy sets out the audit, audit-related, tax and other services that have received the general pre-approval of the Audit Committee. All other audit, audit-related (including services related to internal controls and significant mergers and acquisitions projects), tax and other services are subject to specific pre-approval by the Audit Committee. All service requests concerning generally pre-approved services are submitted to an appointed Audit Committee delegate within management, who determines whether the services are within the generally pre-approved services. The Pre-approval Policy is subject to annual review by the Audit Committee.

The Audit Committee establishes budgeted fee levels annually for each of the categories of audit and non-audit services that are pre-approved under the Pre-approval Policy, namely, audit, audit-related, tax and other services. At each regular meeting of the Audit Committee, the auditor provides a report in order for the Audit Committee to review the services that the auditor is providing, as well as the cost of those services.

[Corporate governance statement](#) continued

The Corporate Governance and Nomination Committee
The following table sets forth the members of the Corporate Governance and Nomination Committee and their meeting attendance in 2023 :

Member	Attendance (meetings)	Attendance (%)
Søren Skou (Chair as of 4 April 2023)	3/3	100
Sari Baldauf	5/5	100
Bruce Brown (until 4 April 2023)	2/2	100
Lisa Hook (as of 4 April 2023)	3/3	100
Carla Smits-Nusteling	5/5	100
Kai Öistämö	5/5	100
Average attendance (%)		100

The Committee consists of three to five members of the Board who meet all applicable independence requirements as stipulated by Finnish law, the Finnish Corporate Governance Code and the rules of the NYSE. As of 4 April 2023, the Corporate Governance and Nomination Committee has consisted of the following five members of the Board: Søren Skou (Chair), Sari Baldauf, Lisa Hook, Carla Smits-Nusteling and Kai Öistämö.

The Committee fulfills its responsibilities by:

- actively identifying individuals qualified to be elected members of the Board, as well as considering and evaluating the appropriate level and structure of director remuneration;
- preparing and evaluating the principles regarding Board diversity;
- preparing proposals to the shareholders on the director nominees for election at the general meetings, as well as director remuneration;
- monitoring and assessing the directors' current and planned time commitments outside the Nokia Board and their attendance at Nokia Board and Committee meetings;
- monitoring significant developments in the law and practice of corporate governance, including the sustainability-related governance trends and the directors' duties and responsibilities;
- assisting the Board and each Committee of the Board in its annual performance evaluation process, including establishing criteria to be applied in connection with such evaluations;
- developing and administering Nokia's Corporate Governance Guidelines and giving recommendations regarding them to the Board; and
- reviewing Nokia's disclosure in the corporate governance statement.

The Committee has the power and practice to appoint a recruitment firm to identify appropriate new director candidates.

Corporate governance statement continued

The Personnel Committee

The following table sets forth the members of the Personnel Committee and their meeting attendance in 2023 :

Member	Attendance (meetings)	Attendance (%)
Thomas Dannenfeldt (Chair as of 4 April 2023)	5/5	100
Sari Baldauf	5/5	100
Bruce Brown (until 4 April 2023)	1/1	100
Elizabeth Crain (as of 4 April 2023)	4/4	100
Lisa Hook (as of 4 April 2023)	4/4	100
Soren Skou	5/5	100
Average attendance (%)		100

The Committee consists of a minimum of three members of the Board who meet all applicable independence requirements as stipulated by Finnish law, the Finnish Corporate Governance Code and the rules of the NYSE. As of 4 April 2023, the Personnel Committee has consisted of the following five members of the Board: Thomas Dannenfeldt (Chair), Sari Baldauf, Elizabeth Crain, Lisa Hook and Soren Skou.

The Committee has overall responsibility for evaluating, resolving and making recommendations to the Board regarding:

- preparing the Remuneration Policy and the Remuneration Report;
- compensation and terms of employment of the Company's senior management;
- human capital management;
- all equity-based plans;
- incentive compensation plans, policies and programs of the Company affecting executives; and
- possible other significant incentive plans.

The Committee is responsible for preparing the Remuneration Policy, including Nokia's compensation philosophy and principles and ensuring that the Company's compensation programs are performance-based, designed to contribute to long-term shareholder value creation in line with shareholders' interests, properly motivate management and are aligned with the Remuneration Policy, as well as supporting overall corporate strategies.

The Committee also oversees human capital management and periodically reviews the personnel policies and practices of Nokia related to human capital management and social responsibilities relating to its employees, including Company culture, physical safety, employee wellbeing, morale, diversity, equity and inclusion, talent management and development, succession planning, resourcing, recruiting, attrition, retention and employee engagement.

[Corporate governance statement](#) continued

The Technology Committee

The following table sets forth the members of the Technology Committee and their meeting attendance in 2023 :

Member	Attendance (meetings)	Attendance (%)
Kai Öistämö (Chair)	4/4	100
Timo Ahopelto (as of 4 April 2023)	3/3	100
Sari Baldauf (as of 4 April 2023)	3/3	100
Bruce Brown (until 4 April 2023)	1/1	100
Jeanette Horan	4/4	100
Edward Kozel (until 4 April 2023)	1/1	100
Thomas Saueressig	4/4	100
Average attendance (%)		100

The Committee consists of a minimum of three members of the Board who meet applicable independence requirements as stipulated by Finnish law, the Finnish Corporate Governance Code and the rules of the NYSE and have such skills in innovation, technology and science matters as the Board determines adequate from time to time. As of 4 April 2023, the Technology Committee has consisted of the following five members of the Board: Kai Öistämö (Chair), Timo Ahopelto, Sari Baldauf, Jeanette Horan and Thomas Saueressig.

In its dialogue with and provision of opinions and advice to the management, the Committee will periodically review:

- the Company's technological competitiveness and new strategic technology initiatives as well as market trends, considering both organic and inorganic options to retain or attain competitiveness;
- the Company's approach to major technological innovations;
- key technology trends that may result in disruptive threats or opportunities and the proposals on how to adequately address them;
- high-level risks and opportunities associated with the Company's Research and Development Programs;
- embedding sustainability in the technology roadmaps; and
- the processes and management related to the cybersecurity of the Company, including product and customer security.

Corporate governance statement continued

Group Leadership Team and the President and CEO

The Group Leadership Team is responsible for the operative management of Nokia. The Group Leadership Team is chaired by the President and CEO. The President and CEO's rights and responsibilities include those allotted to the President under Finnish law.

During 2023, the Group Leadership Team was complemented with the appointment of Esa Niinimäki, Chief Legal Officer, effective as of 25 January 2023.

On 31 December 2023, the Group Leadership Team consisted of 11 members, including the President and CEO, representing six different nationalities. In total 27% of the Group Leadership Team members were female.

In addition to biographical information of the Group Leadership Team members, the table on the right sets forth the number of shares held by the members as at 31 December 2023, a total of 4 239 962 Nokia shares. These holdings represented approximately 0.08% of our total shares and voting rights excluding shares held by the Nokia Group. The number of shares includes shares received as compensation as well as shares acquired through other means.

At 31 December 2023, no American Depositary Shares (ADS) were held by the Group Leadership Team members. Stock options or other equity awards that are deemed as being beneficially owned under the applicable SEC rules are not included in the table.

Name	Position	Gender	Year of birth	Nationality	On GLT since	Shares
Pekka Lundmark	President and CEO	Male	1963	Finnish	2020	1 473 060
Nishant Batra	Chief Strategy and Technology Officer	Male	1978	Indian	2021	484 473
Ricky Corker	Chief Customer Experience Officer	Male	1967	Australian	2019	437 199
Federico Guillén	President of Network Infrastructure	Male	1963	Spanish	2016	453 764
Amy Hanlon-Rodemich	Chief People Officer	Female	1972	American	2022	-
Jenni Lukander	President of Nokia Technologies	Female	1974	Finnish	2019	102 297
Esa Niinimäki	Chief Legal Officer	Male	1976	Finnish	2023	33 588
Raghav Sahgal	President of Cloud and Network Services	Male	1962	American	2020	569 659
Melissa Schoeb	Chief Corporate Affairs Officer	Female	1968	American	2021	161 367
Tommi Uitto	President of Mobile Networks	Male	1969	Finnish	2019	246 945
Marco Wirén	Chief Financial Officer	Male	1966	Finnish/Swedish	2020	277 610

Corporate governance statement continued

Biographical details of the current members of the Nokia Group Leadership Team



Pekka Lundmark
b. 1963

President and Chief Executive Officer (CEO) since 2020. Rejoined Nokia in 2020. Master's degree in Information Systems, Department of Technical Physics, Helsinki University of Technology, Finland.

President and CEO, Fortum Corporation, 2015–2020. President and CEO, Konecranes Plc, 2005–2015 and Group Executive Vice President 2004–2005. President and CEO, Hackman Oyj, 2002–2004. Managing Partner, Startupfactory 2000–2002. Various executive positions at Nokia 1990–2000.

Commissioner, Broadband Commission for Sustainable Development. Member of the Board, Research Institute of the Finnish Economy (ETLA) and Finnish Business and Policy Forum (EVA). International Member of the Royal Swedish Academy of Engineering Sciences (IVA). Member of the Board, Finnish Athletics Federation. Member of the European Round Table for Industry. Member of The Business Council (the United States).

Chairman of the Board, Confederation of Finnish Industries 2019–2020. Member of the Board, East Office of Finnish Industries 2009–2020. Chairman of the Board, Finnish Energy 2016–2018.



Nishant Batra
b. 1978

Chief Strategy and Technology Officer (CSTO). Group Leadership Team member since 2021. Joined Nokia in 2021.

MBA from INSEAD. Master's degrees in Telecommunications and in Computer Science, Southern Methodist University, Dallas, the United States. Bachelor's degree in Computer Applications, Devi Ahilya University, Indore, Madhya Pradesh, India.

Executive Vice President and Chief Technology Officer, Veoneer Inc. 2018–2021. Prior to Veoneer Inc. held several senior positions at Ericsson 2006–2018 in the United States, Sweden and India.

Chair of the Board of ReOrbit Oy. Member of the Board of Directors of Sensys Gatto Group 2020–2022.



Ricky Corker
b. 1967

Chief Customer Experience Officer (CCXO). Group Leadership Team member since 2019. Joined Nokia in 1993.

Bachelor in Communications and Electronic Engineering from the Royal Melbourne Institute of Technology, Australia.

Heading the global Customer Experience organization 2021–2023. President of Customer Operations, Americas, Nokia 2019–2020. Executive Vice President and President of North America, Nokia 2011–2018. Head of Asia Pacific, Nokia Siemens Networks 2009–2011. Head of Asia North Region, Nokia Siemens Networks 2008–2009. Head of Hutchison Global Customer Business Team, Nokia Siemens Networks 2007–2008. Vice President Asia Pacific, Nokia Networks 2005–2007. Lead Sales Director Asia Pacific, Nokia Networks 2004–2005. Account Director Telstra, Nokia Networks 2002–2003. Account Director Vodafone Australia and New Zealand, and Sales Director Vodafone Asia Pacific Customer Business Team, Nokia Networks 2001–2002. Commercial Director Global Accounts British Telecom, Nokia Networks 2001. Senior sales and marketing positions at Nokia 1993–2001.



Federico Guillén
b. 1963

President of Network Infrastructure. Group Leadership Team member since 2016. Joined Nokia in 2016.

Degree in Telecommunications Engineering, ETSIT at Universidad Politécnica de Madrid, Spain. Master's degree in Switching & Communication Architectures, ETSIT at Universidad Politécnica de Madrid, Spain. Master's Degree in International Management, ESC Lyon and Alcatel, France.

President of Customer Operations, Europe, Middle East & Africa and Asia Pacific, Nokia 2018–2020. President of Fixed Networks, Nokia 2016–2018. President of Fixed Networks, Alcatel-Lucent 2013–2016. President and Chief Senior Officer of Alcatel-Lucent Spain and Global Account Manager Telefónica, Alcatel-Lucent 2009–2013. Vice President Sales of Vertical Market Sales in Western Europe, Alcatel-Lucent 2009. Head of Regional Support Center, Fixed Access Division for South Europe, Middle East & Africa, India and Caribbean & Latin America, Alcatel-Lucent 2007–2009. President and Chief Senior Officer, Alcatel Mexico and Global Account Manager, Telmex 2003–2007. Various R&D, portfolio and sales management positions with Telettra in Spain, and with Alcatel in Spain, Belgium and the United States 1989–2003.

Corporate governance statement continued

Biographical details of the current members of the Nokia Group Leadership Team continued



Amy Hanlon-Rodemich
b. 1972

Chief People Officer (CPO), Group Leadership Team member since 2022. Joined Nokia in 2022.

Master of Human Resources and Organizational Development, University of San Francisco, the United States. Bachelor of Arts in English, Tufts University, Boston, the United States.

Chief People Officer, GlobalLogic, a Hitachi Group Company 2019–2022. Vice President, Human Resources, Synopsys, Inc. 2017–2019. Executive Vice President, People Success, Milestone Technologies 2016–2017. Director and Global HR Head, Yahoo 2013–2016. Various positions such as Senior HR Business Partner, Senior Manager, Director, Global Talent Development Operations, VMware 2004–2013. Employee Relations Specialist, Technology Credit Union 2003–2004. Human Resources Manager, CAT Technology 2000–2003. Manager, Staffing Programs, Inktomi Corporation 1996–2000.

Member of the Board, Exceptional Women Awardees Foundation. Advisory Board member, Topia, Inc. Advisory Board Member, BrightPlan.



Jenni Lukander
b. 1974

President of Nokia Technologies. Group Leadership Team member since 2019. Joined Nokia in 2007.

Master of Laws, University of Helsinki, Finland.

Senior Vice President, Head of Patent Business, Nokia 2018–2019. Vice President, Head of Patent Licensing, Nokia 2018. Vice President, Head of Litigation and Competition Law, Nokia 2016–2018. Director, Head of Regulatory and Competition Law, Nokia 2015–2016. Director, Head of Competition Law, Nokia 2011–2015. Senior Legal Counsel, Nokia 2007–2011. Visiting lawyer, Nokia 2001. Lawyer, Roschier Ltd. 1999–2007.



Esa Niinimäki
b. 1976

Chief Legal Officer (CLO) and Board Secretary. Group Leadership Team member since 2023. Joined Nokia in 2007.

Master of Laws, Fordham University, School of Law, New York, the United States. Master of Laws, University of Helsinki, Finland.

Interim Chief Legal Officer, Nokia 2022–2023. Deputy Chief Legal Officer, Vice President, Corporate Legal and Board Secretary, Nokia 2018–2023. General Counsel, Global Services, Nokia 2015–2018. Head of Corporate Legal, Nokia Solutions and Networks and Head of Finance & Labor Legal, Nokia 2013–2015. Senior Legal Counsel, Legal and IP, India, Middle East and Africa, Nokia 2012–2013. (Senior) Legal Counsel, Corporate Legal, Nokia 2007–2011. Group Legal Counsel, Metsä Group 2005–2007. Associate Lawyer, White & Case LLP 2003–2005.

Chair of Legal Affairs Committee of the Confederation of Finnish Industries. Member of the Market Practice Board of Securities Market Association and the Policy Committee of the Directors' Institute Finland.



Raghav Sahgal
b. 1962

President of Cloud and Network Services. Group Leadership Team member since 2020. Joined Nokia in 2017.

Master of Science in Computer Systems Management, University of Maryland, the United States. Bachelor of Science in Computer Engineering, Tulane University, New Orleans, the United States. Executive Business Certificate in General Management, Harvard University, the United States.

President of Nokia Enterprise 2020. Senior Vice President, Nokia Software 2017–2020. President, NICE Ltd. Asia Pacific and the Middle East 2010–2017. Advisory Board Member, Orga Systems 2010–2014. Vice President, Communications Business Unit, Asia Pacific & Japan, Oracle 2008–2010. Chief Business Officer, Comverse 2005–2006. Executive Vice President, Asia Pacific, CSG 2002–2005. Vice President, Software Products Group Asia Pacific, Lucent Technologies 2000–2002.

[Corporate governance statement](#) continued

Biographical details of the current members of the Nokia Group Leadership Team continued

**Melissa Schoeb**
b. 1968

Chief Corporate Affairs Officer (CCAO). Group Leadership Team member since 2021. Joined Nokia in 2021.

Bachelor of Arts, double major in International Relations and Spanish, University of Mary Washington, Virginia, the United States. Fellowship Recipient, Four Freedoms Foundation, Rome, Italy.

Vice President, Corporate Affairs, Occidental 2017–2021. Vice President, Communications and Public Affairs, Occidental 2012–2017. Senior Director, Communications and Public Affairs, Occidental 2007–2012. Senior Vice President and Senior Partner, General Manager and other senior positions, FleishmanHillard 2002–2007. Director of Global Communications, Nortel Networks 2000–2002. Vice President, Technology, FleishmanHillard 1998–2000. Business Director, The VenCom Group Inc. 1995–1997. Consultant, London, the United Kingdom and Washington D.C., the United States, Gemini Consulting 1991–1995.

Member of the Arthur Page Society and The Seminar. Member of Mary Washington University College of Business Executive Advisory Board.

**Tommi Uitto**
b. 1969

President of Mobile Networks. Group Leadership Team member since 2019. Joined Nokia in 1996.

Master's degree in industrial management, Helsinki University of Technology, Finland. Master's degree in operations management, Michigan Technological University, the United States.

Senior Vice President (VP), Global Product Sales, Mobile Networks, Nokia 2016–2018. Senior VP, Global Mobile Broadband Sales, Customer Operations, Nokia Networks 2015–2016. Senior VP, West Europe, Customer Operations, Nokia Networks 2013–2015. Head of Radio Cluster (Senior VP), Mobile Broadband, Nokia Siemens Networks (NSN) 2012–2013. Head of Global LTE Radio Access Business Line (VP) and Quality, Mobile Broadband NSN, 2011–2012. Head of Product Management, Network Systems, NSN 2010. Head of Product Management, Radio Access, NSN 2009. Head of WCDMA/HSPA and Radio Platforms Product Management, NSN 2008. Head of WCDMA/HSPA Product Line Management, NSN 2007. General Manager, Radio Controller Product Management Nokia Networks, 2005–2007. Various other positions at Nokia since 1999.

Member of the *Board of Technology Industries of Finland*. *Board member at F-Secure Oyj (standing for election at the 2024 AGM)*.

**Marco Wirén**
b. 1966

Chief Financial Officer (CFO). Group Leadership Team member since 2020. Joined Nokia in 2020.

Master's degree in Business Administration, University of Uppsala, Sweden. Studies in management and strategic leadership, including at Duke Business School, the United States; IMD, Switzerland and Stockholm School of Economics, Sweden.

President, Wärtsilä Energy and Executive Vice President, Wärtsilä Group 2018–2020. Executive Vice President and CFO, Wärtsilä Group 2013–2018. Executive Vice President and CFO, SSAB Group 2008–2013. Vice President, Business Control, SSAB Group 2007–2008. CFO, Eltel Networks 2006–2007. Vice President of Business Development, Eltel Networks 2004–2005. Head of Service Division, Eltel Networks 2003–2004. Vice President, Corporate Development, Eltel Networks 2002–2003. Vice President, Strategy & Business Development, NCC Group 1999–2002. Head of Strategic Planning, NCC Group 1998–1999. Group Controller, NCC Group 1996–1998.

Vice Chair of the Board of Directors of Neste Corporation 2019–2023 and member of the Board of Directors of Neste Corporation 2015–2023.

Corporate governance statement continued

Risk management, internal control and internal audit functions at Nokia

Risk management principles

We have a systematic and structured approach to risk management. Risk management covers strategic, operational, financial, compliance and hazard risks. The principles documented in the Nokia Enterprise Risk Management (ERM) Policy, which is approved by the Audit Committee of the Board, require risk management and its elements to be integrated into key processes:

- **ERM is an integral part of Nokia's objective setting and key decision-making**

Key risks and opportunities are primarily identified against business targets either in business operations or as an integral part of strategy and financial planning. Key risks are monitored as part of the management and business performance information flow. Our overall risk management concept is based on managing the key risks that would prevent us from meeting our objectives, rather than focusing on eliminating all risks.

- **ERM is an integral part of Nokia's corporate governance**

ERM accountability runs through the Company and is embedded into Nokia corporate governance. The Board of Directors and Group Leadership Team are committed to effective risk management as a core management capability that supports Nokia in achieving strategic, tactical and operational business objectives and in managing business performance.

- **Risk ownership follows business ownership**

Nokia ERM is aligned to the overall Nokia governance model, where Nokia's businesses are accountable for meeting approved plans and targets as agreed within Nokia. Each business or function head is an owner of the risks in their respective responsibility area and is responsible for identifying and managing key risks and capturing opportunities.

- **ERM is an area of continuous improvement**

ERM is an area of continuous improvement for Nokia. The Chief Financial Officer, who also functions as the Chief Risk Officer, provides guidance and sponsors the development of ERM practices and ERM improvement.

In addition to the principles defined in the Nokia Enterprise Risk Management Policy, other key corporate level policies reflect the implementation of specific aspects of risk management.

Cybersecurity Risk Management

Nokia, along with its partners and contracted third parties, faces cybersecurity threats like ransomware, viruses, worms and other malicious software, unauthorized modifications, or illegal activities that may cause potential security risks and other harm to Nokia, its customers or consumers and other end-users of Nokia's products and services. The dynamic nature of IT makes it challenging to fully mitigate these risks. Nokia's joint ventures and other group companies may have limited ability to oversee such threats.

The cybersecurity incidents may lead to lengthy and costly incident response, remediation of the attack or breach and legal proceedings and fines imposed on us, as well as adverse effects to our reputation and brand value. Despite ongoing investments, preventing, detecting and containing cyber-attacks remain challenging. Additionally, the cost and operational consequences of implementing further information system protection measures, especially if prescribed by national authorities, could be significant. We may not be successful in implementing such measures in due time, which could lead to business disruptions and the implementation being more expensive, time-consuming and resource intensive. The regulatory framework around responding to and disclosing such events is in flux. We may not be able to comply with the regulations that must be implemented or such compliance may negatively impact our ability to deal with the underlying event.

We face a number of cybersecurity risks within our business. Although such risks have not materially affected us thus far, including our business strategy, results of operations, or financial condition, we have from time to time experienced threats to and breaches of our data and systems, including malware and computer virus attacks. We continue to address these challenges, but there is no guarantee against future attacks.

Nokia has well-established cybersecurity processes built into its overall security risk management framework. This integration is achieved through the implementation of a security program set on various processes, such as cybersecurity risk management, third-party security risk management, security incident management and disaster recovery.

The Chief Security Officer, who has the authority to establish and oversee the Nokia information security program, keeps Nokia's executive leadership informed on program outcomes and highlights information security risks which may affect Nokia business and customers. Nokia's executive leadership provides direction and support and has the responsibility to execute the program within their own domains. Key principles are communicated through the Nokia Information Security Policy, applicable also to third parties and collaborators and supported by topical Standard Operation Procedures and guidelines.

Nokia's security ambition is reflected in the supplier selection processes, contracts and supplier (re)assessments ensuring effective security is in place in our supply chain and with our third-party partners. We are dedicated to adhering to applicable laws, regulations, contractual commitments, and industry best practices, including but not limited to ISO 27001, NIST SP 800 series, Cloud Security Alliance Control Matrix, and the Information Security Forum.

Nokia's cybersecurity incidents are handled in the Security Incident Management Process, which covers all phases of incident response, including preparation, identification, containment, eradication, recovery and post-incident analysis. Each confirmed cybersecurity-related incident is assessed against a classification scheme (impact on confidentiality, integrity and availability of the related asset, urgency, and priority of the security incident). Significant cybersecurity incidents are elevated and managed by a cross-functional, executive management-level team, which is responsible for making the necessary decisions and prioritizing actions that can minimize the impact of the security incident to Nokia and its customers. Members from the CFO and Legal and Compliance teams are responsible for determining the materiality of the security incident and promptly informing the Audit Committee of the Board. The Nokia management team for assessing and managing cybersecurity threats includes members with training and experience in security risk management, security governance, cyber resilience, security incident management, information technology, cybersecurity legal and compliance requirements and disclosures. For an overview of the training and experience of the members of the Board and our assessment of their experience and skills related to cybersecurity, please see "Main corporate governance bodies of Nokia—Board of Directors".

Corporate governance statement continued

Description of internal control procedures in relation to the financial reporting process

Management is responsible for establishing and maintaining adequate internal control over Nokia's financial reporting. Our internal control over financial reporting is designed to provide reasonable assurance to management and the Board regarding the reliability of financial reporting and the preparation and fair presentation of published financial statements.

Management conducts a yearly assessment of Nokia's internal controls over financial reporting in accordance with the Committee of Sponsoring Organizations framework (the "COSO framework", 2013) and the Control Objectives for Information and Related Technology (COBIT) framework of internal controls. The assessment is performed based on a top-down risk assessment of our financial statements covering significant accounts, processes and locations, corporate-level controls and information systems' general controls.

As part of its assessment, management has documented:

- the corporate-level controls, which create the "tone from the top" containing the Nokia values and Code of Conduct and which provide discipline and structure to decision-making processes and ways of working. Selected items from our operational mode and governance principles are separately documented as corporate-level controls;
- the significant processes: (i) give a complete end-to-end view of all financial processes; (ii) identify key control points; (iii) identify involved organizations; (iv) ensure coverage for important accounts and financial statement assertions; and (v) enable internal control management within Nokia;

- the control activities, which consist of policies and procedures to ensure management's directives are carried out and the related documentation is stored according to our document retention practices and local statutory requirements; and
- the information systems' general controls to ensure that sufficient IT general controls, including change management, system development and computer operations, as well as access and authorizations, are in place.

Further, management has also:

- assessed the design of the controls in place aimed at mitigating the financial reporting risks;
- tested operating effectiveness of all key controls; and
- evaluated all noted deficiencies in internal controls over financial reporting in the interim and as of year end.

In 2023, Nokia has followed the procedures as described above and has reported on the progress and assessments to management and to the Audit Committee of the Board on a quarterly basis.

Description of the organization of the internal audit function

We have an internal audit function that examines and evaluates the adequacy and effectiveness of our system of internal control. Internal audit reports to the Audit Committee of the Board. The head of the internal audit function has direct access to the Audit Committee, without the involvement of management. The internal audit staffing levels and annual budget are approved by the Audit Committee. All authority of the internal audit function is derived from the Board. The internal audit aligns to the business by business group and function.

Annually, a risk-based internal audit plan is developed with input from management, taking into account key business risks and external factors. This plan is approved by the Audit Committee. Audits are completed across business groups and functions. The results of each audit are reported to management identifying issues, financial impact, if any, and the correcting actions to be completed. Quarterly, the internal audit function communicates the progress of the internal audit plan completion, including the results of the closed audits, to the Audit Committee. Any changes to the risk environment impacting the internal audit plan are presented to the Audit Committee for review and approval on a quarterly basis.

Internal audit also works closely with Internal Controls and Ethics and Compliance offices to review any financial and compliance concerns brought to light from various channels and, where relevant, works with Enterprise Risk Management to ensure priority risk areas are reviewed through audits.

Corporate governance statement continued

Related party transactions

We determine and monitor related parties in accordance with the International Accounting Standards (IAS 24, Related Party Disclosures) and other applicable regulations including the applicable US securities laws. We maintain information on our related parties, as well as monitor and assess related party transactions. As a main principle, all transactions should be conducted at arm's-length and as part of the ordinary course of business. In exceptional cases where these principles would be deviated from, Nokia would set up a separate process to determine the related parties in question and to seek relevant approvals in accordance with internal guidelines and applicable regulations.

Main procedures relating to insider administration

Our insider administration is organized according to the applicable European Union and Finnish laws and regulations as well as applicable US securities laws and regulations. In addition, the Board of Directors has approved the Nokia Insider Policy, which sets out Nokia-wide rules and practices to ensure full compliance with applicable rules and that inside information is recognized and treated in an appropriate manner and with the highest integrity. The Nokia Insider Policy is applicable to all directors, executives and employees of Nokia.

Persons discharging managerial responsibilities

Nokia has identified members of the Board of Directors and the Group Leadership Team as persons discharging managerial responsibilities who, along with persons closely associated with them, are required to notify Nokia and the Finnish Financial Supervisory Authority of their transactions with Nokia's financial instruments. Nokia publishes the transaction notifications.

In addition, according to the Nokia Insider Policy, persons discharging managerial responsibilities are obligated to clear with the Head of Corporate Legal a planned transaction in Nokia's financial instruments in advance. It is also recommended that trading and other transactions in Nokia's financial instruments are carried out in times when the information available to the market is as complete as possible.

Closed window

Persons discharging managerial responsibilities are subject to a closed window period of 30 calendar days preceding the disclosure of Nokia's quarterly or annual result announcements, as well as the day of the disclosure. During the closed window period, persons discharging managerial responsibilities are prohibited from dealing in Nokia's financial instruments.

Nokia has imposed this closed window period also on separately designated financial reporting persons who are recurrently involved with the preparation of Nokia's quarterly and annual results announcements. These persons are separately notified of their status as designated financial reporting persons.

Insider registers

Nokia does not maintain a permanent insider register. Insiders are identified on a case-by-case basis for specific projects and are notified of their insider status. Persons included in a project-specific insider register are prohibited from dealing in Nokia's financial instruments until the project ends or is made public.

Supervision

Our insider administration's responsibilities include internal communications related to insider matters and trading restrictions, setting up and maintaining our insider registers and arranging related trainings, as well as organizing and overseeing compliance with the insider rules.

Violations of the Nokia Insider Policy must be reported to the Head of Corporate Legal. Nokia employees may also use channels stated in the Nokia Code of Conduct for reporting incidents involving suspected violations of the Nokia Insider Policy.

Auditor fees and services

Deloitte Oy, based in Helsinki, Finland, served as our auditor for the financial year ended 31 December 2023 and for the financial year ended 31 December 2022. The auditor is elected annually by our shareholders at the Annual General Meeting for the next financial year commencing after the election. On an annual basis, the Audit Committee of the Board prepares a proposal to the shareholders regarding the appointment of the auditor based upon its evaluation of the qualifications and independence of the auditor to be proposed for election.

The following table presents fees by type paid to Deloitte's network of firms for the years ended 31 December:

EURm	2023	2022
Audit fees ⁽¹⁾	20.2	22.7
Audit-related fees ⁽²⁾	1.7	0.8
Tax fees ⁽³⁾	0.4	0.4
All other fees ⁽⁴⁾	0.3	0.2
Total	22.6	24.1

(1) Audit fees consist of fees incurred for the annual audit of the Group's consolidated financial statements and the statutory financial statements of the Group's subsidiaries.

(2) Audit-related fees consist of fees billed for assurance and related services that are reasonably related to the performance of the audit or review of the Group's financial statements or that are traditionally performed by the independent auditor, and include consultations concerning financial accounting and reporting standards; advice and assistance in connection with local statutory accounting requirements; due diligence related to mergers and acquisitions; and audit procedures in connection with investigations in the pre-litigation phase and compliance programs. They also include fees billed for other audit services, which are those services that only the independent auditor can reasonably provide, and include the provision of comfort letters and consents in connection with statutory and regulatory filings and the review of documents filed with the SEC and other capital markets or local financial reporting regulatory bodies.

(3) Tax fees include fees billed for: (i) services related to tax compliance including preparation and/or review of tax returns, preparation, review and/or filing of various certificates and forms and consultation regarding tax returns and assistance with revenue authority queries; compliance reviews, advice and assistance on other indirect taxes; and transaction cost analysis; (ii) services related to tax audits; (iii) services related to individual compliance (preparation of individual tax returns and registrations for employees (non-executives), assistance with applying for visas, residency, work permits and tax status for expatriates); (iv) services related to technical guidance on tax matters; (v) services related to transfer pricing advice and assistance with tax clearances; and (vi) tax consultation and planning (advice on stock-based remuneration, local employer tax laws, social security laws, employment laws and compensation programs and tax implications on short-term international transfers).

(4) Other fees include fees billed for Company establishments, liquidations, forensic accounting, data security, other consulting services and reference materials and services.

[Remuneration](#)

Remuneration

This section sets out our remuneration governance, policies and how they have been implemented within Nokia. It includes our Remuneration Report where we disclose the remuneration of our Board members and the President and CEO for 2023, which will be presented to the Annual General Meeting (AGM) 2024 for an advisory vote.

Our updated Remuneration Policy will also be presented to the AGM 2024 for an advisory vote. A summary of the updated Remuneration Policy is set out in this section and the full Policy is available on our website.

Other remuneration-related information provided alongside the Remuneration Report and the Remuneration Policy is not subject to a vote at the AGM 2024 but provides added information on the remuneration policies applied within Nokia as well as on the remuneration of the Group Leadership Team members.

We report information applicable to executive remuneration in accordance with Finnish regulatory requirements and with requirements set by the US Securities and Exchange Commission that are applicable to us.

Highlights

- Despite the challenging market environment in 2023, Nokia delivered a resilient financial performance, we made progress on our strategy, and continued to create world-leading technology.
- As reported last year, at the beginning of 2023, the President and CEO, Pekka Lundmark, received a base salary increase of 3.5% in recognition of his performance. During 2023, in line with the Company's cost control efforts, Pekka Lundmark requested that his salary increase of 3.5% be cancelled as of 1 July 2023. His base salary for the second half of 2023 remained unchanged since his appointment in 2020.
- Our President and CEO, Pekka Lundmark's 2023 Short-term Incentive (STI) was subject to a scorecard of Nokia Economic Profit, gender diversity, carbon emission reduction (Scope 1, 2 and 3) and personal strategic objectives. Following the year end, performance was assessed against the predetermined targets and resulted in an overall STI payout of 65.30% of target opportunity for Pekka Lundmark. Further details on the targets and performance assessment and outcomes are provided in the Remuneration Report.
- The Long-term Incentive (LTI) awards (performance shares) granted to Pekka Lundmark and other GLT members in 2020 vested at 39.5% of target following the end of the 3-year performance period, as a result of the dividend adjusted share price achievement of €3.21. Further details of the target and performance assessment are set out in the Remuneration Report.
- The Personnel Committee reviewed our Remuneration Policy ("Policy") during 2023 in preparation for our second "Say on Pay" shareholder vote at the 2024 AGM. A minor amendment is proposed to the LTI leaver provision under the Policy to further align with market practice. A few other presentational changes are also proposed to the Policy to provide enhanced disclosure for greater transparency, taking account of the feedback received from our shareholders.
- Reflecting the input from our shareholders, we are also making some changes to the performance metrics for our 2024 LTI and STI. The 2024 metrics for the LTI (performance shares) plan for Pekka Lundmark and the rest of the GLT will be subject to a scorecard of 50% relative TSR, 40% cumulative reported Earnings Per Share (EPS) (adjusted for impairments and M&A) and 10% carbon emission reduction (Scope 1, 2 and 3).
- To bring greater focus on our profitability and cash position as well as other important ESG topics such as health and safety, the 2024 metrics for the STI plan for Pekka Lundmark will be subject to a new scorecard of 60% operating profit, 20% Cash Release, 10% health and safety and 10% diversity.
- Pekka Lundmark will receive a salary increase of 8.5% in 2024, to bring his total target remuneration closer to the market level, although remaining below median of our Global Peer Group.

Remuneration continued

Remuneration Report 2023

Word from the Chair of the Personnel Committee of the Board



Dear Fellow Shareholder,
I am delighted to present the first Remuneration Report since my appointment as the Chair of the Personnel Committee of the Nokia Board.

Our remuneration philosophy

At the core of Nokia's philosophy lie three principles:

- pay for performance and aligning the interests of employees with shareholders;
- ensuring that remuneration programs and policies support the delivery of the corporate strategy and create long-term sustainable shareholder value; and
- ensuring that executive remuneration reflects the contribution to achieving our ESG targets which support long-term shareholder value creation.

Business context

2023 saw a meaningful shift in customer spending which impacted our industry, with more caution due to the macroeconomic environment, high interest rates and customers working down elevated inventories accumulated during the pandemic-related supply chain crisis. This industry-wide shift has led to our net sales declining over the full year. However, due to proactive actions we took across our organization, we were able to protect our profitability while continuing to invest in R&D. Despite all the challenges faced during the year, we maintained a strong cash position in 2023 and the Board proposed an increase in the dividend from EUR 12 cents to 13 cents and initiated a new share buyback program to return up to EUR 600 million to our shareholders over the next two years.

Shareholder support and the updated Remuneration Policy

The Policy that applied for the 2020-2023 period was approved by shareholders at the 2020 AGM with 86.37% of votes cast in favor. The Board's implementation of that Policy also received strong support at the AGMs in 2021, 2022 and 2023, with over 90% votes in favor in all three years.

We have monitored developments in shareholder and voting agency guidance on remuneration and conducted a thorough review of the Policy during 2023. The review concluded that the overall remuneration structure continues to be suitable for Nokia and is aligned to our strategic goals. Where amendments have been proposed to the Policy, these are intended to further align our arrangements with market practice and to provide greater transparency to help shareholders understand our arrangements and practices. We consulted with our largest shareholders and several other key stakeholders on some proposed amendments to the Policy.

The shareholders we engaged with were generally supportive of the proposed amendments and made a few helpful and constructive suggestions for the Committee to consider. The feedback was taken into account as the proposed Policy was finalized.

Remuneration of the President and CEO – base salary and incentive opportunities

As reported last year, Pekka Lundmark received a salary increase of 3.5% in January 2023 as a result of Nokia's continued growth and strong business performance. However, in July 2023, he asked to reverse the salary

increase taking into consideration the Company's cost control efforts, the macroeconomic context, the fact that our GLT requested a salary freeze for 2023 and the wider employee experience. His base salary for the second half of 2023 remained unchanged since his appointment in 2020. There was no increase to Pekka Lundmark's STI and LTI opportunities during 2023.

Pekka Lundmark's total target remuneration has remained below the median of our Global Peer Group since his appointment, as a result of the restrained approach the Personnel Committee and the Board have continued to take on executive remuneration, taking account of the current financial pressures being felt by shareholders and our employees. However, considering the Company's resilient performance under Pekka Lundmark's leadership despite the industry-wide challenges we faced during 2023, the Committee and the Board recognize that Pekka Lundmark's current remuneration is not at a competitive level, either relative to others in less senior roles in the Company or relative to other CEOs in our Global Peer Group. This situation is not sustainable in the long term. The Board decided to increase Pekka Lundmark's base salary by 8.5% in 2024. His 2024 STI and LTI opportunities will remain unchanged. As a result, his total target remuneration in 2024 will remain below the median of our Global Peer Group. Our employees globally have received salary increases of approximately 14 percentage points during the past three years.

STI performance and outcomes for 2023

Pekka Lundmark's 2023 STI was subject to a scorecard of 70% Nokia Economic Profit, 10% gender diversity, 5% carbon emission reduction (Scope 1 and 2), 5% carbon emission reduction (Scope 3) and 10% personal strategic objectives.

Nokia Economic Profit was determined based on the comparable operating profit less the cost of normalized core net working capital (i.e. net receivables, inventories and trade creditors). The 2023 Economic Profit outcome of €854m was below the threshold set at the beginning of the year for Pekka Lundmark's 2023 STI. This outcome was largely as a result of the 5G patent cross-license agreements negotiation with OPPO and vivo that continued into early 2024. Since 2021, Nokia has been involved in legal disputes with OPPO and vivo over patent payments in several countries in Europe and Asia.

Remuneration continued

While there have been intense negotiations between the relevant parties, the Company prioritized protecting the value of its patent portfolio over achieving certain timelines for resolution. In January and February 2024, we announced the conclusion of the patent cross-license agreements with OPPO and vivo, respectively. Under the agreements, OPPO and vivo will make royalty payments, along with catch-up payments to cover the periods of non-payment. The agreements resolve all pending patent litigation between the parties, in all jurisdictions. The Personnel Committee and the Board recognized that although both agreements were signed in early 2024 instead of 2023, the outcomes were in the best interest of the Company and our shareholders. Therefore, to fairly reflect the significant effort and achievements of Pekka Lundmark and our GLT, the Board decided it would be appropriate to reflect the value created from signing both agreements in the Nokia Economic Profit outcome for 2023 STI purposes, which would result in an above threshold payout under this element for Pekka Lundmark. However, taking account of the current financial pressure we are under and our restrained approach to executive remuneration as a matter of principle, it was decided that a one-third discount should be applied to the EP outcome which resulted in a payout of 37% of target under this element for Pekka Lundmark.

Our 2023 diversity objective was based on the female percentage of our global external hires. We delivered a full year outcome of 27.9% of female external hiring against a target of 28%, which resulted in 90% of the target payout under this element for Pekka Lundmark. Our absolute Scope 1 and 2 carbon emission for 2023 was 195 897 tCO₂e against a target of 221 652 tCO₂e, which resulted in the maximum payout of 225% of target under this element. Our Scope 3 carbon emission targets were based on a number of emission improvement actions reflecting the key milestones of our Net Zero Roadmap. During 2023, we achieved 83.03 % of the targets under this element. The Personnel Committee and the Board carried out a detailed assessment of Pekka Lundmark's personal strategic objectives achievement following the year end and determined a 150% of target payout under this element. The personal strategic objectives and the assessment are set out in the Remuneration Report. As a result, a total of 65.30% of target STI was payable to Pekka Lundmark in respect of 2023 performance.

LTI performance and outcomes for 2020–2023

The 2020 LTI (performance shares) was subject to the predetermined dividend adjusted share price targets and a three-year performance period which ended in October 2023. Based on the dividend adjusted share price outcome of €3.21, the award vested at 39.5% of target for Pekka Lundmark and other GLT members who received the grant in 2020.

Pekka Lundmark also received a grant under our eLTI co-investment arrangement in August 2020, under which he purchased €2.6 million in Nokia shares and received two-for-one matching shares in return. The matching shares were also subject to dividend adjusted share price targets with a three-year performance period, which ended in August 2023. The threshold share price was not met. Therefore, his matching shares under the 2020 eLTI lapsed in full.

STI and LTI performance conditions for 2024

During 2023, the Committee also undertook a review of the performance metrics used for our LTI and STI and decided to make a number of changes for 2024 to ensure our incentive plans continue to support the business strategy and growth over the next three years. Our 2024 incentive plans for the President and CEO and the rest of the GLT will follow the structure set out below.

Delivering the next year's step in the strategic plan – STI

Operating Profit 60%	Cash Release 20%
Continued focus on profitability	Achieve a strong cash position
Health & safety 10% – Lost Time Injury Frequency Rate (with a fatality modifier)	Diversity 10%
Deliver on our focus on the continued health and safety of our employees	Deliver on our commitment to become a more diverse employer

Delivering sustainable value – LTI

50% relative TSR, 40% cumulative reported EPS (adjusted for impairments and M&A), 10% carbon emission reduction (Scope 1, 2 and 3)
A more rounded and balanced approach reflecting performance over the long term in growing the business and in delivering shareholder value whilst working towards our 2030 goal of 50% carbon emission reduction

Taking account of the shareholder feedback received as well as market practice, the absolute TSR metric in the LTI will be replaced by cumulative reported EPS (adjusted for impairments and M&A) in 2024. The Scope 1, 2 and 3 carbon emission reduction targets will also be introduced to the 2024 LTI. We are one of the very few companies in the market to include Scope 3 targets in incentive plans. This demonstrates our commitment to deliver our long-term emission reduction goal and to be a market leader in addressing climate change.

Our other ESG-related focus and commitment is reflected in the introduction of the health and safety metric with a fatality modifier and the continued use of the diversity metric in our 2024 STI. The change of financial metric for the 2024 STI from Economic Profit to Operating Profit and Cash Release supports our short-term strategic priority on delivering profit and maintaining a strong cash position. Based on feedback received from our shareholders, they are also considered more transparent metrics than Economic Profit.

Share ownership requirement

Our President and CEO is required to hold Nokia shares equivalent to three times his annual base salary. Pekka Lundmark currently maintains a total shareholding which significantly exceeds the requirement. This demonstrates his commitment to and alignment with Nokia's long-term success and our shareholder interests.

Conclusions

Remuneration outcomes for 2023 reflect our resilient performance despite the challenges during the year and demonstrate our remuneration philosophy of pay for performance. The proposed Remuneration Policy amendments build on what has proved to be a successful remuneration strategy over the years. I thank shareholders who assisted the Committee in the consultation process, and very much welcome their constructive feedback and support for the proposals. I look forward to your continued support at our 2024 AGM.

Thomas Dannenfeldt,
Chair of the Personnel Committee

Remuneration continued

Introduction

This Remuneration Report of Nokia Corporation (the Report) has been approved by the Company's Board of Directors (the Board) to be presented to the Annual General Meeting 2024. The resolution of the Annual General Meeting on the Report is advisory. The Report presents the remuneration of the Board members and the President and CEO for the financial year 2023 in accordance with the Finnish Decree of the Ministry of Finance 608/2019 and the Finnish Corporate Governance Code of 2020, as well as other applicable Finnish laws and regulations. The members of the Board and the President and CEO have been remunerated in accordance with our approved Remuneration Policy during the financial year 2023. No temporary or other deviations from the Policy have been made and no clawback provisions have been exercised during the financial year 2023.

In 2023, our remuneration structure promoted the Company's long-term financial success by setting the performance criteria for short- and long-term incentives to support the Company's short- and long-term goals, as well as through shareholding requirements set for the President and CEO, the GLT and the Board members. Aligned with Nokia's pay-for-performance remuneration principle, performance-based remuneration was emphasized over fixed base salary. The setting and application of the performance criteria for incentive programs executed the philosophy of pay-for-performance and supported the delivery of the corporate strategy as well as the creation of long-term sustainable shareholder value.

The table on the right compares the development of the remuneration of our Board of Directors, President and CEO, average employee pay and Company performance over a five-year period.

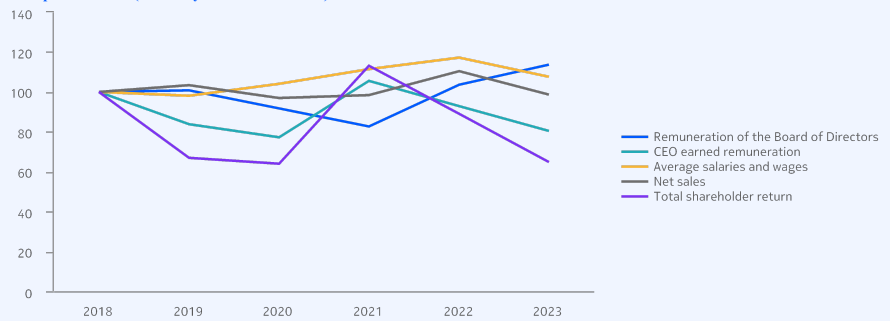
The pay-for-performance remuneration principle applied to the President and CEO, as well as the shareholding requirement of the President and CEO and the Board members, as applicable, contribute to an alignment of interests with shareholders, while also promoting and incentivizing decisions that are in the long-term interest of the Company.

Year	Aggregate remuneration of the Board of Directors (EUR) ⁽¹⁾	President and CEO actual remuneration (EUR) ⁽²⁾	Average salaries and wages (EUR) ⁽³⁾	Net sales (EURm)	Total shareholder return (rebased to 100 at 31 Dec 2018) ⁽⁴⁾
2019	2 219 000	3 897 625	61 980	23 315	66.90
2020	2 016 000	3 587 781	65 787	21 852	63.95
2021	1 821 000	4 908 244	70 411	22 202	113.13
2022	2 280 000	4 316 606	74 100	24 911	88.94
2023	2 503 000	3 738 560	69 074	22 258	64.68

- (1) Aggregate total remuneration paid to the members of the Board during the financial year as annual fee and meeting fee, as applicable, and as approved by general meetings of shareholders. The value depends on the number of members elected to the Board for each term as well as on the composition of the Board committees and travel required. During the term that began from the Annual General Meeting 2021, the Board had eight members only, compared to ten members during the following terms.
- (2) The President and CEO actual remuneration represents the aggregate total of the two CEOs in 2020.
- (3) Average salaries and wages are based on average employee numbers and their total salaries and wages as reported in the Company's financial statements.
- (4) Total shareholder return on last trading day of the previous year.

We also present this data graphically:

Comparative data (rebased year-end 2018 = 100)



Remuneration continued

Remuneration of the Board of Directors

The shareholders resolve annually on director remuneration based on a proposal made by the Board of Directors on the recommendation of the Board's Corporate Governance and Nomination Committee.

The aggregate amount of remuneration paid to Board members in 2023 equaled EUR 2 503 000 of which EUR 2 370 000 consisted of annual fees and the rest of meeting fees. In accordance with the resolution by the Annual General Meeting 2023, approximately 40% of the annual fee from Board and Board Committee work was paid in Nokia shares purchased from the market on behalf of the Board members following the Annual General Meeting.

The directors shall retain until the end of their directorship such number of shares that corresponds to the number of shares they have received as Board remuneration during their first three years of service on the Board.

The rest of the annual fee was paid in cash, most of which was used to cover taxes arising from the remuneration. All meeting fees were paid in cash.

It is the Company's policy that the non-executive members of the Board do not participate in any of Nokia's equity programs and do not receive performance shares, restricted shares, or any other variable remuneration for their duties as Board members. No such variable remuneration was paid since all persons acting as Board members during the financial year 2023 were non-executive.

Board remuneration for the term that began at the Annual General Meeting held on 4 April 2023 and ends at the close of the Annual General Meeting in 2024 consisted of the following fees.

Annual fee	EUR
Chair	440 000
Vice Chair	210 000
Member	185 000
Chair of Audit Committee	30 000
Member of Audit Committee	15 000
Chair of Personnel Committee	30 000
Member of Personnel Committee	15 000
Chair of Technology Committee	20 000
Member of Technology Committee	10 000
Meeting fee ⁽¹⁾	EUR
Meeting requiring intercontinental travel	5 000
Meeting requiring continental travel	2 000

(1) Paid for a maximum of seven meetings per term.

The following table outlines the total annual remuneration paid in 2023 to the members of the Board for their services, as resolved by the shareholders at the Annual General Meeting.

	Annual fees (EUR)	Meeting fees (EUR) ⁽¹⁾	Total remuneration paid (EUR)	60% of annual fees and all meeting fees paid in cash (EUR)	40% of annual fees paid in shares (EUR)	Number of shares (approximately 40% of the annual fee)
Sari Baldauf (Chair)	465 000	10 000	475 000	289 000	186 000	47 427
Søren Skou (Vice Chair)	225 000	14 000	239 000	149 000	90 000	22 948
Timo Ahopelto	210 000	10 000	220 000	136 000	84 000	21 418
Bruce Brown (until 4 April 2023) ⁽²⁾	—	5 000	5 000	5 000	—	—
Elizabeth Crain	215 000	15 000	230 000	144 000	86 000	21 928
Thomas Dannenfeldt	230 000	9 000	239 000	147 000	92 000	23 458
Lisa Hook	200 000	17 000	217 000	137 000	80 000	20 399
Jeanette Horan	210 000	10 000	220 000	136 000	84 000	21 418
Edward Kozel (until 4 April 2023) ⁽²⁾	—	5 000	5 000	5 000	—	—
Thomas Saueressig	195 000	14 000	209 000	131 000	78 000	19 889
Carla Smits-Nusteling	215 000	14 000	229 000	143 000	86 000	21 928
Kai Öistämö	205 000	10 000	215 000	133 000	82 000	20 908
Total	2 370 000	133 000	2 503 000	1 555 000	948 000	241 721

(1) Meeting fees include all meeting fees paid for the term that ended at the Annual General Meeting held on 4 April 2023 and meeting fees accrued and paid in term that began at the same meeting.

(2) Stepped down at the Annual General Meeting on 4 April 2023 and received only one meeting fee in 2023.

Remuneration continued

Remuneration of the President and CEO

The following table shows the actual remuneration received by Pekka Lundmark in 2023 and 2022. The LTI figures relate to the vesting of the final tranche of the restricted share award granted to him on joining Nokia in respect of forfeited shares from his previous employer and the vesting of the 2020 LTI performance shares.

EUR	2023	Pay mix ⁽¹⁾	2022	Pay mix ⁽¹⁾
Salary	1 322 750	36%	1 300 000	31%
Short-term incentive ⁽²⁾	1 079 695	30%	2 342 438	56%
Long-term incentive	1 240 359	34%	560 318	13%
Other compensation ⁽³⁾	95 756		113 850	
Total	3 738 560		4 316 606	

(1) Pay mix reflects the proportions of base salary, STI and LTI of total remuneration, excluding other remuneration.

(2) STI represents the amounts earned in respect of financial year 2023, but that are paid in April 2024.

(3) Other remuneration includes benefits such as telephone, car, driver, tax compliance support, and medical insurance.

Pursuant to Finnish legislation, Nokia is required to make contributions to the Finnish TyEL pension arrangements in respect of the President and CEO. Such payments can be characterized as defined contribution payments. In 2023, payments to the Finnish state pension system equalled EUR 422 274 for Pekka Lundmark in respect of his service as President and CEO (EUR 475 384 for Pekka Lundmark in 2022). No supplementary pension arrangements were offered.

2023 Short-term Incentive of the President and CEO

Targets for the STI are set annually at or before the start of the year, balancing the need to deliver value with the need to motivate and drive the performance of the Executive Team. Targets are determined for a set of strategic metrics that align with driving sustainable value for shareholders and are set in the context of market expectations and analyst consensus forecasts. For 2023, Pekka Lundmark had a target STI opportunity of 125% of annual base salary. His 2023 STI framework was based on a scorecard of financial, strategic and ESG objectives. Achievement against the 2023 targets was as follows:

Metric	Weight	Target	STI outcome (% of target)
Economic Profit ⁽¹⁾	70%	EUR 1 851 million	37%
Diversity	10%	Female percentage of global external hires of 28%	90%
Carbon emission reduction Scope 1&2	5%	221 652 tCO ₂ e	225%
Carbon emission reduction Scope 3	5%	<ul style="list-style-type: none"> ■ Finalize Nokia's Net Zero Roadmap and transition plan ■ Achieve each business group's committed roadmap milestones towards higher energy-efficient products and services 	83.03%
Personal strategic objectives	10%	<ul style="list-style-type: none"> ■ Define the 2030 technology and business vision ■ Develop alternative value creation strategies beyond the 3-year long-range plan 	150%
Total STI outcome	100%		65.30%

(1) Non-IFRS measure. For the definition and reconciliation of non-IFRS measures to the most directly comparable IFRS measures, refer to the "Alternative performance measures" section. Nokia Economic Profit was determined based on the comparable operating profit less the cost of normalized core net working capital, which was measured excluding the impact from the sale of receivables.

Accordingly, the total 2023 STI payout for Pekka Lundmark as the President and CEO was EUR 1 079 695.

Remuneration continued

Long-term Incentive awards granted to the President and CEO during 2023

In 2023, Pekka Lundmark was granted the following LTI (performance share) awards.

Targets for our LTI performance shares are set in a similar context to the STI. The performance share targets are set at the start of the performance period and locked in for the life of the plan. The performance condition for the 2023 performance shares is based on two-thirds absolute TSR and one-third relative TSR against our global peer group ⁽¹⁾ over the three-year performance period from 2023 to 2026. The targets for both metrics and the performance and vesting outcomes will be disclosed in the 2026 Remuneration Report.

Performance share awards granted during the year ⁽²⁾	Units granted	Grant date face value (EUR) ³	Grant date	Vesting
2023 LTI performance shares	635 700	2 434 731	6 July 2023	Q3 2026

(1) Global peer group consisted of 27 companies (see details under the "Global peer group" section).

(2) The maximum vesting is 200% if stretch performance targets are met. Vesting is also subject to continued employment.

(3) Grant date face value was calculated using the closing price of €3.83 on the date of grant.

Long-term Incentive awards and other equity awards vested for the President and CEO during 2023

The final tranche of Pekka Lundmark's 2020 restricted share award, made to him on joining Nokia to compensate for the forfeited awards from his previous employer, vested on 1 October 2023 as set out in the table below.

Restricted share awards vested during the year	Units granted	Target	Achievement	Units vested	Value of vested award ⁽¹⁾ (EUR)
2020 Restricted Share award final tranche (3/3)	117 467	N/A	N/A	117 467	380 590

(1) The vesting value was calculated using the closing share price of €3.24 on 21 November 2023, the day before the share delivery date.

The 2020 LTI performance share award granted to Pekka Lundmark in November 2020 had a three-year performance period and was subject to dividend adjusted share price targets over the performance period. This award vested on 1 November 2023 as set out in the table below.

LTI performance shares vested during the year	Units granted	Target share price (EUR)	Share price achievement (EUR)	Vesting outcome (% of target)	Units vested	Value of vested award ⁽¹⁾ (EUR)
2020 LTI performance shares	671 800	3.67	3.21	39.5 %	265 361	859 770

(1) The vesting value was calculated using the closing share price of €3.24 on 21 November 2023, the day before the share delivery date.

Pekka Lundmark also received an eLTI grant in 2020, under which he invested €2.6 million in Nokia shares and received two-for-one matching shares in return. The matching shares were subject to dividend adjusted share price targets over a three-year performance period. However, as the threshold share price was not achieved, the matching shares lapsed in full on 1 August 2023.

eLTI matching performance shares vested during the year	Units granted	Target share price (EUR)	Share price achievement (EUR)	Vesting outcome (% of target)	Units vested
2020 eLTI matching performance shares	1 390 894	5.35	3.72	0.00	0

Remuneration continued

The President and CEO's share ownership and invested share awards

Our share ownership policy requires that the President and CEO holds a minimum of three times his or her annual base salary in Nokia shares in order to ensure alignment with shareholder interests over the long term. Pekka Lundmark significantly exceeds this requirement with a holding of 346%, well within the five-year allotted period.

Pekka Lundmark	Units	Value ⁽¹⁾ (EUR)
Beneficially owned shares at 31 December 2023	1 473 060	4 495 779
Unvested shares under outstanding Nokia equity plans ⁽²⁾	2 910 980	8 884 310
Total	4 384 040	13 380 089

(1) The values are based on the closing price of a Nokia share of EUR 3.052 on Nasdaq Helsinki on 29 December 2023.

(2) The number of units represents the number of unvested awards as of 31 December 2023.

The President and CEO's termination provisions 2023

Termination by	Reason	Notice	Compensation
Nokia	Cause	None	The President and CEO is entitled to no additional remuneration and all unvested equity awards would be forfeited after termination.
Nokia	Reasons other than cause	Up to 12 months	The President and CEO is entitled to a severance payment equaling up to 12 months' remuneration (including annual base salary, benefits, and target short-term incentive) and unvested equity awards would be forfeited after termination.
President and CEO	Any reason	12 months	The President and CEO may terminate his service agreement at any time with 12 months' notice. The President and CEO would either continue to receive salary and benefits during the notice period or, at Nokia's discretion, a lump sum of equivalent value. Additionally, the President and CEO would be entitled to any short- or long-term incentives that would normally vest during the notice period. Any unvested equity awards would be forfeited after termination.
President and CEO	Nokia's material breach of the service agreement	Up to 12 months	In the event that the President and CEO terminates his service agreement based on a final arbitration award demonstrating Nokia's material breach of the service agreement, he is entitled to a severance payment equaling up to 12 months' remuneration (including annual base salary, benefits and target incentive). Any unvested equity awards would be forfeited after termination.

The President and CEO is subject to a 12-month non-competition and non-solicit obligation that applies after the termination of the service agreement or the date when he is released from his obligations and responsibilities, whichever occurs earlier.

Remuneration continued

Remuneration Policy

Nokia Corporation's Remuneration Policy, which applies to the governing bodies of the Company, i.e. the Board of Directors and the President and CEO, was approved by shareholders at the Annual General Meeting 2020 receiving 86.37% of votes in favor. During 2023, the Board's Personnel Committee carried out a review of the Remuneration Policy and concluded the Policy remains suitable for Nokia's business strategy. Therefore, only minor changes are proposed to the Policy alongside some presentational changes to further align our arrangements with market practice and to provide greater transparency on our disclosure. This section sets out the updated Policy, which will be submitted to the Annual General Meeting 2024 to be adopted through an advisory vote.

The updated Policy would apply to remuneration in respect of the four-year period from 2024 to 2027, unless presented to the General Meeting at an earlier date with proposed changes.

The updated Remuneration Policy for the Board of Directors

In accordance with the Remuneration Policy, the Board's Corporate Governance and Nomination Committee periodically reviews the remuneration for the Chair and members of the Board against companies of similar size and complexity. The objective of the Corporate Governance and Nomination Committee is to enable Nokia to compete for top-of-class Board competence to maximize value creation for its shareholders. The Committee's aim is that the Company has an efficient Board composed of international professionals representing a diverse and relevant mix of skills, experience, background and other personal qualities in line with the diversity principles established by the Board. Competitive Board remuneration contributes to the achievement of this target.

The main structure of the Board remuneration as outlined in the Remuneration Policy is set out in the table below.

Fees	Fees consist of annual fees and meeting fees. Approximately 40% of the annual fee is paid in Nokia shares purchased from the market on behalf of the Board members or alternatively delivered as treasury shares held by the Company. The balance is paid in cash, most of which is typically used to cover taxes arising from the paid remuneration. Meeting fees are paid in cash.
Incentives	Non-executive directors are not eligible to participate in any Nokia incentive plans and do not receive performance shares, restricted shares or any other equity-based or other form of variable compensation for their duties as members of the Board.
Pensions	Non-executive directors do not participate in any Nokia pension plans.
Share ownership requirement	Members of the Board shall normally retain until the end of their directorship such number of shares that corresponds to the number of shares they have received as Board remuneration during their first three years of service on the Board (the net amount received after deducting those shares needed to offset any costs relating to the acquisition of the shares, including taxes).
Other	Directors are compensated for travel and accommodation expenses as well as other costs directly related to Board and Committee work. These are paid in cash.

Proposals of the Board of Directors to the Annual General Meeting 2024 were published on 25 January 2024. The Corporate Governance and Nomination Committee has resolved to recommend to the Board that the annual fees of Board members would remain at an unchanged level. Consequently, the Board proposes to the Annual General Meeting 2024 that the annual fees payable for a term ending at the close of the next Annual General Meeting be as follows:

- EUR 440 000 for the Chair of the Board;
- EUR 210 000 for the Vice Chair of the Board;
- EUR 185 000 for each member of the Board;
- EUR 30 000 each for the Chairs of the Audit Committee and the Personnel Committee and EUR 20 000 for the Chair of the Technology Committee as an additional annual fee;
- EUR 15 000 for each member of the Audit Committee and Personnel Committee and EUR 10 000 for each member of the Technology Committee as an additional annual fee.

The Board has resolved to establish a Strategy Committee to support the management in terms of strategy work and to act as a preparatory body for the Board. Consequently, on the recommendation of the Corporate Governance and Nomination Committee, the Board also proposes that:

- EUR 20 000 be paid for the Chair of the Strategy Committee and EUR 10 000 be paid for each member of the Strategy Committee as an additional annual fee for the Committee's first term commencing from the Annual General Meeting and ending at the close of the next Annual General Meeting.

In addition, the Board of Directors proposes that the meeting fees for Board and Committee meetings remain at the current level. The meeting fees are based on potential travel required between the Board member's home location and the location of a meeting and are paid for a maximum of seven meetings per term as follows:

- EUR 5 000 per meeting requiring intercontinental travel;
- EUR 2 000 per meeting requiring continental travel.

Only one meeting fee is paid if the travel covered by the fee includes several meetings of the Board and its Committees. The Board also proposes that members of the Board shall be compensated for travel and accommodation expenses as well as other costs directly related to Board and Board Committee work.

Remuneration continued

The updated Remuneration Policy for the President and CEO

Remuneration element	Purpose and link to strategy	Operation including maximum opportunity	Performance conditions
Base salary	To attract and retain individuals with the requisite level of knowledge, skills and experience to lead our businesses	Base salary is normally reviewed annually taking into consideration a variety of factors, including but not limited to, performance of the Company and the individual, remuneration of our external peer group, changes in individual responsibilities and employee salary increases.	Whilst there are no performance targets attached to the payment of base salary, performance is considered as context in the annual salary review.
Pension	To provide retirement benefit aligned with local country practice	Pension arrangements reflect the relevant market practice and may evolve year on year. The President and CEO may participate in the applicable pension programs available to other executives in the country of employment. The current President and CEO participates in the Finnish statutory Employee's Pension Act (TyEL); there is no supplementary pension plan. The retirement age is the statutory retirement age in Finland.	N/A
Benefits	To provide a competitive level of benefits and to support recruitment and retention	Benefits will be provided in line with local market practice in the country of employment and may evolve year on year. Benefits may include, for example, a company car (or cash equivalent), risk benefits (for example life and disability insurance) and employer contributions to insurance plans (for example medical insurance). Additional benefits and allowances may be offered in certain circumstances such as relocation support, expatriate allowances, and temporary living and transportation expenses aligned with Nokia's mobility policy.	N/A
Short-term incentive (STI)	To incentivize and reward performance against delivery of the annual business plan	STI is based on performance against one-year financial and non-financial targets and normally paid in cash. Minimum payout is 0% of base salary. Target opportunity is 125% of base salary. Maximum opportunity is 281.25% of base salary. The Company Clawback Policies apply.	Performance measures, weightings and targets for the selected measures are set at the start of the year annually by the Board of Directors to ensure they continue to support Nokia's short-term business strategy. These measures can vary from year to year to reflect business priorities and may include a balance of financial, key operational and non-financial measures. Although the performance measures and weighting may differ year on year reflecting the business priorities, in any given year, a minimum of 60% of measures will be based on financial criteria. Performance metrics and weightings are disclosed retrospectively in the annual Remuneration Report.
Long-term incentive (LTI) – performance share award	To reward for delivery of sustainable long-term performance, align the President and CEO's interests with those of shareholders and aid retention	Long-term incentive awards may be made annually in shares, vesting normally after three years dependent on the achievement of stretching performance conditions measured over a three-year period. Target award level is 200% of base salary at the date of grant, with maximum vesting of 400% of base salary. The Company Clawback Policies apply.	Performance measures, weightings and targets for the selected measures are set by the Board of Directors to ensure they continue to support Nokia's long-term business strategy and financial success. Targets are set in the context of Nokia's long-term plans and analyst forecasts, ensuring that they are considered both achievable and sufficiently stretching. The Committee may choose different measures and weightings each year based on the business plan and these will consist of at least 60% financial measures and/or share price-related measures. Performance metrics and weightings are disclosed retrospectively in the annual Remuneration Report.

Remuneration continued

Remuneration element	Purpose and link to strategy	Operation including maximum opportunity	Performance conditions
Enhanced LTI (eLTI) – co-investment arrangement	To further align the President and CEO's interests with Nokia's long-term success and shareholder interests	<p>To further align the President and CEO's interests with Nokia's long-term success and shareholder interests eLTI is only granted in exceptional circumstances.</p> <p>The President and CEO may be invited, at the discretion of the Board, to purchase investment shares of up to 200% of base salary, and in return, receive two matching shares for every one investment share purchased.</p> <p>The matching shares are delivered in the form of performance shares, typically subject to the same performance conditions as for the LTI performance share award, with a three-year performance and vesting period.</p> <p>The minimum vesting of the matching shares is 0% of base salary and maximum vesting is two times grant level.</p> <p>The Company Clawback Policies apply.</p>	The performance metrics, targets and weightings for the matching shares are typically the same as those for LTI performance shares granted in the same year.
Shareholding requirement	To align the President and CEO's interests with shareholder interests and ensure any decisions made are in the long-term interest of the Company	The President and CEO is required to build and maintain a shareholding equivalent to 300% of base salary, to be achieved normally within five years of appointment.	N/A

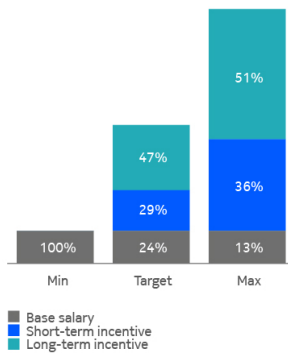
Remuneration continued

Pay mix and remuneration scenarios for the President and CEO

The chart below illustrates how the proportion of the President and CEO's remuneration package varies at the minimum, target and maximum levels of performance. A significant proportion of remuneration is linked to performance, especially at stretch performance levels. Actual pay mix is influenced by the extent to which the performance targets set for the STI and LTI are achieved and may vary from the scenarios below.

The long-term incentive vesting outcomes in the chart below ignore share price movement from grant to vest. The eLTI is not included in this analysis as it is not an annual award and is only granted in exceptional circumstances. The vesting outcome of the matching performance shares under the eLTI would be dependent, besides the performance, on the value of the investment, which could range from 0% to 200% of base salary for the President and CEO. The minimum and maximum vesting levels for the matching performance shares are provided in the above summary table of the remuneration elements.

President and CEO pay mix scenarios



Nokia Annual Report on Form 20-F 2023

Share ownership requirement

Nokia believes that it is desirable for its executives to own shares in Nokia to align their interests with those of shareholders and to ensure that their decisions are in the long-term interest of the Company. The President and CEO is required to own three times his or her annual base salary in Nokia shares and is given a period of five years from appointment to achieve the required level of share ownership.

Clawback Policies

The Company Clawback Policies apply to the President and CEO's incentive plans. The Executive Clawback Policy is applied in the case of any erroneously awarded remuneration due to restatement in the Company's financial statements with a three-year look back period, resulting in the recoupment of excess amounts previously paid based on numbers which have since been materially restated.

Additionally, the Board of Directors may, in its sole discretion, apply the Nokia Incentive Compensation Clawback Policy in circumstances such as reputational damage, gross misconduct and willful breach of internal control procedure.

Remuneration on recruitment

Our policy on recruitment is to offer a remuneration package that is sufficient to attract, retain and motivate the individual with the right skills for the required role.

On occasion, we may offer buy-out awards to compensate for a candidate's forfeited awards on leaving a previous employer. Such buy-out awards would, where possible, reflect the nature of the forfeited awards in terms of delivery mechanism, time horizons, attributed expected value and performance conditions.

Termination provisions

In the event of a termination of employment, any payable remuneration is determined in line with legal advice regarding local legislation, country policies, contractual obligations and the rules of the applicable incentive and benefit plans. Payment in lieu of notice will not typically exceed the value of 12 months' remuneration (including base salary, benefits, STI and pension contribution, if applicable). The treatment of equity incentive awards may depend on the circumstances of the departure. In the event of death, permanent disability or retirement, unvested awards are normally allowed to be retained. These awards will vest either on departure or at normal vesting date, subject to performance (if applicable) and time proration, unless the Board of Directors determines otherwise. Current termination provisions of the President and CEO's service agreement are described in the Remuneration Report.

Change of control arrangements, if any, are based on a double trigger structure, which means that both a specified change of control event and termination of the individual's employment must take place for any change of control-based severance payment to materialize.

Remuneration continued

Remuneration governance

We manage our remuneration through clearly defined processes, with well-defined governance principles, ensuring that no individual is involved in the decision-making related to their own remuneration, and that there is appropriate oversight of any remuneration decision. Remuneration of the Board is annually presented to shareholders for approval at the Annual General Meeting.

The Board submits its proposal to the Annual General Meeting on the recommendation of the Board's Corporate Governance and Nomination Committee, which actively considers and evaluates the appropriate level and structure of directors' remuneration. Shareholders also authorize the Board to resolve to issue shares, for example to settle Nokia's equity-based incentive plans, based on the proposal of the Board.

The Board of Directors approves, and the independent members of the Board confirm, the remuneration of the President and CEO, upon recommendation of the Personnel Committee.

The Personnel Committee consults regularly with the President and CEO and the Chief People Officer. The President and CEO has an active role in the remuneration governance and performance management processes for the GLT and the wider employee population at Nokia. However, the President and CEO or the Chief Personnel Officer are not present when their own remuneration is reviewed or discussed. This enables the Personnel Committee to be mindful of employee pay and conditions across the broader employee population.

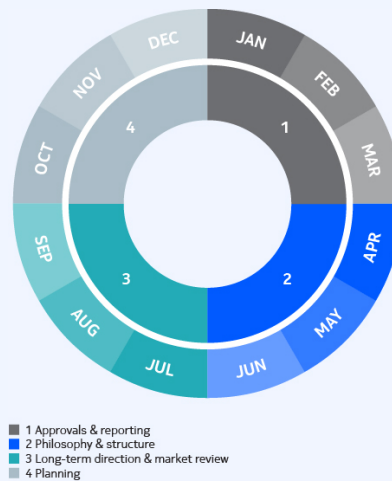
The Committee has the power, in its sole discretion, to retain remuneration consultants to assist the Personnel Committee in evaluating executive remuneration. During 2023, the Personnel Committee engaged Willis Towers Watson, an independent external consultant, to assist in the review and determination of executive remuneration and program design, as well as to provide insight into market trends and regulatory developments.

The Personnel Committee Chair regularly engages with shareholders to discuss their views on our remuneration policies, programs and associated disclosures and reflects on their feedback. These insights are taken account of in the Committee's and Board's decision-making process for executive remuneration.

Nokia Annual Report on Form 20-F 2023

Work of the Personnel Committee

The Personnel Committee convened five times during 2023 with a general theme for each meeting.



January

- 2022 STI performance outcome
- 2023 STI and LTI metrics and target setting
- President and CEO remuneration review
- Equity plan vesting and granting during 2023
- Remuneration Report for 2022

May

- LTI design for 2024–2026
- Equity plan status
- 2023 Annual General Meeting season review
- GLT remuneration review
- Culture update
- GLT succession approach
- The SEC's regulation on clawback

July

- Remuneration Policy review
- Nokia Executive Clawback Policy review
- LTI design for 2024–2026
- Market practice update
- People risks including physical safety review

September

- Nokia Incentive Compensation Clawback Policy review
- LTI design for 2024–2026
- Analytics and demographics
- Remuneration Policy 2024 including the shareholder consultation process

November

- LTI and Share in Success Plan Rules renewal for 2024–2026 and 2024 incentive metrics
- 2024 equity plan budget and allocation
- Proxy agency and shareholder feedback
- Planning of Remuneration Report for 2023
- GLT Succession planning
- Executive shareholding assessment
- Personnel Committee charter review

Remuneration continued

Remuneration of the Nokia Group
Leadership Team in 2023

The remuneration of the members of the GLT (excluding the President and CEO) consists of base salary, other benefits, and short- and long-term incentives. Short-term incentive plans are based on rewarding the delivery of business performance utilizing certain, or all, of the following metrics as appropriate to the member's role: Economic Profit, diversity, carbon emission reduction and defined strategic objectives.

Executives in the GLT are subject to the same remuneration policy framework as the President and CEO. This includes being subject to the Clawback Policies and shareholding requirements. The shareholding requirement for members of the GLT is two times their annual base salary, built within a period of five years of their appointment.

At the end of 2023, the Group Leadership Team consisted of 11 persons split between Finland, other European countries, Singapore and the United States. For information regarding the current Group Leadership Team composition, refer to the Corporate Governance Statement.

Name	Position in 2023	Appointment date
Pekka Lundmark	President and CEO	1 August 2020
Nishant Batra	Chief Strategy and Technology Officer	18 January 2021
Ricky Corker	Chief Customer Experience Officer	1 January 2019
Federico Guillén	President of Network Infrastructure	8 January 2016
Amy Hanlon-Rodemich	Chief People Officer	24 October 2022
Jenni Lukander	President of Nokia Technologies	1 August 2019
Esa Niinimäki	Chief Legal Officer	25 January 2023
Raghav Sahgal	President of Cloud and Network Services	1 June 2020
Melissa Schoeb	Chief Corporate Affairs Officer	12 April 2021
Tommi Uitto	President of Mobile Networks	31 January 2019
Marco Wirén	Chief Financial Officer	1 September 2020

Remuneration of the Group Leadership Team members in 2023

Remuneration of the Group Leadership Team (excluding the President and CEO) in 2022 and 2023, in the aggregate, was as follows:

EURm ⁽¹⁾	2023	2022
Salary, short-term incentives and other compensation ⁽²⁾	10.8	13.6
Long-term incentives ⁽³⁾	2.5	7.0
Total	13.3	20.6

(1) The values represent each member's time on the Group Leadership Team.

(2) Short-term incentives represent amounts earned in respect of 2023 performance. Other compensation includes mobility-related payments, local benefits and pension costs.

(3) The amounts represent the equity awards that vested in 2023 and 2022.

The members of the Group Leadership Team (excluding the President and CEO) were awarded the following equity awards under the Nokia equity program in 2023:

Award	Units awarded ⁽¹⁾	Grant date fair value (EUR)	Grant date	Vesting
Performance share award ⁽²⁾	1 858 500	7 118 055	6 July 2023	Q3 2026
Restricted share award ⁽³⁾	1 454 000	4 376 540	15 December 2023	Q4 2024, Q4 2025

(1) Includes units awarded to persons who were Group Leadership Team members during 2023.

(2) The 2023 performance shares have a three-year performance period based on absolute total shareholder return. The maximum payout is 200% subject to maximum performance against the performance criteria. Vesting is subject to continued employment.

(3) Vesting of each tranche of the restricted share awards is conditional on continued employment.

[Remuneration continued](#)**Unvested equity awards held by the Group Leadership Team, including the President and CEO**

The following table sets forth the potential aggregate ownership interest through the holding of equity-based long-term incentives of the Group Leadership Team in office, including the President and CEO, at 31 December 2023 :

	Shares receivable through performance shares at grant	Shares receivable through performance shares at maximum ⁽⁴⁾	Shares receivable through restricted shares
Number of equity awards held by the Group Leadership Team ⁽¹⁾	9 556 958	19 113 916	1 454 000
% of the outstanding shares ⁽²⁾	0.17 %	0.35 %	0.03 %
% of the total outstanding equity incentives (per instrument) ⁽³⁾	22.19 %	23.26 %	1.55 %

(1) Includes the 11 members of the Group Leadership Team in office at 31 December 2023 .

(2) The percentages are calculated in relation to the outstanding number of shares and total voting rights of Nokia at 31 December 2023 , excluding shares held by the Nokia Group. No member of the Group Leadership Team owns more than 1% of the outstanding Nokia shares.

(3) The percentages are calculated in relation to the total outstanding equity incentives per instrument.

(4) At maximum performance, under the performance share plans outstanding at 31 December 2023 , the payout would be 200% and the table reflects this potential maximum payout.

Employee Share Purchase Plan

All eligible Nokia employees, including the President and CEO and our GLT members can participate in the Employee Share Purchase Plan, by making contributions from their monthly net salaries (up to a cap) to purchase Nokia shares at market value. Participants will receive one matching share for every two purchased shares they still hold at the end of the applicable annual plan cycle. Until the matching shares are delivered, the participants have no shareholder rights, such as voting or dividend rights associated with the matching shares.

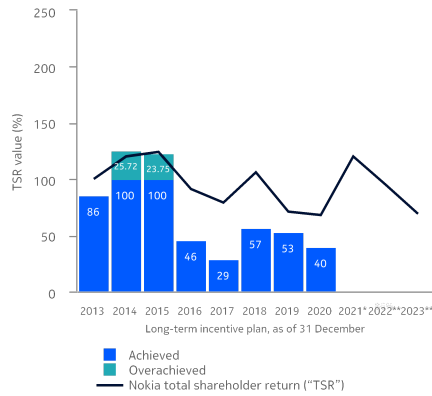
Remuneration continued

Pay for performance

Core to our remuneration philosophy is a desire to pay for performance.

Each year we review overall total shareholder return compared with LTI vesting, mapping the performance of the plans against the total shareholder return curve.

Share price and total shareholder return vs long-term incentive performance



* 2021 LTI's performance period ended in Jan 2024. The vesting outcome of this award will be reported in the 2024 Remuneration Report.
 ** 2022 and 2023 LTI's performance periods not yet completed.

Looking at the performance of our long-term incentive plans against total shareholder return, there is a reasonable alignment with the performance of the plans declining as total shareholder return declines.

The Board continues to actively monitor the performance of our long-term incentive plans to ensure that they deliver value for shareholders.

Global peer group

The global peer group used in our remuneration benchmarking and relative TSR performance assessment consists of 27 companies.

ABB	IBM
Adobe	Infineon Technologies
Airbus	Juniper Networks
ASML	Kone
Atos	Motorola Solutions
BAE Systems	NXP Semiconductors
Capgemini	Oracle
Ciena	Philips
Cisco Systems	SAP
Corning	Siemens Healthineers
Dell Technologies	VMware
Ericsson	Vodafone Group
Hewlett Packard Enterprise	Wärtsilä
HP	

Operating and financial review and prospects

Selected financial data	73
Operating and financial review	74
Results of operations	74
Results of segments	77
Network Infrastructure	77
Mobile Networks	78
Cloud and Network Services	79
Nokia Technologies	80
Group Common and Other	81
Liquidity and capital resources	82
Financial position	82
Cash flow	82
Financial assets and debt	83
Venture fund investments and commitments	83
Treasury policy	83
Foreign exchange impact	84
Sustainability and corporate responsibility	85
Our purpose, strategy and targets	85
Sustainability governance	90
Risk management	91
Environment	92
Industrial digitalization	95
Security and privacy	96
Bridging the digital divide	97
Responsible business	98
Our People	101
Shares and shareholders	107
Share details	107
Shareholders	110
Articles of Association	111
Risk factors	113
Significant subsequent events	130



Selected financial data

Selected financial data

This section includes selected financial and other measures for the Nokia Group as of and for each of the years in the three-year period ended 31 December 2023. The information has been derived from, and should be read in conjunction with, our audited consolidated financial statements prepared in accordance with IFRS. The consolidated financial statements as of 31 December 2023 and 2022, and for the years ended 31 December 2023, 2022 and 2021 are included in this report.

EURm (except for percentage and personnel data)	2023	2022	2021	EURm (except for percentage and personnel data)	2023	2022	2021
From the consolidated income statement				Key financial indicators and ratios			
Net sales	22 258	24 911	22 202	Earnings per share attributable to equity holders of the parent			
Operating profit	1 688	2 318	2 158	Basic earnings per share, EUR			
% of net sales	7.6%	9.3%	9.7%	Continuing operations	0.12	0.75	0.29
Profit before tax	1 499	2 184	1 926	Profit for the year	0.12	0.76	0.29
Profit from continuing operations	674	4 210	1 654	Diluted earnings per share, EUR			
Profit/(loss) from discontinued operations	5	49	(9)	Continuing operations	0.12	0.74	0.29
Profit for the year	679	4 259	1 645	Profit for the year	0.12	0.75	0.29
From the consolidated statement of financial position				Proposed dividend per share, EUR ⁽¹⁾	0.13	0.12	0.08
Non-current assets	21 694	22 677	20 452	Return on capital employed % ⁽²⁾	6.7%	9.5%	10.1%
Current assets	18 087	20 266	19 597	Return on shareholders' equity % ⁽²⁾	3.2%	22.0%	10.9%
Assets held for sale	79	—	—	Equity ratio % ⁽²⁾	51.8%	49.9%	43.6%
Total assets	39 860	42 943	40 049	Net debt to equity (gearing) % ⁽²⁾	(21.0)%	(22.2)%	(26.4)%
Total shareholders' equity	20 537	21 333	17 360	Cash and cash equivalents	6 234	5 467	6 691
Non-controlling interests	91	93	102	Total cash and interest-bearing financial investments ⁽²⁾	8 514	9 244	9 268
Total equity	20 628	21 426	17 462	Net cash and interest-bearing financial investments ⁽²⁾	4 323	4 767	4 615
Interest-bearing liabilities ⁽¹⁾	4 191	4 477	4 653	Net cash flows from operating activities	1 317	1 474	2 625
Lease liabilities ⁽¹⁾	997	1 042	1 009	Free cash flow ⁽²⁾⁽⁴⁾	665	873	2 065
Provisions ⁽¹⁾	1 262	1 435	1 569				
Other liabilities ⁽¹⁾	12 782	14 563	15 356				
Total shareholders' equity and liabilities	39 860	42 943	40 049				
Other information							
Research and development expenses	(4 327)	(4 550)	(4 214)				
% of net sales	(19.4)%	(18.3)%	(19.0)%				
Capital expenditure ⁽²⁾	(652)	(601)	(560)				
% of net sales	(2.9)%	(2.4)%	(2.5)%				
Personnel expenses	(7 470)	(7 903)	(7 541)				
Average number of employees	86 689	86 896	87 927				
Order backlog, EUR billion	22.0	19.5	20.3				

(1) Includes both current and non-current liabilities in the consolidated statement of financial position.

(2) Non-IFRS measures. For the definition and reconciliation of non-IFRS measures to the most directly comparable IFRS measures, refer to the "Alternative performance measures" section.

(3) The Board of Directors proposes to the Annual General Meeting to be authorized to decide in its discretion on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity.

(4) Free cash flow is calculated according to the new definition, refer to the "Alternative performance section" for details.

Operating and financial review

The financial information included in this “Operating and financial review” section as of and for the years ended 31 December 2023 and 2022 has been derived from our audited consolidated financial statements included in this report. The financial information should be read in conjunction with, and is qualified in its entirety by reference to, our audited consolidated financial statements. For a discussion of the year ended 31 December 2022 compared to the year ended 31 December 2021, please refer to the “Operating and financial review” section of our Annual Report on Form 20-F for the year ended 31 December 2022.

Results of operations

This “Results of operations” section discusses the results of our continuing operations.

Cost savings program

On 19 October 2023, Nokia announced actions being taken across business groups to address the increasingly challenging market environment that the Company faces. The Company will reduce its cost base and increase operational efficiency while protecting its R&D capacity and commitment to technology leadership.

Nokia targets to lower its cost base on a gross basis (i.e. before inflation) by between EUR 800 million and EUR 1 200 million by the end of 2026 compared to 2023, assuming on-target variable pay in both periods. This represents a 10-15% reduction in personnel expenses. The program is expected to lead to a 72 000–77 000 employee organization compared to the 86 000 employees Nokia had when the program was announced.

The program is expected to deliver savings on a net basis but the magnitude will depend on inflation. The cost savings are expected to primarily be achieved in Mobile Networks, Cloud and Network Services and Nokia’s corporate functions. One-time restructuring charges and cash outflows of the program are expected to be similar to the annual cost savings achieved.

The current plan envisages achieving gross cost savings of EUR 1 000 million within the 2024–2026 program although this remains subject to change depending on the evolution of end market demand. This includes the expected gross cost savings along with the associated restructuring charges and cash outflows for the program. Nokia expects approximately 70% of the savings to be achieved within operating expenses and 30% within cost of sales. By business group, approximately 60% of the savings are expected to be achieved within Mobile Networks, 30% within Cloud and Network Services and the remaining 10% between Network Infrastructure and corporate center.

The prior cost savings program from 2021 to 2023 is now essentially completed.

Conclusion of smartphone patent license renewal cycle

On 8 February 2024, Nokia announced it had signed its last remaining major smartphone patent license agreement and concluded its smartphone patent license renewal cycle which began in 2021. Nokia Technologies will now enter a period of stability with no major smartphone license agreements expiring for a number of years. In addition to license agreements signed with Apple and Samsung in 2023, and Huawei in December 2022, Nokia Technologies signed agreements with Honor, OPPO and vivo, among others at the beginning of 2024.

As a result, at the conclusion of the smartphone patent license renewal cycle, Nokia Technologies currently has an annual net sales run-rate (contracted recurring net sales) of approximately EUR 1.3 billion, excluding catch-up net sales. In addition to the remaining addressable smartphone market, it will continue to focus on opportunities to grow the annual net sales run-rate through patent licensing in areas such as automotive, consumer electronics, IoT and multimedia, to reach a run-rate of EUR 1.4-1.5 billion in the mid term.

Operating and financial review continued

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the results of Nokia's continuing operations and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales	22 258	100.0	24 911	100.0	(11)
Cost of sales	(13 571)	(61.0)	(14 689)	(59.0)	(8)
Gross profit	8 687	39.0	10 222	41.0	(15)
Research and development expenses	(4 327)	(19.4)	(4 550)	(18.3)	(5)
Selling, general and administrative expenses	(2 929)	(13.2)	(3 013)	(12.1)	(3)
Other operating income and expenses	257	1.2	(341)	(1.4)	(175)
Operating profit	1 688	7.6	2 318	9.3	(27)
Share of results of associated companies and joint ventures	(39)	(0.2)	(26)	(0.1)	50
Financial income and expenses	(150)	(0.7)	(108)	(0.4)	39
Profit before tax	1 499	6.7	2 184	8.8	(31)
Income tax (expense)/benefit	(825)	(3.7)	2 026	8.1	(141)
Profit for the year from continuing operations	674	3.0	4 210	16.9	(84)
Attributable to:					
Equity holders of the parent	660	3.0	4 201	16.9	(84)
Non-controlling interests	14	0.1	9	—	56

Net sales

Net sales in 2023 were EUR 22 258 million, a decrease of EUR 2 653 million, or 11 %, compared to EUR 24 911 million in 2022. In 2023, our industry was impacted by a meaningful shift in customer behavior driven by the macroeconomic environment, high interest rates and inventory digestion. In addition to a negative impact from foreign exchange rate fluctuations, performance was driven by declines across all four business groups, with particular weakness in Network Infrastructure, Mobile Networks and Nokia Technologies. Net sales declined 3% due to foreign exchange rate fluctuations in 2023.

The following table sets forth distribution of net sales by region for the years indicated.

EURm	2023	2022	Year-on-year change %
Asia Pacific	2 291	2 648	(13)
Europe ⁽¹⁾	5 873	6 662	(12)
Greater China	1 303	1 581	(18)
India	2 842	1 290	120
Latin America	1 046	1 223	(14)
Middle East & Africa	2 050	1 969	4
North America	5 733	8 388	(32)
Submarine Networks	1 120	1 150	(3)
Total	22 258	24 911	(11)

(1) All Nokia Technologies IPR and licensing net sales are allocated to Finland.

The following table sets forth distribution of net sales by customer type for the years indicated.

EURm	2023	2022	Year-on-year change %
Communications service providers	17 652	19 921	(11)
Enterprise	2 282	1 997	14
Licensees	1 085	1 595	(32)
Other ⁽¹⁾	1 239	1 398	(11)
Total	22 258	24 911	(11)

(1) Includes net sales of Submarine Networks which operates in a different market, and Radio Frequency Systems (RFS), which is being managed as a separate entity, and certain other items, such as elimination of inter-segment revenues and certain items related to purchase price allocation. Submarine Networks and RFS net sales also include revenue from communications service providers and enterprise customers.

Gross profit

Gross profit in 2023 was EUR 8 687 million, a decrease of EUR 1 535 million, or 15 %, compared to EUR 10 222 million in 2022. The decrease in gross profit was attributable to all four business groups, particularly to unfavorable regional mix in Mobile Networks and a lower contribution from Nokia Technologies. Gross profit in 2023 also reflected higher restructuring and associated charges, which amounted to EUR 151 million in 2023, compared to EUR 84 million in 2022. In 2023, variable pay accruals within cost of sales were lower, compared to 2022. Gross margin in 2023 was 39.0 %, compared to 41.0 % in 2022.

Operating and financial review continued

Operating expenses

Our research and development expenses in 2023 were EUR 4 327 million, a decrease of EUR 223 million, or 5%, compared to EUR 4 550 million in 2022. Research and development expenses represented 19.4% of our net sales in 2023 compared to 18.3% in 2022. While research and development expenses declined in 2023, they declined at a slower rate than net sales, reflecting the impact of inflation in addition to our commitment to build and maintain technology leadership across our portfolio. Research and development expenses were also positively impacted by foreign exchange rate fluctuations. By business, the decrease was primarily related to Mobile Networks and Network Infrastructure. Research and development expenses in 2023 also reflected higher restructuring and associated charges, which amounted to EUR 61 million in 2023, compared to EUR 37 million in 2022. In 2023, variable pay accruals within research and development expenses were lower, compared to 2022.

Our selling, general and administrative expenses in 2023 were EUR 2 929 million, a decrease of EUR 84 million compared to EUR 3 013 million in 2022. Selling, general and administrative expenses represented 13.2% of our net sales in 2023 compared to 12.1% in 2022. The modest decrease in selling, general and administrative expenses was driven by the impact of inflation, which was broad-based across businesses and reflected higher salary expenses, but was somewhat offset by cost savings actions and the positive impact from foreign exchange rate fluctuations. Additionally, the lower selling, general and administrative expenses in 2023 reflected higher restructuring and associated charges, partially offset by lower amortization of acquired intangible assets. 2023 included restructuring and associated charges of EUR 138 million, compared to EUR 52 million in 2022. In 2023, selling, general and administrative expenses included amortization of acquired intangible assets of EUR 301 million, compared to EUR 356 million in 2022. In 2023, variable pay accruals within selling, general and administrative expenses were lower, compared to 2022.

Other operating income and expenses in 2023 was a net income of EUR 257 million, an improvement of EUR 598 million, compared to a net expense of EUR 341 million in 2022. The improvement in other operating income and expenses was primarily related to the positive impact from foreign exchange hedging, a net positive fluctuation related to provisions associated with a country exit, the sale of digital assets, a net positive fluctuation in the amount of loss allowances on trade receivables, partly offset by a net negative impact from Nokia's venture fund investments. The impact of hedging was positive EUR 80 million in 2023, compared to a negative impact of EUR 107 million in 2022. In 2022, a provision associated with a country exit amounting to EUR 98 million was booked, of which EUR 49 million was reversed in 2023. Additionally, the net loss related to Nokia's venture fund investments in 2023 was approximately EUR 70 million, compared to a net benefit of approximately EUR 20 million in 2022.

Operating profit

Our operating profit in 2023 was EUR 1 688 million, a decrease of EUR 630 million, compared to an operating profit of EUR 2 318 million in 2022. The decrease in operating profit was due to lower gross profit, partially offset by a net positive fluctuation in other operating income and expenses, lower research and development expenses and lower selling, general and administrative expenses. Our operating margin in 2023 was 7.6%, compared to 9.3% in 2022.

Financial income and expenses

Financial income and expenses were a net expense of EUR 150 million in 2023, an increase of EUR 42 million, compared to a net expense of EUR 108 million in 2022. The net negative fluctuation in financial income and expenses mainly resulted from a EUR 207 million negative fluctuation in net foreign exchange gains and losses and EUR 136 million of higher interest expenses which were partly offset by EUR 233 million of higher interest income and a EUR 61 million impairment in 2022 related to loans extended to a customer. The higher interest income was primarily driven by EUR 130 million higher interest income on financial investments and EUR 95 million higher net interest income on deferred pension plans.

Profit before tax

Our profit before tax in 2023 was EUR 1 499 million, a decrease of EUR 685 million compared to EUR 2 184 million in 2022.

Income tax

Income taxes were a net expense of EUR 825 million in 2023, a net negative fluctuation of EUR 2 851 million compared to a net benefit of EUR 2 026 million in 2022. The fluctuation in net income taxes was primarily attributable to the recognition of Finnish deferred tax assets of EUR 2.5 billion that positively impacted 2022, as well as a non-recurring tax expense of EUR 392 million related to an internal operating model change that led to a remeasurement of a deferred tax asset that negatively impacted 2023. For more details on these items, please refer to Note 2.5. Income taxes in our consolidated financial statements.

Profit attributable to equity holders of the parent and earnings per share

The profit attributable to equity holders of the parent in 2023 was EUR 660 million, a decrease of EUR 3 541 million, compared to a profit of EUR 4 201 million in 2022. The change in profit attributable to equity holders of the parent was primarily due to the net negative fluctuation in income taxes, the lower operating profit and, to a lesser extent, a net negative fluctuation in financial income and expenses.

Our EPS from continuing operations in 2023 was EUR 0.12 (basic) and EUR 0.12 (diluted) compared to EUR 0.75 (basic) and EUR 0.74 (diluted) in 2022.

Operating and financial review continued

Results of segments

In 2023, we had four operating and reportable segments for financial reporting purposes: (1) Network Infrastructure, (2) Mobile Networks, (3) Cloud and Network Services and (4) Nokia Technologies. We also present segment-level information for Group Common and Other. The amounts presented in this "Results of segments" section for each reportable segment and Group Common and Other represent the amounts reported to the management for the purpose of assessing performance and making decisions about resource allocation. Certain costs and revenue adjustments are not allocated to the segments for this purpose. For more information on our operational and reporting structure as well as the reconciliation of reportable segment measures to those of the Nokia Group, refer to Note 2.2. Segment information, in the consolidated financial statements.

Network Infrastructure

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the segment operating results and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales ⁽¹⁾	8 037	100.0	9 047	100.0	(11)
Cost of sales	(4 987)	(62.1)	(5 739)	(63.4)	(13)
Gross profit	3 050	37.9	3 308	36.6	(8)
Research and development expenses	(1 259)	(15.7)	(1 307)	(14.4)	(4)
Selling, general and administrative expenses	(818)	(10.2)	(833)	(9.2)	(2)
Other operating income and expenses	81	1.0	(66)	(0.7)	(223)
Operating profit	1 054	13.1	1 102	12.2	(4)

(1) In 2023, net sales include IP Networks net sales of EUR 2 606 million, Optical Networks net sales of EUR 1 942 million, Fixed Networks net sales of EUR 2 369 million and Submarine Networks net sales of EUR 1 120 million. In 2022, net sales include IP Networks net sales of EUR 3 063 million, Optical Networks net sales of EUR 1 891 million, Fixed Networks net sales of EUR 2 943 million and Submarine Networks net sales of EUR 1 150 million.

Net sales

Network Infrastructure net sales in 2023 were EUR 8 037 million, a decrease of EUR 1 010 million, or 11%, compared to EUR 9 047 million in 2022. While net sales in Network Infrastructure were negatively impacted by foreign exchange rate fluctuations in 2023, the decrease reflected declines across all businesses, with the exception of Optical Networks. Net sales declined 2% due to foreign exchange rate fluctuations in 2023.

IP Networks net sales were EUR 2 606 million in 2023, a decrease of EUR 457 million, or 15%, compared to EUR 3 063 million in 2022. Net sales in IP Networks decreased in 2023, with particular weakness in North America as CSP customers evaluated their spending through most of the year, with smaller variations across other regions.

Optical Networks net sales were EUR 1 942 million in 2023, an increase of EUR 51 million, or 3%, compared to EUR 1 891 million in 2022. The increase in Optical Networks net sales primarily reflected the strong momentum of and customer engagement with our PSE-V solutions. From a regional perspective, the net sales increase was primarily driven by India, with smaller variations in other regions.

Fixed Networks net sales were EUR 2 369 million in 2023, a decrease of EUR 574 million, or 20%, compared to EUR 2 943 million in 2022. The decline in Fixed Networks net sales was primarily driven by weakness in North America with a slowdown in fixed wireless access, as well as in fiber where customers evaluated their spending and digested inventories.

Submarine Networks net sales were EUR 1 120 million in 2023, a decrease of EUR 30 million, or 3%, compared to EUR 1 150 million in 2022. The slight decrease in Submarine Networks net sales mainly reflected project timing, while the business continues to execute on its strong order backlog.

Gross profit

Network Infrastructure gross profit in 2023 was EUR 3 050 million, a decrease of EUR 258 million, or 8%, compared to EUR 3 308 million in 2022. Network Infrastructure gross margin in 2023 was 37.9%, compared to 36.6% in 2022. Network Infrastructure gross profit declined while gross margin improved, primarily reflecting favorable mix shift despite the decline in net sales. In 2023, variable pay accruals within Network Infrastructure cost of sales were lower, compared to 2022.

Operating expenses

Network Infrastructure research and development expenses were EUR 1 259 million in 2023, a decrease of EUR 48 million, or 4%, compared to EUR 1 307 million in 2022. The decrease in research and development expenses largely reflected lower variable pay accruals and foreign exchange rate fluctuations, which more than offset the impact of inflation.

Network Infrastructure selling, general and administrative expenses were EUR 818 million in 2023, a decrease of EUR 15 million, or 2%, compared to EUR 833 million in 2022. The decrease in Network Infrastructure selling, general and administrative expenses largely primarily reflected lower variable pay accruals and foreign exchange rate fluctuations, which more than offset the impact of inflation.

Network Infrastructure other operating income and expenses was an income of EUR 81 million in 2023, a change of EUR 147 million compared to an expense of EUR 66 million in 2022. The change in other operating income and expenses was mainly due to the positive impact from the sale of digital assets and foreign exchange hedging, as well as a net positive fluctuation in the amount of loss allowances on trade receivables.

Operating profit

Network Infrastructure operating profit was EUR 1 054 million in 2023, a decrease of EUR 48 million, or 4%, compared to EUR 1 102 million in 2022. Network Infrastructure operating margin in 2023 was 13.1%, compared to 12.2% in 2022.

Operating and financial review continued

Mobile Networks

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the segment operating results and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales	9 797	100.0	10 671	100.0	(8)
Cost of sales	(6 364)	(65.0)	(6 575)	(61.6)	(3)
Gross profit	3 433	35.0	4 096	38.4	(16)
Research and development expenses	(2 010)	(20.5)	(2 234)	(20.9)	(10)
Selling, general and administrative expenses	(822)	(8.4)	(865)	(8.1)	(5)
Other operating income and expenses	122	1.2	(57)	(0.5)	(315)
Operating profit	723	7.4	940	8.8	(23)

Net sales

Mobile Networks net sales in 2023 were EUR 9 797 million, a decrease of EUR 874 million, or 8%, compared to EUR 10 671 million in 2022. While net sales in Mobile Networks were negatively impacted by foreign exchange rate fluctuations in 2023, the decline mainly reflected weakness in North America which was somewhat offset by strong growth in India. Net sales in North America declined sharply, as customers evaluated their spending amidst macroeconomic uncertainty and depleted their inventories through the year. Strong growth in India was driven by the continuation of 5G deployments and market share expansion in the region. Net sales declined 3% due to foreign exchange rate fluctuations in 2023.

Gross profit

Mobile Networks gross profit in 2023 was EUR 3 433 million, a decrease of EUR 663 million, or 16%, compared to EUR 4 096 million in 2022. Mobile Networks gross margin in 2023 was 35.0%, compared to 38.4% in 2022. The decrease in Mobile Networks gross profit and gross margin largely reflected unfavorable regional mix. In 2023, variable pay accruals within Mobile Networks cost of sales were lower, compared to 2022.

Operating expenses

Mobile Networks research and development expenses were EUR 2 010 million in 2023, a decrease of EUR 224 million, or 10% compared to EUR 2 234 million in 2022. The lower research and development expenses mainly reflected lower variable pay accruals, continued cost control and the positive impact of foreign exchange rate fluctuations, which largely offset the impact of inflation.

Mobile Networks selling, general and administrative expenses were EUR 822 million in 2023, a decrease of EUR 43 million, or 5%, compared to EUR 865 million in 2022. The decrease in Mobile Networks selling, general and administrative expenses mainly reflected lower variable pay accruals, continued cost control and the positive impact of foreign exchange rate fluctuations, which more than offset the impact of inflation.

Mobile Networks other operating income and expenses was an income of EUR 122 million in 2023, a change of EUR 179 million compared to an expense of EUR 57 million in 2022. The change in other operating income and expenses was primarily due to the positive impact from foreign exchange hedging and the sale of digital assets, as well as a net positive fluctuation in the amount of loss allowances on trade receivables.

Operating profit

Mobile Networks operating profit was EUR 723 million in 2023, a decrease of EUR 217 million, compared to EUR 940 million in 2022. Mobile Networks operating margin was 7.4% in 2023 compared to 8.8% in 2022.

Operating and financial review continued

Cloud and Network Services

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the segment operating results and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales	3 220	100.0	3 351	100.0	(4)
Cost of sales	(1 944)	(60.4)	(2 011)	(60.0)	(3)
Gross profit	1 276	39.6	1 340	40.0	(5)
Research and development expenses	(577)	(17.9)	(577)	(17.2)	—
Selling, general and administrative expenses	(494)	(15.3)	(544)	(16.2)	(9)
Other operating income and expenses	50	1.6	(42)	(1.3)	(219)
Operating profit	255	7.9	177	5.3	44

Net sales

Cloud and Network Services net sales in 2023 were EUR 3 220 million, a decrease of EUR 131 million, or 4%, compared to EUR 3 351 million in 2022. In addition to the negative impact from foreign exchange fluctuations, net sales in Cloud and Network Services reflected growth in Enterprise Solutions and Core Networks which was more than offset by declines in Cloud and Cognitive Services and Business Applications. Net sales declined 3% due to foreign exchange rate fluctuations in 2023.

Gross profit

Cloud and Network Services gross profit in 2023 was EUR 1 276 million, a decrease of EUR 64 million, or 5%, compared to EUR 1 340 million in 2022. Cloud and Network Services gross margin in 2023 was 39.6%, compared to 40.0% in 2022. The decrease in Cloud and Network Services gross profit reflected the mix shift from software sales towards lower margin hardware sales in the first half of the year, somewhat offset by lower variable pay accruals in 2023 compared to 2022.

Operating expenses

Cloud and Network Services research and development expenses were EUR 577 million in 2023, flat compared to EUR 577 million in 2022. The flat research and development expenses largely reflected lower variable pay accruals in 2023 compared to 2022, the positive impact of foreign exchange rate fluctuations and continued discipline on cost control which offset the impact of inflation.

Cloud and Network Services selling, general and administrative expenses were EUR 494 million in 2023, a decrease of EUR 50 million, or 9%, compared to EUR 544 million in 2022. The decrease in Cloud and Network Services selling, general and administrative expenses largely reflected lower variable pay accruals in 2023 compared to 2022, the positive impact of foreign exchange rate fluctuations and continued discipline on cost control which offset the impact of inflation.

Cloud and Network Services other operating income and expenses was an income of EUR 50 million in 2023, a change of EUR 92 million compared to an expense of EUR 42 million in 2022. The change in other operating income and expenses was primarily due to the positive impact from foreign exchange hedging and the sale of digital assets.

Operating profit

Cloud and Network Services operating profit was EUR 255 million in 2023, an increase of EUR 78 million, compared to EUR 177 million in 2022. Cloud and Network Services operating margin in 2023 was 7.9% compared to 5.3% in 2022.

Operating and financial review continued

Nokia Technologies

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the segment operating results and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales	1 085	100.0	1 595	100.0	(32)
Cost of sales	—	—	(5)	(0.3)	(100)
Gross profit	1 085	100.0	1 590	99.7	(32)
Research and development expenses	(224)	(20.6)	(214)	(13.4)	5
Selling, general and administrative expenses	(140)	(12.9)	(136)	(8.5)	3
Other operating income and expenses	13	1.2	(32)	(2.0)	(141)
Operating profit	734	67.6	1 208	75.7	(39)

Net sales

Nokia Technologies net sales in 2023 were EUR 1 085 million, a decrease of EUR 510 million, or 32%, compared to EUR 1 595 million in 2022. The decrease in Nokia Technologies net sales was primarily due to a significant one-off that benefited 2022, which related to an option exercised within a long-term license, as well as catch-up net sales in 2022 related to new deals signed in the same year. Net sales in 2023 were also impacted by lower net sales from a smartphone vendor whose market share has meaningfully declined and the lower net sales from a license that expired at the end of the third quarter 2023, which were somewhat offset by catch-up net sales related to deals signed in the second quarter of 2023.

Gross profit

Nokia Technologies gross profit in 2023 was EUR 1 085 million, a decrease of EUR 505 million, or 32%, compared to EUR 1 590 million in 2022. The lower gross profit in Nokia Technologies was due to lower net sales.

Operating expenses

Nokia Technologies research and development expenses in 2023 were EUR 224 million, an increase of EUR 10 million, or 5%, compared to EUR 214 million in 2022. The increase in Nokia Technologies research and development expenses was primarily due to higher investments to drive creation of intellectual property.

Nokia Technologies selling, general and administrative expenses in 2023 were EUR 140 million, an increase of EUR 4 million, or 3%, compared to EUR 136 million in 2022.

Nokia Technologies other operating income and expenses in 2023 was an income of EUR 13 million, a change of EUR 45 million compared to an expense of EUR 32 million in 2022. The change in other operating income and expenses was primarily related to the reversal of loss allowance on certain trade receivables recorded in 2022 and the positive impact from hedging.

Operating profit

Nokia Technologies operating profit in 2023 was EUR 734 million, a decrease of EUR 474 million, or 39%, compared to an operating profit of EUR 1 208 million in 2022. The decrease in Nokia Technologies operating profit was primarily related to lower net sales, partially offset by a net positive fluctuation in other operating income and expenses. Nokia Technologies operating margin in 2023 was 67.6% compared to 75.7% in 2022.

Operating and financial review continued

Group Common and Other

For the year ended 31 December 2023 compared to the year ended 31 December 2022

The following table sets forth the operating results for Group Common and Other, and the percentage of net sales for the years indicated.

	2023		2022		Year-on-year change %
	EURm	% of net sales	EURm	% of net sales	
Net sales	130	100.0	295	100.0	(56)
Cost of sales	(136)	(104.6)	(307)	(104.1)	(56)
Gross profit	(6)	(4.6)	(12)	(4.1)	(50)
Research and development expenses	(120)	(92.3)	(117)	(39.7)	3
Selling, general and administrative expenses	(216)	(166.2)	(226)	(76.6)	(4)
Other operating income and expenses	(49)	(37.7)	37	12.5	(232)
Operating loss	(391)	(300.8)	(318)	(107.8)	23

Net sales

Group Common and Other net sales in 2023 were EUR 130 million, a decrease of EUR 165 million, or 56%, compared to EUR 295 million in 2022. The decrease in Group Common and Other net sales was related to reduced net sales from Radio Frequency Systems, mainly driven by the divested business carved out during 2023.

Gross profit

Group Common and Other gross profit in 2023 was negative EUR 6 million, compared to negative EUR 12 million in 2022. Group Common and Other gross margin in 2023 was negative 4.6% compared to negative 4.1% in 2022.

Operating expenses

Group Common and Other research and development expenses in 2023 were EUR 120 million, an increase of EUR 3 million, or 3%, compared to EUR 117 million in 2022.

Group Common and Other selling, general and administrative expenses in 2023 were EUR 216 million, a decrease of EUR 10 million, or 4%, compared to EUR 226 million in 2022. In 2023, variable pay accruals within Group Common and Other selling, general and administrative expenses were lower, compared to 2022.

Group Common and Other other operating income and expense in 2023 was an expense of EUR 49 million, a net negative fluctuation of EUR 86 million compared to an income of EUR 37 million in 2022. The net negative fluctuation in 2023 was primarily related to Nokia's venture fund investments. In 2023, Nokia's venture fund investments generated a loss of approximately EUR 70 million, compared to a benefit of approximately EUR 20 million in 2022.

Operating loss

Group Common and Other operating loss in 2023 was EUR 391 million, a change of EUR 73 million, compared to an operating loss of EUR 318 million in 2022. The change in Group Common and Other operating loss was primarily attributable to the lower other operating income somewhat offset by lower selling, general and administrative expenses.

Operating and financial review continued

Liquidity and capital resources

Financial position

At 31 December 2023, our cash and cash equivalents equaled EUR 6 234 million, an increase of EUR 767 million compared to EUR 5 467 million as of 31 December 2022. The increase was primarily attributable to net cash inflow from operating activities of EUR 1 317 million and net cash inflow related to interest-bearing financial investments of EUR 1 527 million, offset by capital expenditure of EUR 652 million, net cash outflow related to long-term borrowings of EUR 302 million, payment of principal portion of lease liabilities of EUR 239 million, dividends of EUR 621 million and share repurchases of EUR 300 million.

At 31 December 2023, our total cash and interest-bearing financial investments⁽¹⁾ equaled EUR 8 514 million, a decrease of EUR 730 million, compared to EUR 9 244 million as of 31 December 2022. The decrease was primarily attributable to the same factors as the ones that contributed to the increase in cash and cash equivalents except for the net cash inflow related to interest-bearing financial investments of EUR 1 527 million.

At 31 December 2023, our net cash and interest-bearing financial investments⁽¹⁾ equaled EUR 4 323 million, a decrease of EUR 444 million, compared to EUR 4 767 million as of 31 December 2022. The decrease was mainly attributable to capital expenditure of EUR 652 million, payment of the principal portion of the lease liabilities of EUR 239 million, dividends of EUR 621 million and share repurchases of EUR 300 million, offset by net cash inflow from operating activities of EUR 1 317 million.

(1) Non-IFRS measures. For the definition and reconciliation of non-IFRS measures to the most directly comparable IFRS measures, refer to the "Alternative performance measures" section.

Cash flow

The cash inflow from operating activities in 2023 was EUR 1 317 million, a decrease of EUR 157 million compared to a cash inflow of EUR 1 474 million in 2022. The decrease was primarily attributable to a decrease in net profit, adjusted for non-cash items, of EUR 328 million, a decrease of EUR 575 million compared to EUR 3 813 million in 2022, partially offset by a decrease in cash tied-up to net working capital of EUR 1 282 million in 2023 compared to EUR 1 843 million cash tied-up in 2022. The primary drivers for the decrease in cash tied-up to net working capital compared to 2022 were related to a decrease in inventories of EUR 443 million compared to an increase of EUR 991 million in 2022, and a decrease in receivables of EUR 304 million compared to an increase in receivables of EUR 451 million in 2022. These were partially offset by a decrease in liabilities of EUR 2 029 million compared to a decrease of EUR 401 million in 2022. The decrease in liabilities during 2023 was primarily attributable to a decrease in trade payables, a decrease in liabilities related to variable pay, and restructuring and associated cash outflows, partially offset by an increase in contract liabilities.

In 2023, the cash inflow from operating activities included paid taxes of EUR 576 million, an increase of EUR 195 million compared to EUR 381 million in 2022, interest received of EUR 178 million compared to EUR 65 million in 2022 and interest paid of EUR 241 million compared to EUR 180 million in 2022.

The cash inflow from investing activities was EUR 1 043 million in 2023, compared to a EUR 1 880 million cash outflow in 2022. Cash inflow from investing activities was primarily driven by net cash inflow of EUR 1 527 million of interest-bearing financial investments in 2023 compared to net cash outflow of EUR 1 198 million in 2022, partially offset by cash outflow due to the capital expenditure of EUR 652 million in 2023 compared to EUR 601 million in 2022 and net cash outflow from other non-current financial assets of EUR 49 million compared to EUR 66 million in 2022.

Major items of capital expenditure in 2023 included investments in R&D equipment, test equipment, hardware for telecommunication and cloud environment, repair or improvements of sites, shipyards and vessels.

In 2023, the cash outflow from financing activities was EUR 1 502 million, compared to a EUR 837 million cash outflow in 2022. The cash outflow was driven by repayments of long-term borrowings of EUR 798 million, dividend payments of EUR 621 million, share repurchases of EUR 300 million and payments of the principal portion of lease liabilities of EUR 239 million, partially offset by proceeds from long-term borrowings of EUR 496 million. In 2022, the cash outflow was driven by dividend payments of EUR 353 million, share repurchases of EUR 300 million and payments of the principal portion of lease liabilities of EUR 217 million.

Operating and financial review continued

Financial assets and debt

At 31 December 2023, our net cash and interest-bearing financial investments⁽¹⁾ equaled EUR 4 323 million consisting of EUR 8 514 million in total cash and interest-bearing financial investments⁽¹⁾, and EUR 4 191 million of long-term and short-term interest-bearing liabilities.

We hold our total cash and interest-bearing financial investments⁽¹⁾ predominantly in euro. Our interest-bearing financial investments mainly include high-quality money market and fixed income instruments with strict maturity limits and diversified counterparty risk limits. We also have a EUR 1 500 million revolving credit facility available for liquidity purposes. The facility has no financial covenants and remains undrawn.

At 31 December 2023, our interest-bearing liabilities consisted of EUR 378 million notes due in 2024, EUR 292 million notes due in 2025, EUR 500 million R&D loan from the European Investment Bank maturing in 2025, EUR 167 million R&D loan from the Nordic Investment Bank with final maturity in 2025, EUR 630 million notes due in 2026, USD 500 million notes due in 2027, EUR 500 million notes due in 2028, USD 74 million notes due in 2028, USD 206 million notes due in 2029, EUR 500 million notes due in 2031, USD 50 million notes due in 2039, and EUR 110 million of other liabilities. The EUR notes maturing in 2024, 2025, 2026, 2028 and 2031 as well as the USD notes maturing in 2027 and 2039, are issued by Nokia Corporation, while the USD notes maturing in 2028 and 2029 are issued by Lucent Technologies Inc., a predecessor to Nokia of America Corporation (Nokia's wholly-owned subsidiary, formerly known as Alcatel-Lucent USA Inc.). The loans from the Nordic Investment Bank and from the European Investment Bank are drawn by Nokia Corporation. For more information on our interest-bearing liabilities, refer to Note 5.2. Financial assets and liabilities, of our consolidated financial statements.

In June 2021, we exercised our option to extend the maturity date of the EUR 1 500 million revolving credit facility. Subsequent to the extension, EUR 1 412 million of the facility has its maturity in June 2026 and EUR 88 million of the facility has its maturity in June 2024.

We consider that with EUR 8 514 million of total cash and interest-bearing financial investments⁽¹⁾ and with our undrawn revolving credit facility, we have sufficient funds to satisfy our future working capital needs, capital expenditure, R&D investments, structured finance, venture fund commitments, acquisitions and debt service requirements, at least through 2024.

We further consider that with our current credit ratings of BBB- by S&P Global Ratings, Ba1 by Moody's, and BBB- by Fitch, we have access to the capital markets should any funding needs arise in 2024.

We aim to maintain investment grade credit ratings.

Off-balance sheet arrangements

There are no material off-balance sheet arrangements that have, or are reasonably likely to have, a current or future effect on our financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors, except for the purchase obligations and lease commitments, as well as guarantees and financing commitments disclosed in Note 6.1. Commitments, contingencies and legal proceedings, and in Note 5.4. Financial risk management, of our consolidated financial statements.

(1) Non-IFRS measures. For the definition and reconciliation of non-IFRS measures to the most directly comparable IFRS measures, refer to "Alternative performance measures" section.

Venture fund investments and commitments

We make financing commitments to a number of unlisted venture funds that make technology-related investments. The majority of the investments are managed by NGP Capital, a global venture capital firm backing exceptional entrepreneurs driving the convergence of the physical and virtual world.

As of 31 December 2023, our venture fund investments equaled EUR 784 million, compared to EUR 828 million as of 31 December 2022. For more information on the fair value of our venture fund investments, refer to Note 5.2. Financial assets and liabilities, of our consolidated financial statements.

As of 31 December 2023, our venture fund commitments equaled EUR 381 million, compared to EUR 433 million as of 31 December 2022. As a limited partner in venture funds, we are committed to capital contributions and entitled to cash distributions according to the respective partnership agreements and underlying fund activities. For more information on venture fund commitments, refer to Note 6.1. Commitments, contingencies and legal proceedings, of our consolidated financial statements.

Treasury policy

Treasury activities are governed by the Nokia Treasury Policy approved by the President and CEO within the authority granted by the Board of Directors and supplemented by operating procedures approved by the CFO, covering specific areas such as foreign exchange risk, interest rate risk, credit risk and liquidity risk. The objective of treasury's liquidity and capital structure management activities is to ensure that we have sufficient liquidity to go through unfavorable periods without being severely constrained by the availability of funds to execute Nokia's business plans and implement Nokia's long-term business strategy. We are risk-averse in our treasury activities.

Operating and financial review continued

Foreign exchange impact

We are a company with global operations and net sales derived from various countries, invoiced in various currencies. Therefore, our business and results from operations are exposed to changes in exchange rates between the euro, our reporting currency, and other currencies, such as the US dollar. The magnitude of foreign exchange exposures changes over time as a function of our net sales and costs in different markets, as well as the prevalent currencies used for transactions in those markets. Significant changes in exchange rates may also impact our competitive position and related price pressures through their impact on our competitors.

To mitigate the impact of changes in exchange rates on our results, we hedge material net foreign exchange exposures (net sales less costs in a currency) typically with a hedging horizon of approximately 12 months. For the majority of these hedges, hedge accounting is applied to reduce income statement volatility.

In 2023, approximately 25% of Group net sales and 30% of total costs were denominated in euros, and approximately 50% of Group net sales and 45% of total costs were denominated in US dollars. In 2022, approximately 5% of Group net sales and total costs were denominated in Chinese yuan and approximately 5% of Group net sales and total costs were denominated in Indian rupee.

The average currency mix for Group net sales and total costs:

Currency	2023		2022	
	Net sales	Total costs	Net sales	Total costs
EUR	~25%	~30%	~25%	~25%
USD	~50%	~45%	~50%	~50%
CNY	~5%	~5%	~5%	~5%
INR	~5%	~5%	~0%	~5%
Other	~15%	~15%	~20%	~15%
Total	~100%	~100%	~100%	~100%

For the full year 2023 compared to the previous year, the US dollar was weaker against the euro. The weaker US dollar in 2023 on a year-on-year basis had a negative impact on our net sales reported in euros. However, the weaker US dollar also contributed to slightly lower costs of sales and operating expenses on a year-on-year basis. In total, before hedging, the weaker US dollar on a year-on-year basis had a slightly negative effect on our operating profit in 2023.

For a discussion of the instruments used by us in connection with our hedging activities, refer to Note 5.4. Financial risk management, of our consolidated financial statements. Refer also to the "Risk factors" section.

Sustainability and corporate responsibility

Sustainability and corporate responsibility

We believe that the positive impact of the technology we create provides our greatest contribution to realizing the United Nations Sustainable Development Goals (SDGs) and outweighs potential negative impacts of the technology.

Our purpose is to create technology that helps the world act together. We believe that digitalization and enhanced connectivity will play an increasingly significant role in helping industries and economies decarbonize while enabling a more inclusive society. These technology enablers are critical to achieving the Sustainable Development Goals of 2030 .

We see the potential of digital technologies to create a more sustainable, productive, and accessible world. At Nokia, we take a two-pronged approach to sustainability. First, we minimize our potentially negative environmental and value chain impact – our “footprint”. Second, we maximize our potentially positive environmental impact on industries and economies as well as our social impact in the communities we operate in – our “handprint”. We believe that our potential handprint far outweighs our current footprint. Industry studies such as the GSMA study on the impact of mobile communications technologies on carbon emission reductions, have shown the potential of digitalization and enhanced connectivity on several industrial sectors and consumers.

A critical component of Nokia’s sustainability approach also rests on our focus on governance and culture. We maintain robust policies, processes, and management systems across our value chain to align with regulation and global frameworks.

Our strategy, purpose, and targets

Our approach to sustainability is built on our company’s purpose – to create technology that helps the world act together. In 2023, Nokia took a step forward in embedding sustainability into our corporate strategy by announcing the ambition to develop ESG as a competitive advantage, integrated into Nokia’s 2030 Technology Vision and continued to deliver on it as part of our company purpose. Our sustainability initiatives and approaches in 2023 were built on our existing impact materiality matrix.

Nokia’s sustainability strategy is based on topics where we believe we can have the greatest impact on ESG risks and opportunities. The five pillars of our sustainability strategy are shown in the following diagram.

5 ESG pillars



Sustainability and corporate responsibility continued

For the **environment**, we emphasize two areas: climate and circularity. For climate, we look to be the leader in energy efficiency in silicon, software, and systems, providing the networks and operations skills to scale smart energy solutions. We also intend to accelerate our first mover ambition in energy efficiency in 5G-Advanced and 6G through early engagement in standardization and ecosystem development. For circularity, we focus on opportunities to promote hardware circularity and manage the sourcing and reuse of key source materials.

Industrial digitalization provides the opportunity to sustainably transform physical industries and cities through digitalization and connectivity. Our offering for industries and cities can enable decarbonization, resource efficiency, and improved safety. We are excited by the opportunities in digitalization enablement, cloud-based service delivery and partnership-driven use case solutions to enable net zero in key industries.

Security and privacy are positioned as the cornerstone of our product proposition. Product development follows the "Design for Security" methodology, and Nokia's security team partners with our customers to build and maintain secure networks, compliant with national regulations for critical telecom infrastructure.

We aim to **bridge the digital divide** using our broad product portfolio across terrestrial and non-terrestrial networks and focused partnering to address different demographics through digital skill building. Connectivity, combined with digital skills, enables increased equality of access to healthcare, education and employment for individuals and the opportunity to participate in the digital economy for small businesses.

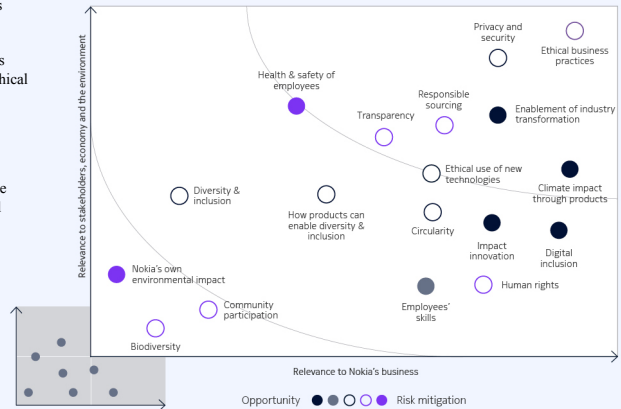
In **responsible business** we work to ensure our business practices are aligned to our ethical and responsible values across our value chain. We collaborate closely with customers and suppliers to engage on systemic issues related to the environment, health and safety, mitigating the misuse of technology (and advocating for responsible AI principles), ethics, human rights and working conditions, as well as focusing on diversity, equity and inclusion in Nokia's own workforce.

Our materiality matrix

In 2023, our sustainability approach was based on our existing impact materiality assessment, which was completed in 2022. The following diagram shows the top-right quadrant of the impact materiality assessment matrix, which displays the topics identified through the assessment as most relevant to our business and stakeholders, the economy and the environment in 2023. Of these, the most important topics for Nokia are:

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

Climate, ethical business practices, and how Nokia's products can enable change in other industries, cities and society continued to be among the most material topics. The most significant growth in importance among stakeholders was seen in privacy and security, responsible sourcing and circularity.



Sustainability and corporate responsibility continued

Sustainable Development Goals

The United Nations SDGs and their targets remain a key framework for our sustainability work. SDGs 8, 9 and 13 are the most material for our business and reflect the areas in which we can have the greatest positive impact. We believe that digitalization and enhanced connectivity will continue to play a critical role in accelerating and achieving all 17 SDGs. Here are examples of how the work we do actively contributes to our most material SDGs.



Promote inclusive and sustainable economic growth, employment and decent work

In 2023, Nokia deployed the Rural Connect Solution in Middle East and Africa to connect the unconnected and bridge the coverage gap in remote areas of sub-Saharan Africa. The solution takes a new approach to evolving radio access network sites with a focus on reducing energy consumption. It incorporates baseband units with AirScale power rectifiers and long-lasting lithium batteries in a compact, portable package that can be installed almost anywhere.

Nokia is collaborating with UNICEF to bridge the digital divide by helping to improve digital education and training in schools in select parts of Senegal, West Africa. The principal beneficiaries are teachers, as well as middle school students in underserved areas. The scope of work includes specific sessions on digital skills, as well as upgrading equipment and connectivity.



Build resilient infrastructure, promote sustainable industrialization and foster innovation

In 2023, Nokia partnered with DXC Technology, to launch DXC Signal Private LTE and 5G, a managed secure private wireless network and digitalization platform solution that helps industrial enterprises digitally transform their operations, especially in key market segments including manufacturing, energy, healthcare, logistics, transportation, and education.

During the year we also announced that we will work with US energy provider Xcel Energy to help modernize grid operations. The project will include the deployment of Nokia private LTE network technology, helping support secure, reliable data connectivity and new levels of automation. The network technologies will back a growing mix of renewable power sources for Xcel Energy and optimize the delivery of electricity to its millions of customers.



Take urgent action to combat climate change and its impacts

In 2023, Nokia announced a new update in its optics portfolio with the sixth-generation super-coherent photonic service engine, PSE-6s, which can reduce network power consumption in optical transport by up to 60% per bit. We also announced Habrok massive MIMO radios, which offer improved energy efficiency by using up to 30% less energy through a combination of software, hardware and services.

During the year we also communicated that we helped Vietnamese communications service provider MobiFone achieve overall energy savings of almost 14% in the first trial of our new Digital Design service. The service analyzes each individual cell in the network and recommends the most appropriate radio link power balance to reduce transmit power.

Nokia joined with Orange under the Switch to Circular Economy Value Chains initiative, run by UNIDO (United Nations Industrial Development Organization). The project aims to support corporates in accelerating their circularity efforts, including with their partners in developing countries. Nokia will work closely with Orange to further develop circular approaches in network equipment, including setting up a new refurbishment and repair center in Egypt, which will extend the lifetime of Nokia products.



Sustainability and corporate responsibility continued

Key sustainability targets

Our ESG targets are determined based on our sustainability strategy and material topics and are distributed across short, medium and long term. The key targets are listed in the table below which shows progress against selected targets.

Progress against select ESG targets in 2023

Strategic focus area	Target year	Base year	Target	2023 results	Status
Environment					
Climate	2030	2019	Our science-based target (SBT ⁽¹⁾): 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 34 319 800 tons CO ₂ e, ⁽²⁾ which is a 9% decrease from 2022. Despite this decrease, our current SBT emissions are now at the same level as the 2019 baseline year. This means that the 2030 SBT is still not on track with a linear reduction trajectory. While we continue to accelerate innovations in product energy efficiency and supplier collaboration, the availability and take-up of renewable energy by Nokia's customers must rapidly increase to support the achievement of the interim target.	Not on track
	2030	2019	Our final assembly suppliers reach zero emissions by 2030.	Our final assembly suppliers' emissions were 38 500 tons CO ₂ e, which is a 49% reduction from 2019.	On track
	2030	2019	Our suppliers reduce GHG emissions by 50% by 2030. ⁽³⁾	Our suppliers' emissions were 540 500 tons CO ₂ e, which is a 82% reduction from 2019. However, as this includes emissions data from hundreds of suppliers and the quality of allocated emissions data has been of concern, we are conscious that some of the reductions may be due to the quality of the data reported.	On track
	2030	2019	Our logistics' GHG emissions reduced by 73% by 2030.	Our logistics emissions were 140 900 tons CO ₂ e, which is a 54% decrease from 2019.	On track
	2023	N/A	Reach 75% renewable electricity in our own facilities.	Reached 75% renewable electricity in our own facilities.	Achieved
	2023	2019	Reach 65% reduction of our facilities' GHG emissions compared to 2019.	Reached 69% reduction of our facilities' GHG emissions.	Achieved
Circularity	2030	2019	95% circularity rate for waste from our offices, labs, manufacturing, installation and product takeback by 2030.	We have recognized areas where a high circularity rate has already been achieved and also areas requiring further action. There are still data gaps to be closed but data accuracy has increased. Annual waste circularity outcome for 2023 was 86%.	On track
Bridging the digital divide					
Connecting the unconnected and underserved	2030	2021	Helping our customers to connect the next 2 billion measured by number of subscriptions in Nokia radio customers' networks by 2030.	In line with Nokia's long term goal, we work with our customers to provide broadband based digital services on more subscriptions. The number of mobile broadband subscriptions in Nokia radio customers' networks has increased from 2022 to the end of 2023 by 372 million (2022-2023: 772 million) ⁽⁴⁾ .	On track
	2025	2021	Harness Nokia technology, capabilities and funds to improve the lives of 1 500 000 through social digitalization projects, digital skills building, and connecting the unconnected or underserved by 2025 ⁽⁵⁾ .	We reached 130 832 reported direct beneficiaries ⁽⁶⁾ through social digitalization projects, building digital skills, connecting the unconnected or underserved and improving inclusion, equity and diversity. The current total reported direct beneficiaries for 2022 and 2023 were 691 534.	On track

Sustainability and corporate responsibility continued

Strategic focus area	Target year	Base year	Target	2023 results	Status
Security and privacy					
Security and privacy	2023	N/A	95% mandatory training completion related to privacy.	In 2023, the mandatory training completion rate was 98%.	Achieved
Responsible Business					
Health & safety	2030	2016	100% of suppliers delivering high-risk activity to meet "H&S preferred supplier" status (score 4 or more out of 5) in our Health & Safety Maturity Assessment.	18% of relevant suppliers met H&S "Preferred" supplier status. To reach the 2030 target, Nokia continues to work with our supplier base, engaging and promoting the supplier safety competences, offering safety training and setting supplier workshops in order to improve supplier Health and Safety awareness and capability.	On track
	2023	N/A	Zero critical or fatal incidents for employees and suppliers.	In 2023, there were zero work-related fatal incidents involving employees. However, we regret three work-related fatal incidents resulting in the death of one contractor/ subcontractor and two third-parties. ⁽⁷⁾	Not achieved
Inclusion & diversity	2023	N/A	Reach a minimum of 27% female hires in global external recruits.	28% of external recruits were women. We achieved the 2023 target via increased marketing, communication and talent attraction activities to make Nokia's employer brand stand out for diversity-friendly employment policies and attract diverse talent.	Reached
Ethics & compliance	2030	2016	Maintain 85% favorability of employee/line manager engagement on ethics and compliance.	In 2023, 85% of employees said that their line manager talked to the team about the importance of ethics and compliance.	Achieved
	2023	N/A	Ethical Business Training completed by 95% of employees.	98% of employees completed Ethical Business Training.	Achieved
Responsible sourcing	2025	N/A	98% 3TG traceability and conflict-free status to smelter level in our supply chain as well as conflict-free status of the smelters. Extended due diligence and conflict-free status of cobalt, mica and two additional minerals.	As of 2023, we have achieved 81% traceability to the smelter level in our supply chain as well as conflict-free status of the smelters. We have also extended and conducted due diligence for cobalt and mica and mapped the supply chains for additional minerals. For those due-diligence will follow in the next years.	On track
	2025	2020	80% of suppliers achieve satisfactory sustainability score (based on aggregated weighted share) from supplier performance evaluation (based on Corporate Responsibility onsite audit programs, EcoVadis, CDP, Conflict minerals).	80% of suppliers, on average, received a satisfactory sustainability score in our assessment programs.	On track

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

(2) CO₂e = carbon dioxide equivalents.

(3) Refers to our material suppliers.

(4) Source: GSMA Intelligence.

(5) Improving lives refers to increased digital connectivity and inclusion for 1 500 000 people.

(6) Individuals that independent from any relationship with the company were directly benefited by Nokia's contributions or activities related to digital connectivity and inclusion directly resulting from them.

(7) Nokia has revised its fatality-reporting criteria in 2023, to include third parties such as members of the public who are assessed as being impacted by an incident that is deemed within Nokia's control. This more closely aligns Nokia's reporting with some of its closest industry stakeholders and competitors.

Sustainability and corporate responsibility continued

Sustainability governance

The Board of Directors evaluates Nokia's ESG practices, related risks and target setting, as well as their implementation and effectiveness across the Company. In 2023, the Board reviewed Nokia's sustainability strategy and targets, evolving ESG requirements and expectations, investor feedback, disclosure approach, net zero strategy and roadmap.

In addition, the Board's committees monitor environmental and social developments and activities in the Company in their respective areas of responsibilities. The Chief Corporate Affairs Officer has overall responsibility for sustainability in the Group Leadership Team.

In line with our mode of operation, the Group Leadership Team approves our sustainability-related strategy, overall targets and operational frameworks, within which corporate functions and business groups can operate. This enables accountable and empowered business groups while maintaining appropriate strategic and operative oversight.

Internal councils and committees, such as the Sustainability Council, are used to steer, align and ensure the implementation of these strategies, targets and frameworks and review recommendations to the Group Leadership Team.

Our overall sustainability governance framework and responsibilities are shown in the opposite diagram.

Nokia Board of Directors

- Approves ESG strategy and evaluates ESG practices, related risks and target setting as well as their implementation and effectiveness.
- Specific sustainability topics are reviewed by Board Committees based on their responsibilities, including ESG reporting, materiality assessment, ethics and compliance, cybersecurity, privacy, culture, human capital management and embedding sustainability in our technologies.

Group Leadership Team

- Reviews and approves implementation of and changes to sustainability-related policies, management and operational frameworks, strategy, targets and performance, annual sustainability report and links to rewarding.
- Conducts sustainability review and provides feedback a minimum two times per year and as topic-specific areas require
- CEO, CFO and business group presidents review additional sustainability topics a minimum of 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 all business groups, Customer Experience, Corporate Affairs, People, Finance, Strategy and Technology and Legal and Compliance. Convened ten times in 2023.

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, VP Technology Leadership, Chief Compliance Officer, Head of Customer Experience Finance. Convened once in 2023.

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. Did not convene in 2023⁽¹⁾.

Human Rights Due Diligence Council

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

Members

Chief Legal Officer, Chief Corporate Affairs Officer, Chief Compliance Officer, VP Sustainability, VP Technology Leadership, other senior leaders per need. Head of Human Rights, and Legal Counsel. Convened twice in 2023.

ESG function

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

Ethics and Compliance function

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

(1) Due to reorganization the Inclusion and Diversity Steering Committee did not meet during 2023 and the Sustainability governance model will be reviewed and updated in 2024.

Sustainability and corporate responsibility continued

Risk management

Sustainability-related risks and opportunities are part of our Enterprise Risk Management framework. We recognize and aim to mitigate the potential risks and negative impacts associated with our business whether related to technology, supply chains, the climate or people, while also driving opportunities within and beyond our business to contribute to achieving the UN SDGs. We have policies and processes for our identified material sustainability-related risks, including our Code of Conduct which reflects our values through clear and simple directions on ways of working for all employees and business partners. The main features of our risk management systems are described as part of our corporate governance statement (see Corporate Governance Statement—Risk management, internal control and internal audit functions at Nokia). The “Risk factors” section of this report discusses the most important risk factors affecting our operations. These risks include sustainability-related issues such as:

- product safety and energy efficiency;
- environmental incidents;
- people safety and security;
- privacy and security, including cybersecurity threats
- potential human rights abuse through misuse of the technology we provide;
- potential lack of proper respect for human rights, fair labor conditions, the environment and supply chains;
- non-compliance with regulations or our supplier and customer requirements;
- violation of ethical standards, including our Code of Conduct;
- labor unrest and strikes;
- inability to retain, motivate, develop and recruit appropriately skilled employees;
- public harm to our brand;
- issues with trade tariffs and taxation, including tax disputes; and
- disruptions in our manufacturing, service creation, delivery, logistics or supply chain caused, for instance, by natural disasters, military actions, civil unrest, public health, and safety threats (including disease outbreaks), many of which may be fueled by the adverse effects resulting from climate change.



How these risks are managed, including related key policies and actions, is further discussed in the following paragraphs, in the context of the relevant topics

Sustainability recognitions

We respond to key ratings and ranking organizations to drive greater transparency and external recognition of our work.

For example, for 2023, we were assessed by Sustainalytics to be at low risk of experiencing material financial impacts from ESG factors. In early 2024, we were included in Sustainalytics' 2024 ESG Top-Rated Companies list. The ESG Risk Ratings by Sustainalytics provide information for investors

assessing financially material ESG issues that affect the long-term performance of their investments.

In the MSCI ESG Ratings assessment, we received a rating of AAA (on a scale of AAA–CCC). The MSCI ESG Ratings are used by investors to measure companies' resilience to long-term, financially relevant ESG risks.

Further information on all our recognitions can be found on our website.



Environment

This section covers how we address our own environmental footprint, including our focus on both climate and circularity. We strive to minimize our footprint across Scope 1, 2 and 3 by actively and continually managing that footprint. As the volume of network traffic rises in a more connected, digitalized world, we must work to separate this growth in traffic from any equivalent growth in energy consumption. We also need to constantly strive to reduce GHG emissions across our operations and facilities, and work with our supply chain to help drive greater energy and resource efficiency through the whole chain. We believe our technology will play an ever-more significant role in helping other industries and society decarbonize (see the “Industrial digitalization” section of this report).

Climate

Climate change remains a significant risk to society and the natural environment. It can negatively impact our supply chain and our customers’ business, as well as the global economy and political and social stability.

We recognize that the products and services we provide globally may affect the environment and climate as manufacturing, distributing, and operating these products requires energy and other natural resources. In 2023, 97% of our GHG emissions footprint came from our products in use by our customers in their networks. We can impact our footprint by constantly improving power consumption, increasing energy efficiency, and innovating where possible.

We continue to also innovate in terms of the silicon, software and hardware we develop. During the year some of those innovations included:

- MantaRay Energy, a solution for RAN energy efficiency, combines Nokia’s capabilities to optimize the energy consumption of radio access networks with AI and ML
- An expanded portfolio of energy-efficient site solutions designed for our AirScale baseband portfolio
- A new update to our optics portfolio with launch of the sixth-generation super-coherent photonic service engine (PSE-6s)

GHG emissions from our own operations account for only 1% of Nokia’s total carbon emissions, but we remain committed to decarbonizing our operational footprint.

We are a member of the RE100 initiative aligned with our global ambition to use 100% renewable electricity across our facilities by 2025. In 2023, we reached our annual target of 75% of renewable electricity across our facilities.

Our commitment to climate action was further validated through Nokia’s Sustainable Finance Framework announced in 2023. This framework was established in accordance with the recommendations of the Sustainability-Linked Bond Principles (SLBP), and the Sustainability Performance Target in the framework is based on Nokia’s science-based target of reduction of absolute GHG emissions across our value chain (Scope 1, 2 and 3) measured in metric tons CO₂e. A second-party opinion for the Framework was provided by Sustainalytics, assessing Nokia’s Sustainability Performance Target as ‘Highly Ambitious’ and the Company’s selected KPI – reduction of absolute GHG emissions across its value chain – as ‘Very Strong’.

As digitalization plays an increasing role in helping industries and communities decarbonize, it is important that we are part of the climate conversation. Our sustainability leadership participated in the New York Climate Week and the UN General Assembly in September 2023, meeting with key UN and climate leaders on the role of technology in environmental and social challenges. In December 2023, Nokia joined Business Finland and other Finnish climate leaders in COP28 (the United Nations Climate Change Conference) to again emphasize the importance of digital solutions in accelerating the response to climate change and supporting industries in which emissions are hard to abate.

Sustainability and corporate responsibility continued

Accelerating our climate ambition

In 2023, Nokia collaborated with the Carbon Trust to investigate how to accelerate its net zero targets and the related pathway and levers. The Carbon Trust partners with leading businesses, governments and financial institutions to help turn their climate ambition into climate action. In December 2023, the Group Leadership Team approved the plan to fast-forward both our net zero target (Scope 1, 2 and 3) and our interim 2030 Scope 1 and 2 targets.

- We have set a new long-term target to reach net zero GHG emissions across our value chain ⁽¹⁾ by 2040
- We also aim to accelerate our existing interim 2030 target to reduce emissions across our own operations, ⁽²⁾ reaching an 83% reduction by 2030
- To ensure its targets are aligned with climate science, Nokia submitted its net zero letter of commitment to the Science Based Targets initiative (SBTi) in February 2024 and will submit the targets themselves for validation

Our key climate achievements in 2023

Our existing SBT is to reduce our total emissions by 50% between 2019 and 2030 across our value chain (Scope 1, 2 and 3) ⁽³⁾. Overall, Nokia's SBT carbon emissions in 2023 saw a reduction of 9% compared to 2022. Our Scope 1 GHG emissions in 2023 increased by 7% to 111 100 tons CO₂e driven by our marine fleet, and our market-based ⁽⁴⁾ Scope 2 emissions reached 84 800 tons CO₂e. By the end of 2023, we had reduced our Scope 2 emissions by 37% compared to 2022. Our Scope 3 emissions included in the SBT were 34 123 900 tons CO₂e in 2023. This represents a reduction of 9% over the previous year.

Despite this decrease, our current SBT emissions are now at the same level as the 2019 baseline year. This means that the 2030 target was not on track with the expected linear trajectory. While we continue to accelerate innovations in product energy efficiency and supplier collaboration, the availability and take up of renewable energy by Nokia's customers must rapidly increase to support the achievement of the interim target.

Climate actions in our value chain

More and more Nokia customers are accelerating their journey towards renewable energy. Therefore, from 2023 onward, we started to collect customer-specific emissions factors from our customers as we believe this could give a better indication of our total Scope 3 category 11 (use of sold products) GHG emissions than just using a GHG Protocol-mandated global emissions factor.

Therefore, in 2023, we also calculated a total Scope 3 category 11 emissions number based on blended emissions factors. The blended emissions factor is a combination of customer-specific emissions factors confirmed by customers, country-average emissions factors and global emissions factors. Our total Scope 3 category 11 emissions based on the 2023 blended emissions factor was 33 691 400 tons CO₂e. In this first year, the blended emissions consist of 5% calculated by customer-specific emission factors, 92% calculated by country-average emission factors and 3% calculated by a global emission factor. Nokia intends to further develop the collection and calculation of customer-specific emissions factors going forward.

We also work with our suppliers to reduce our upstream indirect emissions and to drive circular practice and innovation. In 2023, we continued and enhanced our supplier climate engagement and saw 458 of our key suppliers responding to CDP's request to disclose their climate performance information, while 283 also provided emission reduction targets.

We saw good results from our climate work with our suppliers, with our logistics suppliers achieving a 54% decrease in emissions over the 2019 baseline. Logistics emissions were 140 900 tons CO₂e in 2023. Our final assembly supplier emissions were 38 500 tons CO₂e, which is a 49% reduction from 2019.

In early 2023, we were once again recognized by CDP for our work on climate issues, receiving an A- score for our climate work. We were also included in the CDP's Supplier Engagement Rating Leaderboard, reserved for companies with the highest rating for supplier engagement on climate change. CDP is a global organization that runs a bespoke global rating system for investors, companies, cities, states and regions to disclose their environmental impact.

We also had 247 suppliers responding to the CDP water security questionnaire. We encouraged suppliers to set climate targets aligned to the SBTi and again recognized climate-related innovations as part of our Supplier Diamond Awards program.

- (1) Scope 1, 2 and 3.
- (2) Scope 1 and 2. This includes complete decarbonization of Nokia's car fleet as well as its facilities and marine fleet reductions as aligned with the International Maritime Industry (IMO) decarbonization pathway.
- (3) The current SBT covers the following activities: Scope 1: emissions from our facilities, car fleet and marine fleet own vessels. Scope 2: market-based emissions from purchased energy. Scope 3: emissions from the customer use of sold products (covering almost 100% of our current portfolio) and emissions from logistics, final assembly factories in our supply chain, and marine fleet chartered vessels.
- (4) Market-based method derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims.

Sustainability and corporate responsibility continued

Circularity

We aim to be a driver of circular practices in our industry. We focus on opportunities to promote hardware circularity by managing the sourcing and reuse of key source materials. We build on our existing waste processes and circular products and services offering, proactively increasing the takeback of products from customer modernization projects and end-of-life equipment and increasing the availability and sales of refurbished products.

We also look to increase the use of recycled materials in our products, augmenting the inclusion of recycled plastics, steel, copper, nickel and aluminum in our product design.

Our circularity highlights in 2023

We have a robust environmental management system and environmental policy. At the end of 2023, the coverage of employees within the scope of ISO 14001 certification was 90%.

We introduced our first Sustainable Finance Framework that underscores the importance of ESG within its business and financing structure. We successfully completed an inaugural EUR 500 million sustainability-linked bond.

We announced our sponsorship of a professorship with the University of Jyväskylä in Finland to explore the measurement of our industry's biodiversity impacts.

Our circularity achievements:

In 2023, we achieved 81% tin, tantalum, tungsten and gold traceability and conflict-free status and extended due diligence for cobalt and mica.

We introduced a circular metric to guide our operational circularity journey and to close the material loop. Our target is to be 95% circular with regard to waste in 2030.

As part of our drive for the refurbishment and reuse of our products in 2023, we sent around 2 610 metric tons of old telecommunications equipment for material recycling. Approximately 49 300 units were refurbished for reuse/resell purposes with a total weight of 290 metric tons.

We have a robust environmental management system and environmental policy, supported by documented processes and procedures to ensure their implementation. The system helps us to monitor our progress and identify needed improvements. Our own operational footprint is certified under the ISO 14001 environmental management system standard, and at the end of 2023 the coverage of employees within the scope of that certification was 90%.

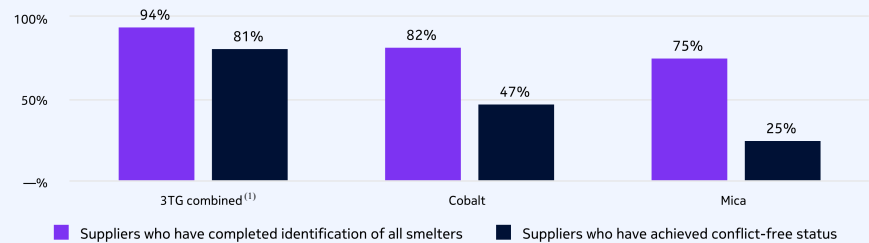
Exploring biodiversity

Biodiversity is of increasing importance for our stakeholders. At Nokia we also look more broadly at our dependence on natural resources, including climate, biodiversity and geological diversity (geodiversity). By geodiversity, we mean the Earth's minerals, rocks, fossils, soils, sediments, landforms, topography and hydrological features such as rivers and lakes. In 2023, we started to work to understand the impacts affecting natural capital (including biodiversity and geodiversity) across our value chain.

As a part of a holistic approach to biodiversity Nokia expanded its forest protection efforts by establishing two new nature conservation areas in Finland. One of these areas covers 71 hectares in Northern Ostrobothnia and the other covers 14 hectares in the Capital Region. In 2023, our total protected area expanded to 242 hectares, comprising 131 hectares of forested areas, 11 islands and 111 hectares of marine environments.

In December, through its University Collaboration engagements Nokia announced a collaboration with the University of Jyväskylä and the Finnish Innovation Fund SITRA to improve biodiversity footprint assessments. The collaboration aims to help organizations develop effective strategies and measures to assess and reduce their biodiversity footprint.

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



(1) 3TG combined shows the 4 minerals together (Tantalum, Tin, Gold and Tungsten), and is core to our reporting



Industrial digitalization

Digitalization and enhanced connectivity are a critical part of the solution to decarbonizing and dematerializing physical industries that significantly contribute to global carbon emissions. This is our handprint – it represents the enablement effect of the technology solutions we provide. We aim to maximize this handprint as it provides our greatest potential impact on climate change.

As part of our strategy, we provide low-latency connectivity, private wireless networks, sensors, and AI/ML as the basis of a “Green Digital” proposition in our enterprise portfolio. We are working within our ecosystem to identify methodologies that better measure the enablement effect and articulate the business case for transformation to accelerate and scale adoption.

Nokia has been a member of the European Green Digital Coalition (EGDC) since 2021. As part of the EGDC, Nokia has contributed to developing methodologies to measure the net environmental impact of digital solutions in different industrial sectors. At Mobile World Congress 2023, Nokia’s Integrated Operations Center smart city project with Nicosia, the capital of Cyprus, was highlighted by the EGDC in their announcement detailing their online case studies.

We work with customers across the energy, manufacturing, and transportation industries among others, providing ever-growing evidence that there is no green without digital. We are considered the leading vendor of private wireless to enterprises, with 710 private wireless customers.

For example, in 2023 Nokia partnered with IT company Kyndryl to enable Dow Company to digitalize the largest integrated chemical manufacturing facility in the western hemisphere in Freeport, Texas, removing paper from the manufacturing and maintenance processes. And in September we launched an array of industrial 5G devices to keep enterprise teams and public safety workers safe, connected and informed over private wireless networks in hazardous and industrial environments such as ports, mines, chemical plants and offshore oil platforms.



Security and privacy

In our ESG strategy we position security and privacy as the cornerstone of our product proposition. We work to ensure a common security baseline enforced for all products and services and accelerate our security strategy ambitions.

Nokia has well-established cybersecurity processes built into its overall security risk management framework. This integration is achieved through the implementation of a robust Security Program set on various processes, such as cybersecurity risk management, third-party security risk management, security incident management and disaster recovery.

In 2023, Nokia conducted a security training program that included annual all-employee mandatory training, quarterly awareness campaigns, monthly phishing simulations, and expanded initiatives to safeguard key data such as our Zero-Trust and Critical Information Protection Program and our dedicated Application Security Program.

We have developed and maintain an actionable Cyber Resilience service, built on an assessment of the cyber risks Nokia is most likely to experience. This includes investments in our Cyber Defense Center and our Computer Emergency Response team, as well as the execution of regular incident simulations and tabletop exercises to ensure resilience in case of a cyber event.

We have also strengthened our third-party security process through improved supplier selection procedures, ensuring that security governance and compliance are embedded in our supplier selection processes and contracts.

Product and Services Security

At Nokia, we recognize the paramount significance of product and services security in the rapidly evolving landscape of telecommunications and technology. In an era marked by digital transformation and interconnected ecosystems, the security of our offerings is crucial to our operations. We understand that our customers rely on Nokia for solutions that not only elevate performance but also guarantee the integrity and confidentiality of their critical data.

We are dedicated to achieving a common security baseline enforced for all products and services. To accelerate our security ambitions, we are reinforcing the Nokia Design for Security framework, driving end-to-end product security testing initiatives like the Advanced Security Testing and Research (ASTaR) Lab, and leveraging our own security innovations .

Secure products are our priority, supported by initiatives such as the Product Security Transformation Program, the pursuit of certifications for essential 5G products, and the evolution of our product security platforms. We have set up Service Security as a separate domain to cover the full-service lifecycle with a properly defined service security framework and we remain focused on the continuous certification of services teams to the ISO 27001 standard. We also have a program dedicated to enhancing the security of Nokia service companies and joint ventures.

Privacy

In privacy, we have established a comprehensive Company-wide privacy program based on respecting privacy rights and exercising high standards of integrity in dealing with – and protecting – personal data, set out in core principles that are based on relevant laws, best practices, and standards. We conduct privacy assessments that aim to mitigate privacy risk in relation to the data we collect, process and store.

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

These processes also include mechanisms to communicate in a timely fashion with supervisory authorities, should that be required. A program of privacy awareness, and general and targeted role-based training, ensures that we continuously and effectively address areas of the highest privacy impact. Our mission is to protect and safeguard personal data in Nokia's possession, and we have a network of certified privacy professionals who regularly provide coaching on privacy .

Sustainability and corporate responsibility continued



Bridging the digital divide

We aim to bridge the digital divide and connect the unconnected through our broadband and innovative connectivity solutions. Our solutions can bring more inclusive access to opportunities and help resolve many social and economic challenges the world faces today.

Nokia aims to bring both our connectivity and digital skills-building solutions to support more inclusive access to healthcare, education, and employment opportunities. We also aim to enable new business opportunities for SMEs through digitalization. We can achieve this by leveraging our broad product portfolio, as well as through focused strategies with non-terrestrial network operators to connect different demographics to broadband-level speeds in both fixed and wireless domains.

For example, in September we announced the deployment of Nokia's energy-efficient passive optical LAN (POL) solution at 100 schools in a cutting-edge network for schools in South Korea. The deployment, completed in collaboration with Dongkuk Systems and Erum I&C, aims to enhance the existing infrastructure and provide a high-capacity network to support digital learning. This initiative is part of the South Korean Ministry of Education's Green Smart School program to transform existing school facilities into smart learning environments, including the creation of large-capacity multimedia classes.

We also implement social initiatives via non-governmental organizations (NGOs) to further support our sustainability strategy. In 2023, we reached 130 832 direct beneficiaries through social digitalization projects, building digital skills, connecting the unconnected or underserved, and improving inclusion, equity and diversity. This year, we saw the finalization of some programs and the initial launch of new programs, which both led to the total number of direct beneficiaries being lower than in 2022. ⁽¹⁾

Our program with UNICEF in Morocco continued in 2023, reaching 3 928 people through mentor training, awareness raising sessions, regional and national social innovation bootcamps, project or business incubation and digital skills training. The program aims to empower youth with digital, entrepreneurial skills and environmental knowledge.

One of our flagship social initiatives in India is Smartpur, which was developed to improve access to livelihood opportunities, healthcare, financial services, education and governance for rural communities by utilizing the transformative power of technology. In 2023, we supported Smartpur centers in 350 villages across India and the number of direct beneficiaries reached in 2023 is 119 795.

(1) Individuals that independent from any relationship with the company were directly benefited by Nokia's contributions or activities related to digital connectivity and inclusion directly resulting from them.

Sustainability and corporate responsibility continued



Responsible business

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

98%

of our employees completed the Ethical Business Training

Highlights

98% of our employees completed our 2023 Ethical Business Training.

In 2023, we implemented 635 supply chain audits, including 141 on-site in-depth audits on corporate responsibility topics, 48 on-site audits against our Supplier Requirements and 446 supplier assessments using the EcoVadis scorecards, which consisted of 62% of Nokia's total spend.

We successfully completed our second independent assessment for the Global Network Initiative (GNI), with the public report made available in 2023. The assessors highlighted Nokia's strong human rights culture, noting that many issues are flagged and addressed informally even prior to surfacing during the formal process.

Of the Human Rights Due Diligence cases investigated in 2023, 96% of total cases were resolved as "Go" or "Go with Condition s" (63% and 33% respectively) and 4% as "No Go".

We also improved our diversity hiring in 2023 with women representing 28% of external hires.

We take a proactive and values-driven approach to responsible business practices both internally and within our value chain. We aim to improve outcomes related to issues including environmental and human rights risks.

Ethics and compliance

We aim to conduct our business with the highest standards of business ethics and integrity. Our comprehensive compliance program and our strong culture of integrity allow us to earn and keep the trust of customers, governments, employees and other stakeholders. The foundation of our commitment to integrity is our Code of Conduct, which provides a framework that unites our leaders and employees behind a common vision and set of values. This Code sets out four defining principles that are supplemented by 14 key compliance policy areas.

Our Code of Conduct and the 14 main policy areas

We do business the right way

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

We respect our people and community

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

We safeguard our assets

- Controllership
- Intellectual property & confidential information
- Insider trading

Four defining principles

We follow the laws of the countries where we do business and adhere to Nokia's policies and procedures

We personally set the example for each other and our stakeholders by being honest and fair

We promote a culture of integrity through mutual respect, trust in each other and high standards of ethics in all our business dealings

We hold each other accountable to the Code of Conduct and if we are aware of potential violations, we promptly report them

Sustainability and corporate responsibility continued

We do business the right way

Our Third-Party Code of Conduct, which is applicable to our suppliers and partners, clearly states our expectations regarding ethical conduct. We ask our third parties to adhere to Nokia's Third-Party Code of Conduct. Third-party commercial partners, including distributors and indirect resellers, are required to annually certify compliance with this code, and high risk third parties are required to complete compliance training. This code is further supplemented by policies, procedures, and guidance documents covering a range of topics, including third-party screening procedures and corporate hospitality.

We also have a separate Code of Ethics that sets out further expectations for our President and CEO, Chief Financial Officer and Corporate Controller.

In 2023, we deployed annual mandatory training on ethical business practices for our employees. Our Ethical Business Training was completed by 98% of our employees, surpassing the agreed target of 95%.

We supplement our all-employee mandatory training with targeted training focusing on particular parts of our operations and addressing high risk areas, regulatory requirements and critical and emerging needs. We use a combination of videos, in-depth training modules, microlearning modules, animations, and live training sessions to educate employees about high-risk areas.

In 2023, more than 23 600 attendees received live training with over 35 compliance topics covered in about 75 sessions. For select topics, we provide short, animated "just-in-time" training modules that provide information at the time it is needed; these are triggered by specific employee actions. For example, a just-in-time training module on anti-competition risks is delivered to employees who are attending trade association meetings, and a module regarding our investigation process is delivered to employees and external individuals who raise concerns.

Anti-corruption and bribery

We employ a multi-faceted approach to prevent corruption, and we have clear and unambiguous policies concerning improper payments, facilitation payments, gifts and hospitality, sponsorships and donations and other areas of corruption risk. Our policies and expectations regarding our strict prohibition on improper payments and corrupt behavior apply to our employees, partners and suppliers.

We implement training and regularly communicate with our employees regarding legal and compliance risks, and we review these risks and our mitigation measures with the Company's senior leadership and Audit Committee of the Board of Directors.

In 2023, we created a new online anti-corruption training module and included several topics related to anti-corruption in our annual "Ethical Business Training," including: bribery workplace scenarios, policy information and special requirements when working with government officials

We conduct periodic audits and risk assessments to ensure that we identify and respond to corruption risks across our operations. Our compliance operations reviews provide an in-depth assessment of a business or region's compliance programs and status, including a review of the strength of the culture of integrity. In addition, our compliance control framework assessments provide a deep analysis of compliance risks and controls associated with a specific business, country, or region.

These site or business reviews focus on identifying anti-corruption risks (as well as other risks) and developing, implementing, and monitoring responsive mitigation controls. We also carry out risk-based due diligence and monitoring procedures for all third parties to assess and manage potential risks related to engaging and working with them. In 2023, we completed four compliance operation reviews and 13 compliance control framework assessments.

Nokia's Anti-Corruption Center of Excellence is a dedicated group within our compliance team that assesses, monitors, and approves or rejects engagement with high-risk third parties (including, but not limited to, commercial third parties and high-risk suppliers), as well as practices such as gifts, entertainment, hospitality, sponsorships, and donations. All third parties and suppliers that conduct business with Nokia are subject to a risk-based screening process.

The activities of the Anti-Corruption Center of Excellence are digitalized and tool-based, including, for example, monitoring and training of third parties.

Third parties must adhere to our Third-Party Code of Conduct, and they are required to sign our anti-corruption certification annually. In 2023, over 260 of our commercial third parties certified that they reviewed our Third-Party Code of Conduct and completed the training video. In addition, as necessary, live discussions on effective compliance programs are held with our commercial partners with the goal of exchanging best practices.

Oversight and grievance mechanisms

Our Board of Directors, its Audit Committee and our Group Leadership Team all provide oversight of our ethics and compliance program. Our Chief Compliance Officer provides periodic reports and updates on our compliance program (including information relating to investigations, due diligence, transaction metrics, and evolving external enforcement and risk trends) to the Board, the Audit Committee, and others, as needed.

Using one of the several resources available to them employees are expected and encouraged to report concerns about suspected misconduct or potential violations of the law, our Code of Conduct, or our company policies. We provide numerous channels and mechanisms to facilitate such reporting, including anonymous reporting (unless prohibited by local law), and we strive to ensure that employees feel comfortable reporting concerns. Our global Ombuds Program helps drive our 'speak-up' culture and allays concerns employees may have about potential reprisal for filing a report.

In 2023, the Business Integrity Group, our investigation team in the Ethics and Compliance organization, received a total of 1 056 concerns, of which 483 were integrity concerns investigated by the Business Integrity Group as suspected violations of our Code of Conduct. The Business Integrity Group closed 370 investigations into alleged violations of our Code of Conduct, of which 159 were substantiated with cause found after investigation. Following investigations conducted by the Business Integrity Group, we implemented corrective actions including dismissals, suspension without pay, written warnings, coaching/counseling, training, and restitution. Beyond individual discipline, detailed root cause analysis was conducted for substantiated cases, and unsubstantiated cases, as appropriate, to identify, implement, and to monitor remedial measured and improvements.

Sustainability and corporate responsibility continued

Human rights

We are committed to the principles of the Universal Declaration of Human Rights, the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises. We endorsed the United Nations Guiding Principles on Business and Human Rights in 2011. We encourage our suppliers and business partners to share our values.

Our Code of Conduct, together with our Human Rights Policy, sets out our approach to human rights. Our human rights processes cover the whole value chain, from supplier management to product end use, and we have set clear requirements for all areas separately.

The technology we provide can bring positive benefits to individuals and broader society. We have a robust Human Rights Due Diligence process that aims to ensure the technology we provide is not misused to limit the privacy or freedom of expression of any individual or group. This process, which is embedded in our global sales process, provides the mechanism and tools to effectively mitigate our most salient human rights risks arising from the potential misuse of the products and technology we provide.

Before any sale is made, we aim to identify the level of possible risk to human rights through potential misuse of our technology and provide mitigation if any risk is identified. The Human Rights Due Diligence process is initiated according to various triggers including technology type, customer, country and use case. Of the Human Rights Due Diligence cases handled in 2023, 96% of total cases were resolved as "Go" or "Go with Conditions" (63% and 33%) respectively and 4% as "No Go".

In addition to potential product misuse, human rights risks appear in our global supply chain (see the "Responsible sourcing" section and our Modern Slavery Statement published on our website).

We are a member of the Global Network Initiative, a multi-stakeholder group of companies, civil society organizations (including human rights and press freedom groups), investors and academics working together to protect and advance freedom of expression and privacy in the ICT sector.

We have successfully completed our second independent GNI assessment, and the public report was made available in October 2023. The assessors highlighted Nokia's strong human rights culture, noting that many issues are flagged and addressed informally even prior to surfacing during the formal process. The GNI also noted our Human Rights Due Diligence processes encompassing relevant functions across the Company with strong escalation mechanisms. To ensure best-in-class human rights mitigations our Human Rights Due Diligence process also went through an internal audit that began in 2022 and was completed in 2023, providing findings that led to increased digitalization of the process.

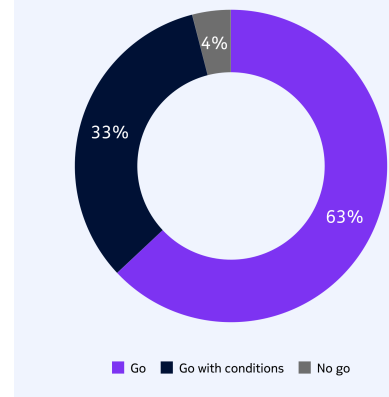
Responsible sourcing

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 such topics as environment, health, safety and security, privacy, risk management, labor and human rights, modern slavery, and ethics. We also run assessments and audits on our suppliers and provide training to ensure they meet our ethical requirements and continuously improve on their performance. We work with them on remediation actions and push to raise the bar on standards across our ecosystem.

In 2023, we implemented 635 supply chain audits, including 141 on-site in-depth audits on corporate responsibility topics, 48 on-site audits against our Supplier Requirements and 446 supplier assessments and follow-ups using the EcoVadis scorecards. We continued our work to increase the use of recycled material content in our products. As part of our circularity program, we introduced recycled material content targets for our mechanical suppliers. We also held training workshops for suppliers on topics such as climate change, circularity, responsible minerals sourcing, modern slavery, labor migration, diversity and inclusion, and health and safety.

We continued to work with suppliers on the CDP Climate program which includes learning and capability building, data reporting, target setting and performance evaluation. In 2023, we expanded the deep dives on emissions reduction roadmap development with carbon intense segments of our supply chain such as integrated circuits (ICs) and semi-discretes, and printed wiring boards (PWBs).

Cases handled in 2023 by the Human Rights Due Diligence process and how they were resolved



63%
of the cases handled by HRDD in 2023 were resolved as "Go"

Our people

“At Nokia, we care about our people and believe they are critical to the long-term sustainability and competitiveness of our company.”



Sustainability and corporate responsibility continued

The essentials and our people strategy

The foundation of our culture is based on the Nokia essentials – open, fearless and empowered – which incorporate our values and determine how we interact with each other and the world around us both as a company and as individuals .

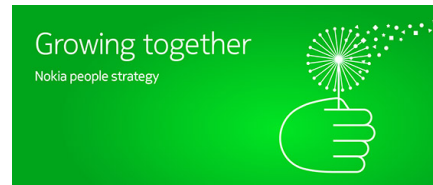
Putting our people at the heart of everything we do

Nokia people strategy



Nokia Annual Report on Form 20-F 2023

Our people strategy brings to life our Nokia essentials and translates Nokia’s vision to create an unbeatable people experience into ambitions and actions in the following four ways:



At Nokia we work together to align personal, professional and business growth by providing our people with visibility, resources and support in their careers. By enriching, recognizing and rewarding individual experiences and skills, we aim to be a company where people not only work but thrive.

We have improved our employee user experience with tools that enable employees to take even more ownership of their careers and that support our leaders with insights to guide employees’ careers. Through AI-driven platforms, employees have an increased visibility of opportunities and job trends across all of Nokia, which optimizes their long-term career planning.

The platforms democratize career development and help to mitigate bias, enabling employees to embrace their ambitions and explore their career journey. In addition, our Technical Career Path Program continues to support employees to advance their careers as subject matter experts, as required for the continued success of Nokia.

We believe that communities help accelerate learning. Learning is social, and we learn together as individuals, as teams and as a company. We can learn faster when we all bring our unique experiences and knowledge. Therefore, we currently have 256 internal coaches and around 670 mentors available at Nokia to support our employees on their growth journey, all of them directly accessible via our platform.

Focus on sustainability enablement

In 2023, we continued sustainability enablement across Nokia through the ESG Community of Interest, a collaborative innovation platform for knowledge building. The community organized several knowledge-sharing sessions on energy efficiency, bridging the digital divide, sustainable sourcing, circularity and ESG standards.

We also launched an ESG certification training curriculum with four certification levels to equip key people with the knowledge they need to explore ESG as a competitive advantage. We set up three ESG customer advisory councils – forums for Nokia and its customers’ ESG leaders to explore common solutions and enablers for sustainable development.

Sustainability and corporate responsibility continued



It is more important than ever to lead with strong human skills that promote psychological safety and create a working environment in which all people can live our Nokia essentials, with a priority on well-being to enable stronger and more resilient teams.

To help leaders role-model the right behaviors while retaining strategic and operational focus, we have implemented new initiatives in 2023, including:

- Developed and piloted face-to-face “Leadership4Impact” sessions for early and mid-level line managers
- Embedded enhanced psychological safety and leadership skills within people agendas
- Introduced Leader Lab sessions, designed to support leaders at all levels with learning and resources needed to lead in the current moment, addressing real-time challenges while building a strong leadership community
- Conducted the inaugural Nokia Leaders Summit, where top executives came together to focus on further developing our strategy with input from the investor and customer communities



Inclusion and diversity are core to the way we do business, innovate with our customers and partners, and attract talent. We bring together people with diverse identities, cognition, education, expertise and backgrounds. To make everyone feel valued and respected, we need an environment where all get equal opportunities to grow and develop, for the benefit and well-being of the individual, team and company.

Nokia’s Inclusion & Diversity Community brings together employees across the organization to educate and share best practices to widen the impact of our inclusion and diversity initiatives. Since its start in June 2022, it has continuously increased its membership – with currently about 1 200 members – and has provided about 40 learning and sharing sessions.

In 2023, the focus has been on the inclusion of people with disabilities and neurodivergent employees, areas in which Nokia closely collaborates with nonprofit organizations for business disability inclusion such as Disability:IN and Inclusion Works.

To ensure that our managers can improve their leadership of multi-generational teams as well as their talent acquisition, retention and productivity, we published the Leading an Aging Workforce and the Successful Early Career Strategies e-books in 2023 .

We also continued to drive improvements in gender diversity by monitoring pay equity. In 2023, our end-of-year review of Nokia’s gender pay gap showed a statistically insignificant unexplained pay gap.

We will continue to further emphasize and apply mitigations to improve in gender diversity, with the following key efforts.

- Targeting a minimum threshold for women hires in our global external recruits since 2021. In 2023, we exceeded the minimum mark of 27% by hiring 28% women.
- Running programs in collaboration with the global gender equality champion UN Women, both with our customers and internally, to support women’s careers.

Sustainability and corporate responsibility continued

Experience is everything
Nokia people strategy



We are shaping the Nokia environment to enable people to be empowered and productive. We strive toward increased flexibility in how and where employees work, simplified policies and processes, psychological safety, and the feeling of working in a united manner.

In 2023, we launched a new consolidated people tool, NokiaME, to simplify key global HR processes and tool, with a continued rollout over the next few years.

This year we again asked our employees what they needed and how management could better support them through our Annual Employee Survey and reached a high participation rate of 76% of Nokia employees, which represents a 10% increase in participation year over year. This feedback loop is essential for developing a better experience.



Sustainability and corporate responsibility continued

Employee demographics

The market for skilled employees in our business remains extremely competitive. Our workforce has evolved over recent years as we have introduced changes in our strategy to respond to our business targets and activities. These changes may in the future cause disruption and fatigue among employees, which, when coupled with our employee demographics and a dependence on key resources in some areas, make a focus on skill refreshing, well-being, inclusivity and enabling personal and professional growth imperative.

In 2023, the average number of employees was 86 689 (86 896 in 2022 and 87 927 in 2021).

At the end of 2023, 27% of our executive leadership positions were held by women, while the share of women in all leadership positions across Nokia was 17%. In total, women accounted for 23% of our workforce.

86 689

the average number of employees in 2023

27%

of our executive leadership positions were held by women at the end of 2023.

Well-being

On 19 October, Nokia announced a number of restructuring changes. As part of the support we want to offer our people during these difficult times, we have focused on providing guidance, tools and trainings to support employees and managers with timely, relevant information to navigate through this period of change.

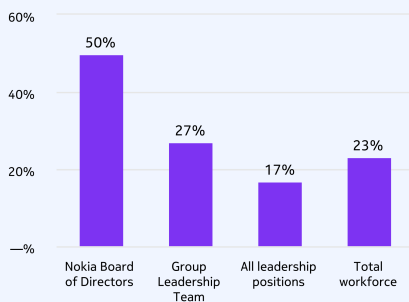
The Personal Support Service, our global employee assistance program, is available to all employees and their family members, providing access to 24/7 professional support in their local language. These confidential resources play an important role in providing counselling and guidance during times of uncertainty.

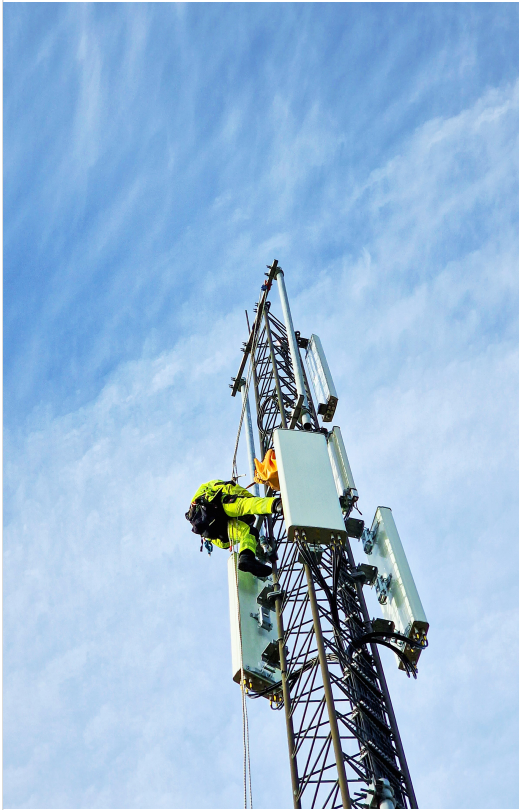
In 2023, we continued to provide opportunities for employees to develop their capabilities in a wide range of wellbeing topics, from self-care and mindfulness to mental health and burnout, with a special focus on implementing ways to increase personal financial stability and coping with change. Over 14 000 employees engaged with the global training series content, which was complemented by regional trainings in local languages.

During the year, we also launched a new guide "Having Open Conversations" to support dialogue about mental health within teams. And our ShareToCare Employee Resource Group continues to grow, bringing people together to have open conversations about mental health.

All employees now have access to an exercise app to encourage them to take breaks and remain active during their workday, providing short exercises to support both the mind and body. We delivered 25 sessions as part of the "Thrive with Well-Being" series and "Be well, Lead well" leadership development program to targeted groups of employees and people managers across the organization.

Share of women in our workforce at the end of 2023





Health, safety and labor conditions

The health and safety of our employees is the non-negotiable foundation of how Nokia conducts its business. Our Code of Conduct is the basis for labor conditions, enhanced by a full set of global HR policies and procedures that enable fair employment. We adhere to the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work, and we meet, or where possible exceed, the requirements of labor laws and regulations wherever we have operations. We work hard to ensure decent working conditions and fair employment, recognizing both international and local laws and guidelines. Our health and safety management system is the basis for our overall Health and Safety program and an integral part of how we manage health and safety.

The system is certified with the internationally recognized ISO 45001 framework. The certification is provided by a third party, Bureau Veritas, and the share of our employees covered by the certification at the end of 2023 was 88%.

We implement training, analysis, assessments, and consequence management to address job-related health and safety risks. We run a wide range of programs targeted at improving our health and safety performance, while also encouraging employees and contractors to report near misses and dangerous incidents.

We see the highest risk exposure to health and safety in the delivery of field work, which is predominantly delivered by our contractors through tasks such as working at height, driving for work, and electrical installation and maintenance. Consequently, we have set stringent KPIs related to a supplier's ability to deliver safely, which is evaluated by our Health and Safety Maturity Assessment.

In 2023, there were no (zero) work-related fatal incidents involving employees. However, we regret the three work-related fatal incidents resulting in the death of one contractor / subcontractor and two third parties ⁽¹⁾.

88%

share of our employees covered by ISO 45001 certification at the end of 2023

Any such serious incidents while carrying out work on behalf of Nokia are unacceptable. Each incident is thoroughly investigated to establish root causes and corrective actions are implemented to reduce the likelihood of future occurrences. In 2023, Nokia ensured 100% of our suppliers formally pledged to follow the Nokia lifesaving rules.

Creating a safer work environment starts with good leadership. Our leaders are in a key position to strengthen the health and safety culture. Conducting a Senior Leader Safety Tour is a targeted, direct and strategic way to engage with local teams in order to influence safety behaviors. In 2023, Nokia set a target of having Senior Leaders lead forty safety tours of specific sites. Nokia recorded 144 such tours in 2023.

Our key standards Working at Height, Rigging & Lifting, Driving, Electrical and Underground Assets Avoidance 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 KPIs 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. 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.

By the end of 2023, 99% of suppliers delivering high-risk activity had been assessed using our Health and Safety Maturity Assessment process and 99% of the assessed suppliers were health and safety compliant. We also carried out implementation assessments on 99% of all high-risk projects, 98% of which were found to meet our minimum non-negotiable requirements.

(1) Nokia has revised its fatality reporting criteria in 2023 to include third parties such as members of the public who are assessed as being impacted by an incident that is deemed within Nokia's control. This more closely aligns Nokia's reporting with some of its closest industry stakeholders and competitors.

Shares and shareholders

Shares and shareholders

Share details

Shares and share capital

Nokia has one class of shares. Each Nokia share entitles the holder to one vote at general meetings of Nokia.

At 31 December 2023, the share capital of Nokia Corporation equaled EUR 245 896 461.96 and the total number of shares issued was 5 613 496 565. At 31 December 2023, the total number of shares included 87 895 712 shares owned by Group companies representing approximately 1.6% of the total number of shares and the total voting rights.

In 2023, under the authorization granted to the Board of Directors by the Annual General Meeting, the Parent Company issued 59 500 000 new shares without consideration to itself to fulfill the Company's obligation under the Nokia Equity Programs.

In 2023, under the authorization granted to the Board of Directors by the Annual General Meeting, the Parent Company issued 16 885 827 treasury shares to employees, including certain members of the Group Leadership Team, as settlement under Parent Company equity-based incentive plans and the employee share purchase plan. The shares were issued without consideration and in accordance with the rules of the plans.

Information on the authorizations held by the Board of Directors in 2023 to issue shares and special rights entitling to shares, to transfer shares and repurchase own shares, as well as information on related party transactions, the shareholders, stock options, shareholders' equity per share, dividend yield, price per earnings ratio, share prices, market capitalization, share turnover and average number of shares is available in this section "Shares and shareholders" and additionally in the "Corporate governance—Compensation" section and Notes 5.1. Equity and 3.2. Remuneration of key management in the consolidated financial statements.

In November 2023, the Board of Directors decided to cancel 78 301 011 Nokia shares held by the Company and repurchased under the second EUR 300 million phase of the EUR 600 million buyback program announced in 2022. The second phase of the buyback program started in January 2023 and ended in November 2023. The cancellation did not affect the Company's share capital nor total equity.

The Board of Directors held at 31 December 2023 a total of 900 190 shares and ADSs in Nokia, which represented approximately 0.02 % of our total shares and voting rights excluding shares held by the Nokia Group. The President and CEO owned at 31 December 2023 a total of 1 473 060 shares.

There were no public takeover offers by third parties for Nokia's shares or by Nokia for other companies' shares during the 2023 and 2022 fiscal years.

Nokia does not have minimum or maximum share capital or a par value of a share.

31 December	2023	2022	2021	2020	2019
Share capital, EURm	246	246	246	246	246
Shares, (000s)	5 613 497	5 632 298	5 675 461	5 653 886	5 640 536
Shares held by the Group, (000s)	87 896	45 282	40 468	36 390	34 955
Number of shares excluding shares held by the Group, (000s)	5 525 601	5 587 016	5 634 993	5 617 496	5 605 581
Average number of shares excluding shares held by the Group during the year					
Basic, (000s) ⁽¹⁾	5 549 468	5 614 182	5 630 025	5 612 418	5 599 912
Diluted, (000s) ⁽¹⁾	5 585 923	5 670 020	5 684 235	5 612 418	5 626 375
Number of registered shareholders ⁽²⁾	247 893	238 359	233 844	246 886	248 526

(1) Used in calculation of earnings per share for profit or loss for the year attributable to equity holders of the parent.

(2) Each account operator is included in the figure as only one registered shareholder.

Shares and shareholders continued

Key ratios

For the year ended 31 December, Continuing operations	2023	2022	2021	2020	2019
Earnings per share, basic, EUR	0.12	0.75	0.29	(0.45)	0.00
Earnings per share, diluted, EUR	0.12	0.74	0.29	(0.45)	0.00
P/E ratio	25.42	5.77	19.22	neg.	—
Proposed dividend per share, EUR ⁽¹⁾	0.13	0.12	0.08	0.00	0.00
Total dividends, EURm ⁽¹⁾⁽²⁾	730	676	449	—	—
Payout ratio ⁽¹⁾	1.08	0.16	0.28	—	—
Dividend yield % ⁽¹⁾	4.26	2.77	1.44	—	—
31 December	2023	2022	2021	2020	2019
Shareholders' equity per share, EUR	3.72	3.82	3.08	2.22	2.73
Share price ⁽³⁾	3.05	4.33	5.57	3.15	3.30
Market capitalization, EURm	16 853	24 192	31 409	17 701	18 476

- (1) The Board of Directors proposes to the Annual General Meeting to be authorized to decide in its discretion on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity.
- (2) In 2023, total dividends is calculated based on the proposed Annual General Meeting authorization to the Board of a maximum distribution of EUR 0.13 per share for the financial year 2023, and the total number of shares on the date of issuing the financial statements for 2023. On the date of issuing the financial statements for 2023 the total number of Nokia shares is 5 613 496 565. Comparative amounts represent the actual total distribution to equity holders of the parent for the financial year presented.
- (3) Closing Nokia share price at year end on Nasdaq Helsinki.

Share turnover

For the year ended 31 December	2023	2022	2021	2020	2019
Number of shares traded during the year (000s) ⁽¹⁾	7 754 279	10 294 615	16 560 334	13 903 762	11 003 630
Average number of shares excluding shares held by the Group during the year (000s)	5 549 468	5 614 182	5 630 025	5 612 418	5 599 912
Share turnover %	140	183	294	248	196

(1) Source: Nasdaq Helsinki, the NYSE composite tape and Euronext Paris.

The principal trading markets for the shares are Nasdaq Helsinki and Euronext Paris, in the form of shares, and the NYSE, in the form of ADSs.

Share price development

Nasdaq Helsinki

EUR	High	Low	Value
2023 Full year High/Low	4.70	2.70	
2023 Full year Average (Volume-weighted)			3.73
Year-end value 31 December 2023			3.05
Year-end value 31 December 2022			4.33
Change from 31 December 2022 to 31 December 2023			(29.6)%

New York Stock Exchange

USD	High	Low	Value
2023 Full year High/Low	5.04	2.94	
2023 Full year Average (Volume-weighted)			4.05
Year-end value 31 December 2023			3.42
Year-end value 31 December 2022			4.64
Change from 31 December 2022 to 31 December 2023			(26.3)%

Euronext Paris

EUR	High	Low	Value
2023 Full year High/Low	4.70	2.70	
2023 Full year Average (Volume-weighted)			3.76
Year-end value 31 December 2023			3.06
Year-end value 31 December 2022			4.34
Change from 31 December 2022 to 31 December 2023			(29.5)%

Shares and shareholders continued

Stock option exercises

Since 2019, Nokia has not administered any global stock option plans.

Dividend and share buybacks

The dividend to shareholders is Nokia's principal method of distributing earnings to shareholders. The dividend policy was updated at the Capital Markets Day in March 2021 to be "We target recurring, stable and over time growing ordinary dividend payments, taking into account the previous year's earnings as well as the company's financial position and business outlook".

The Board of Directors proposes to the Annual General Meeting 2024 that based on the balance sheet to be adopted for the financial year ended on 31 December 2023, no dividend is distributed by a resolution of the Annual General Meeting. Instead, the Board of Directors proposes to be authorized to resolve in its discretion on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity. The authorization would be used to distribute dividend and/or assets from the reserve for invested unrestricted equity in four installments during the authorization period, in connection with the quarterly results, unless the Board of Directors decides otherwise for a justified reason. The proposed total authorization for distribution of dividend and/or assets from the reserve for invested unrestricted equity is in line with the Company's dividend policy. The authorization would be valid until the opening of the next Annual General Meeting. The Board would make separate resolutions on the amount and timing of each distribution of dividend and/or assets from the reserve for invested unrestricted equity.

Nokia's Board of Directors has initiated a share buyback program under the current authorization from the Annual General Meeting to repurchase shares, with purchases expected to begin in the first quarter of 2024. The program targets to return up to EUR 600 million of cash to shareholders in tranches over a period of two years, subject to continued authorization from the Annual General Meeting.

In February 2022, Nokia's Board of Directors initiated a share buyback program under the authorizations from the Annual General Meetings 2021 and 2022 to repurchase shares to return up to EUR 600 million of cash to shareholders in tranches over a period of two years. The first phase of the share buyback program with a maximum aggregate purchase price of EUR 300 million started in February 2022 and ended in November 2022. The second EUR 300 million phase of the share buyback program started in January 2023 and ended in November 2023. The whole share buyback program has now been completed and the repurchased shares have been cancelled.

We distribute distributable funds, if any, within the limits set by the Finnish Companies Act as defined below. We make and calculate the distribution, if any, in the form of cash dividends, assets from the reserve for invested unrestricted equity, share buybacks, or in some other form, or a combination of these. There is no specific formula by which the amount of a distribution is determined, although some limits set by law are discussed below. The timing and amount of future distributions of retained earnings and/or assets from the reserve for invested unrestricted equity, if any, will depend on our future results and financial conditions.

Under the Finnish Companies Act, we may distribute retained earnings and/or assets from the reserve for invested unrestricted equity on our shares only upon a shareholders' resolution and subject to limited exceptions in the amount proposed by the Board. The amount of any distribution is limited to the amount of distributable earnings of the Parent Company pursuant to the last audited financial statements approved by our shareholders, taking into account the material changes in the financial situation of the Parent Company after the end of the last financial period and a statutory requirement that the distribution of earnings must not result in insolvency of the Parent Company. Subject to exceptions relating to the right of minority shareholders to request a certain minimum distribution, the distribution may not exceed the amount proposed by the Board of Directors.

Purchases of equity securities by the Company and affiliated purchasers

The table below presents additional information on the purchases of treasury shares in 2023 :

Period	Total number of shares purchased	Average price paid per share, EUR	Total number of shares purchased as part of publicly announced plans or programs	Maximum value of shares that may yet be purchased under the plans or programs, EUR
January	6 156 200	4.44	6 156 200	272 653 299
February	5 991 500	4.40	5 991 500	246 290 179
March	6 871 300	4.39	6 871 300	216 111 864
April	5 556 000	4.19	5 556 000	192 858 651
May	7 845 100	3.77	7 845 100	163 286 436
June	7 725 400	3.83	7 725 400	133 733 303
July	8 004 933	3.69	8 004 933	104 229 737
August	9 117 690	3.55	9 117 690	71 835 889
September	8 030 700	3.68	8 030 700	42 257 048
October	9 510 000	3.26	9 510 000	11 213 435
November	3 492 188	3.21	3 492 188	—
December	—	—	—	—
Total	78 301 011	3.83	78 301 011	—

Shares and shareholders continued

Shareholders

At 31 December 2023, shareholders registered in Finland represented approximately 26% and shareholders registered in the name of a nominee represented approximately 74% of the total number of shares of Nokia Corporation. The number of directly registered shareholders was 247 893 at 31 December 2023. Each account operator (12) is included in this figure as only one registered shareholder.

Largest shareholders registered in Finland at 31 December 2023 ⁽¹⁾

Shareholder	Total number of shares 000s	% of all shares	% of all voting rights
Solidium Oy	325 000	5.79	5.79
Keskinäinen Työeläkevakuutusyhtiö Varma	80 236	1.43	1.43
Keskinäinen Eläkevakuutusyhtiö Ilmarinen	75 227	1.34	1.34
Keskinäinen Työeläkevakuutusyhtiö Elo	46 066	0.82	0.82
Valtion Eläkerahasto	37 000	0.66	0.66
Oy Lival Ab	17 310	0.31	0.31
Svenska Litteratursällskapet i Finland r.f.	15 217	0.27	0.27
OP Finland Fund	14 833	0.26	0.26
Nordea Bank Abp	14 047	0.25	0.25
Sijoitusrahasto Seligson & Co	13 639	0.24	0.24

(1) Excluding nominee registered shares and shares owned by Nokia Corporation. Nokia Corporation owned 76 437 051 shares at 31 December 2023.

Breakdown of share ownership at 31 December 2023 ⁽¹⁾

By number of shares owned	Number of shareholders	% of shareholders	Total number of shares	% of all shares
1–100	64 068	25.85	3 099 887	0.06
101–1 000	113 516	45.79	50 199 617	0.89
1 001–10 000	61 876	24.96	193 112 400	3.44
10 001–100 000	7 916	3.19	195 350 157	3.48
100 001–500 000	408	0.17	79 398 334	1.41
500 001–1 000 000	37	0.02	25 598 078	0.46
1 000 001–5 000 000	44	0.02	99 933 974	1.78
Over 5 000 000	28	0.01	4 966 804 118	88.48
Total	247 893	100	5 613 496 565	100

(1) The breakdown covers only shareholders registered in Finland, and each account operator shareholders as only one registered shareholder. As a result, the breakdown is not illustrative of the entire shareholder base of Nokia. (2) is included in the number of

By nationality	% of shares
Non-Finnish shareholders	74.45
Finnish shareholders	25.55
Total	100.00

By shareholder category (Finnish shareholders)	% of shares
Corporations	3.37
Households	7.79
Financial and insurance institutions	2.80
Non-profit organizations	1.23
Governmental bodies (incl. pension insurance companies)	10.36
Total	25.55

At 31 December 2023, a total of 673 777 277 ADSs (equivalent to the same number of shares or approximately 11.8% of the total shares) were outstanding and held of record by 95 655 registered holders in the United States. We are aware that many ADSs are held of record by brokers and other nominees, and accordingly the above number of holders is not necessarily representative of the actual number of persons who are beneficial holders of ADSs or the number of ADSs beneficially held by such persons. Based on information available from Broadridge Financial Solutions, Inc., the number of beneficial owners of ADSs at 31 December 2023 was 753 324.

Based on information known to us as of 2 February 2024, at 31 December 2023, BlackRock, Inc. beneficially owned 372 591 440 Nokia shares, which at that time corresponded to approximately 6.6% of the total number of shares and voting rights of Nokia.

To the best of our knowledge, Nokia is not directly or indirectly owned or controlled by any other corporation or any government, and there are no arrangements that may result in a change of control of Nokia.

Shares owned by the members of the Board and the Group Leadership Team

At 31 December 2023, the members of our Board and the Group Leadership Team held a total of 5 140 152 shares and ADSs in Nokia, which represented approximately 0.09% of our shares and total voting rights excluding shares held by the Nokia Group.

Offer and listing details

Our capital consists of shares traded on Nasdaq Helsinki under the symbol "NOKIA" and Euronext Paris under the symbol "NOKIA". Our ADSs, each representing one of our shares, are traded on the NYSE under the symbol "NOK". The ADSs are evidenced by American Depositary Receipts (ADRs) issued by Citibank, N.A.

Articles of Association

Articles of Association

Amendment of our Articles of Association requires a resolution of the general meeting of shareholders, supported by two-thirds of the votes cast and two-thirds of the shares represented at the meeting.

Registration

Nokia Corporation is organized under the laws of the Republic of Finland and registered in the Finnish Trade Register under business identity code 0112038-9. Under its current Articles of Association, Nokia's corporate purpose is to research, develop, manufacture, market, sell and deliver products, software and services in a wide range of consumer and business-to-business markets. These products, software and services relate to, among others, network infrastructure for telecommunication operators and other enterprises, the internet of things, human health and wellbeing, multi-media, big data and analytics, mobile devices and consumer wearables and other electronics. The company may also create, acquire and license intellectual property and software as well as engage in other industrial and commercial operations, including securities trading and other investment activities. The company may carry on its business operations directly, through subsidiary companies, affiliate companies and joint ventures.

Directors' voting powers

Under Finnish law, resolutions of the Board shall be made by a majority vote. A director shall refrain from taking any part in the consideration of an agreement between the director and the company or third party, or any other issue that may provide any material benefit to him or her, which may be contradictory to the interests of the company. Under Finnish law, there is no age limit requirement for directors, and there are no requirements under Finnish law that a director must own a minimum number of shares in order to qualify to act as a director. However, in accordance with the current Company policy, approximately 40% of the annual fee payable to the Board members is paid in Nokia shares purchased from the market or alternatively by using treasury shares held by Nokia, and the directors shall retain until the end of their directorship such number of shares that corresponds to the

number of shares they have received as Board remuneration during their first three years of service (the net amount received after deducting those shares used for offsetting any costs relating to the acquisition of the shares, including taxes).

Share rights, preferences and restrictions

Each share confers the right to one vote at general meetings. According to Finnish law, a company generally must hold an Annual General Meeting called by the Board within six months from the end of the financial year. Additionally, the Board is obliged to call an Extraordinary General Meeting whenever such meeting is deemed necessary, or at the request of the auditor or shareholders representing a minimum of one-tenth of all outstanding shares. Under our Articles of Association, the Board is elected at least annually at the Annual General Meeting of shareholders for a term ending at the end of the next Annual General Meeting.

Under Finnish law, shareholders may attend and vote at general meetings in person or by proxy. It is not customary in Finland for a company to issue forms of proxy to its shareholders. Accordingly, Nokia does not do so. However, registered holders and beneficial owners of ADSs are issued forms of proxy by the Depositary.

To attend and vote at a general meeting, a shareholder must be registered in the register of shareholders in the Finnish book-entry system on or prior to the record date set forth in the notice of the general meeting. A registered holder or a beneficial owner of the ADSs, like other beneficial owners whose shares are registered in the Company's register of shareholders in the name of a nominee, may vote with their shares provided that they arrange to have their name entered in the temporary register of shareholders for the general meeting.

The record date is the eighth business day preceding the meeting. To be entered in the temporary register of shareholders for the general meeting, a holder of ADSs must provide the Depositary, or have his or her broker or other custodian provide the Depositary, on or before the voting deadline, as defined in the proxy material issued by the Depositary, a proxy with the following information: the name, address, and social security number or another corresponding personal identification number of the holder of the ADSs, the number of shares to be voted by the holder of the ADSs and the voting instructions. The register of shareholders as of the record date of each general meeting is public until the end of the respective meeting. Other nominee registered shareholders can attend and vote at general meetings by instructing their broker or other custodian to register the shareholder in Nokia's temporary register of shareholders and give the voting instructions in accordance with the broker's or custodian's instructions.

By completing and returning the form of proxy provided by the Depositary, a holder of ADSs also authorizes the Depositary to give notice to us, required by our Articles of Association, of the holder's intention to attend the general meeting.

The rights of shareholders are related to the shares as set forth in the Finnish Companies Act and our Articles of Association. Neither Finnish law nor our Articles of Association set limitations on the rights to own Nokia securities, including the rights of foreign shareholders to hold or exercise voting rights in the said securities. Amendment of the Articles of Association requires a decision of the general meeting of shareholders, supported by two-thirds of the votes cast and two-thirds of the shares represented at the meeting.

Each of our shares confers equal rights to share in the distribution of the Company's funds. Under Finnish law, dividend entitlement lapses after three years if a dividend remains unclaimed for that period, in which case the unclaimed dividend will be recognized as income by Nokia.

Articles of Association continued

Disclosure of shareholder ownership or voting power

According to the Finnish Securities Market Act, a shareholder shall disclose his or her ownership or voting power to the company and the Finnish Financial Supervisory Authority when the ownership or voting power reaches, exceeds or falls below 5, 10, 15, 20, 25, 30, 50 or 90% of all the shares or the voting rights. The term "ownership" includes ownership by the shareholder, as well as selected related parties, and calculating the ownership or voting power covers agreements or other arrangements, which when concluded would cause the proportion of voting rights or number of shares to reach, exceed or fall below the aforementioned limits. Upon receiving such notice, the company shall disclose it by a stock exchange release without undue delay.

Purchase obligation

Our Articles of Association require a shareholder that holds one-third or one-half of all of our shares to purchase the shares of all other shareholders that so request. A shareholder who becomes subject to the purchase obligation is also obligated to purchase any subscription rights, stock options or convertible bonds issued by the company if so requested by the holder. The purchase price of the shares under our Articles of Association is the higher of: (a) the weighted average trading price of the shares on Nasdaq Helsinki during the ten business days prior to the day on which we have been notified by the purchaser that its holding has reached or exceeded the threshold referred to above or, in the absence of such notification or its failure to arrive within the specified period, the day on which our Board otherwise becomes aware of this; or (b) the average price, weighted by the number of shares, which the purchaser has paid for the shares it has acquired during the last 12 months preceding the date referred to in (a).

Under the Finnish Securities Market Act, a shareholder whose voting power exceeds 30% or 50% of the total voting rights in a company shall, within one month, offer to purchase the remaining shares of the company, as well as any other rights entitling to the shares issued by the company, such as subscription rights, convertible bonds or stock options issued by the company. The purchase price shall be the market price of the securities in question. Subject to certain exceptions, the market price is determined on the basis of the highest price paid for the security during the preceding six months by the shareholder or any party in close connection to the shareholder. Subject to certain exceptions, if the shareholder or any related party has not during the six months preceding the offer acquired any securities that are the target for the offer, the market price is determined based on the average of the prices paid for the security in public trading during the preceding three months weighted by the volume of trade.

Under the Finnish Companies Act, a shareholder whose holding exceeds nine-tenths of the total number of shares or voting rights in Nokia has both the right and, upon a request from the minority shareholders, the obligation to purchase all the shares of the minority shareholders for the then current market price. The market price is determined, among other things, on the basis of the recent market price of the shares. The purchase procedure under the Finnish Companies Act differs, and the purchase price may differ, from the purchase procedure and price under the Finnish Securities Market Act, as discussed above. However, if the threshold of nine-tenths has been exceeded through either a mandatory or a voluntary public offer pursuant to the Finnish Securities Market Act, the market price under the Finnish Companies Act is deemed to be the price offered in the public offer, unless there are specific reasons to deviate from it.

Pre-emptive rights

In connection with any offering of shares, the existing shareholders have a pre-emptive right to subscribe for shares offered in proportion to the amount of shares in their possession. However, a general meeting of shareholders may vote, by a majority of two-thirds of the votes cast and two-thirds of the shares represented at the meeting, to waive this pre-emptive right provided that, from the company's perspective, weighty financial grounds exist.

Monitoring of Foreign Corporate Acquisitions

Under the Finnish Act on the Monitoring of Foreign Corporate Acquisitions (2012/172 as amended), a notification to the Ministry of Economic Affairs and Employment is required for a non-resident of Finland, directly or indirectly, when acquiring one-tenth or more of the voting power or corresponding factual influence in a company. The Ministry of Economic Affairs and Employment has to confirm the acquisition unless the acquisition would jeopardize important national interests, in which case the matter is referred to the Council of State. If the company in question is operating in the defense sector, an approval by the Ministry of Economic Affairs and Employment is required before the acquisition is made. These requirements are not applicable if, for instance, the voting power is acquired in a share issue that is proportional to the holder's ownership of the shares. Moreover, the requirements do not apply to residents of countries in the European Economic Area or EFTA countries, except where at least one-tenth of shares or other controlling right in such resident are held by a party not resident in the European Economic Area or EFTA.

Risk factors

Risk factors

Set forth below is a description of risk factors that could affect our business. Shareholders and potential investors should carefully review the following risk factors, in addition to other information contained in this report. The risk factors described below should not be construed as exhaustive. There may be additional risks that are unknown to us, and other risks currently believed to be immaterial that could turn out to be material.

These risks, either individually or collectively, could adversely affect our business, competitiveness, market share, sales, costs, expenses, results of operations, profitability, financial condition, liquidity, reputation, brand and share price. Unless otherwise indicated or the context otherwise requires, references in these risk factors to “Nokia”, the “Nokia Group”, “Group”, “we”, “us” and “our” mean Nokia’s consolidated operating segments. Certain risks or events may be more prevalent with respect to the Group or a certain business group, business or part of the Group.

In evaluating the risks, one should not rely exclusively on the bullets in the below summary but read the full risk factor discussion. This report also contains forward-looking statements that involve risks and uncertainties presented in “Forward-looking statements” above.

Risk factors summary

Our capability to compete as a trusted partner for critical networks, and remain a leading provider of technology, software and services in the industries and markets in which we operate, is dependent on multiple external and internal factors, partially outside our control, such as :

Risks related to our strategy and its execution

- Sustained traffic growth over customers’ networks, introduction of new use cases and low-latency services to drive the demand for our products;
- Reaching technology limits in key technologies which might change demand patterns for our products and competitive dynamics;

- Trends, such as cloudification, Open RAN and openness in general, virtualization and disaggregation with potential impact on our portfolio of products and services, competitive landscape, business models and our margin profile;
- The degree our investments, including venture funds, result in technologies, products or services that achieve or retain broad or timely market acceptance, answer to the expanding needs or preferences of our customers or consumers, or in breakthrough innovations, research assets, digitalization and intellectual property that we could otherwise utilize for value creation;
- Our success in acquiring or divesting businesses and technologies, integrating acquisitions, entering into licensing arrangements, forming and managing joint ventures or partnerships and in realizing the anticipated benefits, synergies, cost savings or efficiencies from these transactions;
- Our success in continuing to improve our organizational and operational structure for increased operational efficiency, executing our business plans and business models, in identifying and implementing the appropriate measures to improve cost-efficiency and in managing the inflationary pressure on costs in order to continue investments in R&D and future capabilities, including 5G-Advanced and 6G, enterprise, cloud, security, automation, digitalization, and development of new standard essential patents; and
- Our ability to meet our sustainability targets, including with respect to our greenhouse gas emission commitments, and to comply with stakeholder expectations and increasing number of regulations regarding sustainability activities and disclosures.

Surrounding economic, financial and competitive environment

- General economic and financial market conditions, such as high inflation, increased global macroeconomic uncertainty, major currency fluctuations, higher interest rates and financing costs, and other developments in the economies and industries where we, our customers, partners and

suppliers operate, including the ongoing situations in Ukraine and the Middle East;

- The cyclical nature of the markets in which we operate, competitor behavior, technological changes and the speed of technological adoption, customer consolidation, the number of competent suppliers, customer purchasing and spending appetite and behavior, deployments and rollout timing;
- High inflation and our ability to pass increased costs to our pricing;
- Price erosion largely driven by competition challenging the connectivity business models of our customers;
- Our dependency on a limited number of customers and large multi-year agreements;
- Competitiveness of, or developments regarding, pricing and agreement terms we offer, including developments with respect to customer financing or extended payment terms or credit lines that we provide our customers; and
- Willingness of banks or other institutions to purchase our receivables.

Our competitiveness

- Our ability to adapt to changing business models, technological changes and to meet new competition;
- Our ability to invest in new competitive high-quality products and services, such as 5G-Advanced, Open RAN, 6G, the Internet of Things (IoT), the cloud or software, upgrades and technologies that have accurately anticipated technological, regulatory and market trends;
- Our success in the development of new technologies and services, their rollout and commercialization in a timely manner;
- Our capabilities to manage end-to-end costs related to our portfolio of products and services;

Risk factors continued

- Severity of inefficiencies, incidents, malfunctions or disruptions of our information technology systems and processes or disruptions of services relying on our own or third-party IT, including cybersecurity threats and incidents;
- Actual or perceived security or privacy breaches, as well as defects, errors or vulnerabilities in our technology and that of third-party providers;
- Our manufacturing, service creation, delivery, logistics or supply chain to operate without significant interruptions or shortages, including the impacts of geopolitical tensions and open conflicts feeding uncertainty in the global supply chain;
- Performance capabilities of our partners and suppliers, and their high standards to meet product quality, health, safety or security requirements or comply with other regulations or local laws, such as environmental or labor laws;
- Natural or man-made disasters, military actions, wars, labor unrest, civil unrest or health crises, such as another global pandemic, impacting our service delivery or production sites or the production sites of our suppliers, which are geographically concentrated; and
- Our ability to retain, develop, reskill and recruit appropriately skilled employees in the right activities and locations.

Intellectual property rights, technology and brand licensing

- Our ability to create new relevant technologies, products and services through our R&D, as well as our ability to protect our innovations and to maintain the strength of our intellectual property portfolio;
- Our ability to monetize our intellectual property for instance, due to market, regulatory and other developments, or court rulings in intellectual property-related litigation and other disputes;
- Uncertainty relating to the evolving global regulatory and standardization landscape relating to intellectual property;
- Developments in the concentrated smartphone market, the source of a significant portion of our patent licensing income;
- Success and profitability of technology licensing, brand licensing and other business ventures, including venture fund investments where the valuation and proceeds of our venture fund investments may fluctuate;

- Our ability to renew existing license agreements and conclude new license agreements regarding our intellectual property that we license to others on acceptable commercial terms, and the timing, cost, and potential need for litigation to achieve such renewals and new license agreements;
- Claims that we have allegedly infringed third parties' IPR; and
- Our ability to renew or finalize licenses regarding technologies that are licensed to us on acceptable commercial terms.

Geopolitical, legal, regulatory and compliance environment

- Direct and indirect regulation and political developments affecting trade, taxation, national security, competition law, export controls and sanctions, cyber security, supply chains, environmental, social and governance topics and anti-corruption;
- Geopolitical tensions, escalations or expansions into open conflicts, such as potential further developments related to the situations with Russia and Ukraine or in Gaza, risks related to increasing tensions in the Red Sea and the South China Sea;
- Changes in existing regulations or in their application, and emerging new regulations applicable to current or new technologies, products or telecommunications and technology sectors in general impacting our products, services or business;
- Our products, services and operations meeting all relevant quality, health, safety or security standards and other recommendations and regulatory requirements globally;
- Compliance with laws and regulations relating to privacy, data protection, and the protection or transfer of personal data;
- Disruptiveness of litigation, arbitration or agreement-related disputes, and inspections, investigations, claims, and government proceedings which we may be subject to at any given time due to the global nature of our business;
- Our ability to maintain an effective system of governance and compliance processes, disclosure controls and internal control over financial reporting and influence those of third parties whose performance we may be held liable for;

- The degree of control and level of influence in the joint ventures where Nokia is the minority partner and other affiliated companies where Nokia does not have direct management control, or which are not fully integrated into its operational infrastructure; and
- Damage caused to existing undersea infrastructure during installation or maintenance of undersea telecommunications cable networks.

Financial and tax-related uncertainties

- Complex tax laws and rules, including any changes in the aforesaid, as well as diverse tax authority practices and interpretations;
- Our ability to utilize our tax attributes and deferred tax assets;
- Access to sources of funding on favorable terms or at all;
- Our ability to maintain our credit ratings;
- Exchange rate fluctuations impacting our net sales, costs and results of operations, as well as the US dollar value of our dividends and market price of our ADSs;
- Our pension and other post-employment benefit obligations and the potential need for increased funding; and
- Recoverability of the carrying amount of our goodwill, which could result in significant impairment charges.

Ownership of our shares

- Uncertainty of the amount of dividend and/or repayment of capital and other profit distributions such as share buybacks to shareholders for each financial period;
- Volatility of the trading price of our shares and ADSs, including as a result of factors outside our control; and
- Potential requirement of non-Finnish shareholders to provide detailed information in order to obtain advantageous withholding tax treatment for dividends.

Risk factors continued

Full risk factor discussion

Risks related to our strategy and its execution

We may be unable to successfully implement our strategic plans, sustain or improve the operational and financial performance of our business groups, correctly identify or successfully pursue business opportunities, correctly anticipate or successfully mitigate technological disruptions that have adverse effects on our business, or otherwise grow our business.

Our success is dependent on our ability to become and remain a leading provider of technology, software and services in the industries and markets in which we operate. However, there can be no assurance that we will correctly identify trends, opportunities or threats to pursue or mitigate to be able to achieve the goals or targets we have set. For example, our plans assume sustained growth in traffic over our customers' networks. For this to happen, video streaming needs to continue to grow significantly or new high-data use cases (for instance, Virtual Reality or Augmented Reality) need to be developed and drive high concurrency traffic. We also assume a growing number of use cases and demand for low latency services. Should these not materialize, demand for our products and services might be negatively affected.

Our path to continued technology leadership lies in long-term research and development to drive innovation across a comprehensive portfolio of network equipment, software, services and licensing. We are investing, for instance, in 5G-Advanced and 6G research, security and development of new standard-essential patents. The R&D of innovative products, services and technologies is a complex and uncertain process and there can be no assurance that our investments will result in technologies, products or services that achieve or retain broad or timely market acceptance, are commercially successful, answer to the expanding needs or preferences of our customers or consumers, or breakthrough innovations that we could otherwise utilize for value creation. As an example, while we believe that the progress of cloudification and open RAN and openness in general creates an opportunity for us to differentiate with our products and to serve our customers better, it may lead to entry of new competitors with different business models to build multi-vendor RAN networks. The virtualization and cloudification of core and radio networks and the convergence of IT and telecommunications may lower barriers of entry for IT and webscale companies in the traditional telecommunications industry or they may build up

tight strategic partnerships with our traditional competitors or our communications service provider customers. The enhanced competition might result in increased price competition and negatively affect our margins. Virtualization and disaggregation might also affect other parts of our portfolio and lead to changes in competitive landscape, business models, and margin profile. Also, reaching certain technology limits, for example in Optical or in spectral efficiency gains in 6G, might adversely change the demand pattern and competitive dynamics for our products and services. We see the network as the key enabler of metaverse opportunities, but the network capabilities will need to evolve to fulfill the anticipated needs.

We implement our strategic plans, for instance, by entering into licensing arrangements, partnering with third parties and may engage in possible transactions, such as acquisitions, mergers, joint ventures or minority investments that could complement or improve our existing operations or technologies and enable us to grow our business. We also engage to divestitures of our existing businesses or operations in order to sharpen our business focus. Additionally, we may make investments in certain investment funds, including NGP Capital, that invest in other companies. There can be no assurance that our efforts to continuously improve our operations and efficiencies will or continue to generate the expected results or improvements or that we will achieve intended targets or financial objectives related to such efforts. For instance, the underlying rationale or the business case in terms of profits, revenue, strategic impact or otherwise justifying the creation or continuation of the arrangement may not be realized. We may also encounter issues or inefficiencies related to our organizational and operational structure, including being unable to successfully implement the business plans. Also, the planned transactions may not ultimately be completed on favorable terms or at all, or transactions may result in liabilities. Transactions may result in claims between the parties such as indemnification or breach of contract claims, which can consume time and management attention, and the outcome of any claims related to transactions may be difficult to predict. Furthermore, our initial assumptions may be incorrect in evaluating a transaction or we may fail or be unable to discover or identify significant matters during the course of performing our due diligence. Therefore, we may be exposed to unknown, larger or contingent liabilities of acquired businesses, such as those related to contractual obligations, taxes, pensions, environmental liabilities, disputes and compliance matters.

Performance failures of our partners, as well as failures to agree to partnering arrangements with third parties could adversely affect us.

We are increasingly collaborating and partnering with third parties to develop technologies, products and services, as well as seeking new revenue streams through partnering arrangements. We also depend on partners in our efforts to monetize our brands and technologies, including those of Nokia and Nokia Bell Labs, and we have outsourced various functions to third parties and are relying on them to provide certain services to us. Furthermore, according to our technology vision for 2030, the opportunities of the metaverse will be realized by a multi-party value ecosystem developed around collaboration, co-innovation and partnering. Although the objective of the collaborative and partnering arrangements is a mutually beneficial outcome for each party, our ability to introduce and provide technologies, products and services in a timely manner and so that those are commercially viable and meet our, our customers' and consumers' quality, safety, security and other standards could be hampered by performance or other failures of our partners or the companies we collaborate with. For instance, if a partner acts inconsistently with our ethical, sustainability, compliance, brand, or quality standards, this can negatively affect our reputation, the value of our brand and the business outcome of our partnerships. Furthermore, if we fail altogether to achieve the collaboration or partnering arrangements needed to succeed, we may be unable to bring our products, services or technologies to market successfully or in a timely manner. It is also possible that the parties we currently collaborate with, turn into our competitors.

In many areas, including IT, finance and human resources-related arrangements, a failure to maintain an efficient relationship with the selected partner may lead to ongoing operational problems or even to severe business disruptions, and the availability of the processes and services upon which we rely may be interrupted. Performance problems may result in missed reporting deadlines, internal controls challenges, financial losses, missed business opportunities and reputational harm. In addition, as management's focus shifts from a direct to an indirect operational control in these areas, there is a risk that without active management and monitoring of the relationship, the services provided may be below appropriate quality standards. Partners may not meet agreed service levels, in which case, depending on the impacted service, our contractual remedies may not fully cure all of the damages we may suffer. This is particularly true for any

Risk factors continued

deficiencies that would impact the reporting requirements applicable to us as a company listed on multiple stock exchanges. In outsourcing projects, we may encounter disruption to business resulting from broken processes and distraction of our employees that may need to train the partner's staff or be trained in the partner's systems. Adjustments to staff size and transfer of employees to the partner's companies could have an adverse effect on us, for instance through impacting the morale of our employees and raising complex labor law issues and resulting in the loss of key personnel. Additionally, partnering and outsourcing arrangements can create a dependency on the outsourcing company, causing issues in our ability to learn from day-to-day responsibilities, gain hands-on experience, adapt to changing business needs and properly transfer the specific know-how to the new outsourcing partners. Concerns could equally arise from giving third parties access to confidential data, strategic technology applications and books and records. There is also a risk that we may not be able to determine whether controls have been effectively implemented, and whether the partner company's performance-monitoring reports are accurate.

Our efforts aimed at managing and improving our financial or operational performance may not lead to targeted results, benefits, cost savings or improvements in our competitiveness.

We are continuously targeting increased efficiency of our operations. In October 2023, we announced strategic and operational changes to our business and a program to reset our cost base while protecting our R&D capacity and commitment to technology leadership. The program targets to lower our cost base on a gross basis (i.e. before inflation) by between EUR 800 million and EUR 1 200 million by the end of 2026 compared to 2023 assuming on-target variable pay in both periods.

Failure by us to determine the appropriate operational structure, prioritization of operating expenses and other costs, to identify and implement the appropriate measures to increase simplicity and improve cost-efficiency, or to maintain achieved efficiency levels, could limit our future investments and have a material adverse effect on our competitiveness, results of operations and financial condition. Our current and future cost-saving measures may be costly, potentially disruptive to operations, and may not lead to sustainable improvements in our overall competitiveness and profitability and there can be no assurance that such measures will be met as planned in contemplated timeframes or at all. Our plans

may be altered in the future, including adjusting any projected financial or other targets. The anticipated costs or the level of disruption expected from implementing such plans or restructurings may be higher than expected. Efforts to plan and implement cost-saving initiatives may divert management attention from the rest of the business and adversely affect our business.

There are also several other factors that may prevent or delay a successful implementation of any cost-saving or efficiency improvement initiatives, including, among others, the following:

- the need to make additional investments in other areas such as 5G-Advanced and 6G, enterprise, security, cloud, development of new standard essential patents and automation/digitalization of services and our own operations;
- inaccuracy in our expectations with respect to market growth, customer demand and other trends;
- legislative constraints or unfavorable changes in legislation in the markets in which we operate influencing timing, costs and expected savings of certain contemplated initiatives;
- our ability to align and adjust resources, systems and tools, including digitalization and automation of processes, related to implementation of planned organizational changes;
- intended business plans may require us to inform or consult with employees and labor representatives, and such processes may influence the timing, costs and extent of expected savings and the feasibility of certain contemplated initiatives;
- accelerating inflation driving increase in cost base; and
- bargaining power of our suppliers which may prevent us from achieving targeted procurement savings.

Furthermore, cost-saving initiatives may negatively affect our ability to develop new or improve existing products and compete effectively in certain markets, and there is no guarantee that we will continue to be able to successfully innovate or remain technologically competitive.

We may be subject to increased scrutiny related to our sustainability activities and disclosures, and our reputation and brand as well as the willingness of customers and

suppliers to do business with us could be harmed if we fail to meet our sustainability goals.

Our business could be negatively impacted by a failure to appropriately address existing and emerging matters relating to sustainability and good corporate citizenship. We may fail or be unable to fully achieve one or more of our sustainability targets, such as our greenhouse gas emission commitments, due to a range of factors within or beyond our control, and we may adjust or modify our targets in light of new information, adjusted projections, or a change in business strategy, any of which could negatively impact our brand, reputation, and business. It is also possible that stakeholders may not be satisfied with our sustainability disclosures, targets and practices or the speed of their adoption which could result in action against Nokia by regulators or other third parties or negative pressure on us or our stock.

The ESG regulatory environment is complex and fast-moving with new standards proposed or adopted by various regulators around the world, the applicability of which to Nokia needs to be constantly and consistently evaluated. A failure to, or perception of a failure to, adapt, disclose metrics and set targets that are rigorous enough or in an acceptable format or otherwise in compliance with applicable regulations, or to prioritize the most relevant sustainability actions and targets, could negatively impact our ESG-related third-party ratings, brand, reputation, and business. It is also possible that third parties rating our ESG practices and performance may make unfavorable, inaccurate or unsubstantiated interpretations of our ESG practices and performance based on their own assessments and publish such interpretations with or without offering us the possibility to comment. We could also incur additional costs and require additional resources to address evolving regulatory requirements and to monitor and report on our sustainability performance programs, and those of our value chain partners, as required, and to comply with various sustainability practices and disclosure requirements. The lack of global standardization in the way data disclosures should be made is making ESG-related reporting difficult, which may contribute to challenges for investors to correctly assess disclosures or our ability to comply with each disclosure requirement. In addition to this, the challenge of data collection may affect our ability to accurately evaluate climate- and other ESG-related risks and identify and implement strategies for long-term resilience. Furthermore, we foresee that the global rate of technology adoption will be partially driven by sustainability matters such as governance, security

Risk factors continued

and energy efficiency in the longer term. Our failure, or perceived failure, to meet sustainability disclosure regulations, standards, practices or sustainability targets could result in legal sanctions, as well as negatively impact our reputation, employee retention, access to financing and the willingness of our customers and suppliers to do business with us.

Risks related to the general economic and financial market conditions and to the industries and markets in which we operate

Our sales and profitability have been and may in the future be materially and adversely affected by general economic and financial market conditions, such as accelerating inflation, increased global macroeconomic uncertainty, major currency fluctuations, higher interest rates and financing costs, and other developments in the economies where we operate.

We are a company with global operations with sales, R&D, manufacturing facilities, partners and suppliers located in various countries around the world. Adverse developments in and the general weakness of global economic conditions has had an adverse effect on us and the spending of our customers during the past year. For instance, the uncertain nature, magnitude, and duration of hostilities stemming from Russia's military invasion of Ukraine, including the potential effects of sanctions limitations, retaliatory cyber-attacks on the world economy and markets, or any other geopolitical escalation, for instance in the Middle East or Taiwan, could contribute to increased market volatility and uncertainty, which could have an adverse impact on macroeconomic factors affecting market demand, inflationary development and supply.

Any adverse developments in economies, such as increases in the level of inflation, interest rates or unemployment, may affect demand for consumables, such as mobile devices, mobile subscriptions and both the services that end-users subscribe to and the usage levels of such services, which may lead communications service providers to invest less in related infrastructure and services or to invest in low-margin products and services. This may further be mirrored as an adverse effect on the business of our patent, technology or brand licensees and our patent licensing income. Likewise, adverse developments in economic conditions may lead certain customer segments, such as webscale companies, transportation & logistics, energy, manufacturing, and public sector verticals, to invest less or delay spend in infrastructure and services to digitize their operations or to invest in low-

margin products and services. Further, the purchasing power of our customers, particularly in developing markets, depends to a greater extent on the price development of basic commodities and currency fluctuations, which may render our products or services unaffordable. Economic slowdown may also lead to an overcapacity in supply and inflated inventories, and to delays and shortages in case of sharp recovery and ramp-up of demand with a potentially adverse effect on our ability and our suppliers' ability to deliver products and services in time. Increasing inflation and other current market conditions are driving cost increases in operations, materials and labor and may also result in strikes and other industrial actions.

General uncertainty and adverse developments in the financial markets could have a material adverse effect on our, our customers', suppliers' and other partners' ability to obtain sufficient or affordable financing on satisfying terms. Higher interest rates have increased the cost of financing. Uncertain market conditions may further increase the price of financing or decrease its availability if the banks and investors were to tighten lending standards or increase interest rates, or if certain assets would decline in value, which could lead to difficulties in raising funds or accessing liquidity necessary to maintain our financial condition and ongoing operations.

We face intense competition and are dependent on development of the industries and markets in which we operate. The markets are cyclical and are affected by many factors, including the general economic environment, technological changes or the speed of technological adoption, competitor behavior, customer consolidation, customers' purchasing and spending appetite and behavior, including mix of supply, deployments and rollout timing. Our existing competition and new competition challenging the connectivity business models of our customers are driving price erosion.

The competitive environment in the markets in which we operate, including the related services markets, is characterized by maturing industry technologies, 5G and related new technologies, diversification of supplier ecosystems, equipment price erosion and aggressive price competition. Our competition endeavors to gain market share in selected regions where Nokia has a large footprint. Despite strong growth in mobile data traffic, most of our customer base has been facing persistent erosion in unit revenue and is reverting to vendors to compensate for it. Competition for new customers, as well as for new infrastructure deployment, is particularly intense and focused on the favorability of price and

agreement terms. We compete with companies that have large overall scale, which affords such companies more flexibility compared to us. In addition, new competition may be entering the network infrastructure and related services business through adoption of new technologies or business models, such as virtualized RAN and Open RAN or as-a-service models for products or services.

We are particularly dependent on the investments made by communications service providers in mobile connectivity, network infrastructure and related services. The pace and size of such investments are in turn dependent on the ability of communications service providers to increase their subscriber numbers, reduce churn, maintain or increase their average revenue per user, and compete with business models eroding revenue from traditional voice, messaging and data transport services, as well as the financial condition of such service providers. Their cost containment actions and merger activity have in the past constricted capital expenditure, and may continue to do so in the future, resulting in further competition and pressure on pricing and profitability. In addition, the investments of the communications service providers in the new spectrum assets may reduce their funds available for investing in the new network infrastructure and related services. Furthermore, the level of demand by communications service providers and other customers that purchase our products and services is dependent on their ability to monetize their investment and introduce new use cases and can therefore change quickly and vary over short periods of time. Communications service providers may also consolidate their supplier base to our disadvantage — all the way to a one-supplier model, for instance in a specific product area. A portion of our revenues is driven by the timing of completion and customer acceptances. As a result of the uncertainty and variations in the telecommunications and vertical industries, accurately forecasting revenues, results and cash flow remains difficult. Furthermore, significant reduction of business with us could result in the loss of benefits related to economies of scale.

We may be unable to respond successfully to technological changes in the markets in which we operate. Market developments favoring new technological solutions, such as Software Defined Networks (SDNs), Edge computing, cloud and virtualization, may result in reduced spending to the benefit of our competitors who have, or may have, a stronger position in such technologies. The technological viability of standardized, low-margin hardware products in combination with the

Risk factors continued

virtualization of functions can induce a change in purchase behavior, resulting in favoring other vendors or in higher bargaining power versus Nokia due to more alternative vendors. Our customers may prefer best-of-breed from multiple vendors, a single vendor or turn to alternative vendors to maintain end-to-end services. Additionally, new competitors may enter the industry as a result of acquisitions or shifts in technology. Furthermore, some companies, including webscale companies, may drive a faster pace of innovation in telecommunications infrastructure through more collaborative approaches and open technologies across access, backhaul, core and management.

We expect to generate a significant share of our growth from new customers, including webscale companies and vertical customers, for example in transportation & logistics, energy, manufacturing, and public sector verticals. Each of these sectors may face adverse industry developments, which may significantly impact the size of investments addressable by us and our ability to address these investments, in terms of both having the right products available and being able to obtain new customers and having the right go-to-market capabilities and expertise to address the specific needs of these sectors. Furthermore, there are various incumbent and new actors competing with Nokia in these customer groups we strategically target. With these types of customers, the nature of competition and the required capabilities can be significantly different from the communications service provider market, including competition based on access network, core network, cloud infrastructure, platforms, applications and devices, and related services.

Competitive intensity remains high in the market as competitors seek to take share in 5G rollouts, which is creating a risk of persistent high price erosion in the industry. If domestic and global economic conditions worsen, overall spending on 5G infrastructure may be reduced or delayed, and spending in our other network products and services might be even more rapidly reduced to preserve the customer investment in 5G, which would adversely impact demand for our products and services in these markets. Further, any reduction in our market share in 5G compared with our installed base in 4G due to decisions to protect our profitability, inability to meet the customers' requirements or other reasons, may have a material negative effect on our scale and profitability.

We are dependent on a limited number of customers and large multi-year agreements. The loss of a single customer or contract, operator consolidation, unfavorable contract terms or other issues related to a single agreement may have a material adverse effect on our business and financial condition.

A significant proportion of the net sales and profits that we generate have historically been derived from a limited number of customers. As consolidation among existing customers continues, it is possible that an even greater portion of our net sales will be attributable to a smaller number of large communications service providers. These developments are also likely to increase the impact on our net sales based on the outcome of certain individual agreement tenders. Communications service providers are also increasingly entering into asset sharing arrangements, as well as joint procurement agreements, which may reduce their investments and the number of networks available for us to service. Furthermore, procurement organizations of certain large communications service providers sell consulting services to enhance the negotiating position of small operators with their vendors.

As a result of the intense competition in the industry, we may increasingly be required to agree to less favorable terms in order to remain competitive. Any unfavorable developments in relation to, or any change in the agreement terms applicable to, a major customer may have a material adverse effect on our business, results of operations and financial condition. Also, agreements in the networks business are typically complex and long-term in nature and it is possible that over time the contract terms of the agreement may prove less favorable to us than originally expected, for instance due to changes in costs and product portfolio decisions, and those may be difficult to amend promptly to address new developments, such as the accelerating inflation that we are currently facing.

Furthermore, in particular given the bargaining power of our customers or limited legal ability to deviate from the standard governmental contract terms, we may be exposed to onerous terms and liabilities in our customer contracts.

Loss of a single customer, its significant business or contract, or other issues related to a single agreement, may have a material adverse effect on our business and financial condition. We have lost customers and contracts in the past and the same may happen in the future. Furthermore, any suspension, termination or non-performance by us under an agreement's terms may have a material adverse effect on us, for example due to penalties for breaches, early termination or reduced orders or customer footprint. In addition, we may lose existing agreements, or we may be unable to renew or gain new agreements, for instance due to customer policies that limit the ability of customers to have one network provider exceeding a certain threshold of business in a given market or as a result of merger activity where the customer may decide to concentrate their spending elsewhere.

The timing of sales and results of operations associated with large multi-year agreements or turnkey projects may differ significantly from expectations. For instance, recognition of sales and related costs in network implementation projects are often linked with achievement of customer acceptances, which may delay for reasons that may or may not be attributable to us. Moreover, such agreements often require dedication of substantial amounts of working capital and other resources, which may adversely affect our cash flow, particularly in the early stages of an agreement's term, or may require us to continue to sell certain products and services, or to sell in certain markets that would otherwise be discontinued or exited, thereby diverting resources from developing more profitable or strategically important products and services, or focusing on more profitable or strategically important markets. Furthermore, our customer agreements may involve complex transformation of the networks as the customers deploy new technologies and the related costs and scope of required deliverables may differ from our expectations at the time we enter into such agreements.

Risk factors continued

We may be adversely affected by developments with respect to customer financing or extended payment terms that we provide to our customers. Unwillingness of banks or other institutions to provide guarantees or financing to our customers or purchase our receivables could impair our capability to enter agreements with new customers or markets, to mitigate payment risk and to manage our liquidity.

Requests for customer financing and extended payment terms are typical for our industry and uncertainty or lack of liquidity in the financing markets, among other things, may result in increased customer financing requests. In the event that export credit agencies face constraints on their ability or willingness to provide guarantees or financing to our customers, or there is insufficient demand from banks or other financial institutions to purchase receivables, such events could have a material adverse effect on our business and financial condition. Furthermore, reduced availability of credits by export credit agencies supporting our sales could affect our ability to attract customers and enter new markets thus facing the possibility of reduced sales.

In certain cases, the amounts and duration of these financings and trade credits, and the associated impact on our working capital, may be significant. We have agreed to extended payment terms for a number of our customers and may continue to do so in the future. Extended payment terms may result in a material aggregate amount of trade credits and even when the associated risk is mitigated by a diversified customer portfolio, defaults in the aggregate could have a material adverse effect on us.

All in all, our ability to manage our total customer financing and trade credit exposure depends on a number of factors, including, but not limited to market conditions affecting our customers, the levels and terms of credit available to us and our customers, the cooperation of export credit agencies and our ability to mitigate exposure on acceptable terms. We may be unsuccessful in managing the challenges associated with the customer financing and trade credit exposure that we may face from time to time, particularly in difficult financial conditions in the market. While defaults under financings, guarantees and trade credits to our customers resulting in impairment charges and credit losses have not been significant for us in the past, these may increase in the future, in particular in markets such as India with increased risks potentially affecting our customers. Further, commercial banks may not continue to be able or willing to provide sufficient long-term financing, even if backed

by export credit agency guarantees, due to their own constraints, and certain of our competitors may also have greater access to such financing, which could adversely affect our competitiveness. Additionally, we have sold certain receivables to banks or other financial institutions, and any significant change in our ability to continue this practice could impair our capability to mitigate such payment risk and to manage our liquidity.

Nokia also arranges bank guarantees and bonds and issues commercial guarantees in customers' favor in relation to our business. In the event we are unable to collect outstanding guarantees and bonds, this could limit our possibilities to issue new guarantees and bonds, which are required in customer agreements or practices. We also face a risk that such commercial guarantees/bonds may be unfairly called.

Risks impacting our competitiveness

We may fail to invest effectively and profitably in new competitive high-quality products, services, upgrades and technologies or bring them to the market in a timely manner.

We also may fail to adapt to changing business models. Our business performance and results of operations will depend to a significant extent on our ability to succeed in the following areas:

- maintaining and developing a competitive product portfolio and service capability that is attractive to our customers, for instance by keeping pace with technological advances in our industry and pursuing technologies that become commercially accepted and price competitive;
- maintaining compliance with regulatory requirements and standards;
- introducing new products, services and upgrades of current products and doing so on a cost-efficient and timely basis;
- developing new or enhancing existing processes and tools for our service offerings;
- optimizing the amount of customer or market-specific technology, product and feature variants in our product portfolio;
- continuing to meet evolving expectations and enhancing the quality of our products and services, complying with emerging industry standards as well as introducing products and services that have desired features and attributes, such as energy efficiency;

- maintaining and building up strategic partnerships in our value creation chain (e.g. in product creation and project delivery); and
- leveraging our technological strengths and addressing competing technological and product developments carried out by competitors while keeping prices and costs at competitive levels.

The industries in which we operate are characterized by rapidly evolving technologies, frequent new technological requirements, product feature introductions and evolving industry standards. The participants in the markets where we operate compete on the basis of product and service offerings, technical capabilities and quality in addition to price and affordability.

The R&D of new, innovative and technologically advanced products, such as 5G-Advanced, Open RAN, 6G, IoT, the cloud and software as well as upgrades to current products and new generations of technologies, is a complex and an uncertain process requiring high levels of innovation and investment, including trying to accurately anticipate technological, regulatory and market trends. We may focus our resources on products and technologies that do not become widely accepted or ultimately prove unviable. Additionally, many of our current and planned products are highly complex and may contain defects or errors that are, for instance, detected only after deployment in telecommunications networks. Even if we invest in new competitive products, services, upgrades or technologies and proactively manage the costs related to our portfolio of products and services, including component sourcing, manufacturing, logistics and other operations, we may still fail to maintain or improve our market position, competitiveness or scale and keep prices and costs at competitive levels or provide high-quality products and services.

Certain of our competitors have significant resources to invest in market exploration and may seek new monetization models or drive industry development and capture value in areas where we may not currently be competitive or do not have similar resources available to us. These areas may include monetization models linked to large amounts of consumer data, large connected communities, home or other entertainment services, alternative payment mechanisms or marketing products. We also face competition from various companies that may be able to develop technologies or products that become preferred over those developed by us or result in adverse effects on us through, for instance,

Risk factors continued

developing technological innovations that make our innovations less relevant. In addition, reduced government funding and support for our R&D activities could affect our ability to develop new technology or products.

Inefficiencies, incidents, malfunctions or disruptions of information technology systems and processes could have a material adverse effect on our business and results of operations. As our business operations, including those we have outsourced, rely on complex IT systems, networks and related services, our reliance on the precautions taken by us and external companies to ensure the reliability of our own and third-party IT systems, networks and related services is increasing. Consequently, certain disruptions in IT systems and networks affecting us and our external providers could also have a material adverse effect on our business. All IT systems, networks and processes are potentially vulnerable to damage, incidents, malfunction or interruption from a variety of sources. Our own and customer-facing operations rely on the efficient and uninterrupted operation of complex and centralized IT systems, networks and processes, which are integrated with those of third parties. The ongoing migration to cloud-based architectures and network function virtualization has introduced further complexity and associated risk.

We are, to a significant extent, relying on third parties for the provision of IT services. While we have outsourced certain functions, we have also increased our dependence on the reliability of external providers as well as on the security of communication with them. We may experience disruptions if our partners do not deliver as expected or if we are unable to successfully manage systems and processes together with our business partners. We will often need to use new service providers and may, due to technical developments or choices regarding technology, increase our reliance on certain new technologies, such as cloud, and certain other services that are used over the internet rather than using a traditional licensing model. Switching to new service providers and introducing new technologies is inherently risky and may expose us to an increased risk of disruptions in our operations, for instance due to network inefficiency or outage, a cybersecurity or a compliance incident, malfunctions, failure in disaster recovery or IT service continuity or other disruptions resulting from IT systems and processes.

We are constantly seeking to improve the quality and security of our IT systems. However, despite precautions taken by us, we may fail to successfully secure our IT and any malfunction or disruption of our current or future systems or networks, such as an outage in a telecommunications network used by any of our IT systems, or a cybersecurity incident, such as an attack, malware, ransomware or other event that leads to an unanticipated interruption or malfunction of our IT systems, processes, networks or data leakages, could have a material adverse effect on our business, results of operations and brand value. A disruption of services relying on our IT, for instance, could cause significant discontent among customers and their end-users resulting in claims, contractual penalties or deterioration of our brand value. Further, while we are increasing our investments in digitalizing our operations and transforming our IT, the legacy IT systems may be gradually more vulnerable to malfunction, disruptions or security incidents than the new IT systems replacing them.

We are exposed to risks related to information security. Our business model relies on solutions for distribution of services and software or data storage, which entail inherent risks relating not only to applicable regulatory regimes, but also to cybersecurity incidents and other unauthorized access to network data or other potential security risks that may adversely affect our business and/or compromise personal data.

Our business and operations rely on confidentiality of proprietary and other sensitive information, for instance related to our employees and our customers, including our government customers. Our business models rely on certain centralized data processing solutions and cloud or remote delivery-based services for distribution of services and software or data storage, accessible by our partners or subcontractors according to the roles and responsibilities defined.

We, our subsidiaries and joint ventures, products and online services, marketing and developer sites and third parties that we contract have been and may in the future be subject to cybersecurity incidents, including hacking, ransomware, viruses, worms and other malicious software, unauthorized modifications, or illegal activities that may cause potential security risks and other harm to us, our customers or consumers and other end-users of our products and services. IT is rapidly evolving, the techniques used to obtain unauthorized access or sabotage systems change frequently and the parties behind cyber-attacks and other industrial

espionage are sophisticated and have extensive resources, and it is not commercially or technically feasible to mitigate all known vulnerabilities in a timely manner or to eliminate all risk of cyber-attacks and data breaches. Additionally, we contract with multiple third parties in various jurisdictions who collect and use certain data on our behalf. Although we have processes in place designed to ensure appropriate collection, handling and use of such data, third parties may use the data inappropriately or breach laws and agreements in collecting, handling or using or leaking such data. Our business is also vulnerable to theft, fraud or other forms of deception, sabotage and intentional acts of vandalism by third parties and employees. Further, compared to our fully integrated group companies, our ability to mitigate and oversee risk of cyber-attacks and data breaches may be more limited in our joint venture companies and other group companies having their own governance and system infrastructure, such as our local service companies focusing on network field services.

The cybersecurity incidents may lead to lengthy and costly incident response, remediation of the attack or breach, legal proceedings and fines imposed on us, as well as adverse effects to our reputation and brand value. Additionally, cyber-attacks can be difficult to prevent, detect or contain. We cannot rule out the possibility that there may have been cyber-attacks that have been successful and/or evaded our detection. We continue to invest in risk mitigating actions; however, there can be no assurance that such investments and actions will prevent or detect future cyber-attacks. Additionally, the cost and operational consequences of implementing further information system protection measures, especially if prescribed by national authorities, could be significant.

We may not be successful in implementing such measures in due time, which could lead to business disruptions and the implementation to be more expensive, time-consuming and resource intensive. The regulatory framework around responding to and disclosing such events is in flux. We may not be able to comply with the regulations that must be implemented or such compliance may negatively impact our ability to deal with the underlying event.

In connection with providing products and services to our customers, certain personal and consumer data is collected, stored and processed through us, either by us or by our business partners or subcontractors in various jurisdictions. Loss, improper disclosure or processing or leakage of any personal or consumer data collected by us, or which is made

Risk factors continued

available to us or our partners or subcontractors or stored in or through our products and services, could have a material adverse effect on us and harm our reputation and brand. Additionally, governmental authorities may misuse our network products to access the personal data of individuals without our involvement; for example, through the so-called lawful intercept capabilities of network infrastructure, impairing our reputation.

We may face problems or disruptions in manufacturing, service creation, delivery, logistics or supply chain. Such challenges include securing availability of resources or components to meet the demand, ability to adapt supply, defects in products or related software or services, and achieving required efficiencies and flexibility. Our suppliers and partners may fail to meet product quality, health, safety or security requirements or comply with other regulations or local laws, such as environmental, social or labor laws. Additionally, adverse events, such as geopolitical disruptions, natural or man-made disasters, civil unrest or health crises, have and may continue to have an impact on our service delivery, production sites or the production sites of our suppliers and partners which are geographically concentrated.

We have an extensive supply network, including a geographically dispersed manufacturing network consisting of both our own manufacturing and contract manufacturing partners. We, or third parties that we have outsourced manufacturing and services delivery to, may experience difficulties in adapting supply to meet the changing customer demand, ramping up and down production, adjusting network implementation capabilities as needed on a timely basis, maintaining an optimal inventory level, adopting new manufacturing processes, finding the most timely way to develop the best technical manufacturing solutions for new products, managing the increasingly complex manufacturing process, service creation and delivery process or achieving required efficiencies and flexibility. In addition, these operations are exposed to various risks and potential liabilities, including those related to geopolitics, transition to low carbon economy, compliance with laws and regulations, exposure to environmental liabilities or other claims. In addition to operational complexity, these may increase our costs related to our supply chain.

Our manufacturing operations depend on obtaining sufficient quantities of fully functional products, components, sub-assemblies, software, services, energy and other resources

on a timely basis. In certain cases, a particular component or service may be available only from a limited number of suppliers or from a single supplier in the supply chain. Suppliers have and may, from time to time, extend lead times, limit supplies, change their partner preferences, increase prices, provide poor quality supplies or be unable to adapt to changes in demand due to capacity constraints or other factors, which could adversely affect our ability to deliver our products and services on a timely basis or increase our costs. For example, the global semiconductor components shortage constrained our deliveries and the continuing uncertainty around components, raw material availability and potential energy shortages in the market limit our visibility and may continue to have an impact on our ability to supply to our customers and increase our costs. We are working closely not only with our suppliers to ensure component availability but also with our customers to ensure we can meet their needs. We are also building up critical material buffers to be prepared to balance short-term disruptions. Many of our competitors and also companies from other industries utilize the same contract manufacturers, component suppliers and service vendors. If they have purchased capacity or components ahead of us, or if there is significant consolidation in the relevant supplier base, this could prevent us from acquiring the required components or services, which could limit our ability to supply our customers and increase our costs.

Our products are highly complex and defects in their design, manufacture and associated hardware, software, content and installation have occurred in the past and may continue to occur in the future. Quality issues may cause, for instance, delays in deliveries, loss of intellectual property, liabilities for network outages, court fees and fines due to breaches of significantly increasing regulatory privacy requirements and related negative publicity, and additional repair, product replacement or warranty costs to us, and harm our reputation and our ability to sustain or obtain business with our current and potential customers. With respect to our services, quality issues may relate to the challenges of having the services fully operational at the time they are made available to our customers and maintaining them on an ongoing basis. We may also be subject to damages due to product liability claims arising from defective products and components. We make provisions to cover our estimated warranty costs for our products and pending liability claims. We believe our provisions are appropriate, although the ultimate outcome may materially

differ from the provisions that are provided for, which could have a material adverse effect on us.

A large proportion of our manufacturing, service creation and delivery is carried out by third-party suppliers. These vary in size and often engage a number of tiers of suppliers, which limits our direct control. Suppliers may fail to meet our supplier requirements, such as product quality, safety, security and other standards of us and our customers. Certain suppliers may not comply with local laws, including, among others, local labor law, health and safety or environmental requirements. The activities we manage or that are managed by third parties for us may also be subject to negative publicity and purchasing boycotts, strikes or other forms of social, political, economic or environmental activism. These all can lead to exposure in the form of litigation, product recalls or brand damage through association.

Many of our production sites or the production sites of our suppliers and partners are geographically concentrated, with a majority of such suppliers and partners based in Asia. We rely on efficient logistics chain elements, such as regional distribution hubs and transport chain elements (main ports, streets and airways). We are working on gradually increasing the regionalization of our supply network to increase resilience. However, in the event that any of these geographic areas are affected by any adverse conditions that disrupt production or deliveries from our suppliers and partners, such as trade restrictions, severe impacts of environmental events, geopolitical events, man-made or natural disasters (for instance, flooding, heavy rain or extreme heat that climate change is expected to further intensify or current unrest by the Red Sea), war, civil unrest or health crises such as the COVID-19 pandemic, our ability to deliver our products on a timely basis could be adversely affected. In a similar manner, these adverse conditions may also cause disruption to our service creation and delivery, which, in either case, may lead to a material adverse effect on our business and results of operations.

Competition for employees and leaders is increasing globally. We may be unable to retain, motivate, develop, reskill and recruit appropriately skilled employees or we may fail in workforce balancing. Employees may face change fatigue or reduction in motivation and energy as our efforts to evolve our business and improve efficiency continue. Our success in executing our strategy, to address opportunities in new technologies and business models and customer

Risk factors continued

segments in particular, requires and is dependent on our ability to retain, motivate, develop, reskill and recruit appropriately skilled employees and in particular those with relevant technical expertise. Our workforce has fluctuated over recent years as we have introduced changes in our strategy to respond to our business targets and endeavors. In October 2023, we announced strategic and operational changes to our business and a program to reset our cost base. The program is expected to lead to a 72 000 to 77 000-employee organization compared to the 86 000 employees Nokia has today. Such changes and uncertainty may cause disruption, fatigue and dissatisfaction among employees as our efforts to evolve our business and maximize operational efficiency continue. Employee motivation, energy, focus, morale and productivity may be reduced, causing inefficiencies and other problems across the organization resulting in the loss of key employees and increased costs in resolving and addressing such matters. The loss of key employees could result in resource gaps, some of which may only be noticed after a certain period of time or which negatively impact our relationship with customers, vendors or other business partners.

Our efforts to rebalance our workforce as planned may fail, for instance due to legal restrictions or collective bargaining agreements, which may result in a non-optimal workforce, larger than expected costs and not meeting our financial targets for such plans. Our inability to negotiate successfully with employee representatives or failures in our relationships with such representatives could result in strikes and other industrial actions by the employees which may in turn result in significant disruption in our day-to-day operations and higher ongoing labor costs. The market for skilled employees is increasingly competitive, particularly given the similar technology trends affecting various industries simultaneously and increased remote working expanding the job market for individual employees. We have encountered, and may in the future encounter, shortages of appropriately skilled employees or lose key employees or senior management. There can be no assurances that we will be able to implement measures successfully to retain or hire the employees we need. This may require significant time, attention and resources from our senior management and other key employees within our organization and may result in increased costs or otherwise have a material adverse effect on us.

In response to our experience during the COVID-19 pandemic and our employees' feedback, we provide flexibility for

employees to work up to three days a week remotely and increased support for flexible working hours and fully virtual working. With the permanently increasing share of remote working, there is a risk that we may be exposed to a larger extent than before to impacts related to remote work and arranging the home office, such as increased attrition, decreased creativity or productivity of employees, supervising working hours, challenges in identifying, assessing and supporting employees in stress or poor mental health, inability to help employees to work safely in their home office environment or developing and supervising the execution of related internal policies leading to potential health issues and litigation.

Risks associated with intellectual property rights, technology and brand licensing

Our patent licensing income and other intellectual property-related revenues are subject to risks and uncertainties such as our ability to maintain our existing sources of intellectual property-related revenue, establish new sources of revenue and protect our intellectual property from infringement. A proportionally significant share of the current patent licensing income is generated from the smartphone market, which is rapidly changing and features a limited number of large vendors.

The continued strength of our intellectual property portfolios depends on our ability to create new relevant technologies, products and services through our R&D activities and to protect our intellectual property rights (IPR). If those technologies, products and services do not become relevant, and therefore attractive to potential licensees, the strength of our intellectual property portfolios could be reduced. Despite the steps that we have taken to protect our technology investments with IPR, we cannot be certain that any rights or pending applications will be granted or that the rights granted in connection with any future patents or other IPR will be valid and sufficiently broad to protect our innovations and maintain the relative strength of our portfolio. Third parties may infringe our intellectual property relating to our proprietary technologies or disregard their obligation to seek necessary licenses under our patents or seek to pay less than reasonable licensing fees. As a result, we may be unable to continue to develop or protect our intellectual property-related revenue or establish new sources of revenue.

Regulatory and other developments regarding protection awarded to technology innovations or compensation trends

with respect to licensing may impact our ability to protect, monetize or divest our intellectual property. Any patents or other IPR may be challenged, invalidated or circumvented, and any right granted under our patents may not provide competitive advantages for us. In the technology sector generally, certain licensees are actively avoiding concluding license agreements on fair and reasonable commercial terms, or are withholding making license payments, while some suggest that licensors may be able to collect unreasonably high license payments, with both behaviors attracting regulatory attention. Authorities in various countries have increasingly monitored patent monetization and may aim to influence the terms on which patent licensing arrangements or patent divestments may be executed, which could compromise control over or protection of our technology and proprietary information. Such terms may be limited to a certain country or region; however, authorities could potentially seek to widen the scope and even impose global terms, potentially resulting in an adverse effect on us or limiting our ability to monetize our patent portfolios.

There is no assurance that past levels are indicative of future levels of intellectual property-related revenue. Poor performance by any of Nokia's patent, technology or brand licensees may impact Nokia financially, for example, if a licensee's ability to pay is reduced, the licensee decides to divest or scale back a particular part of its business or it becomes insolvent or bankrupt. Additionally, poor performance of potential or current licensees may limit a licensee's motivation to seek new or renew existing licensing arrangements with us. Furthermore, patent license agreements can cover both past and future sales of licensees, and the portion of the income that relates to licensees' past sales is not expected to have a recurring benefit. Ongoing patent income from licensing is generally subject to various factors (for instance, sales by the licensees) that we have little or no control over, and it can vary considerably from time to time based on factors such as the terms of agreements we enter into with licensees.

We seek to expand the scope of our licensing activities to other industries, in particular those that implement mobile communications and multimedia technologies, such as the automotive, consumer electronics and IoT industries. The actors in some of these industries may not have traditionally paid intellectual property-related royalties and the expansion of our licensing activities into such industries may involve

Risk factors continued

litigation. In addition, entering highly fragmented markets or markets with a high volume of licensees may affect our effectiveness and/or profitability.

We retained our patent portfolio after the sale of the Devices & Services business in 2014. Following the sale of the Devices & Services business, Nokia is no longer required to agree upon cross-licenses to cover Nokia's handset business, which has contributed to growing our licensing revenue. While this has been our practice, there can be no guarantee that this can be continued in the future. Also, in the past, parts of our intellectual property development were driven by innovation from the Devices & Services business. As we no longer own this business, our future intellectual property relating to the mobile phone sector may lessen and our ability to influence industry trends and technology selections may reduce.

We also enter into business agreements on behalf of our business groups, which may grant certain licenses to our patents. Some of these agreements may inadvertently grant licenses to our patents with a broader scope than intended, or they may otherwise make the enforcement of our patents more difficult.

To renew existing license agreements and conclude new license agreements with potential licensees, we may and have engaged in legal actions to enforce our intellectual property rights against unlawful infringement, the outcomes of which are uncertain.

Intellectual property-related disputes are common in the technology industry. While we strive to reach negotiated settlements of any disputes in relation to license agreements with companies using our intellectual property, sometimes it is necessary to engage in litigation or arbitration in order to renew existing license agreements which have expired or conclude new license agreements with unlicensed parties. In certain cases, we have engaged in litigation or arbitration proceedings to enforce our rights, for instance to enforce our patents or to establish the terms of a patent license agreement. Due to the nature of litigation and arbitration proceedings, there can be no assurances as to the final outcome, timing or costs involved in such litigation or arbitration proceedings or as to our ability to renew existing license agreements or conclude new license agreements with potential licensees on acceptable commercial terms.

In other cases, other companies have commenced and may continue to commence actions against us seeking to establish

the invalidity of our intellectual property, including our patents, or to contest our licensing practices or file competition law complaints with courts or competition authorities. In the event that one or more of our patents is challenged, a court may invalidate the patent or determine that the patent is not enforceable. The outcome of court proceedings is difficult to predict and, consequently, our ability to use intellectual property for revenue generation may from time to time depend on favorable court rulings. Additionally, if any of our patents is invalidated, or if the scope of the claims in any patents is limited by a court decision, we could be prevented from using such patents as a basis for product differentiation or from licensing the invalidated or limited portion of our IPR. Even if such a patent challenge is not successful, the related proceedings could be expensive and time-consuming, divert the attention of our management and technical experts from our business and have an adverse effect on our reputation. Any diminution in the protection of our IPR could cause us to lose certain benefits of our R&D investments.

While the primary source of Nokia Technologies business group net sales and profits is licensing of the Nokia patents, we are also engaged with licensing of technologies and of the Nokia brand, as well as with other business ventures, including technology innovation and incubation. Expected net sales and profitability for these businesses may not materialize as planned or, for some of these businesses, at all.

There can be no assurances that our Nokia Technologies business group, or any other part of Nokia, will be successful in innovation and incubation or in generating net sales and profits through its business plans, for instance in patent, technology and brand licensing. The industries in which we operate, or may operate in the future, are generally fast paced, rapidly evolving, innovative and at different levels of maturity. Additionally, we are entering into new business areas based on our technology assets and may explore new business ventures. Such business areas or plans may be adversely affected by adverse industry and market developments in the numerous diverse markets in which we operate, and the investments we make may not achieve the targeted scale, intended benefits or yield expected rates of return.

Our products, services and business models depend on technologies that we have developed as well as technologies that are licensed to us by certain third parties. As a result, evaluating the rights related to the technologies we use or

intend to use is increasingly challenging, and we expect to continue to face claims that we have allegedly infringed third parties' IPR. The use of these technologies may also result in increased licensing costs for us, restrictions on our ability to use certain technologies in our products and/or costly and time-consuming litigation.

Our products and services include increasingly complex technologies that we have developed or that have been licensed to us by certain third parties. The amount of such proprietary technologies and the number of parties claiming to own relevant IPR continue to increase. The holders of patents and other IPR potentially relevant to these complex technologies may be unknown to us, may have different business models, may refuse to grant licenses to their proprietary rights or may otherwise make it difficult for us to acquire a license on commercially acceptable terms. If licensing agreements are not available on commercially acceptable terms, we could be precluded from making and selling the affected products or could face increased licensing costs. As new features are added to our products, we may need to acquire further licenses, including from new and sometimes unidentified owners of intellectual property. The lack of availability of licenses for copyrighted content, delayed negotiations or restrictive IPR license terms may have a material adverse effect on the cost or timing of content-related services and products offered by us, mobile network operators or third-party service providers. The cumulative costs of obtaining any necessary licenses are difficult to predict and may be significant.

Additionally, although we endeavor to ensure that we and the companies collaborating with us possess appropriate IPR or licenses, we cannot fully avoid the risks of IPR infringement by suppliers of components, processes and other various layers in our products, or by companies with which we collaborate. Similarly, we and our customers may face claims of infringement in connection with the use of our products. Any restrictions on our ability to sell our products due to expected or alleged infringements of third-party IPR and any IPR claims, regardless of merit, could result in a material loss of profits, costly litigation, the obligation to pay damages and other compensation, the diversion of the attention of our key employees, product shipment delays or the need for us to develop non-infringing technology or to enter into a licensing agreement on unfavorable commercial terms.

Risk factors continued

In line with standard practice in our industry, we generally indemnify our customers for certain intellectual property-related infringement claims initiated by third parties relating to products or services purchased from us. These may include claims from non-practicing entities having no product or service business. If such claims are made directly against our customers, we may have limited opportunities to participate in the processes including in negotiations and in defenses, or to evaluate the outcomes and resolutions in advance. All IPR indemnifications can result in significant payment obligations for us that are difficult to estimate in advance. Moreover, our indemnification responsibilities typically arise whether or not the IPR assertions against our customers have merit.

Since all technology standards that we use and rely on, including mobile communication technologies such as the Universal Mobile Telecommunications System (UMTS), Long-Term Evolution (LTE) and 5G, or fixed line communication technologies, include certain IPR, we cannot avoid risks of facing claims for infringement of such rights due to our reliance on such standards. We believe the number of third parties declaring their patents to be potentially relevant to these standards is increasing, which may increase the likelihood that we will be subject to such claims in the future. As the number of market entrants and the complexity of technologies increase, it remains likely that we will need to obtain licenses with respect to existing and new standards from other licensors. While we believe most of such IPR actually found to be essential to a particular standard carries an obligation to be licensed on fair, reasonable and non-discriminatory terms, not all intellectual property owners agree to apply such terms, nor do all owners agree on what is fair, reasonable and non-discriminatory. As a result, we have experienced costly and time-consuming litigation proceedings against us and our customers or suppliers over such issues and we may continue to experience such litigation in the future.

From time to time, certain existing patent licenses may expire or otherwise become subject to renegotiation. The inability to renew or finalize such arrangements or renew licenses with acceptable commercial terms may result in litigation, which may be expensive and time-consuming and divert the efforts of our management and technical experts from our business and, if decided against us, could result in unfavorable judgments or restrictions on our ability to sell certain of our products or require us to pay increased licensing fees, fines or other penalties and expenses, and/or to enter into costly settlements.

Our patent license agreements may not cover all the future businesses that we may enter, our existing business may not necessarily be covered by our patent license agreements if there are changes in our corporate structure or our subsidiaries, or our newly acquired businesses may already have patent license agreements with terms that differ from similar terms in our patent license agreements. This may result in increased costs, restrictions in the use of certain technologies or time-consuming and costly disputes whenever there are changes in our corporate structure or our subsidiaries, or whenever we enter into new business areas or acquire new businesses.

We make accruals and provisions to cover our estimated total direct IPR costs for our allegedly infringing products. Our estimated total direct IPR costs take into account items such as payments to licensors, accrued expenses under existing agreements and provisions for potential liabilities. We believe our accruals and provisions are at an appropriate level. The ultimate outcome, however, may differ from the provided level, which could have an adverse impact on us.

Risks stemming from geopolitical, legal, regulatory and compliance environment

Current international trends show increased enforcement activity in areas such as national security, competition law, export control and sanctions, privacy, cybersecurity, climate change, human rights and anti-corruption. Furthermore, we have observed an increase in the adoption of surveillance, data localization, national sourcing and national hiring requirements, regulations and policies, as well as regulators' increased interest in regulatory reform and reorganization and their growing appetite for tackling topics such as non-personal data, artificial intelligence, open access and net neutrality.

We conduct our business globally, being subject to direct and indirect regulation and exposed to geopolitical and regulatory risks, such as complex regulatory frameworks, unfavorable or unpredictable treatment in relation to trade sanctions, tariffs, tax matters and export controls, exchange controls and other restrictions, geopolitical conflicts and military actions, labor unrest, civil unrest, and public security and safety threats, which could have a material adverse effect on us and our supply chain and our ability to sell or supply products and services, including network infrastructure equipment and components manufactured in such countries .

We have witnessed political unrest and open conflicts in the past in various markets in which we conduct business or in which we have operations, which have adversely affected our sales, profitability or operations in these markets, including the safety and security of our employees, and also in certain cases affected us outside these countries or regions. Any reoccurrence or escalation of such unrest could have a further material adverse effect on our people, sales or results of operations. For instance, a potential expansion of the current conflict in Gaza or the unrest on the coast of the Red Sea could impact our business on multiple levels from market access over supply chain, general economic developments, security and safety of our operations in concerned countries, potential sanctions or boycotts, and reputational risks. Escalating tensions over Taiwan and territorial disputes in the South China Sea could lead to various risks, including short- or long-term supply chain disruptions from Taiwan and further risks subject to the nature and severity of the tensions. Should we decide to exit or otherwise alter our presence in a particular market, this may have an adverse effect on us through, for example, disruption to our operations in the event we need to relocate significant parts of our operations, triggered investigations, tax audits by authorities, claims by contracting parties or reputational damage. At Nokia, we make our sales in a transparent, regulated and compliant manner and in accordance with applicable laws and regulations. Notwithstanding our compliance measures, there exists a risk that the equipment we sell may subsequently be misused, relocated or resold without our knowledge or consent. The results and costs of investigations or claims against our international operations may be difficult to predict and could lead to lengthy disputes, fines or fees, indemnities or costly settlements.

The regulatory, trade controls and sanctions legal environment can be difficult to navigate for companies with global operations, impacting ability to grow or maintain business in specific markets or enter new markets. As a global operator, Nokia conducts business subject to export controls regulations and in countries subject to various sanctions and our business may be impacted by new, existing or tightened export control regulations, sanctions, embargoes or other forms of economic and trade restrictions imposed on certain countries, regions and entities. Although we strive to conduct all operations of Nokia, and in particular any operations undertaken in countries targeted by sanctions, in accordance with our compliance program, we cannot ensure that breaches will not occur.

Risk factors continued

Export controls, tariffs or other fees or levies imposed on our products and environmental, health, product safety, data protection and security, consumer protection, money laundering and other regulations that adversely affect the export, import, technical design, pricing or costs of our products could also adversely affect our sales and results of operations. Further, we rely on multilateral trade regimes to help ensure a balanced playing field. Conflicts between countries and geopolitical tensions may lead to implementation of multiple and possibly conflicting unilateral measures or uncertainties impacting trade of products and services and which may also affect our customers' ability or willingness to invest in capital expenditures and increase our costs or have adverse impacts on our operations and supply chain. We have a significant presence in emerging markets in which the political, economic, legal and regulatory systems are less predictable than in countries with more developed institutions. These markets represent a significant portion of our total sales, and a significant portion of expected future industry growth. Most of our suppliers are located in, and our products are manufactured and assembled in, emerging markets, particularly in Asia. Our business and investments in these markets may be subject to risks and uncertainties, including unfavorable or unpredictable treatment in relation to tax matters, exchange controls, restrictions affecting our ability to make cross-border transfers of funds, regulatory proceedings, unsound or unethical business practices, challenges in protecting our IPR, information security, nationalization, inflation, currency fluctuations or the absence of or unexpected changes in regulation, as well as other unforeseeable operational risks.

Our business and results of operations may be adversely affected by regulation favoring the local industry participants, as well as other measures with potentially protectionist objectives or outcomes that host governments in various countries may take, including the introduction of local technical standards that divert from the globally adopted standards. Governments and regulators, particularly after changes in political regimes, may make legal and regulatory changes, slow down or reverse the adoption of favorable policy measures, or interpret and apply existing laws in ways that make our products and services less appealing to customers or require us to incur substantial costs, change our business practices or prevent us from offering our products and services. In particular, there is a growing trend in many countries to require minimum local content in products and/or services, and we

may be required to invest in certain movement of operations or joint ventures to retain market share. Restrictive government policies or actions, such as the ones we saw in relation to the COVID-19 pandemic, or limitations on visas or work permits for certain foreign workers, may make it difficult for us to move our employees into and out of these jurisdictions. Our operations and employee recruitment and retention depend on our ability to obtain the necessary visas and work permits for our employees to travel and work in the jurisdictions in which we operate. The impact of changes in our uncertainties related to general regulation and trade policies could adversely affect our business and results of operations even in cases where the regulations do not directly apply to us or our products and services.

Changes in various existing regulations or in their application to current or new technologies, products or telecommunications and technology sectors in general, or emerging new regulation in areas such as security, privacy, digital economy or sustainable finance, may adversely affect our operations and business results.

We develop our products based on existing regulations and technical standards. In the case of new technology, we must often rely on our predictions for and interpretation of unfinished technical standards and upcoming or draft regulations or, in certain cases, have products developed in the absence of applicable regulations and standards. Fragmentation of rules, lengthy legislative processes and unpredictability of regulatory changes present a particular challenge. Due in part to this fragmentation, we face a risk in the inability to meet regulatory or market expectations on security and privacy in our products and services, and perceived or actual breaches of our information systems or customer information systems if fault is attributable to Nokia.

An increase in regulation of the digital economy and telecommunications following the European Commission's ambitious Green Deal and Path to Digital Decade could fail to find the right balance between political ambitions and practical considerations, which might negatively affect Nokia and have a stifling effect on innovation due to strict product liability requirements, limits on the use of data, and extensive due diligence and reporting requirements. From a spectrum policy perspective, unrealistic spectrum pricing, failure to enable access to additional spectrum in various bands and/or failure to achieve frequency band harmonization could also adversely impact Nokia's customers and Nokia itself.

Changes in applicable data and privacy-related regulatory frameworks, such as the EU General Data Protection Regulation (GDPR) EU AI Act, the Data Act and the recent adoption of EU eEvidence Regulations and the upcoming ePrivacy Regulations, including similar regulations in other countries and their application may adversely affect our business, including possible changes that increase costs, limit or restrict possibilities to offer products or services, or reduce or could be seen to reduce the privacy aspects of our offerings. For instance, countries could require governmental interception capabilities or issue regulations aimed at allowing direct governmental access to data for the products and services we offer. Such requirements or regulations could adversely affect us, if, among other things, we decide to reduce our sales to such markets or if such requirements or regulations would be limiting our ability to use components, products or software that we have developed or sourced from other companies.

Our current business models and operations rely on certain centralized data processing solutions and cloud or remote delivery-based services for distribution of services and software or data storage, which have certain inherent risks, including those stemming from applicable regulatory regimes, including data protection or data localization, that may cause limitations in implementing such business models or conducting business. An increase in the protectionist stances of governments around the world, which impact the free flow of data across borders, has already affected and may further affect our global service delivery model. Furthermore, we observe that enforcement actions and investigations by regulatory authorities related to data security incidents and privacy violations continue to increase. Unauthorized disclosure, transfer or loss of sensitive or confidential data, whether through systems failure, employee negligence, fraud or misappropriation, by us, our vendors or other parties with whom we do business (if they fail to meet the standards we impose) could subject us to significant litigation, monetary damages, regulatory enforcement actions, fines and criminal prosecution in one or more jurisdictions.

Artificial intelligence can provide useful tools to augment our capabilities and help us work more efficiently. Those could help us use large volumes of data more efficiently and reliably and assist us in performing tasks which are too difficult to perform only manually. Their use has many advantages, but also risks

Risk factors continued

and challenges related to such topics as intellectual property rights, security, confidentiality, and privacy.

We are seeing an increase in climate and other sustainability-related regulations and customer requirements globally. In the longer term, such regulations or requirements could impact, for instance, our energy, component and logistic costs or competitiveness of our product offering, as well as affect availability of financing from ESG-focused investors or financial institutions. Changes to existing regulation related to Sustainable Finance, such as the EU Taxonomy Regulation and its delegated acts, the new EU Corporate Sustainability Reporting Directive and the related delegated acts, as well as announced and upcoming regulations such as the EU Carbon Border Adjustment Mechanism Regulation, the EU Corporate Due Diligence Directive, the US SEC Climate Disclosure Rule, the California Corporate Data Accountability Act and the Climate Related Financial Risk Law will lead to more detailed reporting obligations, controls and documentation requirements and could also affect our ability to work with certain suppliers, as well as have an impact on how our products and sustainability footprint are perceived by the markets. For example, the EU Taxonomy Regulation aims to define rules for which economic activities contribute to sustainability objectives and mandates companies to report the share of their turnover, capital expenses and operating expenses aligned with specified technical criteria. If our business activities do not meet all the technical criteria as defined in the EU Taxonomy Regulation, or if our offering is not recognized by other similar standards developed around the world, it could potentially have some impact on our financing costs, share price or brand value in the longer term, depending on how such standards are interpreted and used by the markets, financial institutions and investors in the future.

We operate in many jurisdictions around the world, and we are subject to various legal frameworks addressing corruption, fraud, competition, privacy, security, trade policies, environment, human rights, supply chains and other risk areas. At any given time, we may be subject to inspections, investigations, claims, and government proceedings, and the extent and outcome of such proceedings may be difficult to estimate with any certainty. We may be subject to material fines, penalties and other sanctions as a result of such investigations. Bribery and anti-corruption laws in effect in many countries prohibit companies and their intermediaries from making

improper payments to public officials or private individuals for the purpose of obtaining new business, maintaining existing business relationships or gaining any business advantage. Certain anti-corruption laws such as the United States Foreign Corrupt Practices Act (FCPA) also require the maintenance of proper books and records, and the implementation of controls and procedures in order to ensure that a company's operations do not involve corrupt payments. Since we operate throughout the world and given that some of our customers are government-owned entities and that our projects and agreements often require approvals from public officials, there is a risk that our employees, suppliers or commercial third-party representatives may take actions that are in violation of our compliance policies and of applicable anti-corruption laws.

In many parts of the world where we operate, local practices and customs may be inconsistent with our policies, including the Nokia Code of Conduct, and could violate anti-corruption laws, including the FCPA and the UK Bribery Act 2010, and applicable European Union regulations, as well as applicable economic sanctions, embargoes and applicable competition and privacy laws. Our employees, or other parties acting on our behalf, could violate policies and procedures intended to promote compliance with anti-corruption laws, economic sanctions, competition or privacy laws or other applicable regulations. Violations of these laws by our employees or other parties acting on our behalf, regardless of whether we had participated in such acts or had knowledge of such acts, could result in us or our employees becoming subject to criminal or civil enforcement actions, including fines or penalties, disgorgement of profits and suspension or disqualification of sales. Additionally, violations of law or allegations of violations may result in reputational harm and loss of business and adversely affect our brand and reputation. Detecting, investigating and resolving such situations may also result in significant costs, including the need to engage external advisers, and consume significant time, attention and resources from our management and other key employees. The results and costs of such investigations or claims may be difficult to predict and could lead to, for instance, lengthy disputes, fines, fees or indemnities, costly settlement or the deterioration of the Nokia brand. Furthermore, even without allegations of misconduct against us, our employees or other parties acting on our behalf, we may face loss of business as a result of improper conduct or alleged improper conduct by our competitors.

As part of mergers and acquisitions, we may be subject to claims, fines, investigations or assessments for conduct that we failed to or were unable to discover or identify in the course of performing our due diligence, including unknown or unasserted liabilities and issues relating to fraud, trade compliance, non-compliance with applicable laws and regulations, improper accounting policies or other improper activities.

Our governance, internal controls and compliance processes could fail to detect errors or wrongdoings and to prevent regulatory penalties at corporate level, in operating subsidiaries and joint ventures.

Nokia is a publicly listed company and, as such, subject to various securities and accounting rules and regulations. For instance, we must monitor and assess our internal control over financial reporting and its compliance with the applicable rules and regulations. A failure of our corporate functions, our business groups, our operating subsidiaries or our joint ventures to maintain effective internal controls over financial reporting, or to comply with the applicable securities and accounting rules and regulations, could adversely affect the accuracy and timeliness of our financial reporting, which could result, for instance, in loss of confidence in us or in the accuracy and completeness of our financial reports, or otherwise in the imposition of fines or other regulatory measures, which could have a material adverse effect on us.

Integrity and high ethical standards are an essential part of our culture. However, despite our Group-wide compliance measures, including ethical business trainings and other actions (including towards our suppliers), we may not be able to prevent breaches of law or governance standards within our business, subsidiaries, joint ventures or in our supply chain. If we fail to or are unable to comply with applicable law and regulations, we could experience penalties and adverse rulings in enforcement and other proceedings.

We are subject to litigation proceedings, which may be disruptive and expensive. In addition, an unfavorable outcome of litigation, arbitration, agreement-related disputes or product liability-related allegations against our business could have a material adverse effect on us.

We are a party to lawsuits, arbitration proceedings, agreement-related disputes and product liability-related allegations in the normal course of our business. Litigation, arbitration or agreement-related disputes can be expensive, lengthy and disruptive to normal business operations and divert the efforts of our management. Moreover, the outcomes of complex legal

Risk factors continued

proceedings or agreement-related disputes are difficult to predict. An unfavorable resolution of a particular lawsuit, arbitration proceeding or agreement-related dispute could have a material adverse effect on us. The investment or acquisition decisions we make may subject us to litigation arising from minority shareholders' actions and investor dissatisfaction with the activities of our business. Shareholder disputes, if resolved against us, could have a material adverse effect on us.

We record provisions for pending claims when we determine that an unfavorable outcome is likely and the loss can reasonably be estimated. Although we believe our provisions for pending claims are appropriate, due to the inherent uncertain nature of legal proceedings, the ultimate outcome or actual cost of settlement may materially differ from estimates.

Although our products are designed to meet all relevant safety standards and other recommendations and regulatory requirements globally, we cannot guarantee we will not become subject to product liability claims or be held liable for such claims, which could have a material adverse effect on us. We have been involved in several lawsuits alleging adverse health effects associated with our products, including those caused by electromagnetic fields, and the outcome of such procedures is difficult to predict, including potentially significant fines or settlements. Even a perceived risk of adverse health effects of mobile devices or base stations could have a material adverse effect on us, for instance, through a reduction in the demand for mobile devices, and a decreased demand for mobile network or increased difficulty in obtaining sites for base stations.

For a more detailed discussion of litigation to which we are a party, refer to Note 6.1. Commitments, contingencies and legal proceedings, in our consolidated financial statements.

We are involved in joint ventures and other affiliated companies with their own governance and system infrastructure and are exposed to risks inherent to companies under joint management or not having direct management control.

We have a number of joint ventures, including those where Nokia is the minority partner, and other affiliated companies with their own governance and system infrastructure where Nokia does not have direct management control. The agreements related to our joint ventures may require unanimous consent or the affirmative vote of a qualified majority of the shareholders to take certain actions, thereby possibly slowing down the decision-making process or

impairing our ability to implement our key policies and practices, such as our compliance processes and culture, in a comprehensive or timely manner. In addition, joint venture companies and other affiliated companies having their own governance and system infrastructure, such as our local service companies focusing on networks field services, involve inherent risks such as those associated with a complex corporate governance structure, lack of transparency or uniform controls and procedures and consequent risks of compliance breaches or other similar issues, or issues in dissolving such entities or divesting their shareholdings, assets and liabilities, and may also involve negative public perceptions caused by the joint venture partner that are adverse to us.

We engage in the installation and maintenance of undersea telecommunications cable networks and related telecom solutions. During this activity, we may cause damage to existing undersea infrastructure, for which we may ultimately be held responsible.

We supply, install and maintain submarine optical fiber cable networks linking mainland to islands, island to island or several points along a coast. Our activities also include the provision of optical fiber infrastructure to oil and gas platforms and other offshore installations. Despite precautionary measures, there is a risk that previously laid infrastructure, such as third-party fiber optic cables, electrical power lines or hydrocarbon pipelines, may go undetected and be damaged during the process of laying or maintaining the telecommunications cables. Such an event could potentially cause temporary business interruption to third parties operating in the same area, environmental incidents, safety accidents, unwanted media or regulatory attention, loss of reputation, litigation, repair costs or compensation payments for the affected parties. While we have contractual limitations in place, maintain insurance coverage to limit our exposure, and have expertise and established ways of working that minimize such risks, these protections may be insufficient to cover such exposure entirely.

Financial and tax-related uncertainties

We have operations in many countries with different tax laws and rules, which may result in complex tax issues and disputes.

Taxation or other fees collected by governments or governmental agencies may result in unexpected payment obligations, and in response to prevailing difficult economic conditions in the public sector, coupled with already enacted

and proposed fundamental changes in international tax regulations, there may be an increased aggressiveness in collecting such fees or taxes. We may be obliged to pay additional taxes for past periods as a result of changes in law, or changes of tax authority practice or interpretation (possibly with retroactive effect in certain cases), or inaccurate interpretations of tax laws by us resulting potentially in a material adverse effect on our cash flow and financial position. In particular, potential changes in reallocation of taxing rights and other fundamental international tax principles, the OECD Pillar project and digital business-related initiatives, our wide geographical footprint of operations and activities and changes in tax laws or global laws regarding transfer pricing could adversely impact our business, operating results and overall tax burden. There may also be unforeseen tax expenses that turn out to have an unfavorable impact on us, adverse tax consequences related to past acquisitions and divestments, and potential tax liabilities that we are currently not aware of. As a result, and given the inherently unpredictable nature of taxation, our tax rate may change from its current level and our cash flows regarding taxes may not be stable.

As a company with global operations, we are subject to tax investigations in various jurisdictions, and such proceedings can be lengthy, involve actions that can hinder local operations and affect unrelated parts of our business, and the outcome of such proceedings is difficult to predict. While we have made provisions for certain tax issues, the provisions we have made may not be adequate to cover such increases.

In the context of our sale of the Devices & Services business to Microsoft, we are required to indemnify Microsoft for certain tax liabilities, including (i) tax liabilities of the Nokia entities acquired by Microsoft in connection with the closing of the sale of the Devices & Services business, (ii) tax liabilities associated with the assets acquired by Microsoft and attributable to tax periods ending on or prior to the closing date of the sale of the Devices & Services business, and (iii) tax liabilities relating to the pre-closing portion of any taxable period that includes the closing date of the sale of the Devices & Services business.

Our actual or anticipated performance, among other factors, could reduce our ability to utilize our tax attributes and deferred tax assets.

Deferred tax assets recognized on tax losses, unused tax credits and tax-deductible temporary differences are dependent on our ability to offset such items against future

Risk factors continued

taxable income within the relevant tax jurisdiction. Such deferred tax assets are also based on our assumptions on future taxable earnings, and these may not be realized as expected which may cause the deferred tax assets to be materially reduced. Any such reduction could have a material effect on us. As an example, Nokia derecognized EUR 2.9 billion deferred tax assets related to Finland in 2020 and re-recognized EUR 2.5 billion of deferred tax assets related to Finland in 2022. Additionally, our earnings have been unfavorably affected in the past, and may continue to be in the future, in the event that no tax benefits are recognized for certain deferred tax items.

We may not have access to sources of funding on favorable terms, or at all.

In periods when the capital and credit markets experience significant volatility, the amounts, sources and cost of capital available to us may be adversely affected. Deteriorating economic conditions or financial uncertainty in any of the markets in which we sell our products could reduce business confidence and adversely impact spending patterns, and thereby could adversely affect the amounts, sources and cost of capital available to us. Our business requires a significant amount of cash and we continue to invest in our R&D and other future capabilities. We rely on multiple sources of funding for short-term and long-term capital and aim to minimize the liquidity risk by maintaining a sufficient cash position and having committed credit lines in place. However, if economic conditions deteriorate or the credit market tightens, there can be no assurances that we will be able to generate sufficient amounts of capital or to maintain an efficient capital structure from time to time.

We also may not be able to have access to additional sources of funds that we may need from time to time with reasonable terms, or at all. If we cannot access capital or sell receivables on a commercially viable basis, our business, financial condition and cash flow could materially suffer.

We may not be able to maintain our investment grade credit ratings

Moody's, S&P Global Ratings, Fitch and other credit rating agencies have assigned credit ratings to us. Following the upgrades by Moody's and S&P Global Ratings in February 2023, we updated our goal from re-establishing investment grade credit ratings to maintaining our investment grade credit

ratings. However, there can be no assurances that we will be able to maintain our current investment grade credit ratings.

In the event our credit rating is downgraded, it could have a material adverse effect, for instance, on our cost of funds and related margins, our business and results of operations, financial condition, liquidity, or access to capital markets.

Due to our global operations, our net sales, costs and results of operations, as well as the US dollar value of our dividends and market price of our ADSs, are affected by exchange rate fluctuations.

We operate globally and are therefore exposed to foreign exchange risks in the form of both transaction risks and translation risks. Our policy is to monitor and hedge foreign exchange rate exposures within defined exposure identification horizons. We manage our operations to mitigate, but not to eliminate, the impacts of exchange rate fluctuations and our hedging activities may prove unsuccessful in mitigating the potentially negative impact of exchange rate fluctuations. Additionally, significant volatility in the relevant exchange rates and interest rates may increase our hedging costs, as well as limit our ability to hedge our exchange rate exposures including, in particular certain emerging market currencies. Furthermore, exchange rate fluctuations may have an adverse effect on our net sales, costs and results of operations, as well as our competitive position, through their impact on our customers, suppliers and competitors.

We also experience other financial market-related risks, including changes in interest rates and in prices of marketable securities that we own. We may use derivative financial instruments to reduce certain of these risks. If our strategies to reduce such risks are not successful, our financial condition and results of operations may be harmed.

Additionally, exchange rate fluctuations may materially affect the US dollar value of any dividends or other distributions that are paid in euro, as well as the market price of our ADSs.

Our pension and other post-employment benefit obligations are subject to numerous factors that could result in a need for increased funding, adversely affecting our results of operations and cash flow.

We are exposed to various employee cost-related risks, including those related to pension, and other post-employment benefits (OPEB). In the US, we maintain significant employee pension benefit plans and a significant retiree

welfare benefit plan (providing post-employment healthcare benefits and post-employment life insurance coverage).

Outside the US, we contribute to pension schemes for large numbers of current and former employees. The US and non-US plans and schemes have funding requirements that depend on, among other things, various legal requirements, how assets set aside to pay for those obligations are invested, the performance of financial markets, interest rates, assumptions regarding the life expectancy of covered employees and retirees, and medical cost inflation and medical care utilization. To the extent that any of those variables change, the funding required for those plans and schemes may increase, adversely affecting our results of operations and cash flow.

The most significantly underfunded plans are in Germany which do not currently have minimum regulatory funding requirements. With respect to other significantly underfunded plans, there are the OPEB plans in the US where Nokia is able to fund the liabilities by utilizing IRC Section 420 transfers from the US pension surplus up until 2032. More details about these plans can be found in Note 3.4. Pensions and other post-employment benefits in our consolidated financial statements.

The carrying amount of our goodwill may not be recoverable.

We assess the carrying amount of goodwill annually, or more frequently if events or changes in circumstances indicate that such carrying amount may not be recoverable. We assess the carrying amount of other identifiable assets if events or changes in circumstances indicate that their carrying amounts may not be recoverable, for instance, if we would not generate revenues from our businesses as anticipated, or if our businesses would not generate sufficient positive operating cash flows. These, or other factors, may lead to a decrease in the value of our assets, including intangible assets and the goodwill attributed to our businesses, resulting in impairment charges that may adversely affect our net profit for the year. While we believe the estimated recoverable values are reasonable, actual performance in the short and long term and our assumptions on which we base our calculations could materially differ from our forecasts, which could impact future estimates of our businesses' recoverable values, and may result in impairment charges.

Risk factors continued

Risks associated with ownership of our shares

The amount of dividend and/or repayment of capital and other profit distributions such as share buybacks to shareholders for each financial period is uncertain.

As announced on 25 January 2024, our Board proposes that the Annual General Meeting authorizes the Board to resolve on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity in respect of financial year 2023. Furthermore, the Board initiated a share buyback program under the authorization granted by the Annual General Meetings to repurchase shares. The program targets to return up to EUR 600 million of cash to shareholders in tranches over a period of two years, subject to continued authorization by the Annual General Meeting. The first phase of the share buyback program is expected to begin in the first quarter of 2024. Our Annual General Meeting 2023, held on 4 April 2023, authorized the Board to resolve on the distribution of an aggregate maximum of EUR 0.12 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity in respect of the financial year 2022. Furthermore, in 2022, our Board initiated a share buyback program, under the authorizations granted by Nokia's Annual General Meetings, to return up to EUR 600 million of cash to shareholders in tranches over a period of two years. The first phase of the share buyback program with a maximum aggregate purchase price of EUR 300 million started on 14 February 2022 and ended on 11 November 2022. The second EUR 300 million phase of the share buyback program started on 2 January 2023 and it ended on 10 November 2023.

We cannot assure that we will distribute dividends and/or capital repayments on the shares issued by us, nor is there any assurance as to the amount of any dividend and/or repayment of capital we may pay, including but not limited to situations where we make commitments to increase our dividends. Neither can we guarantee that we finalize the announced share buyback program. The payment and the amount of any dividend and/or repayment of capital as well as additional share buyback programs is subject to the discretion of the general meeting of our shareholders and our Board, and will depend on available cash balances, expected cash flow generation, anticipated cash needs, retained earnings, the results of our operations and our financial condition and terms of outstanding indebtedness, as well as other relevant factors such as restrictions, prohibitions or limitations imposed by

applicable laws. Further, even if any conditions or factors covering the issuance or distribution of dividends are met, the Board or the shareholders have in the past decided, and may going forward decide, not to issue or distribute dividends or initiate additional buyback programs.

Our share and/or ADS price may be volatile and subject to fluctuations.

Our share and/or ADS price may be volatile and could be subject to fluctuations in response to various factors, some of which are beyond our control. In addition to the factors described in this "Risk Factors" section, other factors that could cause fluctuations in our share price include, among others, high volatility in the securities markets generally and volatility in telecommunications and technology companies' securities in particular, trading volumes, speculation in the media or retail or institutional investment communities regarding the Company and our prospects, future developments in our industry and competitors, our financial results and the expectations of financial analysts, as well as the timing or content of any public communications, including reports of operating results, by us or our competitors. Further, factors in the public trading market for our stock may produce price movements that may or may not comport with macro, industry or company-specific fundamentals, including, without limitation, the sentiment of retail investors (including as may be expressed on financial trading and other social media sites and online forums), the direct access by retail investors to broadly available trading platforms, the amount and status of short interest in our securities, access to margin debt, trading in options and other derivatives on our common stock and any related hedging and other trading factors.

The market price of, and trading volume for, our shares and/or ADSs may change for reasons not necessarily related to our actual operating performance. The capital markets have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. In addition, in the past, following periods of volatility in the market price of a company's securities, stockholders often institute securities class action litigation against that company. This type of litigation could result in substantial costs and divert our management's attention and resources, which could have a material adverse effect on our cash flows, our ability to execute our business strategy and our ability to make distributions to our stockholders.

Non-Finnish shareholders are likely required to provide detailed information to obtain advantageous withholding tax treatment for dividends.

As described in more detail under "General facts on Nokia—Taxation", non-Finnish shareholders are required to provide certain information in order to benefit from the reduced dividend withholding tax rates set out in the applicable tax treaties. Furthermore, custodians are required to fulfill certain strict requirements and take over certain responsibilities and assume liability for incorrectly applied withholding tax, or a higher withholding tax rate will apply. Such requirements will likely impose an additional administrative burden on shareholders or result in the higher withholding rate becoming applicable for non-Finnish shareholders.

[Significant subsequent events](#)

Significant subsequent events

After 31 December 2023, no significant subsequent events have taken place.

General facts on Nokia

American Depositary Shares	132
Controls and procedures	132
Government regulation	133
Sales in United States-sanctioned countries	133
Taxation	134
Key ratios	137
Alternative performance measures	138



General facts on Nokia

General facts on Nokia

American Depositary Shares

Fees and charges

ADS holders may have to pay the following service fees to the Depository :

Service	Fees, USD
Issuance of ADSs	Up to 5 cents per ADS ⁽¹⁾
Cancellation of ADSs	Up to 5 cents per ADS ⁽¹⁾
Distribution of cash dividends or other cash distributions	Up to 2 cents per ADS
Distribution of ADSs pursuant to (i) stock dividends, free stock distributions or (ii) exercises of rights to purchase additional ADSs	Up to 5 cents per ADS
Distribution of securities other than ADSs or rights to purchase additional ADSs	Up to 5 cents per ADS ⁽¹⁾
ADS transfer fee	1.50 cents per transfer ⁽¹⁾

⁽¹⁾ These fees are typically paid to the Depository by the brokers on behalf of their clients receiving the newly issued ADSs from the Depository and by the brokers on behalf of their clients delivering the ADSs to the Depository for cancellation. The brokers in turn charge these transaction fees to their clients.

Additionally, ADS holders are responsible for certain fees and expenses incurred by the Depository on their behalf and certain governmental charges such as taxes and registration fees, transmission and delivery expenses, conversion of foreign currency and fees relating to compliance with exchange control regulations. The fees and charges may vary over time.

In the event of refusal to pay the depositary fees, the Depository may, under the terms of the deposit agreement, refuse the requested service until payment is received or may set off the amount of the depositary fees from any distribution to be made to the ADS holder.

Payments

In 2023, our Depository made the following payments on our behalf in relation to our ADS program:

Category	Payment, USD
Settlement infrastructure fees (including the Depository Trust Company fees)	1 047 044.65
Proxy process expenses (including printing, postage and distribution)	1 853 812.02
Legal fees	—
NYSE listing fees	500 000.00
Investor relations expenses	9 095.92
Total	3 409 952.59

Additionally for 2023, our Depository reimbursed us USD 6 000 000 mainly related to contributions towards our investor relations activities, including investor meetings and conferences and fees of investor relations service vendors, and other miscellaneous expenses related to the listing of our ADSs in the United States.

Controls and procedures

Our management, with the participation of our President and CEO and our Chief Financial Officer, conducted an evaluation pursuant to Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act), of the effectiveness of our disclosure controls and procedures at 31 December 2023. Based on such evaluation, our President and CEO and our Chief Financial Officer have concluded that our disclosure controls and procedures were effective.

Disclosure controls and procedures mean controls and other procedures that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms, and that such information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our President

and CEO and our Chief Financial Officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosures.

Management's annual report on internal control over financial reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for Nokia. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation and fair presentation of published financial statements. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management evaluated the effectiveness of our internal control over financial reporting using the criteria described in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, our management has assessed the effectiveness of Nokia's internal control over financial reporting at 31 December 2023 and concluded that such internal control over financial reporting was effective.

The effectiveness of our internal control over financial reporting at 31 December 2023 has been audited by Deloitte Oy, an independent registered public accounting firm. Refer to section "Reports of independent registered public accounting firm".

Changes in internal control over financial reporting

There have been no changes in our internal control over financial reporting during 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

General facts on Nokia continued

Attestation report of the registered public accounting firm

Refer to section “Reports of independent registered public accounting firm”.

Exchange controls

There are currently no Finnish laws that may affect the import or export of capital, or the remittance of dividends, interest or other payments.

Government regulation

Nokia and its businesses are subject to direct and indirect regulation in each of the countries in which we and our customers do business. As a result, changes in or uncertainties related to various types of regulations applicable to current or new technologies, intellectual property, products, services, company operations and business environment (e.g. labor laws, taxation) could affect our business adversely. Moreover, the implementation of technological or legal requirements could impact our products and services, technology and patent licensing activities, manufacturing and distribution processes, and could affect the timing of product and services introductions and the cost of our production, products and services, as well as their commercial success. Also, our business is subject to the impacts of changes in economic and trade policies. Export control, tariffs or other fees or levies imposed on our products and services and environmental, product safety and security and other regulations that adversely affect the export, import, pricing or costs of our products and services, as well as export prohibitions (sanctions) enacted by the EU, the United States or other countries or regions could adversely affect our net sales and results of operations. Further, potential governmental intervention in supply chain (e.g. prohibiting imports from certain geographies or imposing certain criteria on selection of suppliers) may impact Nokia's operations.

For example, depending on the geography, our products and services are subject to a wide range of government regulations that might have a direct impact on our business, including, but not limited to, regulation related to product certification, standards, spectrum management, provision of telecommunications services, privacy and data protection, competition and sustainability. The EU-level or local member

state regulation has a direct impact on many areas of our business, markets and customers within the EU. The European regulation influences, for example, conditions for innovation for telecommunications infrastructure and internet and related services, as well as technology and patent licensing, investment in fixed and wireless broadband communication infrastructure and operation of global data flows. Additionally, with respect to certain developing market countries, the business environment we operate in can be affected by localization requirements.

We proactively exchange views and address the impact of any planned changes to the regulatory environment on our business activities with state agencies, regulators and other decision-makers either through our government relations representatives in various geographies and through our experts, or indirectly through memberships in industry associations.

Sales in United States-sanctioned countries

General

We are a global company and have sales in most countries of the world. Nokia is committed to the highest standards of ethical conduct, and adheres to all applicable national and international trade-related laws. As a leading international telecommunications company with global operations, Nokia has a presence also in countries subject to international sanctions. All operations of Nokia, and in particular any operations undertaken in countries targeted by sanctions, are conducted in accordance with our comprehensive and robust internal compliance program to ensure that they are in full compliance with all applicable laws and regulations. In addition, we continuously monitor international developments and assess the appropriateness of our presence and business in these, and all, markets. Nevertheless, business in these markets is marked by complexity and uncertainty.

We cannot exclude the possibility that third parties may unlawfully divert our products to these countries from other countries in which we sell them, or that, for services distributed through the internet, third parties could have accessed them in markets or countries for which they are not intended by circumventing the industry standard protective mechanisms, such as IP address blocks, despite our efforts in implementing measures to prevent such actions.

Disclosure pursuant to Section 219 of the Iran Threat Reduction and Syria Human Rights Act of 2012

We operate in Iran in compliance with applicable economic sanctions and other trade-related laws. We provide telecommunications equipment with ancillary services to network operator customers and internet service providers. We do not deliver equipment and services to Iran for military purposes, or for the purpose of limiting political discourse, blocking legitimate forms of free speech or conducting surveillance of individuals.

In connection with the business activities relating to Iran, we have two local offices in Iran that employed one employee at the end of 2023 through a branch of a Finnish subsidiary. Nokia is the controlling shareholder in Pishahang Communications Network Development Company (Pishahang). The other minority shareholder in Pishahang is Information Technology Application Development TACFAM Company (Tacfam).

We continue to maintain routine contacts with governmental agencies in Iran as required, for example, to maintain a legal presence and office facilities in Iran, pay taxes and employ Iranian nationals.

To our knowledge, none of our sales in Iran in 2023 are required to be disclosed pursuant to ITRA Section 219, with the possible exception of the following.

In 2023, we continued only with our existing contractual obligations in compliance with applicable economic sanctions and other trade-related laws including limited local delivery of radio products and transmission licenses, including associated services, to MTN Irancell.

Although it is difficult to evaluate with any reasonable degree of certainty, we have concluded that we cannot exclude the possibility that MTN Irancell or Tacfam is owned or controlled, directly or indirectly, by the government of Iran. None of these activities involve US affiliates of Nokia, or any persons from the United States.

General facts on Nokia continued

Nokia does not normally allocate net profit on a country-by-country or activity-by-activity basis, other than as set forth in Nokia's consolidated financial statements prepared in accordance with IFRS. Therefore, for this exercise Nokia will reflect its sales margin in lieu of the net profit/loss. In 2023, we recognized net sales of approximately EUR 1 million from business with MTN Irancell. Sales margin from this customer amounted to 99%.

Although we evaluate our business activities on an ongoing basis, we intend to continue not accepting any new business in Iran in 2024 and intend to only complete existing contractual obligations in Iran in compliance with applicable economic sanctions and other trade-related laws.

Taxation

General

The statements of the United States and Finnish tax laws set out below are based on the laws in force as of the date of this report and may be subject to any changes in US or Finnish law, and in any double taxation convention or treaty between the United States and Finland, occurring after that date, possibly with retroactive effect.

For purposes of this discussion, "US Holders" are beneficial owners of ADSs that: (i) hold the ADSs as capital assets; (ii) are citizens or residents of the United States, corporations created in or organized under US law, estates whose income is subject to US federal income tax, or trusts that elect to be treated as a US person or are both subject to the primary supervision of a US court and controlled by a US person; and (iii) in each case, are considered residents of the United States for purposes of the current income tax convention between the United States and Finland, referred to as the "Treaty", and the limitation on benefits provisions therein. Special rules apply to US Holders that are also residents of Finland and to citizens or residents of the United States that do not maintain a substantial presence, permanent home or habitual abode in the United States. For purposes of this discussion, it is assumed that the Depositary and its custodian will perform all actions as required by the deposit agreement with the Depositary and other related agreements between the Depositary and Nokia.

If a partnership holds ADSs (including for this purpose any entity or arrangement treated as a partnership for US federal income tax purposes), the tax treatment of a partner will depend upon the status of the partner and activities of the partnership. If a US Holder is a partnership or a partner in a partnership that holds ADSs, the holder is urged to consult its own tax adviser regarding the specific tax consequences of owning and disposing of its ADSs.

Because this summary is not exhaustive of all possible tax considerations – such as situations involving financial institutions, banks, tax-exempt entities, pension funds, US expatriates, real estate investment trusts, persons that are dealers in securities, persons who own (directly, indirectly or by attribution) 10% or more of the share capital or voting stock of Nokia, persons who acquired their ADSs pursuant to the exercise of employee stock options or otherwise as compensation, or US Holders whose functional currency is not the US dollar, who may be subject to special rules that are not discussed herein – holders of shares or ADSs that are US Holders are advised to satisfy themselves as to the overall US federal, state and local tax consequences, as well as to the overall Finnish and other applicable non-US tax consequences, of their ownership of ADSs and the underlying shares by consulting their own tax advisers. This summary does not discuss the treatment of ADSs that are held in connection with a permanent establishment or fixed base in Finland, and it does not address the US Medicare tax on certain investment income.

For the purposes of both the Treaty and the US Internal Revenue Code of 1986, as amended, referred to as the "Code", US Holders of ADSs will be treated as the owners of the underlying shares that are represented by those ADSs. Accordingly, the following discussion, except where otherwise expressly noted, applies equally to US Holders of ADSs, on the one hand, and to shares on the other.

The holders of ADSs will, for Finnish tax purposes, be treated as the owners of the shares that are represented by the ADSs. The Finnish tax consequences for the holders of shares, as discussed below, also apply to the holders of ADSs.

US taxation of cash dividends

For US federal income tax purposes, the gross amount of dividends paid to US Holders of shares or ADSs out of our current or accumulated earnings and profits, including any related Finnish withholding tax, generally will be included in gross income as foreign source dividend income. We do not expect to maintain calculations of our earnings and profits under US federal income tax principles; therefore, US Holders should expect that the entire amount of any distribution generally will be reported as dividend income. Dividends will not be eligible for the dividends received deduction allowed to corporations under the Code. The amount includable in income (including any Finnish withholding tax) will equal the US dollar value of the payment, determined at the time such payment is received by the Depositary (in the case of ADSs) or by the US Holder (in the case of shares), regardless of whether the payment is in fact converted into US dollars. Generally, any gain or loss resulting from currency exchange rate fluctuations during the period between the time such payment is received and the date the dividend payment is converted into US dollars will be treated as US source ordinary income or loss to a US Holder.

Special rules govern and specific elections are available to accrual method taxpayers to determine the US dollar amount includable in income in the case of a dividend paid (and taxes withheld) in foreign currency. Accrual basis taxpayers are urged to consult their own tax advisers regarding the requirements and elections applicable in this regard.

Dividends received generally will constitute foreign source "passive category income" for foreign tax credit purposes. Subject to certain limitations, Finnish taxes withheld may be eligible for credit (not in excess of the applicable Treaty rate) against a US Holder's US federal income tax liability. Additionally, if Nokia makes a distribution from its reserve for invested unrestricted equity when it does not have current or accumulated earnings and profits, a US Holder may not be able to claim such credit.

In lieu of a credit, a US Holder may elect to claim a deduction in respect of its Finnish income taxes provided the deduction is claimed for all of the foreign taxes paid by the US Holder in that particular taxable year. A deduction does not reduce US tax on a dollar-for-dollar basis like a tax credit. The deduction, however, is not subject to the limitations applicable to foreign tax credits.

General facts on Nokia continued

Provided that certain holding period and other requirements are met, individuals and certain other non-corporate US Holders are eligible for reduced rates of US federal income tax at a maximum rate of 20% in respect of "qualified dividend income". Dividends that Nokia pays with respect to its shares and ADSs generally will be qualified dividend income if certain holding periods are met and Nokia was neither a passive foreign investment company (PFIC) in the taxable year prior to the year in which the dividend was paid nor in the taxable year in which the dividend is paid. Nokia currently believes that dividends it pays with respect to its shares and ADSs will constitute qualified dividend income for US federal income tax purposes; however, this is a factual matter and is subject to change. Nokia anticipates that its dividends will be reported as qualified dividends on Forms 1099-DIV delivered to US Holders. US Holders of shares or ADSs are urged to consult their own tax advisers regarding the availability to them of the reduced dividend tax rate in light of their own particular situation and the computations of their foreign tax credit limitation with respect to any qualified dividends paid to them, as applicable.

We believe we should not be classified as a PFIC for US federal income tax purposes for the taxable year ended 31 December 2023 and we do not expect to become a PFIC in the foreseeable future. US Holders are advised, however, that this conclusion is a factual determination that must be made annually and thus may be subject to change. If we were to be classified as a PFIC, the tax on distributions on our shares or ADSs and on any gains realized upon the disposition of our shares or ADSs generally would be less favorable than as described herein. Dividends paid by a PFIC are not "qualified dividend income" and are not eligible for reduced rates of taxation. Additionally, US persons who are shareholders in a PFIC generally will be required to file an annual report disclosing the ownership of such shares and certain other information. US Holders should consult their own tax advisers regarding the application of the PFIC rules, including the related reporting requirements, to their ownership of our shares or ADSs.

Finnish withholding taxes on cash dividends

Under the Finnish Income Tax Act and Act on Taxation of Non-residents' Income, non-residents of Finland are generally subject to a withholding tax at a rate of 30% on dividends paid by a Finnish resident company. Further, under the Finnish Prepayment Act, 50% preliminary tax must be withheld on dividends paid in certain situations. However, pursuant to the Treaty, dividends paid to US Holders are generally subject to Finnish withholding tax at reduced rates. Under the Finnish Income Tax Act and tax court practice, the distribution of funds from reserves for invested unrestricted equity by a listed company such as Nokia is taxed as a distribution of a dividend.

As of 1 January 2021, nominee registered shares are generally subject to a withholding tax at a rate of 35% on dividends paid by Nokia. This withholding tax regime is based on OECD's TRACE (Treaty Relief and Compliance Enhancement) model. Under the rules, the 35% withholding tax will generally be applied on dividend distributions on nominee registered shares by listed companies such as Nokia, unless custodians fulfill certain strict requirements and are willing to take over certain responsibilities (e.g. registration with the Finnish Tax Administration (so-called authorized intermediary), identification of the beneficial owner of the dividend and collecting and submitting detailed recipient information to the Finnish Tax Administration using specific filing procedures). Furthermore, application of reduced withholding tax rates at source require that the custodian and dividend distributor are willing to assume liability of incorrectly applied withholding tax. If the custodian only registers with the Finnish Tax Administration and submits (or undertakes to submit) the detailed recipient details to the Finnish Tax Administration, the 30% withholding tax rate can be applied, instead of 35%.

Any tax withheld in excess can be reclaimed after the calendar year of the dividend payment by submitting a refund application to the Finnish Tax Administration no later than by the end of the third calendar year following the dividend payment year. During the year of dividend payment, the refund can be processed if custodians and dividend distributor fulfill the above-mentioned requirements laid down for actual dividend distribution.

It is exceptionally also possible that any tax not withheld at source is later assessed directly to the shareholder by the Finnish Tax Administration, in cases where the failure to withhold tax at source is not due to negligence of the custodian or the dividend distributor.

Holders of shares or ADSs are urged to consult their own custodian regarding the availability of reduced withholding tax rates in light of their own particular situation and approach their custodian in terms of their responsibilities, as well as consult their own tax advisers regarding the availability to them of the tax credit from dividend withholding tax.

US and Finnish tax on sale or other disposition

A US Holder generally will recognize taxable capital gain or loss on the sale or other disposition of ADSs in an amount equal to the difference between the US dollar value of the amount realized and the adjusted tax basis (determined in US dollars) in the ADSs. If the ADSs are held as a capital asset, this gain or loss generally will be long-term capital gain or loss if, at the time of the sale, the ADSs have been held for more than one year. Any capital gain or loss, for foreign tax credit purposes, generally will constitute US source gain or loss. In the case of a US Holder that is an individual, long-term capital gain generally is subject to US federal income tax at preferential rates. The deductibility of capital losses is subject to significant limitations.

The deposit or withdrawal by a US Holder of shares in exchange for ADSs or of ADSs for shares under the deposit agreement generally will not be subject to US federal income tax or Finnish income tax.

The sale by a US Holder of the ADSs or the underlying shares, other than an individual who, by reason of his residence in Finland for a period exceeding six months, is or becomes liable for Finnish income tax according to the relevant provisions of Finnish tax law, generally will not be subject to income tax in Finland, in accordance with Finnish tax law and the Treaty.

General facts on Nokia continued

Finnish transfer tax

The transfer of our shares and ADSs for cash through a broker or other appropriate intermediary is generally not subject to Finnish transfer tax. Non-brokered transfers will generally be exempted from the transfer tax if the transferee has been approved as a trading party in the market where the transfer is executed, or other conditions are met. Transfers of ADSs on the New York Stock Exchange are exempt. Where the transfer does not fulfill the above requirements, and either the buyer or the seller is a Finnish resident or a Finnish branch office of a specified foreign financial service provider, the buyer is liable to pay transfer tax of 1.6% of the transaction price where the resulting tax is at least EUR 10. Parliament has approved a change in the transfer tax rate from 1.6% to 1.5% entering into force as of 1 January 2024 (no change to EUR 10 de minimis threshold). The new reduced tax rate will be applied retroactively to transfers that have been bindingly agreed upon on or after 12 October 2023. If transfer tax on such transfers is paid during 2023, the old 1.6% tax rate should still be used. The Finnish Tax Administration will in such case refund the excess tax once the new rules have entered into force. Selling shareholders should consult their tax advisers regarding the specific tax considerations of a sale of our shares or ADSs.

Finnish inheritance and gift taxes

A transfer of an underlying share by gift or by reason of the death of a US Holder and the transfer of an ADS are not subject to Finnish gift or inheritance tax provided that none of the deceased person, the donor, the beneficiary of the deceased person or the recipient of the gift is resident in Finland.

Non-residents of the United States

Beneficial owners of ADSs that are not US Holders will not be subject to US federal income tax on dividends received with respect to ADSs unless such dividend income is effectively connected with the conduct of a trade or business within the United States. Similarly, non-US Holders generally will not be subject to US federal income tax on any gain realized on the sale or other disposition of ADSs, unless (a) the gain is effectively connected with the conduct of a trade or business in the United States or (b) in the case of an individual, that individual is present in the United States for 183 days or more in the taxable year of the disposition and other conditions are met.

The United States information reporting and backup withholding

Dividend payments with respect to shares or ADSs and proceeds from the sale or other disposition of shares or ADSs may be subject to information reporting to the Internal Revenue Service and possible US backup withholding. Backup withholding will not apply to a holder if the holder furnishes a correct taxpayer identification number or certificate of foreign status and makes any other required certification in connection therewith, or if it is a recipient otherwise exempt from backup withholding (such as a corporation). Any US persons required to establish their exempt status generally must furnish a duly completed IRS Form W-9 (Request for Taxpayer Identification Number and Certification). Non-US holders generally are not subject to US information reporting or backup withholding. However, such holders may be required to provide certification of non-US status (generally on IRS Form W-8BEN for individuals and Form W-8BEN-E for corporations) in connection with payments received in the United States or through certain US-related financial intermediaries. Backup withholding is not an additional tax. Amounts withheld as backup withholding may be credited against a holder's US federal income tax liability, and the holder may obtain a refund of any excess amounts withheld under the backup withholding rules by timely filing the appropriate claim for refund with the Internal Revenue Service and furnishing the proper required information.

[General facts on Nokia continued](#)**Key ratios****Earnings per share (basic)**Profit/(loss) attributable to equity holders of the parent

Weighted average number of shares outstanding during the year

Earnings per share (diluted)Profit/(loss) attributable to equity holders of the parent adjusted for the effect of dilution

Adjusted weighted average number of shares during the year

P/E ratioClosing share price at 31 December

Earnings per share (basic) for continuing operations

Payout ratioProposed dividend per share

Earnings per share (basic) for continuing operations

Dividend yield %Proposed dividend per share

Closing share price at 31 December

Shareholders' equity per shareCapital and reserves attributable to equity holders of the parent

Number of shares at 31 December – number of treasury shares at 31 December

Market capitalization

(Number of shares at 31 December – number of treasury shares at 31 December) x closing share price at 31 December

Share turnover %Number of shares traded during the year

Average number of shares during the year

General facts on Nokia continued

Alternative performance measures

Certain financial measures presented in this report are not measures of financial performance, financial position or cash flows defined in IFRS. As these measures are not defined in IFRS, they may not be directly comparable with financial measures used by other companies, including those in the same industry. The primary rationale for presenting these measures is that the management uses these measures in assessing the financial performance of Nokia and believes that these measures provide meaningful supplemental information on the underlying business performance of Nokia. These financial measures should not be considered in isolation from, or as a substitute for, financial information presented in compliance with IFRS.

Beginning with its Annual Report 2023 Nokia changed how it defines its Free cash flow measure to better align it with common practice and Non-GAAP reporting guidelines. Previously Nokia defined Free cash flow as Net cash flows from operating activities – purchases of property, plant and equipment and intangible assets (capital expenditures) + proceeds from sale of property, plant and equipment and intangible assets – purchase of non-current financial investments + proceeds from sale of non-current financial investments. The new definition is Net cash flows from operating activities – purchases of property, plant and equipment and intangible assets (capital expenditures). The comparative amounts for Free cash flow presented in this report have been revised accordingly.

Return on capital employed %

Definition

Return on capital employed is defined as Profit before tax + Interest expense on interest-bearing liabilities / Average capital and reserves attributable to equity holders of the parent + average non-controlling interests + average interest-bearing liabilities.

Purpose

Return on capital employed indicates how efficiently Nokia uses its capital to generate profits.

Composition of return on capital employed %:

EURm	2023	2022	2021
Profit before tax	1 499	2 184	1 926
Interest expense on interest-bearing liabilities	201	103	113
Total	1 700	2 287	2 039
Average capital and reserves attributable to equity holders of the parent ⁽¹⁾	20 935	19 347	14 913
Average non-controlling interests ⁽¹⁾	92	98	91
Average interest-bearing liabilities ⁽¹⁾	4 334	4 565	5 115
Total capital employed	25 361	24 010	20 119
Return on capital employed %	6.7%	9.5%	10.1%

(1) Calculated as the average of opening and closing balance for the year as presented in the consolidated statement of financial position. Refer to the consolidated financial statements.

Return on shareholders' equity %

Definition

Return on shareholders' equity is defined as Profit/(loss) for the year attributable to equity holders of the parent / Average capital and reserves attributable to equity holders of the parent.

Purpose

Return on shareholders' equity indicates how efficiently Nokia uses the capital invested by its shareholders to generate profits.

Composition of return on shareholders' equity %:

EURm	2023	2022	2021
Profit/(loss) for the year attributable to equity holders of the parent	665	4 250	1 623
Average capital and reserves attributable to equity holders of the parent ⁽¹⁾	20 935	19 347	14 913
Return on shareholders' equity %	3.2 %	22.0 %	10.9 %

(1) Calculated as the average of opening and closing balance for the year as presented in the consolidated statement of financial position. Refer to the consolidated financial statements.

Equity ratio %

Definition

Equity ratio % is defined as Total capital and reserves attributable to equity holders of the parent + non-controlling interests / Total assets.

Purpose

Equity ratio indicates the proportion of assets financed by the capital provided by the equity holders of the parent to the total assets of Nokia.

Composition of equity ratio %:

EURm	2023	2022	2021
Total capital and reserves attributable to equity holders of the parent	20 537	21 333	17 360
Non-controlling interests	91	93	102
Shareholders' equity	20 628	21 426	17 462
Total assets	39 860	42 943	40 049
Equity ratio %	51.8 %	49.9 %	43.6 %

General facts on Nokia continued

Total cash and interest-bearing financial investments

Definition

Total cash and interest-bearing financial investments consist of cash and cash equivalents, current interest-bearing financial investments and non-current interest-bearing financial investments.

Purpose

Total cash and interest-bearing financial investments is used to indicate funds available to Nokia to run its current and invest in future business activities as well as provide return for security holders.

Composition of total cash and interest-bearing financial investments:

EURm	2023	2022	2021
Cash and cash equivalents	6 234	5 467	6 691
Current interest-bearing financial investments	1 565	3 080	2 577
Non-current interest-bearing financial investments	715	697	—
Total cash and interest-bearing financial investments	8 514	9 244	9 268

Net cash and interest-bearing financial investments

Definition

Net cash and interest-bearing financial investments equals total cash and interest-bearing financial investments less long-term and short-term interest-bearing liabilities.

Purpose

Net cash and interest-bearing financial investments is used to indicate Nokia's liquidity position after cash required to settle the interest-bearing liabilities.

Composition of net cash and interest-bearing financial investments:

EURm	2023	2022	2021
Total cash and interest-bearing financial investments			
Cash and cash equivalents	6 234	5 467	6 691
Current interest-bearing financial investments	1 565	3 080	2 577
Non-current interest-bearing financial investments	715	697	—
Interest-bearing liabilities			
Long-term interest-bearing liabilities	(3 637)	(4 249)	(4 537)
Short-term interest-bearing liabilities	(554)	(228)	(116)
Net cash and interest-bearing financial investments	4 323	4 767	4 615

Net debt to equity (gearing) %

Definition

Net debt to equity (gearing) % is defined as Interest-bearing liabilities less Total cash and interest-bearing financial investments / (Total capital and reserves attributable to the equity holders of the parent + Non-controlling interests).

Purpose

Net debt to equity ratio presents the relative proportion of shareholders' equity and interest-bearing liabilities used to finance Nokia's assets and indicates the leverage of Nokia's business.

Composition of net debt to equity (gearing) %:

EURm	2023	2022	2021
Interest-bearing liabilities			
Long-term interest-bearing liabilities	3 637	4 249	4 537
Short-term interest-bearing liabilities	554	228	116
Total cash and interest-bearing financial investments			
Cash and cash equivalents	(6 234)	(5 467)	(6 691)
Current interest-bearing financial investments	(1 565)	(3 080)	(2 577)
Non-current interest-bearing financial investments	(715)	(697)	—
Net debt	(4 323)	(4 767)	(4 615)
Total capital and reserves attributable to equity holders of the parent	20 537	21 333	17 360
Non-controlling interests	91	93	102
Shareholders' equity	20 628	21 426	17 462
Net debt to equity (gearing) %	(21.0) %	(22.2) %	(26.4) %

Free cash flow

Definition

Free cash flow is defined as Net cash flows from operating activities – purchases of property, plant and equipment and intangible assets (capital expenditures).

Purpose

Free cash flow is the cash that Nokia generates after investments in property, plant and equipment and intangible assets, and we believe it provides meaningful supplemental information as it represents the cash available to service and repay interest-bearing financial liabilities, including lease liabilities, make investments to grow business and distribute funds to shareholders. It is a measure of cash generation, working capital efficiency and capital discipline of the business.

General facts on Nokia continued

Composition of free cash flow:

EURm	2023	2022	2021
Net cash flows from operating activities	1 317	1 474	2 625
Purchase of property, plant and equipment and intangible assets (capital expenditures)	(652)	(601)	(560)
Free cash flow	665	873	2 065

Capital expenditure

Definition

Purchases of property, plant and equipment and intangible assets (excluding assets acquired under business combinations).

Purpose

Capital expenditure is used to describe investments in future profit-generating activities.

Composition of capital expenditure:

EURm	2023	2022	2021
Purchase of property, plant and equipment and intangible assets	(652)	(601)	(560)
Capital expenditure	(652)	(601)	(560)

Comparable operating profit

Definition

Comparable operating profit excludes intangible asset amortization and other purchase price fair value adjustments, goodwill impairments, restructuring-related charges and certain other items affecting comparability.

Purpose

We believe that our comparable operating profit provides meaningful supplemental information to both management and investors regarding Nokia's underlying business performance by excluding certain items of income and expenses that may not be indicative of Nokia's business operating results. Comparable operating profit is used also in determining management remuneration.

Composition of comparable operating profit:

EURm	2023	2022	2021
Operating profit	1 688	2 318	2 158
Restructuring and associated charges	356	177	263
Amortization of acquired intangible assets	352	411	391
Costs associated with country exit	(49)	98	—
Impairment and write-off of assets, net of reversals	25	97	45
Settlement of legal disputes	—	—	(80)
Gain on sale of fixed assets	—	—	(53)
Other	3	8	51
Comparable operating profit	2 375	3 109	2 775

Comparable operating margin %

Definition

Comparable operating margin is defined as Comparable operating profit / Net sales.

Purpose

Comparable operating margin is used as a measure of Nokia's operating profitability as a percentage of net sales excluding intangible asset amortization and other purchase price fair value adjustments, goodwill impairments, restructuring-related charges and certain other items affecting comparability.

As with comparable operating profit, we believe that our comparable operating margin provides meaningful supplemental information to both management and investors regarding Nokia's underlying business performance by excluding certain items of income and expenses that may not be indicative of Nokia's business operating results.

Composition of comparable operating margin:

EURm	2023	2022	2021
Comparable operating profit	2 375	3 109	2 775
Net sales	22 258	24 911	22 202
Comparable operating margin %	10.7 %	12.5 %	12.5 %

Financial statements

Consolidated financial statements	142	Section 4:	Operating assets and liabilities	172
Consolidated income statement	142	4.1. Goodwill and intangible assets		172
Consolidated statement of comprehensive income	143	4.2. Property, plant and equipment		175
Consolidated statement of financial position	144	4.3. Leases		176
Consolidated statement of cash flows	145	4.4. Inventories		177
Consolidated statement of changes in shareholders' equity	146	4.5. Trade receivables and other customer-related balances		177
		4.6. Other receivables and liabilities		179
		4.7. Provisions		180
Notes to the consolidated financial statements	147	Section 5:	Capital and financial instruments	181
Section 1:		5.1. Equity		181
Basis of preparation	147	5.2. Financial assets and liabilities		185
1.1. Corporate information	147	5.3. Derivative and firm commitment assets and liabilities		189
1.2. General accounting policies	147	5.4. Financial risk management		192
1.3. Use of estimates and critical accounting judgments	148			
1.4. New and amended standards and interpretations	149	Section 6:	Other information	199
		6.1. Commitments, contingencies and legal proceedings		199
Section 2:		6.2. Principal Group companies		201
Results for the year	150	6.3. Significant partly-owned subsidiaries		202
2.1. Net sales	150	6.4. Related party transactions		203
2.2. Segment information	153			
2.3. Operating expenses and other operating income	155	Reports of independent registered public accounting firm (PCAOB ID 1131)		204
2.4. Financial income and expenses	156			
2.5. Income taxes	157			
2.6. Earnings per share	160			
Section 3:				
Compensation and benefits	161			
3.1. Summary of personnel expenses	161			
3.2. Remuneration of key management	161			
3.3. Share-based payments	163			
3.4. Pensions and other post-employment benefits	165			

Consolidated income statement

For the year ended 31 December

EURm	Note	2023	2022	2021
Net sales	2.1, 2.2	22 258	24 911	22 202
Cost of sales	2.3	(13 571)	(14 689)	(13 368)
Gross profit		8 687	10 222	8 834
Research and development expenses	2.3	(4 327)	(4 550)	(4 214)
Selling, general and administrative expenses	2.3	(2 929)	(3 013)	(2 792)
Other operating income	2.3	166	98	443
Other operating expenses	2.3	91	(439)	(113)
Operating profit		1 688	2 318	2 158
Share of results of associates and joint ventures	6.4	(39)	(26)	9
Financial income ⁽¹⁾	2.4	425	178	69
Financial expenses ⁽¹⁾	2.4	(575)	(286)	(310)
Profit before tax		1 499	2 184	1 926
Income tax (expense)/benefit	2.5	(825)	2 026	(272)
Profit from continuing operations		674	4 210	1 654
Profit/(loss) from discontinued operations		5	49	(9)
Profit for the year		679	4 259	1 645
Attributable to:				
Equity holders of the parent		665	4 250	1 623
Non-controlling interests		14	9	22
Earnings per share attributable to equity holders of the parent	2.6	EUR	EUR	EUR
Basic				
Profit from continuing operations		0.12	0.75	0.29
Profit for the year		0.12	0.76	0.29
Diluted				
Profit from continuing operations		0.12	0.74	0.29
Profit for the year		0.12	0.75	0.29

(1) In 2023, Nokia changed the presentation of net interest income on defined benefit plans within financial income and expenses. The comparative amounts for 2022 and 2021 have been recast accordingly. Refer to Note 2.4. Financial income and expenses for more information.

The notes are an integral part of these consolidated financial statements.

Consolidated statement of comprehensive income
For the year ended 31 December

EURm	Note	2023	2022	2021
Profit for the year		679	4 259	1 645
Items that will not be reclassified to profit or loss				
Remeasurements of defined benefit plans		(343)	(424)	3 040
Income tax related to items that will not be reclassified to profit or loss	2.5	61	77	(755)
Total of items that will not be reclassified to profit or loss		(282)	(347)	2 285
Items that may be reclassified to profit or loss				
Translation differences				
Exchange differences on translating foreign operations		(554)	696	1 160
Transfer to income statement		19	14	(7)
Net investment hedges				
Net fair value gains/(losses)		135	(127)	(249)
Cash flow and other hedges				
Net fair value losses		(24)	(15)	(10)
Transfer to income statement		(37)	98	10
Financial assets at fair value through other comprehensive income				
Net fair value losses		(110)	(264)	(25)
Transfer to income statement		120	218	32
Other decrease, net		(4)	(3)	—
Income tax related to items that may be reclassified to profit or loss	2.5	(10)	(21)	2
Total of items that may be reclassified to profit or loss		(465)	596	913
Other comprehensive (loss)/income, net of tax		(747)	249	3 198
Total comprehensive (loss)/income for the year		(68)	4 508	4 843
Attributable to:				
Equity holders of the parent		(78)	4 500	4 814
Non-controlling interests		10	8	29

The notes are an integral part of these consolidated financial statements.

Consolidated statement of financial position

At 31 December

EURm	Note	2023	2022	EURm	Note	2023	2022
ASSETS				SHAREHOLDERS' EQUITY AND LIABILITIES			
Non-current assets				Equity			
Goodwill	4.1	5 504	5 667	Share capital		246	246
Other intangible assets	4.1	1 086	1 263	Share premium		628	503
Property, plant and equipment	4.2	1 951	2 015	Treasury shares		(352)	(352)
Right-of-use assets	4.3	906	929	Translation differences		(249)	169
Investments in associated companies and joint ventures	6.4	88	199	Fair value and other reserves		3 605	3 905
Non-current interest-bearing financial investments	5.2, 5.4	715	697	Reserve for invested unrestricted equity		15 255	15 487
Other non-current financial assets	5.2, 5.4	1 100	1 080	Retained earnings		1 404	1 375
Defined benefit pension assets	3.4	6 258	6 754	Total shareholders' equity		20 537	21 333
Deferred tax assets	2.5	3 873	3 834	Non-controlling interests		91	93
Other non-current receivables	4.6	213	239	Total equity	5.1	20 628	21 426
Total non-current assets		21 694	22 677	Non-current liabilities			
Current assets				Long-term interest-bearing liabilities			
Inventories	4.4	2 719	3 265	Long-term lease liabilities	5.2, 5.3, 5.4	3 637	4 249
Trade receivables	4.5, 5.2, 5.4	4 921	5 549	Defined benefit pension and post-employment liabilities	5.4	799	858
Contract assets	4.5	1 136	1 203	Deferred tax liabilities	3.4	2 299	2 459
Current income tax assets	2.5	307	153	Contract liabilities	2.5	725	332
Other current receivables	4.6	764	934	Other non-current liabilities	4.5	210	120
Current interest-bearing financial investments	5.2, 5.4	1 565	3 080	Provisions	4.6	111	103
Other current financial and firm commitment assets	5.2, 5.3, 5.4	441	615		4.7	518	622
Cash and cash equivalents	5.2, 5.4	6 234	5 467	Total non-current liabilities		8 299	8 743
Total current assets		18 087	20 266	Current liabilities			
Assets held for sale	6.4	79	—	Short-term interest-bearing liabilities	5.2, 5.3, 5.4	554	228
Total assets		39 860	42 943	Short-term lease liabilities	5.4	198	184
				Other financial and firm commitment liabilities	5.2, 5.3, 5.4	830	1 038
				Contract liabilities	4.5	2 157	1 977
				Current income tax liabilities	2.5	203	185
				Trade payables	5.2, 5.4	3 423	4 730
				Other current liabilities	4.6	2 824	3 619
				Provisions	4.7	744	813
				Total current liabilities		10 933	12 774
				Total liabilities		19 232	21 517
				Total shareholders' equity and liabilities		39 860	42 943

The notes are an integral part of these consolidated financial statements.

Consolidated statement of cash flows

For the year ended 31 December

EURm	Note	2023	2022	2021
Profit for the year		679	4 259	1 645
Adjustments, total ⁽¹⁾		2 559	(446)	1 713
Change in net working capital ⁽²⁾		(1 282)	(1 843)	(268)
Cash flows from operations		1 956	1 970	3 090
Interest received		178	65	41
Interest paid	4.3, 5.2	(241)	(180)	(192)
Income taxes paid, net		(576)	(381)	(314)
Net cash flows from operating activities		1 317	1 474	2 625
Purchase of property, plant and equipment and intangible assets		(652)	(601)	(560)
Proceeds from sale of property, plant and equipment and intangible assets		189	33	103
Acquisition of businesses, net of cash acquired		(19)	(20)	(33)
Proceeds from disposal of businesses, net of cash disposed		17	—	—
Purchase of interest-bearing financial investments		(1 855)	(3 595)	(1 845)
Proceeds from interest-bearing financial investments		3 382	2 397	398
Purchase of other non-current financial assets		(83)	(115)	(77)
Proceeds from other non-current financial assets		34	49	277
Other		30	(28)	(58)
Net cash flows from/(used in) investing activities		1 043	(1 880)	(1 795)
Acquisition of treasury shares	5.1	(300)	(300)	—
Proceeds from long-term borrowings	5.4	496	8	17
Repayment of long-term borrowings	5.4	(798)	(2)	(927)
(Repayment of) proceeds from short-term borrowings	5.4	(40)	27	(67)
Payment of principal portion of lease liabilities	4.3, 5.4	(239)	(217)	(226)
Dividends paid	5.1	(621)	(353)	(9)
Net cash flows used in financing activities		(1 502)	(837)	(1 212)
Translation differences		(91)	19	133
Net increase/(decrease) in cash and cash equivalents		767	(1 224)	(249)
Cash and cash equivalents at 1 January		5 467	6 691	6 940
Cash and cash equivalents at 31 December		6 234	5 467	6 691

The consolidated statement of cash flows combines cash flows from both continuing and discontinued operations.

The notes are an integral part of these consolidated financial statements.

(1) Adjustments

EURm	2023	2022	2021
Depreciation and amortization	1 087	1 140	1 095
Share-based payments	202	149	108
Impairment charges	25	152	40
Restructuring charges	316	125	183
Loss/(gain) from other non-current financial assets	56	(27)	(188)
Gain on sale of property, plant and equipment	(143)	(35)	(59)
Financial income and expenses	148	28	240
Income tax expense/(benefit)	825	(2 030)	273
Other adjustments, net	43	52	21
Total	2 559	(446)	1 713

Restructuring charges in adjustments represent the non-cash portion recognized in the consolidated income statement.

(2) Change in net working capital

EURm	2023	2022	2021
Decrease/(increase) in receivables	304	(451)	239
Decrease/(increase) in inventories	443	(991)	(48)
Decrease in non-interest-bearing liabilities	(2 029)	(401)	(459)
Total	(1 282)	(1 843)	(268)

Consolidated statement of changes in shareholders' equity

EURm	Note	Share capital	Share premium	Treasury shares	Translation differences	Fair value and other reserves	Reserve for invested unrestricted equity	Retained earnings ¹ (Accumulated deficit)	Total shareholders' equity	Non-controlling interests	Total equity
1 January 2021		246	443	(352)	(1 295)	1 910	15 656	(4 143)	12 465	80	12 545
Profit for the year								1 623	1 623	22	1 645
Other comprehensive income	5.1				899	2 309		(17)	3 191	7	3 198
Total comprehensive income for the year		—	—	—	899	2 309	—	1 606	4 814	29	4 843
Share-based payments			108						108		108
Settlement of share-based payments			(97)				70		(27)		(27)
Dividends	5.1									(7)	(7)
Total transactions with owners		—	11	—	—	—	70	—	81	(7)	74
31 December 2021		246	454	(352)	(396)	4 219	15 726	(2 537)	17 360	102	17 462
Profit for the year								4 250	4 250	9	4 259
Other comprehensive income	5.1				565	(314)		(1)	250	(1)	249
Total comprehensive income for the year		—	—	—	565	(314)	—	4 249	4 500	8	4 508
Share-based payments			149						149		149
Settlement of share-based payments			(100)				73		(27)		(27)
Acquisition of treasury shares ⁽¹⁾	5.1			(300)			(12)		(312)		(312)
Cancellation of treasury shares ⁽¹⁾	5.1			300			(300)		—		—
Dividends	5.1							(337)	(337)	(17)	(354)
Total transactions with owners		—	49	—	—	—	(239)	(337)	(527)	(17)	(544)
31 December 2022		246	503	(352)	169	3 905	15 487	1 375	21 333	93	21 426
Profit for the year								665	665	14	679
Other comprehensive loss	5.1				(418)	(300)		(25)	(743)	(4)	(747)
Total comprehensive income for the year		—	—	—	(418)	(300)	—	640	(78)	10	(68)
Share-based payments			202						202		202
Settlement of share-based payments			(77)				59		(18)		(18)
Acquisition of treasury shares ⁽¹⁾	5.1			(303)			12		(291)		(291)
Cancellation of treasury shares ⁽¹⁾	5.1			303			(303)		—		—
Disposal of subsidiaries										(2)	(2)
Dividends	5.1							(611)	(611)	(10)	(621)
Total transactions with owners		—	125	—	—	—	(232)	(611)	(718)	(12)	(730)
31 December 2023		246	628	(352)	(249)	3 605	15 255	1 404	20 537	91	20 628

(1) Treasury shares have been acquired as part of the share buyback program announced on 3 February 2022 using the reserve for invested unrestricted equity. The shares repurchased in the first phase of the program between 14 February and 11 November 2022 were cancelled on 8 December 2022. The shares repurchased in the second phase of the program between 2 January and 10 November 2023 were cancelled on 30 November 2023. Refer to Note 5.1. Equity for more information.

The notes are an integral part of these consolidated financial statements.

Notes to the consolidated financial statements

Section 1

Basis of preparation

This section describes the general accounting policies applied in preparation of these consolidated financial statements, including the basis of presentation and key consolidation principles. This section also summarizes the accounting matters that involve most judgment or estimation uncertainty. The specific accounting policies as well as details of key accounting estimates and judgments are provided in the related notes.

1.1. Corporate information

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 (together Nokia or the Group). Nokia is a global provider of mobile, fixed and cloud network solutions combining hardware, software and services, as well as licensing of intellectual property, including patents, technologies and the Nokia brand. Nokia's operational headquarters are located in Espoo, Finland. The shares of Nokia Corporation are listed on the Nasdaq Helsinki Stock Exchange, the New York Stock Exchange and the Euronext Paris Stock Exchange.

These consolidated financial statements for the year ended 31 December 2023 were authorized for issuance and filing by the Board of Directors on 29 February 2024.

1.2. General accounting policies

Basis of presentation and statement of compliance

The consolidated financial statements are prepared in accordance with International Financial Reporting Standards (IFRS Accounting Standards) as issued by the International Accounting Standards Board (IASB) and as adopted by the European Union (EU). The consolidated financial statements also conform to Finnish accounting and company legislation.

The consolidated financial statements are presented in millions of euros (EURm), except when otherwise noted, and are prepared under the historical cost convention, except when otherwise disclosed in the accounting policies in the specific notes.

Other information

This paragraph is included in connection with statutory reporting requirements in Germany. The fully consolidated German subsidiary, Nokia Solutions and Networks GmbH & Co. KG, registered in the commercial register of Munich under HRA 88537, has made use of the exemption available under § 264b and § 291 of the German Commercial Code (HGB).

Principles of consolidation

The consolidated financial statements comprise the financial statements of the Parent Company, and each of those companies over which it exercises control. Control over an entity exists when Nokia is exposed, or has rights, to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Presumption is that a majority of voting rights results in control. To support this presumption, Nokia considers all relevant facts and circumstances in assessing whether it has power over the entity including voting rights and potential voting rights, rights to appoint key management personnel and rights arising from other contractual arrangements. Consolidation of a subsidiary begins when Nokia obtains control over the subsidiary and ceases when it loses control over the subsidiary.

All intercompany transactions are eliminated as part of the consolidation process. Non-controlling interest represents the proportion of net profit or loss, other comprehensive income and net assets in subsidiaries that is not attributable to the equity holders of the Parent.

Investments in associates and joint ventures

An associate is an entity over which Nokia exercises significant influence. A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement.

Nokia's investments in associates and joint ventures are accounted for using the equity method. Under the equity method, the investment in an associate or joint venture is initially recognized at cost. The carrying amount of the investment is adjusted to recognize changes in Nokia's share of net assets of the associate or joint venture since the acquisition date. Nokia's share of profits and losses of associates and joint ventures is reflected in the consolidated income statement. Any change in other comprehensive income of associates and joint ventures is presented as part of Nokia's other comprehensive income.

Notes to the consolidated financial statements continued

Non-current assets (or disposal groups) held for sale and discontinued operations

Non-current assets or disposal groups are classified as assets held for sale if their carrying amounts will be recovered principally through a sale transaction rather than through continuing use. Non-current assets classified as held for sale, or included in a disposal group classified as held for sale, are not depreciated or amortized.

Discontinued operation is reported when a component of Nokia, comprising operations and cash flows that can be clearly distinguished both operationally and for financial reporting purposes from the rest of Nokia, has been disposed of or is classified as held for sale, and that component represents a major line of business or geographical area of operations or is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations. Profit or loss from discontinued operations is reported separately from income and expenses from continuing operations in the consolidated income statement, with prior periods presented on a comparative basis. Intra-group revenues and expenses between continuing and discontinued operations are eliminated. Discontinued operations presented in these consolidated financial statements comprise the financial results related to the HERE digital mapping and location services business and the Devices & Services business sold in 2015 and 2014, respectively.

Foreign currency translation**Functional and presentation currency**

The consolidated financial statements are presented in euro, the functional and presentation currency of the Parent Company. The financial statements of all Group companies are measured using the functional currency, which is the currency of the primary economic environment in which the entity operates.

Transactions in foreign currencies

Transactions in foreign currencies are recorded at exchange rates prevailing at the date of the transactions. For practical reasons, a rate that approximates the actual rate at the date of the transaction is often used. Monetary assets and liabilities denominated in foreign currency are translated at the exchange rates prevailing at the end of the reporting period.

Foreign exchange gains and losses arising from monetary assets and liabilities as well as fair value changes of related hedging instruments are recognized in financial income and expenses. Unrealized foreign exchange gains and losses related to non-monetary non-current financial investments are included in the fair value measurement of these investments and recognized in other operating income and expenses.

Foreign Group companies

On consolidation, the assets and liabilities of foreign operations whose functional currency is other than euro are translated into euro at the exchange rates prevailing at the end of the reporting period. The income and expenses of these foreign operations are translated into euro at the average exchange rates for the reporting period. The exchange differences arising from translation for consolidation are recognized as translation differences in other comprehensive income. On disposal of a foreign operation the cumulative amount of translation differences relating to that foreign operation is reclassified to profit or loss.

1.3. Use of estimates and critical accounting judgments

The preparation of financial statements requires use of management judgment in selecting and applying accounting policies as well as making estimates and assumptions about the future. These judgments, estimates and assumptions may have a significant effect on the amounts recognized in the financial statements.

The estimates and assumptions used in determining the carrying amounts of assets and liabilities are based on historical experience, expected outcomes and various other factors that were available when these financial statements were prepared, and they are believed to be reasonable under the circumstances. The estimates and assumptions are reviewed continually and revised if changes in circumstances occur, or as a result of new information. As estimates and assumptions inherently contain a varying degree of uncertainty, actual outcomes may differ resulting in adjustments to the carrying amounts of assets and liabilities in subsequent periods.

The accounting matters listed below are determined to involve the most difficult, subjective or complex judgments, or are considered as major sources of estimation uncertainty that may have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the next financial year. Please refer to the specific notes for further information on the key accounting estimates and judgments.

Key accounting estimates and judgments	Note
Judgment related to recognition of deferred tax assets	2.5. Income taxes
Estimate of pension and other post-employment benefit obligations	3.4. Pensions and other post-employment benefits

1.4. New and amended standards and interpretations

On 1 January 2023, Nokia adopted the following amendments to the accounting standards issued by the IASB and endorsed by the EU:

- IFRS 17 Insurance Contracts (including the June 2020 and December 2021 Amendments to IFRS 17);
- Amendments to IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates;
- Amendments to IAS 1 Presentation of Financial Statements and IFRS Practice Statement 2 Making Materiality Judgements: Disclosure of Accounting Policies;
- Amendments to IAS 12 Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction; and
- Amendments to IAS 12 Income Taxes: International Tax Reform—Pillar Two Model Rules.

The amendments had no material impact on the measurement, recognition or presentation of any items in Nokia's consolidated financial statements for 2023. The amendments affecting the disclosures are explained below.

The amendments to IAS 1 and IFRS Practice Statement 2 related to disclosure of accounting policies aim to help entities provide accounting policies disclosures that are more useful by replacing the requirement to disclose 'significant' accounting policies with a requirement to disclose 'material' accounting policies and adding guidance to help entities determine when accounting policies information is material and, therefore, needs to be disclosed. These amendments are reflected in the accounting policies disclosures in Nokia's consolidated financial statements for 2023.

The amendments to IAS 12 related to Pillar Two Model Rules have been introduced in response to the OECD's BEPS Pillar Two rules and include a mandatory temporary exception to the recognition and disclosure of deferred taxes arising from the jurisdictional implementation of the Pillar Two model rules, and disclosure requirements for affected entities to help users of the financial statements better understand an entity's exposure to Pillar Two income taxes arising from that legislation, particularly before its effective date. Information on the impact of Pillar Two legislation on Nokia is disclosed in Note 2.5. Income taxes.

Nokia has not early adopted any new or amended standards or interpretations that have been issued but are not yet effective. The new and amended standards and interpretations issued by the IASB that are effective in future periods are not expected to have a material impact on the consolidated financial statements of Nokia when adopted. Nokia intends to adopt these new and amended standards and interpretations, if applicable, when they become effective and are endorsed by the EU.

Section 2

Results for the year

This section provides details of items presented in the income statement including disaggregation of net sales by region and customer type, results of Nokia's operating segments, as well as information on operating expenses and other operating income. Furthermore, this section contains information about financial income and expenses and income taxes, as well as earnings per share.

2.1. Net sales

Accounting policies

Nokia accounts for a contract with a customer when the contract has been approved in writing, which is generally when both parties are committed to perform their respective obligations, the rights, including payment terms, regarding the goods and services to be transferred can be identified, the contract has commercial substance, and collection of the consideration to which Nokia expects to be entitled is probable. Management considers only legally enforceable rights in evaluating the accounting for contracts with customers. As such, frame agreements that do not create legally enforceable rights and obligations are accounted for based on the issuance of subsequent legally binding purchase orders under the frame agreements.

A contract modification or a purchase order is accounted for as a separate contract if the scope of the contract increases by additional distinct goods or services, and the price of the contract increases by an amount that reflects the standalone selling price of those additional goods or services. In cases where the additional goods or services are distinct but not sold at a standalone selling price, the contract modification is accounted for prospectively. In cases where the additional goods or services are not distinct, the modification is accounted for through a cumulative catch-up adjustment.

Nokia recognizes revenue from contracts with customers to reflect the transfer of promised goods and services to customers for amounts that reflect the consideration to which Nokia expects to be entitled in exchange for those goods and services. The consideration may include a variable amount, which Nokia estimates based on the most likely amount. Items causing variability include volume discounts and sales-based or usage-based royalties. Nokia includes variable consideration into the transaction price only to the extent that it is highly probable that a significant revenue reversal will not occur. The transaction price also excludes amounts collected on behalf of third parties.

In cases where the timing of payments provides either the customer or Nokia with a significant benefit of financing, the transaction price is adjusted for the effect of financing and the related interest revenue or interest expense is presented separately from revenue. As a practical expedient, Nokia does not account for financing components if, at contract inception, the consideration is expected to be received within one year before or after the goods or services have been transferred to the customer.

Nokia enters into contracts with customers consisting of any combination of hardware, services and intellectual property. Hardware and software sold by Nokia includes warranty, which can either be assurance-type for repair of defects and replacement of hardware recognized as a centralized warranty provision, or service-type for scope beyond the repair of defects or for a time period beyond the standard assurance-type warranty period and considered a separate performance obligation within the context of the contract.

The associated revenue recognized for such contracts depends on the nature of the underlying goods and services provided. The promised goods or services in the contract might include sale of goods, license of intellectual property and grant of options to purchase additional goods or services that may provide the customer with a material right. Nokia conducts an assessment at contract inception to determine which promised goods and services in a customer contract are distinct and accordingly identified as performance obligations.

The standalone selling price of each performance obligation is determined by considering factors such as the price of the performance obligation if sold on a standalone basis and the expected cost of the performance obligation plus a reasonable margin when price references are not available. The portion of the transaction price allocated to each performance obligation is then recognized when the revenue recognition criteria for that performance obligation have been met.

[Notes to the consolidated financial statements](#) continued

Nokia allocates the transaction price to each distinct performance obligation on the basis of their standalone selling prices, relative to the overall transaction price. If a standalone selling price is not observable, it is estimated. The transaction price may include a discount or a variable amount of consideration that is generally allocated proportionately to all performance obligations in the contract unless Nokia has observable evidence that the entire discount relates to only one or more, but not all, performance obligations in a contract. The amount of revenue recognized is the amount allocated to the satisfied performance obligation based on the relative standalone selling prices. A performance obligation may be satisfied at a point in time or over time.

As described in Note 4.5, Trade receivables and other customer-related balances, Nokia presents its customer contracts in the statement of financial position as either a contract asset or a contract liability, depending on the relationship between Nokia's performance and the customer's payment for each individual contract.

Sale of products

Nokia manufactures and sells a range of networking equipment, covering the requirements of network operators. Revenue for these products is recognized when control of the products has transferred, the determination of which may require judgment. Typically, for standard equipment sales, control transfers upon delivery. For more complex solutions, control generally transfers upon acceptance.

In some arrangements, mainly within the Submarine Networks business, Nokia's performance does not create an asset with an alternative use and Nokia recognizes revenue over time using the output method, which faithfully depicts the manner in which the asset is transferred to the customer as well as Nokia's enforceable rights to payment for the work completed to date, including margin. The output measure selected by Nokia for each contract may vary depending on the nature of the contract.

Sale of services

Nokia provides services related to the provision of networking equipment, ranging from managing a customer's network and product maintenance services to network installation, integration and optimization. Revenue for each separate service performance obligation is recognized as or when the customer obtains the benefits of Nokia's performance. Service revenue is recognized over time for managed and maintenance services, as in these cases Nokia performs throughout a fixed contract term and the customer simultaneously receives and consumes the benefits as Nokia performs. In some cases, Nokia performs services that are subject to customer acceptance where revenue is recognized when the customer acceptance is received.

Sale of intellectual property licenses

Nokia provides its customers with licenses to intellectual property (IP) owned by Nokia by granting software licenses and rights to benefit from Nokia's IP in their products. When a software license is sold, revenue is recognized upon delivery or acceptance of the software, as Nokia has determined that each software release is distinct and the license is granted for software as it exists when the control transfers to the customer.

When Nokia grants customers a license to use IP owned by Nokia, the associated license fee revenue is recognized in accordance with the substance of the relevant agreements. In the majority of cases, Nokia retains obligations to continue to develop and make available to the customer the latest IP in the licensed assets during the contract term, and therefore revenue is recognized pro rata over the period during which Nokia is expected to perform.

Recognition of the revenue as pro rata over the term of the license is considered the most faithful depiction of Nokia's satisfaction of the performance obligation as the IP being licensed towards the customer includes new inventions patented by Nokia that are highly interdependent and interrelated and created through the course of continuous research and development (R&D) efforts that are relatively stable throughout the year. In some contracts, Nokia has no remaining obligations to perform after granting a license to the initial IP, and licensing fees are non-refundable. In these cases, revenue is recognized at the beginning of the license term.

Notes to the consolidated financial statements continued

Revenue disaggregation

Management has determined that Nokia's geographic areas are considered as the primary determinants to depict how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. Nokia's primary customer base consists of companies that operate on a country-specific or a regional basis. Although Nokia's technology cycle is similar around the world, different countries and regions are inherently in a different stage of that cycle, often influenced by macroeconomic conditions specific to those countries and regions. In addition to Net sales to external customers by region, the chief operating decision-maker, as described in Note 2.2. Segment information, also reviews Net sales by customer type disclosed in this note.

Each reportable segment, as described in Note 2.2. Segment information, consists of customers that operate in all geographic areas. No reportable segment has a specific revenue concentration in any geographic area other than Nokia Technologies, which is included within Europe.

Net sales to external customers by region

Net sales to external customers by region are based on the location of the customer, except for Nokia Technologies IPR and licensing net sales which are allocated to Europe.

EURm	2023	2022	2021
Asia Pacific	2 291	2 648	2 472
Europe	5 873	6 662	6 313
Greater China	1 303	1 581	1 512
India	2 842	1 290	1 035
Latin America	1 046	1 223	983
Middle East & Africa	2 050	1 969	1 771
North America	5 733	8 388	7 187
Submarine Networks	1 120	1 150	929
Total	22 258	24 911	22 202

Net sales by customer type

EURm	2023	2022	2021
Communications service providers	17 652	19 921	17 977
Enterprise	2 282	1 997	1 575
Licensees	1 085	1 595	1 502
Other ⁽¹⁾	1 239	1 398	1 148
Total	22 258	24 911	22 202

(1) Includes net sales of Submarine Networks which operates in a different market, and Radio Frequency Systems (RFS), which is being managed as a separate entity, and certain other items, such as eliminations of inter-segment revenues. Submarine Networks and RFS net sales also include revenue from communications service providers and enterprise customers.

Order backlog

At 31 December 2023, the aggregate amount of the transaction price allocated to partially or wholly unsatisfied performance obligations arising from fixed contractual commitments amounted to EUR 22.0 billion (EUR19.5 billion in 2022). Management has estimated that these unsatisfied performance obligations will be recognized as revenue as follows:

	2023	2022
Within 1 year	51%	75%
2-3 years	30%	21%
More than 3 years	19%	4%
Total	100%	100%

The estimated timing of the satisfaction of these performance obligations is subject to change owing to factors beyond Nokia's control such as customer and network demand, market conditions and, in some cases, restrictions imposed by the weather or other factors impacting project logistics. Revenue recognized in the reporting period from performance obligations satisfied (or partially satisfied) in previous periods (for example, due to changes in transaction price) was not material.

2.2. Segment information

Accounting policies

Nokia has four operating and reportable segments for financial reporting purposes: (1) Network Infrastructure, (2) Mobile Networks, (3) Cloud and Network Services and (4) Nokia Technologies. In addition, Nokia provides net sales disclosure for the following business divisions within the Network Infrastructure segment: (i) IP Networks, (ii) Optical Networks, (iii) Fixed Networks and (iv) Submarine Networks.

The President and CEO is the chief operating decision-maker monitoring the operating results of segments for the purpose of assessing performance and making decisions about resource allocation. Key financial performance measures of the segments comprise primarily net sales and segment operating profit. The evaluation of segment performance and allocation of resources is primarily based on segment operating profit which the management believes is the most relevant measure for this purpose. Segment operating profit excludes intangible asset amortization and other purchase price fair value adjustments, goodwill impairments, restructuring-related charges and certain other items of income and expenses that may not be indicative of the business operating results.

Accounting policies of the segments are the same as those for the Group except for the aforementioned items of income and expenses that are not allocated to the segments. Inter-segment revenues and transfers are accounted for as if the revenues were to third parties, that is, at current market prices.

Segment descriptions

Network Infrastructure

The Network Infrastructure segment serves communications service providers, enterprises, webscales and public sector customers. It comprises the following business divisions: (i) IP Networks, which provides IP networks and services for residential, mobile, enterprise and cloud applications; (ii) Optical Networks, which provides optical transport networks for metro, regional, and long-haul applications, and collaborates with Submarine Networks on subsea applications; (iii) Fixed Networks, which provides fiber, fixed wireless access and copper technologies; and (iv) Submarine Networks, which offers undersea cable transmission.

Mobile Networks

The Mobile Networks segment creates products and services covering all mobile technology generations. Its portfolio includes products for radio access networks (RAN) and microwave radio (MWR) links for transport networks, and solutions for network management, as well as network planning, optimization, network deployment and technical support services.

Cloud and Network Services

The Cloud and Network Services segment is built around software and the cloud and is focused on driving leadership in cloud-native software and as-a-service delivery models, as demand for critical networks accelerates; and has strong market positions in communications software, private wireless networks, and cognitive (or intelligent) services. The Cloud and Network Services portfolio encompasses core network solutions, including both voice and packet core; business applications covering areas like security, automation, and monetization; cloud and cognitive services; and enterprise solutions covering private wireless and industrial automation.

Nokia Technologies

Nokia Technologies segment monetizes Nokia's intellectual property, including patents, technologies and the Nokia brand, building on Nokia's continued innovation leadership, long-term investment into research and development, and decades of driving technology standards development. The majority of net sales and related costs and expenses attributable to licensing and patenting the patent portfolio of Nokia is recorded in Nokia Technologies, while each segment separately records its own research and development expenses.

Group Common and Other

Despite not being a reportable segment, Nokia also provides segment-level information for Group Common and Other. Group Common and Other includes Radio Frequency Systems which is managed as a separate entity. In addition, Group Common and Other includes certain corporate-level and centrally managed operating expenses, as well as fair value gains and losses on investments in venture funds, including investments managed by NGP Capital.

Notes to the consolidated financial statements continued

Segment results

EURm	Network Infrastructure ⁽¹⁾	Mobile Networks	Cloud and Network Services	Nokia Technologies	Group Common and Other	Eliminations and unallocated items ⁽²⁾	Nokia Group
2023							
Net sales to external customers	8 039	9 791	3 219	1 085	124	—	22 258
Net sales to other segments	(2)	6	1	—	6	(11)	—
Operating profit/(loss)	1 054	723	255	734	(391)	(687)	1 688
Share of results of associated companies and joint ventures	—	(30)	7	12	—	(28)	(39)
Financial income and expenses	—	—	—	—	—	—	(150)
Profit before tax							1 499
Other segment items							
Depreciation and amortization	(235)	(366)	(81)	(39)	(14)	(352)	(1 087)
2022							
Net sales to external customers	9 044	10 658	3 350	1 583	276	—	24 911
Net sales to other segments	3	13	1	12	19	(48)	—
Operating profit/(loss)	1 102	940	177	1 208	(318)	(791)	2 318
Share of results of associated companies and joint ventures	—	(11)	6	(8)	—	(13)	(26)
Financial income and expenses	—	—	—	—	—	—	(108)
Profit before tax							2 184
Other segment items							
Depreciation and amortization	(229)	(347)	(91)	(34)	(28)	(411)	(1 140)
2021							
Net sales to external customers	7 673	9 711	3 088	1 490	240	—	22 202
Net sales to other segments	1	6	1	12	17	(37)	—
Operating profit/(loss)	784	765	166	1 185	(125)	(617)	2 158
Share of results of associated companies and joint ventures	(1)	6	6	(2)	—	—	9
Financial income and expenses	—	—	—	—	—	—	(241)
Profit before tax							1 926
Other segment items							
Depreciation and amortization	(208)	(338)	(95)	(33)	(30)	(391)	(1 095)

(1) Includes IP Networks net sales of EUR 2 606 million (EUR 3 063 million in 2022 and EUR 2 679 million in 2021), Optical Networks net sales of EUR 1 942 million (EUR 1 891 million in 2022 and EUR 1 708 million in 2021), Fixed Networks net sales of EUR 2 369 million (EUR 2 943 million in 2022 and EUR 2 358 million in 2021) and Submarine Networks net sales of EUR 1 120 million (EUR 1 150 million in 2022 and EUR 929 million in 2021).

(2) Unallocated items comprise costs related to intangible asset amortization, restructuring-related charges, impairments and certain other items.

Material reconciling items between total segment operating profit and operating profit for the Group

EURm	2023	2022	2021
Total segment operating profit	2 375	3 109	2 775
Restructuring and associated charges	(356)	(177)	(263)
Amortization of acquired intangible assets	(352)	(411)	(391)
Costs associated with country exit	49	(98)	—
Impairment and write-off of assets, net of reversals	(25)	(97)	(45)
Settlement of legal disputes	—	—	80
Gain on sale of fixed assets	—	—	53
Other	(3)	(8)	(51)
Operating profit for the Group	1 688	2 318	2 158

Notes to the consolidated financial statements continued

Information by geographies and customer concentration

Net sales to external customers by country

EURm	2023	2022	2021
Finland	1 192	1 697	1 605
United States	5 373	7 949	6 791
India	2 835	1 283	1 022
France	792	862	847
Great Britain	786	759	650
Other	11 280	12 361	11 287
Total	22 258	24 911	22 202

Net sales to external customers by country are based on the location of the customer, except for Nokia Technologies IPR and licensing net sales which are allocated to Finland.

Major customers

As is typical for our industry, Nokia's net sales are largely driven by multi-year customer agreements with a limited number of significant customers. In 2023, no single customer represented more than 10% of net sales. In 2022, net sales to the largest customer were 10% and in 2021, 11% of net sales to external customers. Net sales to the largest customer were reported by Network Infrastructure, Mobile Networks and Cloud and Network Services, as well as Group Common and Other.

Non-current assets by country

EURm	2023	2022
Finland	1 549	1 365
United States	4 383	5 032
France	2 139	2 180
Other	1 376	1 297
Total	9 447	9 874

Non-current assets consists of goodwill, other intangible assets, property, plant and equipment and right-of-use assets.

2.3. Operating expenses and other operating income

Accounting policies

Nokia presents its income statement based on the function of expenses as it considers this to provide more relevant information about its financial performance. Information about the nature of expenses is provided in the notes. Certain items of income and expenses, such as gains and losses from venture funds, are presented as other operating income and expenses as Nokia considers these items to be related to its operating activities but not to any specific functions.

Government grants received as compensation for expenses incurred are recognized as a reduction of the related expenses except for certain non-recurring grants that are recognized as other operating income. Government grants received in the form of R&D tax credits are recognized as a reduction of R&D expenses if the tax credit relates to the R&D expenditures incurred by Nokia and the tax credit is reimbursed in cash by the government in cases where Nokia is not able to offset it against its income tax payable. R&D tax credits that do not meet both conditions are recognized as income tax benefit.

Expenses by nature

EURm	2023	2022	2021
Personnel expenses	7 470	7 903	7 541
Cost of material	7 825	8 481	6 320
Project subcontracting and other customer contract expenses	2 949	3 156	4 225
Depreciation and amortization	1 087	1 140	1 095
IT services	399	376	230
Impairment charges	25	90	39
Other	981	1 545	1 037
Total operating expenses	20 736	22 691	20 487

Operating expenses include government grant income and R&D tax credits of EUR 173 million (EUR146 million in 2022 and EUR111 million in 2021) most of which have been recognized as a deduction against research and development expenses.

Restructuring charges by function ⁽¹⁾:

EURm	2023	2022	2021
Cost of sales	153	85	133
Research and development expenses	61	37	73
Selling, general and administrative expenses	137	46	78
Total restructuring charges	351	168	284

(1) Restructuring charges include defined benefit plan curtailment income and expenses.

Notes to the consolidated financial statements continued

Other operating income

EURm	2023	2022	2021
Gain on sale of property, plant and equipment including divested business	168	7	66
Subsidies and government grants	—	20	43
(Losses)/gains from venture funds	(56)	27	188
Settlements and resolutions of legal disputes	—	—	90
Other	54	44	56
Total	166	98	443

Other operating expenses

EURm	2023	2022	2021
Expected credit losses on trade receivables	(4)	(107)	16
Impairment of disposal groups	—	(72)	—
Changes in provisions	37	(134)	(77)
Foreign exchange gains/(losses) on hedging forecasted sales and purchases	80	(107)	45
Other	(22)	(19)	(97)
Total	91	(439)	(113)

2.4. Financial income and expenses

Financial income

EURm	2023	2022	2021
Interest income on financial investments	199	69	21
Interest income on financing components of other contracts	21	13	28
Net interest income on defined benefit plans ⁽¹⁾	187	92	26
Other financial income ⁽²⁾	18	4	(6)
Total	425	178	69

(1) In 2023, Nokia changed the presentation of net interest income on defined benefit plans from financial expenses to financial income as it better reflects the nature of this item which Nokia expects to be an income also in the foreseeable future. The comparative amounts for 2022 and 2021 have been recast accordingly.

(2) In 2023, includes an expense of EUR 2 million (income of EUR 11 million in 2022 and expense of EUR 33 million in 2021) due to a change in the fair value of the financial liability related to Nokia Shanghai Bell. Refer to Note 6.3. Significant partly-owned subsidiaries

Financial expenses

EURm	2023	2022	2021
Interest expense on interest-bearing liabilities	(201)	(103)	(113)
Negative interest on financial investments	(3)	(27)	(29)
Interest expense on financing components of other contracts ⁽¹⁾	(126)	(66)	(40)
Interest expense on lease liabilities	(28)	(26)	(24)
Net fair value (losses)/gains on hedged items under fair value hedge accounting	(93)	262	25
Net fair value gains/(losses) on hedging instruments under fair value hedge accounting	89	(265)	(25)
Net foreign exchange (losses)/gains	(187)	20	(60)
Other financial expenses ⁽²⁾	(26)	(81)	(44)
Total	(575)	(286)	(310)

(1) In 2023, includes EUR 106 million (EUR 46 million in 2022 and EUR 12 million in 2021) related to the sale of receivables.

(2) In 2023, includes an increase in loss allowance of EUR 9 million (impairment of EUR 61 million in 2022 and increase in loss allowance of EUR 32 million in 2021) related to loans extended to certain emerging market customers.

2.5. Income taxes

Accounting policies

Income tax expense comprises current tax and deferred tax. Tax is recognized in the income statement except to the extent that it relates to items recognized in other comprehensive income, or directly in equity, in which case the related tax is recognized in other comprehensive income or equity, respectively.

Current taxes are calculated based on the results of the Group companies in accordance with local tax laws and using tax rates that are enacted or substantively enacted at the reporting date. Corporate taxes withheld at the source of the income on behalf of Group companies are accounted for as income taxes when determined to represent a tax on net income.

Deferred tax assets and liabilities are determined using the balance sheet liability method for all temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the statement of financial position. Deferred tax assets are recognized to the extent it is probable that future taxable profit will be available against which the unused tax losses, unused tax credits and deductible temporary differences can be utilized in the relevant jurisdictions. Deferred tax assets are assessed for realizability at each reporting date. When facts and circumstances indicate it is no longer probable that deferred tax assets will be utilized, adjustments are made as necessary.

Deferred tax liabilities are recognized for taxable temporary differences, and for temporary differences that arise between the fair value and the tax base of identifiable net assets acquired in business combinations. Deferred tax liabilities are not recognized if they arise from the initial recognition of goodwill. Deferred tax liabilities are recognized on taxable temporary differences associated

with investments in subsidiaries, associates and joint arrangements, unless the timing of the reversal of the temporary difference is controlled by Nokia, and it is probable that the temporary difference will not reverse in the foreseeable future. Nokia applies the exception to recognizing and disclosing information about deferred tax assets and liabilities related to Pillar Two income taxes. Deferred tax assets and deferred tax liabilities are measured using the enacted or substantively enacted tax rates at the reporting date that are expected to apply in the period when the asset is realized or the liability is settled. Deferred tax assets and liabilities are not discounted.

Deferred tax assets and deferred tax liabilities are offset for presentation purposes when there is a legally enforceable right to set off current tax assets against current tax liabilities, and the deferred tax assets and deferred tax liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or realize the assets and settle the liabilities simultaneously in each future period in which significant amounts of deferred tax liabilities or deferred tax assets are expected to be settled or recovered.

Nokia periodically evaluates positions taken in tax returns in situations where applicable tax regulation is subject to interpretation. The amounts of current and deferred tax assets and liabilities are adjusted when it is considered probable, i.e. more likely than not, that certain tax positions may not be fully sustained upon review by tax authorities. The amounts recorded are based on the most likely amount or the expected value, depending on which method Nokia expects to better predict the resolution of the uncertainty, at each reporting date.

Critical accounting judgment

Nokia is subject to income taxes in the jurisdictions in which it operates. Judgment is required in determining current tax expense, uncertain tax positions, deferred tax assets and deferred tax liabilities; and the extent to which deferred tax assets can be recognized.

Estimates related to the recoverability of deferred tax assets are based on forecast future taxable income and tax planning strategies. Based on these estimates and assumptions, at 31 December 2023 Nokia has EUR21 569 million (EUR20 214 million in 2022) of unused tax losses, unused tax credits and deductible temporary differences for which no deferred tax assets are recognized due to uncertainty of utilization. The majority of the unrecognized deferred tax assets relate to France.

The utilization of deferred tax assets is dependent on future taxable profit in excess of the profit arising from the reversal of existing taxable temporary differences. The recognition of deferred tax assets is based on the assessment of whether it is probable that sufficient taxable profit will be available in the future to utilize the unused tax losses, unused tax credits and deductible temporary differences before the unused tax losses and unused tax credits expire. Recognition of deferred tax assets involves judgment regarding the future financial performance of the particular legal entity or tax group that has recognized the deferred tax asset. At 31 December 2022 , Nokia re-recognized deferred tax assets of EUR2.5 billion related to Finland in the statement of financial position.

Notes to the consolidated financial statements continued

Components of the income tax expense/benefit

EURm	2023	2022	2021
Current tax expense	(431)	(426)	(409)
Deferred tax (expense)/benefit	(394)	2 452	137
Total	(825)	2 026	(272)

Income tax reconciliation

Reconciliation of the difference between income tax computed at the statutory rate in Finland of 20% and income tax recognized in the income statement:

EURm	2023	2022	2021
Income tax expense at statutory rate	(300)	(437)	(385)
Permanent differences	139	87	47
Non-creditable withholding taxes	(41)	(72)	(37)
Income taxes for prior years ⁽¹⁾	22	3	95
Effect of different tax rates of subsidiaries operating in other jurisdictions	(140)	(68)	(57)
Effect of deferred tax assets not recognized ⁽²⁾	(524)	(107)	(77)
Benefit arising from previously unrecognized deferred tax assets ⁽³⁾	25	2 646	187
Net (increase)/decrease in uncertain tax positions	(15)	9	(29)
Change in income tax rates	32	24	17
Income taxes on undistributed earnings	(23)	(59)	(33)
Total	(825)	2 026	(272)

(1) In 2021, relates primarily to a tax benefit related to past operating model integration.

(2) In 2023, includes a remeasurement of deferred tax assets related to internal operating model change.

(3) In 2022, includes a re-recognition of deferred tax assets related to Finland.

Income tax liabilities and assets include a net liability of EUR 184 million (EUR182 million in 2022) relating to uncertain tax positions with inherently uncertain timing of cash outflows.

Prior period income tax returns for certain Group companies are under examination by local tax authorities. Nokia has ongoing tax investigations in various jurisdictions, including the United States, Canada, India, Brazil, Saudi Arabia, France, China and South Korea. Nokia's business and investments, especially in emerging market countries, may be subject to uncertainties, including unfavorable or unpredictable tax treatment. Management judgment and a degree of estimation are required in determining the tax expense or benefit. Even though management does not expect that any significant additional taxes in excess of those already provided for will arise as a result of these examinations, the outcome or actual cost of settlement may vary materially from estimates.

Deferred tax assets and liabilities

Deferred tax assets and liabilities relate to the following:

EURm	2023			2022		
	Deferred tax assets	Deferred tax liabilities	Net balance	Deferred tax assets	Deferred tax liabilities	Net balance
Tax losses carried forward and unused tax credits	1 083	(21)	1 011	—	—	—
Undistributed earnings	—	(215)	—	—	(193)	—
Intangible assets and property, plant and equipment	2 962	(312)	3 267	3 267	(309)	(309)
Right-of-use assets	—	(177)	—	—	(177)	(177)
Defined benefit pension assets	—	(1 913)	—	—	(1 989)	(1 989)
Other non-current assets	83	(37)	66	66	(30)	(30)
Inventories	185	(18)	216	216	(18)	(18)
Other current assets	221	(93)	225	225	(95)	(95)
Lease liabilities	156	—	176	176	—	—
Defined benefit pension and other post-employment liabilities	991	—	925	925	—	—
Other non-current liabilities	14	(1)	18	18	—	—
Provisions	245	(138)	311	311	(73)	(73)
Other current liabilities	301	(184)	326	326	(154)	(154)
Other temporary differences	33	(17)	27	27	(28)	(28)
Total before netting	6 274	(3 126)	3 148	6 568	(3 066)	3 502
Netting of deferred tax assets and liabilities	(2 401)	2 401	—	(2 734)	2 734	—
Total after netting	3 873	(725)	3 148	3 834	(332)	3 502

In 2023 Nokia recognized a deferred tax expense and a decrease in deferred tax assets of EUR0.4 billion due to an internal transaction related to an operating model change that led to a remeasurement of deferred tax assets in Finland and the United States.

Nokia has undistributed earnings of EUR 356 million (EUR388 million in 2022) for which a deferred tax liability has not been recognized as these earnings will not be distributed in the foreseeable future.

Notes to the consolidated financial statements continued

Movements in the net deferred tax balance during the year:

EURm	2023	2022	2021
1 January	3 502	990	1 562
Recognized in income statement, continuing operations	(394)	2 452	137
Recognized in other comprehensive income	51	56	(753)
Other	(3)	2	(6)
Translation differences	(8)	2	50
31 December	3 148	3 502	990

In addition, at 31 December 2023, Nokia has unrecognized deferred tax assets of which the majority relate to France. These deferred tax assets have not been recognized due to uncertainty regarding their utilization. A significant portion of the French unrecognized deferred tax assets are indefinite in nature and available against future French tax liabilities, subject to a limitation of 50% of annual taxable profits.

Amount of temporary differences, tax losses carried forward and tax credits for which no deferred tax asset was recognized due to uncertainty of utilization:

EURm	2023	2022
Temporary differences	1 743	1 579
Tax losses carried forward	19 482	18 324
Tax credits	344	311
Total	21 569	20 214

Expiry of tax losses carried forward and unused tax credits:

EURm	2023			2022		
	Recognized	Unrecognized	Total	Recognized	Unrecognized	Total
Tax losses carried forward						
Within 10 years	1 375	1 025	2 400	1 344	1 247	2 591
Thereafter	17	—	17	—	4	4
No expiry	2 229	18 457	20 686	2 095	17 073	19 168
Total	3 621	19 482	23 103	3 439	18 324	21 763
Tax credits						
Within 10 years	143	329	472	85	286	371
Thereafter	48	1	49	47	4	51
No expiry	154	14	168	117	21	138
Total	345	344	689	249	311	560

Nokia continually evaluates the probability of utilizing its deferred tax assets and considers both positive and negative evidence in its assessment. At 31 December 2021, Nokia concluded based on its assessment that it was not probable that it would have been able to utilize the unused tax losses, unused tax credits and deductible temporary differences in Finland, which were generated over a longer period including as a result of historical operating performance and integration costs in Finland related to the 2016 acquisition of Alcatel-Lucent. This conclusion was based on the weighting of objective negative evidence of cumulative taxable losses against more subjective positive evidence. The primary factors in this weighting were the more objective record of a pattern of historical financial performance compared to the more inherently subjective expectations regarding future financial performance in Finland.

In 2022, Nokia generated accounting and taxable profit in Finland and there were improvements in financial performance compared to preceding periods. The changes arose from the underlying improvements in operating performance. These improvements are expected to be sustained in the upcoming years, as well as over the longer term. In addition, Nokia has determined that, in 2022, a pattern of material taxable profits was re-established in Finland. Nokia's re-established pattern of profitability together with Nokia's forecasts of future taxable profit in Finland provides positive evidence about its ability to utilize the unused tax losses and deductible temporary differences in Finland. At 31 December 2022, Nokia concluded based on its assessment that it is probable that it will be able to utilize the unused tax losses and deductible temporary differences and re-recognized deferred tax assets of EUR 2.5 billion in the statement of financial position.

In 2023, Nokia generated accounting and taxable profit in Finland and continued to recognize net deferred tax assets related to Finland. In performing its assessment, Nokia has not applied any cut-off period, other than expiry under the relevant tax legislation. A significant portion of Finnish deferred tax assets are indefinite in nature and available fully against future Finnish tax liabilities. Due to the non-expiry of these assets, the sensitivity of future profit projections affects mainly the period of time over which the deferred tax assets are expected to be utilized.

Income tax related to items of other comprehensive income

EURm	2023			2022			2021		
	Gross	Tax	Net	Gross	Tax	Net	Gross	Tax	Net
Remeasurements of defined benefit plans	(343)	61	(282)	(424)	77	(347)	3 040	(755)	2 285
Translation differences	(535)	7	(528)	710	1	711	1 153	2	1 155
Net investment hedges	135	(27)	108	(127)	(20)	(147)	(249)	—	(249)
Cash flow and other hedges	(61)	10	(51)	83	(15)	68	—	—	—
Financial assets at fair value through other comprehensive income	10	—	10	(46)	13	(33)	7	—	7
Other decrease	(4)	—	(4)	(3)	—	(3)	—	—	—
Total	(798)	51	(747)	193	56	249	3 951	(753)	3 198

Notes to the consolidated financial statements continued

OECD Pillar Two model rules

Nokia is within the scope of the OECD Pillar Two model rules, which introduce a global minimum tax rate of 15% per jurisdiction. Pillar Two legislation has been enacted in Finland the jurisdiction in which Nokia is incorporated, and will come into effect from 1 January 2024. Since the Pillar Two legislation was not effective at the reporting date, Nokia has no related current tax expense. Nokia applies the exemption to recognizing and disclosing information about deferred tax assets and liabilities related to Pillar Two income taxes, as provided in the amendments to IAS 12 issued in May 2023.

Nokia has performed an analysis of the expected impact of the Pillar Two legislation and based on this analysis the impact on income tax expense and effective tax rate in the short term is expected to be immaterial. The main elements of this analysis were the following:

- Current understanding of the interpretation of the rules.
- Applicability of the safe harbors for recent years provided for in the Pillar Two legislation.
- Analysis of potential income tax expense in respect of jurisdictions not meeting safe harbor tests.

2.6. Earnings per share

Accounting policies

Basic earnings per share is calculated by dividing the profit or loss attributable to equity holders of the parent by the weighted average number of shares outstanding during the year. Diluted earnings per share is calculated by adjusting the profit or loss attributable to equity holders of the parent, and the weighted average number of shares outstanding, for the effects of all dilutive potential ordinary shares. Potential ordinary shares are excluded from the calculation of diluted earnings per share when they are determined to be antidilutive.

EURm	2023	2022	2021
Profit or loss attributable to equity holders of the parent			
Continuing operations	660	4 201	1 632
Discontinued operations	5	49	(9)
Profit for the year	665	4 250	1 623
Number of shares (000s)			
Weighted average number of shares outstanding	5 549 468	5 614 182	5 630 025
Effect of potentially dilutive shares			
Performance shares	8 190	46 187	50 300
Restricted shares and other	28 265	9 651	3 910
Total effect of potentially dilutive shares	36 455	55 838	54 210
Adjusted weighted average number of shares	5 585 923	5 670 020	5 684 235
Earnings per share, EUR			
Basic earnings per share			
Continuing operations	0.12	0.75	0.29
Discontinued operations	0.00	0.01	0.00
Profit for the year	0.12	0.76	0.29
Diluted earnings per share			
Continuing operations	0.12	0.74	0.29
Discontinued operations	0.00	0.01	0.00
Profit for the year	0.12	0.75	0.29

Section 3

Compensation and benefits

This section provides information on Nokia's employee benefits including remuneration of the management and Board of Directors. Employee benefits comprise salaries and wages, short-term cash incentives and share-based payments, as well as post-employment benefits in accordance with the local conditions and practices in the countries in which Nokia operates.

Information about the remuneration of the President and CEO and Board of Directors is provided in compliance with Finnish Accounting Standards.

3.1. Summary of personnel expenses

EURm	2023	2022	2021
Salaries and wages ⁽¹⁾	5 988	6 439	6 191
Pensions and other post-employment benefits			
Defined contribution plans	251	241	223
Defined benefit plans ⁽²⁾	156	193	183
Share-based payments	202	149	118
Social security costs	873	881	826
Total	7 470	7 903	7 541

(1) Includes termination benefits.

(2) Excludes amounts recorded in financial income and expenses, refer to Note 3.4.

	2023	2022	2021
Average number of employees	86 689	86 896	87 927

3.2. Remuneration of key management

Remuneration of the Group Leadership Team

The amounts below represent each member's time on the Group Leadership Team.

EURm	2023	2022	2021
Short-term benefits	13	17	20
Post-employment benefits ⁽¹⁾	1	1	2
Share-based payments	13	13	12
Termination benefits ⁽²⁾	—	1	—
Total	27	32	34

(1) The members of the Group Leadership Team participate in the local retirement programs applicable to employees in the country where they reside.

(2) Includes both termination payments and payments made under exceptional contractual arrangements for lapsed equity awards.

Remuneration of the President and CEO

EUR	2023	2022	2021
Base salary	1 322 750	1 300 000	1 300 000
Cash incentive payments	1 079 695	2 342 438	2 975 781
Share-based payment expenses ⁽¹⁾	5 041 885	5 425 169	4 263 505
Pension expenses	422 274	406 806	589 873
Other benefits ⁽²⁾	95 756	113 850	35 731
Total	7 962 360	9 588 263	9 164 890

(1) Represents the expense for all outstanding equity grants recorded during the year.

(2) Other benefits consist of telephone, car, driver, mobility, tax compliance support and medical insurance.

Terms of termination of employment of the President and CEO

The President and CEO, Pekka Lundmark, may terminate his service agreement at any time with 12 months' prior notice. The President and CEO would either continue to receive salary and benefits during the notice period or, at Nokia's discretion, a lump sum of equivalent value. Additionally, the President and CEO would be entitled to any short- or long-term incentives that would normally vest during the notice period. Any unvested equity awards would be forfeited after termination.

In the event that the President and CEO terminates his service agreement based on a final arbitration award demonstrating Nokia's material breach of the service agreement, he is entitled to a severance payment equaling up to 12 months of compensation, including annual base salary, benefits and target incentive. Any unvested equity awards would be forfeited after termination.

Notes to the consolidated financial statements continued

Remuneration of the Board of Directors

The annual remuneration paid to the members of the Board of Directors, as decided by the Annual General Meetings in the respective years:

	2023			2022			2021		
	Annual fee ⁽¹⁾ EUR	Meeting fees ⁽²⁾ EUR	Shares received ⁽³⁾ number	Annual fee ⁽¹⁾ EUR	Meeting fees ⁽²⁾ EUR	Shares received ⁽³⁾ number	Annual fee ⁽¹⁾ EUR	Meeting fees ⁽²⁾ EUR	Shares received ⁽³⁾ number
Sari Baldauf, Chair ⁽⁴⁾⁽⁵⁾	465 000	10 000	47 427	440 000	—	36 217	440 000	—	43 711
Soren Skou, Vice Chair ⁽⁴⁾	225 000	14 000	22 948	210 000	9 000	17 285	175 000	7 000	17 385
Timo Ahopelto ⁽⁵⁾⁽⁶⁾	210 000	10 000	21 418	—	—	—	—	—	—
Bruce Brown	—	5 000	—	210 000	17 000	17 285	200 000	7 000	19 868
Elizabeth Crain ⁽⁴⁾⁽⁶⁾	215 000	15 000	21 928	—	—	—	—	—	—
Thomas Dannenfeldt ⁽⁴⁾⁽⁶⁾	230 000	9 000	23 458	200 000	9 000	16 462	185 000	7 000	18 378
Lisa Hook ⁽⁴⁾	200 000	17 000	20 399	185 000	7 000	15 227	—	—	—
Jeanette Horan ⁽⁵⁾⁽⁶⁾	210 000	10 000	21 418	195 000	—	16 050	185 000	7 000	18 378
Edward Kozel	—	5 000	—	205 000	12 000	16 874	195 000	7 000	19 372
Thomas Saueressig ⁽⁵⁾	195 000	14 000	19 889	180 000	7 000	14 816	—	—	—
Carla Smits-Nusteling ⁽⁶⁾	215 000	14 000	21 928	200 000	9 000	16 462	190 000	9 000	18 875
Kari Stadigh	—	—	—	—	—	—	200 000	7 000	19 868
Kai Östämö ⁽⁵⁾	205 000	10 000	20 908	180 000	5 000	14 816	—	—	—
Total	2 370 000	133 000		2 205 000	75 000		1 770 000	51 000	

(1) Annual fees consist of Board member fees and Committee chair and member fees.

(2) Meeting fees include all meeting fees paid for the term that ended at the Annual General Meeting held on 4 April 2023, and meeting fees accrued and paid in 2023 for the term that began at the same meeting.

(3) Approximately 40% of each Board member's annual compensation is paid in Nokia shares purchased from the market, and the remaining approximately 60% is paid in cash.

(4) Annual fees in 2023 include EUR 30 000 for Thomas Dannenfeldt as Chair and EUR 15 000 for Sari Baldauf, Elizabeth Crain, Lisa Hook and Soren Skou as members of the Personnel Committee.

(5) Annual fees in 2023 include EUR 20 000 for Kai Östämö as Chair and EUR 10 000 for Timo Ahopelto, Sari Baldauf, Jeanette Horan and Thomas Saueressig as members of the Technology Committee.

(6) Annual fees in 2023 include EUR 30 000 for Carla Smits-Nusteling as Chair and EUR 15 000 for Timo Ahopelto, Elizabeth Crain, Thomas Dannenfeldt and Jeanette Horan as members of the Audit Committee.

3.3. Share-based payments

Accounting policies

Nokia offers three types of global share-based compensation plans for employees: performance shares, restricted shares and the employee share purchase plan. All plans are equity-settled.

Employee services received and the corresponding increase in equity are measured by reference to the fair value of the equity instruments at the grant date, excluding the impact of any non-market vesting conditions. Plans that apply tranched vesting are accounted for under the graded vesting model. Share-based compensation plans are generally conditional on continued employment as well as the fulfillment of any performance conditions specified in the award terms. Until the Nokia shares are delivered, the participants do not have any shareholder rights, such as voting or dividend rights, associated with the shares. The share grants are generally forfeited if the employment relationship with Nokia terminates prior to vesting. Share-based compensation is recognized as an expense over the relevant service periods.

Share-based payment expense

In 2023, the share-based payment expense recognized in the income statement for all share-based compensation plans amounted to EUR 202 million (EUR149 million in 2022 and EUR118 million in 2021).

Performance shares

In 2023, Nokia had outstanding Performance shares from grants made in 2020, 2021, 2022 and 2023. Starting in 2021, grants made for Performance shares have been targeted on a more limited basis to senior level employees and executives.

Performance share plans at 31 December 2023:

Plan	Performance shares outstanding at target	Confirmed payout (% of target)	Performance period	Settlement year
2020	—	38 %	2020-2023	2023
2021	16 086 604	12 %	2021-2023	2024
2022	12 141 600	—	2022-2024	2025
2023	15 118 600	—	2023-2025	2026

The 2020, 2021, and 2022 Performance share grants have a three-year vesting period where Nokia's actual total shareholder return (ATSR) is compared to the target total shareholder return to determine the number of Nokia shares that will be delivered at settlement. The 2020, 2021 and 2022 Performance share grants do not include a minimum payout guarantee.

The 2023 Performance share grants apply the ATSR performance metric to two-thirds of the grant. For the remaining one-third of the granted shares, the metrics are either a service condition alone or a Relative total shareholder return (RTSR). RTSR grants measure Nokia's share performance against its peer group companies where minimum payout for this metric requires Nokia to be at least in the 25th percentile when compared with the peer group.

Restricted shares

In 2023, there were outstanding Restricted shares from grants made in 2020, 2021, 2022 and 2023. Starting in 2021, Nokia has granted Restricted shares to selected employees as the primary method of equity compensation. Restricted shares are Nokia shares that will be delivered to eligible participants at a future point in time, subject to the fulfillment of predetermined service conditions. Restricted shares will either vest on the third anniversary of the award or follow a tranche vesting schedule whereby each plan vests in one or more tranches determined at the award date.

The Restricted share grants are generally forfeited if the employment relationship with Nokia terminates prior to vesting of the applicable tranche or tranches.

Employee share purchase plan

Nokia offers a voluntary Employee Share Purchase Plan (ESPP) to its employees. Participating employees make contributions from their net salary to purchase Nokia shares on a monthly basis during a 12-month savings period. Nokia delivers one matching share for every two purchased shares the employee holds at the end of the plan cycle. In 2023, 6 726 190 matching shares were issued as a settlement to the participants of the ESPP 2022 (5 243 560 matching shares issued under the 2021 Plan in 2022 and 4 851 070 matching shares issued under the 2020 Plan in 2021).

Notes to the consolidated financial statements continued

Share-based payment plans by instrument

	Performance shares		Restricted shares	
	Number of shares outstanding at target	Weighted average grant date fair value (EUR)	Number of shares outstanding	Weighted average grant date fair value (EUR)
1 January 2021	99 472 193		4 527 593	
Granted	17 749 650	5.11	25 046 200	5.05
Forfeited	(5 783 031)		(783 950)	
Vested ⁽¹⁾	(31 611 804)		(2 026 150)	
31 December 2021	79 827 008		26 763 693	
Granted	12 661 300	3.49	32 238 100	4.15
Forfeited	(2 450 396)		(1 695 734)	
Vested ⁽¹⁾	(26 290 064)		(2 778 431)	
31 December 2022	63 747 848		54 527 628	
Granted	15 207 400	3.10	45 322 400	3.36
Forfeited	(3 916 744)		(1 998 801)	
Vested ⁽¹⁾	(31 691 700)		(3 175 287)	
31 December 2023	43 346 804		94 675 940	

(1) Vested performance shares at target are to be multiplied by the confirmed payout (% of target) to calculate the total number of Nokia shares settled.

Estimation of grant date fair values

Plan	Grant date fair value
ATSR	Estimated considering the dividend-adjusted Nokia share price at the end of the performance period of the plan and the target payout levels set for the plan.
RTSR	Estimated considering a combination of the dividend-adjusted Nokia share price compared with benchmark companies' share prices at the end of the performance period of the plan and the target payout levels set for the plan.
Restricted Shares	Estimated using the grant date market price of the Nokia share less the present value of dividends expected to be paid during the vesting period.

3.4. Pensions and other post-employment benefits

Accounting policies

Nokia has various post-employment plans in accordance with the local conditions and practices in the countries in which it operates. Nokia's defined benefit plans comprise pension schemes as well as other benefit plans providing post-employment healthcare and life insurance coverage to certain employee groups. Defined benefit plans expose Nokia to various risks such as investment risk, interest rate risk, life expectancy risk, and regulatory/compliance risk. The characteristics and extent of these risks vary depending on the legal, fiscal and economic requirements in each country, as well as the impact of global events. The plans are generally funded through payments to insurance companies or contributions to trustee-administered funds as determined by periodic actuarial calculations.

The costs of defined benefit plans are assessed using the projected unit credit method. The defined benefit obligation is measured as the present value of the estimated future cash outflows using interest rates on high-quality corporate bonds or government bonds with maturities most closely matching expected payouts of benefits. The plan assets are measured at fair value at the reporting date. The liability or asset recognized in the statement of financial position is the present value of the defined benefit obligation at the reporting date less the fair value of plan assets adjusted for effects of any asset ceiling.

Actuarial valuations for defined benefit plans are performed annually or when a material plan amendment, curtailment or settlement occurs. Service cost related to employees' service in the current period and past service cost resulting from plan amendments and curtailments, as well as gains and losses on settlements, are presented in cost of sales, research and development expenses or selling, general and administrative expenses. Net interest as well as pension plan administration costs not considered in determining the return on plan assets, are presented in financial income and expenses. Remeasurements, comprising actuarial gains and losses, the effect of the asset ceiling and the return on plan assets, excluding amounts recognized in net interest, are recognized in other comprehensive income. Remeasurements are not reclassified to profit or loss in subsequent periods.

In a defined contribution plan, Nokia's legal or constructive obligation is limited to the amount that it agrees to contribute to the fund. Nokia's contributions to defined contribution plans, multi-employer and insured plans are recognized in the income statement in the period to which the contributions relate. If a pension plan is funded through an insurance contract where Nokia does not retain any legal or constructive obligations, the plan is treated as a defined contribution plan. All arrangements that do not fulfill these conditions are considered defined benefit plans.

Defined benefit plans

Nokia's most significant defined benefit plans are in the United States, Germany, and the United Kingdom. Together, they account for 93% of Nokia's total defined benefit obligation (91% in 2022) and 91% of Nokia's total fair value of plan assets (90% in 2022).

Summary of defined benefit balances at 31 December

EURm	Defined benefit obligation	Fair value of plan assets	Effects of asset ceiling	Net defined benefit balance
2023				
United States, Pension	(11 325)	16 285	—	4 960
United States, OPEB	(1 471)	675	—	(796)
Germany	(2 037)	1 199	—	(838)
United Kingdom	(782)	957	—	175
Other	(1 253)	1 798	(87)	458
Total	(16 868)	20 914	(87)	3 959
2022				
United States, Pension	(12 340)	17 726	—	5 386
United States, OPEB	(1 615)	637	—	(978)
Germany	(1 957)	1 179	—	(778)
United Kingdom	(730)	942	—	212
Other	(1 670)	2 207	(84)	453
Total	(18 312)	22 691	(84)	4 295

Funded status of defined benefit obligation:

EURm	2023	2022
Wholly funded	12 782	14 330
Partly funded	3 149	3 009
Unfunded	937	973
Total	16 868	18 312

[Notes to the consolidated financial statements](#) continued**United States**

Nokia has significant defined benefit pension plans and a significant post-employment welfare benefit plan (OPEB) providing post-employment healthcare benefits and life insurance coverage in the United States.

Defined Benefit Pension Plans

The defined benefit pension plans include both traditional service-based programs and cash-balance plans. Salaried, non-union-represented employees are covered by a cash-balance program. All other legacy programs, including legacy service-based programs, were frozen by 31 December 2009. For former employees who, when actively employed, were represented by a union, Nokia maintained two defined benefit pension plans, both of which are traditional service-based programs. On 31 December 2021, these two plans were merged.

Other Post-Employment Benefit Plan

The other post-employment benefit plan provides welfare benefits for certain retired former employees. Pursuant to an agreement with the Communications Workers of America (CWA) and the International Brotherhood of Electrical Workers (IBEW) unions, Nokia provides post-employment healthcare benefits and life insurance coverage for employees formerly represented by these two unions. That agreement was renewed in 2020 and the contract expires on 31 December 2027.

Germany

Nokia maintains two primary plans in Germany which cover the majority of active employees: the cash-balance plan Beitragsorientierter Altersversorgungs Plan (BAP) for the Group's Nokia employees and a similar cash-balance program (AVK Basis-/Matchingkonto) for the Group's former Alcatel-Lucent employees. Individual benefits are generally dependent on eligible compensation levels, ranking within the Group and years of service. These plans are partially funded defined benefit pension plans, the benefits being subject to a minimum return guaranteed by the Group. The funding vehicle for the BAP is the NSN Pension Trust e.V. The trust is legally separate from the Group and manages the plan assets in accordance with the respective trust agreements.

All other plans have been frozen or closed in prior years and replaced by the cash-balance plans. Benefits are paid in annual installments, as monthly retirement pension, or as a lump sum on retirement in an amount equal to accrued pensions and guaranteed interest.

United Kingdom

Nokia maintains one primary plan in the UK, "Nokia Retirement Plan for former NSN & ALU employees", which is the result of the 2019 merger of the legacy Nokia plan where the plan was merged and members' benefits were transferred to the legacy Alcatel-Lucent plan. The combined plan consists of both money purchase sections with Guaranteed Minimum Pension (GMP) underpin and final salary sections. All final salary sections are closed to future benefit accrual: the legacy Nokia plan closed on 30 April 2012 and the legacy Alcatel-Lucent plan on 30 April 2018. Individual benefits for final salary sections are dependent on eligible compensation levels and years of service. For the money purchase sections with GMP underpin, individual benefits are dependent on the greater of the value of GMP at retirement date and the pension value resulting from the individual's invested funds. Nokia engages the services of an external trustee service provider to manage all investments for the combined pension plan.

Notes to the consolidated financial statements continued

Movements in the defined benefit obligation, fair value of plan assets and the impact of the asset ceiling limitation for the years ended 31 December

EURm	2023				2022			
	United States pension	United States OPEB	Other pension	Total	United States pension	United States OPEB	Other pension	Total
1 January	(12 340)	(1 615)	(4 357)	(18 312)	(14 892)	(2 015)	(5 797)	(22 704)
Current service cost	(83)	—	(74)	(157)	(113)	—	(92)	(205)
Interest expense	(563)	(73)	(173)	(809)	(363)	(50)	(94)	(507)
Past service cost	(9)	—	3	(6)	—	—	2	2
Settlements ⁽¹⁾	—	—	501	501	—	—	54	54
Total	(655)	(73)	257	(471)	(476)	(50)	(130)	(656)
Remeasurements:								
Gain/(loss) from change in demographic assumptions	66	1	(12)	55	—	(6)	2	(4)
(Loss)/gain from change in financial assumptions	(114)	(26)	(161)	(301)	2 689	398	1 447	4 534
Experience (loss)/gain	(43)	28	(11)	(26)	(159)	(12)	(149)	(320)
Total	(91)	3	(184)	(272)	2 530	380	1 300	4 210
Translation differences	431	57	(12)	476	(869)	(114)	54	(929)
Contributions from plan participants	—	(60)	(24)	(84)	—	(59)	(35)	(94)
Benefits paid	1 330	229	249	1 808	1 367	253	240	1 860
Other	—	(12)	(1)	(13)	—	(10)	11	1
Total	1 761	214	212	2 187	498	70	270	838
31 December	(11 325)	(1 471)	(4 072)	(16 868)	(12 340)	(1 615)	(4 357)	(18 312)
Weighted average duration of the defined benefit obligation (in years)	7.7	8.8	10.6	8.5	7.6	8.7	9.3	8.1

(1) In 2023, the settlement relates to transfer of liabilities from formerly Nokia managed Provident Fund to Indian government managed Provident Fund platform (EPFO).

Notes to the consolidated financial statements continued

Fair value of plan assets

EURm	2023				2022			
	United States pension	United States OPEB	Other pension	Total	United States pension	United States OPEB	Other pension	Total
1 January	17 726	637	4 328	22 691	20 987	759	5 382	27 128
Interest income	820	28	171	1 019	517	18	87	622
Administrative expenses and interest on asset ceiling	(17)	—	(4)	(21)	(18)	—	(5)	(23)
Settlements ⁽¹⁾	—	—	(494)	(494)	—	—	(44)	(44)
Total	803	28	(327)	504	499	18	38	555
Remeasurements:								
Return on plan assets, excluding amounts included in interest income	(186)	62	48	(76)	(3 577)	(110)	(959)	(4 646)
Total	(186)	62	48	(76)	(3 577)	(110)	(959)	(4 646)
Translation differences	(624)	(21)	28	(617)	1 271	38	(66)	1 243
Contributions:								
Employers	27	7	41	75	28	9	47	84
Plan participants	—	60	24	84	—	59	35	94
Benefits paid	(1 330)	(229)	(181)	(1 740)	(1 367)	(253)	(138)	(1 758)
Section 420 transfer ⁽²⁾	(131)	131	—	—	(117)	117	—	—
Other	—	—	(7)	(7)	2	—	(11)	(9)
Total	(2 058)	(52)	(95)	(2 205)	(183)	(30)	(133)	(346)
31 December	16 285	675	3 954	20 914	17 726	637	4 328	22 691

(1) In 2023, the settlement relates to transfer of assets from formerly Nokia managed Provident Fund to Indian government managed Provident Fund platform (EPFO).

(2) Refer to the Future cash flows section below for description of Section 420 transfers.

The impact of the asset ceiling limitation

EURm	2023				2022			
	United States pension	United States OPEB	Other pension	Total	United States pension	United States OPEB	Other pension	Total
1 January	—	—	(84)	(84)	—	—	(92)	(92)
Interest expense	—	—	(2)	(2)	—	—	—	—
Remeasurements:								
Change in asset ceiling, excluding amounts included in interest expense	—	—	5	5	—	—	12	12
Translation differences	—	—	(6)	(6)	—	—	(4)	(4)
31 December	—	—	(87)	(87)	—	—	(84)	(84)

Net balances

EURm	2023				2022			
	United States pension	United States OPEB	Other pension	Total	United States pension	United States OPEB	Other pension	Total
31 December	4 960	(796)	(205)	3 959	5 386	(978)	(113)	4 295
Consisting of:								
Net pension assets	5 217	—	1 041	6 258	5 658	—	1 096	6 754
Net pension liabilities	(257)	(796)	(1 246)	(2 299)	(272)	(978)	(1 209)	(2 459)

Notes to the consolidated financial statements continued

Recognized in the income statement

EURm	2023	2022	2021
Current service cost ⁽¹⁾	157	205	196
Past service cost ⁽¹⁾	6	(2)	(17)
Net interest ⁽²⁾	(187)	(92)	(26)
Settlements ⁽¹⁾	(7)	(10)	4
Total	(31)	101	157

(1) Included in operating expenses within the income statement.
(2) Included in financial income within the income statement.

Recognized in other comprehensive income

EURm	2023	2022	2021
Return on plan assets, excluding amounts included in interest income	(76)	(4 646)	853
Gain/(loss) from change in demographic assumptions	55	(4)	(13)
(Loss)/gain from change in financial assumptions	(301)	4 534	989
Experience (loss)/gain	(26)	(320)	30
Change in asset ceiling, excluding amounts included in interest expense	5	12	1 181
Total	(343)	(424)	3 040

Actuarial assumptions and sensitivity analysis

Actuarial assumptions

The discount rates and mortality tables used for the significant plans:

	Discount rate		Mortality table
	2023	2022	2023
United States	4.7%	4.9%	Pri-2012 w/MP-2020 Mortality projection scale
Germany	3.2%	3.7%	Heubeck 2018G
United Kingdom ⁽¹⁾	4.5%	4.8%	CMI 2021
Total weighted average for all countries	4.4%	4.7%	

(1) Mortality tables for United Kingdom have been adjusted with 1.5% long-term rate of improvement.

Assumptions regarding future mortality are set based on actuarial advice in accordance with published statistics and experience in each country.

The principal actuarial weighted average assumptions used for determining the defined benefit obligation and sensitivity of the defined benefit obligation to changes in these assumptions:

	2023	2022	Change in assumption	Increase in assumption ⁽¹⁾ EURm	Decrease in assumption ⁽¹⁾ EURm
Discount rate for determining present values	4.4%	4.7%	1.0%	1 279	(1 547)
Pension growth rate	3.3%	2.2%	1.0%	(266)	214
Inflation rate	2.3%	2.1%	1.0%	(294)	270
Life expectancy	87-88 yrs	87-89 yrs	1 year	(626)	587

(1) Positive movement indicates a reduction in the defined benefit obligation; a negative movement indicates an increase in the defined benefit obligation.

Sensitivity analysis

When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions, the present value of the defined benefit obligation is calculated using the projected unit credit method. The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant and may not be representative of the actual impact of changes. If more than one assumption is changed simultaneously, the combined impact of changes would not necessarily be the same as the sum of the individual changes. If the assumptions change to a different level compared with that presented, the effect on the defined benefit obligation may not be linear. Increases and decreases in the principal assumptions, which are used in determining the defined benefit obligation, do not have a symmetrical effect on the defined benefit obligation primarily due to the compound interest effect created when determining the net present value of the future benefit.

Key source of estimation uncertainty

The determination of pension and other post-employment benefit obligations and expenses for defined benefit plans is dependent on a number of estimates and assumptions, including the discount rate, future mortality rate, annual rate of increase in future compensation levels, and healthcare costs trend rates and usage of services in the United States where the majority of our post-employment healthcare plans are maintained. Changes in assumptions and actuarial estimates may materially affect the benefit obligation, future expense and future cash flow.

Notes to the consolidated financial statements continued

Investment strategies

The overall pension investment objective of Nokia is to preserve or enhance the defined benefit pension plans' funded status through the implementation of an investment strategy that maximizes return within the context of minimizing funded status risk. In formulating the asset allocation for the plans, multiple factors are considered, including, but not limited to, the long-term risk and return expectations for a variety of asset classes as well as current and multi-year projections of the defined benefit pension plans' demographics, benefit payments, contributions and funded status. Local trustee boards are responsible for conducting Asset-Liability Management (ALM) studies, when appropriate; overseeing the investment of plan assets; and monitoring and managing associated risks under company oversight and in accordance with local law. The results of the ALM framework are implemented on a plan level.

Nokia's pension investment managers may use derivative financial instruments including futures contracts, forward contracts, options and interest rate swaps to manage market risk. The performance and risk profile of investments is regularly monitored on a standalone basis as well as in the broader portfolio context. One risk is a decline in the plan's funded status as a result of the adverse performance of plan assets and/or defined benefit obligations. The application of the ALM study focuses on minimizing such risks.

United States plan assets

The majority of Nokia's United States pension plan assets are held in a master pension trust. The OPEB plan assets are held in two separate trusts. The Pension & Benefits Investment Committee formally approves the target allocation ranges every few years on the completion of the ALM study by external advisers and Nokia's investment management company (NIMCO). The overall United States pension plan asset portfolio, at 31 December 2023, reflects a balance of investments split of approximately 20/80 between equity, including alternative investments for this purpose, and fixed income securities.

Disaggregation of plan assets

EURm	2023				2022			
	Quoted	Unquoted	Total	%	Quoted	Unquoted	Total	%
Equity securities	1 242	—	1 242	6	1 086	—	1 086	5
Fixed income securities	14 952	140	15 092	72	16 070	164	16 234	71
Insurance contracts	—	807	807	4	—	790	790	4
Real estate	—	1 012	1 012	5	—	1 297	1 297	6
Short-term investments	397	—	397	2	482	—	482	2
Private equity and other	106	2 258	2 364	11	93	2 709	2 802	12
Total	16 697	4 217	20 914	100	17 731	4 960	22 691	100

Most short-term investments including cash, equities and fixed-income securities have quoted market prices in active markets. Equity securities represent investments in equity funds and direct investments, which have quoted market prices in an active market. Fixed income securities represent direct investments in government and corporate bonds, as well as investments in bond funds, which have quoted market prices in an active market. Insurance contracts are customary pension insurance contracts structured under domestic law in the respective countries. Real estate investments are investments in commercial properties or real estate funds, which invest in a diverse range of real estate properties.

Short-term investments are liquid assets or cash, which are being held for a short period of time, with the primary purpose of controlling the tactical asset allocation. Private equity net asset values (NAVs) are determined by the asset managers based on inputs such as operating results, discounted future cash flows and market-based comparable data. Assets invested in alternative asset classes such as private equity, real estate and absolute return, are measured using latest available valuations provided by the asset managers, reviewed by Nokia, and adjusted for subsequent cash flows.

Notes to the consolidated financial statements continued

Future cash flows

Contributions

Group contributions to the pension and other post-employment benefit plans are made to facilitate future benefit payments to plan participants. The funding policy is to meet minimum funding requirements as set forth in the employee benefit and tax laws, as well as any such additional amounts as Nokia may determine appropriate. Contributions are made to benefit plans for the sole benefit of plan participants. Employer contributions expected to be paid in 2024 total EUR 56 million.

United States

Funding methods

Funding requirements for the two United States qualified defined benefit pension plans are determined by the applicable statutes, namely the Employee Retirement Income Security Act of 1974 (ERISA), the Internal Revenue Code of 1986, and regulations issued by the Internal Revenue Service (IRS). In determining funding requirements, ERISA allows assets to be either fair value or an average value over a period of time; and liabilities to be based on spot interest rates or average interest rates over a period of time. For the non-represented and formerly represented defined benefit pension plans, Nokia does not foresee any future funding requirement for regulatory funding purposes, given the plans' asset allocation and the level of assets compared to liabilities.

Post-employment healthcare benefits for both non-represented and formerly union represented retirees are capped for those who retired after 28 February 1990. The benefit obligation associated with this group of retirees is 98% of the total United States retiree healthcare obligation at 31 December 2023. The US government's Medicare program is the primary payer for those aged 65 and older.

Section 420 transfers

Section 420 of the U.S. Internal Revenue Code (Section 420) allows for the transfer of pension assets in excess of specified thresholds above the plan's funding obligation (excess pension assets) to a retiree health benefits account, a retiree life insurance account, or both, maintained within the pension plan and to use the assets in such accounts to pay for, or to reimburse the employer for the cost of providing applicable health or life insurance benefits, each as defined in Section 420, for retired employees, and with respect to health benefits, their spouses and dependents. Employers making such transfers are required to continue to provide healthcare benefits or life insurance coverage, as the case may be, for a certain period of time (cost maintenance period) at levels prescribed by regulations. Pursuant to Section 420, Nokia has transferred EUR 131 million during 2023 (EUR117 million in 2022). Section 420 is currently set to expire on 31 December 2032.

Benefit payments

The following table summarizes expected benefit payments from the defined benefit pension plans and other post-employment benefit plans until 2033. Actual benefit payments may differ from expected benefit payments.

EURm	US Pension			US OPEB		Other countries	Total
	Management	Occupational	Supplemental plans	Formerly union represented	Non-union represented		
2024	1 058	217	25	65	57	273	1 695
2025	950	202	25	56	57	248	1 538
2026	909	190	24	55	58	252	1 488
2027	861	177	23	47	58	252	1 418
2028	811	165	23	77	58	252	1 386
2029-2033	3 374	655	99	309	292	1 391	6 120

Benefits are paid from plan assets where there is sufficient funding available to the plan to cover the benefit obligation. Any payments in excess of the plan assets are paid directly by Nokia. Direct benefit payments expected to be paid in 2024 total EUR 111 million.

Section 4

Operating assets and liabilities

This section provides detailed information on Nokia's assets and liabilities related to its operating activities such as tangible and intangible fixed assets, leases, inventories, trade receivables and other customer related balances, and provisions.

4.1. Goodwill and intangible assets

Accounting policies

Intangible assets acquired separately are measured on initial recognition at cost. Internally generated intangibles, except for development costs that may be capitalized, are expensed as incurred. Development costs are capitalized only if Nokia has the technical feasibility to complete the asset; has an ability and intention to use or sell the asset; can demonstrate that the asset will generate future economic benefits; has resources available to complete the asset; and has the ability to measure reliably the expenditure during development.

The useful life of Nokia's intangible assets, other than goodwill, is finite. Following initial recognition, finite intangible assets are carried at cost less accumulated amortization and accumulated impairment losses. Intangible assets are amortized over their useful lives, generally three to ten years, using the straight-line method, which is considered to best reflect the pattern in which the asset's future economic benefits are expected to be consumed. Depending on the nature of the intangible asset, the amortization charges are included in cost of sales, research and development expenses or selling, general and administrative expenses.

Goodwill is allocated to the cash-generating units or groups of cash-generating units that are expected to benefit from the synergies of the related business combination and that reflect the lowest level at which goodwill is monitored for internal management purposes. A cash-generating unit, as determined for the purposes of Nokia's goodwill impairment testing, is the smallest group of assets generating cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The carrying value of a cash-generating unit includes its share of relevant corporate assets allocated to it on a reasonable and consistent basis. When the composition of one or more groups of cash-generating units to which goodwill has been allocated is changed, the goodwill is reallocated based on the relative fair value of the affected groups of cash-generating units.

Nokia tests the carrying value of goodwill for impairment annually. In addition, Nokia assesses the recoverability of the carrying value of goodwill and intangible assets if events or changes in circumstances indicate that the carrying value may be impaired. Factors that Nokia considers when it reviews indications of impairment include, but are not limited to, underperformance of the asset relative to its historical or projected future results, significant changes in the manner of using the asset or the strategy for the overall business, and significant negative industry or economic trends.

Nokia conducts its impairment testing by determining the recoverable amount for an asset, a cash-generating unit or groups of cash-generating units. The recoverable amount of an asset, a cash-generating unit or groups of cash-generating units is the higher of its fair value less costs of disposal and its value-in-use. The recoverable amount is compared to the asset's, cash-generating unit's or groups of cash-generating units' carrying value. If the recoverable amount for the asset, cash-generating unit or groups of cash-generating units is less than its carrying value, the asset is considered impaired and is written down to its recoverable amount. Impairment losses are presented in cost of sales, research and development expenses or selling, general and administrative expenses, except for impairment losses on goodwill, which are presented in other operating expenses.

Notes to the consolidated financial statements continued

EURm	Goodwill	Intangible assets	Total
2023			
Acquisition cost at 1 January	6 799	9 778	16 577
Additions	—	299	299
Disposals, retirements and reclassifications	(22)	(23)	(45)
Translation differences	(148)	(161)	(309)
Acquisition cost at 31 December	6 629	9 893	16 522
Accumulated amortization and impairment charges at 1 January	(1 132)	(8 515)	(9 647)
Amortization	—	(423)	(423)
Impairment charges	—	(26)	(26)
Disposals, retirements and reclassifications	—	17	17
Translation differences	7	140	147
Accumulated amortization and impairment charges at 31 December	(1 125)	(8 807)	(9 932)
Net book value at 1 January	5 667	1 263	6 930
Net book value at 31 December	5 504	1 086	6 590
2022			
Acquisition cost at 1 January	6 552	9 499	16 051
Additions	—	49	49
Disposals, retirements and reclassifications	—	(19)	(19)
Translation differences	247	249	496
Acquisition cost at 31 December	6 799	9 778	16 577
Accumulated amortization and impairment charges at 1 January	(1 121)	(7 879)	(9 000)
Amortization	—	(465)	(465)
Disposals, retirements and reclassifications	—	19	19
Translation differences	(11)	(190)	(201)
Accumulated amortization and impairment charges at 31 December	(1 132)	(8 515)	(9 647)
Net book value at 1 January	5 431	1 620	7 051
Net book value at 31 December	5 667	1 263	6 930

Net book value of intangible assets by type of asset

EURm	2023	2022
Customer relationships	605	923
Patents and licenses	316	151
Technologies and IPR&D	31	83
Tradenames and other	134	106
Total	1 086	1 263

At 31 December 2023, the weighted average for the remaining amortization period is approximately two years for customer relationships, six years for patents and licenses, two years for technologies and IPR&D, and three years for tradenames and other.

Notes to the consolidated financial statements continued

Goodwill

Nokia has allocated goodwill to its operating segments corresponding to groups of cash-generating units (CGUs) that are expected to benefit from goodwill. Refer to Note 2.2. Segment information .

Allocation of goodwill

The following table presents the allocation of goodwill to groups of CGUs at 31 December:

EURm	2023	2022
Network Infrastructure	2 739	2 812
Mobile Networks	2 228	2 284
Cloud and Network Services	537	571

Recoverable amounts

The recoverable amounts of the groups of CGUs in 2023 were based on value-in-use that was determined using a discounted cash flow calculation. The cash flow projections used in calculating the recoverable amounts were based on financial plans approved by management covering an explicit forecast period of three years .

Seven additional years of cash flow projections subsequent to the explicit forecast period of three years reflect a gradual progression towards the steady state cash flow projections modeled in the terminal year. The terminal growth rate assumptions reflect long-term average growth rates for the industries and economies in which the groups of CGUs operate. The discount rates reflect current assessments of the time value of money and relevant market risk premiums considering risks and uncertainties for which the future cash flow estimates have not been adjusted. Discounted cash flow projections are based on post-tax cash flows and post-tax discount rates, which do not materially differ from the pre-tax basis discounted cash flow projections. Other key variables in future cash flow projections include assumptions on estimated sales growth, gross margin and operating margin.

Sales growth and gross margin assumptions reflect management expectations of addressable market growth, market share and competitive position, strategy and long-term business outlook. Gross margin and operating profit assumptions include the impact of an ongoing cost savings program announced on 19 October 2023. The cost savings program is expected to reduce cost base and increase operational efficiency especially within Mobile Networks and Cloud and Network Services.

Terminal growth rate and post-tax discount rate applied in the impairment test for the groups of CGUs:

Key assumption %	Terminal growth rate		Post-tax discount rate	
	2023	2022	2023	2022
Network Infrastructure	1.0	1.6	9.3	9.0
Mobile Networks	1.0	1.3	8.3	7.7
Cloud and Network Services	1.0	1.8	7.7	7.0

The results of the impairment testing indicate adequate headroom for each group of CGUs in 2023 .

Notes to the consolidated financial statements continued

4.2. Property, plant and equipment

Accounting policies

Property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Depreciation is recorded on a straight-line basis over the expected useful lives of the assets as follows:

Buildings and constructions	
Buildings and constructions	20–33 years
Light buildings and constructions	3–20 years
Vessels	
Cable-laying vessels	15–40 years
Cable-laying accessories	4–10 years
Machinery and equipment	
Production machinery and measuring and test equipment	1–5 years
Other machinery and equipment	3–10 years

Land and water areas are not depreciated.

Maintenance, repairs and renewals are generally expensed in the period in which they are incurred. However, major renovations are capitalized and included in the carrying amount of the asset when it is probable that future economic benefits in excess of the originally assessed standard of performance of the existing asset will flow to Nokia. Major renovations are depreciated over the remaining useful life of the related asset. Leasehold improvements are depreciated over the shorter of the lease term and the useful life. Gains and losses on the disposal of property, plant and equipment are included in other operating income or expenses.

EURm	Land, buildings, constructions and vessels	Machinery, equipment and other	Assets under construction	Total
2023				
Acquisition cost at 1 January	1 409	3 589	248	5 246
Additions	33	314	115	462
Reclassifications	107	85	(192)	—
Disposals and retirements	(88)	(374)	(1)	(463)
Translation differences	(27)	(67)	(3)	(97)
Acquisition cost at 31 December	1 434	3 547	167	5 148
Accumulated depreciation at 1 January	(575)	(2 656)	—	(3 231)
Depreciation	(90)	(358)	—	(448)
Disposals and retirements	79	333	—	412
Translation differences	17	53	—	70
Accumulated depreciation at 31 December	(569)	(2 628)	—	(3 197)
Net book value at 1 January	834	933	248	2 015
Net book value at 31 December	865	919	167	1 951
2022				
Acquisition cost at 1 January	1 228	3 371	280	4 879
Additions	55	361	166	582
Reclassifications	160	40	(200)	—
Disposals and retirements	(49)	(191)	(1)	(241)
Translation differences	15	8	3	26
Acquisition cost at 31 December	1 409	3 589	248	5 246
Accumulated depreciation at 1 January	(495)	(2 460)	—	(2 955)
Depreciation	(87)	(363)	—	(450)
Impairment charges	(33)	(12)	—	(45)
Disposals and retirements	46	185	—	231
Translation differences	(6)	(6)	—	(12)
Accumulated depreciation at 31 December	(575)	(2 656)	—	(3 231)
Net book value at 1 January	733	911	280	1 924
Net book value at 31 December	834	933	248	2 015

Notes to the consolidated financial statements continued

4.3. Leases

Accounting policies

In the majority of its lease agreements, Nokia is acting as a lessee. Nokia's leased assets relate mostly to commercial and industrial properties such as R&D, production and office facilities. Nokia also leases vehicles provided as employee benefits and service vehicles. There are only minor lease contracts, mainly concerning subleases of vacant leasehold or freehold facilities, where Nokia is acting as a lessor.

As a lessee, Nokia recognizes a right-of-use asset and a lease liability at the commencement date of the lease. Right-of-use assets are measured at cost less accumulated depreciation and impairment losses, and adjusted for any remeasurements of the lease liabilities. Right-of-use assets are depreciated on a straight-line basis over the lease term as follows:

Buildings	3–15 years
Other	3–5 years

Lease liabilities are initially measured at the present value of the lease payments made over the lease term. Nokia uses its incremental borrowing rate to calculate the present value as the interest rate implicit in the lease is not readily determinable. Subsequently, lease liabilities are measured on an amortized cost basis using the effective interest method. In addition, lease liabilities are remeasured if there is a lease modification, a change in the lease term or a change in the future lease payments. The interest component of the lease payments is recognized as interest expense in financial expenses.

Nokia applies practical expedients whereby the payments for short-term leases and leases of low-value assets are recognized as an operating expense on a straight-line basis over the lease term. In addition, Nokia does not separate certain non-lease components from lease components but instead accounts for each lease component and associated non-lease component as a single lease component.

Right-of-use assets

EURm	Buildings	Other	Total
2023			
Acquisition cost at 1 January	1 423	241	1 664
Additions ⁽¹⁾	74	129	203
Retirements	(39)	(96)	(135)
Translation differences	(24)	1	(23)
Acquisition cost at 31 December	1 434	275	1 709
Accumulated depreciation at 1 January	(589)	(146)	(735)
Depreciation	(140)	(76)	(216)
Impairment charges	2	—	2
Retirements	39	96	135
Translation differences	11	—	11
Accumulated depreciation at 31 December	(677)	(126)	(803)
Net book value at 1 January	834	95	929
Net book value at 31 December	757	149	906
2022			
Acquisition cost at 1 January	1 318	223	1 541
Additions ⁽¹⁾	184	73	257
Retirements	(85)	(52)	(137)
Translation differences	6	(3)	3
Acquisition cost at 31 December	1 423	241	1 664
Accumulated depreciation at 1 January	(533)	(124)	(657)
Depreciation	(150)	(75)	(225)
Impairment charges	6	—	6
Retirements	85	52	137
Translation differences	3	1	4
Accumulated depreciation at 31 December	(589)	(146)	(735)
Net book value at 1 January	785	99	884
Net book value at 31 December	834	95	929

(1) Additions comprise new lease contracts as well as modifications and remeasurements of existing lease contracts.

Amounts recognized in the income statement

EURm	2023	2022	2021
Depreciation of right-of-use assets	(216)	(225)	(214)
Interest expense on lease liabilities	(28)	(26)	(24)
Impairment charges, net of reversals	2	6	(25)
Total	(242)	(245)	(263)

Amounts recognized in the income statement presented above exclude expenses relating to short-term leases and leases of low-value assets, income from subleasing right-of-use assets and gains or losses arising from sale and leaseback transactions as these are immaterial.

Amounts reported in the statement of cash flows

EURm	2023	2022	2021
Payment of principal portion of lease liabilities	(239)	(217)	(226)
Interest paid on lease liabilities	(28)	(26)	(24)
Total	(267)	(243)	(250)

Amounts reported in the statement of cash flows exclude payments for short-term leases and leases of low-value assets.

The maturity analysis of lease liabilities is presented in Note 5.4. Financial risk management. Commitments related to future lease contracts are presented in Note 6.1. Commitments, contingencies and legal proceedings.

4.4. Inventories

Accounting policies

Inventories are measured at the lower of cost and net realizable value. Cost is determined using standard cost, which approximates actual cost on a first-in first-out (FIFO) basis. In addition to the cost of materials and direct labor, an appropriate proportion of production overheads is allocated to the cost of inventory. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs necessary to make the sale.

Nokia classifies its inventories to raw materials and semi-finished goods, finished goods, and contract work in progress. Contract work in progress comprises costs incurred to date for customer contracts where the contractual performance obligations are not yet satisfied. Contract work in progress will be recognized as cost of sales when the corresponding revenue is recognized.

EURm	2023	2022
Raw materials and semi-finished goods	1 156	1 075
Finished goods	980	1 375
Contract work in progress	583	815
Total	2 719	3 265

The cost of inventories recognized as an expense during the year and included in cost of sales is EUR 7 978 million (EUR8 623 million in 2022 and EUR 6 427 million in 2021).

The cost of inventories recognized as an expense includes EUR296 million (EUR267 million in 2022 and EUR 203 million in 2021) in respect of write-downs of inventory to net realizable value.

The cost of inventories recognized as an expense has been reduced by EUR 88 million (EUR98 million in 2022 and EUR 112 million in 2021) in respect of the reversal of write-downs of inventory to net realizable value. Previous write-downs have been reversed primarily as a result of changes in estimated customer demand.

4.5. Trade receivables and other customer-related balances

Accounting policies

Customer contracts

Nokia presents its customer contracts in the statement of financial position as either a contract asset or a contract liability, depending on the relationship between Nokia's performance and the customer's payment for each individual contract. On a net basis, a contract asset position represents where Nokia has performed by transferring goods or services to a customer before the customer has provided the associated consideration or before payment is due. Conversely, a contract liability position represents where a customer has paid consideration or payment is due, but Nokia has not yet transferred goods or services to the customer. Contract assets presented in the statement of financial position are current in nature while contract liabilities can be either current or non-current.

Invoices are generally issued as control transfers and/or as services are rendered. Invoiced receivables represent an unconditional right to receive the consideration and only the passage of time is required before the consideration is received. Invoiced receivables are presented separately from contract assets as trade receivables in the statement of financial position. Trade receivables may be converted to customer loan receivables in certain cases where extended payment terms are requested. From time to time Nokia may also extend loans to other third parties and these loans are accounted for similarly as customer loan receivables. Nokia sells trade receivables and customer loan receivables to various financial institutions primarily without recourse in the normal course of business, in order to manage credit risk and working capital cycle.

The business model for managing trade receivables and customer loan receivables is holding receivables to collect contractual cash flows and selling receivables. Trade receivables and customer loan receivables are initially recognized and subsequently remeasured at fair value using the discounted cash flow method.

The changes in fair value are recognized in the fair value reserve through other comprehensive income. Interest calculated using the effective interest method as well as foreign exchange gains and losses are recognized in financial income and expenses.

Discounts without performance obligations presented on the statement of financial position in other current liabilities relate to discounts given to customers which will be executable upon satisfying specific criteria. As these discounts become executable, they are netted against related trade receivables or customer loan receivables.

Expected Credit Losses

Loss allowance for expected credit losses (ECL) is recognized on financial assets measured at amortized cost and financial assets measured at fair value through other comprehensive income, as well as on financial guarantee contracts and loan commitments. Nokia continuously assesses its financial instruments on a forward-looking basis and accounts for the changes in ECL on a quarterly basis using the following method:

- $ECL = PD \times LGD \times EAD$
- Probability of Default (PD) is based on the credit rating profile of the counterparties as well as specific local circumstances as applicable, unless there are specific events that would indicate that the credit rating would not be an appropriate basis for estimating credit risk at the reporting date.
- For Loss Given Default (LGD), the recovery rate is based on the type of receivable, specific local circumstances as applicable and related collateral arrangements, if any.
- Exposure at Default (EAD) is normally the nominal value of the receivable.

Notes to the consolidated financial statements continued

Nokia applies a simplified approach to recognize a loss allowance based on lifetime ECL on trade receivables and contract assets without significant financing components. Based on quantitative and qualitative analysis, Nokia has determined that the credit risk exposure arising from its trade receivables is low risk. Quantitative analysis focuses on historical loss rates, historic and projected sales and the corresponding trade receivables, and overdue trade receivables including indicators of any deterioration in the recovery expectation. Qualitative analysis focuses on all relevant conditions, including customer and country credit rating, to improve the accuracy of estimating lifetime ECL.

For customer loan receivables, the ECL is calculated separately for each significant counterparty using the method described above, including the impact of any collateral arrangements or other credit enhancements to LGD. The estimate is based on 12-month ECL unless there has been a significant increase in credit risk for the specific counterparty since the initial recognition, in which case lifetime ECL is estimated. Breaches of contract, credit rating downgrades and other credit measures are typical indicators that Nokia takes into consideration when assessing whether the credit risk on a financial instrument has increased significantly since initial recognition. Nokia considers additional indicators to determine if a financial asset is credit-impaired including whether the counterparty is in significant financial difficulties and whether it is becoming probable that the customer will enter bankruptcy or financial reorganization. Typically customer loan credit risk is higher than credit risk of trade receivables and contract assets on average.

The change in the amount of ECL for trade receivables and contract assets is recognized in other operating expenses and for customer loan receivables in financial expenses. For customer loan receivables, the loss allowance is recorded as an adjustment in other comprehensive income instead of adjusting the carrying amount that has already been recorded at fair value. If trade receivables and customer loan receivables are sold, the impact of ECL is reversed and the difference between the carrying amount derecognized and the consideration received is recognized in financial expenses.

Customer-related balances

Nokia aims to ensure the highest possible quality in trade receivables and contract assets as well as customer or third-party loan receivables. The Credit Risk Management Standard Operating Procedure, approved by the CFO, lays out the framework for the management of business-related credit risks. The Credit Risk Management Standard Operating Procedure sets out that credit decisions are based on credit evaluation in each business, including credit rating and limits for larger exposures, according to defined principles. Group level limit approvals are required for material credit exposures. Credit risks are monitored in each business and, where appropriate, mitigated on a case-by-case basis with the use of letters of credit, collaterals, sponsor guarantees, credit insurance and sale of selected receivables.

Aging of trade receivables and other customer-related balances at 31 December

EURm	Past due				Total
	Current	1-30 days	31-180 days	> 180 days	
2023					
Trade receivables ⁽¹⁾	4 404	157	279	430	5 270
Contract assets	1 136	—	—	—	1 136
Customer financing-related loan receivables	207	1	20	88	316
Total gross receivables	5 747	158	299	518	6 722
Expected credit loss allowance ⁽²⁾⁽³⁾	(207)	(8)	(80)	(302)	(597)
Total net receivables	5 540	150	219	216	6 125
2022					
Trade receivables ⁽¹⁾	5 117	210	267	355	5 949
Contract assets	1 203	—	—	—	1 203
Customer financing-related loan receivables	212	8	5	79	304
Total gross receivables	6 532	218	272	434	7 456
Expected credit loss allowance ⁽²⁾⁽³⁾	(361)	(15)	(65)	(203)	(644)
Total net receivables	6 171	203	207	231	6 812

(1) Nokia's payment terms are 104 days on average.

(2) The total expected credit loss allowance includes EUR 318 million (EUR311 million in 2022) of credit-impaired assets relating to certain emerging market customers.

(3) In 2023, the decrease in the expected credit loss allowance includes EUR 29 million transferred to other provisions. In 2022, the expected credit loss allowance included EUR33 million transferred from other provisions.

The reversal of expected credit loss charged to the income statement in 2023 was EUR 16 million. The expected credit loss charged to the income statement was EUR 160 million in 2022 and EUR 10 million in 2021.

Notes to the consolidated financial statements continued

Credit risk exposure by customer and country

Credit exposure is measured as the total of trade receivables, contract assets and loans outstanding from customers and committed credits. Trade receivables do not include any major concentrations of credit risk by customer.

Credit risk exposure by customer and country as % of total trade receivables and contract assets as well as loans and loan commitments to customers:

Customer	2023	2022
Customer 1	12.2%	4.5%
Customer 2	3.6%	3.5%
Customer 3	3.4%	3.3%
Total	19.2%	11.3%

Country	2023	2022
Country 1 ⁽¹⁾	19.0%	14.7%
Country 2	11.7%	10.8%
Country 3	6.1%	7.3%
Total	36.8%	32.8%

(1) In 2023 Country 1 was India (the United States in 2022).

Contract assets and contract liabilities

Contract asset balances decrease upon reclassification to trade receivables when Nokia's right to payment becomes unconditional. Contract liability balances decrease when Nokia satisfies the related performance obligations and revenue is recognized. There were no material cumulative adjustments to revenue recognized arising from changes in transaction prices, changes in measures of progress or changes in estimated variable consideration.

During the year, Nokia recognized E UR 1.4 billion (EUR1.6 billion in 2022) of revenue that was included in the current contract liability balance at the beginning of the period.

4.6. Other receivables and liabilities**Other non-current receivables**

EURm	2023	2022
R&D tax credits	127	114
Indirect tax receivables	45	46
Other	41	79
Total	213	239

Other current receivables

EURm	2023	2022
VAT and other indirect tax receivables	302	457
Prepayments related to contract manufacturing	128	62
IT-related prepaid expenses	59	41
R&D tax credits and grant receivables	46	28
Divestment-related receivables	28	26
Other	201	320
Total	764	934

Other non-current liabilities

EURm	2023	2022
Salaries, wages and social charges	42	46
Other	69	57
Total	111	103

Other current liabilities

EURm	2023	2022
Salaries, wages and social charges	1 176	1 669
Accrued expenses related to customer projects	442	466
Discounts without performance obligations	404	539
VAT and other indirect tax payables	323	328
Other ⁽¹⁾	479	617
Total	2 824	3 619

(1) Includes accrued logistics, R&D, IT and royalty expenses.

4.7. Provisions

Accounting policies

Provision is recognized when Nokia has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources will be required to settle the obligation and a reliable estimate of the amount can be made. Management judgment may be required in determining whether it is probable that an outflow of economic benefits will be required to settle the obligation. The amount recognized as a provision is based on the best estimate of unavoidable costs required to settle the obligation at the end of the reporting period.

When estimating the amount of unavoidable costs, management may be required to consider a range of possible outcomes and their associated probabilities, risks and uncertainties surrounding the events and circumstances, as well as making assumptions about the timing of payment. Changes in estimates of timing or amounts of costs required to settle the obligation may become necessary as time passes and/or more accurate information becomes available. Nokia assesses the adequacy of its existing provisions and adjusts the amounts as necessary based on actual experience and changes in facts and circumstances at each reporting date.

Restructuring provision

Nokia provides for the estimated cost to restructure when a detailed formal plan of restructuring has been completed, approved by management, and announced. Restructuring costs consist primarily of personnel restructuring charges. The other main components are costs associated with exiting real estate locations, and costs of terminating certain other contracts directly linked to the restructuring. At 31 December 2023, the restructuring provision amounted to EUR 255 million including personnel and other restructuring costs. The provision consists primarily of amounts related to the announcements made by Nokia on 16 March 2021 and 19 October 2023. The majority of the restructuring cash outflows is expected to occur over the next two years.

Warranty provision

Nokia provides for the estimated liability to repair or replace products under standard warranty at the time revenue is recognized. The provision estimate is based on historical experience of the level of repairs and replacements. Cash outflows related to the warranty provision are generally expected to occur in the next 18 months.

Litigation and environmental provisions

Nokia provides for the estimated future settlements related to legal proceedings based on the probable outcome of the claims. Nokia also provides for environmental remediation when Nokia becomes obliged, legally or constructively, to rectify environmental damage relating to soil, groundwater, surface water or sediment contamination. Cash outflows related to the litigation and environmental liabilities are inherently uncertain and generally occur over several periods. For a presentation of legal matters potentially affecting Nokia, refer to Note 6.1. Commitments, contingencies and legal proceedings.

Project loss provision

Nokia provides for onerous contracts based on the lower of the expected cost of fulfilling the contract and the expected cost of terminating the contract. An onerous contract is a contract in which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. Project loss provisions relate to contracts with customers and are evaluated at a contract level. The majority of the project loss provision utilization is expected to occur over the next two years.

Other provisions

Nokia provides for various legal and constructive obligations such as material liability, indirect tax provisions, divestment-related provisions, employee-related provisions other than restructuring provisions and asset retirement obligations. Cash outflows related to other provisions are generally expected to occur over the next two years.

EURm	Restructuring	Warranty	Litigation and environmental ⁽²⁾	Project losses	Other	Total
1 January 2023	193	221	253	207	561	1 435
Charged to income statement						
Additions	316	177	52	10	204	759
Reversals	—	(51)	(13)	—	(199)	(263)
Total charged to income statement	316	126	39	10	5	496
Utilized during year ⁽¹⁾	(254)	(147)	(29)	(107)	(109)	(646)
Translation differences and other	—	—	(12)	—	(11)	(23)
31 December 2023	255	200	251	110	446	1 262
Non-current	75	20	156	89	178	518
Current	180	180	95	21	268	744

(1) The utilization of restructuring provision includes items transferred to accrued expenses, of which EUR 65 million remained in accrued expenses at 31 December 2023.

(2) Environmental provision was EUR 154 million at 31 December 2023 (EUR155 million at 31 December 2022).

Section 5

Capital and financial instruments

This section provides information on shareholders' equity, shareholders' remuneration and Nokia's capital management objectives. Furthermore, this section comprises the policies and disclosures related to Nokia's financial assets and liabilities and hedge accounting, as well as information on Nokia's financial risks and financial risk management principles and objectives.

5.1. Equity

Shares and share capital

Share capital

Nokia Corporation has one class of shares. Each share entitles the holder to one vote at general meetings. The shares have no par value nor is there a minimum or maximum share capital or number of shares under the Articles of Association of Nokia Corporation. The share capital amounted to EUR245 896 461.96 at 31 December 2023 and 2022, and consisted of 5 613 496 565 (5 632 297 576 in 2022) issued and fully paid shares.

In 2023, Nokia Corporation issued without consideration in a directed share issue 59 500 000 (20 800 000 in 2022) new shares to itself to fulfill the Company's obligations under the Nokia Equity Programs and canceled 78 301 011 (63 963 583 in 2022) shares it had repurchased during the year under its share buyback program.

Share premium

Share premium reserve consists of the share premium account of the Parent Company. In addition, the equity impact corresponding to the employee services received related to the equity-settled share-based compensation plans is recorded in the share premium reserve.

Treasury shares

At 31 December 2023, the number of Nokia shares held by the Group companies was 87 895 712 (45 281 539 in 2022) representing 1.6% (0.8% in 2022) of the share capital and total voting rights.

In 2023, Nokia Corporation transferred without consideration 16 885 827 (15 986 016 in 2022) shares held by the Company to employees, including certain members of the Group Leadership Team, as settlement of the Group's equity-based incentive plans and the employee share purchase plan. In addition, Nokia repurchased 78 301 011 shares under the second phase of its share buyback program (63 963 583 in 2022 under the first phase of the program). The repurchased shares were canceled in November 2023.

Number of shares outstanding at the beginning and at the end of the period

Number of shares 000s	2023	2022	2021
1 January	5 587 016	5 634 993	5 617 496
Settlement of share-based payments	16 886	15 986	17 497
Acquisition of treasury shares	(78 301)	(63 963)	—
31 December	5 525 601	5 587 016	5 634 993

Nature and purpose of other equity reserves

Translation differences

Translation differences consist of foreign exchange differences arising from translation of foreign operations into euro, the presentation currency of the consolidated financial statements, as well as gains and losses related to hedging of net investments in foreign operations.

Fair value and other reserves

Pension remeasurements

Pension remeasurements reserve includes actuarial gains and losses as well as return on plan assets and changes in the effect of the asset ceiling, excluding amounts recognized in net interest, related to Nokia's defined benefit plans.

Hedging reserve

Hedging reserve includes the change in fair value that reflects the change in spot exchange rates for certain foreign exchange forward contracts and foreign exchange options, as well as the part of cross-currency swaps that is designated as a cash flow hedge to the extent that the hedges are effective.

Cost of hedging reserve

Cost of hedging reserve includes the forward element of foreign exchange forward contracts and the time value of foreign exchange options related to cash flow hedging of forecast foreign currency sale and purchase transactions. Additionally, cost of hedging reserve includes the difference between the change in fair value of the forward element of foreign exchange forward contracts and the time value of option contracts and the amortization of the forward element of foreign exchange forward contracts and time value of option contracts related to net investment hedging. Cost of hedging reserve also includes changes in fair value from foreign currency basis spread related to fair value hedging of foreign currency denominated bonds.

Notes to the consolidated financial statements continued

Fair value reserve

Fair value reserve includes the changes in fair value of financial instruments that are managed in a portfolio with a business model of holding financial instruments to collect contractual cash flows including principal and interest, as well as selling financial instruments. The fair value changes recorded in fair value reserve for these instruments are reduced by amounts of loss allowances.

Reserve for invested unrestricted equity

The reserve for invested unrestricted equity includes that part of the subscription price of issued shares that according to the share issue decision is not to be recorded to the share capital as well as other equity inputs that are not recorded to some other reserve. The amount received for treasury shares are recorded to the reserve for invested unrestricted equity, unless it is provided in the share issue decision that it is to be recorded in full or in part to the share capital. The Nokia shares repurchased under the ongoing share buyback program are funded using funds in the reserve for invested unrestricted equity.

Other equity

Retained earnings

Retained earnings is the net total of previous years' profits and losses less dividends paid to the shareholders.

Non-controlling interests

Non-controlling interests represent the share of net assets of certain subsidiaries attributable to their minority shareholders. For more information on the contractual arrangement related to the ownership interests in the Nokia Shanghai Bell Group, refer to Note 6.3. Significant partly-owned subsidiaries.

Changes in other comprehensive income by component of equity

EURm	Fair value and other reserves				
	Translation differences ⁽¹⁾	Pension remeasurements	Hedging reserve	Cost of hedging reserve	Fair value reserve
1 January 2021	(1 295)	1 940	2	(10)	(22)
Foreign exchange translation differences	1 162	—	—	—	—
Net investment hedging losses	(249)	—	—	—	—
Remeasurements of defined benefit plans	—	2 302	—	—	—
Net fair value (losses)/gains	—	—	(15)	5	(25)
Transfer to income statement	(7)	—	6	4	32
Movement attributable to non-controlling interests	(7)	—	—	—	—
31 December 2021	(396)	4 242	(7)	(1)	(15)
Foreign exchange translation differences	697	—	—	—	—
Net investment hedging losses	(147)	—	—	—	—
Remeasurements of defined benefit plans	—	(349)	—	—	—
Net fair value gains/(losses)	—	—	24	(27)	(208)
Transfer to income statement	14	—	61	10	175
Movement attributable to non-controlling interests	1	—	—	—	—
31 December 2022	169	3 893	78	(18)	(48)
Foreign exchange translation differences	(547)	—	—	—	—
Net investment hedging gains	105	—	—	3	—
Remeasurements of defined benefit plans	—	(261)	—	—	—
Net fair value gains/(losses)	—	—	2	(25)	(87)
Transfer to income statement	19	—	(66)	38	96
Movement attributable to non-controlling interests	5	—	—	—	—
31 December 2023	(249)	3 632	14	(2)	(39)

(1) At 31 December 2023 translation differences include a EUR 186 million gain related to net investment hedging (EUR 80 million gain in 2022 and EUR 226 million gain in 2021).

Notes to the consolidated financial statements continued

Capital management

For capital management purposes Nokia defines capital as total equity and interest-bearing liabilities less cash and cash equivalents, current interest-bearing financial investments and non-current interest-bearing financial investments. The main objectives of Nokia's capital management are to maintain a solid overall financial position and to ensure sufficient financial flexibility to execute Nokia's long-term business strategy and to provide returns to shareholders.

From a cash perspective, Nokia aims to maintain the balance of its cash and cash equivalents and interest-bearing financial investments less interest-bearing liabilities at 10 -15% of annual net sales over time. This cash target was announced in March 2023, and it replaced the previous cash target to maintain a level of cash and cash equivalents and interest-bearing financial investments at 30% or more of annual net sales. To support these objectives, Nokia aims to maintain investment grade credit ratings. At 31 December 2023, Nokia's long-term credit ratings are BBB- (stable) by Fitch, Ba1 (stable) by Moody's, and BBB- (stable) by S&P Global Ratings.

With regards to shareholder remuneration, Nokia targets recurring, stable and over time growing ordinary dividend payments, taking into account the previous year's earnings as well as the Company's financial position and business outlook. Nokia may also use share repurchases as a tool to manage its capital structure through the reduction of capital and distribute excess cash to the shareholders.

Distribution of funds

Nokia distributes funds to its shareholders in two ways: a) as dividends from retained earnings and/or as assets from the reserve for invested unrestricted equity, and b) by repurchasing shares using funds in the unrestricted equity. The amount of any distribution is limited to the amount of distributable earnings of the Parent Company, and subject to exceptions relating to the right of minority shareholders to request a certain minimum distribution, the distribution may not exceed the amount proposed by the Board of Directors.

Dividend and/or assets from the reserve for unrestricted invested equity**For the financial year 2023**

Nokia's Board of Directors proposes to the Annual General Meeting 2024 that no dividend is distributed by a resolution of the AGM for the financial year ended on 31 December 2023. Instead, the Board proposes to be authorized to decide, in its discretion, on the distribution of an aggregate maximum of EUR0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity. The authorization would be used to distribute dividend and/or assets from the reserve for invested unrestricted equity in four installments during the period of validity of the authorization unless the Board decides otherwise for a justified reason. Distributions of dividend and/or assets from the reserve for unrestricted invested equity are recognized as a reduction of equity and a liability when the Board has decided on the distribution. On the date of issuing the financial statements for 2023 the total number of Nokia shares is 5 613 496 565 and consequently the total amount of distribution would be EUR 730 million. The total number of shares includes the shares held by the Parent Company which are not entitled to a distribution.

For the financial year 2022

The AGM in 2023 resolved to authorize the Board of Directors to decide on the distribution of an aggregate maximum of EUR0.12 per share as dividend and/or as assets from the reserve of invested unrestricted equity for the financial year 2022. The authorization was used to distribute a dividend in four installments. During 2023, three installments of dividend were distributed amounting to EUR0.09 per share and EUR499 million in total. The fourth installment of EUR 0.03 per share and EUR 166 million in total was paid in February 2024. The total amount of dividend paid for the financial year 2022 was EUR665 million.

For the financial year 2021

For the financial year 2021, a total dividend of EUR448 million, corresponding to EUR 0.08 per share, was paid.

Share buyback programs**Program announced in 2022**

In February 2022, Nokia's Board of Directors initiated a share buyback program under authorization from the AGM to repurchase shares. The program targeted to return up to EUR600 million of cash to shareholders in tranches over a period of two years. The repurchases were funded using funds in the reserve for invested unrestricted equity and hence the repurchases reduced Nokia's total unrestricted equity.

In the first phase of the program, which was launched on 11 February 2022 and which ended on 11 November 2022, Nokia repurchased 63 963 583 shares corresponding to 1.1% of the total number of Nokia shares at 31 December 2021. The aggregate purchase price of all shares acquired in the first phase was EUR 300 million and the average price per share was EUR4.69. The repurchased shares were canceled in December 2022.

In the second phase of the program, which was launched on 2 January 2023 and which ended on 10 November 2023, Nokia repurchased 78 301 011 shares corresponding to 1.4% of the total number of Nokia shares at 31 December 2022. The aggregate purchase price of all shares acquired under the second phase of the program was EUR 300 million and the average price per share was EUR 3.83. The repurchased shares were canceled in November 2023.

Program announced in 2024

Nokia's Board of Directors is initiating a share buyback program under the current authorization from the AGM to repurchase shares, with purchases expected to begin in March 2024. The program targets to return up to EUR 600 million of cash to shareholders in tranches over a period of two years, subject to continued authorization from the AGM.

[Notes to the consolidated financial statements](#) continued**Authorizations given to the Board of Directors**

The following authorizations related to the issue and repurchase of shares were given to the Board of Directors at the AGM held on 4 April 2023 .

Authorization to issue shares and special rights entitling to shares

The shareholders authorized the Board to issue a maximum of 550 million shares, corresponding to less than 10% of the total number of Nokia's shares, through one or more issues of shares or special rights entitling to shares. The Board is authorized to issue either new shares or shares held by Nokia. Shares and special rights entitling to shares may be issued in deviation from the shareholders' pre-emptive rights within the limits set by law. The authorization may be used to develop Nokia's capital structure, diversify the shareholder base, finance or carry out acquisitions or other arrangements, settle Nokia's equity-based incentive plans or for other purposes resolved by the Board of Directors.

The authorization is effective until 3 October 2024, and it terminated the previous authorizations to issue shares and special rights entitling to shares.

Authorization to repurchase shares

The shareholders authorized the Board to repurchase a maximum of 550 million shares, corresponding to less than 10% of the total number of Nokia's shares, using funds in the unrestricted equity, which means that the repurchases will reduce Nokia's distributable funds. Shares may be repurchased to be canceled, held to be reissued, transferred further or for other purposes resolved by the Board. The price paid for the shares shall be based on the market price of Nokia shares on the securities markets on the date of the repurchase or a price otherwise formed in a competitive process. The shares may be repurchased otherwise than in proportion to the shares held by the shareholders. The Board shall resolve on all other matters related to the repurchase of Nokia shares.

The authorization is effective until 3 October 2024, and it terminated the previous authorization to repurchase shares to the extent that the Board has not previously resolved to repurchase shares based on such authorization.

5.2. Financial assets and liabilities

Accounting policies

Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Financial assets and liabilities measured at fair value are categorized based on the availability of observable inputs used to measure their fair value. Three hierarchical levels are based on an increasing amount of judgment associated with the inputs used to derive fair valuation for these assets and liabilities, Level 1 being market values for exchange traded products, Level 2 being primarily based on publicly available market information and Level 3 requiring most management judgment.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest, by using quoted market rates, discounted cash flow analyses and other appropriate valuation models. Nokia uses valuation techniques that are appropriate in the circumstances and for which sufficient data is available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs. At the end of each reporting period, all financial assets and liabilities, that are either measured at fair value on a recurring basis or for which fair values are disclosed in the financial statements, are categorized within the fair value hierarchy based on the lowest level input that is significant to the fair value measurement as a whole.

Classification and measurement

Financial assets

Nokia classifies its financial assets that are debt instruments in the following three categories: financial assets measured at amortized cost, financial assets measured at fair value through other comprehensive income, and financial assets measured at fair value through profit and loss. The selection of the appropriate category is made based on both Nokia's business model for managing the financial asset and on the contractual cash flow characteristics of the asset. Equity instruments and derivative financial assets are measured at fair value through profit and loss.

Nokia's business model for managing financial assets is defined on a portfolio level. The business model must be observable on a practical level by the way the business is managed. The cash flows of financial assets measured at amortized cost are solely payments of principal and interest. These assets are held within a business model that has an objective to hold assets to collect contractual cash flows. Financial assets measured at fair value through other comprehensive income have cash flows that are solely payments of principal and interest, and these assets are held within a business model that has an objective that is achieved both by holding financial assets to collect contractual cash flows and selling financial assets. For these categories, a loss allowance is calculated on a quarterly basis based on a review of collectability (probability of default) and available collateral (loss given default) for the asset, recorded as an adjustment to the carrying amount of the asset and recognized in other financial expenses in the income statement.

Financial assets measured at fair value through profit and loss are assets that do not fall in either of the categories in the paragraph above. Additionally, the accounting for financial assets depends on whether the financial asset is part of a hedging relationship (refer to Note 5.3. Derivative and firm commitment assets and liabilities).

All purchases and sales of financial assets are recorded on the trade date, i.e. when Nokia commits to purchase or sell the asset. All financial assets are initially measured at fair value and subsequently remeasured according to their classification. Subsequently, instruments classified as fair value through profit or loss and instruments classified as fair value through other comprehensive income are remeasured at fair value, while instruments classified as amortized cost are remeasured using the effective interest rate method. For instruments classified as fair value through profit or loss, the fair value adjustments and foreign exchange gains and losses are recognized in the income statement either in other operating income and expenses or financial income and expenses as determined by the purpose of the instruments. For instruments classified as fair value through other comprehensive income, changes in fair value are recognized in the fair value reserve through other comprehensive income (refer to Note 5.1. Equity).

For instruments classified as amortized cost, interest calculated using the effective interest method, as well as foreign exchange gains and losses, are recognized in financial income and expenses in the income statement.

A financial asset is derecognized when substantially all the risks and rewards related to the financial asset have been transferred to a third party that assumes control of the asset. On derecognition of a financial asset, the difference between the carrying amount and the consideration received is recognized in the income statement either in other operating income and expenses or financial income and expenses as determined by the purpose of the instrument. The FIFO method is used to determine the cost basis of financial assets at amortized cost that are disposed of.

Financial liabilities

Nokia classifies its financial liabilities as financial liabilities measured at amortized cost except for derivative liabilities and the conditional obligation related to Nokia Shanghai Bell, which are classified as financial liabilities at fair value through profit and loss.

All financial liabilities are initially recognized at fair value and, in the case of borrowings and payables, net of transaction costs. Financial liabilities are subsequently remeasured according to their classification.

For financial liabilities measured at amortized cost, interest calculated using the effective interest method, as well as foreign exchange gains and losses, are recognized in financial income and expenses in the income statement.

Financial liabilities are derecognized when the related obligation is discharged, canceled or expired. Additionally, a substantial modification of the terms of an existing financial liability is accounted for as a derecognition of the original financial liability and the recognition of a new financial liability. On derecognition of a financial liability, the difference between the carrying amount extinguished and the consideration paid is recognized in financial income or expenses in the income statement.

Notes to the consolidated financial statements continued

Fair value of financial instruments

EURm	2023						2022							
	Carrying amounts					Fair value ⁽¹⁾	Carrying amounts					Fair value ⁽¹⁾		
	Amortized cost	Fair value through profit or loss			Fair value through other comprehensive income ⁽²⁾	Total	Amortized cost	Fair value through profit or loss			Fair value through other comprehensive income ⁽²⁾	Total		
	Level 1	Level 2	Level 3	Level 2	Total	Total	Level 1	Level 2	Level 3	Level 2	Total	Total		
Non-current interest-bearing financial investments	715	—	—	—	—	715	717	697	—	—	—	—	697	659
Investments in venture funds	—	5	—	779	—	784	784	—	5	—	823	—	828	828
Other non-current financial assets ⁽³⁾	161	—	96	—	59	316	316	183	—	91	—	27	301	301
Other current financial assets ⁽³⁾	263	—	—	—	22	285	285	296	—	—	—	36	332	332
Derivative assets ⁽⁴⁾	—	—	134	—	—	134	134	—	—	239	—	—	239	239
Trade receivables ⁽³⁾	—	—	—	—	4 921	4 921	4 921	—	—	—	—	5 549	5 549	5 549
Current interest-bearing financial investments	874	—	691	—	—	1 565	1 565	1 447	—	1 633	—	—	3 080	3 080
Cash and cash equivalents	4 791	—	1 443	—	—	6 234	6 234	4 176	—	1 291	—	—	5 467	5 467
Total financial assets	6 804	5	2 364	779	5 002	14 954	14 956	6 799	5	3 254	823	5 612	16 493	16 455
Long-term interest-bearing liabilities	3 637	—	—	—	—	3 637	3 614	4 249	—	—	—	—	4 249	4 230
Other long-term financial liabilities	33	—	—	28	—	61	61	—	—	—	48	—	48	48
Short-term interest-bearing liabilities	554	—	—	—	—	554	555	228	—	—	—	—	228	228
Other short-term financial liabilities	65	—	—	471	—	536	536	75	—	—	502	—	577	577
Derivative liabilities ⁽⁴⁾	—	—	286	—	—	286	286	—	—	496	—	—	496	496
Discounts without performance obligations ⁽³⁾	404	—	—	—	—	404	404	539	—	—	—	—	539	539
Trade payables	3 423	—	—	—	—	3 423	3 423	4 730	—	—	—	—	4 730	4 730
Total financial liabilities	8 116	—	286	499	—	8 901	8 879	9 821	—	496	550	—	10 867	10 848

(1) The following fair value measurement methods are used for items not carried at fair value: The fair values of long-term interest-bearing liabilities, including current portion, are primarily based on publicly available market information (level 2). The fair values of other assets and liabilities, including loan receivables and loans payable, are primarily based on discounted cash flow analysis (level 2). The fair value is estimated to equal the carrying amount for short-term financial assets and financial liabilities due to limited credit risk and short time to maturity.

(2) No financial instruments measured at fair value through other comprehensive income are categorized in fair value hierarchy level 1 or level 3.

(3) For further information on trade receivables, customer loans and discounts without performance obligation, refer to Note 4.5. Trade receivables and other customer-related balances

(4) For further information on derivative assets and liabilities, refer to Note 5.3. Derivative and firm commitment assets and liabilities

Notes to the consolidated financial statements continued

Financial assets

Interest-bearing financial investments

Nokia invests a portion of the corporate cash needed to cover the projected cash outflows of its ongoing business operations in highly liquid, interest-bearing investments. Interest-bearing financial investments may include investments measured at amortized cost and investments measured at fair value through profit and loss.

Non-current interest-bearing financial investments are investments in highly liquid corporate bonds that are long-term in nature based on their initial maturity and are measured at amortized cost using the effective interest method.

Current interest-bearing financial investments in bank deposits, as well as fixed income and money market securities with an initial maturity or put feature longer than three months, that have characteristics of solely payments of principal and interest and are not part of structured investments, are managed in a portfolio with a business model of holding investments to collect principal and interest and are measured at amortized cost using the effective interest method. These investments are executed with the main purpose of collecting contractual cash flows and principal repayments. However, investments are sold from time to time for liquidity management and market risk mitigation purposes.

Current interest-bearing financial investments may also include money market funds that do not qualify as cash equivalents, investments acquired for trading purposes, investment structures consisting of securities traded in combination with derivatives with complementing and typically offsetting risk factors and other investments that have cash flows not being solely payments of principal and interest. These investments are executed for capital appreciation and other investment returns and can be sold at any time. These investments are classified as fair value through profit or loss, with fair value adjustments, foreign exchange gains and losses and realized gains and losses recognized in financial income and expenses in the income statement. The fair values of these investments are based on publicly available market information.

Corporate cash investments in bank deposits used as collateral for derivative transactions are measured at amortized cost using the effective interest method.

Other financial assets

Other non-current financial assets include unlisted private equity and unlisted venture fund investments, including investments managed by NGP Capital which specializes in growth-stage investing. These investments do not fulfill the criteria of being solely payments of principal and interest and they are classified as investments at fair value through profit and loss. The fair value of these level 3 investments determined using one or more valuation techniques where the use of the market approach generally consists of using comparable market transactions, while the use of the income approach generally consists of calculating the net present value of expected future cash flows.

For unlisted funds, the selection of appropriate valuation techniques by the fund managing partner may depend on the availability and reliability of relevant inputs. In some cases, one valuation technique may provide the best indication of fair value while in other circumstances multiple valuation techniques may be appropriate.

Inputs generally considered include the original transaction price, recent transactions in the same or similar instruments, completed or pending third-party transactions in the underlying investment or comparable issuers, subsequent rounds of financing, recapitalizations or other transactions undertaken by the issuer, offerings in the equity or debt capital markets, and changes in financial ratios or cash flows, adjusted as appropriate for liquidity, credit, market and/or other risk factors. The fair value may be adjusted to reflect illiquidity and/or non-transferability, with the amount of such discount estimated by the managing partner in the absence of market information.

Level 3 investments are remeasured at each reporting date taking into consideration any changes in estimates, projections and assumptions, as well as any changes in economic and other relevant conditions. These investments include approximately 50 separate venture funds investing in hundreds of individual companies in various sectors and geographies, focusing on 5G, digital health, software and enterprise sectors.

Hence, specific estimates and assumptions used by managing partners in the absence of observable inputs do impact the fair value of individual investments, but no individual input has a significant impact on the aggregated fair value of level 3 investments.

Fair value adjustments, foreign exchange gains and losses, and realized gains and losses from the disposal of these investments are recognized in other operating income and expenses in the income statement.

From time to time Nokia may have investments in listed equity shares classified as level 1 investments. These are exchange traded products with quoted prices readily and regularly available from an exchange representing actual and regularly occurring market transactions on an arm's-length basis.

Other non-current financial assets also include restricted assets and other receivables, customer financing-related loan receivables (refer to note 4.5. Trade receivables and other customer-related balances) and certain other financial assets of a long-term nature.

Restricted assets and other receivables include restricted bank deposits primarily related to employee benefits as well as other loan receivables measured at amortized cost using the effective interest method.

The cash flows of certain other financial assets of a long-term nature do not fulfill the criteria of being solely payments of principal and interest. These investments are measured at fair value using quoted market rates, discounted cash flow models or other appropriate valuation methods as of the reporting date. Fair value adjustments, foreign exchange gains and losses, and realized gains and losses from the disposal of these investments are mainly recognized in financial income and expenses in the income statement.

Other current financial assets include the current part of other non-current financial assets as well as short-term loan receivables measured at amortized cost using the effective interest method.

Cash and cash equivalents

Cash and cash equivalents include cash at bank and in hand as well as highly liquid, fixed income and money market investments that are readily convertible to known amounts of cash with maturities at acquisition of three months or less, as well as bank deposits with maturities or contractual call periods at acquisition of three months or less. Due to the high credit quality and short-term nature of these investments, there is an insignificant risk of change in value. Investments in money market funds that have a risk profile consistent with the aforementioned criteria are also classified as cash equivalents.

Notes to the consolidated financial statements continued

Investments that have cash flows that are solely payments of principal and interest are measured at amortized cost using the effective interest method whereas all other investments are classified as fair value through profit and loss, with fair value adjustments and foreign exchange gains and losses recognized in financial income and expenses in the income statement. The fair values of these investments are based on publicly available market information.

Financial liabilities

Interest-bearing liabilities

Long-term and short-term interest-bearing liabilities are measured at amortized cost using the effective interest method. Long-term and short-term interest-bearing liabilities include issued bonds and other borrowings. Short-term interest-bearing liabilities also include the current portion of long-term interest-bearing liabilities and collaterals for derivative transactions.

Other financial liabilities

Other financial liabilities mainly include a conditional obligation to China Huaxin as part of the Nokia Shanghai Bell (NSB) definitive agreements where China Huaxin obtained the right to fully transfer its ownership interest in NSB to Nokia in exchange for a future cash settlement. The financial liability related to the conditional obligation is measured based on the expected future cash settlement with any changes recorded in financial income and expenses in the income statement. The measurement of this level 3 financial liability involves estimation of the option exercise price and the distribution of excess cash balances upon exercise. Unobservable valuation inputs include certain financial performance metrics of NSB. No individual input has a significant impact on the total fair value.

Trade payables

Trade payables are carried at invoiced amount in the statement of financial position. Trade payables includes balances payable to suppliers under reverse factoring arrangements with financial institutions. These balances are classified as trade payables and the related payments as cash flows from operating activities, since the payments are made to the banks on very similar terms as to suppliers. Possible extensions to payment terms beyond the due dates agreed with suppliers are insignificant and there are no special guarantees securing the payments to be made.

Interest-bearing loans and other borrowings

All borrowings presented in the table below are senior unsecured and have no financial covenants.

Issuer/borrower	Instrument	Currency	Nominal (million)	Final maturity	Carrying amount EURm ⁽¹⁾	
					2023	2022
Nokia Corporation	2.00% Senior Notes ⁽²⁾	EUR	378	3/2024	375	736
Nokia Corporation	EIB R&D Loan	EUR	500	2/2025	500	500
Nokia Corporation	NIB R&D Loan ³⁾	EUR	167	5/2025	167	250
Nokia Corporation	2.375% Senior Notes ⁽²⁾	EUR	292	5/2025	289	478
Nokia Corporation	2.00% Senior Notes ⁽²⁾	EUR	630	3/2026	614	716
Nokia Corporation	4.375% Senior Notes	USD	500	6/2027	430	436
Nokia of America Corporation	6.50% Senior Notes	USD	74	1/2028	67	70
Nokia Corporation	3.125% Senior Notes	EUR	500	5/2028	479	457
Nokia of America Corporation	6.45% Senior Notes	USD	206	3/2029	187	194
Nokia Corporation	4.375% Sustainability-linked Senior Notes ⁽⁴⁾	EUR	500	8/2031	510	—
Nokia Corporation	6.625% Senior Notes	USD	500	5/2039	463	478
Nokia Corporation and various subsidiaries	Other borrowings				110	162
Total					4 191	4 477

- (1) Carrying amount includes EUR 31 million of fair value losses (EUR 120 million in 2022) related to fair value hedge accounting relationships, including EUR 156 million of fair value gains (EUR 180 million in 2022) related to discontinued fair value hedge accounting relationships that are amortized over the life of the respective senior notes.
- (2) In February 2023, Nokia purchased in a tender offer EUR 372 million (49.66% of the nominal amount) of the notes due 15 March 2024, EUR208 million (41.57% of the nominal amount) of the notes due 15 May 2025 and EUR 120 million (15.96% of the nominal amount) of the notes due 11 March 2026.
- (3) The remaining loan from the Nordic Investment Bank (NIB) is repayable in two equal annual installments in 2024 and 2025.
- (4) The bond has a one-time redemption premium at maturity of EUR 4 million in case Nokia does not meet its commitment to reduce its greenhouse gas emissions (in tCO₂e) across its value chain (Scope 1, 2, and 3) by 50% between 2019 and 2030. This target is one of Nokia's key sustainability targets and has been selected to be the Sustainability Performance Target in Nokia's Sustainable Finance Framework that enables the issuance of sustainability-linked financing instruments.

Changes in level 3 financial assets and liabilities measured at fair value

EURm	2023		2022	
	Financial assets	Financial liabilities	Financial assets	Financial liabilities
1 January	823	(550)	750	(590)
Net (losses)/gains in income statement	(76)	31	13	24
Additions ⁽¹⁾	56	—	101	—
Deductions ⁽¹⁾	(24)	19	(39)	20
Transfers out of level 3	—	—	(4)	—
Other movements	—	1	2	(4)
31 December	779	(499)	823	(550)

- (1) For level 3 financial assets, additions mainly include capital contributions to venture funds and deductions mainly include distributions from venture funds.

A net loss of EUR42 million (net gain of EUR23 million in 2022) related to level 3 financial instruments held at 31 December was included in the profit and loss during 2023 .

5.3. Derivative and firm commitment assets and liabilities

Accounting policies

Fair value

All derivatives are recognized initially at fair value on the date a derivative contract is entered into and subsequently remeasured at fair value. The method of recognizing the resulting gain or loss varies according to whether the derivatives are designated and qualify under hedge accounting.

Foreign exchange forward contracts are valued at market-forward exchange rates. Changes in fair value are measured by comparing these rates with the original contract-forward rate. Currency options are valued at each reporting date by using the Garman & Kohlhagen option valuation model. Interest rate swaps and cross-currency swaps are valued using the discounted cash flow method.

Hedge accounting

Nokia applies hedge accounting on certain foreign exchange forward contracts, options or option strategies, and interest rate derivatives. Qualifying options and option strategies have zero net premium, or a net premium paid. For option structures, the critical terms of the purchased and written options are the same and the notional amount of the written option component is not greater than that of the purchased option.

In the fair valuation of foreign exchange forward contracts, Nokia separates the forward element and considers it to be the cost of hedging for foreign exchange forward contracts. In the fair valuation of foreign exchange option contracts, Nokia separates the time value and considers it to be the cost of hedging for foreign exchange option contracts. In the fair valuation of cross-currency swaps, Nokia separates the foreign currency basis spread and considers it to be the cost of hedging for cross-currency swaps.

Hedge effectiveness is assessed at inception and subsequently on a quarterly basis during the hedge relationship to ensure that an economic relationship exists. As Nokia only enters in hedge relationships where the critical terms match, the assessment of effectiveness is done on a qualitative basis with no significant ineffectiveness expected.

Presentation in the statement of cash flows

The cash flows of a hedge are classified as cash flows from operating activities in cases where the underlying hedged items relate to Nokia's operating activities. When a derivative contract is accounted for as a hedge of an identifiable position relating to financing or investing activities, the cash flows of the contract are classified in the same way as the cash flows of the position being hedged. Cash flows of derivatives used in hedging the foreign exchange risk of Nokia's cash position are presented in cash flows from investing activities.

Cash flow hedges: hedging of forecast foreign currency denominated sales and purchases

Nokia applies cash flow hedge accounting primarily to foreign exchange exposure that arises from highly probable forecast operative business transactions. The risk management strategy is to hedge material net exposures (identified standard net sales exposure minus identified standard costs exposure) by using foreign exchange forwards and foreign exchange options in a layered hedging style that follows defined hedging level ranges and hedge maturities in quarterly time buckets. The hedged item must be highly probable and present an exposure to variations in cash flows that could ultimately affect profit or loss.

For qualifying foreign exchange forwards and foreign exchange options, the change in fair value that reflects the change in spot exchange rates on a discounted basis is recognized in hedging reserve through other comprehensive income (refer to Note 5.1. Equity). The changes in the forward element of the foreign exchange forwards and the time value of the options that relate to hedged items are deferred in the cost of hedging reserve through other comprehensive income (refer to Note 5.1. Equity) and are subsequently accounted for in the same way as the spot element or intrinsic value.

In each quarter, Nokia evaluates whether the forecast sales and purchases are still expected to occur. If a portion of the hedged cash flow is no longer expected to occur, the hedge accounting criteria are no longer met and all related deferred gains or losses are derecognized from fair value and other reserves and recognized in other operating income and expenses in the income statement.

If the hedged cash flow ceases to be highly probable, but is still expected to occur, accumulated gains and losses remain in fair value and other reserves until the hedged cash flow affects profit or loss.

Nokia's risk management objective is to hedge forecast cash flows until the related revenue has been recognized. Each hedge relationship is discontinued during the quarter when the hedge matures, which is also the quarter that it had been designated to hedge. At this point, the accumulated gain or loss of cash flow hedges is reclassified to other operating income and expenses in the income statement. In cases where the forecast amount of revenue is not recognized during a quarter, the full accumulated gain or loss of cash flow hedges designated for said quarter is still reclassified and the portion related to forecast revenue that was not recognized is disclosed as hedge ineffectiveness.

As cash flow hedges primarily mature in the same quarter as the hedged item, there is no significant ineffectiveness resulting from the time value of money. Nokia will validate the magnitude of the impact of discounting related to the amount of gain or loss recognized in fair value and other reserves on a quarterly basis.

Cash flow and fair value hedges: hedging of foreign exchange risk of future interest cash flows

Nokia also applies cash flow hedging to future interest cash flows in foreign currency related to issued bonds. These future interest cash flows are hedged with cross-currency swaps that have been bifurcated and designated partly as fair value hedges (see Fair value hedges: hedging of interest rate exposure below) to hedge both the foreign exchange and interest rate benchmark risk component of the issued bond, and partly as cash flow hedges to hedge the foreign exchange risk related to the remaining portion of interest cash flows on the issued bond. The accumulated gain or loss for the part of these cross-currency swaps designated as cash flow hedges is initially recorded in hedging reserve through other comprehensive income and reclassified to profit or loss at the time when the related interest cash flows are settled.

Fair value hedges: hedging of interest rate exposure

Nokia applies fair value hedge accounting to reduce exposure to fair value fluctuations of interest-bearing liabilities due to changes in interest rates and foreign exchange rates. Nokia uses interest rate swaps and cross-currency swaps aligned with the hedged items to hedge interest rate risk and associated foreign exchange risk.

Nokia has entered into long-term borrowings mainly at fixed rates and has swapped most of them into floating rates in line with a defined target interest profile. Nokia aims to mitigate the adverse impacts from interest rate fluctuations by continuously managing net interest exposure resulting from financial assets and liabilities by setting appropriate risk management benchmarks and risk limits. The hedged item is identified as a proportion of the outstanding loans up to the notional amount of the swaps as appropriate to achieve the risk management objective. Nokia enters into interest rate swaps that have similar critical terms to the hedged item, such as reference rate, reset dates, payment dates, maturities and notional amount and hence Nokia expects that there will be no significant ineffectiveness. Nokia has not entered into interest rate swaps where it would be paying fixed rates.

Nokia's borrowings are carried at amortized cost. Changes in the fair value of derivatives designated and qualifying as fair value hedges, together with any changes in the fair value of hedged liabilities attributable to the hedged risk, are recorded in financial income and expenses in the income statement. Nokia separates the foreign currency basis spread from cross-currency swaps and excludes it from the hedged risk as cost of hedging that is initially recognized and subsequently measured at fair value and recorded in the cost of hedging reserve through other comprehensive income. If a hedge relationship no longer meets the criteria for hedge accounting, hedge accounting ceases, the cost of hedging recorded in the cost of hedging reserve is immediately expensed and any fair value adjustments made to the carrying amount of the hedged item while the hedge was effective are recognized in financial income and expenses in the income statement based on the effective interest method.

Fair value hedges: hedging of foreign exchange exposure

In certain cases, mainly related to long-term construction projects, Nokia applies fair value hedge accounting for foreign exchange risk with the objective to reduce the exposure to fluctuations in the fair value of firm commitments due to changes in foreign exchange rates. The change in fair value that reflects the change in spot exchange rates of the foreign exchange forwards designated and qualifying as fair value hedges, together with any changes in the fair value of the hedged firm commitments attributable to the hedged risk, are recorded in financial income and expenses in the income statement.

At the end of the hedge relationship the accumulated changes in the spot element of qualifying fair value hedges are recorded as adjustments to net sales or cost of sales in the income statement according to the hedge designation. The changes in the forward element of the foreign exchange forwards that relate to hedged items are deferred in the cost of hedging reserve through other comprehensive income and reclassified to other operating income and expenses in the income statement at the end of the hedge relationship.

Hedges of net investments in foreign operations

Nokia applies hedge accounting for its foreign currency hedging of selected net investments. The hedged item can be an amount equal to or less than the carrying amount of the net assets of the foreign operation in the statement of financial position. The risk management strategy is to protect the euro counter value of the portion of this exposure expected to materialize as non-euro cash repatriation in the foreseeable future.

For qualifying foreign exchange forwards, foreign exchange options and option strategies, the change in fair value that reflects the change in spot exchange rates is recognized in translation differences in shareholders' equity (refer to Note 5.1. Equity). The changes in the forward element of foreign exchange forwards as well as the changes in the time value of options (collectively known as the "cost of hedging") is recognized in the cost of hedging reserve through other comprehensive income. The cost of hedging at the date of designation of the foreign exchange forward or option contract as a hedging instrument is amortized to financial income and expenses in the income statement over the duration of the contract. Hence, in each reporting period, the change in fair value of the forward element of the foreign exchange forward

contract or the time value of the option contract is recorded in the cost of hedging reserve through other comprehensive income, while the amortization amount is reclassified from the cost of hedging reserve to profit or loss.

The cumulative amount or proportionate share of changes in the fair value of qualifying hedges deferred in translation differences is recognized as gain or loss on disposal of all or part of a foreign subsidiary.

Derivatives not designated in hedge accounting relationships carried at fair value through profit and loss

For derivatives not designated under hedge accounting, but hedging identifiable forecast exposures such as anticipated foreign currency denominated sales and purchases, the gains and losses are recognized in other operating income and expenses in the income statement. The gains and losses on all other derivatives not designated under hedge accounting are recognized in financial income and expenses.

Embedded derivatives included in contracts are identified and monitored by Nokia. For host contracts that are not financial assets containing embedded derivatives that are not closely related, the embedded derivatives are separated and measured at fair value at each reporting date with changes in fair value recognized in financial income and expenses in the income statement. For host contracts that are financial assets containing embedded derivatives, the whole contract is measured at fair value at each reporting date with changes in fair value recognized in financial income and expenses in the income statement.

Notes to the consolidated financial statements continued

Derivatives and firm commitments

EURm	2023				2022			
	Assets		Liabilities		Assets		Liabilities	
	Fair value ⁽¹⁾	Notional ⁽²⁾	Fair value ⁽¹⁾	Notional ⁽²⁾	Fair value ⁽¹⁾	Notional ⁽²⁾	Fair value ⁽¹⁾	Notional ⁽²⁾
Cash flow hedges								
Foreign exchange forward contracts	26	1 206	(19)	1 039	77	1 775	(30)	1 034
Currency options bought	3	466	—	—	2	173	—	—
Currency options sold	—	—	—	23	—	—	—	—
Fuel hedges	—	—	(1)	50	2	33	—	—
Cash flow and fair value hedges⁽³⁾								
Cross-currency swaps	—	—	(144)	905	—	—	(123)	938
Fair value hedges								
Interest rate swaps	24	1 195	(28)	1 105	—	—	(99)	2 500
Foreign exchange forward contracts	14	627	(59)	1 337	19	393	(163)	1 981
Firm commitments	22	1 788	(9)	434	117	1 842	(28)	384
Hedges on net investment in foreign subsidiaries								
Foreign exchange forward contracts	6	1 111	—	81	—	3 509	(9)	1 103
Derivatives not designated in hedge accounting relationships carried at fair value through profit and loss								
Foreign exchange forward contracts	58	6 889	(35)	6 012	86	5 625	(72)	6 968
Currency options bought	—	10	—	—	—	18	—	—
Embedded derivatives ⁽⁴⁾	3	620	—	—	51	2 495	—	—
Other derivatives	—	12	—	—	2	5	—	—
Total	156	13 924	(295)	10 986	356	15 868	(524)	14 908

(1) Included in other current financial and firm commitment assets and other financial and firm commitment liabilities in the statement of financial position.

(2) Includes the gross amount of all notional values for contracts that have not yet been settled or canceled. The amount of notional value outstanding is not necessarily a measure or indication of market risk as the exposure of certain contracts may be offset by that of other contracts.

(3) Cross-currency swaps have been designated partly as fair value hedges and partly as cash flow hedges.

(4) Embedded derivatives are related to customer contracts.

To manage interest rate and foreign exchange risks related to Nokia's interest-bearing liabilities, Nokia has designated the following cross-currency swaps as hedges under both fair value hedge accounting and cash flow hedge accounting, and interest rate swaps as hedges under fair value hedge accounting at 31 December:

Entity	Instrument	Currency	Maturity	Notional (million in currency)		Fair value EURm	
				2023	2022	2023	2022
				Nokia Corporation	Interest rate swaps	EUR	3/2024
Nokia Corporation	Interest rate swaps	EUR	5/2025	292	500	—	(17)
Nokia Corporation	Interest rate swaps	EUR	3/2026	630	750	(13)	(34)
Nokia Corporation	Cross-currency swaps	USD	6/2027	500	500	(28)	(26)
Nokia Corporation	Interest rate swaps	EUR	5/2028	500	500	(13)	(36)
Nokia Corporation	Interest rate swaps	EUR	8/2031	500	—	20	—
Nokia Corporation	Cross-currency swaps	USD	5/2039	500	500	(116)	(97)
Total						(148)	(222)

5.4. Financial risk management

General risk management principles

Nokia has a systematic and structured approach to risk management. Key risks and opportunities are primarily identified against business targets either in business operations or as an integral part of strategy and financial planning. Risk management covers strategic, operational, financial, compliance and hazard risks. Key risks and opportunities are analyzed, managed and monitored as part of business performance management. The principles documented in the Nokia Enterprise Risk Management Policy, which is approved by the Audit Committee of the Board, require risk management and its elements to be integrated into key processes. One of the core principles is that the business or function head is also the risk owner, although all employees are responsible for identifying, analyzing and managing risks, as appropriate, given their roles and duties. Nokia's overall risk management concept is based on managing the key risks that would prevent Nokia from meeting its objectives, rather than focusing on eliminating risks. In addition to the principles defined in the Nokia Enterprise Risk Management Policy, other key policies and operating procedures reflect the implementation of specific aspects of risk management, including financial risk management.

Financial risks

The objective for treasury activities is to guarantee sufficient funding at all times and to identify, evaluate and manage financial risks. Treasury activities support this aim by mitigating the adverse effects on the profitability of the underlying business caused by fluctuations in the financial markets, and by managing the capital structure by balancing the levels of liquid assets and financial borrowings. Treasury activities are governed by the Nokia Treasury Policy approved by the President and CEO, which provides principles for overall financial risk management and determines the allocation of responsibilities for financial risk management activities. Operating procedures approved by the Chief Financial Officer (CFO) cover specific areas such as foreign exchange risk, interest rate risk, credit risk and liquidity risk, as well as the use of derivative financial instruments in managing these risks. Nokia is risk averse in its treasury activities.

Financial risks are divided into market risk covering foreign exchange risk and interest rate risk; credit risk covering business-related credit risk and financial credit risk; and liquidity risk.

Market risk

Foreign exchange risk

Nokia operates globally and is exposed to transaction and translation foreign exchange risks. The objective of foreign exchange risk management is to mitigate adverse impacts from foreign exchange fluctuations on Nokia's profitability and cash flows. Treasury applies a global portfolio approach to manage foreign exchange risks within approved guidelines and limits.

Transaction risk arises from foreign currency denominated assets and liabilities together with foreign currency denominated future cash flows. Transaction exposures are managed in the context of various functional currencies of Group companies. Material transactional foreign exchange exposures are hedged, unless hedging would be uneconomical due to market liquidity and/or hedging cost. Exposures are defined using transaction nominal values. Exposures are mainly hedged with derivative financial instruments, such as foreign exchange forward contracts and foreign exchange options with most of the hedging instruments having a duration of less than a year.

A layered hedging approach is typically used for hedging of highly probable forecast foreign currency denominated cash flows with quarterly hedged items defined based on set hedge ratio ranges for each successive quarter. Hedged items defined for successive quarters are hedged with foreign exchange forward contracts and foreign exchange options with a hedge ratio of 1:1. Hedging level ranges are adjusted on a monthly basis including hedging instrument designation and documentation as appropriate. In cases where hedges exceed the hedge ratio range for any specific quarter, the hedge portfolio for that specific quarter is adjusted accordingly.

In certain cases, mainly related to long-term construction projects, Nokia applies fair value hedge accounting for foreign exchange risk with the objective to reduce the exposure to fluctuations in the fair value of the related firm commitments due to changes in foreign exchange rates. Exposures are mainly hedged with foreign exchange forward contracts with most of the hedging instruments matching the duration of the underlying projects. Nokia continuously manages the portfolio of hedging instruments to ensure appropriate alignment with the portfolio of hedged items at a hedging ratio of 1:1.

As Nokia has entities where the functional currency is other than the euro, the shareholders' equity is exposed to fluctuations in foreign exchange rates. Changes in shareholders' equity caused by movements in foreign exchange rates are shown as currency translation differences in the consolidated financial statements. The risk management strategy is to protect the euro counter value of the portion of this exposure expected to materialize as foreign currency repatriation cash flows in the foreseeable future. Exposures are mainly hedged with derivative financial instruments, such as foreign exchange forward contracts and foreign exchange options with most of the hedging instruments having a duration of less than a year. Hedged items are defined based on conservative expectations of repatriation cash flows based on a range of considerations. Net investment exposures are reviewed, hedged items designated, and hedging levels adjusted at minimum on a quarterly basis with a hedge ratio of 1:1. Additionally, hedging levels are adjusted whenever there are significant events impacting expected repatriation cash flows.

The foreign exchange risk arising from foreign currency denominated interest-bearing liabilities is primarily hedged using cross-currency swaps that are also used to manage Nokia's interest rate profile (refer to the interest rate risk section below).

Notes to the consolidated financial statements continued

Notional amounts in currencies that represent a significant portion of the currency mix in outstanding financial instruments and other hedged items at 31 December:

EURm	USD	CNY	JPY	INR
2023				
Foreign exchange exposure designated as hedged item for cash flow hedging, net ⁽¹⁾	606	(232)	281	(153)
Foreign exchange exposure designated as hedged item for fair value hedging for FX risk, net ⁽²⁾	1 354	—	—	—
Foreign exchange exposure designated as hedged item for net investment hedging ⁽³⁾	—	788	—	184
Foreign exchange exposure from interest-bearing liabilities ⁽⁴⁾	(750)	—	—	—
Foreign exchange exposure from items on the statement of financial position, excluding interest-bearing liabilities, net	2 475	(804)	147	(346)
Other foreign exchange derivatives, carried at fair value through profit and loss, net ⁽⁵⁾	(205)	720	(100)	(38)
2022				
Foreign exchange exposure designated as hedged item for cash flow hedging, net ⁽¹⁾	854	(402)	311	(68)
Foreign exchange exposure designated as hedged item for fair value hedging for FX risk, net ⁽²⁾	1 458	—	—	—
Foreign exchange exposure designated as hedged item for net investment hedging ⁽³⁾	3 007	866	—	192
Foreign exchange exposure from interest-bearing liabilities ⁽⁴⁾	(758)	—	—	—
Foreign exchange exposure from items on the statement of financial position, excluding interest-bearing liabilities, net	(2 709)	(888)	204	(272)
Other foreign exchange derivatives, carried at fair value through profit and loss, net ⁽⁵⁾	4 214	892	(151)	(1 117)

(1) Includes foreign exchange exposure from forecast cash flows related to sales and purchases. In some currencies, especially the US dollar, Nokia has substantial foreign exchange exposures in both estimated cash inflows and outflows. These underlying exposures have been hedged.

(2) Includes foreign exchange exposure from contractual firm commitments. These underlying exposures have been substantially hedged.

(3) Includes net investment exposures in foreign operations. These underlying exposures have been hedged.

(4) Includes interest-bearing liabilities that have been hedged with cross-currency swaps and foreign exchange forwards. Refer to Note

5.3. Derivative and firm commitment assets and liabilities

(5) Items on the statement of financial position are hedged by a portion of foreign exchange derivatives not designated in a hedge relationship and carried at fair value through profit and loss. Embedded derivatives are included in this line item.

Effects of hedge accounting on the financial position and performance

Nokia is using several types of hedge accounting programs to manage its foreign exchange and interest rate risk exposures; refer to Note

5.3. Derivative and firm commitment assets and liabilities

The effect of these programs on Nokia's financial position and performance at 31 December:

EURm	Cash flow hedges ⁽¹⁾	Net investment hedges ⁽¹⁾	Fair value hedges for FX risk ⁽¹⁾	Fair value and cash flow hedges ⁽¹⁾
2023				
Carrying amount of hedging instruments	2	5	(45)	(174)
Notional amount of hedging instruments	(968)	(1 166)	(1 354)	3 205
Notional amount of hedged items	968	1 166	1 354	(3 205)
Change in intrinsic value of hedging instruments since 1 January	22	132	40	89
Change in value of hedged items used to determine hedge effectiveness	(15)	(132)	(42)	(93)
2022				
Carrying amount of hedging instruments	46	(9)	(145)	(247)
Notional amount of hedging instruments	(1 350)	(4 299)	(1 456)	3 438
Notional amount of hedged items	1 353	4 299	1 458	(3 438)
Change in intrinsic value of hedging instruments since 1 January	(12)	(126)	(111)	(265)
Change in value of hedged items used to determine hedge effectiveness	20	126	112	262

(1) No significant ineffectiveness has been recorded during the periods presented and economic relationships have been fully effective.

Notes to the consolidated financial statements continued

The methodology for assessing foreign exchange risk exposures: Value-at-Risk

Nokia uses the Value-at-Risk (VaR) methodology to assess exposures to foreign exchange risks. The VaR-based methodology provides estimates of potential fair value losses in market risk-sensitive instruments as a result of adverse changes in specified market factors, at a specified confidence level over a defined holding period. Nokia calculates the foreign exchange VaR using the Monte Carlo method, which simulates random values for exchange rates in which Nokia has exposures and takes the non-linear price function of certain derivative instruments into account. The VaR is determined using volatilities and correlations of rates and prices estimated from a sample of historical market data, at a 95% confidence level, using a one-month holding period. To put more weight on recent market conditions, an exponentially weighted moving average is performed on the data with an appropriate decay factor. This model implies that, within a one-month period, the potential loss will not exceed the VaR estimate in 95% of possible outcomes.

In the remaining 5% of possible outcomes, the potential loss will be at minimum equal to the VaR figure and, on average, substantially higher. The VaR methodology relies on a number of assumptions, which include the following: risks are measured under average market conditions, changes in market risk factors follow normal distributions, future movements in market risk factors are in line with estimated parameters and the assessed exposures do not change during the holding period. Thus, it is possible that, for any given month, the potential losses at a 95% confidence level are different and could be substantially higher than the estimated VaR.

The VaR calculation includes foreign currency denominated monetary financial instruments, such as current financial investments, loans and trade receivables, cash, and loans and trade payables; foreign exchange derivatives carried at fair value through profit and loss that are not in a hedge relationship and are mostly used to hedge the statement of financial position foreign exchange exposure, as well as embedded derivatives; and foreign exchange derivatives designated as forecast cash flow hedges, fair value hedges and net investment hedges as well as the exposures designated, as hedged items for these hedge relationships.

The VaR risk measures for Nokia's sensitivity to foreign exchange risks are presented in the Total VaR column and the simulated impact to financial statements is presented in the profit, other comprehensive income (OCI) and cumulative translation adjustment (CTA) columns in the table below.

EURm	2023				2022			
	Total VaR	Simulated impact on financial statements			Total VaR	Simulated impact on financial statements		
		Profit	OCI	CTA		Profit	OCI	CTA
31 December	72	67	18	—	38	40	33	—
Average for the year	32	25	23	—	31	36	48	—
Range for the year	19 -72	12 -67	9 -40	0 -0	12 -67	17 -59	31 -70	0 -0

The most significant foreign exchange hedging instruments under cash flow, net investment and fair value hedge accounting at 31 December:

	Currency	Fair value (EURm)	Weighted average hedged rate	Total	Maturity breakdown of notional amounts (EURm) ⁽¹⁾			
					Within 3 months	Between 3 and 12 months	Between 1 and 3 years	Beyond 3 years
2023								
Cash flow hedge accounting	GBP	(1)	0.8640	(219)	(63)	(156)	—	—
	USD	5	1.0881	(860)	(231)	(629)	—	—
	USD	(2)	1.0832	257	—	119	131	7
Net investment hedge accounting	CNY	4	7.8152	(788)	(788)	—	—	—
Fair value hedge accounting for FX risk	USD	(45)	1.1196	(1 354)	(427)	(301)	(616)	(10)
2022								
Cash flow hedge accounting	GBP	5	0.8593	(235)	(76)	(159)	—	—
	JPY	5	138.8404	(235)	(66)	(169)	—	—
	USD	22	1.0394	(1 261)	(347)	(914)	—	—
	USD	12	1.0868	423	—	193	217	13
Net investment hedge accounting	CNY	(8)	7.4193	(866)	(866)	—	—	—
	USD	(3)	1.0563	(3 007)	(3 007)	—	—	—
Fair value hedge accounting for FX risk	USD	(145)	1.1358	(1 456)	(448)	(213)	(787)	(8)

(1) Negative notional amounts indicate that hedges sell currency, and positive notional amounts indicate that hedges buy currency.

Notes to the consolidated financial statements continued

Interest rate risk

Nokia is exposed to interest rate risk either through market value fluctuations of items on the statement of financial position (price risk) or through changes in interest income or expenses (refinancing or reinvestment risk). Interest rate risk mainly arises through interest-bearing liabilities and assets. Estimated future changes in cash flows and the structure of the statement of financial position also expose Nokia to interest rate risk.

The objective of interest rate risk management is to mitigate adverse impacts arising from interest rate fluctuations on the income statement, cash flow and financial assets and liabilities while taking into consideration Nokia's target capital structure and the resulting net interest rate exposure. Nokia has entered into long-term borrowings mainly at fixed rates and swapped most of them into floating rates, in line with a defined target interest profile. Nokia has not entered into interest rate swaps where it would be paying fixed rates. Nokia aims to mitigate the adverse impacts from interest rate fluctuations by continuously managing net interest rate exposure arising from financial assets and liabilities, by setting appropriate risk management benchmarks and risk limits.

Treasury monitors and manages interest rate exposure centrally. Nokia uses selective sensitivity analyses to assess and measure interest rate exposure arising from interest-bearing assets, interest-bearing liabilities and related derivatives. Sensitivity analysis determines an estimate of potential fair value changes in market risk-sensitive instruments by varying interest rates in currencies in which Nokia has material amounts of financial assets and liabilities while keeping all other variables constant.

Sensitivities to credit spreads are not reflected in the sensitivity analysis.

Interest rate profile of items under interest rate risk management at 31 December:

EURm	2023		2022	
	Fixed rate	Floating rate ⁽¹⁾	Fixed rate	Floating rate ⁽¹⁾
Non-current interest-bearing financial investments	715	—	697	—
Current interest-bearing financial investments	510	1 055	912	2 168
Cash and cash equivalents	55	6 179	346	5 121
Interest-bearing liabilities	(3 483)	(708)	(3 658)	(819)
Financial assets and liabilities before derivatives	(2 203)	6 526	(1 703)	6 470
Interest rate derivatives	3 057	(3 057)	3 216	(3 216)
Financial assets and liabilities after derivatives	854	3 469	1 513	3 254

(1) All cash equivalents and derivative transaction-related collaterals with initial maturity of three months or less are considered floating rate for the purposes of interest rate risk management.

Nokia's sensitivity to interest rate exposure in the investment and debt portfolios is presented in the fair value column in the table below with simulated impact to the financial statements presented in the profit and other comprehensive income (OCI) columns.

EURm		2023			2022		
		Impact on fair value	Impact on profit	Impact on OCI	Impact on fair value	Impact on profit	Impact on OCI
Interest rates - increase by	100 basis points	(6)	3	1	(2)	3	(1)
Interest rates - decrease by	100 basis points	8	(4)	(1)	4	(2)	(1)

Notes to the consolidated financial statements continued

Credit risk

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in financial loss to Nokia. Credit risk arises from credit exposures to customers, including outstanding receivables, financial guarantees and committed transactions, as well as financial institutions, including bank and cash, fixed income and money market investments, and derivative financial instruments. Credit risk is managed separately for business-related and financial credit exposures.

Financial instruments contain an element of risk resulting from changes in the market price due to counterparties becoming less creditworthy or risk of loss due to counterparties being unable to meet their obligations. Financial credit risk is measured and monitored centrally by Treasury. Financial credit risk is managed actively by limiting counterparties to a sufficient number of major banks and financial institutions, and by monitoring the creditworthiness and the size of exposures continuously. Additionally, Nokia enters into netting arrangements with all major counterparties, which give the right to offset in the event that the counterparty would not be able to fulfill its obligations. Nokia enters into collateral agreements with most counterparties, which require counterparties to post collateral against derivative receivables.

Investment decisions are based on strict creditworthiness and maturity criteria as defined in the Treasury-related policies and procedures. As a result of this investment policy approach and active management of outstanding investment exposures, Nokia has not been subject to any material credit losses in its financial investments in the years presented. Due to the high credit quality of Nokia's financial investments, the expected credit loss for these investments is deemed insignificant based on 12 months' expected credit losses at 31 December 2023.

For information on expected credit losses for customer-related balances, refer to Note 4.5. Trade receivables and other customer-related balances

Nokia has restricted bank deposits primarily related to employee benefits of EUR 119 million (EUR122 million in 2022) that are presented in other non-current financial assets. Nokia has assessed the counterparty credit risk for these financial assets and concluded that expected credit losses are not significant.

Outstanding non-current and current interest-bearing financial investments, cash equivalents and cash classified by credit rating grades ranked in line with S&P Global Ratings categories at 31 December:

EURm	Rating ⁽¹⁾	Cash equivalents and interest-bearing financial investments					Total ⁽²⁾⁽³⁾	
		Cash	Due within 3 months	Due between 3 and 12 months	Due between 1 and 3 years	Due between 3 and 5 years		Due beyond 5 years
2023	AAA	—	1 443	25	—	—	1 468	
	AA+ - AA-	1 042	149	74	—	8	1 273	
	A+ - A-	2 183	1 340	301	255	245	4 347	
	BBB+ - BBB-	456	242	134	230	227	1 289	
	Other	133	4	—	—	—	137	
Total		3 814	3 178	534	485	480	23	8 514
2022	AAA	—	1 046	—	—	—	—	1 046
	AA+ - AA-	683	643	250	—	—	—	1 576
	A+ - A-	1 553	2 314	865	190	234	203	5 359
	BBB+ - BBB-	39	477	52	291	197	70	1 126
	Other	123	6	—	—	8	—	137
Total		2 398	4 486	1 167	481	439	273	9 244

(1) Bank Parent Company ratings are used here for bank groups. Actual bank subsidiary ratings may differ from the Bank Parent Company rating.

(2) Non-current and current interest-bearing financial investments and cash equivalents include bank deposits, structured deposits, investments in money market funds and investments in fixed income instruments.

(3) Instruments that include a call feature have been presented at their final maturities. Instruments that are contractually due beyond three months include EUR 332 million (EUR551 million in 2022) of instruments that have a call period of less than three months.

The following table sets out financial assets and liabilities subject to offsetting under enforceable master netting agreements and similar arrangements at 31 December. To reconcile the items presented to the statement of financial position, items that are not subject to offsetting would need to be included, refer to Note 5.3. Derivative and firm commitment assets and liabilities

EURm	Related amounts not set off in the statement of financial position			Net amount
	Net amounts of financial assets/ (liabilities) presented in the statement of financial position	Financial instruments assets/(liabilities)	Cash collateral (received)/pledged	
2023				
Derivative assets	131	(115)	(15)	1
Derivative liabilities	(285)	115	164	(6)
Total	(154)	—	149	(5)
2022				
Derivative assets	182	(158)	(20)	4
Derivative liabilities	(496)	158	327	(11)
Total	(314)	—	307	(7)

The financial instruments subject to enforceable master netting agreements and similar arrangements are not offset in the statement of financial position as there is no intention to settle net or realize the asset and settle the liability simultaneously.

Notes to the consolidated financial statements continued

Liquidity risk

Liquidity risk is defined as financial distress or extraordinarily high financing costs arising from a shortage of liquid funds in a situation where outstanding debt needs to be refinanced or where business conditions unexpectedly deteriorate and require financing. Transactional liquidity risk is defined as the risk of executing a financial transaction below fair market value or not being able to execute the transaction at all within a specific period of time. The objective of liquidity risk management is to maintain sufficient liquidity, and to ensure that it is readily available without endangering its value in order to avoid uncertainty related to financial distress at all times.

Nokia aims to secure sufficient liquidity at all times through efficient cash management and by investing primarily in highly liquid money market investments. Depending on its overall liquidity position, Nokia may pre-finance or refinance upcoming debt maturities before contractual maturity dates. The transactional liquidity risk is minimized by entering into transactions where proper two-way quotes can be obtained from the market. Nokia aims to ensure flexibility in funding by maintaining committed and uncommitted credit lines.

Certain changes in financial liabilities do not have a direct impact on Nokia's liquidity position. A disaggregation of cash and non-cash changes in financial liabilities has been presented in the adjacent table.

Nokia's significant credit facilities and funding programs at 31 December:

Committed/uncommitted	Financing arrangement	Currency	Nominal (million)	Utilized (million)	
				2023	2022
Committed	Revolving Credit Facility ⁽¹⁾	EUR	1 500	—	—
Uncommitted	Finnish Commercial Paper Programme	EUR	750	—	—
Uncommitted	Euro-Commercial Paper Programme	EUR	1 500	—	—
Uncommitted	Euro Medium Term Note Programme ⁽²⁾	EUR	5 000	2 300	2 500
Total				2 300	2 500

(1) The facility has its maturity in June 2026, except for EUR 88 million having its maturity in June 2024.
(2) All euro-denominated bonds have been issued under the Euro Medium Term Note Programme.

Changes in lease liabilities, interest-bearing liabilities and associated derivatives arising from financing activities:

EURm	Long-term interest-bearing liabilities	Short-term interest-bearing liabilities	Derivatives held to hedge long- term borrowings ⁽¹⁾	Lease liabilities ⁽²⁾	Total
1 January 2023	4 249	228	246	1 042	5 765
Cash flows	(283)	(40)	(19)	(239)	(581)
Non-cash changes:					
Changes in foreign exchange rates	(34)	(3)	25	(12)	(24)
Changes in fair value	83	—	(79)	—	4
Reclassification between long-term and short-term	(374)	374	—	—	—
Additions ⁽³⁾	—	—	—	206	206
Other	(4)	(5)	1	—	(8)
31 December 2023	3 637	554	174	997	5 362
1 January 2022	4 537	116	53	1 009	5 715
Cash flows	(1)	27	7	(217)	(184)
Non-cash changes:					
Changes in foreign exchange rates	69	1	(57)	8	21
Changes in fair value	(282)	—	243	—	(39)
Reclassification between long-term and short-term	(84)	84	—	—	—
Additions ⁽³⁾	—	—	—	242	242
Other	10	—	—	—	10
31 December 2022	4 249	228	246	1 042	5 765

(1) Includes derivatives designated in fair value and cash flow hedge accounting relationships as well as derivatives not designated in hedge accounting relationship but hedging identifiable long-term borrowing exposure.

(2) Includes non-current and current lease liabilities.

(3) Includes new lease contracts as well as modifications and remeasurements of existing lease contracts.

Notes to the consolidated financial statements continued

The following table presents an undiscounted, contractual cash flow analysis for lease liabilities, financial liabilities and financial assets presented on the statement of financial position as well as loan commitments given and obtained. The line-by-line analysis does not directly reconcile with the statement of financial position.

EURm	2023						2022					
	Due					Total	Due					Total
	within 3 months	between 3 and 12 months	between 1 and 3 years	between 3 and 5 years	beyond 5 years		within 3 months	between 3 and 12 months	between 1 and 3 years	between 3 and 5 years	beyond 5 years	
Non-current financial assets												
Non-current interest-bearing financial investments	—	—	394	385	—	779	5	7	376	275	104	767
Other non-current financial assets ⁽¹⁾	—	—	60	8	46	114	—	—	30	2	46	78
Current financial assets												
Other current financial assets excluding derivatives ⁽¹⁾	216	31	—	—	—	247	207	77	—	—	—	284
Current interest-bearing financial investments ⁽²⁾	998	595	—	—	—	1 593	2 146	946	—	—	—	3 092
Cash and cash equivalents ⁽²⁾	6 017	52	30	138	26	6 263	4 947	31	136	200	195	5 509
Cash flows related to derivative financial assets net settled:												
Derivative contracts – receipts	(7)	(2)	(11)	(12)	(10)	(42)	—	—	—	—	—	—
Cash flows related to derivative financial assets gross settled:												
Derivative contracts – receipts	8 407	1 582	358	6	—	10 353	9 170	2 109	297	20	—	11 596
Derivative contracts – payments	(8 349)	(1 560)	(353)	(6)	—	(10 268)	(9 089)	(2 038)	(282)	(20)	—	(11 429)
Trade receivables	3 834	1 316	184	—	—	5 334	4 885	1 004	123	2	—	6 014
Non-current financial and lease liabilities												
Long-term interest-bearing liabilities	(33)	(115)	(1 766)	(1 200)	(1 528)	(4 642)	(43)	(98)	(2 182)	(1 397)	(1 628)	(5 348)
Long-term lease liabilities	—	—	(353)	(199)	(304)	(856)	—	—	(340)	(200)	(327)	(867)
Other non-current financial liabilities	—	—	(11)	(11)	(11)	(33)	—	—	(17)	—	—	(17)
Current financial and lease liabilities												
Short-term interest-bearing liabilities	(473)	(98)	—	—	—	(571)	(131)	(99)	—	—	—	(230)
Short-term lease liabilities	(44)	(179)	—	—	—	(223)	(61)	(162)	—	—	—	(223)
Other financial liabilities excluding derivatives ⁽³⁾	(458)	(24)	—	—	—	(482)	(482)	(20)	—	—	—	(502)
Cash flows related to derivative financial liabilities net settled:												
Derivative contracts - payments	(4)	(29)	(41)	(12)	—	(86)	5	(31)	(1)	7	7	(13)
Cash flows related to derivative financial liabilities gross settled:												
Derivative contracts – receipts	6 475	1 322	735	541	767	9 840	8 832	1 271	919	573	826	12 421
Derivative contracts – payments	(6 553)	(1 353)	(806)	(551)	(858)	(10 121)	(8 992)	(1 303)	(1 003)	(542)	(778)	(12 618)
Discounts without performance obligations	(151)	(212)	(40)	(1)	—	(404)	(205)	(211)	(121)	(2)	—	(539)
Trade payables	(3 154)	(204)	(64)	—	(1)	(3 423)	(4 561)	(165)	(3)	—	(1)	(4 730)
Commitments given and obtained												
Loan commitments given undrawn ⁽⁴⁾	(1)	(4)	—	—	—	(5)	(13)	(13)	—	—	—	(26)
Loan commitments obtained undrawn ⁽⁵⁾	(1)	86	1 408	—	—	1 493	(1)	(3)	80	1 410	—	1 486

(1) Other non-current financial assets and other current financial assets excluding derivatives include mainly customer financing-related loan receivables.

(2) Instruments that include a call feature have been presented at their final maturities. Instruments that are contractually due beyond three months include EUR

(3) Other financial liabilities excluding derivatives include a conditional obligation to China Huaxin presented in the earliest period as the exercise period is open.

(4) Loan commitments given undrawn have been included in the earliest period in which they could be drawn or called.

(5) Loan commitments obtained undrawn have been included based on the period in which they expire. These amounts include related commitment fees.

332 million (EUR551 million in 2022) of instruments that have a call period of less than three months.

Section 6

Other information

This section contains information on Nokia's off-balance sheet commitments and contingencies, Group structure and related party transactions, as well as post reporting date events.

6.1. Commitments, contingencies and legal proceedings

Contractual obligations

EURm	Within 1 year	1-5 years	More than 5 years
2023			
Purchase obligations	3 630	767	14
Lease commitments ⁽¹⁾	—	54	570
2022			
Purchase obligations	5 308	509	79
Lease commitments ⁽¹⁾	—	31	192

(1) Relates to lease contracts that had not yet commenced as at the reporting date.

At 31 December 2023, Nokia has potential undiscounted future lease payments of EUR 838 million (EUR807 million in 2022) relating to extension options not expected to be exercised and EUR33 million (EUR15 million in 2022) relating to termination options expected to be exercised that are not included in the lease liability.

Guarantees and financing commitments

The contingent liabilities in the table below represent the maximum principal amount of guarantees and financing commitments, and do not reflect management's expected outcomes.

EURm	2023	2022
Guarantees on behalf of Group companies		
Guarantees issued by financial institutions		
Commercial guarantees ⁽¹⁾	1 477	1 238
Non-commercial guarantees	615	538
Corporate guarantees ⁽²⁾		
Commercial guarantees ⁽¹⁾	325	504
Non-commercial guarantees	35	32
Financing commitments		
Customer finance commitments ⁽³⁾	5	26
Venture fund commitments ⁽⁴⁾	381	433

(1) Commercial guarantees are guarantees that are issued in the normal course of business to Nokia's customers for the performance of Nokia's obligations under supply agreements; these include tender bonds, performance bonds and warranty bonds.

(2) Corporate guarantees are guarantees with a primary obligation that are issued to Nokia's customers and other third parties.

(3) Customer finance commitments are available under customer loan facilities. Availability of the facility depends on the borrower's continuing compliance with the agreed financial and operational covenants, and other administrative terms of the facility. The loan facilities are primarily available to fund purchases of network infrastructure equipment and services. Refer to Note 4.5. Trade receivables and other customer-related balances.

(4) As a limited partner in NGP Capital and certain other funds making technology-related investments, Nokia is committed to capital contributions and entitled to cash distributions according to the respective partnership agreements and underlying fund activities. In January 2022, Nokia agreed on a capital commitment of USD 400 million to NGP Capital's Fund V. The fund's emphasis on companies developing emerging 5G use cases for industrial and business transformation aligns closely with Nokia's technology leadership vision and its efforts to maximize the value shift towards cloud. Per industry standard practice, the capital will be called throughout the 10-year lifecycle of the fund.

Notes to the consolidated financial statements continued

Legal matters

Accounting policies

Nokia discloses ongoing legal matters that relate to possible obligations whose existence will be confirmed by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of Nokia. These matters are assessed continually to determine whether an outflow of resources embodying economic benefits has become probable so as to recognize a provision.

Nokia is and will likely continue to be subject to various legal proceedings that arise from time to time, including proceedings related to intellectual property, antitrust, commercial disputes, product liability, environmental issues, tax, health and safety, employment and wrongful discharge, sales and marketing practices, international trade, securities, privacy matters and compliance. While management does not expect any of the legal proceedings it is currently aware of to have a material adverse effect on Nokia's financial position, litigation is inherently unpredictable and Nokia may in the future receive judgments or enter into settlements that could have a material adverse effect on its results or cash flows.

Litigation and proceedings

Mass labor litigation in Brazil

Nokia is defending against a number of labor claims in various Brazilian labor courts. Plaintiffs are former employees whose contracts were terminated after Nokia exited from certain managed services contracts. The claims mainly relate to payments made under, or in connection with, the terminated labor contracts. Nokia has closed the majority of the court cases through settlement or judgment.

Asbestos litigation in the United States

Nokia is defending approximately 300 asbestos-related matters, at various stages of litigation. The claims are based on premises liability, products liability, and contractor liability. The claims also involve plaintiffs allegedly diagnosed with various diseases, including but not limited to asbestosis, lung cancer, and mesothelioma.

Intellectual property rights litigation

Continental

In 2019, Continental Automotive Systems (Continental) brought breach of FRAND (fair, reasonable and non-discriminatory terms) and antitrust claims against Nokia and others. The antitrust claims were dismissed. In 2022, this decision became final after Continental lost on appeal and reconsideration requests. Continental also brought breach of contract and FRAND-related claims against Nokia in 2021. In 2023, Nokia's motion to dismiss was granted in part and denied in part, and the action is proceeding on the remaining claims at this time.

OPPO

In 2021, Nokia commenced patent infringement proceedings against OPPO, OnePlus and Realme in several countries in Asia and Europe. OPPO responded by filing invalidation actions and patent infringement actions against Nokia in Germany, China and Finland and actions in China against Nokia relating to standard essential patent licensing issues. In January 2024, Nokia announced that it has concluded a multi-year patent cross-license agreement with OPPO. Under the agreement OPPO will make royalty payments, along with catch-up payments to cover the periods of non-payment. The agreement resolves all pending patent litigation between the parties, in all jurisdictions.

vivo

In 2022, Nokia commenced patent infringement proceedings against vivo in Germany and several countries in Asia. Vivo responded by filing a number of patent infringement actions against Nokia equipment in Germany and China. They also filed an action in China against Nokia relating to standard essential patent licensing issues. In February 2024, Nokia announced that it has concluded a multi-year patent cross-license agreement with vivo. Under the agreement vivo will make royalty payments, along with catch-up payments to cover the periods of non-payment. The agreement resolves all pending patent litigation between the parties, in all jurisdictions.

Amazon

In 2023, Nokia commenced patent infringement proceedings against Amazon in Brazil, Germany, the European Unified Patent Court, India, the United Kingdom and the United States (International Trade Commission/District Court). Across these actions, more than 30 patents are in suit, covering video-related technologies implemented in Amazon's services and devices.

HP

In 2023, Nokia commenced patent infringement proceedings against HP in Brazil, Germany, the European Unified Patent Court and the United States (International Trade Commission/District Court). Across these actions, there are 14 patents in suit, covering video coding technologies implemented in HP's products.

Notes to the consolidated financial statements continued

6.2. Principal Group companies

Company name	Country of incorporation	Parent holding %	Group ownership interest %
Nokia Solutions and Networks Oy	Finland	100.0	100.0
Nokia of America Corporation	United States	—	100.0
Nokia Shanghai Bell Co., Ltd. ⁽¹⁾	China	—	50.0
Nokia Solutions and Networks B.V.	Netherlands	—	100.0
Nokia Technologies Oy	Finland	100.0	100.0
Nokia Participations	France	—	100.0
Alcatel Lucent	France	—	100.0
Nokia Networks France	France	—	100.0
Nokia Solutions and Networks India Private Limited	India	—	100.0
Nokia Solutions and Networks Japan G.K.	Japan	—	100.0
Nokia Solutions and Networks Branch Operations Oy	Finland	—	100.0
Alcatel Submarine Networks	France	—	100.0
Nokia Arabia Limited	Saudi Arabia	—	100.0
Nokia Solutions and Networks do Brasil Telecomunicações Ltda.	Brazil	—	100.0
Nokia Solutions and Networks Taiwan Co., Ltd.	Taiwan	—	100.0
Nokia Spain, S.A.	Spain	—	100.0
Nokia UK Limited	United Kingdom	—	100.0
Nokia Solutions and Networks System Technology (Beijing) Co., Ltd. ⁽²⁾	China	—	50.0
Nokia Canada Inc.	Canada	—	100.0
Nokia Solutions and Networks Italia S.p.A.	Italy	—	100.0
Nokia Solutions and Networks Australia Pty Ltd	Australia	—	100.0

(1) Nokia Group owns 50% plus 1 share of Nokia Shanghai Bell Co., Ltd. with China Huaxin, an entity controlled by the Chinese government, holding the remaining ownership interests. Nokia Shanghai Bell Co., Ltd. is the parent company of the Nokia Shanghai Bell Group (NSB Group). Refer to Note 6.3. Significant partly-owned subsidiaries

(2) Nokia Solutions and Network System Technology (Beijing) Co., Ltd. is a wholly-owned subsidiary of Nokia Shanghai Bell Co., Ltd. and the Nokia Group has control over this subsidiary through its holding in the NSB Group.

Notes to the consolidated financial statements continued

6.3. Significant partly-owned subsidiaries

Nokia holds an ownership interest of 50% plus one share in Nokia Shanghai Bell's parent company, Nokia Shanghai Bell Co., Ltd. (NSB), with China Huaxin Post & Telecommunication Economy Development Center (China Huaxin) holding the remaining ownership interests. Nokia applied judgment to conclude that it is able to control NSB based on an assessment of various factors including the ability to nominate key management personnel, decision-making related to the management of NSB operations and Nokia's exposure to variable returns from NSB.

In 2017, Nokia entered into a contractual arrangement providing China Huaxin with the right to fully transfer its ownership interest in NSB to Nokia and Nokia with the right to purchase China Huaxin's ownership interest in NSB in exchange for a future cash settlement. To reflect this, Nokia derecognized the non-controlling interest balance related to NSB and recognized a financial liability based on the estimated future cash settlement to acquire China Huaxin's ownership interest. In 2023, the contractual arrangement was extended until 30 June 2024. If it expires unexercised, Nokia will derecognize the financial liability and record non-controlling interest equal to its share of NSB's net assets with any difference recorded within shareholders' equity.

The measurement of the financial liability is complex as it involves estimation of the option exercise price and the distribution of excess cash balances upon exercise. In 2023, Nokia recognized a EUR2 million loss (EUR11 million gain in 2022) in financial income and expenses to reflect a change in the estimated future cash settlement. At 31 December 2023, the expected future cash settlement amounted to EUR455 million (EUR482 million in 2022).

Financial information for the Nokia Shanghai Bell Group

Financial information below is presented after elimination of intercompany transactions between entities within the Nokia Shanghai Bell Group but before elimination of intercompany transactions with the rest of the Nokia Group.

EURm	2023	2022
Summarized income statement		
Net sales ⁽¹⁾	979	1 316
Operating loss	(6)	(149)
Loss for the year	(26)	(148)
Loss for the year attributable to:		
Equity holders of the parent	(26)	(148)
Non-controlling interests ⁽²⁾	—	—
Summarized statement of financial position		
Non-current assets	400	487
Non-current liabilities	(100)	(129)
Non-current net assets	300	358
Current assets ⁽³⁾	1 642	1 939
Current liabilities	(900)	(1 185)
Current net assets	742	754
Net assets ⁽⁴⁾	1 042	1 112
Non-controlling interests ⁽²⁾	—	—
Summarized statement of cash flows		
Net cash flows from operating activities	51	38
Net cash flows from/(used in) investing activities	2	(33)
Net cash flows used in financing activities	(41)	(4)
Translation differences	(38)	(8)
Net decrease in cash and cash equivalents	(26)	(7)

(1) Includes EUR 19 million (EUR29 million in 2022) net sales to other Nokia Group entities.

(2) Based on the contractual arrangement with China Huaxin, Nokia does not recognize any non-controlling interest in NSB.

(3) Includes a total of EUR 790 million (EUR725 million in 2022) of cash and cash equivalents.

(4) The distribution of the profits of NSB requires the passing of a special resolution by more than two-thirds of its shareholders, subject to a requirement that at least 50% of the after-tax distributable profits are distributed as dividends each year.

Notes to the consolidated financial statements continued

6.4. Related party transactions

Nokia has related party transactions with its subsidiaries, associated companies, joint ventures and pension funds as well as the management and the Board of Directors. Transactions and balances between group companies are eliminated on consolidation. For more information on principles of consolidation and principal Group companies, refer to Note 1.2. General accounting policies, and Note 6.2. Principal Group companies, respectively.

Transactions with associated companies and joint ventures

EURm	2023	2022	2021
Sales	46	74	87
Purchases	(141)	(127)	(144)
Trade receivables	18	36	45
Trade payables	(31)	(26)	(29)

Investments in associated companies and joint ventures are individually immaterial.

In 2016, Nokia entered into a strategic agreement with HMD Global Oy (HMD) granting HMD an exclusive global license to create Nokia branded mobile phones and tablets for ten years. Under the agreement, Nokia receives royalty payments from HMD for sales of Nokia branded mobile phones and tablets, covering both brand and patent licensing. In August 2023, Nokia and HMD amended the licensing agreement so that HMD's exclusive license to create Nokia branded devices will expire by March 2026. Nokia has held an ownership interest in HMD since 2020 which it has accounted for as an investment in associate. In 2023, Nokia recorded an impairment loss of EUR 28 million related to its investment in HMD in the share of result of associates and joint ventures.

Nokia holds a 51% ownership interest in TD Tech Holding Limited ("TD Tech HK"), a Hong Kong based joint venture holding company which Nokia has accounted for as an investment in associate. In 2023, TD Tech HK has entered into an agreement to divest the entire business of the joint venture through the sale of TD Tech HK's operating subsidiaries to a consortium consisting of Huawei Technologies, Chengdu High-tech Investment Group and other buyers. The closing of the transaction is conditional upon receiving regulatory approvals for the transaction and is expected in 2024. Following the transaction, Nokia will exit from its shareholding in TD Tech HK. Nokia expects to record a gain on the contemplated transactions. At 31 December 2023, the carrying amount of Nokia's investment in TD Tech HK is included in assets held for sale in the statement of financial position.

Transactions with pension funds

Nokia has borrowings of EUR 37 million (EUR 37 million in 2022) from Nokia Unterstützungsgesellschaft mbH, Nokia's German pension fund, a separate legal entity. The loan bears interest at the rate of 6% per annum and its duration is pending until further notice by the loan counterparties who have the right to terminate the loan with a 90-day notice. The loan is included in short-term interest-bearing liabilities in the statement of financial position. For more information on Nokia's post-employment benefit plans, refer to Note 3.4. Pensions and other post-employment benefits.

Transactions with the Group Leadership Team and the Board of Directors

No loans were granted to the members of the Group Leadership Team and the Board of Directors in 2023, 2022 or 2021. For information on remuneration of Nokia's key management personnel, refer to Note 3.2. Remuneration of key management.

Reports of independent registered public accounting firm

Report of independent registered public accounting firm

To the shareholders and the Board of Directors of Nokia Corporation.

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of financial position of Nokia Corporation and subsidiaries (the "Company") as of December 31, 2023 and 2022, and the related consolidated income statements, consolidated statements of comprehensive income, consolidated statements of changes in shareholders' equity and consolidated statements of cash flows for each of the three years in the period ended December 31, 2023, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board and International Financial Reporting Standards as adopted by the European Union.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated 29 February 2024, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue recognition – Accounting for significant and complex contracts – Refer to Note 2.1 to the financial statements

Critical Audit Matter Description

The Company recognises revenue in accordance with International Financial Reporting Standard 15 Revenue from Contracts with Customers. Certain contracts that the Company enters into are particularly significant in value and contain highly complex terms and conditions which impact revenue recognition. Such complexities include the determination of the standalone selling price, combination of contracts assessments, accounting for contractual discounts and subsequent modifications or other factors occurring during the contract period that may impact revenue recognition.

Given the level of complexity and management judgement involved in the accounting for significant and complex contracts, performing audit procedures to evaluate the reasonableness of these accounting judgements required a high degree of auditor judgement, and there was significant audit effort in obtaining sufficient audit evidence.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the determination of the appropriateness of the accounting for significant and complex contracts included the following, among others:

- We assessed management's accounting policy in relation to the areas of complexity identified in all significant and complex contracts to determine compliance of the policy with IFRS 15;
- We tested the effectiveness of controls over revenue recognition of significant and complex contracts, specifically focusing on controls relating to the areas of accounting complexity;
- We utilised data analytics to identify contracts that were significant in value and contained complexities;
- We analyzed the terms and conditions of significant and complex contracts entered into or modified during the current-period, inspected documentation of ongoing commercial discussions, and obtained supporting audit evidence;
- We made inquiries of senior management in the finance, operations and sales teams relevant to the significant and complex contracts, assessed financial reporting considerations related to those discussions and obtained supporting audit evidence;
- We assessed whether management's conclusions, including determination of standalone selling price, were in compliance with IFRS 15.

[Reports of independent registered public accounting firm](#) continued

Valuation of Goodwill — Mobile Networks — Refer to Note 4.1 to the financial statements

Critical Audit Matter Description

The Company's evaluation of goodwill for impairment involves the comparison of the recoverable amount of each applicable cash generating unit ("CGU"), or group of CGUs, to its carrying value on at least an annual basis, in line with International Accounting Standard 36 Impairment of Assets. The goodwill balance allocated to Mobile Networks ("MN") is €2,228 million as of 31 December 2023 and is included in the total goodwill balance of €5,504 million. The Company based the recoverable amount on the value in use, which uses a discounted cash flow model.

Management's discounted future cash flow model consists of an explicit three-year long-range forecast and seven additional years of cash flow projections to a terminal year. We identified the valuation of MN's goodwill as a critical audit matter because of the significant estimates and assumptions management made in the value in use calculation related to future revenues, future expenses and cost savings. Auditing the significant judgements and assumptions management made to estimate the recoverable amount of MN required a high degree of auditor judgement and increased audit effort, including the need to involve our valuation specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the determination of the appropriateness of management assumptions in relation to future revenue forecasts and future expenses in the MN cashflows utilized in impairment testing included the following, among others:

- We tested the operating effectiveness of the Company's controls over goodwill impairment evaluation, specifically focusing on controls related to the determination of the recoverable amount, as well as controls over forecasting;
- We held discussions with key members of management to understand how the MN forecast, including key assumptions around future revenues, future expenses, and the impact of cost savings were derived;
- We utilised our valuation specialists to review valuation assumptions, and challenge certain estimates and judgments used in deriving the value in use of MN;

- We challenged net sales, operating expenses and operating margin assumptions by comparing to (1) historical and forecasted peer company data, (2) historical actual results, and (3) prior period internal forecasts;
- We read analyst reports to identify supporting or contradictory information in relation to management's revenue and operating profit assumptions; and
- We evaluated the adequacy of the Company's disclosures against the requirements of IAS 36.

Deloitte Oy

Helsinki, Finland
29 February 2024

We have served as the Company's auditor since 2020.

Reports of independent registered public accounting firm continued**Report of independent registered public
accounting firm**

To the shareholders and the Board of Directors of Nokia Corporation.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Nokia Corporation and subsidiaries (the "Company") as of 31 December 2023, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of 31 December 2023, based on criteria established in Internal Control — Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended 31 December 2023, of the Company and our report dated 29 February 2024 expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's annual report on internal control over financial reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists,

testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

**Definition and Limitations of Internal Control over
Financial Reporting**

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

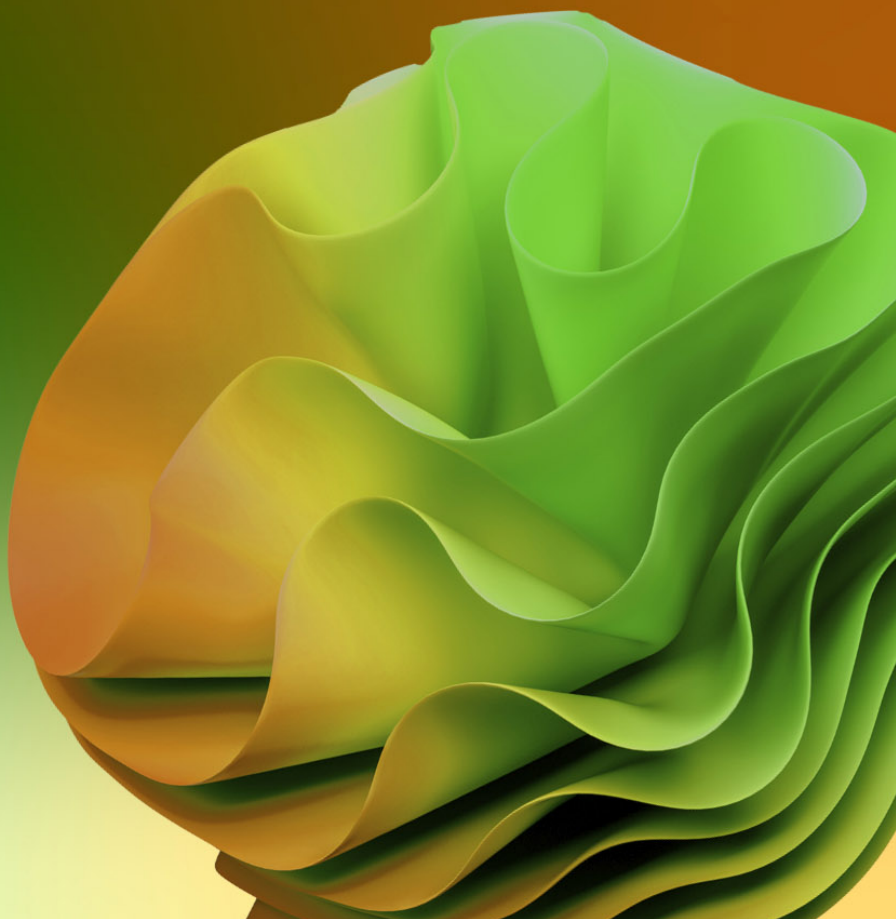
Deloitte Oy

Helsinki, Finland

29 February 2024

Other information

Exhibits	208
Glossary	209
Investor information	212
Signatures	213



Exhibits

Exhibits

- 1 [Articles of Association of Nokia Corporation \(incorporated by reference to Exhibit 1 of our Annual Report on Form 20-F filed with the Securities and Exchange Commission on 23 March 2017 \(File No. 1-13202\)\)](#)
- 8 [Refer to Note 6.2, Principal Group companies, in our consolidated financial statements for more information on our significant subsidiaries.](#)
- 11 [Code of Ethics.](#)
- 12.1 [Certification of Pekka Lundmark, President and Chief Executive Officer of Nokia Corporation, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- 12.2 [Certification of Marco Wirén, Group Chief Financial Officer of Nokia Corporation, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- 13 [Certification, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.](#)
- 15.1 [Consent of Deloitte Oy.](#)
- 97.1 [Executive Officer Clawback Policy .](#)
- 101 Interactive Data Files (Inline XBRL – Related Documents).
- 104 Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101).

Glossary

Glossary

2G (Second Generation Mobile Communications): Also known as GSM (Global System for Mobile Communications): A digital system for mobile communications that is based on a widely-accepted standard and typically operates in the 900 MHz, 1800 MHz and 1900 MHz frequency bands.

3G (Third Generation Mobile Communications): The third generation of mobile communications standards designed for carrying both voice and data generally using WCDMA or close variants. See also WCDMA.

3GPP (The Third Generation Partnership Project): A consortium comprising several standards organizations which develop protocols for mobile telecommunications. The initial goal was to develop a global technical specification for a 3G mobile phone system. Since then, the operations have been extended and today the main focus is on 5G networks.

4G (Fourth Generation Mobile Communications): The fourth generation of mobile communications standards based on LTE, offering IP data connections only and providing true broadband internet access for mobile devices. See also LTE.

5G (Fifth Generation Mobile Communications): The next major phase of mobile telecommunications standards. 5G is a complete redesign of network architecture with the flexibility and agility to support upcoming service opportunities. It delivers higher speeds, higher capacity, extremely low latency and greater reliability.

6G (Sixth Generation Mobile Communications): The cellular industry introduces a new generation about every ten years. The next generation of technology is expected to be introduced by 2030 and is generally referred to as 6G.

Access network: A telecommunications network between a local exchange and the subscriber station.

Airframe: Our 5G-ready, end-to-end data center solution that combines the benefits of cloud computing technologies with the requirements of the core and radio telecommunications world. It is available in Rackmount and Open Compute Project (OCP) form factors. This enables the solution to be very scalable: from small distributed latency-optimized data centers to massive centralized hyperscale data center deployment.

AirScale Radio Access: A 5G-ready complete radio access generation that helps operators address the increasing demands of today and tomorrow. The solution comprises: Nokia AirScale Base Station with multiband radio frequency elements and system modules; Nokia AirScale Active Antennas; Cloud RAN with Nokia AirScale Cloud Base Station Server and the cloud-based AirScale RNC (Radio Network Controller) for 3G; Nokia AirScale Wi-Fi; common software; and services which use intelligent analytics and extreme automation to maximize the performance of hybrid networks.

Alcatel-Lucent: Alcatel-Lucent Group, that has been part of the Nokia Group since 2016.

Anyhaul: Mobile transport solution for 5G networks covering microwave, IP, optical and broadband.

Artificial Intelligence (AI): Autonomous and adaptive intelligence of machines, where machines have the ability to perform tasks in complex environments without constant guidance by a user and have the ability to improve performance by learning from experience.

Bandwidth: The width of a communication channel, which affects transmission speeds over that channel.

Base station: A network element in a mobile network responsible for radio transmission and reception to or from the mobile station.

Broadband: The delivery of higher bandwidth by using transmission channels capable of supporting data rates greater than the primary rate of 9.6 Kbps.

Churn: A measure of the number of customers or subscribers who leave their service provider, e.g., a mobile operator, during a given time period.

Cloud: Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort.

Cloud and Network Services: Our Cloud and Network Services business group enables CSPs and enterprises to deploy and monetize 5G, cloud-native software and as-a-Service delivery models.

CloudBand: Our cloud management and orchestration solutions enabling a unified cloud engine and platform for Network Functions Virtualization (NFV). See also NFV.

Cloud RAN: Cloud RAN refers to all or some of the baseband functions being run on a commercial off-the-shelf (COTS) computing platform rather than purpose-built hardware.

Common Software Foundation (CSF): As a coherent software suite, Nokia's cloud-native Common Software Foundation is designed to deliver applications that are hardware- and vendor-agnostic, and easy to deploy, integrate, use and upgrade.

Converged core: Wireless and fixed access convergence within the core. As we move towards a 5G standalone core, service providers will be able to use a common set of control plane functions within the core to manage both wireless and fixed user plane functions. The ability of a unified control plane will simplify operations and provide independent location, scaling and lifecycle management capabilities.

Convergence: The coming together of two or more disparate disciplines or technologies. Convergence types are, for example, IP convergence, fixed-mobile convergence and device convergence.

Core network: A combination of exchanges and the basic transmission equipment that together form the basis for network services.

CSPs: Communications service providers. One of Nokia's customer segments.

Customer Experience Management: Software suite used to manage and improve the customer experience, based on customer, device and network insights.

Digital: A signaling technique in which a signal is encoded into digits for transmission.

Discontinued operations: The continuing financial effects of the HERE business and the Devices & Services business. HERE was divested to an automotive consortium and substantially all of the Devices & Services business was sold to Microsoft.

Glossary continued

Ecosystem: An industry term to describe the increasingly large communities of mutually beneficial partnerships that participants such as hardware manufacturers, software providers, developers, publishers, entertainment providers, advertisers and ecommerce specialists form in order to bring their offerings to market. At the heart of the major ecosystems in the mobile devices and related services industry is the operating system and the development platform upon which services are built.

Enterprise verticals: One of Nokia's customer segments. An enterprise vertical represents a grouping of companies by an industry (like energy or transportation) that offers products and services that meet specific needs of that industry. Within the enterprise verticals segments, we primarily focus on transportation, energy, manufacturing, logistics and the public sector.

ETSI (European Telecommunications Standards Institute): Standards produced by the ETSI contain technical specifications laying down the characteristics required for a telecommunications product.

Fixed Wireless Access (FWA): Uses wireless networks to connect fixed locations such as homes and businesses with broadband services.

FP5: Nokia's fifth generation of high-performance IP routing silicon, and the latest range of our AirScale 5G products.

Future X: A network architecture – a massively distributed, cognitive, continuously adaptive, learning and optimizing network connecting humans, senses, things, systems, infrastructure and processes.

G.fast: A fixed broadband technology able to deliver up to 1Gbps over very short distances (for example, for in-building use, also called "Fiber-to-the-Building"). Launched in 2014, G.fast uses more frequencies and G.fast Vectoring techniques to achieve higher speeds.

GPON (Gigabit Passive Optical Network): A fiber access technology that delivers 25Gbps over a single optical fiber to multiple end points including residential and enterprise sites.

GSM (Global System for Mobile Communications): A digital system for mobile communications that is based on a widely accepted standard and typically operates in the 900 MHz, 1800 MHz and 1900 MHz frequency bands. See also 2G.

GSM-R (GSM-Railway): An international wireless communications standard for railway communication and applications. A sub-system of European Rail Traffic Management System (ERTMS), it is used for communication between train and railway regulation control centers.

Hexa-X: European Commission's flagship 6G initiative for research into the next generation of wireless networks. The initiative began in January 2021 with Nokia as project lead, working closely with a strong consortium of European partners.

Hyperscalers: One of Nokia's customer segments. Hyperscaler refers to companies like Alphabet (Google), Amazon (Amazon Web Services), Microsoft and Meta Platforms (Facebook) that provide cloud solutions at a global scale leveraging massive connected data centers.

Internet of Things (IoT): All things such as cars, the clothes we wear, household appliances and machines in factories connected to the internet and able to automatically learn and organize themselves.

IP (Internet Protocol): A network layer protocol that offers a connectionless internet work service and forms part of the (Transmission Control Protocol) TCP/IP protocol.

IP (Intellectual Property): Intellectual property results from original creative thought, covering items such as patents, copyright material and trademarks, as well as business models and plans.

IPR (Intellectual Property Rights): Legal rights protecting the economic exploitation of intellectual property, a generic term used to describe products of human intellect, for example patents, that have an economic value.

IP/MPLS (IP Multiprotocol Label Switching): IP/MPLS is a routing technique in telecommunications networks that directs data from one node to the next based on short path labels rather than long network addresses, thus avoiding complex lookups in a routing table and speeding traffic flows.

IPR licensing: Generally, an agreement or an arrangement where a company allows another company to use its intellectual property (such as patents, trademarks or copyrights) under certain terms.

LTE (Long-Term Evolution): 3GPP radio technology evolution architecture and a standard for wireless communication of high-speed data. Also referred to as 4G.

Mission-critical networks/communications: One of the key elements of 5G. Mission-critical communications meets the needs of emergency responders such as emergency operations centers, fire departments, emergency vehicles, police, and search and rescue services, replacing traditional radio with new communications capabilities available to smartphone users.

Mobile broadband: Refers to high-speed wireless internet connections and services designed to be used from multiple locations.

Mobile Networks: Our Mobile Networks business group offers products and services for radio access networks covering technologies from 2G to 5G, and microwave radio links for transport networks.

MPLS: Multiprotocol Label Switching, a routing technique for networks.

MSO: Multiple System Operators (MSO) are operators of multiple cable television systems. The majority of system operators run cable systems in more than one community and hence most of them are multiple system operators.

Network Infrastructure: Our Network Infrastructure business group provides fiber, copper, fixed wireless access technologies, IP routing, data center, subsea and terrestrial optical networks – along with related services – to customers including communications service providers, webscales (including hyperscalers), digital industries and governments.

NFV (Network Functions Virtualization): Principle of separating network functions from the hardware they run on by using virtual hardware abstraction.

Nokia Bell Labs: Our research arm engaged in discovering and developing the technological shifts needed for the next phase of human existence as well as exploring and solving complex problems to radically redefine networks.

Nokia Technologies: Our Nokia Technologies business group is responsible for managing Nokia's patent portfolio and monetizing Nokia's intellectual property, including patents, technologies and the Nokia brand.

Non-Standalone (NSA): Network architecture that is built over an existing 4G network.

[Glossary continued](#)

Operating System (OS): Software that controls the basic operation of a computer or a mobile device, such as managing the processor and memory. The term is also often used to refer more generally to the software within a device, for example, the user interface.

O-RAN: The term O-RAN refers to interfaces and architecture elements as specified by the O-RAN alliance. O-RAN Alliance is a specification group defining next-generation RAN infrastructures, empowered by principles of intelligence and openness.

Packet: Part of a message transmitted over a packet-switched network.

Platform: Software platform is a term used to refer to an operating system or programming environment, or a combination of the two.

PON (Passive Optical Network): A fiber access architecture in which unpowered fiber optic splitters are used to enable a single optical fiber to serve multiple endpoints without having to provide individual fibers between the hub and customer.

Private wireless network: Private wireless is a standalone network focused on industrial operational assets and users. A private wireless network provides broadband connectivity, similar to a public wireless network, but is owned and controlled by the organization that built or purchased it.

Programmable world: A world where connectivity will expand massively, linking people as well as billions of physical objects – from cars, home appliances and smartphones, to wearables, industrial equipment and health monitors. What distinguishes the Programmable World from the Internet of Things (IoT) is the intelligence that is added to data to allow people to interpret and use it, rather than just capture it.

PSE-3: The PSE-3 chipset is the first coherent digital signal processor to implement Probabilistic Constellation Shaping (PCS), a modulation technique pioneered by Nokia Bell Labs.

RAN (Radio Access Network): A mobile telecommunications system consisting of radio base stations and transmission equipment.

SDAN: Software Defined Access Network.

SDN (Software-Defined Network): Decoupling of network control and data forwarding to simplify and automate connections in data centers, clouds and across the wide area.

SD-WAN: Software-Defined Networking in a Wide Area Network (WAN) that simplifies and automates enterprise networks, seamlessly connecting users and applications, from branch office to cloud.

SEP (Standard-Essential Patent): Generally, patents needed to produce products which work on a standard which companies declare as essential and agree to license on Fair, Reasonable and Non-Discriminatory (FRAND) terms. Can also be referred to as essential patent.

Single RAN: Single RAN (S-RAN) allows different radio technologies to be provided at the same time from a single base station, using a multi-purpose platform.

Small cells: Low-powered radio access nodes (micro cells or picocells) that are a vital element in handling very dense data traffic demands. 3G and LTE small cells use spectrum licensed by the operator; Wi-Fi uses unlicensed spectrum which is therefore not under the operator's exclusive control.

Standalone (SA): Network architecture that allows independent operation of a 5G service without interaction with an existing 4G core and 4G radio network.

Technology licensing: Generally, refers to an agreement or arrangement where under certain terms a company provides another company with its technology and possibly know-how, whether protected by intellectual property or not, for use in products or services offered by the other company.

Telco cloud: Applying cloud computing, SDN and NFV principles in telecommunications environment, for example separating application software from underlying hardware with automated, programmable interfaces while still retaining telecommunications requirements such as high availability and low latency.

Transmission: The action of conveying signals from one point to one or more other points.

TXLE (Technical Extra-Large Enterprise): Technically sophisticated companies, such as banks, that invest heavily in their own network infrastructures to gain a key competitive advantage.

VDSL2 (Very High Bit Rate Digital Subscriber Line 2): A fixed broadband technology, the successor of ADSL. Launched in 2007, it typically delivers a 30Mbps broadband service from a street cabinet (also called a Fiber to the Node deployment) over existing telephone lines.

VDSL2 vectoring: A fixed broadband technology launched in 2011, able to deliver up to 100Mbps over a VDSL2 line by applying noise cancellation techniques to remove cross-talk between neighboring VDSL2 lines.

Virtual Reality (VR): The simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

VoLTE (Voice over LTE): Required to offer voice services on an all-IP LTE network and generally provided using IP Multimedia Subsystem, which is an architectural framework designed to deliver IP-based multimedia services over telecommunications networks; standardized by 3GPP.

WAN (Wide Area Network): A geographically distributed private telecommunications network that interconnects multiple local area networks.

WCDMA (Wideband Code Division Multiple Access): A third-generation mobile wireless technology that offers high data speeds to mobile and portable wireless devices. Also referred to as 3G.

Webscale companies: Companies which are investing in cloud technology and network infrastructure on an increasing scale to fulfill their needs for massive, mission-critical networks.

WING: Worldwide IoT Network Grid is a managed service that offers CSPs the ability to support their enterprise customers with global IoT connectivity across borders and technologies.

WLAN (Wireless Local Area Network): A local area network using wireless connections, such as radio, microwave or infrared links, in place of physical cables.

Investor information

Investor information

Information on the internet
www.nokia.com

Available on the internet: financial reports, members of the Group Leadership Team, other investor-related materials and events, and press releases as well as environmental and social information, including our People & Planet Report, Code of Conduct, Corporate Governance Statement and Remuneration Statement.

SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC (<http://www.sec.gov>).

Investor Relations contacts

investor.relations@nokia.com

Annual General Meeting

Date: 3 April 2024

Place: Helsinki, Finland

Dividend

The Board proposes to the Annual General Meeting 2024 to be authorized to decide, in its discretion, on the distribution of an aggregate maximum of EUR 0.13 per share as dividend from the retained earnings and/or as assets from the reserve for invested unrestricted equity.

Financial reporting

Our interim reports in 2024 are planned to be published on 18 April 2024, 18 July 2024 and 17 October 2024. The full-year 2024 results are planned to be published in January 2025.

Information published in 2023

All our global press releases and statements published in 2023 are available on the internet at www.nokia.com/en_int/news/releases.

Stock exchanges

The Nokia Corporation share is quoted on the following stock exchanges:

	Symbol	Trading currency
Nasdaq Helsinki (since 1915)	NOKIA	EUR
New York Stock Exchange (since 1994)	NOK	USD
Euronext Paris (since 2015)	NOKIA	EUR

Documents on display

The documents referred to in this Annual Report on Form 20-F can be read at the Securities and Exchange Commission's internet site at <http://www.sec.gov>.

Nokia Annual Report on Form 20-F 2023

Contact information

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FINLAND

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Signatures

Signatures

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this Annual Report on Form 20-F on its behalf.

Nokia Corporation

By: **/S/ STEPHAN PROSI**

Name: Stephan Prosi

Title: Vice President, Corporate Controlling and Accounting

By: **/S/ JOHANNA MANDELIN**

Name: Johanna Mandelin

Title: Global Head of Corporate Legal

29 February 2024

CERTIFICATION

I, PEKKA LUNDMARK, certify that:

1. I have reviewed this Annual Report on Form 20-F of Nokia Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: 29 February 2024

/s/ PEKKA LUNDMARK
PEKKA LUNDMARK
President and Chief Executive Officer

CERTIFICATION

I, MARCO WIRÉN, certify that:

1. I have reviewed this Annual Report on Form 20-F of Nokia Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: 29 February 2024

/s/ MARCO WIRÉN

MARCO WIRÉN
Chief Financial Officer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 20-F of Nokia Corporation (the "Company") for the period ended December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned hereby certify that, to the best of our knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: 29 February 2024

/s/ PEKKA LUNDMARK

Name: PEKKA LUNDMARK

Title: President and Chief Executive Officer

/s/ MARCO WIRÉN

Name: MARCO WIRÉN

Title: Chief Financial Officer

* The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-253253, 333-236903, 333-230467, and 333-223848 on Form S-8 of our reports dated 29 February 2024 relating to the financial statements of Nokia Corporation and the effectiveness of Nokia Corporation's internal control over financial reporting appearing in this Annual Report on Form 20-F for the year ended 31 December 2023.

/s/ Deloitte Oy

Deloitte Oy
Helsinki, Finland
29 February 2024

**NOKIA CORPORATION
EXECUTIVE OFFICER CLAWBACK POLICY**

The Personnel Committee (the “ Committee ”) of the Board of Directors (the “ Board ”) of Nokia Corporation (the “ Company ”) believes that it is appropriate for the Company to adopt this Clawback Policy (the “ Policy ”) to be applied to the Executive Officers of the Company and adopts this Policy to be effective and apply as of the Effective Date on 2 October 2023.

1. DEFINITIONS

For purposes of this Policy, the following definitions shall apply:

- a) "Applicable Listing Standards” mean the listing standards of the Applicable Stock Exchange implementing compensation recovery rules mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act.
- b) "Applicable Stock Exchange” means the New York Stock Exchange, the Nasdaq Stock Market or any other stock exchange in the United States where the Company is listed, as applicable.
- c) "Covered Compensation” means any Incentive-Based Compensation granted, vested or paid to a person who served as an Executive Officer at any time during the performance period for the Incentive-Based Compensation and that was Received (i) on or after the effective date of the Applicable Listing Standards, (ii) after the person became an Executive Officer and (iii) at a time that the Company had a class of securities listed on a national securities exchange or a national securities association.
- d) "Effective Date” means 2 October, 2023.
- e) "Erroneously Awarded Compensation” means the amount of Covered Compensation granted, vested or paid to a person during the fiscal period when the applicable Financial Reporting Measure relating to such Covered Compensation was attained that exceeds the amount of Covered Compensation that otherwise would have been granted, vested or paid to the person had such amount been determined based on the applicable Restatement, computed without regard to any taxes paid (i.e., on a pre-tax basis). For Covered Compensation based on stock price or total

¹ The New York Stock Exchange and the Nasdaq Stock Market released their respective versions of the listing standards on the clawback rule mandated by the Dodd-Frank Act, to become effective on 2 October, 2023.

shareholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in a Restatement, the Committee will determine the amount of such Covered Compensation that constitutes Erroneously Awarded Compensation, if any, based on a reasonable estimate of the effect of the Restatement on the stock price or total shareholder return upon which the Covered Compensation was granted, vested or paid and the Committee shall maintain documentation of such determination and provide such documentation to the Applicable Stock Exchange.

- f) “Exchange Act” means the United States Securities Exchange Act of 1934.
- g) “Executive Officer” means the Company’s president, principal financial officer, principal accounting officer (or if there is no such accounting officer, the controller), any vice-president of the Company in charge of a principal business unit, division, or function (such as sales, administration, or finance), any other officer who performs a policy-making function, or any other person who performs similar policy-making functions for the Company. Executive officers of the Company’s parent(s) or subsidiaries are deemed executive officers of the Company if they perform such policy-making functions for the Company. “Policy-making function” does not include policy-making functions that are not significant. Both current and former Executive Officers are subject to the Policy in accordance with its terms. In Nokia Group, all members of the Group Leadership Team in addition to Vice President, Corporate Controlling and Accounting, are deemed Executive Officers under the above definition and subject to this Policy.
- h) “Financial Reporting Measure” means (i) any measure that is determined and presented in accordance with the accounting principles used in preparing the Company’s financial statements, and any measures derived wholly or in part from such measures and may consist of IFRS/GAAP or non-IFRS/non-GAAP financial measures (as defined under Regulation G of the Exchange Act and Item 10 of Regulation S-K under the Exchange Act), (ii) stock price or (iii) total shareholder return. Financial Reporting Measures need not be presented within the Company’s financial statements or included in a filing with the SEC.
- i) “Home Country” means the Company’s jurisdiction of incorporation.
- j) “Incentive-Based Compensation” means any compensation that is granted, earned or vested based wholly or in part upon the attainment of a Financial Reporting Measure.
- k) “Lookback Period” means the three completed fiscal years (plus any transition period of less than nine months that is within or immediately following the three completed fiscal years and that results from a change in the Company’s fiscal year) immediately preceding the date on which the Company is required to prepare a Restatement for a given reporting period, with such date being the earlier of: (i) the date the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare a Restatement, or (ii) the date a court, regulator or other legally authorized body directs the Company to prepare a Restatement. Recovery of any Erroneously Awarded Compensation under the Policy is not dependent on if or when the Restatement is actually filed.
- l) “Nokia Group” means the Company and each of its Subsidiaries, as applicable.

- m) “Received”: Incentive-Based Compensation is deemed “Received” in the Company’s fiscal period during which the Financial Reporting Measure specified in or otherwise relating to the Incentive-Based Compensation award is attained, even if the grant, vesting or payment of the Incentive-Based Compensation occurs after the end of that period.
- n) “Restatement” means a required accounting restatement of any Company financial statement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including (i) to correct an error in previously issued financial statements that is material to the previously issued financial statements (commonly referred to as a “Big R” restatement) or (ii) to correct an error in previously issued financial statements that is not material to the previously issued financial statements but that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period (commonly referred to as a “little r” restatement). Changes to the Company’s financial statements that do not represent error corrections under the then-current relevant accounting standards will not constitute Restatements. Recovery of any Erroneously Awarded Compensation under the Policy is not dependent on fraud or misconduct by any person in connection with the Restatement.
- o) “SEC” means the United States Securities and Exchange Commission.
- p) “Subsidiary” means any domestic or foreign corporation, partnership, association, joint stock company, joint venture, trust or unincorporated organization “affiliated” with the Company, that is, directly or indirectly, through one or more intermediaries, “controlling”, “controlled by” or “under common control with”, the Company. “Control” for this purpose means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of such person, whether through the ownership of voting securities, contract or otherwise.

2. RECOUPMENT OF ERRONEOUSLY AWARDED COMPENSATION

In the event of a Restatement, any Erroneously Awarded Compensation Received during the Lookback Period prior to the Restatement (a) that is then-outstanding but has not yet been paid shall be automatically and immediately forfeited and (b) that has been paid to any person shall be subject to reasonably prompt repayment to the Nokia Group in accordance with Section 3 of this Policy. The Committee must pursue (and shall not have the discretion to waive) the forfeiture and/or repayment of such Erroneously Awarded Compensation in accordance with Section 3 of this Policy, except as provided below.

Notwithstanding the foregoing, the Committee (or, if the Committee is not a committee of the Board responsible for the Company’s executive compensation decisions and composed entirely of independent directors, a majority of the independent directors serving on the Board) may determine not to pursue the forfeiture and/or recovery of Erroneously Awarded Compensation from any person if the Committee determines that such forfeiture and/or recovery would be impracticable due to any of the following circumstances: (i) the direct expense paid to a third party (for example, reasonable legal expenses and consulting fees) to assist in enforcing the Policy would exceed the amount to be recovered, including the costs that could be incurred if

pursuing such recovery would violate local laws other than the Company's Home Country laws (following reasonable attempts by the Nokia Group to recover such Erroneously Awarded Compensation, the documentation of such attempts, and the provision of such documentation to the Applicable Stock Exchange), (ii) pursuing such recovery would violate the Company's Home Country laws adopted prior to November 28, 2022 (provided that the Company obtains an opinion of Home Country counsel acceptable to the Applicable Stock Exchange that recovery would result in such a violation and provides such opinion to the Applicable Stock Exchange), (iii) recovery would likely cause any otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the Nokia Group, to fail to meet the requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and regulations thereunder, or (iv) recovery would likely cause any otherwise tax-favored retirement scheme, under which benefits are broadly available to employees of Company Group, to fail to meet the requirements of applicable law respecting such tax-favored status.

In no event shall the Nokia Group be required to award any person an additional payment if any Restatement would result in a higher incentive compensation payment.

3. MEANS OF REPAYMENT

In the event that the Committee determines that any person shall repay any Erroneously Awarded Compensation, the Committee shall provide written notice to such person by email or by certified mail to the physical address on file with the Nokia Group for such person, and the person shall satisfy such repayment in a manner and on such terms as required by the Committee, and the Nokia Group shall be entitled to set off the repayment amount against any amount owed to the person by the Nokia Group, to require the forfeiture of any award granted by the Nokia Group to the person, or to take any and all necessary actions to reasonably promptly recoup the repayment amount from the person, in each case, to the fullest extent permitted under applicable law, including without limitation, Section 409A of the Internal Revenue Code and the regulations and guidance thereunder. If the Committee does not specify a repayment timing in the written notice described above, the applicable person shall be required to repay the Erroneously Awarded Compensation to the Nokia Group by wire, cash or cashier's check no later than thirty (30) days after receipt of such notice.

4. NO INDEMNIFICATION

No person shall be indemnified, insured or reimbursed by the Nokia Group in respect of any loss of compensation by such person in accordance with this Policy, nor shall any person receive any advancement of expenses for disputes related to any loss of compensation by such person in accordance with this Policy, and no person shall be paid or reimbursed by the Nokia Group for any premiums paid by such person for any third-party insurance policy covering potential recovery obligations under this Policy. For this purpose, "indemnification" includes any modification to current compensation arrangements or other means that would amount to *de facto* indemnification (for example, providing the person a new cash award that would then be cancelled to effect the recovery of any Erroneously Awarded Compensation).

5. MISCELLANEOUS

This Policy generally will be administered and interpreted by the Committee, provided that the Board may, from time to time, exercise discretion to administer and interpret this Policy, in which case, all references herein to “Committee” shall be deemed to refer to the Board. Any determination by the Committee with respect to this Policy shall be final, conclusive and binding on all interested parties. Any discretionary determinations of the Committee under this Policy, if any, need not be uniform with respect to all persons, and may be made selectively amongst persons, whether or not such persons are similarly situated.

This Policy is intended to satisfy the requirements of Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, as it may be amended from time to time, and any related rules or regulations promulgated by the SEC or the Applicable Stock Exchange, including any additional or new requirements that become effective after the Effective Date, which upon effectiveness shall be deemed to automatically amend this Policy to the extent necessary to comply with such additional or new requirements.

The provisions in this Policy are intended to be applied to the fullest extent of the law. To the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to applicable law. The invalidity or unenforceability of any provision of this Policy shall not affect the validity or enforceability of any other provision of this Policy. Recoupment of Erroneously Awarded Compensation under this Policy is not dependent upon the Nokia Group satisfying any conditions in this Policy, including any requirements to provide applicable documentation to the Applicable Stock Exchange.

The rights of the Nokia Group under this Policy to seek forfeiture or reimbursement are in addition to, and not in lieu of, any rights of recoupment, or remedies or rights other than recoupment, that may be available to the Nokia Group pursuant to the terms of any law, government regulation or stock exchange listing standard or other requirement, or any other policy, code of conduct, employee handbook, employment agreement, equity award agreement, or other plan or agreement of the Nokia Group.

6. ADMINISTRATION, AMENDMENTS AND TERMINATION

This Policy was approved by the Board of Directors of the Company on 19 July 2023, on the recommendation of the Personnel Committee. The Personnel Committee of the Board of Directors may periodically review the Nokia Executive Officers’ Clawback Policy to determine their appropriateness against stated objectives and that the Policy continues to function in the best interests of the Company as well as to ensure regulatory compliance. To the extent permitted by, and in a manner consistent with applicable law, including SEC and the Applicable Stock Exchange rules, the Personnel Committee may propose to terminate, suspend or amend this Policy. When it deems appropriate, the Committee will make such recommendations to the Board regarding modifications of the Policy. In addition, the Board may modify this Policy at any time in its sole discretion.



7. SUCCESSORS

This Policy shall be binding and enforceable against all persons and their respective beneficiaries, heirs, executors, administrators or other legal representatives with respect to any Covered Compensation granted, vested or paid to or administered by such persons or entities.

