

People & Planet Report 2016

NOKIA



About this report

We would like to thank you for reading the Nokia People & Planet Report 2016. The report presents and discusses the key ethical, environmental, and socio-economic issues most material to our business and stakeholders during the 2016 fiscal year.

The scope of this report

The scope of this report is Nokia Group, including Nokia's Networks business groups, Nokia Technologies, and Group Common and Other Functions, in 2016.

For an explanation of how we chose what to include in this year's report, please refer to the section Materiality: Identifying our key priorities.

At the end of 2015, our shareholders voted overwhelmingly to approve the Alcatel-Lucent acquisition, and in early January 2016 we announced that we had gained control of Alcatel-Lucent through the successful public exchange offer for all outstanding Alcatel-Lucent securities by holding nearly 80% of outstanding Alcatel-Lucent securities. On November 2, 2016, we achieved 100% ownership of Alcatel-Lucent. Former Alcatel-Lucent operations are fully included in our 2016 Nokia Group reporting. We use the term "Comparable combined company" when we refer to information including combined Nokia Group and former Alcatel-Lucent data prior to acquisition of Alcatel-Lucent in January 2016. Nokia Group data excludes Discontinued operations, which refer to the sale of the Devices and Services Business in 2014 and the sale of HERE Business in 2015.

As our environmental impact and our ability to manage it originate predominately from our networks business, the 'Protecting the environment' and 'Responsible sourcing' chapters focus on explaining the sustainability matters related to

Nokia's Networks business. However, the numeric data regarding our facilities energy use, waste, and water include the whole Nokia Group. The chapters 'Improving people's lives with technology' and 'Making change happen together' include references to activities that took place in early 2017 but this is indicated in the text separately.

Reporting frameworks and assurance

In our reporting, we are committed to expanding our transparency and our coverage. To help ensure compatibility with other organizations, our report is prepared in accordance with the Global Reporting Initiative GRI G4 guidelines, "in accordance – Core" criteria. Our report is also compliant with the UN Global Compact advanced. The Global Reporting Initiative index is available as a separate PDF document on our website and some more detailed sustainability data is included as a separate chapter at the end of this report.

Our selected key sustainability indicators have been assured by an independent auditor of Nokia, PricewaterhouseCoopers Oy.

A summary of this report

This report was published in May 2017 and it is only available in digital format. We have also published an online summary of this report which is available at nokia.com/people&planet.

Further information

We have published annual corporate responsibility reports since 1999 and the reports are available in digital format on our website from as far back as 2003 at nokia.com/sustainability

We also discuss sustainability and corporate responsibility topics in our official annual reports, including the annual report on Form 20-F that is filed with the U.S. Securities and Exchange Commission in the United States*. The reports are available at nokia.com/investors

In addition to our own reports, we provide detailed information through various external reports. In 2016, we reported our climate impacts to CDP – a leading global organization working with shareholders and companies to disclose the greenhouse gas emissions of major corporations. We answered the RobecoSAM questionnaire, which is used as the basis for the Dow Jones Sustainability Indices, and we answered the EcoVadis evaluation which our customers use to evaluate our sustainability performance, to name just a few.

Unless otherwise indicated or evident from the context, we generally provide information for the year 2016, with comparisons to the year 2015.



Your feedback

We welcome your views and questions on our activities and our performance. If you would like to share your opinions, please contact us at global.sustainability@nokia.com



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*Also, financial and operational information in this report should be read in conjunction with the more detailed information provided in our interim reports and annual financial reports, as well as the risk factors and forward-looking statements disclaimers included in such reports.

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Letter from the President and CEO

2016 was a year of remarkable change for Nokia. We delivered solid financial performance and, with the exception of a handful of projects, completed the integration of Alcatel-Lucent.



Today, we are a fundamentally different company, with perhaps the broadest product portfolio in our industry. From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in virtual reality and digital health, we are shaping the future of technology. I am pleased to say that, in fact, our integration provided the opportunity to apply the best practices of each company to deliver a robust sustainability platform.

Sustainability remains an important foundation for our business. Aligned with our renewed corporate strategy as well as our brand commitments, our work is driven by performance as well as our deep commitment to ethics and integrity. Our activities focus on four priority areas: improving people's lives with technology, protecting the environment, conducting our business with integrity, and respecting our people. We measure progress of our efforts against the highest standards, those frameworks which are recognized globally for sustainability. In 2016, we continued to further embed the UN Sustainable Development Goals into our sustainability activities, supporting the UN Global Compact (UNGC) principles and assessing our performance in alignment with the UNGC Advanced Level principles.

Let me share some highlights, and you can then find more detail in the rest of this report.

Improving people's lives with technology

We believe we can make our greatest impact on the world's sustainability challenges by developing and enhancing solutions that improve lives. This core belief is at the heart of everything we do, and as a global leader in delivering technology solutions, we know we must continue to apply our solutions, our robust innovation, to make a positive impact on the world and those living in it.

In 2016, we made progress building a resilient infrastructure, promoting sustainable industrialization, and fostering innovation – key objectives listed as part of the UN Sustainable Development Goals – across a range of technology innovations. Our radio networks' customers serve around 5.5 billion subscriptions worldwide; we performed more than 40 use case trials in 5G, the next generation of wireless networks; and, in the emerging Internet of Things (IoT) market, we launched innovations that provide the building blocks for IoT solutions in health care, connected cars, first responder, smart cities, and utilities, among others.

Thanks to our Withings acquisition, we expanded our offerings in digital health, empowering people to take control of their physical wellbeing. Wellness and preventative health care is also a personal passion of mine, and I took pride in working with the UN Broadband Commission – along with some of the brightest minds in the world – to create powerful

research that provided practical guidance to global leaders implementing national digital health systems and solutions.

Protecting the environment

We take very seriously the risks of climate change and the depletion of natural resources. And last year, we worked tirelessly to support our customers in reducing their environmental impact by improving the energy efficiency of our products. For example, by modernizing 27% more base station sites last year, our customers averaged 43% more energy savings than those running on non-modernized networks. This is a significant improvement by any standard.

We also continued to expand our zero CO2 emissions offerings. Today, 120 customers use at least one zero emission product or service, and 104 customers use renewable energy sources through Nokia.

And we work hard in our own operations to reduce our environmental impact. Last year our facility emissions decreased by 14%.

Conducting our business with integrity

For more than 150 years, Nokia has managed its business with integrity. Today, we continue to embrace a culture of integrity through our Code of Conduct, which we apply daily to our internal and external business activities.

Technology vendors such as Nokia have an important role to play to help ensure that the technologies we provide are used to respect, and not infringe, human rights. We believe that in addition to exercising human

rights due diligence that minimize technology misuse, transparency plays an equally important role in companies' duty to respect human rights. Accordingly, to further advance transparency and to push the dialog on challenges in the telecoms sector further, we are, as part of this report, publishing the first anonymized human rights due diligence case examples. Furthermore, as part of our efforts to increase transparency, we joined the Global Network Initiative (GNI), and thus made a commitment to undergo external assessments by the GNI Board to confirm that we continue, as a company, to make best faith efforts to implement the GNI Principles. We also aim to increase our reporting transparency in other areas as we release our first Modern Slavery report in June 2017, in line with the UK Modern Slavery Act.

Responsible sourcing is also inherent to our culture of high ethical standards and integrity. Last year, we expanded our work by conducting 390 supply chain audits, including 45 on-site audits on corporate responsibility. And we more than doubled the amount of days spent on in-depth on-site supplier auditing to ensure our suppliers apply the same high integrity standards that we have for ourselves.

Respecting our people

We placed special emphasis on our Nokia culture and people throughout our year of integration. And our team responded positively with a more favorable understanding of our vision, increasing from 85% favorable to 88%. This was measured by our regular Culture Cohesion Tracker, which was sent to all employees and garnered over 70 000 responses. As a result of the integration work of the combined company, we raised our estimate of net operating

cost synergies and announced a target of EUR 1.2 billion in total cost savings in 2018. And, I would note that delivering against this commitment has required that we reduce the number of employees that we employ. These reductions are never easy. Throughout the process, we have made it a priority to provide support for those employees and to treat them with dignity and respect.

As a global company, we also believe that it is important to reflect the diversity of the world. Therefore, last year we laid the foundation to improve the gender balance across our organization. This included training more than 1 900 leaders in gender balance topics and launching two high-touch career development programs targeted to 50 of our most talented women. This issue is important not only to our business but to me personally, and I take great pride in contributing to this effort.

We also respect others through a range of global initiatives. Launched last year, our new corporate community investment approach and programs made it possible for us to make a difference by leading projects around the globe that connect the unconnected, encourage gender diversity, and save lives.

Addressing our challenges

Sustainability is a continuous journey of learning and improvement. Accordingly, we identified the following areas where we can do better in 2017.

We deeply regret that we had seven fatalities involving contractors or subcontractors carrying out work on behalf of Nokia. While each of these fatalities was related to accidents that occurred on

public roads, they are unacceptable. The incidents have been thoroughly investigated, with remediation and corrective actions put in place.

In terms of gender balance, we are far short of our long-term aspiration. While we have put a range of activities in place in 2016 to improve in this area, those activities will only start to show meaningful results this year and beyond. To further accelerate progress, we have clear improvement goals established for each member of my leadership team. Thus, I am confident that we will start to deliver the needed changes, but remain impatient to see that progress happen.

In environmental activities, our total waste from our combined company facilities and operations increased by 14% from the previous year. This was partly a result of consolidation activities and the exit of real estate as part of our integration. We must do better this year, and plans are already underway to drive these improvements.

We did not achieve our 2016 goal to complete the phase-out of four phthalates, which are restricted chemical compounds typically used as a softener in plastic materials. This was a challenge experienced across the industry, as the supply base was not sufficiently prepared to deliver alternatives. As a result, the EU revised the goals previously set forth, and we are on track to achieving the new targets.

Finally, our greenhouse gas emissions related to upstream transportation and distribution of our products increased by 21% last year. For 2017, our focus will be to improve the environmental efficiency associated with the transportation of components from our suppliers.

Recognizing our industry leadership

Overall, 2016 has been a year of change, bringing the best of two industry leaders together to become a strong enterprise and a leader in sustainability. And we were acknowledged with accolades. Nokia was named the Supersector/CMT Group Leader in the Dow Jones Sustainability Indices, garnering top rankings in the economic, environmental, and social dimensions of sustainability. We also ranked 18th among the 100 most sustainable corporations in the world as judged by Corporate Knights, the Canadian-based media and research company. And, we took top honors in CDP for our work on the disclosure of climate change data.

Targets for a better tomorrow

Earning recognition as an industry leader isn't enough, however. As we move into 2017 and beyond, we remain ever more committed to leveraging our strong global presence to improve lives through technology. Accordingly, we have set our most aggressive sustainability targets to date through to 2030 for our top sustainability focus areas. I'd like to mention one of these targets.

With a focus on making a positive long-term impact and fulfilling the global climate change targets set by the United Nations, we recently signed the Science Based Targets initiative commitment letter. In addition to setting long-term goals through to 2030, this commitment requires submission of our yearly emissions reduction targets and annual third party validation. This is significant to say the least, and the fact that we are the first telecommunications vendor to sign is a testimony to our unwavering support in

the fight against global warming.

Finally, I would like to thank our Nokia team for their work in enabling us to achieve our leading sustainability performance in 2016. It is proof of the talent, innovation, and drive for excellence in everything we do.

Thank you also for your interest in Nokia's sustainability efforts. I invite you to learn more in this full report.

Warm regards,

Rajeev Suri

Nokia President and CEO

Our sustainability achievements and challenges 2016

We take pride in our achievements while we are not complacent about it. Sustainability is a journey of continual learning and improvement.

We are proud of

Our efforts in helping our customers improve on energy efficiency and the use of renewable energy

In radio networks, for example, our customers are already deploying Nokia AirScale base station solutions which feature new software that reduces radio module and system module energy consumption and even use zero energy in the absence of network traffic. In 2016, we modernized 27% more base station sites than in 2015, achieving average energy savings of 43% for our customers, compared to non-modernized networks. This reduces the environmental impact from electricity consumption and is directly reflected as increased financial benefits for our customers. Furthermore, we have continued to develop our Zero Emission base station solution; now a group of 20 products and services that can reduce an operator's CO2 emissions. Our zero emissions solution reduces site energy consumption and CO2 emissions by up to 60% and Total Cost of Ownership by up to 30% compared to an LTE overlay solution. With the additional use of renewable energy sources (solar, wind, and fuel cells), our customers can further reduce CO2 emissions, potentially reaching zero emissions operations.

The improved energy efficiency of our facilities

As part of integrating our real estate portfolios, we were able to reduce our real estate portfolio net area by around 5%, which contributed to a net 3% reduction in electricity usage. Additional energy efficiency efforts that included implementation of various facility related energy best practices such as standardization of temperature setbacks and controls, reducing sources of outside air infiltration, installation of energy-efficient lighting and occupancy sensors, and the replacement of single-drive fans with variable-speed units, resulted in a 7% reduction in electricity usage, and an associated 12% reduction of greenhouse gas emissions.

The excellent progress our suppliers made with reporting their climate impacts

In 2016, 243 of our key suppliers, an increase of 63 from 2015 and representing 54 percent of our total procurement spend, responded to the CDPs request to disclose their climate performance information. Of these 192 disclosed their carbon emissions (an increase of 52 from 2015) and 127 also provided emission reduction targets (an increase of 35 from 2015). The total saving from these carbon reduction initiatives was 10 million metric tons of CO2 equivalents and around USD 938 million during the course of the year.

The extensive work and collaboration we have carried out in Human Rights

We undertook an extensive review of the Nokia Human Rights Policy, consulted with outside stakeholders, taking our commitment even further. The consequent update of the policy reaffirmed our strengthened commitment to issues related to freedom of expression and privacy. We also published a more detailed Human Rights Policy Implementation Guideline internally, which provides hands-on guidance to relevant teams on the processes related to human rights due diligence. Moreover, as chair of the Telecommunications Industry Dialogue (ID), we helped steer the GNI membership agreement for the majority of the ID's members in March 2017.

Our achievements included

The networks we modernized brought average energy savings, for our customers, of	Our total energy consumption across our facilities decreased by	We were judged by EcoVadis “Outstanding”, the highest gold recognition level, putting us in the top 1% of all suppliers assessed, with a score of	We refurbished old telecoms equipment (units)	Car fleet CO ₂ e/km	Total Scope 1 and 2 GHG emissions Market-based (tonnes CO ₂ e)*
43%	9%	85/100	~85800	-8%	-9%
Share of electricity purchased from certified renewable sources	Number of suppliers assessed on CR in EcoVadis Sustainable Supply Management platform	Number of suppliers that set GHG emission reduction targets (in CDP)	Number of suppliers assessed on their climate change impact based on their CDP reporting for Nokia	Share of women within senior management increased to	Share of females in line management and Group Leadership team
21%	306	127	243	14%	17%
Total number of ethical concerns reported	Supplier on-site audits focusing on labor conditions and environment	Share of smelters that have been validated as conflict-free or are active in the validation process (out of known smelters in Nokia's supply chain) increased slightly to		Number of leaders trained on gender balance topics was over	Number of Health & Safety assessments
637	45	84%		1 900	382

*Due to updated renewable energy information associated with former Alcatel-Lucent activities for 2015, the 2015-2016 comparison was updated from -10% to -9% after the previous value was published in Nokia's Annual Report 2016

Our recognitions and awards

For Nokia, sustainability is not just about mitigating risks and fulfilling legal obligations. We want to be a leader and a true example of sustainable development and we truly believe we can be. Our people deal with difficult issues day in day out, are transparent when we need to do better, act with integrity in daily business, innovate every day and believe in the difference our work can make. We have the chance to create future business opportunities, help fight climate change, lead by example and in so doing, also make our company a great place to work.

We moved into the top 20 of the 100 most sustainable corporations in the world as judged by Corporate Knights, the Canadian-based media and research company.

A great achievement – from 60th to 18th place in just a year. Sustainability is a continuous journey of learning and improvement. The Global 100 is determined using 14 quantitative sustainability indicators, including the amount of revenue companies generate per unit of energy consumed, the ratio of CEO to average worker pay, and per cent of taxes paid.

For the second year in a row, we were listed in the Dow Jones Sustainability Indices.

And this year, we have also been recognized as the industry leader in the CMT Communications Equipment sector with an improved global score of 83/100 (+4 points compared to last year).

We have taken further steps on our sustainability journey, and those steps have been recognized. We scored above the industry average in all 21 DJSI criteria and were the industry best in 16 DJSI criteria.

- In the economic dimension Nokia scored best in Customer Relationship Management, CR Materiality, Privacy Protection, Risk & Crisis Management, Supply Chain Management and Tax Strategy
- In the environmental dimension Nokia scored best in Climate Strategy, Environmental Policy/Management System, Environmental Reporting, Hazardous Substances, Operational Eco-Efficiency and Product Stewardship
- In the social dimension, Nokia scored best in Corporate Citizenship and Philanthropy, Human Capital Development, Labor Practice Indicators and Human Rights, as well as Social Reporting.

We were ranked to leadership-level in the CDP (formerly Carbon Disclosure Project) for our work on climate change and disclosure of climate data. This information is requested by both investors and some of our customers.

Nokia was also ranked top performer in the Ecovadis Supplier Sustainability Ratings. We were judged “Outstanding”, the highest gold recognition level, with a score of 85/100 putting us in the top 1% of all suppliers assessed. We retained our position in the Ethibel Sustainability Indices, Euronext indices, FTSE4Good Index and got good scores from MSCI ESG rating. We received gold recognition from RobecoSAM and inclusion in their Sustainability Yearbook.

Nokia moved into the top 20 of the 100 most sustainable corporations in the world

60th ↗ 18th



Other recognitions

Best Newcomer to CSR in India for our resilience project with Save the Children, at the National CSR leadership Congress & Awards.

The ceremony was held in Bangalore on September 1. These CSR Awards are aimed at recognizing corporate social responsibility and sustainability initiatives being taken by businesses and governmental institutions in the region. The recognition shows that Nokia offers a balanced framework to position our sustainability strategy around the social elements.

In early 2017, Nokia Saving Lives was honored with the UAE Drones for Good Award in the international category, presented by H.H. Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, Crown Prince of Dubai.

The Award competition, which had over 1 000 submissions from 160+ countries, is dedicated to transforming the technologies behind civilian drones into practical solutions for improving people's lives. TRA & ICTFund was the organizer of the competition

In November 2016, Global Telecoms (GLOTEL) Awards presented Nokia with an award in the category “Best Sustainability Project”

For our partnership with CenturyLink to reduce their network power consumption by approximately 22 000 megawatt-hours a year through network optimization, by applying our Public Switched Telephone Network (PSTN) Smart Transform solution.

In December 2016, Telecom Review Excellence Awards selected Nokia for an award in the category “Best Industry Vendor”.

Some highlights of why we were awarded are that we focus on innovation in the technologies that connect people and things. We were driven by our vision of expanding the human possibilities of technology and accordingly deliver innovative solutions to operators, enterprises, and government bodies to enable this vision, and create safe, smart and sustainable cities.



We can do more by

Further encouraging our contractors and subcontractors to follow our rules

Health and safety performance, as well as the compliance of our contractors and subcontractors, are critical factors in our overall performance. To ensure that our contractors and subcontractors understand how seriously we take these requirements, we have a formal consequence-management process that follows all fatal, critical, and high-potential incident investigations. Where a contractor does not fulfil our expectations, we instigate a tiered form of consequence that ranges from a warning to termination of contract. However, in 2016, we deeply regret seven fatalities involving contractors and subcontractors carrying out work on behalf of Nokia. Even though, all of these fatalities were related to road accidents that occurred on public roads, any fatalities are unacceptable

More detailed targets related to our environmental and social responsibility are included in the topic specific sections.

Working harder to decrease the amount of waste we produce in our operations

In 2016, the total waste amount from our operations increased by 14% from the previous year, when the former Alcatel-Lucent is included in the comparison. One reason for the increased amounts was the clear-out and consolidation of real estate as part of the integration of the 2 companies as well as changes in calculation methods. Although we had a positive increase in utilization rate of 87% within Nokia. (85% in 2015), we will work harder to reduce overall waste amount.

Delivering on removal of the four restricted phthalates from our products

Phase out of four phthalates by 2016 was not achieved as the supply base was not completely prepared to deliver phthalate-free alternatives. The EU, recognizing a need for a protracted alternatives development period, has set a compliance date of July 2019 under Directive 2015/863. Nokia remains committed to having all its products comply by this later date.

Operating one fully-integrated sustainability approach

Despite having only closed the acquisition of Alcatel-Lucent in early January 2016, and gained 100% ownership on November 2, 2016, we have completed the majority of our integration projects. The sustainability teams have done stellar integration work in 2016, laying the foundations and baselines of combined sustainability related systems, procedures, and measurement methodologies, based on the best from the two former companies. While we have renewed policies and procedures, leading transition plans for key social environmental and societal programs, some harmonization is still needed and will take further time. Now we need to make even greater efforts to ensure we are all working under a single set of systems and processes. For example, an integration implementation plan was created to ensure all relevant former Alcatel-Lucent operations and facilities will be fully integrated under the Nokia ISO 14001 global certification during 2017 – 2018.

Our sustainability goals and performance progress

Target for 2016	Progress in 2016	Status
Ensuring decent working conditions and fair employment		
Increase employee awareness on the importance and impact of open reporting to ensure our employees feel comfortable raising possible ethics concerns	In 2016, Nokia ran several internal initiatives that promoted open reporting and measuring employees' opinions and emotional connection to ethical concerns, a trust-based working environment, and appropriate conflict resolution. These themes were embedded in our regular culture survey, the Culture Cohesion Tracker.	 Achieved
Maintain and improve our overall employee engagement, progress towards 90% favorable	As 2016 was a year of integration the traditional engagement census survey was replaced with 3 global initiatives to capture the voice of the employee, understand engagement, and gather information on critical Nokia wide aspects on the build-up of one Nokia. Culture Cohesion Tracker (CCT), virtual co-creation dialog platform, and local physical events called Coffee and Connect. Measured with the CCT, in the end of the year our employee engagement showed a 76% favorability towards the company. ✓ Assured	 On-going
Maintain and improve overall employee support for our company direction	To ensure a successful integration and strong culture cohesion, the culture integration team managed a series of employee inclusion programs throughout the year which gathered over 70.000 feedback points. The culture program also maintained a visible and accessible communication site where the company direction, vision, strategy and culture principles could be found. The site also encouraged feedback and sharing of opinions.	 Achieved

Establish a firm understanding of Nokia's culture and vision	We had a culture advisory board representing the new Nokia and all its business groups and functions, which met every month to collaborate on global and business specific culture issues. We had an all employee survey going out to the entire organization every second month (Culture Cohesion Tracker, CCT), garnering over 70 000 responses. In 2016, understanding of Nokia's vision rose from 85% favorable to 88%. In addition, one building block of the Culture Cohesion Tracker is "Understanding New Nokia Mindset", which contains questions focused on behaviors, values, ethics, and emotional connection, and received 83% favorability at the end of year 2016. ✓ Assured	 Achieved
Revise and start implementing a new diversity strategy and action plan	Our diversity strategy has been revised and the new strategy received Group Leadership Team (GLT) support as of April 2016. Implementation has started by, amongst other actions, fostering Leaders' awareness and engagement through Diversity Dialogues. In 2016, over 1900 leaders were trained on gender balance topics. ✓ Assured	 Achieved
Further strengthen our commitment to privacy and freedom of expression and become a full member of the Global Network Initiative by March 2017	We became a full member of the Global Network Initiative (GNI) in March 2017. As the Industry Dialogue chair Nokia led the completion of the GNI membership negotiations for the Industry Dialogue companies.	 Achieved

Maintaining world-class environmental performance in our own operations

Reduce our overall electricity consumption from our facilities by 2% compared to 2015	Our electricity consumption was 1 034 GWh. ✓ Assured We achieved a 9% reduction of electricity consumption from our facilities, when also including the former Alcatel-Lucent in the comparison.	 Achieved
Reduce our CO2e emissions from our facilities (scope 1&2) by 2%, compared to 2015	Our facility related CO2e-emissions were 464 100 metric tons. (scope 1&2, market-based) ✓ Assured We achieved approximately 14% reduction, including our renewable energy usage, when also including the former Alcatel-Lucent in the comparison.*	 Achieved

*Due to updated renewable energy information associated with former Alcatel-Lucent activities for 2015, the 2015-2016 comparison was updated from -16% to -14% after the previous value was published in Nokia's Annual Report 2016

Further develop our low-emission fleet and maintain related emissions below the market average.	We reduced the carbon intensity (CO2e/vehicle km) of our car fleet by 8% as compared to 2015, and achieved a reduction of 19 % in greenhouse gas emissions from the car fleet.	 Achieved
Further investigate the scientific target-setting methodology for our greenhouse gas emissions to better understand what our greenhouse gas reduction target should be in order to do our share in keeping global warming below 2°C.	We have established Energy Usage Goals and KPIs based on Science-Based Target procedures. Please see more about our Science-Based Target project on page 71	 Achieved
Helping operators deal with the growth in mobile data traffic in a sustainable way		
Improve the energy efficiency of our products in each main release by 15%.	Please see the Solution spotlight section on pages 79-81 for examples. Case: Photonic Services Switch 1830 PSS-24x. Case: Surepay solution  Assured	 Achieved
Work with our customers to help them reduce the energy consumption of their telecommunications networks through our innovative product solutions.	As a core part of our business this is an ongoing goal. See the Solution spotlight section on pages 79-81 for examples.	 On-going
To phase out and substitute the four phthalates restricted by RoHS Commission Delegated Directive 2015/863: Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP) by the end of 2016.	The EU recognized a need for a protracted alternatives development period and set a compliance date of July 2019. In response, Nokia sought to have their suppliers substitute the phthalates by end of 2016. However, this was not achievable as the supply base was not completely prepared to deliver phthalate-free alternatives by this earlier date. Currently, we remain committed to having all our products comply with EU RoHS phthalates restrictions by July 2019.	 Not achieved

Continue to expand the Zero CO2 Emission offering with new innovations.	We have continued to develop our Zero Emission base station solution; launching a group of 20 products and services that can reduce an operator's CO2 emissions by up to 60%. Read more in Zero emission section on page 80 .	 On-going
As part of our Technology Vision 2020, our goal is to keep absolute network energy consumption essentially flat over the coming years.	We continually work to keep the network energy consumption essentially flat. Read more in section on network energy on page 79 .	 On-going
Enhancing sustainability in our supply chain		
40 in-depth audits.	We conducted 45 on-site audits on Corporate Responsibility topics. (formerly in-depth audits) ✓ Assured	 Achieved
Complete the roll out of health and safety qualification tracking for all suppliers, phase-out non-compliant suppliers and automate this process to enable better traceability.	We conducted 382 supplier health and safety maturity assessments. Health and Safety qualification by a Health and Safety professional is part of supplier onboarding and vendor creation control points.	 On-going
Continue encouraging our suppliers to report their climate impacts via CDP with a target to have 200 suppliers involved.	In 2016, 243 of our key suppliers , an increase of 63 from 2015, responded to the CDPs request to disclose their climate performance information.	 Achieved
Have 100 of our suppliers setting emission reduction targets.	127 suppliers provided emission reduction targets via CDP. ✓ Assured This was an increase of 35 from 2015.	 Achieved
Continue our training program with at least 10 on-site workshops for suppliers.	12 workshops completed	 Achieved

Increase improvement activities and re-assessments with our suppliers, and by the end of 2016, 75% of the suppliers we evaluate through EcoVadis should score at satisfactory level (score $\geq$ 45/100).	Percentage of active suppliers rated “satisfactory” or above on their assessment of sustainability through EcoVadis was 70%. ✓ Assured In 2016 focus was on integration of platforms from Alcatel-Lucent and Nokia and target is carried forward in 2017.	 Not achieved
Our long term target: Have 100% of the smelters identified in our supply chain validated as conflict-free by 2018.	In 2016, 84% of smelters identified as part of Nokia’s supply chain have been validated as conflict-free or are active in the validation process. ✓ Assured	 On-going

Partnering with NGOs

Create a group-wide strategy to guide corporate investment activities and include priorities aligned with SDGs & business drivers.	Strategy and thematic approach aligned with SDGs and business drivers were created during the first half and approved by the Corporate Community Investment (CCI) board in September.	 Achieved
All new corporate investment programs to be measured against a monitoring and evaluating system.	London Business Group (a third-party community investment evaluation partner) criteria adapted into the Nokia themes and the first data collection started in December. In 2016, through Nokia Corporate Community Investment and the Alcatel-Lucent Foundation, we contributed corporate-level resources totaling Eur 3 million, which supported 42 community programs in collaboration with 39 community organizations. ✓ Assured	 Achieved
Our long term target: By 2020, foster the spirit of employee volunteerism across the company and increase engagement.	Volunteering guideline approved. Tools integration still under evaluation. Overall guideline was launched 1Q 2017.	 On-going

About Nokia

2016 marked a year of transition and successful integration for Nokia. We have built strong foundations for a world where billions of connected devices, vast analytical capabilities, and automated action come together to deliver extraordinary human benefits.

Nokia today

Nokia is today a global leader in creating and delivering the technology to connect the world, powered by the research and innovation of Nokia Bell Labs. We serve communications service providers, public sector agencies, large enterprises, and consumers, offering the industry's most complete, end-to-end portfolio of products, services, and licensing. We are shaping the future of technology to transform the human experience. From the enabling infrastructure for 5G and the Internet of Things, to secure platforms for the new digital sharing economy, and emerging applications to transform life experiences through virtual reality and digital health – Nokia creates the technology to connect the world.

Who we are

In January 2016, Nokia closed the acquisition of Alcatel-Lucent. This brought global leadership in mobile and fixed network infrastructure with software, services, and advanced technologies, serving customers in more than 100 countries around the world. We are driving the transition to smart, virtual networks and connectivity by creating one single network for all services, converging mobile and fixed broadband, IP routing, and optical networks with the software and services to manage them. We continue to innovate in key technologies from 5G, ultra-broadband access, IP and Software Defined Networking (SDN), Cloud applications, and IoT to security platforms, data analytics, as well as sensors and imaging. We do this not for technology's sake but because we are committed to innovating new solutions which will transform the way people and things communicate and connect.

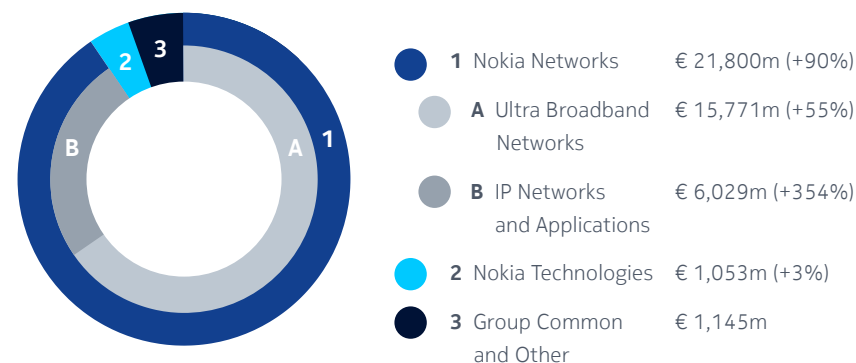
Our businesses in 2016

After the acquisition of Alcatel-Lucent, we organized our networks businesses into four business groups: Mobile Networks, Fixed Networks, IP/Optical Networks and Applications & Analytics (together the “Networks business”); and kept our driver of future innovation and licensing, Nokia Technologies, as a separate fifth business group. The Networks businesses are also supported by Nokia Bell Labs, our research arm and innovation driver. We also renewed our strategy, which builds on our business portfolio and drive to design technology that serves people.

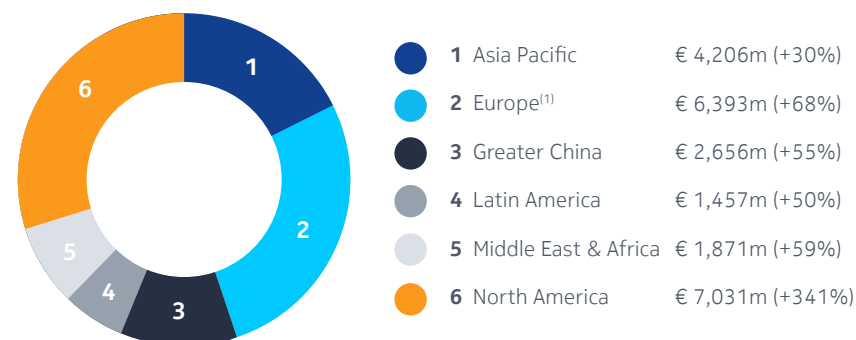
On March 17, 2017 we announced changes to our organizational structure which separated the Mobile Networks business into two distinct but closely linked organizations – one focused on products and solutions, and the other on services. They are called respectively Mobile Networks business group and Global Services business group.

In 2016, despite market challenges and a year of transition, our businesses delivered solid performances. We closed 2016 delivering net sales of EUR 23.6 billion. We continued to make significant targeted R&D investments with R&D expenditures equaling EUR 4.9 billion in 2016.

Net sales by business 2016



Net sales by region 2016



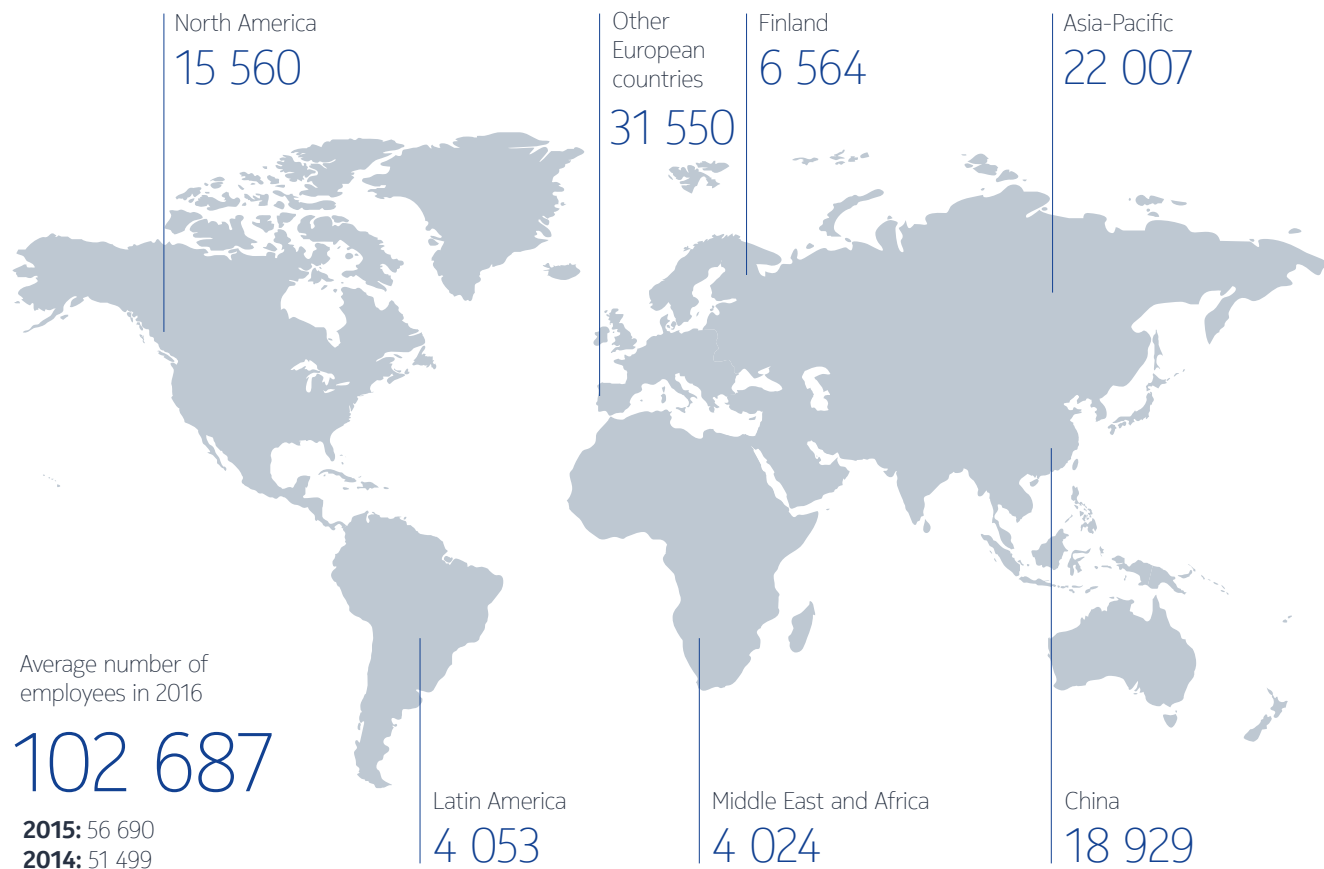
(1) All Nokia Technologies IPR and licensing net sales are allocated to Finland. Year-on-year change is in parentheses. Derived from our financial statements which were prepared in accordance with IFRS.

Our presence and employees in 2016

In 2016 we had a global presence with operations in Europe, the Middle East & Africa, Greater China, North America, Asia-Pacific, and Latin America. In 2016, we had sales in approximately 130 countries. We also have research and development (R&D) facilities in Europe, North America, and Asia, and at the end of 2016, we employed approximately 101 000 people. Of this total amount, approximately 36 000 (36%) worked in R&D, and around 3% worked at the Nokia headquarters in Espoo, Finland

The image shows the average number of employees in 2016 divided by geographical location.

Average number of employees by region 2016



The infographic shows the average number of employees in 2016 divided according to their geographical location.

Our economic impact

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

sector. The related key performance indicators are listed below. We contribute indirectly to the economy in a variety of ways, though our greatest indirect impact comes as a result of the benefits of technology. Connectivity and access to the Internet has created enormous economic and social advantages for billions of people globally, enabling people to live better lives.

We measure our progress in this area with the KPIs: salaries paid to employees, dividends paid to shareholders, payments to suppliers, direct tax payments.

Economic impact table (Nokia Group)

Stakeholder	Impact (EUR million)	2016 ⁽¹⁾		2015 ⁽¹⁾		2014 ⁽¹⁾		2013 ⁽¹⁾	
		Continuing operations	Continuing and Discontinued operations	Continuing operations	Continuing and Discontinued operations	Continuing operations	Continuing and Discontinued operations	Continuing operations	Continuing and Discontinued operations
Customers	Net sales	23 614	23 614	12 499	13 574	11 762	15 189	11 795	23 444
Suppliers	Total purchases of goods and services	13 544	-	6 810	-	6 281	-	6 194	-
Shareholders	Dividends paid	-	1 501	-	512	-	1 392	-	71
Employees	Wages and benefits ⁽²⁾	6 275	-	3 075	-	2 797	-	3 030	4 591
Creditors	Net financial expenses	287	273	186	195	403	393	277	2
Public sector	Income taxes paid, net	502	503	262	290	313	636	209	386

(1) Discontinued operations refer to HERE and our former Devices and Services business

(2) Includes termination benefits and excludes social security expenses

Our tax payments

In recent years, one of the key discussions in global corporate responsibility discussions has been the transparency and sustainability of a company's tax planning, and the allocation of tax payments between the countries in which they operate. In 2016, Nokia paid a total of EUR 503 million of direct income taxes (EUR 290 million in 2015), of which approximately 52% was paid in Asia Pacific, 36% in the Americas, and the remaining 12% in Europe, the Middle East, and Africa. Of this total, approximately EUR 1 million was related to discontinued operations (our former Devices and Services business and HERE). Following the acquisition of Alcatel-Lucent, our 2016 figures include both former Nokia and former Alcatel-Lucent entities.

In addition to paying direct income tax, we contribute to society in the form of pension contributions, social security contributions, payroll taxes, value-added taxes, sales taxes, customs

duties, excise taxes, environmental taxes, and other similar duties and fees. Nokia is a major taxpayer and collector of indirect taxes and payroll-related taxes, and pays and collects these taxes in accordance with the applicable rules and regulations.

Our tax policy

The foundation of our tax policy is to pay the right amount of tax that is legally due in the correct jurisdiction. Furthermore, we strive to observe all applicable rules and regulations in every country where we operate, and we follow the rules set by the relevant authorities.

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

intercompany dealings. Based on the policy and the guidance given by the OECD, we comply with the arm's length principle in all our intercompany dealings. We also follow the development of local transfer pricing rules and regulations in all territories and adopt localized transfer pricing policies if necessary. Large multinationals resident within the EU are obliged to disclose country specific information to the tax authorities regarding 2016 (so-called country by country reporting within the framework of OECD BEPS action 13). We will comply with the new reporting requirements.

We may also seek so-called advance pricing agreements, i.e. agreements between taxpayers and tax authorities, to the extent feasible in order to gain mutual understanding and acceptance on the tax treatment of intercompany arrangements. The benefit of such agreements is to remove uncertainty regarding tax treatment, especially in complex business arrangements by end 2017. In 2016 there were no significant cases of tax penalties or penalty interest for Nokia.

Nokia does business in many countries, and in every one of these countries our policy is to operate in an open and cooperative relationship with the tax authorities. Our tax planning is aligned with our business models, and taxes are considered in business decision-making – but only as one of many elements. Our business and location planning is driven by sound commercial needs.

We are subject to income taxes in multiple jurisdictions. Our businesses and investments globally, particularly in emerging markets, are subject to uncertainties, including unfavorable or unpredictable changes in tax laws, taxation treatment, and regulatory proceedings, including tax audits.

Our new targets

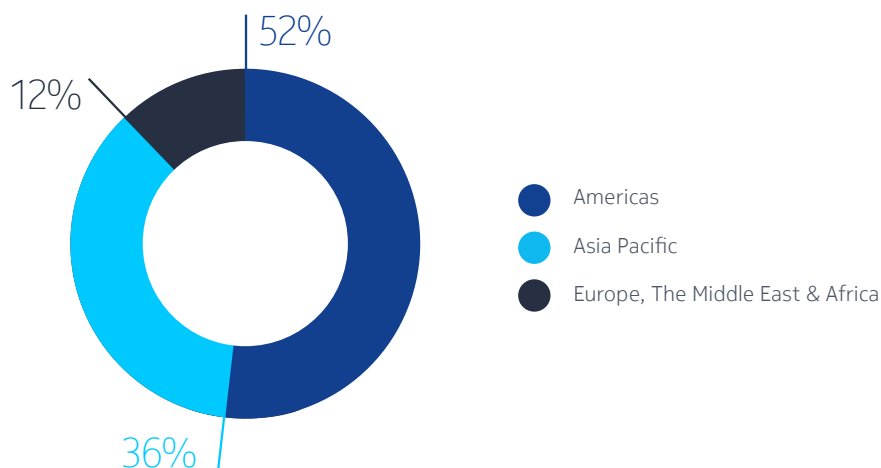


2017

We will disclose country-specific information to the tax authorities regarding 2016 according to the new country by country reporting requirement

In 2016 there were no significant cases of tax penalties or penalty interest for Nokia

Direct income taxes paid by region



Our indirect economic impact

We also contribute to economic development indirectly in various ways. Our indirect economic impact includes creating business opportunities and jobs along our supply chain, and competence development for our employees. In addition, our technology facilitates positive change on a wider scale. Connectivity helps to bring market information and financial services to remote areas. It increases productivity and also enables new ways of doing business such as e-commerce, transforms public service delivery, and democratizes innovation. Our industry also has a major role to play in technology transfer and human capital development globally.

According to the World Bank, a 10% increase in high-speed internet connections leads to a 1.3% increase in economic growth. Through our technology, we enhance network capacity and coverage in countries around the world. In 2016, we made agreements to improve network capacity and coverage in a number of emerging countries such as Indonesia, Philippines, India, Thailand, China, Myanmar, Lebanon, Kenya, and early in 2017 in Bangladesh. We had sales in approximately 130 countries worldwide.

Affordable broadband service everywhere is still a challenging goal for many rural and underserved communities in the world. By using solutions such as Nokia FastMile that use an existing mobile network grid, we can partly address this challenge, which is critical for communities as it helps drive greater economic opportunity and access to improved services such as health and education.

Smart Agriculture will boost yields by 30%, avoid 20% of food waste, and could deliver economic benefits worth USD 1.9 trillion. An assessment of eight economic sectors – mobility & logistics, manufacturing,

food, buildings, energy, work & business, health and learning – shows that ICT could generate over USD 11 trillion in economic benefits per year by 2030. In 2016, we entered into the digital health business with the acquisition of Withings, and expanded our business in Internet of Things with for example the launch of the IMPACT platform. See some of our solutions in the Improving Lives section of this report.

ICT-enabled telecommuting and virtual conferencing can save employees time, money, and provide environmental benefits. Additional revenues from e-commerce could total USD 1.8 trillion and E-Work could add USD 0.5 trillion while freeing up 100 hours per E-Worker annually.

Source: GeSI Smarter 2030 report

Contributing to India's future

One clear example of our role in creating indirect impact through our business is India. The Chennai factory, which is the largest manufacturing facility in the Indian telecommunications equipment manufacturing sector, employs a workforce of 1500 highly skilled employees. Nokia pioneered the virtualized global service delivery model in India, initiating operations of its first Global Delivery Center (GDC) site in Chennai in 2006, with the second following three years later in Noida, to provide business continuity management during natural calamities like cyclones and earthquakes.

Over the decade, the company has made significant investments in building capabilities to serve telco operators globally. Today, Nokia's GDCs in India bring multi-technology and multi-vendor expertise with capabilities in the latest technologies such as IMS and telco cloud. They also provide operators access to best practices, leveraging experience across 275 global telco operators the GDC serves in 85 countries.

Nokia's commitment to India is deeply engraved in the way we harness the potential of local talent for research and development. Our Bangalore Technology Center is one of the four main global R&D sites for the company, employing over 6000 engineers and undertaking research on various advanced global telecommunications technologies like WCDMA, Small Cells, CDMA, Radio Platforms, LTE, Operational Support Systems, Voice & IP Transformation, Packet Core, and more.

Nokia in China

Nokia has been operating in China since 1982 and our pioneering work will continue in the country, where Nokia President and CEO Rajeiv Suri was a previous recipient of the Marco Polo award for Nokia's longstanding contribution towards the development of China's economy, technology, and culture. We became a leading provider of innovative technologies in almost all areas of China Mobile's network when we announced in 2016 a EUR 1.36 billion frame agreement. China Mobile was first to announce it would deploy our innovative AirScale Base Station. We work with all operators in China including China Mobile, China Telecom, China Tower and China Unicom, as well as public and enterprise sectors, such as railways and public security. We have six Technology Centers, one regional Service Delivery Hub, and more than 80 offices spread over megacities and provinces.

We are honored to play a role in the country's rise to become a leader of the global economy. China is a key contributor for sustainable development and progress. For example, China released its national plan for implementing the 2030 Agenda for Sustainable Development, which translates each target of the Sustainable Development Goals (SDGs) into "action plans" for China.

Our innovation approach

We purposefully design technologies to drive social, environmental, and economic progress, and wherever we can, seek to harness the opportunities of connectivity for people and our planet. Our technology helps create and enable new opportunities, resolve existing challenges in everyday life, and helps people thrive. We believe technology should be sophisticated, intuitive to use, and effortless.

Nokia is over 150 years old and has been at the forefront of every major communication technology shift: analog, digital, and mobility. We continue that innovation heritage today, introducing powerful, simple and useful tools that support people, business, and society in the era of the Internet of Things, ultra-broadband, cloud, virtual and augmented reality, digital health and more. We are laying the foundations for a new industrial and societal revolution by leading the introduction of 5G networks, which will drive economic transformation in cities and industries. Nokia is building this bridge to the future with a focus on creating the technologies to connect the world.

Nokia's overall innovation priorities are decided by the Group Leadership Team Strategy Board, with innovation focus areas agreed by the Innovation Meeting. Selection and prioritization of innovation candidates are handled by leadership teams and portfolio decision bodies. Prioritization of innovation initiatives, projects, and associated budgets, are then decided by portfolio management governance bodies.

In terms of an innovation culture, Nokia takes a holistic approach, embedding innovation across the company – changing the way we work, with digitalization, automation, techniques to save employees' time, collaborative ways of working and better information sharing, simplification of processes and tools, instilling an innovation mindset across the whole company – to make Nokia a great place to work and innovate. Innovation is broader than just technology. It's an attitude, a way of living. It is about challenging the way we do things and looking at how we can improve further.

Nurturing a culture of innovation

Nokia places a premium on innovation within every aspect of its business – from its own internal operations embedding innovation across the company, to enhancing its end-to-end portfolio and co-innovating with ecosystem partners and customers.

Nokia Bell Labs is a world-renowned innovation engine, always thinking 10 years ahead to push the limits of technology that will bring tenfold improvements across key technology domains.

Nokia Technologies is innovating how we experience and interact with the world and take control of our health through immersive virtual reality and personal digital health devices.

Nokia Growth Partners invests in innovative companies connecting people and things in consumer, enterprise, and vertical spaces.

Nokia Incubator creates internal and external incubation environments for innovation

collaboration to accelerate the pace at which new applications and technologies are brought to market.

Our **ng Connect program** works with a global community of more than 300 member companies to drive open collaboration, business modeling, and market trials that drive industry adoption across automotive, utilities, smart cities, health, and public safety. The focus on innovation permeates every aspect of Nokia.

Our innovation assets

Intellectual property assets are fundamental to Nokia. We own a large patent portfolio of more than 26 000 patent families, originating from three distinct organizations (Nokia Technologies, the former NSN and former Alcatel-Lucent), creating a larger and more valuable IP portfolio than ever before. The portfolio patent families have been built on combined R&D investments of more than EUR 119 billion over the last two decades. Our R&D expenditures equaled EUR 4.9 billion in 2016.

We continue to refresh our portfolio from R&D activities across all of our businesses, filing patent applications on more than 1 300 new inventions in 2016.

1 300+ new filings in 2016

~Eur 119 billion R&D investment over the last two decades

Eur 4.9 billion R&D investment in 2016



For more information on our intellectual property, please refer to our annual Form 20-F [here](#)

Maintaining our innovative culture of a start up

Nokia maintains an innovative culture of a start-up through a combination of co-innovating with the ecosystem and driving an internal innovation culture. Co-innovation with the ecosystem is an essential part of Nokia's strategy to bring in people with creative ideas and smart solutions. Nokia believes in openly collaborating with ecosystems, both in the way we create our products and services, but also in the way we bring our go-to-market solutions to customers. Co-innovation accelerates Nokia's innovation in rapidly evolving areas like the Internet of Things. This is because no one single company has all the required competence and diversity to continuously innovate and build and maintain a leading position.

To further foster a culture of innovation, we are developing our connected workplace to digitalize and transform the ways of working, enabling our connected employees to be more efficient, and enhancing the work experience. We have programs running to create an efficient internal environment, to simplify tools and processes, and promote time-saving tools and techniques. For example, the Get 1 Hour Back program gives employees techniques to communicate, collaborate, network and co-create. Read more on [pages 122-137](#) in *Respecting our people*.

We also run a Location Development program to create a model and dynamic working environment, encouraging open co-innovation with the local ecosystem, and increasing our external attractiveness and co-operation initiatives.



Nokia Open Innovation Challenge

The annual [Nokia Open Innovation Challenge](#) is a prime example of co-innovation, which in 2016 looked for the next big ideas in Internet of Things domains including public safety, connected automotive, industry 4.0, digital health, utilities, security, and smart cities. The winners joined Nokia's Innovation Accelerator Program to incubate their ideas with Nokia, access our global market, and network with investors.

Read more about the [Bell Labs Prize](#)

Alternative energy research

The Alternative Energy and Storage group develops technologies that improve deployment and operations of telecom systems. We collaborate with CRANN, the nano-technology institute based in Trinity College Dublin, Ireland, to explore battery improvements – such as improved capacity and lighter weights.

The AES group is dedicated to developing technologies for powering off-grid telecom equipment. We are researching power-autonomous equipment to reduce complexity and deployment times in both remote rural areas and dense urban environments. With the goal of providing high energy density and longer battery life, we plan to use small cells in future networks to address rapid data traffic growth. We are researching ways to eliminate battery replacements in small cells and within wireless sensor nodes by employing energy harvesting and storage solutions.



Quja Startup Space

At Quja Startup Space, we want to support startups and offer a growth platform to success. Co-working space at the heart of Nokia headquarters in Finland. Quja Startup Space is an open layout space where we invite startups to come and accelerate their ventures in an exciting environment with likeminded entrepreneurs. Our aim is to build an open ecosystem on our campus, and to create a community of entrepreneurs. Our facilities have been designed to enable continuous dialog amongst startups, as well as within Nokia.

We also have our own innovation playground in France – the Nokia Garage, a corporate garage program initiated in Bell Labs Villardereaux, France. It's an impressive workspace where Nokia employees are free to bring their ideas, use the latest technology tools, and software processes to bring their ideas to life, fostering a true spirit of entrepreneurship.

Our approach

Our sustainability vision:
Creating the technology to connect the world,
in a responsible way. Together

Creating a more sustainable world

We work to bring about a more sustainable, socially responsible world

As a values-driven business, we invent, design, and deploy sustainable technologies that make a real difference to people's lives, and take responsibility for the impact we can make in the world.

We purposefully design technologies to drive social, environmental, and economic progress, and wherever we can, seek to harness the opportunities of connectivity for people and our planet. This includes actively pursuing ways to increase the energy efficiency of our technologies and products, minimizing the environmental impacts from making, distributing and operating them, and working closely with our customers and partners to reduce energy use and emissions across their networks.

Furthermore, we strive for the highest degree of ethical conduct in every decision we make, and every action we take. We rigorously tackle issues related to business ethics, privacy and potential misuse of our technology, and endeavor to ensure suppliers meet our high ethical, human rights, labor and environmental standards.

Beyond this, we engage actively with our stakeholders to contribute to global efforts to achieve a more sustainable, socially responsible world, and improve people's lives with technology through social investments.

Global macro trends impacting our sustainability approach

Based on our analysis, the key trends impacting our sustainability approach remained the same: the human potential of technology, the increased importance of privacy and data security, the demand for high ethics and transparency, climate change and sustainable use of natural resources, and the importance of attracting and retaining talent.

The human potential of technology

Nokia's strategy identifies the following global technology related megatrends:



Network, compute, and storage



Internet of Things



Augmented intelligence



Human and machine interaction



Social and trust economics



Digitalization and ecosystems.

With our technology expertise, and by connecting things as well as people, we are well positioned to support efforts to address many of the global challenges listed on the UN Sustainable Development agenda. Our radio networks customers serve over five billion subscriptions worldwide. This provides tremendous opportunities because connectivity increases both productivity and economic growth. It also plays a key part in reducing carbon emissions. The Programmable World will bring further benefits, including better use of scarce resources, greater human well-being, improved health and wellness, reduced environmental damage, and greater efficiency. Both the benefits and risks related to new technology have increasingly gained attention.

Increased importance of privacy and data security

While increased connectivity improves people's lives in many ways, privacy concerns are also increasing with the rapid growth in sensitive, private data being transmitted across telecommunications networks. As a company that provides technologies and services that fuel our information society, getting privacy right is critical for Nokia.

Demand for high ethics and transparency

Unethical business practices like corruption and lack of respect for human rights and labor conditions are major obstacles to development in many countries. Related regulation and pressure for transparency and integrity is increasing. We believe Nokia can be part of the solution by upholding high standards of ethics and human rights in our own activities and throughout our value chain. Neglecting these issues would present a major risk for our reputation and our business. Information and communications technology has a major role also in increasing the transparency and efficiency of institutions.

Climate change and sustainable use of natural resources

Climate change is one of the biggest global challenges of our time and the debate regarding decoupling economic growth from global emissions is increasing. Climate change and sustainable management of resources have a medium and long-term impact on our business as their effects

are wide-ranging, from inhibiting global economic development and increasing the risk of natural disasters, to contributing to rising energy prices and leading to changes in regulations. Although these effects may have a long-term impact on our business, they also create a business opportunity for us. We cannot focus solely on minimizing negative environmental impact and improving resource efficiency in our own operations; we must also help our operator customers meet the growing demand for communication in a sustainable way. We can do this by making our products energy efficient and encouraging the use of renewable energy, and by helping our customers support the circular economy.

Attracting and retaining talent

The companies that are able to attract, keep, and motivate the best talent are usually the most successful ones. Skillful and engaged employees have a direct impact on our business success, which is why we want to create a great place to work for all our employees

Our renewed priorities

Our sustainability strategy and priorities were realigned to our renewed strategy and business focus in 2016. Our sustainability activities in 2016 were: Improving people's lives with technology, protecting the environment, respecting our own people in everything we do, and making change happen together.

In 2016, we published 25 targets reflecting our commitment to sustainable development and our achievements on these targets can be seen on [pages 15-19](#). 16 of these targets have been achieved, 7 are ongoing, 2 were not achieved.

While our vision remained the same, we seized the opportunity to extract the best of two industry leaders, we reviewed our sustainability strategy, priorities and governance, and we aligned them to our key business drivers. Based on the results of our 2016 materiality assessment (see [pages 32-34](#)) of the key issues related to sustainability, we will articulate our 2017 sustainability activities under the following priorities:

- Improving people's lives with technology
- Protecting the environment
- Respecting our own people in everything we do
- Conducting business with integrity

We will enable these activities by making change happen together with our multi-stakeholder cooperation. These renewed priorities have been reviewed by our Chief Executive Officer and the Leadership Team.

Improve people's lives

Create and deliver technology solutions and products that connect people and things.
Our sustainability related products and services will help people thrive and live better and healthier lives on a cleaner planet.



Protect the environment



- Help customers reduce energy use and emissions
- Increase product energy efficiency, Develop product eco-design and manage materials
- Reduce environmental impact of our operations (emissions, waste, resources)

Conduct our business with integrity



- Uphold the highest principles of business ethics and corporate governance
- Tackle issues related to privacy, data security, and potential technology misuse
- Ensure suppliers meet our high ethical, labor and environmental standards

Respect our own people



- Provide fair and just labor conditions in own operations
- Maintain health & safety as a priority
- Foster employee satisfaction, engagement, and development
- Strive for greater diversity, inclusion, and anti-discrimination

Make change happen together

Engage actively with our stakeholders to contribute to global efforts towards a more sustainable, socially responsible world



To demonstrate our strong commitment in sustainable business, we published this year a new range of 46 company targets, including 22 long-term ones. We took a bold step in committing to set science-based targets through the Science Based Targets initiative, as published in the report and which we expect to be approved by end June 2017. All of these new targets are fully aligned with SDGs, and our most material issues.

Materiality: How we identified our key priorities

Our sustainability and corporate responsibility activities focus on the topics that are most important, or material, to our business. We use a combination of factors to identify material topics, analyzing the shared value for people, the planet, and our company. These include:

- Nokia's renewed vision and corporate strategy
- Assessments of risks and opportunities through Nokia Enterprise Risk Management system
- Our long history and experience in sustainability and corporate responsibility
- Our regular engagement with various stakeholders, including industry cooperation around key sustainability topics
- Our customers' sustainability requirements and the evaluation criteria in the EcoVadis supplier assessment
- Requirements and feedback from investors, and indices such as the Dow Jones Sustainability Indices and the CDP
- Global macro trends and challenges and issues that are subject to public debate and media and analyst interest
- UN Sustainable Development Goals
- International sustainability frameworks such as the Global Reporting Initiative (GRI) G4 and the UN Global Compact.

In 2016, we reviewed and updated our materiality analysis whereby we systematically evaluated more than 40 sustainability topics selected based on the above criteria. Each topic was carefully defined and weighed against its impact on our commercial

success and sustainable development - including UN Sustainable Development Goals, and also taking into account the possibilities we have to influence sustainable development throughout the value chain.

As a part of the analysis we conducted close to 50 interviews with Nokia experts representing all the key sustainability related areas within the company, customers representing both traditional and new customer segments, and investor, employee, UN and NGO representatives. The analysis was also reviewed in Nokia Responsibility Council, Board of Directors, and by external sustainability experts.

The results of the materiality assessment helped us to identify the key topics and focus areas and set the long-term targets for the most material areas. The targets can be found on [pages 45-51](#)

Compared to our earlier sustainability materiality analysis, some of the key findings during the 2016 analysis were:

- Overall the importance of sustainability has to some extent increased
- No issue has clearly declined in importance
- The issues with already high importance like connecting people and things, ethical business practices, and product energy efficiency continue to increase in importance
- The highest increase in materiality is with the issue sustainability related products and services. The 2nd highest increase is in privacy & data security

- Our re-entry into the consumer business increases the importance of several issues
- New emerging issues in Nokia materiality map - both of which were earlier included in the other issues: materials traceability and conflict minerals and diversity, inclusion, and anti-discrimination.

The materiality map on the next page shows the 20 most material topics, their relevance to sustainable development, and Nokia business success.

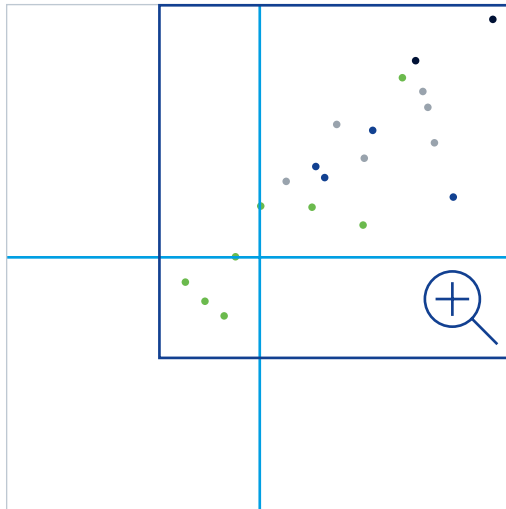
Overall, we want to maximize our positive impact and minimize our negative impact.

40
key sustainability
topics identified

50
interviews
conducted

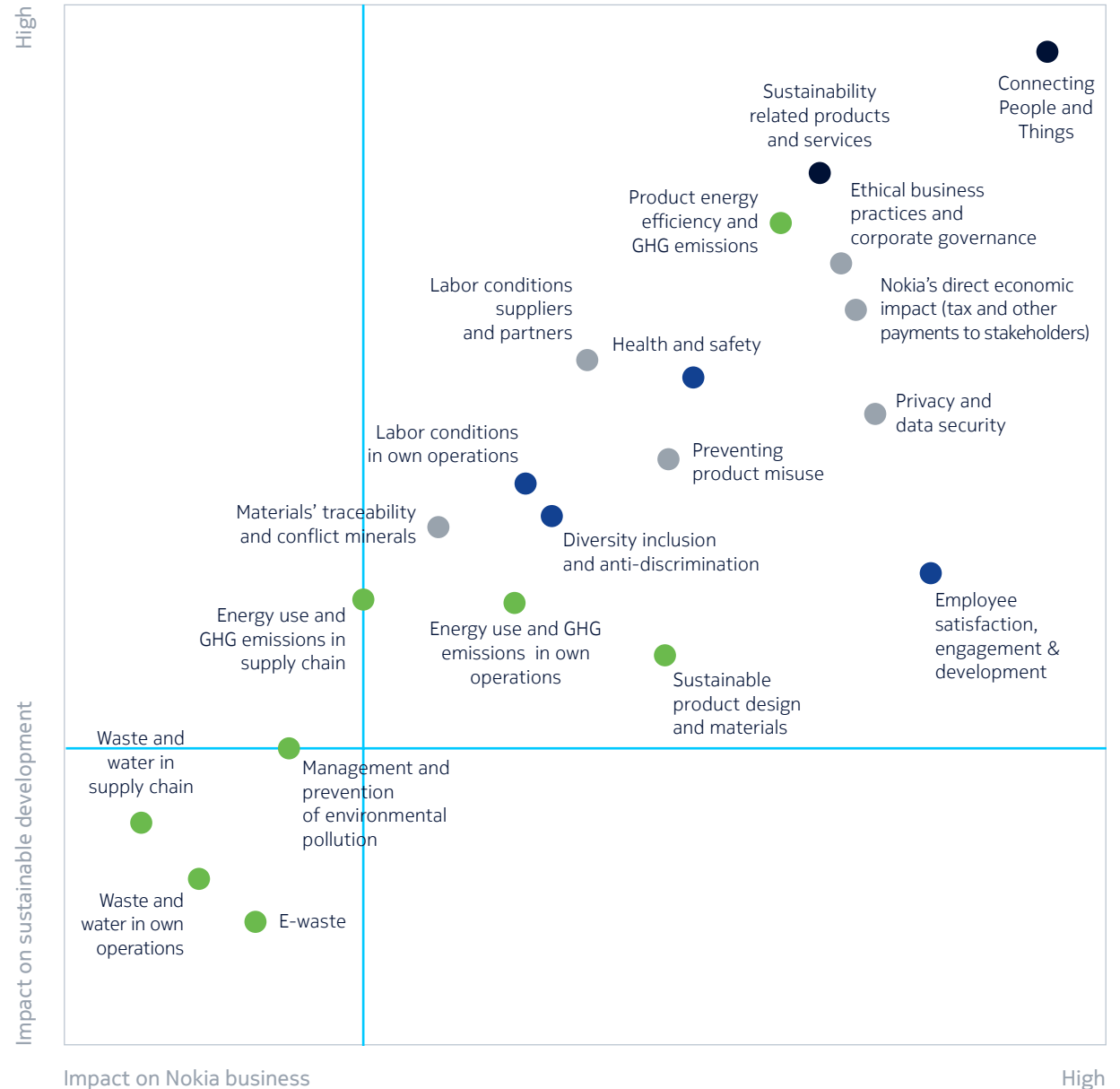
20
top topics
identified as key
focus areas

Our sustainability: Impact on business success & sustainable development

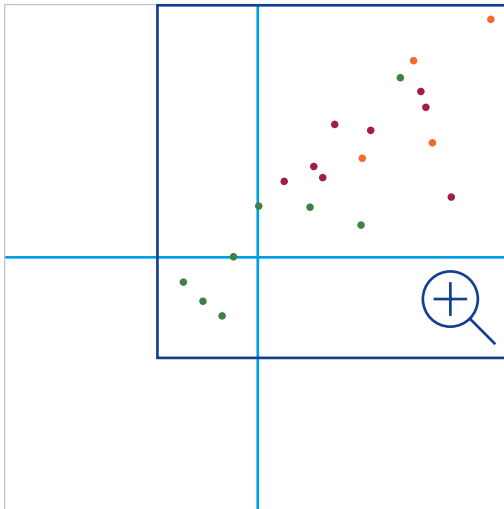


- Improving lives with technology
- Protecting the environment
- Respecting our people
- Conducting our business with integrity

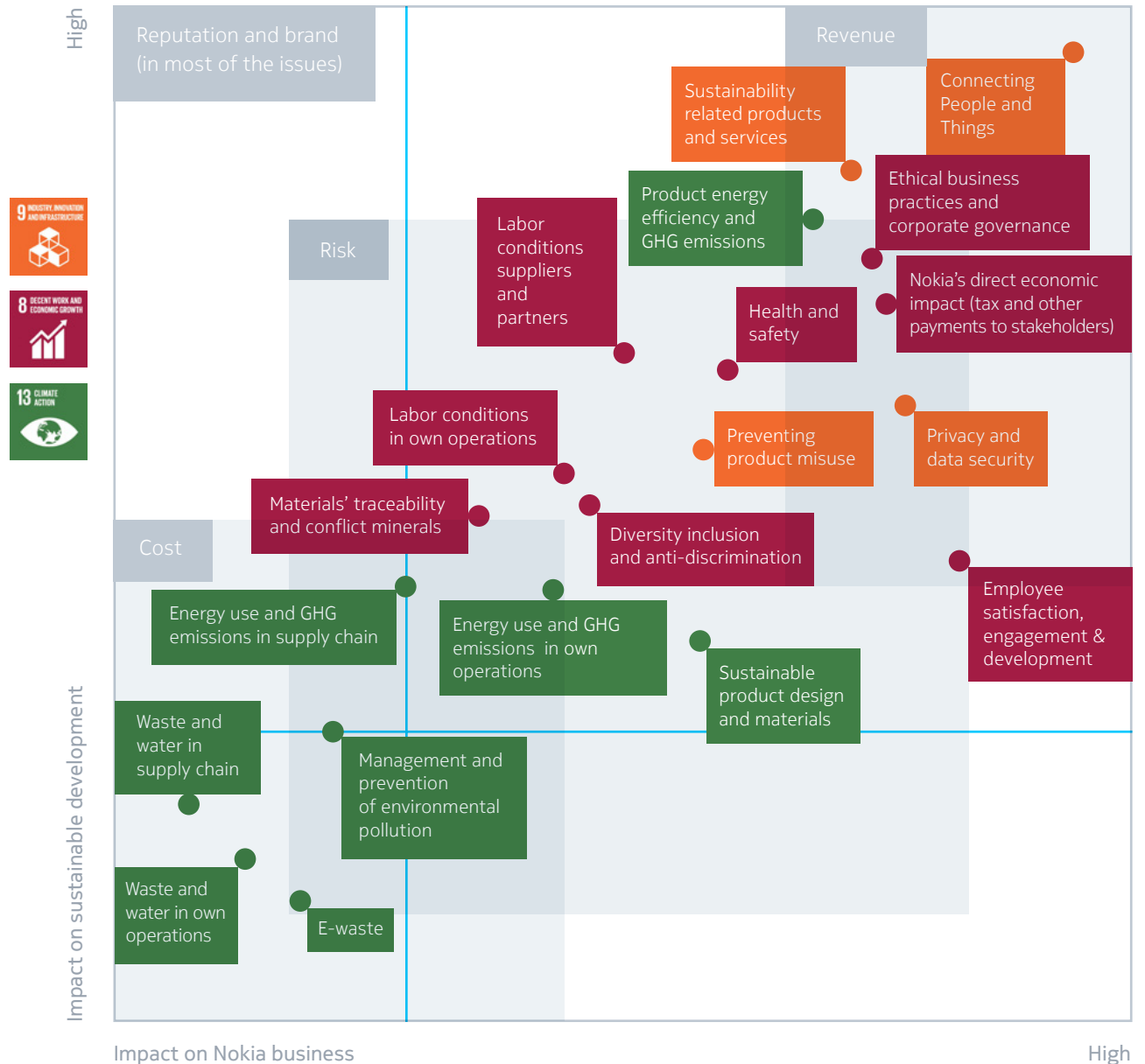
All the topics shown in this diagram are important in our responsibility work. Those in the top right corner of the diagram are most important to our business and sustainable development.



Key business and sustainability drivers



- Revenue, risk, cost & reputation/brand were important factors when the “Impact on Business success” was evaluated.
- A key component in the evaluation of “Impact on Sustainable Development” was the UN Sustainable Development Goals (SDGs).
- Many of our most material issues are product related and have a strong link to UN Sustainable Development Goals especially 8, 9 & 13.



Our impact and influence on sustainable development throughout the value chain

 Positive impact
  Negative impact
  Areas where we believe we have the largest opportunity to influence

	Suppliers	Our operations	Logistics and installation	Product use	Reuse and recycling
Economic Economic impact includes both direct economic contribution and indirect impact. For example, direct contributions to the value chain include payments to suppliers, employees, shareholders, creditors, and public sector. Indirect impact on the other hand includes issues such as how our technology, innovations, and connectivity create further economic activity, drive greater productivity and support our customers in their business.	Medium positive impact	Medium positive impact	Low positive impact	High positive impact	Low positive impact
Social Social impact includes employment opportunities, labor conditions, health and safety and training throughout the value chain. It also takes into account how our technology and connectivity can enable people to improve their lives and thrive.	Medium positive impact	Medium positive impact	Medium positive impact	High positive impact	Low positive impact
Environmental Environmental impact includes how we can affect GHG emissions, water, waste and material use throughout the value chain and how our technology and connectivity supports other industries and people in reducing their negative impact on the environment.	Medium negative impact	Low negative impact	Low negative impact	High positive impact	Low positive impact
	Our supply chains are long and involved in all phases along the value chain. We have more influence on tier one suppliers but this influence gradually reduces in the subsequent tiers.	We are most influential in our own operations, but the overall impact this has on sustainable development is relatively small.	Working with various partners and suppliers, including up and downstream logistics providers and partners during the installation phase, is an important part of our work.	Our biggest impact on sustainable development comes through our core business – from offering network infrastructure and advanced technology to our customers. During the product use phase the network energy use and related emissions have a negative environmental impact, but connectivity has a significant positive impact on the environment – meaning the overall net impact is positive.	

How we manage sustainability and corporate responsibility

Sustainability and corporate responsibility issues are reviewed regularly at all levels within Nokia, including by the Nokia Board of Directors (the “Board”). Our sustainability strategy and governance were realigned to our renewed strategy and business focus and new governance was implemented in 2016.

We have strong governance structures and practices in place to manage ethical business practices and corporate responsibility at Nokia. Our Code of Conduct sets out our expectations for employees across the company. The code is supported by policies and management systems related to responsibility issues. Our aim is to ensure that social and environmental matters are taken into account in everything we do.

Our policies are available [here](#), and they include:

- Code of conduct
- Code of ethics
- Conflict minerals policy
- Cookie policy
- Corporate governance guidelines
- Environmental policy
- General terms and conditions for the purchase of hardware and software
- General terms and conditions for the purchase of services
- Human rights policy
- Human Resources Policy

- Privacy policy
- Quality policy
- Recruitment privacy policy
- Transaction policy

Our sustainability governance

Sustainability and corporate responsibility issues are reviewed regularly at all levels, including the highest decision-making bodies of the company. The highest decision-making body at Nokia after the General Meeting of shareholders is the Board of Directors, which reviews annually the company’s overall sustainability activities and in addition specific topics when needed.

In 2016 the Board reviewed the Nokia sustainability focus areas, priorities, their alignment with the UN SDGs, targets and performance, new materiality analysis with key sustainability topics and their impact on business success & sustainable development. The board also reviewed the new Corporate Community Investment (CCI) approach and approved the CCI and University donations budget for the year 2017, and had a cybersecurity/information security update.

The Nokia Group Leadership Team, chaired by the President and CEO, is responsible for managing our operations. This includes reviewing and approving our policies and main responsibility initiatives. They also approve Nokia’s sustainability strategy, long-term and annual targets, the annual sustainability report, as well as how we link sustainability

performance into our rewarding system. They review and give feedback at least twice a year. In 2016, our Executive Vice President for Marketing and Corporate Affairs was responsible for corporate responsibility at the executive management level.

Our Corporate Responsibility Council, which consists of senior representatives – typically leadership team members from our business units and support functions – meets quarterly and ensures alignment across the business on responsibility strategy, priorities, and the implementation of responsibility activities.

Our Corporate Responsibility team develops together with business representatives the responsibility framework that outlines our priorities, targets, and policies. The team drives and advises on responsibility initiatives throughout the business, and works together with representatives and subject-matter experts from our business units to develop and implement processes and activities to achieve our environmental and social targets and supports in related stakeholder communications.

Our Ethics and Compliance Office supports employees in making decisions that are ethical, legal, and consistent with Nokia’s values. The team also investigates any concerns about potential breaches of our Code of Conduct.

More information about our corporate governance practices is available in our annual reports and on our website.

Our sustainability governance



Ethics and compliance office

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

Risk and opportunity management

We have a systematic and structured approach to risk management across our business operations and processes. Key risks and opportunities are primarily identified against business targets, either in business operations or as an integral part of financial planning. Key risks and opportunities are analyzed, managed, monitored, and identified as part of business performance management with the support of risk management personnel.

Our overall risk management concept is based on managing the key risks that would prevent

Nokia from meeting its objectives, rather than solely focusing on eliminating risks. The principles documented in the Nokia Enterprise Risk Management Policy, which is approved by the Audit Committee of the Board of Directors, require risk management and its elements to be integrated into key processes. One of the main 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 to their roles and duties.

Risk management covers strategic, operational, financial, and hazard risks. Key risks and

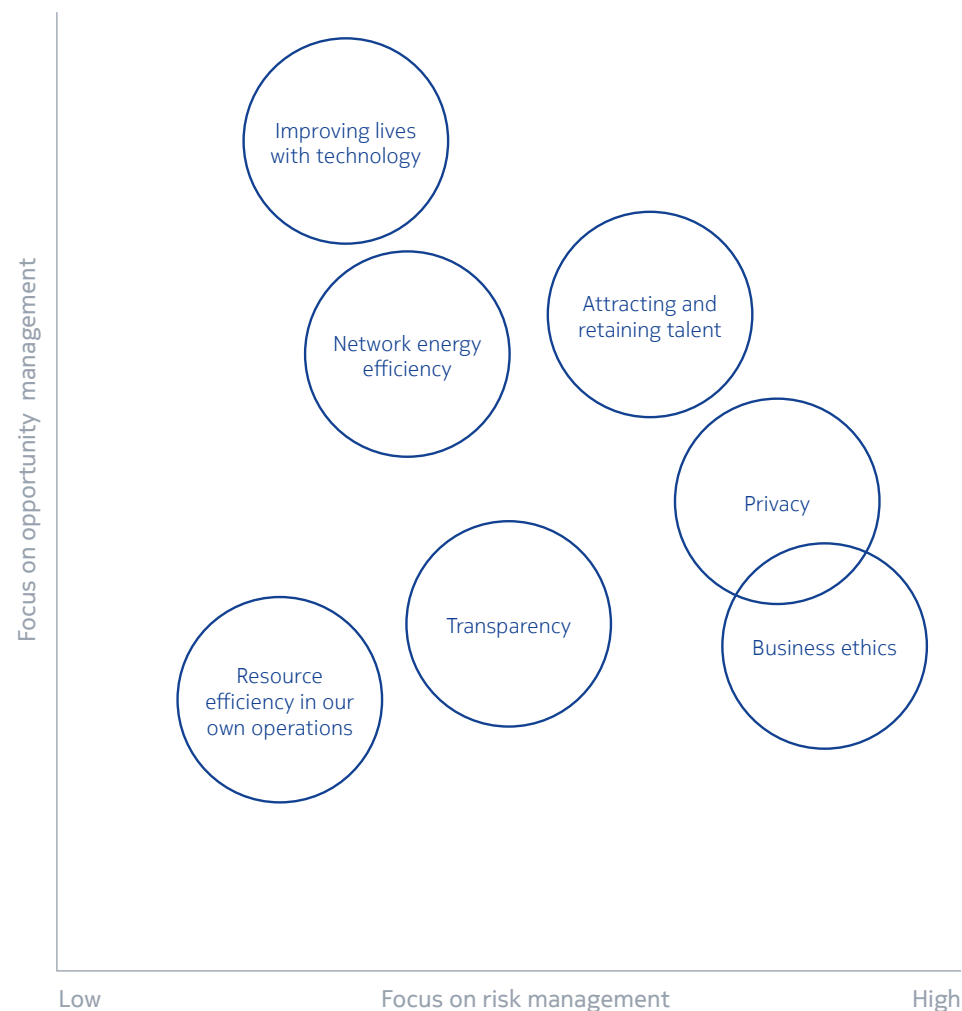
opportunities are reviewed by the Group Leadership Team and the Board of Directors to create visibility on business risks as well as to enable prioritization of risk management activities. In addition to the principles defined in the Nokia Enterprise Risk Management Policy, specific risk management implementation is reflected in other key policies.

The most important risk factors together with the principal factors and trends affecting our operations are discussed in our 2016 annual report, our Form 20-F. These include sustainability-related risks such as:

- Risks related to product safety, product misuse, health, privacy and security, including cybersecurity issues, as well as risks related to the environment, including also the adverse effects resulting from climate change.
- Risk of non-compliance with regulations or our supplier and customer requirements
- Violation of ethical standards, including our Code of Conduct
- Labor unrest and strikes
- Reduced employee motivation, difficulties in recruiting, and loss of key personnel
- Purchasing boycotts and public harm to our brand
- Risks related to issues with taxation, including tax disputes

We systematically analyze sustainability-related opportunities. Our innovations hold the potential for changing the way we live, from technologies that improve people's lives to helping reduce our environmental impact.

Illustrative examples of responsibility related opportunities and risks



Improving lives with technology, and network energy efficiency

There are revenue and, to some extent, also brand opportunities in creating technologies that improve people's lives and in developing more energy efficient networks.

Attracting and retaining talent

The ability to attract, motivate and keep talent has an impact on how well we are able to manage our revenue and cost related opportunities and risks.

Privacy and business ethics

Privacy and ethics are brand, reputation and regulatory driven risk areas but there are also opportunities in these areas. Ethics also covers how we work with suppliers and partners.

Transparency

Transparency has an impact on brand related risks and opportunities.

Resource efficiency in our own operations

Eco-efficiency in our own operations and logistics includes cost savings opportunities and also have an impact on Nokia's brand perception.

Business continuity management

Nokia stands out as a trusted partner for our customers, sustaining long-term relationships through our proven ability to deliver mission critical technology that directly impacts businesses, public services and individuals. We are committed to ensuring the continuity of our products, services and solutions in customer networks, and the critical functions supporting them by:

- Establishing and proactively maintaining a business continuity management system to ensure that products, services, and solutions continue to be delivered at acceptable levels during a significant disruption to our operations
- Implementing a crisis management strategy focused on safety of personnel, efficient recovery and effective restoration of business capabilities
- Managing IT continuity to ensure availability of critical IT services and applications
- Complying with all applicable legal, statutory, corporate, contractual and other requirements
- Always striving for continual improvement in our business continuity management processes to increase resilience and minimize the impact of a disruption on customers, employees and other stakeholders.

Our sustainability strategy and reporting frameworks

Our sustainability strategy and reporting framework conforms to key regulatory, investor, and customer requirements and globally recognized corporate social responsibility (CSR) frameworks. Nokia is committed to expanding its transparency and coverage in reporting, and to reviewing progress

on its activities. Our selected key sustainability indicators have been assured by an independent auditor.

Our report has been prepared in accordance with the Global Reporting Initiative GRI G4 Core guidelines. Nokia has based its sustainability activities and reporting on the United Nations Global Compact (UNGC) principles. For the second year in a row, we will ensure that our reporting is compliant with the UN Global Compact advanced criteria. In June 2017, we will also publish our first report in compliance with the UK Modern Slavery Act.

We respond to the RobecoSAM Corporate Sustainability Analysis annually, through which we are listed in the Dow Jones Sustainability Indices (DJSI). We also follow the EcoVadis framework, which is a mandatory annual evaluation of customer and supplier corporate social responsibility. Focusing on climate change strategy, governance, performance, as well as supplier requirements, we refer to the CDP in our environmental reporting. Read more in the [Environment section](#)

In 2016, we continued to further embed the UN Sustainable Development Goals into our business, sustainability strategy, and activities. We again carried out an extensive materiality analysis and evaluation of how our business can make the greatest impact in reaching these goals.

How the UN Sustainable Development Goals relate to Nokia

In 2016 Nokia increased its work and commitment towards contributing to the 17 ambitious Sustainable Development Goals (SDGs) adopted by the United Nations Assembly in 2015. We further evaluated the relationship between our business, our most material issues and the support

we can provide in reaching these goals. It is clear that through the technology and the solutions we invent, create, and deliver, we can potentially contribute to every goal. Our revisited sustainability strategy, related activities, targets, and programs are well aligned with the SDGs. The illustration

highlights our strategic sustainability priority areas and how they correlate to the SDGs. We aim to further integrate the SDGs into our sustainability strategy, programs, and activities.

Improving people's lives with technology



Protecting the environment



Conducting our business with integrity



Respecting our people in everything we do



Making change happen together



Improving people's lives with technology



Build resilient infrastructure, promote sustainable industrialization and foster innovation - is the most material SDG for us

In the area of improving people's lives with our technology. It's importance relates directly to our technology innovations and network infrastructure which also provides the opportunity to contribute to all the other remaining goals.

In addition, IoT connected devices are expected to top 46 billion by 2020 which will enable many billions of people, devices, and sensors to connect in a way that opens up a world of possibilities. These possibilities include making our planet safer, cleaner, healthier, more sustainable, more efficient, and more productive.

In 2016, we used our technology to drive further improvements in public safety, efficiency, and emergency response; we supported rural communities in improving access to education and improved economic opportunities; we continued connecting the unconnected; we expanded our programs and collaboration around digital health and wellness; we extended our product offering to drive reductions in CO2 emissions from network infrastructure; and we used technology to raise awareness of the refugee crisis.



End poverty in all its forms everywhere
How we contribute to the overall economy; improving peoples lives with technology; collaborating with NGOs



Ensure access to a ordable, reliable, sustainable and modern energy for all
A world of possibilities through Internet of Things



Conserve and sustainably use the oceans, seas and marine resource
A world of possibilities through Internet of things; Making cities smart, safe and sustainable



End hunger, achieve food security and improved nutrition and promote sustainable agriculture
A world of possibilities through Internet of Things



Promote inclusive and sustainable economic growth, employment and decent work for all
How we contribute to the overall economy



Sustainably manage forests, combat desertication, halt and reverse land degradation, halt biodiversity loss
A world of possibilities through Internet of Things



Ensure healthy lives and promote well-being for all at all ages
Sustainability related products and solutions; collaboration with universities, cities and other industries



Reduce inequality within and among countries
Connecting the unconnected; Bridging the digital divide



Promote just, peaceful and inclusive societies
Collaborating with NGOs, improving people's lives with technology



Ensure inclusive and quality education for all and promote lifelong learning
Enhancing lives through corporate community investment; collaborating with NGOs



Make cities inclusive, safe, resilient and sustainable
Making cities smart, safe and sustainable



Revitalize the global partnership for sustainable development
Making change happen together; improving people's lives with technology



Achieve gender equality and empower all women and girls
Diversity, inclusion and anti-discrimination; Collaborating with NGOs



Ensure sustainable consumption and production patterns
A world of possibilities through Internet of Things



Ensure access to water and sanitation for all
A world of possibilities through Internet of Things



Take urgent action to combat climate change and its impacts
Our commitment to protecting the environment



Read about our activities in the Improving people's lives with technology section.

Protecting the environment



The most material goal from an environmental perspective for us is goal 13: Take urgent action to combat climate change and its impacts.

It is estimated that by 2030, the ICT industry has the potential to reduce global carbon emissions ten-times more when compared to the emissions created by the industry. Nokia's positive impact is created through the equipment we provide that advances digitalization towards a programmable world. Our product portfolio in use also has a carbon footprint and therefore we must also pursue ways to increase the energy efficiency of our products and enhance the use of renewable energy.

We also aim to constantly improve the eco efficiency of our own operations despite a relatively small impact. We work hard to drive improvements in eco efficiency throughout the life cycle of our products, from design through delivery to end of life.

In 2016, a year of integration of the former Alcatel-Lucent, we continued to achieve some excellent environmental performance results in our own operations; we launched new products that help our customers decrease energy use and emissions in their networks; and we continued reusing and recycling old telecom equipment collected from our customers.



Ensure access to water and sanitation for all

Use of natural resources



Ensure access to an affordable, reliable, sustainable and modern energy for all

Driving further efficiencies in our facilities



Build resilient infrastructure, promote sustainable industrialization and foster innovation

Minimizing the climate impact of networks, maximizing the benefits



Ensure consumption and production patterns

Managing environmental impact



Read about our activities in the [Protecting the environment section](#)



We identified Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all – as the most material one for both topics.

At the end of 2016 we employed around 100 000 people globally, but also our business creates greater business and job opportunities throughout our supply chain. We conduct our business in accord with internationally recognized ethical and responsible business practices. We require the same high standards of our suppliers. Health and safety is a priority for our own employees as well as for our supply chain, and we are committed to a diverse workforce that reflects the gender and diversity balance of the real world. An employee mix of women and men from different age groups enriches our company

In 2016, we trained over 1900 leaders in gender diversity issues, and over 90% of former Alcatel-Lucent employees completed Nokia Ethical Business Training. We ran specific training programs and information sessions to highlight key safety risks for our employees, contractors, and subcontractors. We increased the number of supply chain onsite audits and expanded our range of security products.

Conducting our business with integrity



Promote inclusive and sustainable economic growth, employment and decent work for all
Responsible sourcing



Promote just, peaceful and inclusive societies
Promoting ethical behavior; Addressing human rights



Read about our activities in the Running our business with integrity section

Respecting our people in everything we do



Ensure healthy lives and promote well-being for all at all ages
Health and Safety



Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Human capital development



Read about our activities in the Respecting our people in everything we do section



Achieve gender equality and empower all women and girls
Diversity, inclusion and anti-discrimination; Collaborating with NGOs



Promote inclusive and sustainable economic growth, employment and decent work for all
Ensuring decent working conditions and fair employment



Reduce inequality within and among countries
Ensuring decent work and fair employment; Diversity, inclusion and anti-discrimination

Making change happen together



In our collaboration with stakeholders, our activity is directly aligned with goal 17: Revitalize the global partnership for sustainable development.

We are committed to working with a broad range of stakeholders to make an even greater contribution to a more sustainable, more efficient, and more socially responsible world. We seek improvements by working with our suppliers, industry peers, customers, enterprises, authorities, and NGOs.

In 2016, we engaged with stakeholders to enhance the use of technology for the good of people and the planet. We worked with a number of NGOs and other organizations to improve access to education, improve connectivity for rural communities, to increase public safety, and to highlight the current refugee crisis. We also championed activities that support greater gender equality and diversity, empowering women, girls, and young people. Additionally, our collaborative activities promote inclusive and sustainable economic growth, employment and decent work for all, and they reduce inequality within and among countries.



End poverty in all its forms everywhere
Collaborating with NGOs



Ensure healthy lives and promote well-being for all at all ages
Digital innovation for improved healthcare



Ensure inclusive and quality education for all and promote lifelong learning
Collaborating with NGOs



Achieve gender equality and empower all women and girls
Diversity, inclusion and anti-discrimination; collaborating with NGOs



Ensure access to water and sanitation for all
Use of natural resources



Promote inclusive and sustainable economic growth, employment and decent work for all
Responsible sourcing; ensuring good labor practices in the supply chain



Reduce inequality within and among countries
Collaborating with NGOs



Make cities inclusive, safe, resilient and sustainable
Collaboration with universities, cities and other industries



Take urgent action to combat climate change and its impacts
Climate impact - helping suppliers reduce and report



Promote just, peaceful and inclusive societies
Partnering with NGOs



Read about our activities in the [Making change happen together](#) section

Our new sustainability targets: Improving people's lives with technology

Connecting People and Things

These targets directly support these SDGs

2022

Helping our customers to connect the next billion measured by number of subscriptions in Nokia radio customers' networks and by number of fixed network lines shipped to our customers.



Sustainability related products and services

2018

3-4 Nokia Saving Lives solution kits provided and supported by Nokia and used by selected partner organizations in the humanitarian field proving that Nokia technology saves lives.

100% of corporate community investment activities aligned with our group-wide strategy, business drivers and SDGs.

100% of corporate community investment programs to be measured against a monitoring and evaluating system.

Ensure participation of all Nokia employees in corporate health programs by 2018 to reduce the incidence of Cardio Vascular Disease



2020

Ensure integration of data from smart health devices into all major electronic health records accessible to doctors by 2020

Support the extension of remote patient monitoring of chronic diseases, by rolling out patient care solutions using Nokia devices to over 100 000 patients by 2020

Reduce the rate of uncontrolled hypertension from an average 50% of hypertensive adults to less than 10% among the Nokia wireless blood pressure user community by 2020

2025

Improve the lives of 2 000 000 people through our corporate and key regional community investment programs (baseline 2015) focusing our action on gender balance, education and health and on how Nokia products and services improve people's lives.

Our new sustainability targets: Conducting our business with integrity

Ethical Business Practices and Corporate Governance

These targets directly support these SDGs



2017

Ethical Business Training (EBT)
completion = 95%

Set the baseline based on new Culture Cohesion Tracker question “Does your line manager periodically talk with you and your team members about the importance of ethics and compliance?”

2020

Ethical Business Training (EBT)
completion = 98%

Employee/Line Manager
engagement = 75% favorable answers
based on the baseline set during 2017

2030

Ethical Business Training (EBT)
completion = 100%

Employee/Line Manager
engagement = 85% favorable answers
based on the baseline set during 2017

Privacy and Data Security

2017

Nokia has approved company-wide security baseline requirements. Plans for the deployment of both security and privacy requirements to all businesses and product programs will be in place and underway by the end of 2017.

2020

Our aim for 2020 is that Nokia be recognized as an industry leader in security and privacy. This will be assessed through external benchmarking.



Preventing product misuse

2017

Conduct a formal Human Rights Impact Assessment for the new Nokia product portfolio with an externally verified expert.

2018

Successful completion of the first Global Network Initiative (GNI) assessment.

2020

Nokia as externally recognized leader in vendor related issues such as freedom of expression & right to privacy according to external benchmarking.



Our new sustainability targets: Conducting our business with integrity

Nokia's direct economic impact – Tax & other payments to stakeholders

These targets directly support these SDGs

2017

We will disclose country specific information to the tax authorities regarding 2016 according to the new reporting requirements (so-called country by country reporting within the framework of OECD BEPS action 13).



Labor conditions / suppliers & partners

2020

Comprehensive supplier sustainability risk mitigation (90% of Suppliers assessed with satisfactory sustainability score and 100 on-site audits conducted per year).

Establish supplier worker empowerment program (enabling trainings on NokiaEDU and Worker Tollfree Helpline).



Materials traceability and Conflict Minerals

2018

Achieve full traceability to the smelters in our supply chain and their conflict-free status (Mobile Networks).

2020

Achieve full traceability to the smelters in our supply chain and their conflict-free status (Nokia Corp).



Our new sustainability targets: Respecting our people in everything we do

Employee Satisfaction, Engagement, and Development

These targets directly support these SDGs

2018

Introduction of the renewed Employee Engagement model with increased frequency and depth.

2020

90% employee engagement by 2020

Nokia to be the "employer of choice" (in our size) for all of our major hubs in locations around the world and become the best regarded employer in our industry globally.

Foster the spirit of employee volunteerism across the company and increase their engagement.



Diversity inclusion and anti-discrimination

2017

2000 Nokia leaders, managers, employees to participate in Gender Balance training by the end of 2017

2020

Increase the % of women in leadership by 25% (baseline 2016)



Our new sustainability targets: Respecting our people in everything we do

Health, Safety, and Wellness

These targets directly support these SDGs



2017

80% of all suppliers delivering high-risk activity to be requalified using Nokia Supplier Maturity Assessment Process. Starting point – 70% of Nokia Suppliers and 5% of former Alcatel-Lucent suppliers covered by revised process.

2020

50% of suppliers delivering high-risk activity to meet or exceed “H&S preferred supplier” status

H&S Awareness – 100% of employees to undertake mandatory training on health and safety behaviors and values. Nokia internal training “Making tomorrow safer”.

2030

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

2018

100% of all suppliers delivering high-risk activity to be assessed using Nokia Supplier Maturity Assessment Process.

Our new sustainability targets: Protecting the environment

Product Energy Efficiency and GHG Emissions

These targets directly support these SDGs

2030

GHG reduction 75% compared to 2014*
(scope 3, energy use of sold products)



Energy Efficiency and GHG Emissions in own operations

2017

Achieve a total facility energy usage reduction of 1.8%, as compared to 2016 levels (Scopes 1+2)

Achieve at least 20% utilization of renewable electricity, as compared to total purchased electricity

2030

GHG emission reduction of 41%, as compared to the 2014 baseline level* (Scopes 1+2)



Energy use and GHG emissions in supply chain

2018

150 suppliers setting emission reduction targets

90 dedicated 1 to 1 reviews with suppliers, collaborative emission reduction projects



*The targets are at the time of publication of this report under verification against a set of criteria developed by the Science Based Target initiative, a collaboration between CDP, United Nations Global Compact, World Resources Institute and the World Wide Fund for Nature (WWF). We expect to have the targets formally approved by end June 2017. Read more about the Science Based Targets initiative on [page 71](#)

Our new sustainability targets: Protecting the environment

Waste and water in own operation

These targets directly support these SDGs

2017

Reduce the water use in our facilities by 2% compared to 2016 level

Establish a new baseline and related targets for waste reporting on account of changed waste reporting scope



Waste and water in supply chain

2018

Deployment of non-carbon related projects with suppliers



Sustainable product design & materials

2017

By end of 2017, eliminate PVC from Nokia products, where technically, economically, and environmentally feasible.



Improving people's lives with technology

In 2016 our focus on the human possibilities of technology reflects the exciting opportunities we see in the connected world. Connectivity increases productivity and economic growth, improves access to knowledge, information and education, a healthier life, and plays a key part in reducing carbon emissions.

Connecting people and things

The technology, products, services and innovations we design and create can provide tremendous opportunities and solve many of today's global challenges. The vision of the Programmable World continues to guide our corporate strategy.

Connectivity has tremendous potential for economic and social empowerment for any individual. The development of technologies such as 5G and IoT is expected to help to realize smart innovations in cities and homes, access to digital health and greater public safety.

Through our end-to-end portfolio, our technology can connect the unconnected, increase efficiency and productivity, thus creating shared value and driving greater economic growth. Our radio networks customers serve around 5.5 billion subscriptions worldwide, while in fixed networks we shipped around 35% of the world's broadband lines. We are moving towards a world of 5G, Internet of Things (IoT), Cloud, Virtual and Augmented Reality, and smart technology solutions that solve everyday challenges and drive sustainable growth and development. We believe our technology, and the potential of IoT to connect people and trillions of things with each other, could positively contribute to all 17 of the UN Sustainable Development Goals. Research firm IDC estimates that global spending on IoT devices and services will rise from USD 656 billion in 2014 to USD 1.7 trillion in 2020.

We see a time of massive transformation of networks and technology that will connect the unconnected in more ways than ever before.

Billions, if not trillions, of machines will become part of the Internet of Things, and the applications ecosystem will drive greater demand for data by continuously inventing new categories of applications and use cases. With the upcoming rollout of 5G and cloud solutions, people will have access to information, knowledge and awareness exactly when they need it, helping them to be more efficient in their professional and private lives. We can have the greatest impact on sustainable development through our main business of delivering networks, technology solutions, and services to telco operators, enterprises, and organizations.

Enabling a 5G world

5G will be one of the key requirements to enable imperceptible speed, without any noticeable delay. The technology performance we will see with 5G is critical for use cases such as virtual and augmented reality, e-education and e-health, industrial applications, machine-to-machine (M2M) communications as well as mission-critical communications. 5G will be key in the near future to enable smart cities. We continue to work with the European Commission to drive the 2020 5G trial plan activity across member states, as well as having over 40 engagements globally, testing and trialing the different facets of 5G.

In February 2016, we underscored our position in 5G development by announcing 5G-ready Nokia AirScale, an innovative next-generation radio

access solution which will enable operators to satisfy future demands. For example, in 2016, we also signed a EUR 1.36 billion frame agreement with China Mobile, first to announce it will deploy Nokia's innovative AirScale Base Station.

Our new target



2022

Helping our customers to connect the next billion measured by number of subscriptions in Nokia radio customers' networks and by number of fixed network lines shipped to our customers.



Real-Time Communication between vehicles

On March 16, 2016, The "Real-Time Communication between vehicles via the LTE Mobile Network" project jointly launched by Continental, Deutsche Telekom, the Fraunhofer ESK Institute, and Nokia on the A9 motorway in Germany won the top award in the best-practice competition of the Intelligent Networking Initiative in the "Traffic" category. The aim of this project was to improve road safety and prevent traffic jams through mobile technology, therefore also helping to reduce car exhaust emissions.



5G for the first time in the Philippines

5G opens up exciting possibilities for IoT applications for Filipinos, particularly in healthcare and smart cities. Nokia Manila Technology Center and Smart's innovation team will collaborate to conduct joint 5G research for the development of 5G technology. With extremely low latency, 5G enables a huge number of new use cases, such as remote surgery, real-time responsive robots for automated industrial production, virtual and augmented reality and autonomous driving.



4.5G technology across Saudi Arabia

STC is deploying our 4.5G technology across Saudi Arabia to meet the next phase of mobile data demand and pave the way to 5G. They will expand coverage and capacity, and the initial deployment supported millions of visitors to Mecca, meeting peak 4G traffic demands which increased by 600 percent compared to 2015.





Connected mobility

In 2016, Nokia became a founding member of the 5G Automotive Association where automotive and telecom companies have joined forces to address society's connected mobility needs. The association includes car manufacturers, telecom operators and suppliers, chipset and device vendors and automotive suppliers. The aim is to develop, test and promote standardized communications solutions, initiate their standardization and accelerate their commercial availability and global market penetration for the automotive sector. Key areas of interest will be road safety, automated driving and smart city transportation.



Extreme broadband speeds

Nokia and Ooredoo Qatar have successfully demonstrated how 5G technology can deliver extreme broadband speeds of 10 Gbps and reduced latency of just 1 millisecond, reiterating the operator's contribution to Qatar National Vision 2030 goal to boost the knowledge-based economy. The 5G speed and latency was demonstrated with two different applications - the streaming of virtual reality content and use of industrial robots.

This kind of performance is critical for use cases including augmented reality, virtual reality, e-education, e-health, industrial applications, machine-to-machine communications (M2M) and critical communications - it will be key in the near future to enable smart cities with IoT.

"For Qatar National Day, we wanted to celebrate the achievements of Qatar's founders and also look forward to the future, at the new accomplishments that the people of Qatar will realise. This demonstration shows not only the speed and latency of 5G networks, but also the types of solutions and technology that will become available in Qatar as we become a truly "smart nation""

Waleed Al Sayed, Chief Executive Officer of Ooredoo, Qatar



Opening up a world of possibilities through Internet of Things

According to a Bell Labs Consulting report, there will be at least over five billion IoT devices connected through mobile networks by the year 2020. Moreover, IoT connected devices are expected to potentially top 46 billion by 2020 and disrupt the way networks are managed.

Working closely with operators, enterprises and a strong ecosystem of companies through our IoT Community, we combine our mobile and fixed network infrastructure assets with secure IoT connectivity, distributed cloud, as well as IoT platforms with applications and analytics, and individualized services. Our innovations help service providers, enterprises, and governments use the Internet of Things (IoT) to create new opportunities for people, communities and economies.

Nokia expects IoT to create new industries and opportunities in connected mobility, smart cities, public safety, healthcare, and the connected home.

In 2016, amongst many activities, we conducted an interesting trial using NB-IoT (Narrowband Internet of Things) technology on Finnish operator, Sonera's

commercial 4G network to accelerate the creation of an IoT ecosystem, and provide support for the ever-growing number of IoT-connected devices. In the IoT world, networks will need to support billions of remote machines requiring instant connectivity to record and share data for industries such as healthcare, energy, manufacturing, agriculture and transportation. NB-IoT technology is designed to meet these demands, providing the capacity, network reliability and security enabled by commercial mobile networks together with deep indoor coverage and low power consumption, to prolong device battery life to up to 10 years and optimize maintenance costs. Compared to conventional LTE, NB-IoT will allow for the tracking of objects deep within buildings and in rural areas. The trial reaffirms Nokia's leadership in developing technology to support IoT and the programmable world

Nokia has also collaborated with Vodafone and Telit to expand the IoT ecosystem using NB-IoT technology. We deployed a fully integrated NB-IoT system at Vodafone's 'Open Lab' in Dusseldorf, Germany, using our radio access network and elements from Cloud Packet Core solution.

In addition, in 2016, Nokia continued to expand

its support to initiatives aiming to identify new opportunities to grow the ecosystem in IoT solutions. We launched a USD 350 million IoT investment fund through Nokia's private venture firm, Nokia Growth Partners, related to the Connected Enterprise, consumer IoT, Connected Car and Digital Health, as well as technologies with a focus on capabilities in big data and analytics.



Read more about
[Nokia Growth Partners](#)

Making IoT fly

During 2016, we took a major step towards driving IoT development by launching our IMPACT IoT platform. Nokia IMPACT IoT Platform enables service providers, enterprises and government agencies to easily deploy IoT services and lines of business, such as smart parking, smart lighting, and transportation and automotive. IMPACT adds to our rapidly expanding IoT portfolio that now contains the major building blocks of every IoT solution:

Applications: Vertical solutions for connected cars, healthcare, first responder, smart cities, smart homes, and utility deployments.

Devices and Sensors: Connected devices such as those from the acquisition of Withings and the smart home broadband gateway.

IoT for Service Providers

Manage billions of IoT device connections and support applications that open up new revenue streams

IoT for the Automotive Fleet Industry

Meet the demand for new functions and best-in-class security with scalable solutions that make it easy to connect and control IoT devices

IoT for Utilities

Make mission-critical operations more efficient, safe, and secure by deploying an IoT-ready utility communications infrastructure

IoT for Smart Cities

Use IoT to improve quality of life, foster economic growth, and deliver on eco-sustainability initiatives

Connecting the unconnected

According to the latest International Telecom Union ICT Facts and Figures, 20% of households in developed countries and as much as 66% of households in developing countries do not have internet access, leaving almost 4 billion people from developing countries offline*.

At Nokia, our commitment is to contribute to delivering the benefits of broadband infrastructure and services to all corners of the world. Digital inclusion is part and parcel of our overall vision to create the technologies that connect the world. Our technology can, and will, make a major contribution to improving lives, whether through access to education, healthcare & nutrition information, or management of the environment and natural disaster situations. Connecting the unconnected opens up opportunities in life in many other areas. Connectivity is a basic human right in line with the United Nations' stance, as it facilitates the realization of a range of other human rights. We continue to work with governments, non-governmental organizations (NGOs), customers and other industries to drive access for all.

Connecting in more ways

Thanks to our portfolio of fixed and mobile access products and solutions, we deliver more reliable broadband experiences, as well as more bandwidth to more places, giving communities greater access to the world around them. Thanks to our copper, fiber and coax access portfolio offering, we deliver more bandwidth to more people, faster, and cost-efficiently. The portfolio allows for a customized

combination of technologies that brings fiber to the most cost-effective point for our customers.

Our innovations in this area include the launch of **Nokia FastMile** which is designed to overcome missing broadband connectivity by bringing much needed high-speed broadband to the citizens of unconnected areas. This solution delivers good quality broadband to those living in unconnected areas. It is also faster and cheaper than fixed solutions in areas where copper or optical connectivity is unavailable. Our solution triples TD-LTE-A speeds and boosts capacity to help bridge the digital divide, prepare for 5G and enable telecom operators to reach underserved and rural markets.

We extended our fixed portfolio of G.fast micronodes, next generation PON and virtualization to provide a larger number of use cases in a cost-effective way for operators to drive broadband nationwide, including in rural areas.

Collaborating to remove the digital divide

It is essential that we work with others in our industry, international organizations, global institutions as well as policy makers, civil society, and academia, in order to make connectivity and broadband investments successful, and to help shape the emerging Programmable World. The UN Broadband Commission for Sustainable Development set up by ITU and UNESCO promotes broadband in developing countries and underserved communities and advocates the power of ICT and



Australia's national broadband network

Australia's national broadband network (nbn) was set up in 2009 with the aim to provide a broadband connection to every household in Australia, regardless of where they live.

As nbn's original fixed networks partner, Nokia is working to deliver the latest innovation in ultra-broadband access technology and to help nbn decide on the best options to get connectivity to everyone, based on a mix of copper and fiber technologies. In 2016, we continued rolling out broadband in Australia, while testing the latest technologies, like XG-FAST for future evolutions of the network.

broadband-based technologies for sustainable development.

Our President and CEO Rajeev Suri accepted a role as Broadband Commissioner in order to contribute to creating and innovating on projects that can digitize the under-developed and under-connected world. We work with the UN Broadband Commission for a Sustainable Development on a range of sustainability-related topics including

*Source: <http://www.itu.int/en/mediacentre/Pages/2016-PR30.aspx>

the digitalization scorecard and digital health. Read more on [pages 138-158](#) in the Making change happen together section of this report. We are also proud to contribute to the work of the World Economic Forum (WEF), where our CEO and other executives engage in discussions shaping the future of the digital economy and society. You can read more on our cooperation with WEF on [pages 138-158](#) in Making change happen together.

Key educational institutions in countries around the world are also part of our drive to improve people's lives. For example, in 2016, we announced a partnership with the Indian Institute of Technology-Madras (IIT-M), one of the country's foremost educational institutions, to create technology solutions that will enhance broadband connectivity in rural India, with the aim to leverage unlicensed spectrum and enable the government's vision of "Digital India". Read more [here](#).

"Together with Nokia, IIT-Madras, through its Centre of Excellence in Wireless Technology, will explore new avenues for getting affordable wireless broadband technology to rural India in an effort to bridge the digital divide. Our research will focus on leveraging the power of the Internet to accelerate the development of India's rural communities, home to the vast majority of India's population."

Professor Bhaskar Ramamurthi
Director, Indian Institute of Technology-Madras

Through our technology, we enhance network capacity and coverage in countries around the world. In 2016, we had sales in approximately 130 countries and made agreements to improve network capacity and coverage in various developing countries, including Cambodia, China, India, Indonesia, Kenya, Lebanon, Malaysia, Thailand, and the Philippines, with work in Bangladesh scheduled for early 2017.

Helping our customers improve connectivity in 2016 – a snapshot

Bangladesh

We help Teletalk improve coverage in rural areas with comprehensive 2G and 3G networks, and enhance quality in urban areas. Covering 70% of the country, the technology will also help significantly reduce energy costs and CO2 emissions.

Cambodia

We expand and modernize Cambodian operator Cellcard's 3G and LTE network with around 1500 new sites to make mobile broadband services available in other provinces and rural areas.

China

China Unicom leverages Nokia core router technology to address surging Internet traffic and the national broadband initiative, improving speed and response times to meet future capacity demands.

India

We expand Bharti Airtel 4G deployment across urban, suburban, and rural areas.

Idea Cellular rolled out our 4G LTE, covering 3 telecom circles, expanded 3G network, and modernized 2G networks.

Indonesia

We enhanced Hutchison 3 quality and speeds for its rapidly growing subscriber base on one of the most densely-populated islands on the planet

FiberStar chose us to help deploy Internet Protocol Multiprotocol Label Switching (IP/MPLS) Metro Ethernet networks in 48 cities across the islands of Java and Bali.

Kenya

Safaricom in East Africa is improving services for more than 25 million subscribers in Kenya, thanks to our Customer Experience Management on Demand. Safaricom now uses big data technology to derive real-time insights from network, customer, and revenue touchpoints.

Malaysia

Our mobile fronthaul optical technology supports edotco transition to meet demand for mobile broadband.

Thailand

True Group updated its broadband network with our IP/MPLS solution to meet surging demand for ultra-broadband fixed and mobile services in the greater Bangkok area.

Did you know?

Internet subscriptions in Cambodia increased from 3.86 million in 2013 to 5.8 million in 2015, as per [Telecommunications Regulator of Cambodia](#). Mobile broadband is recording a growth of 37% year-on-year in Cambodia, according to [GSMA Intelligence](#)

Did you know?

At the end of September 2016, Bangladesh had 66.86 million internet subscribers, out of which 62.9 million accessed the Internet on mobile, according to the [Bangladesh Telecommunication Regulatory Commission](#).

Sustainability related products and services

We are committed to innovating ways to use technology for a more sustainable tomorrow.

Entering the digital health market

The global digital health market is expected to grow exponentially over the next five to seven years, up to EUR 220 billion by 2020*.

In Digital Health, we are entering the market through our acquisition of Withings with a portfolio of premium, intuitive products designed to inspire the individual to take control of their own health.



Our digital health strategy focuses on the segments fueling the most significant growth:

- 1) connected devices that go beyond trackers and smart watches to include scales and blood pressure monitors;
- 2) remote patient monitoring.

Connected devices empower individuals to take control of their own health through a portfolio of beautifully designed, medical-grade products that integrate seamlessly into daily life. The data generated by these products can then feed powerful research to produce insights that benefit the wellbeing of society as a whole, so that people can live longer, healthier, and happier lives with their families. We publish anonymized data from

our research to create shared knowledge and a source of information for researchers, the medical profession, and other stakeholders

We see the biggest opportunity to impact health globally in the management and prevention of chronic conditions such as hypertension and heart disease, which are the leading causes of death globally.

In the future, we see opportunities to scale globally by building on the powerful reach of the Nokia brand, expanding into corporate wellness, and assessing opportunities to transition into business-to-business health care, in areas such as remote patient monitoring.

Innovative solutions for outpatient care

In 2016 we announced a collaboration with HUS/Helsinki University Hospital and University of Helsinki, Faculty of Medicine, to create innovative solutions for outpatient care and to foster mutual research and development. The first project under this collaboration launched in Q2 2016 to develop remote patient monitoring solutions. The collaboration, reflects the company's intent to enter the regulated healthcare space. It will extend our span of care from everyday health and wellness devices to clinical solutions that help improve patient/physician interaction while informing our continued research and development in the clinical space.

With over 14 000 patients visiting Meilahti Hospital's Neurological Outpatient Clinic in Helsinki every year, the collaboration will enable input from HUS clinicians and patients to improve the quality and effectiveness of our remote patient monitoring solutions, all while driving meaningful patient outcomes.

Read more [here](#)

Our new targets



2020:

Ensure integration of data from smart health devices into all major electronic health records accessible to doctors by 2020

Support the extension of remote patient monitoring of chronic diseases, by rolling out patient care solutions using Nokia devices to over 100000 patients by 2020

Reduce the rate of uncontrolled hypertension from an average 50% of hypertensive adults to less than 10% among the Nokia wireless blood pressure user community by 2020

*Sources: Finn Market Research March 2016 (US market), Machina Research October 2016

The growing benefits of sensor technology

Sensor technology is changing the world of digital health, making it possible for measurements outside hospitals, health centers and doctors' surgeries, through products integrated into daily life. We have deep R&D expertise in sensing and connectivity, and low power consumption, rooted in our mobile business. Analytics are rapidly evolving and becoming more sophisticated, and we can now use vast amounts of health data to create profound new insights. Through our product portfolio, we have a rich, broad dataset, which is anonymized, aggregated, and secure, to feed that research. Finally, chronic disease is a growing burden on the global population. In response, we see a new emphasis on the importance of

proactive, affordable, preventative care. In turn, this drives demand for a portfolio of comprehensive, affordable products, delivered by a trusted brand.

Nokia can work with partners to bring First World medicine to remote corners of the developing world through the spread of 5G, VR, and AI technology. We are standing on the brink of more exciting breakthroughs in wearable sensors that help people to monitor their health and take more control of their own wellbeing, as well as provide a first line of defense against chronic conditions that needlessly kill millions.

Taking control of your own health and wellbeing

Withings has invented smart products, applications and solutions that give people the knowledge they need to lead happier, healthier lives. We believe in the possibility of digital health to inspire individuals to take control of their own health and to enable healthcare 2.0, which marries next generation

sensors capturing clinically accurate data within products that work seamlessly together across our mobile worlds to deliver actionable insights. With the acquisition of Withings in 2016, Nokia now offers an award-winning range of Withings products built across the health spectrum, including activity trackers (Withings Pulse, Activité and Go), the Wi-Fi scale and health station (Body Cardio), the Wireless Blood Pressure Monitor, the security camera with air quality sensors (Withings Home), the smart temporal thermometer (Withings Thermo), and an advanced sleep system (Withings Aura). Every piece of collected data comes to life in Withings applications where users can find coaching, motivation, and insights to shape key aspects of their health.

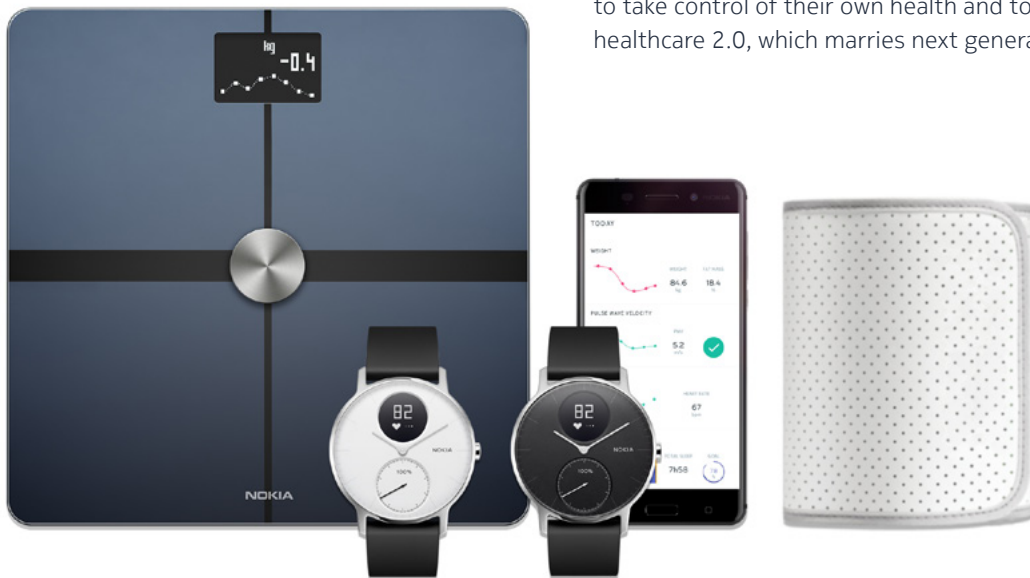
In addition to creating revolutionary connected health products for consumers, Withings has partnered with over 50 institutions around the world to help advance medical research on improving health and treating diseases. We offer a unique ecosystem covering all key health dimensions including all vital signs.

Our new targets



2018

Ensure participation of all Nokia employees in corporate health programs by 2018 to reduce the incidence of Cardio Vascular Disease





Digital care for the elderly

The world is undergoing a dramatic demographic transformation and at the same time being transformed in remarkable & unprecedented ways by the digital revolution. As the global population ages, the over 60's consumers are the fastest growing market, with spending expected to skyrocket from USD 8 trillion in 2010 to USD 15 trillion by 2020. In 2016, we sponsored and participated in the Digital Silver event in Finland <http://www.digitalsilver.eu/>, which was co-organized by Esko Aho, former Prime Minister of Finland, and Mike Hodin, CEO of the Global Coalition on Aging.

The Digital Silver forum brought together innovative thinkers, public policy experts, corporate leaders and entrepreneurs to explore opportunities that emerge from combining our growing digital capability with the needs and demands of our ageing populations.



Stepping up to fight Type 2 Diabetes

From October 14 to November 14, 2016 Withings in collaboration with AstraZeneca Laboratories launched Diabet'up, a public steps challenge to help support the battle against Type 2 diabetes, which can be caused by lack of exercise and being overweight. The challenge included 3215 participants, 58% of which were women, in 29 teams all over France. Over the challenge, participants exceeded all expectations, taking an incredible **457 731 133 steps**. That is equivalent to walking 555 000 km, or traveling 14 times around the earth.

Making cities smart, safe, and sustainable

There are many drivers for making urban areas “smart(er),” and no two implementation paths are the same. Municipalities around the globe are deploying a wide variety of innovative services and applications to streamline their own operations and to change the urban experience for city dwellers and travelers. In an attempt to bring some order to the smart city universe, Machina Research has grouped their projects and activities under the headings “smart,” “safe,” and “sustainable”.

‘Smart’ cities use advanced technology and the Internet of Things to make people's lives more

comfortable and convenient and deliver applications that support innovation, and economic and social development — making cities more attractive places to live, visit, and do business.

The availability of high-quality and high-speed fixed and mobile data connectivity allows cities to better communicate, interact, and innovate — making them more competitive and innovative. As shown by PricewaterhouseCoopers, for every euro spent on broadband infrastructure, 14 euros can be generated for the local economy.

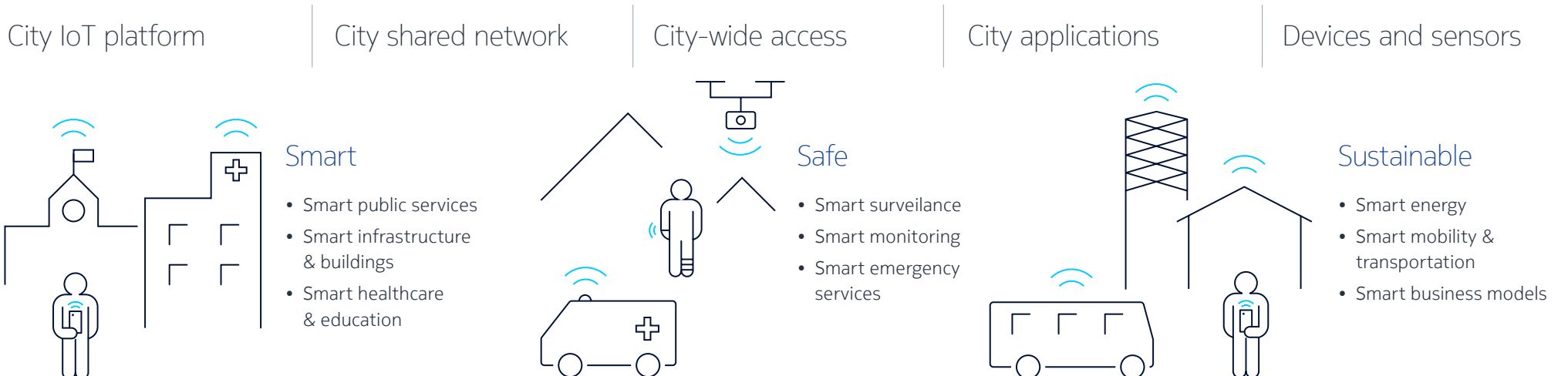
According to research firm Markets and Markets, the IoT market for smart cities and manufacturing will reach USD 161 billion by 2020. The markets

will grow as manufacturing companies use IoT to improve productivity in the production process and the supply chain, and as cities with growing populations use IoT to improve operational efficiency, maintain and protect their infrastructure, and operate in a more sustainable manner.

In November 2016, Nokia and Hewlett-Packard Enterprise (HPE) announced a strategic collaboration on Internet of Things (IoT) solutions for enterprise customers. The companies will jointly market and sell solutions for two IoT vertical enterprise segments, including industrial/manufacturing and smart city applications.

Smart City Infrastructure

Shared + Secure + Scalable



Smart private city networks and homes

Cities currently do not have a cost-effective alternative to established communication service providers in order to run reliable and universally accessible services. Nokia has deployed 'private' city networks with various cities, utility companies, and MVNOs around the world. In 2016, we had smart solution projects in Bristol, Dubai, Calgary, Cape Town, Chattanooga, and Jeddah, to name just a few.

We look at smart buildings and smart use of resources where we provide solutions to track and fine tune resource usage and operational expenditure on assets and provide better asset protection. In 2016, we for example worked with Schneider Electric on Smart Building operations, using Nokia's IMPACT IoT platform to drive down operational costs and improve time to market.

In the home space, in order to provide telecom operators with a single box solution, we announced in 2016 a new Smart Home solution to quickly offer new services to residential customers seeking a digital home solution for the Internet of Things. The solution supports an array of sensors, plugs and other connected devices essential for the delivery of home security, automation and smart metering services, providing customers with a fully integrated, simple, plug-and-play experience. Nokia's smart home gateway lets subscribers easily monitor and control everything inside the home with a smartphone or a tablet, including temperature and motion sensors, door and window sensors, smoke detectors, light switches, and security camera.

Gig city Chattanooga USA goes smart

The "Gig City" of Chattanooga is a leader in transforming into a smart or livable city. The transformation is enabled by our gigabit broadband network deployed throughout the city by EPB, the municipally-owned utility. This afforded an opportunity to test the impact of live 4K video streaming on viewers. Live video was streamed from the Tennessee Aquarium to the Chattanooga Airport during the spring of 2016. In addition to the Nokia-powered IP network of EPB, the trial relied on a 4K UHD display from Planar, and a facial recognition solution developed by NEC, running on Intel small NUC computers equipped with standard cameras to track viewers. Nokia's IMPACT platform was used for analytics.

Early results of the trial indicate that an attractive, well-placed, UHD 4K display showing live streaming video can have an impact on viewers actually visiting an attraction. The trial compares anonymous MAC addresses at both locations to assess this correlation. The trial also highlights the ability to analyze the viewers across many dimensions including age, gender, dwell time, and viewing distance, and to compare the differences between signage showing live streaming versus fixed artwork. These results will provide data points in understanding how the ROI to the economics of the city go beyond just the attraction displayed.

Read more on our work with other cities on [pages 138-158](#) in Making change happen together



Read more about our approach to Smart cities [here](#)

Connected City with Algar in Brazil

On a journey to make cities smarter, Nokia and the Brazilian operator Algar Telecom have collaborated with local research institutes to develop and implement IoT applications with a positive impact on people's daily lives. The Connected City project was officially launched in December 2016 and displays digital solutions for cities and citizens providing better services, accurate information and

more convenience. The initiative aims to develop and implement, with public and private partners, new technological tools to eliminate everyday problems experienced in cities.



The smart way to save resources and cost

According to The United Nations World Water Development Report 2016, estimates indicate that about 30% of global water abstraction is lost through leakage*. Wireless sensor networks can monitor water flows and provide significant savings in water loss, as well as detect and localize water leakage for immediate mitigation. With our technology and solutions, we aim to help authorities control pressure and optimize water pumping throughout the distribution system; provide predictive maintenance of pipes, pumps, and other infrastructure, monitor water quality to ensure safety, and enable smart water metering, by extending the scope of the wireless signal to locations where the water pipe enters the basement of buildings.

In 2016, we showcased a leakage detection scenario with chipset partners Intel and Mediatek, using a new technology, EC-GSM-IoT (Extended Coverage GSM for Internet of Things) at Mobile World Congress in Barcelona. Upgrading a standard GSM network to EC-GSM-IoT technology is one of the most efficient ways to provide connectivity not only to water meters, but to all kinds of meters, sensors and other devices. Nokia and Orange are active sponsors of the Mobile IoT initiative in GSMA, and also conducted a live EC-GSM-IoT pilot in 2016. The pilot tested EC-GSM-IoT devices and demonstrated how the technology can support a huge number of devices, extend rural and in-building machine-to-machine coverage, and decrease IoT device cost.

* Kingdom et al., 2006; Danilenko et al., 2014



Getting smart down on the farm in India

The average yield per acre in India is only about 30-40% of the world's most efficient agrarian economies¹. Productivity inefficiencies, coupled with erratic rains have a severe impact on farming. The ballooning subsidies bill is unsustainable. For reference, fertilizers subsidies alone are equivalent to 0.5% of India's Gross Domestic Product (GDP).²

It is critical for countries across the world to revolutionize the agricultural sector to improve yield efficiency while optimizing usage of fertilizers and other crop inputs.

The solution uses data received from soil based sensors, crop health sensing sensors and calibrated hyper spectral camera imaging devices to analyze presence of nutrients or identify diseased plants and weed infested areas. The solution also enables a variable rate precision farming approach. Location based solutions coupled with tractor based ultrasonic sensors help identify

specific locations within the field where crop inputs like fertilizers are needed most. Ultrasonic sensor based spraying ensures minimal wastage by ensuring crop inputs are applied on crop areas instead of in the gaps. Opportunity costs associated with forced idle time due to equipment breakdown are also significantly reduced through tractor telematics based preventive maintenance.

Empowered by our Nokia Connected Smart Farming solution, farmers can now take necessary actions to increase potential average yield by anything between 10-50%. Additionally, the variable rate precision farming approach presents a potential saving in crop inputs of nearly 20% versus a uniform approach.

¹ "World Agriculture: Towards 2015/2030. An FAO perspective"

² "Reforming the Fertiliser Sector", Pg 24, 2015-2016 India Economic Survey

Promoting Public Safety

The public safety community has long called for mobile broadband to support its mission to save lives. With the adoption of LTE mobile broadband technology, public safety networks can benefit from the advantages of fast and reliable broadband data and real-time video services, opening up new communications possibilities for rescue missions and disaster recovery situations. Public safety customers require a variety of solutions, ranging from robust broadband infrastructure to rapidly deployable systems for disaster recovery and temporary coverage. In October 2016, for example, we announced we would support MRC Foundation field trial for next-generation mission-critical wireless communication systems.

Nokia is matching the high-availability, security and quality needs of public safety agencies with a comprehensive portfolio of technology solutions, applications, network management, and services expertise.

In May 2016, we launched our [Ultra Compact Network](#), a rapidly deployable 4G solution that can be carried by a drone to provide connectivity at high-traffic events, remote areas or when a macro network is compromised in an emergency situation.

In 2016 we expanded our range of LTE-based public safety solutions with the launch of the Nokia Group Communications portfolio. It will enable first responder teams to securely communicate through new applications such as instant video connectivity alongside traditional push-to-talk features on a single device, to enhance operations and safety. Read more [here](#).

In May 2016, after further development, we launched Nokia Saving Lives Innovation initiative where we combine the capabilities of the ultra-compact LTE network with drone video applications for search and rescue missions. As a fantastic recognition of its potential, Nokia Saving Lives was recently honored to receive the UAE Drones for Good Award in the international category, presented by H.H. Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, Crown Prince of Dubai. The Award competition, which had over 1 000 submissions from 160+ countries, is dedicated to transforming the technologies behind civilian drones into practical solutions for improving people's lives.

Read more on Nokia Saving Lives on [page 148](#) under the Making change happen together section. See more information on our collaboration with governments and other stakeholders in Making change happen together on [pages 138-158](#).

In 2016 Nokia was identified as 'number one vendor of LTE public safety technology' in a global study of 100 operators by Current Analysis.

Our new targets



2018

3-4 Nokia Saving Lives solution kits provided and supported by Nokia and used by selected partner organizations in the humanitarian field proving that Nokia technology saves lives.



You can view the Nokia Saving Lives demonstration video [here](#)

Enhancing lives through corporate community investment

A key theme of our corporate community investment approach is connecting the unconnected. In 2016, we rolled out a new project in Myanmar where technology plays a significant role in improving early childhood care and development monitoring. We have together with Save the Children developed a web-based database

and synchronized mobile application which is currently being deployed, intended to replace slow, non-real-time paper-based data collection used during care center monitoring visits. During a visit, the application enables saving of data on a mobile phone when offline and uploading it when online again. This is particularly important in parts

of Myanmar, and elsewhere, where there is limited network coverage today. This is one example where we use our core competencies to bring shared value to society. Read more on [pages 140-150](#) under Making change happen together.

Our new targets



2025

Improve the lives of 2 000 000 people through our corporate and key regional community investment programs (baseline 2015) focusing our action on gender balance, education, and health and on how Nokia products and services improve people's lives.

Strengthening resilience in India with Save the Children

In 2016, we continued with Phase 2 of our cooperation with Save the Children to strengthen resilience of disaster affected communities in 350 villages/ urban settlements across five states - Bihar, Tamil Nadu, Andhra Pradesh, Delhi, and Rajasthan. We are preparing the communities to respond efficiently during and after disasters by creating specific disaster-management plans, school safety plans, and village task forces. We are developing partnerships with stakeholders such as district administrations, and state level government bodies such as State Disaster Management Authorities (SDMA) and education department as well as engagement with other civil society organizations. Our aim is to further strengthen the disaster resilience model in all 350 villages over the next three years.

Key highlights of 2016

A web-based application for an early warning system and a mobile-based application on road safety - ROSA - was launched together with the Disaster Management Authority (South-East District of Delhi) to use technology to minimise the impact of disasters in urban slums.

The mobile-based road safety application has multiple features that would immediately help an accident victim. The application will use SMS-based technology to send messages (with location details) to critical life-saving departments such as police and health. It would also send the same information to preferred contacts. The app would also enable bystanders with android smart phones to click the photo of the accident site, geo-tag it and send it to the designated authorities for necessary action.

South India - Cyclone Vardah Response

Cyclone Vardah ripped through Chennai and adjoining districts of north Tamil Nadu and south Andhra Pradesh at wind speeds of up to 130 kmph, paralysing life and leaving a trail of destruction in its wake. The cyclone hit the districts of Nellore in Andhra Pradesh and Tiruvallur in Tamil Nadu. The 'Building Resilience Project' is being implemented in these two districts and the effectiveness of the work under the project was tested during this cyclone.

The presence of task force members and the task force kit proved to be an effective tool to alert the

population about the landfall of the cyclone, and also expedite the evacuation and relief operation post cyclone. An external expert is currently documenting the effectiveness of the work that we have done and how it has helped the communities cope with the cyclone. Save the Children through its partners addressed the needs of 2177 families.

Activities

Villages with Disaster Management Plans created	216
Schools with Disaster Management Plans created	182
Villages with 5 task forces	328
Community members impacted (directly & indirectly)	690 585
Children impacted (directly & indirectly)	366 597

And then there was light

Hpa-An Township is located in Kayin State, southeastern Myanmar.¹ Since 1949, Hpa-An Township, as the rest of Kayin State, has witnessed violent internal conflict between government and anti-government forces, leading to decades of instability. A recent peace agreement signed in 2012 by the government and the major actors in Kayin, and subsequent negotiations around the Nationwide Ceasefire Agreement, has resulted in a more stable operating environment as well as improved opportunities to address the needs of the ethnic Kayin population. Save the Children has been operating in Hpa-An Township since 2006. In 2013, they started ECCD an early education program in Hpa-An Township. Since 2015, they have been implementing the Best Start project in 61 villages with the support of Finland's Ministry of Foreign Affairs.

Through the Best Start project, Save the Children has supported the establishment of community libraries by providing them story books appropriate for early grade reading, small grants for basic furniture, and identification and training of community volunteers. However, these libraries were operational only during the day with limited time for children to read books after school hours.

¹Previously known as Kayin State, the territory is inhabited primarily by the Karen people, a broad umbrella identity that includes a multiplicity of ethnic groups such as the Sgaw, Pwo and Pao.

“There was no library in our village. Now, our village has library and by reading books we will get new knowledge, will become educated persons, know what is right and what is wrong. Now we got solar light and we can read at night time. We are able to concentrate more on reading because it is quiet at night.”

Grade 6 students Saw Htoo La Wah & Ma Aye Aye Aung from Nga Net Pyar village

The education team in Hpa-an engaged in discussions with the community to provide solar panels with Nokia support, which means the libraries will be able to stay open longer into the evening. Some of the communities that had access to electricity requested meter boxes and others solar panels. Save the Children provided 33 solar panels and 28 meter boxes to all the 61 implementing villages.



Raising awareness and understanding through technology

We work with a number of industry bodies, non-governmental organizations (NGOs), and authorities to connect the unconnected, enhance public safety, drive diversity, and lower carbon emissions, helping people thrive. But technology can also be used to

highlight social issues and help drive understanding, raise awareness, and change perceptions for the better. Take for example the recent collaboration on virtual reality with a non-profit film company and the UN Refugee Agency.



Life in a time of refuge

In 2016 Nokia together with the United Nations refugee agency UNHCR and the award-winning film makers of The Humanitarian Cooperative embarked on a cooperation project to tell Omar's story, highlighting the value and importance of resettlement for refugees. We donated the Nokia OZO camera and innovative production techniques to help raise awareness and encourage action on the crisis of our times - the refugee crisis.

The film tells the story of Omar, a young Syrian refugee. 4 years ago he fled war-torn Syria with his family. They had to leave their home in Idlib, just outside of Aleppo, and became refugees in Zgharte, northern Lebanon. He was just 5 then. 3 long years as a refugee in Lebanon. Omar's family was among the annual Finnish quota of refugees last year. Now they live in a small town called Kuopio in the middle of Finland. He is 9 now, resettled last year.

Virtual Reality and other immersive technologies can take you into the situation like no technology before. It helps bring awareness to today's refugee challenge and call to action, and supports international bodies that work to bring a solution.

For more information on our Corporate Community Investment approach look at [page 66](#) and watch the 360 version [here](#).

Our achievements

Our radio networks customers serve around 5.5 billion subscriptions worldwide and we shipped 35% of the world's broadband fixed lines

We conducted over 40 engagements globally, testing and trialing the different facets of 5G

Nokia Saving Lives was honored with the UAE Drones for Good Award and we launched our Ultra Compact Network, a rapidly deployable 4G solution providing connectivity in rural areas, or in emergency or challenging situations

With Save the Children, we rolled out a new project in Myanmar, improving early childhood care and development monitoring, and continued to strengthen resilience of disaster affected communities in 350 villages in India

We launched our IMPACT IoT platform, a major building block in enabling IoT smart services, and Nokia FastMile, designed to overcome missing broadband connectivity

We expanded our range of LTE-based public safety solutions with the launch of the Nokia Group Communications portfolio and the Ultra Compact Network

Our President and CEO Rajeev Suri accepted a role as Broadband Commissioner in order to contribute to creating and innovating on projects that can digitize the under-developed and under-connected world

We entered the digital health market through our acquisition of Withings, and launched a project to develop remote patient monitoring solutions with Helsinki University Hospital and University of Helsinki, faculty of medicine

Through Withings, we partnered with over 50 institutions around the world to help advance medical research, and now offer an award-winning range of Withings products built across the health spectrum

Our new Smart Home solution to quickly offer new services to residential customers seeking a digital home solution for the Internet of Things

Protecting the environment

We are committed to protecting the environment and to the fight against climate change by making our operations eco-friendly and reducing the energy usage of the products we deliver to our customers.

Our commitment to protecting the environment

We are committed to protecting the environment and to the fight against climate change by making our operations eco-friendly, reducing the energy usage of the products we deliver to our customers, and helping other industries to meet their environmental goals.

We can see unprecedented growth in Internet data due to greater availability and use of smartphones and tablets, with masses of applications and services available on both fixed and mobile networks. According to a recent ITU report based upon data from Nokia, the sheer mass of mobile traffic in 2017 is set to reach an amount 85 times the levels seen in 2010. **The number of internet users is set to rise to 3.6 billion in 2017, and the global telecom networks may well have to manage more than 5 000 billion gigabytes of data.** With this growth come challenges as well as opportunities: how do we sustainably manage this continued growth in digital technology usage? How do we try to ensure that the positive impact of mass use and availability of technology outweighs the potential energy footprint of that same technology? How do we take full advantage of the use of our technology to reduce the carbon footprint of our customers, consumers, and other industries?

We believe it is not simply about incremental one-off improvements in our equipment design but about investing in R&D and network deployment across the board in a judicious manner. We drive to develop networks and products that use no more energy in the future than they are using today.

We believe our technology solutions have a major role to play in separating economic growth from emissions growth, while providing major support to our customers and other industries in helping to reduce their emissions. Read more about how technology can make a difference: [GESI Smarter 2030 report](#).

As part of the fight against climate change, we aim to do our part in keeping global warming below 2°C, and therefore continued to pilot and further develop a science-based target setting methodology for our greenhouse gas emissions. We believe the implementation of science-based target setting would help us better define our greenhouse gas reduction targets to positively contribute to the fight against global warming. We have therefore established Energy Usage Goals and KPIs based on Science-Based Target procedures. Carbon Loading (tCO₂e) and Emission Intensity (tCO₂e/m²) limits have been established on a yearly basis for the 2017 through 2030 time period.

We are the first telecoms vendor to have signed the commitment letter and submitted our emissions reduction targets. The targets are at the time of publication of this report under verification against a set of criteria developed by the Science Based Targets initiative. We expect to have the targets formally approved by end June 2017.

Our new science-based targets



2030

GHG emission reduction of 41%, as compared to the 2014 baseline level (Scopes 1+2, our own operations)

GHG reduction 75% compared to 2014 (scope 3, energy use of sold products)



Read more about The Science Based Targets initiative [here](#)

Managing our environmental impact

We manage, track, and improve our environmental efficiency through a robust environmental management system (EMS). We manage our own footprint through continued certification to the ISO 14001 environmental management standard and our performance is audited regularly by external auditors. In 2016 we maintained both former Nokia and former Alcatel-Lucent certificates as separate ones – with a plan in place for 2017 to integrate the former Alcatel-Lucent activities into one global Nokia certificate during 2017 and 2018. All our environmental activities, particularly around energy and material efficiency, come under the EMS. We analyze our most significant environmental aspects annually and look for the best ways to manage them. Our significant aspects are related to energy and material efficiency through the value chain.

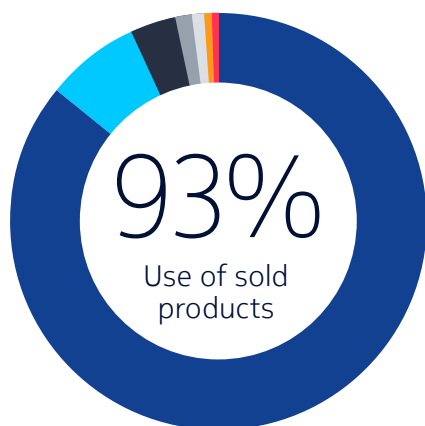
Holistic view of our environmental strategic activities

- Energy consumption of Networks offices
- Energy consumption of Networks Labs, testbeds and datacenters
- Energy consumption of mobile networks
- Energy consumption of our suppliers' operations (CDP program)
- Transportation of dangerous goods
- Use of materials and substances in products
- Conflict Minerals
- Packaging materials and design
- Site implementation / installation / maintenance (including for example waste, packaging, diesel generators, cables, batteries)

- Manufacturing waste at suppliers
- IT waste (including for example old laptops, servers, cables)
- Water usage at facilities (drinking, sanitary, landscaping, boilers, and cooling towers)
- Waste generated from production in factories

We also insist that a major part of our suppliers must have a documented EMS in use. Key suppliers and any with larger environmental impact must also be certified to ISO 14001. We track this through structured audits and assessments. To read more on how we work with suppliers, see the Responsible Sourcing section on [pages 112-118](#).

Our carbon footprint (Scope 1+2+3), metric tons CO₂e



Emission source	Metric tons	(CO ₂ e /% of total)
Use of sold products	42 930 000	(92,9%)
Purchased goods and services	1 725 900	(3,7%)
Energy use in facilities and by fleet	618 400	(1,3%)
Capital goods	408 700	(0,9%)
Upstream transportation and distribution	268 400	(0,6%)
Employee commuting	154 700	(0,3%)
Business air travel	113 300	(0,2%)

Our Scope 1 & 2 emissions

*Percentages counted out of reported, relevant GHG emissions.

Climate change – risks and opportunities

We understand that there may be potential risks and opportunities related to climate and other environmental changes such as resource challenges, natural disasters, and changes in legislation. We are deeply committed to saving energy and reducing resource use from both an environmental perspective and a potential cost perspective, and realize also the need for adaptation. We use our core strengths in technology to affect positive change and drive opportunities to contribute to the fight against climate change.

Climate related risks and opportunities are discussed in more detail in our publicly available CDP submissions. We have carried out sensitivity analysis to be able to respond to CDP climate change questionnaire, even though these are not key material risks in Nokia's business – for example facility associated energy costs represent less than 1% of our total operational spend.

Managing the life cycle

Life cycle management is a key principle of our approach to environmental efficiency across our own operations and those of our suppliers, and is integral to the products and services we deliver to customers from creation to end of life. Creating and bringing to market products, services, and solutions that contribute to environmentally-friendly end-to-end networks is key to ensuring our customers and other industries can positively impact their own eco-footprint. Network Energy Research is also a priority for Bell Labs, cutting across all elements of the network.

Through our EMS and life cycle management approach we can minimize our footprint in our operations and our product offering, while also maximizing our handprint, the positive impact of products and services. We look at raw materials and components with our suppliers. We minimize energy, waste, and water use in our own operations, also optimising packaging and transport.

Measuring life cycle benefits and impacts

In 2016, Nokia participated in a jointly funded project with VTT Technical Research Centre of Finland Ltd and the Finnish Funding Agency for Innovation, TEKES, to assess the use of carbon handprinting in measuring and communicating the beneficial impacts created within the life cycle of a product or service. The project includes developing the associated assessment approaches needed to apply the carbon handprinting concept to a company's business activities and products. To date, Nokia has hosted a meeting at its HQ facilities to review the initial project survey results.

We also studied other areas of sustainability related to our products. For example we have been in collaboration with the High Density Packaging Users Group (HDPUG), the Massachusetts Institute of Technology (MIT) and the Sustainability Symposium to study the environmental impact of printed wiring board manufacturing that uses advanced high density interconnect technology. This study provided insight into each board manufacturing step's contribution to the overall environment impact and how such impact can be lessened as a function of printed wiring board design changes.

Life cycle management



Minimizing the environmental impact of our products

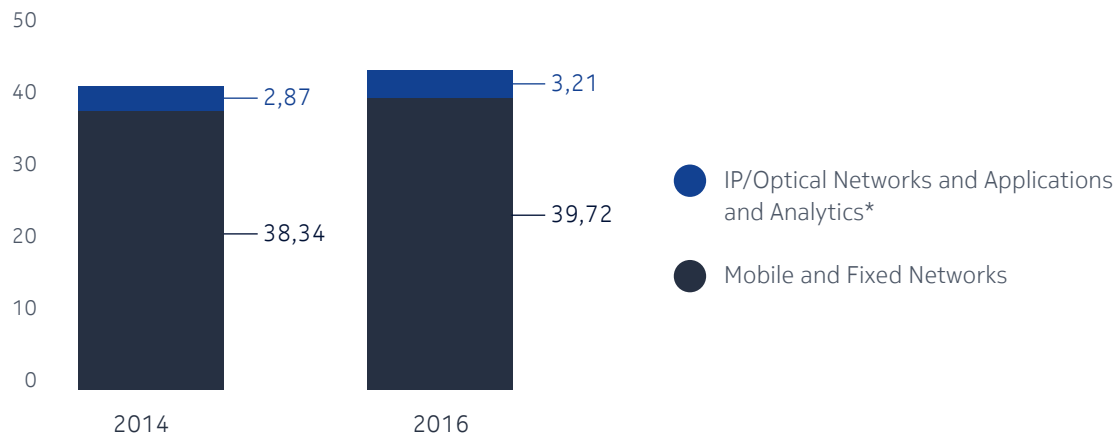
Our product development processes include four key design-for-environment principles:

- Minimize material and energy use
- Minimize the use of materials detrimental to the environment
- Design equipment to be easily or remotely maintainable, or maintenance free
- Maximize reuse and recycling

We have put in place design-for-environment guidelines for all designs, products, parts, modules, components, batteries, and packaging materials. A list of substances and materials that are banned or restricted in our products for environmental reasons is also included in these guidelines. The

environmental requirements are frequently updated and provide direction that every new main Mobile Networks product release should be at least 15% more energy efficient than the previous release. Nokia diligently works to tell customers and investors that its products are environmentally harmonious and regulatory compliant. Design for Environment (DfE) helps product developers to determine the environmental requirements that are relevant to the product. There are also several DfE tools available to support the designer during product development. As output, product development produces compliant and competitive products.

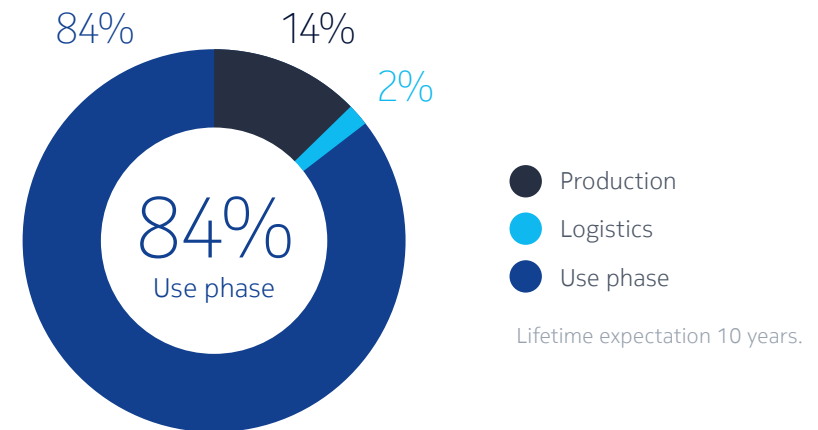
CO₂-emissions from use of sold products (Mega metric tons) increased by 4%



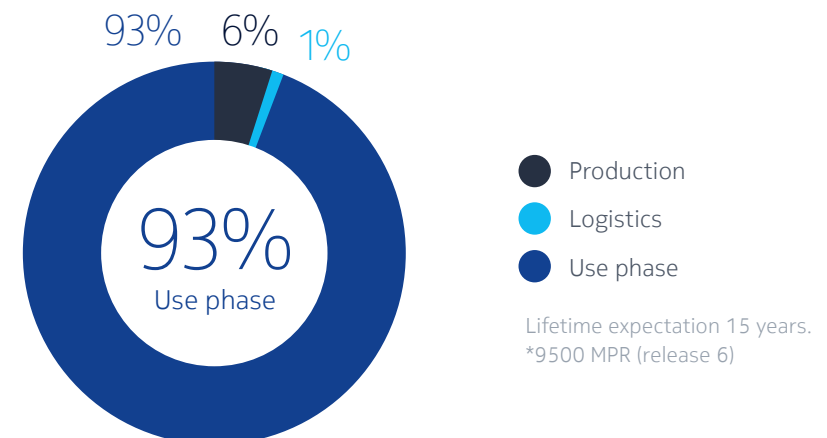
*Applications and Analytics data was not yet available for 2014.

Product use time varies between 6 and 15 years, depending on the products. Energy use calculations are based on product group specific ETSI standards where ever standards have been published. Total product coverage is over 80%.

For a typical urban base station site in Europe, the use phase accounts for over 84% of its global warming potential



For a Microwave Packet Radio product* the use phase accounts for 93% of its global warming potential



Our main networks customers receive a product-specific Environmental Product Declaration (EPD).

Environmental management in Nokia is included both in product development and supplier requirements. DfE is a key part of the Nokia CREATE or product development life cycle common processes. DfE is also a part of supplier requirements covered in the Environmental/ Sustainability Appendix of Purchase Agreements for Hardware Products. It includes environmental requirements Nokia sets for suppliers for example in terms of materials. Furthermore, DfE is an integral part of Nokia's environmental management system, which is globally certified to the ISO 14001 standard. In 2016, an integration implementation plan was created to ensure all relevant former Alcatel-Lucent operations and facilities will be fully integrated under the Nokia global certification during 2017 – 2018.

We also use material marking which supports the recycling of products and packaging at end of life. We correctly mark all plastic and metal product parts as well as ensuring all Nokia product packaging also includes proper material markings. The markings used by Nokia comply with the relevant ISO standards.

Ensuring our continued legal and regulatory compliance

In 2016 Nokia encountered a new situation with the inclusion of all former Alcatel-Lucent products into our product portfolio. Ensuring legal and regulatory compliance of products can be very different between companies and tracking of compliance can be based on information gathered in tools or agreements between a company and its suppliers.

The complex nature of the products means that the supply chain is also very complex, consisting of a huge variety of different materials used in products. This complexity means it is not only the first tier supplier who is involved in material compliance, but compliance must be assured throughout the supply chain. It must cover all raw materials that end up in parts or the final product. This has to be visible for both integrated companies and therefore a new approach is being taken towards future legal compliance targets.

Design for Environment (DfE) methodologies for product development

What	How
Requirements, general • Legal • Nokia commitment • Customer	Requirements, DfE • Environmental requirements and guidelines for Nokia products • Nokia Substance List DfE tools available • DfE plan • DfE review • Energy Scorecard • LCA tool • Material data collection tools • Substance Restrictions tool DfE output • Compliant and competitive product • EPD (customer document) • Material data

Tracking the substances used in our products

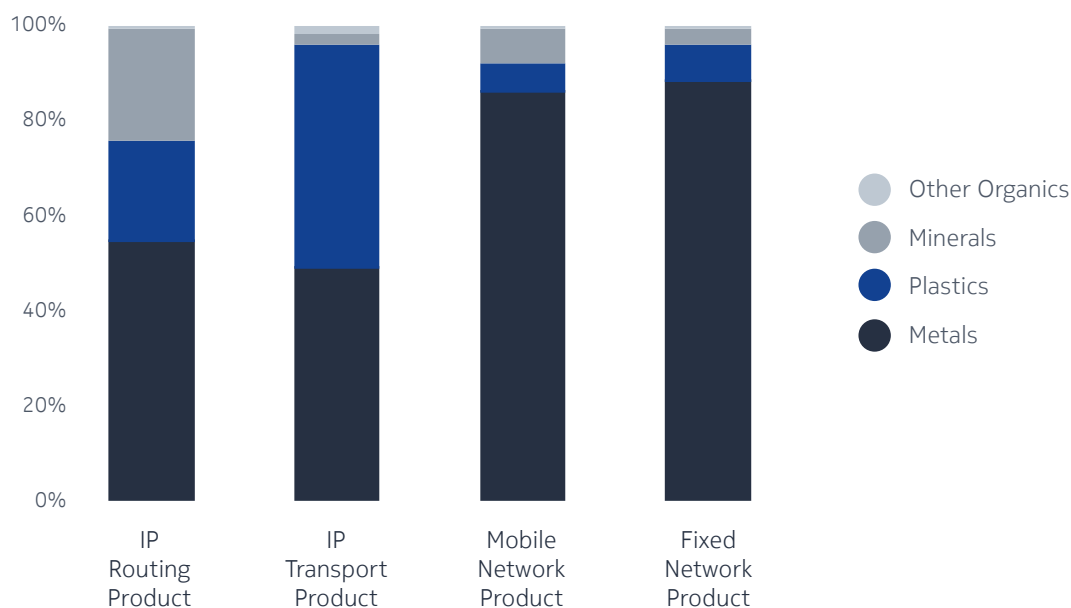
As a responsible manufacturer of complex technology products, we believe it is paramount that we have good systems in place to track the substances used in the parts and components that comprise our products.

We track these substances to assure compliance with a variety of laws, rules, and regulations that exist on the use of materials and substances. These include the most common such as Restriction of Hazardous Substances Directive (RoHS) and the Registration, Evaluation, Authorisation and

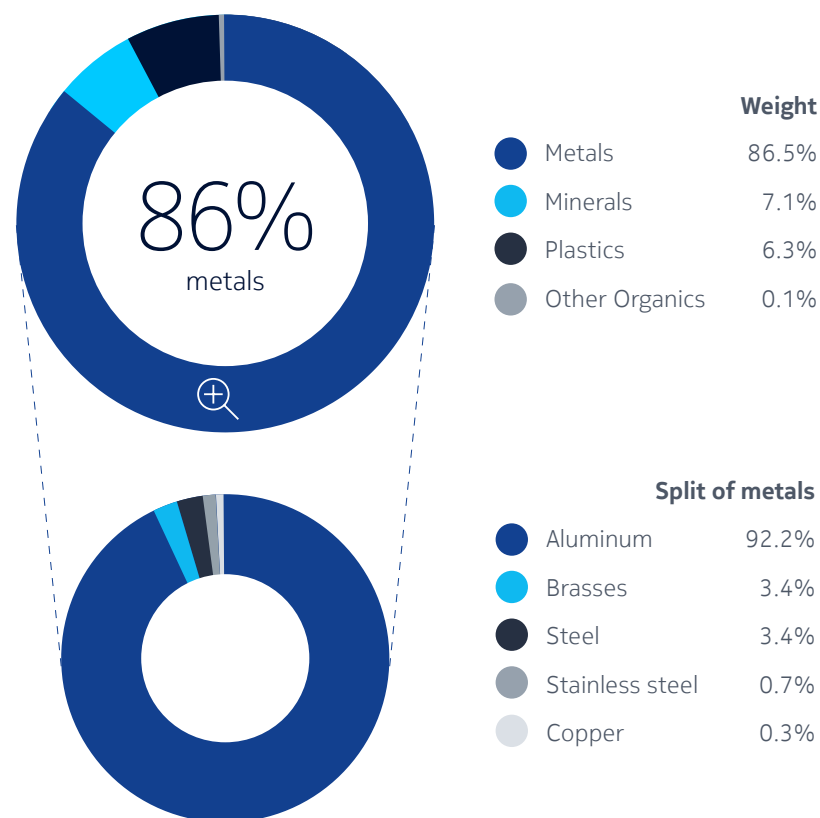
Restriction of Chemicals (REACH) regulation, the Waste Electrical and Electronic Equipment Directive (WEEE), the Waste Batteries and Accumulators Directive, and the Packaging and Packaging Waste Directive. We are also aware of, and comply with, less customary substance restrictions and reporting legislations such as radioactive substances, Persistent Organic Pollutants (POP), the USA California Prop 65, and many more. There may also be third party concerns related to the use of some substances that need to sometimes be taken into account in product design and development.

Product Materials Breakdown

Note: Based on product life cycle assessments of typical configurations



A typical Mobile Network Product with details on metal composition



Nokia Substance List

As a result of the combination of two companies (former Nokia and former Alcatel-Lucent), which began in early 2016, the need arose to have one common substance list based on the separate substance lists of the two companies. Throughout the year several working group sessions were held to create a single harmonized substance list, and after a number of iterations, the new substance list was approved and published in December 2016.

The Nokia Substance List (NSL) merges what was in use in Nokia Networks, Alcatel-Lucent, and Nokia Technologies, but does not introduce any major changes to the requirements as specified by either of the former companies. The NSL specifies legally restricted substances and substances that Nokia seeks to avoid due to the potential for legal restriction in the future. Additional highlights of the NSL include:

- Listing key legislation instead of individual substances, thereby reducing the number of substances that are individually listed
- Splitting the scope of products into two: Mobile & Wearables and Network & others, where requirements for Mobile & Wearables is more restrictive

The new NSL is referred to in our internal processes, such as the Nokia CREATE, and the Nokia Design for Environment (DFE) processes, and in product design drawings, as well as in the Sustainability/Environmental Appendix of supplier agreements. We include the substance list in our purchasing process as a reference document for our suppliers, and require them to provide us with the material content of the parts and components they deliver.

The Sustainability/Environmental Appendix forms an essential part of our contracts with suppliers. We use even more stringent material selection for Mobile & Wearables in order to better ensure consumer safety and environmental protection with consumer products. Examples of these material restrictions include nickel on product surface, PVC, as well as bromine and chlorine as defined in NSL.

Substances of Very High Concern

Phthalates are chemical compounds typically used as a softener in plastic materials. Beginning in 2009, the EU REACH regulation classified four phthalates as Substances of Very High Concern (SVHC). Suppliers then had to report the use of these four phthalates if the concentration in the supplied article was above a threshold weight of 0.1%. Since that time Nokia had approached its supply base to confirm the presence of these phthalates and to request a suitable substitute, i.e. one that was technically, economically, and environmentally feasible.

Then in 2015, the EU RoHS directive (amendment 2015/863) further restricted these four phthalates. The EU recognized a need for a protracted alternatives development period and set a compliance date of July 2019. In response, Nokia sought to have their suppliers substitute the phthalates by end of 2016. However, this was not achievable as the supply base was not completely prepared to deliver phthalate-free alternatives by this earlier date. Currently, Nokia remains committed to having all its products comply with EU RoHS phthalates restrictions by July 2019.

Nokia and exposure to radio waves

Nokia designs products that transmit and receive radio frequency (RF) energy. We ensure that our product portfolio — including macro cells, small cells and Wi-Fi — comply with the established national and international standards and regulations on RF exposure. We provide installation procedures and training to those working for and with Nokia to ensure that equipment is installed correctly and radio wave exposure levels are in compliance with established exposure limits.

We engage with customers and partners about RF exposure to our products and provide detailed instructions to ensure they are able to operate equipment appropriately to keep the general public and workers' exposure below the established exposure limits. For more detailed information see [Nokia RF exposure statement](#).

Our new targets



2017

By end of 2017, eliminate PVC from Nokia products, where technically, economically, and environmentally feasible.

Minimizing the climate impact of networks, maximizing the benefits

To help our customers meet the world's growing demand for communications, it is essential to help operators meet the demands of data traffic growth in a sustainable way. By minimizing the environmental impact of our products in use and maximizing the positive benefits of the products and services we deliver, we can have by far the greatest impact on climate change. Therefore, we continuously improve the energy efficiency of our products, develop software that helps manage energy consumption, support customers with energy optimization services, and encourage the use of renewable energy.

It is not simply about the incremental improvements in individual products, although this can deliver efficiency and cost savings, but it is more about taking a holistic approach to the products, services, solutions and networks we deliver, from components to delivery, through installation to recycle and reuse.

We look at the environmental impact of our solutions and technologies at every stage of their life cycle. Wherever possible we try to design upgradeable hardware and software features in order to extend product lifetime and value, decreasing the need to remove and replace, and also developing equipment that uses less space and generates less heat. We aim to provide more functionality per kilowatt of energy used while also ensuring a safe electromagnetic environment, and we search for materials with low environmental impacts, and even plan for the most eco-efficient product packaging and transportation. We work closely with our telecoms service provider customers to help them reduce their carbon footprint by developing and delivering products, solutions, and services that increase

energy efficiency and reduce power consumption in their networks, while enabling cost efficiencies. We also work with other industries and organizations to help reduce their carbon footprint and create greater efficiencies.

Towards zero emissions and lower energy bills

In radio networks, for example, our customers are already deploying Nokia AirScale base station solutions which feature new software that reduces radio module and system module energy consumption and even use zero energy in the absence of network traffic. In 2016, we modernized 27% more base stations than in 2015, achieving average energy savings of 43% for our customers, compared to non-modernized networks. This reduces the environmental impact from electricity consumption and is directly reflected as increased financial benefits for our customers.

Another major source of inefficiency is the Radio Frequency power amplifier. Roughly half of all the energy consumption of a mobile network is lost as heat in the RF power amplifier. In 2016 we acquired EtaDevices which specialize in power amplifier efficiency across base stations, access points, and device usage, to support our goal of improved energy efficiency and lower power bills for our customers.

In IP and optical technologies, with our own developments such as the Photonic Service Engine (PSE) for optical transport and FP3 Network Processor for service and core routers we are able

to drive greater product performance and energy efficiency. In fixed networks, technology shifts that change the architecture of networks, such as DSL copper lines to optical fiber technologies like GPON, and new developments that allow the doubling of capacity in optical networks, deliver more with minimal increases in power consumption. In the summer of 2016, Nokia also acquired California-based start-up **Gainspeed**, focusing on virtualized CCAP solutions for cable MSOs. Real-world deployment examples show that a Virtual CCAP solution provides a 10X increase in fiber efficiency, uses less than 10% of the power and requires less than 10% of the rack space of a traditional CCAP solution at about 45% of the capital expense and 35% of the operating costs.

Reducing power consumption

On top of product/technology specific energy efficiency developments, we see opportunities to reduce power consumption through greater efficiency on the network system and architecture levels. Heat loss is a significant sign of energy inefficiency. Designing environmentally hardened equipment that needs no external heating or cooling, can, for example in mobile base stations, halve the power consumption. At the system level the use of sleep mode when there is no traffic can also provide power efficiencies. The introduction of small cells nearer the end-user will offer greater opportunities to further develop energy efficiencies and is an area we are investigating regarding use of solar energy. Putting the energy source at the point of energy consumption also eliminates all the transmission line losses.

Our new targets



2030

GHG reduction 75% compared to 2014 (scope 3 emissions, energy use of sold products)

Making zero emissions a reality

We have continued to develop our Zero Emission base station solution; now a group of 20 products and services that can reduce an operator's CO2 emissions. Our Zero Emissions solution reduces site energy consumption and CO2 emissions by up to 60 percent and Total Cost of Ownership by up to 30 percent compared to an LTE overlay solution. With the additional use of renewable energy sources (solar, wind and fuel cells), our customers can

further reduce CO2 emissions, potentially reaching zero emissions operations. We also for example sponsored the Renewable Energy Conference in Florida in December 2016 and demonstrated our Zero Emissions solution, including the Bell Labs innovation in base station site liquid cooling. The liquid cooling innovation was also shown at Mobile World Congress in February 2017 in Barcelona.

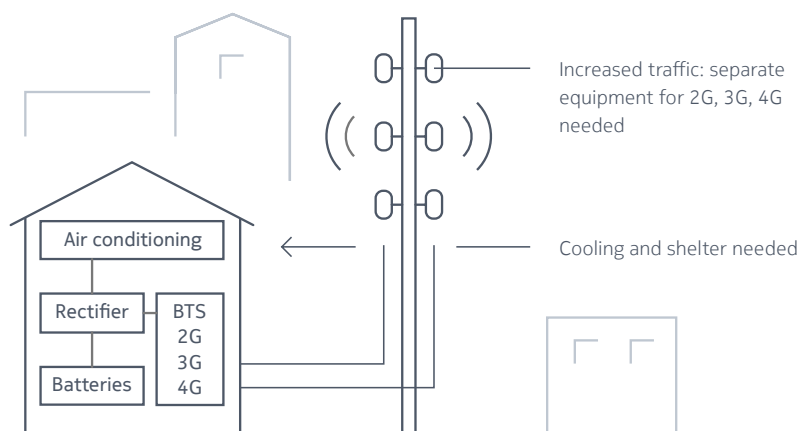
Today 120 customers use at least one zero emission product or service, and 104 use renewable energy sources through Nokia. We believe we can do more to drive for carbon-free base station operations.



For more information on zero emission base stations and how they contribute to the fight against climate change, take a look [here](#)

Traditional base station site

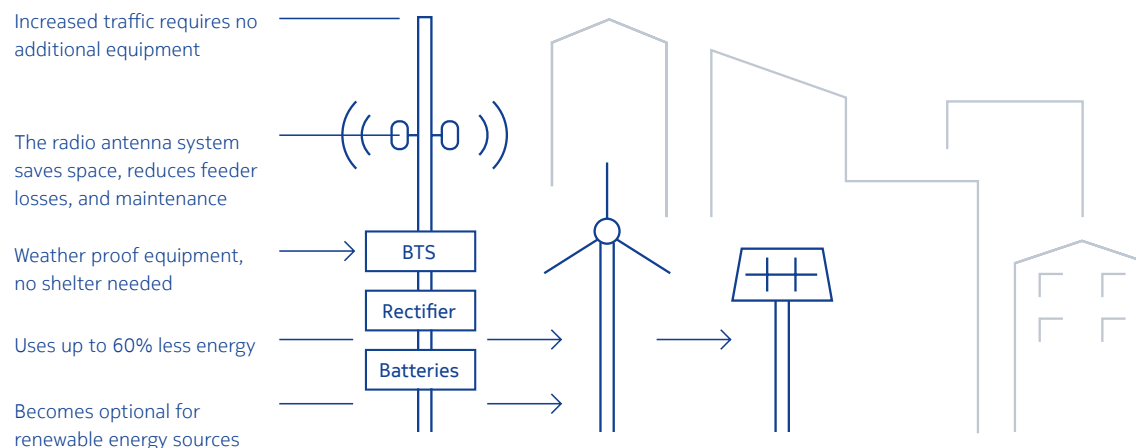
+2°C Traditional way of working leads to global warming



Zero emission base station site

-60% Reduce emissions by AirScale Base Station

-43% Average lower energy bill in 2016 cases



Glass is always greener

Optical networks deliver much more data, much more quickly than any other available technology, they do so using far less energy and space, making it the greenest option to support data networking needs. Traditionally this technology was limited to large-scale data transport and broadband access networks, but now – after the introduction by Nokia of its Passive Optical LAN (POL) product – fiber has become an option for local area networks (LANs) in office buildings, campuses, hotels, and other venues, which have historically been wired up using traditional copper Ethernet cable.

POL offers enormous benefits for companies of all kinds in terms of meeting fast-growing bandwidth demands, while reducing power consumption overall. But now we also have some outside

validation from a small team of researchers at the University of Melbourne in Australia, who documented just how great the power savings from POL can be. In their paper entitled Energy-Efficient Passive Optical Local Area Network¹ Researchers from the Department of Electrical and Electronic Engineering conducted a battery of measurements coupled with network modeling comparing POL to conventional copper Ethernet LANs. Through this effort they determined that POL (based on Nokia's G-PON technology), could deliver power savings of up to 82%, which, put simply, represents enormous savings.

The energy efficiency benefits of Nokia's POL is among the reasons that Environment Canterbury, the government agency responsible for air, water, and land management in and around the city of

Canterbury, New Zealand, opted to deploy it in their new headquarters. Following a devastating earthquake in 2011, several facilities that housed Environment Canterbury's staff were destroyed. They decided to build a new facility to bring several hundred of their employees together, and wanted it to reflect their commitment to sustainability. As you can imagine, finding a greener alternative to traditional Ethernet LAN was among the design criteria for the new building. In Nokia POL, they found a solution that aligned perfectly with their environmental mission.

¹ Please note this research is pending publication in an academic journal and will be available online at a later date.



Optical fiber efficiency

In April 2016, Nokia launched its award-winning* Passive Optical LAN solution, an alternative for traditional Ethernet LANs, using fiber technology.

POL requires less capital costs than traditional copper-based LANs while offering a lower operating expense, and consuming less energy. Based on proven and established Gigabit Passive Optical Network (GPON) fiber technology that is already serving millions of people worldwide, the solution requires, on average, 50 percent less space to deploy and power to run than traditional Ethernet based LANs. Delivering virtually unlimited data

capacity, it is also capable of supporting all video, voice and data requirements over a single fiber optic cable. Passive Optical LAN reduces operating costs and energy consumption by using equipment that requires less power, HVAC (air conditioning) and maintenance.

Read more [here](#)

*Passive Optical LAN was awarded the Most Innovative Product award by Frost & Sullivan

IP and optical networks

The Nokia Photonic Services Switch 1830 PSS-24x offers industry-leading optical transport network (OTN) and packet switch scale, while also using less power per bit. This new level of switching scale is enabled by intelligent electrical fabric design, coupled with PSE-2-powered transport wavelength cards, and services cards with high client port density. Compared to previous generation 1830 PSS-64, the new 1830 PSS-24x can consume up to 58% less power per Gb/s transported, which is equivalent to an energy efficiency improvement of 138%. This Energy Efficiency improvement was measured according to ETSI Standard ES 203 184 V1.1.1.

Nokia has developed a proven foundation for high-performance IP routing platforms that includes FP3 in-house developed network processing silicon, a feature-rich Service Router Operating System and end-to-end service-aware management. As a result, service providers are well-equipped to address the next wave of network challenges and in particular the reduction of operating expenditures (OPEX) and greenhouse gas emissions due to increased power efficiency.

Applications & Analytics

The evolution of Application and Analytics products leverages the introduction of new components, new building blocks, new hardware, and software features that increase the performance of our products, for an equivalent power budget compared to previous generation. The introduction of a new generation of Energy Star certified servers in our Surepay policy and charging solution, has resulted in a 65% energy efficiency improvement compared to the previous generation

Driving energy efficiency in Fixed Networks

Nokia Public Switched Telephone Network (PSTN) Smart transform can help customers to migrate their old PSTN network towards an efficient ultra-broadband IP network architecture that reduces OPEX and unlocks new revenue opportunities.

Transformation to IP technologies offers some significant advantages over the TDM-based PSTN:

- Reduction of real estate costs through floor space saving, reduction of HVAC and maintenance costs in Central Offices
- Energy consumption reduction; voice over broadband and voice over narrowband consume significantly less power than PSTN, with the latter providing particularly strong power-saving opportunities
- Reduction of overall carbon footprint over the life cycle of the equipment

Nokia PSTN Smart Transform contributes to the industry's eco-sustainability by significantly reducing power consumption and CO₂ emissions, repurposing real estate and decommissioning old energy inefficient technology. As an example, Centurylink is consolidating more than 400 000 legacy PSTN subscriber lines, using Nokia's PSTN Smart Transform migration service, processes and tools, planning to reduce network power consumption by around 22 000 megawatt-hours a year. The company says that the optimization will reduce PSTN power consumption by 37 percent - enough to power 2000 homes for a year, or around 15 000 metric tons of greenhouse gas. The Centurylink-Nokia project gained industry recognition from the GLOTEL (Global Telecom) awards by winning the "Best Sustainability project" award.

Improving the environmental efficiency of our own activities

Protecting the environment also means reducing the environmental impact of our own operations. Improving the efficiency of our own activities, such as the impacts from production, facilities, business travel, car fleet, and product transportation to market, helps us to save energy, cut carbon emissions and costs, and minimize waste. Our environmental management system helps us monitor progress and identify ways to improve further. It provides the basis for all of our environmental activity, focusing on environmental matters related to energy and material efficiency.

In 2016 we concentrated on a number of key areas in our own operations, areas such as, eco-efficient component sourcing, and supply chain and subcontractor management. We looked at efficiency in our offices and laboratories in terms of energy consumption, freight transportation and packaging, waste and water usage, business travel,

and emissions from the leased car fleet. The fleet is used both by our service engineers for network site maintenance visits and by employees as benefit cars. With the acquisition of Alcatel-Lucent, Nokia now also has a marine fleet operated by Alcatel Submarine Networks (ASN), which is a part of Nokia, run as an independent business, and provides turnkey submarine network solutions.

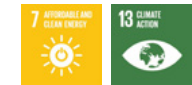
In a year of integration of the former Alcatel-Lucent into Nokia, our total facility operations energy consumption stood at 1246 GWh. This decreased by approximately 9%, as compared to 2015, which, consequently, reflected a decrease of approximately 14%* in our greenhouse gas emissions from facility operations. In comparison to 2015 figures, Nokia's use of renewable electricity, as a combined entity, rose from 20% to 21%.

*Due to updated renewable energy information associated with former Alcatel-Lucent activities for 2015, the 2015-2016 comparison was updated from -16% to -14% after the previous value was published in Nokia's Annual Report 2016

Driving further energy efficiencies in our facilities.

In 2016 we were in full-scale integration mode due to the acquisition of former Alcatel-Lucent. We placed extra emphasis on firstly reducing the need to travel, and secondly offering a choice of lower-carbon modes of travel. For example, video conferencing brings Nokia colleagues across the globe face-to-face at a virtual meeting table and reduces the need to travel. The telepresence studios and video terminals available for Nokia personnel represent the latest video conferencing technology which is easy to use. In 2016 The Video Room Expansion project expanded the pre-existing Nokia video conferencing solution to legacy former Alcatel-Lucent sites.

Our new targets



2017

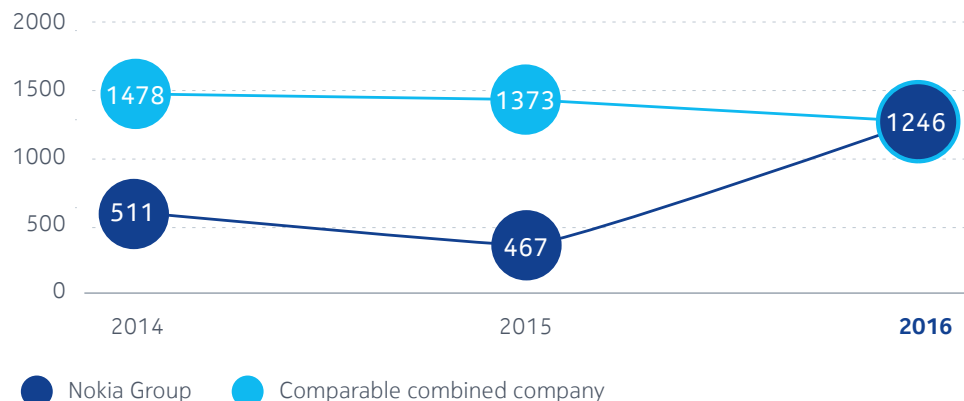
Achieve at least 20% utilization of renewable electricity, as compared to total purchased electricity

Achieve a total facility energy usage reduction of 1.8%, as compared to 2016 levels (Scopes 1+2)

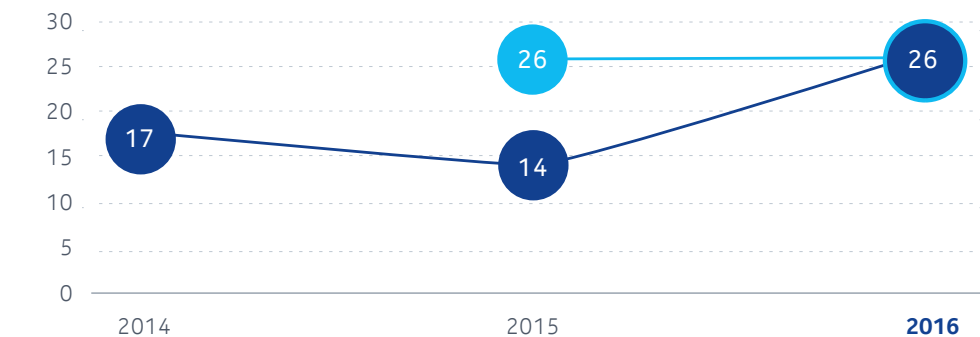
2030

GHG emission reduction of 41%, as compared to the 2014 baseline level (Scopes 1+2, our own operations)

Energy consumption in our facilities (GWh)



Scope 1+2 CO₂e-emissions in relation to net sales (metric tons GHG/€ million)



Scope 1+2 CO₂e-emissions cover emissions from energy use in our facilities, from our owned and leased car and marine fleet and minorly from releases of HFC refrigerants, fire suppression systems and from R&D and manufacturing. Scope 2 emissions are calculated with market-based method. 2014 data is excluding emissions from car fleet.

As part of integrating our real estate portfolio, we were able to reduce our real estate portfolio net area by around 5%, which contributed to a net 3% reduction in electricity usage. Additional energy efficiency efforts that included implementation of various facility related energy best practices such as standardization of temperature setbacks and controls, reducing sources of outside air infiltration, installation of energy-efficient lighting and occupancy sensors, and the replacement of single-drive fans with variable-speed units, resulted in a 7% reduction in electricity usage and associated 12% reduction in greenhouse gas emissions. The energy savings and our efforts in energy procurement price optimization lead together to around EUR 3.9 million savings in 2016.

In 2016, Nokia became a member of United States Green Building Council (USGBC) and started incorporating LEED (Leadership in Energy and Environmental Design) sustainability principles and guidelines into the design and construction of new sites and workplaces.

We look at innovative ways to reduce energy use in our labs and technology centers, for example, using water cooling from local lakes. See how our data center cooling is implemented using local lake water in Tampere, Finland. We also look at leasing green buildings or retrofitting existing and new sites with sustainable features as in the Vimercate, Italy case.

We continue to measure the energy performance of our labs using the Power Usage Effectiveness (PUE) method. PUE is a method of measuring the ratio of total amount of energy used by an R&D lab to the energy delivered to computing equipment. The performance of these sites is then ranked. The lowest-ranked labs and highest energy users are investigated to identify root causes and actions for improvement. To improve the monitoring and better understand our energy use, we completed installation of Automatic Meter Reading (AMR) technology across the 15 sites with the largest test labs. 2016 marked the first full year of energy monitoring and tracking.



Finnish lakes take the heat out of our data center

The official opening of Nokia Data Center in Tampere took place on November 25, 2016. The data center has been designed from the beginning to be energy efficient. The center uses water from the local lake Näsijärvi to cool the facilities. The service is provided by the local electricity company, Tampereen Sähkölaitos, through their district cooling system. This enables unlimited, free of charge cooling capacity for Nokia's future demands and growth in an economical way. This is a new benchmark for Nokia's environmentally sustainable business and values.



Vimercate office in Italy among world's greenest

In November 2016, Energy Park Building 1 at Vimercate, a Milan suburb, where Nokia campus is located, received a Leadership in Energy and Environment Design (LEED) platinum award from Green Building Council Italia (GBC Italia). Platinum is the top level of this certification, proving that the location is one of the greenest buildings in the world. 100% of the building façade is able to stay cool in direct sunshine by reflecting the solar radiation, thus saving air-conditioning costs and usage. 100% of drinking water is separated from the irrigation system used for watering the plants and 63% of all wood used comes from forests that follow strict sustainable forest management standards as well as 33% coming from regional suppliers. 2.3% of renewable energy is produced by the photovoltaic roof.

ESCO – Energy Service Company pilot

In 2016 at our Karaportti Campus in Finland we ran an ESCO (Energy Service Company) pilot case. ESCO provides a global model where guaranteed energy savings cover the project investments while providing savings in energy. The business case was further improved by additional life cycle cost (LCC) savings, which cover (investments, energy, maintenance, and repair costs. Based on current calculations, our CO₂ emissions will be

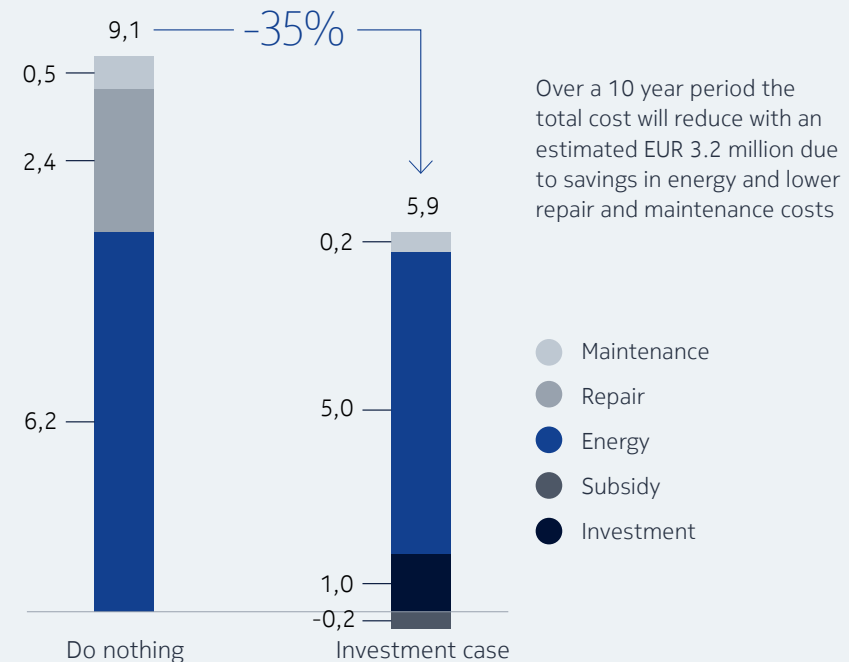
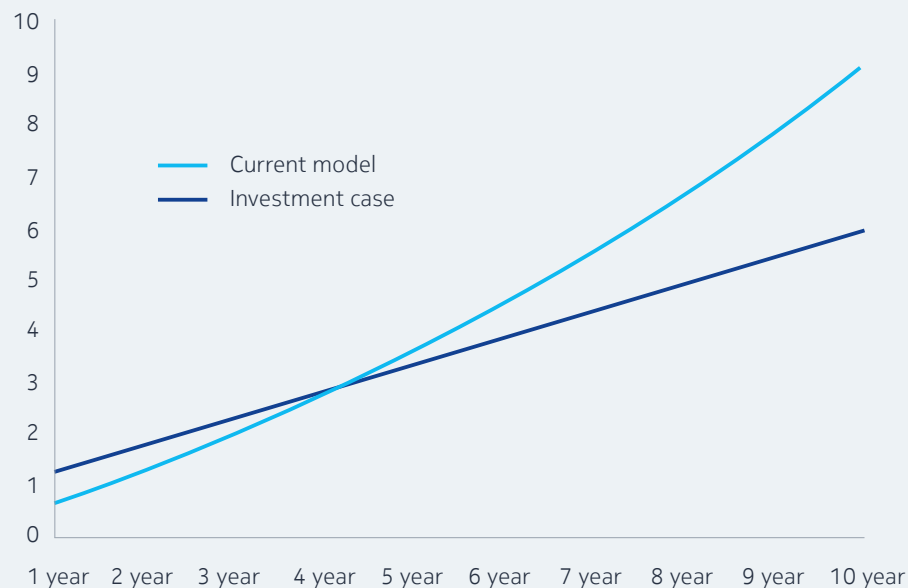
reduced by 20%, which will greatly contribute to achieving Nokia's annual target of a 1.8 % emission reduction from our facilities globally.

Investments are ongoing and the agreement period is 8 years and savings are guaranteed by the ESCO company. We are expecting energy savings of 600 MWh on heating and 1200 MWh on electricity, as well as reductions in CO₂ emissions

equalling 360 tCO₂/a. These investments help to improve our technical systems and open up opportunities for the introduction of new technologies, such as IoT in Nokia premises. As we move forward we will continue to investigate how sensors, Wifi space usage data, and IoT can help Life Cycle Costing, and that way further decrease our carbon emissions.

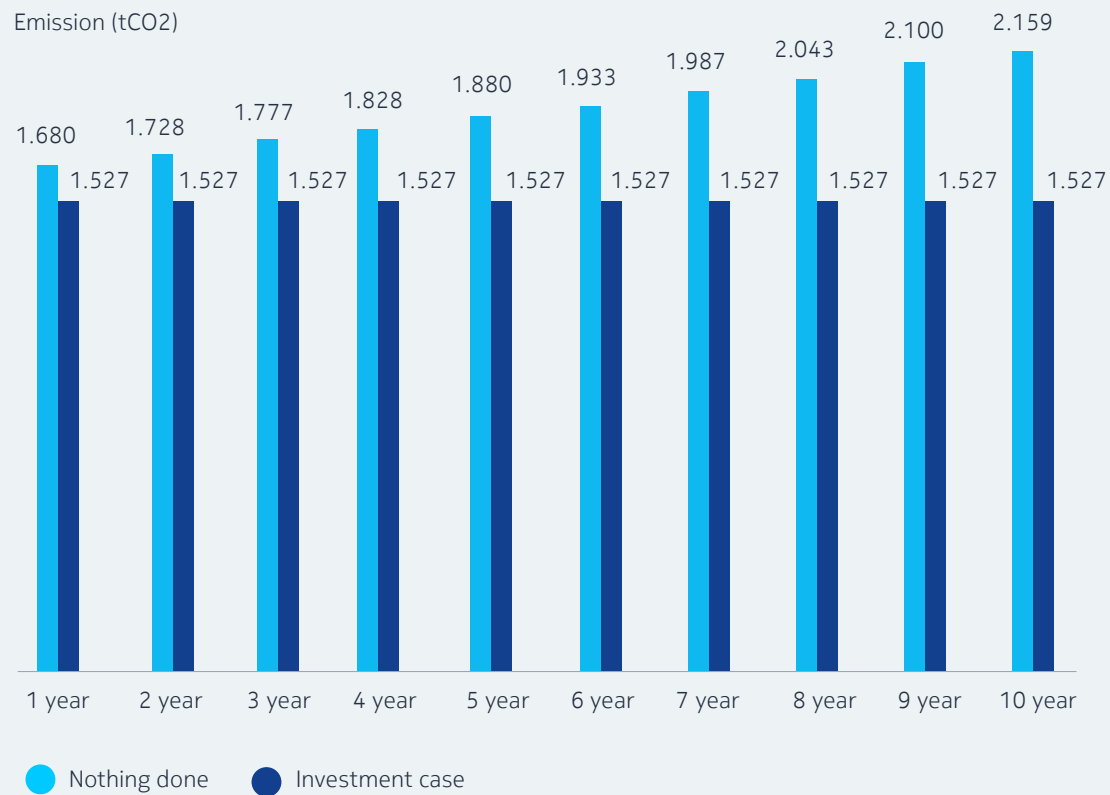
The ESCO Investment case reaches break even after 4 years and reduces total cost by 35% over the coming 10 years

WR Cash flow (m€)



ESCO – Energy Service Company pilot

CO2 emissions targeted to reduce by 20% - greatly contributing to reach Nokia's annual target of a 1.8% emission reduction from our facilities globally



Making logistics more eco-efficient

To drive improvements in our transportation and distribution, we look at the most energy efficient ways of transporting components from suppliers to us, and also in delivery of our products to our customers. The combination of two global operations landscapes and integration of new products/suppliers, under tough time constraints, weakened our transportation situation.

In 2016, our Scope 3 GHG emissions related to upstream transportation, and distribution of our products stood at CO₂e 268 400 metric tons, an increase of 21 % over the previous year, when also including the former Alcatel-Lucent in the comparison. Numbers are not fully comparable between the years as we changed the tracking in

our internal tool from pay weight to real weight. The main reasons for the increase were more deliveries, and increased share of air freight by ton-miles (46% in 2016, 32% in 2015), while the airfreight share by volume stayed almost the same at 19%. For 2017, our focus will be again to positively affect the environmental efficiency of the transportation of components from our suppliers to us, as it helps us reduce the distances, and need for airfreight.

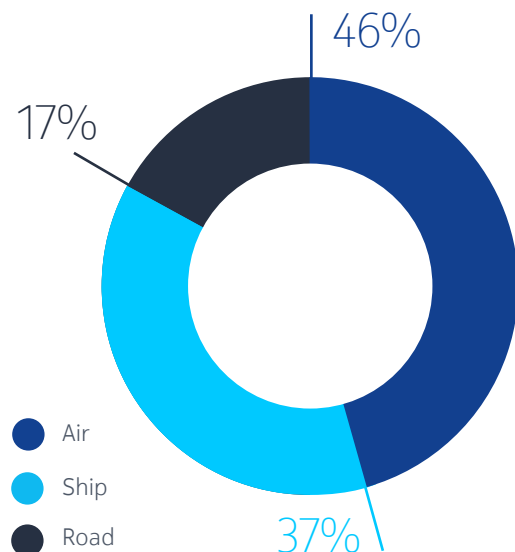
Our marine and car fleet

In 2016, despite a benefit-car order freeze, we further reduced the carbon intensity (CO₂ equivalents per vehicle kilometer driven) of our car fleet by 8%, as compared to 2015. For example, in Finland the CO₂ average was reduced in 2016 by 10

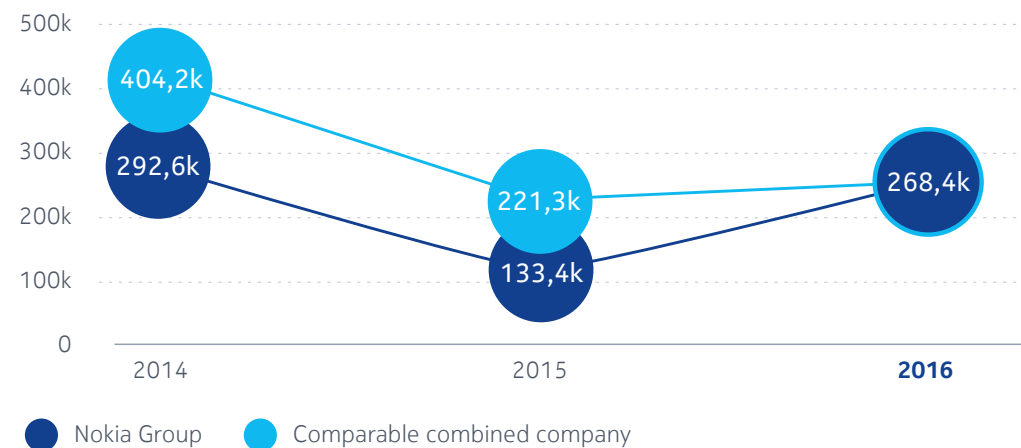
grams, with the new orders being approximately 23 grams per kilometer lower than the market average. The reduced carbon intensity and reduced amount of cars in our combined fleet led to a reduction of 19 % in greenhouse gas emissions from the car fleet, compared with 2015, and when the former Alcatel-Lucent is also included in the comparison. Policy and process harmonization has started and will continue in 2017.

With the acquisition of Alcatel-Lucent, Nokia now also has a marine fleet. The emissions increased in 2016 by 27% compared to 2015 due to significant transit amounts. The monthly fuel consumption logs also show that adverse weather conditions were often a reason for the larger than planned fuel consumption.

Share of transportation modes in 2016



CO₂e emissions from transportation and distribution (thousand (k) metric tons) CO₂e



Use of natural resources

We aim to limit the use of natural resources. In shipping, we drive to save space, reduce the amount of materials used, and minimize where possible the use of additional, sometimes unnecessary containers. Reuse of packaging materials also contributes to reductions in CO2 emissions from deliveries. In 2016, we reduced use of new packaging materials by 2300 metric tons by reusing the packages coming from suppliers to the customer deliveries. The amount is 200 metric tons less than in 2015. OEM (original equipment manufacturer) packaging, such as packaging for cabinets, antennas, batteries, and cable reels, is typically 100% re-used. This reuse reporting does not yet cover the former Alcatel-Lucent distribution hubs, but the same practices are in use and will be reported from 2017 onwards.

Although the nature of our business means water is not a significant resource for us, we do track, measure, and aim to reduce the amount of water we use in our facilities. In 2016, we used 3 180 000 m3 of water. Water use increased by 21% compared to 2015 mainly on account of varying water data

collection boundaries and practices across both former Nokia and former Alcatel-Lucent portfolios. In 2017, we aim to gather water data from a larger number of sites and reduce consumption by 2%.

Reducing our travel footprint

In 2016, with the expected intensity of ongoing integration, our emissions related to business travel, based on flown air miles, were around 113 300 metric tons of CO2 equivalents emissions, meaning a 1% increase compared to the 2015 level, when the former Alcatel-Lucent is also included in the comparison. Business travel includes flights, rail, rental cars, taxis, and public transport. Our reporting is based on the biggest contributor to business travel emissions, air travel, for which we calculate the CO2 emissions based on the number of miles flown.

During 2016 we have worked hard to discourage the need for business travel and encourage the use of virtual meetings using new video conferencing facilities and virtual collaboration software. This also allows employees to work from home more frequently. These actions helped us to remain on

the level of 2015 even though there was more intensive and additional integration related travel. Travel policies were harmonized in 2016 as part of the integration of Alcatel-Lucent, with little change specifically in earlier Nokia environmental related travel issues. We continue to encourage the use of electric or low-emission cars, organize shuttle buses between hotels, offices, and airports, and encourage employees to use public transport.

We continued to use our Mobile Travel Assistant (MTA) service, helping keep travelers up to date on their bookings and providing practical information and tips throughout their journey. During 2016 we started to create TOP destination packages for our travelers. The purpose of this set of packages is to provide practical information for Nokia employees travelling to key destinations. We will continue to produce more of these destination-specific information packages throughout 2017 and intensify the communication of them. MTA is planned to be used more widely in 2017 to cover the majority of Nokia travelers, including practical tips that help lower costs and environmental impacts of business travel.

Our new targets



2017

Reduce the water use in our facilities by 2% compared to 2016 level

Smart mobility

Travel policy

Best business travel practices for efficient and low emission travelling

Technology enablers

IT & virtual meetings, mobile broadband, and public transportation applications

Company car policies

Sustainable business with usage of low emission vehicles in a smart way

Meeting and event policies

Best practices for meetings and events at Nokia premises or externally

Home office working guidelines

Home office working guidelines to enable flexibility and optimize daily emissions of commuting externally

Recycle, reuse, disposal, and waste in our own operation

Our operations create some waste and we aim to minimize the amount of waste we create while also maximizing the reuse of that waste. We also look to decrease the amount of waste that goes to landfill. In 2016 we produced 28 400 metric tons of waste from our operations. 21 600 metric tons were sent to recycling or used, 3200 metric tons were sent for energy recovery. We sent 3600 metric tons to landfill or incineration without energy recovery. This gave us a utilization rate of 87% within Nokia. (85% in 2015). The total waste amount increased by 14% from previous year, when the former Alcatel-Lucent is included in the comparison. One reason for the increased amounts was the clear-out and consolidation of real estate as part of the integration of the companies. In 2016, we updated our waste sorting and recycling instructions, providing clearer guidance on what can be recycled and where it is to be deposited for collection. This

was further supported by an increase in recycling bins.

Nokia also offers Asset Recovery services to its customers as part of product life cycle management. This service can cover both Nokia products and the products of other manufacturers. In 2016, we sent around 2450 metric tons of old telecommunications equipment for materials recovery and we refurbished approximately 85800 units.

Environmental risks in our own operations

As a company with global operations, we provide connectivity and other infrastructure, software, and services around the world, which inevitably affects the environment because manufacturing, distributing, and operating these products requires energy and other resources. In order to minimize this impact, we aim to make our own operations

as eco-environmental as possible. As such, we face risks related to accidental pollution or other disturbances or damage to the environment. While we have contractual limitations in place and maintain insurance coverage to limit our exposure, we cannot provide any assurance that these provisions will be sufficient to cover such exposure entirely. Accordingly, we make provisions for environmental liabilities* to cover such exposure, which in accordance with our Q4 and full year 2016 financial report, published on February 2, 2017, amounted to EUR 134 million in 2016 as compared to EUR 16 million in 2015. The increase was primarily attributable to the acquisition of Alcatel-Lucent.

*The environmental provision includes estimated costs to sufficiently clean and refurbish contaminated sites, to the extent necessary, and where necessary, continuing surveillance at sites where the environmental remediation exposure is less significant. Cash outflows related to the environmental liability are inherently uncertain and generally occur over several periods.

Our new targets



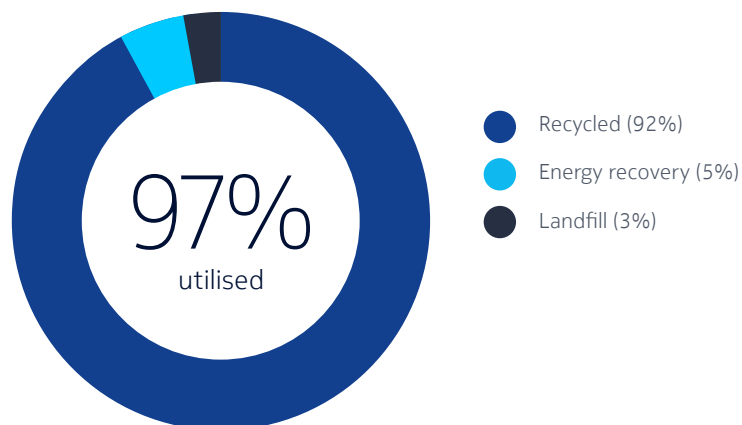
2017

Establish a new baseline and related targets for waste reporting on account of changed waste reporting scope

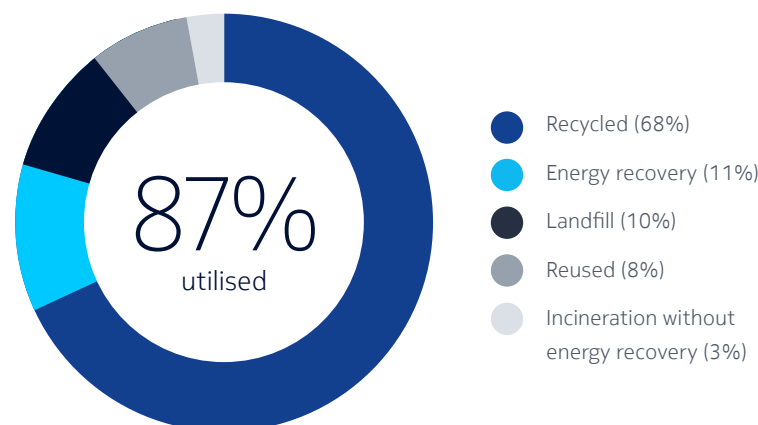


The updated environmental policy can be found [here](#)

Product take-back



Waste from our own operations



Raising awareness and good practice

It is paramount that we engage our employees and raise awareness of good environmental practice in day to day life. In 2016 Nokia launched a Switch-off campaign designed to raise awareness on climate change and energy conservation, Nokia's environmental efforts, and to also influence employee behavior to reduce energy use. Over 250 sites took part in the campaign with 65 sites providing feedback on actions they had taken and suggested future improvements. Activities included timer and temperature changes, load shedding, improved controls, and a proactive switching off of unnecessary equipment.

Nokia also supported WWF's Earth Hour campaign, switching off the lights of our buildings along with those of 1.23 million individual actions taken to raise greater awareness on the fight against climate change. Our offices in Espoo are certified under

the WWF Green Office, and our actions in 2016 also helped both Tampere and Oulu offices in Finland receive certification in January 2017 under the same program.

We also renewed the environmental policy, which is embedded in the Nokia Code of Conduct, ensuring it reaches all employees and that it is clear that environmental issues are the responsibility of everyone in the company.

Our achievements

We modernized 27% more base stations than in 2015, average energy savings of 43% for our customers

First telco equipment vendor to sign the commitment to Science-Based Targets initiative and submitted our emission reduction targets

Today 120 customers use at least one Zero emission product or service

Our total facility operations energy consumption decreased by about 9% compared to 2015

We sent around 2450 metric tons of old telecommunications equipment for materials recovery and we refurbished approximately 85 800 units

21 600 metric tons of waste from our operations were sent to recycling or reuse, 3 200 metric tons were sent for energy recovery

Launched Zero Emission 2.0 offering with 20 new innovations, and AirScale base station which can reduce operator CO2 emissions by up to 60%

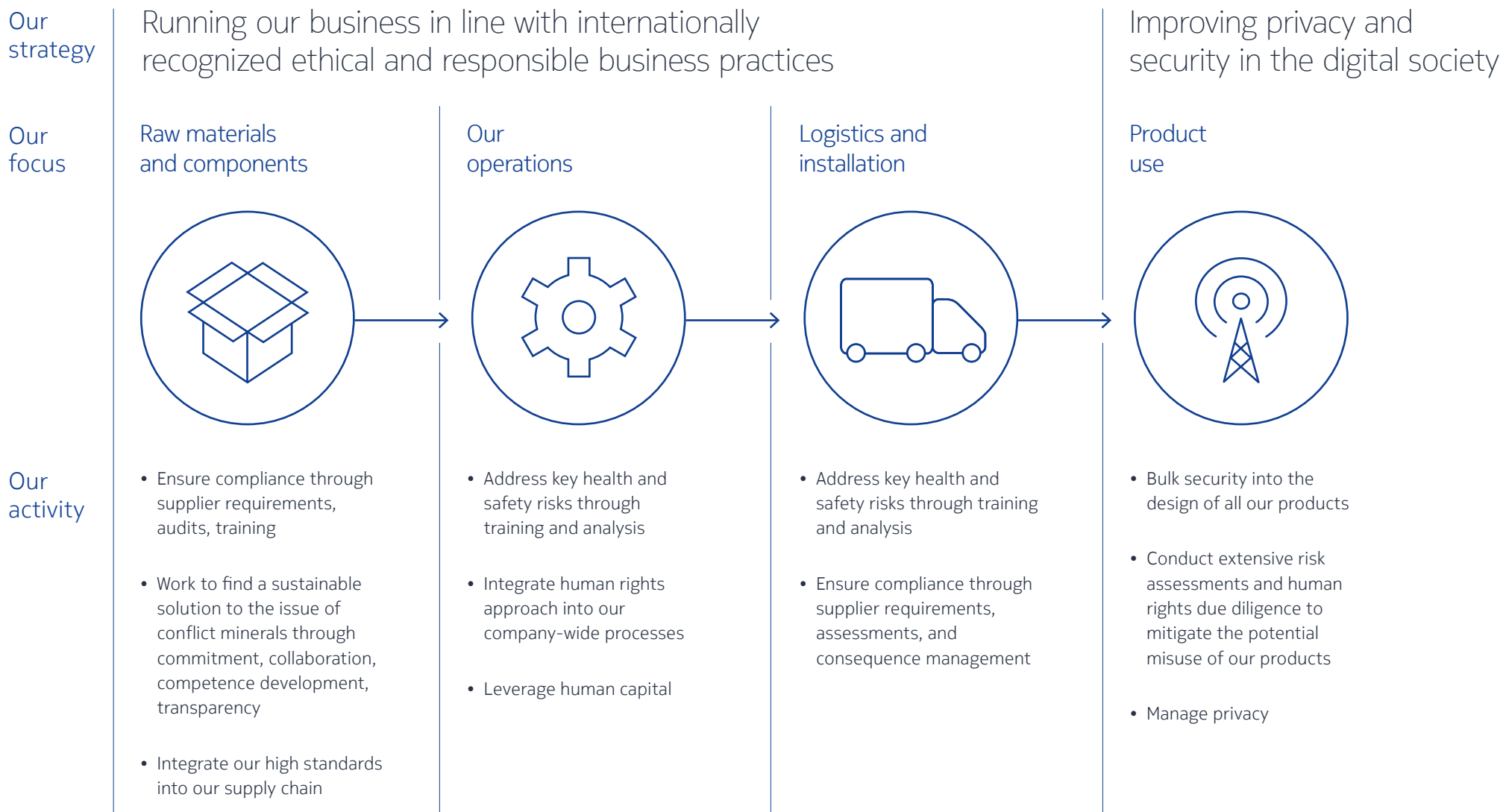
We demonstrated our liquid cooling innovation for base station sites at shows in Barcelona and Florida

We worked with CenturyLink to reduce their network power consumption by approximately 22 000 megawatt-hours a year through network optimization, by applying our PSTN Smart Transform solution

Conducting our business with integrity

At Nokia, our reputation for always acting with unyielding integrity is our most precious asset. Our commitment to upholding the highest principles of business ethics and integrity not only defines us as a company, but we believe it's what separates us from our competitors.

Our approach to responsible business



Promoting ethical behavior

We have a Code of Conduct that is applicable to all of our employees, directors and management and, in addition, we have a Code of Ethics applicable to the President and CEO, Chief Financial Officer and Corporate Controller. We apply our Code of Conduct not just to our own employees but also in our daily activities and business dealings with all of our external stakeholders. Leadership involvement and oversight on ethics and compliance are provided by Nokia Board of Directors via the Audit Committee. Compliance management is further supported by both global and regional compliance committees.

Our Code of Conduct sets down the key principles and practices of our ethical business approach and provides clear guidance to our employees as well as other stakeholders we work with. The high standards of our Code of Conduct allow us to build and maintain personal integrity across the company and protect our reputation.

The Code is publicly available [here](#). It can be summarized in 5 simple principles which run through everything we do and how our employees are expected to behave:

- Obey laws and follow policies
- Be fair and honest
- Treat each other with respect
- Declare conflicts of interest and avoid appearance of impropriety
- Report any concerns promptly

We are committed to follow and uphold the laws and regulations in all countries where we operate. The Code includes basic legal guidance and information on the key ethical behavior standards in order to help our employees make the right decisions in a variety of business scenarios they may encounter in their daily work. The code underpins our labor conditions, and is supplemented and strengthened with human rights policies and procedures that underscore how we aim to ensure fair employment.

The Code of Conduct is further enhanced by 14 key business policy statements. The policies in the Code of Conduct are non-exhaustive summaries of the policy statements, but they provide guidance on proper ethical conduct. The 14 policy statements include the following topics: Improper Payments/Anti-Corruption, Conflict of Interests, Fair Competition, Privacy, Dealing with Government Officials, Intellectual Property & Confidential Information, Working with Suppliers, Trade Compliance, Insider Trading, Health, Safety & Labor Conditions, Controllershship, Fair Employment Practices, Human Rights, Environment, and operational guidance on third-party screening and corporate hospitality. The complete policies and respective Q&A's are made available to our employees.

We understand our great reputation, built up over decades by thousands of dedicated Nokia employees the world over, could easily be tarnished by the reckless acts of a small handful of misguided employees. At Nokia, compliance is not just the job of lawyers and compliance leaders; it is a responsibility shared by all to know more about

our Code of Conduct The Code was cascaded to employees via intranet, email, posters, and line managers, as well as on a company mobile app, which was launched in 2015, to reach out to our highly mobile and tech-savvy workforce. The Code of Conduct is available in 23 languages.

Responsible advertising

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



The Code of Conduct is available [here](#)



Our policies are available on our [website](#)

Our new targets



2017

Ethical Business Training (EBT) completion = 95%

2020

Ethical Business Training (EBT) completion = 98%

2030

Ethical Business Training (EBT) completion = 100%

2017

Set the baseline based on new Culture Cohesion Tracker question "Does your line manager periodically talk with you and your team members about the importance of ethics and compliance?"

2020

Employee/Line Manager engagement = 75% favorable answers based on the baseline set during 2017

2030

Employee/Line Manager engagement = 85% favorable answers based on the baseline set during 2017

Making ethical practices part of our employee makeup

We believe ethical practice and understanding can be at the core of our employees' characters, but we also understand that we need to support, maintain, and constantly improve our employees' knowledge and understanding of good ethical business practice. Our employees want to do the right thing and that means we need to give guidance, training, and continuously communicate with them.

We offer training in ethical business conduct to all our employees and other targeted training courses such as Competition Law and Privacy Matters to help employees understand and implement the Code of Conduct in their daily work. In 2016, Ethical Business Training was not mandatory for all employees, as former Nokia employees completed the training by end 2015 with a completion rate of 98%. However, this training was mandatory in 2016 for all former Alcatel-Lucent employees in support of Nokia on-boarding. About 90 % of former Alcatel-Lucent employees successfully completed the training by the end of December 2016. For 2017, we target to achieve 95% completion of the Ethical Business Training (EBT) and furthermore have set the long term-targets of 98% by 2020 and 100% by 2030.

The ethical business training looks at issues such as ethics in the workplace, fair competition and anti-trust, trade compliance, privacy, bribery and corruption, gifts, entertainment and hospitality, conflicts of interest, human rights, environment, equal opportunity, discrimination, and harassment. In 2016 we also rolled out a targeted Competition Law online course which was completed by around 24 000 employees.

Leadership engagement and compliance oversight

The Audit Committee is the vehicle through which Nokia's Board of Directors provides engaged leadership and oversight on compliance to our employees. In 2016, the Audit Committee met 8 times to discuss a number of topics, of which 5 meetings focused on the compliance program/strategy, significant issues/cases, and results and outcomes of compliance initiatives such as the Compliance Risk Assessment and Ethical Business Training. In addition, Nokia's President and CEO continued to chair the Global Compliance Committee (GCC) in order to provide oversight and strategic direction to the committee on matters of ethics and compliance. In instances where meetings weren't possible, information was sent via email to maintain a regular rhythm of compliance updates to the GCC. Nokia's regional and business compliance leaders provide local oversight through Regional and Business Compliance Committees on a quarterly basis in order to support on the ground execution of Nokia's compliance program and initiatives such as training, risk assessment, and readouts on new/revised compliance policies.

Evaluating compliance risks is critical

We believe it is critical we understand the potential compliance issues our employees may face in their daily work, in order to create the appropriate support and guidance to deal with the most salient compliance risks. We also continuously look at potential new risks that may appear that require updates to our compliance program and approach. In 2016, we carried out internal assessments with former Alcatel-Lucent employees that included manager and team discussions with approximately

22 000 of our employees around the world pertaining to over 44 compliance risk areas. The outcomes of these assessments are used as direct input to further develop our compliance processes and procedures, and implement any necessary risk mitigation actions. The full Nokia employee population did not participate in the 2016 risk assessment exercise as former Nokia employees participated in this initiative in 2015.

On top of these assessments, we engage continuously with our employees through anonymous surveys to gauge the effectiveness and understanding of our compliance program across the workforce. In 2016 compliance was a standard part of the Culture Cohesion Tracker surveys. Employee and other stakeholder input is actively sought in order to further develop our program, through town-hall meetings with business leaders at our sites around the world as well as inclusion in external presentations to various stakeholder groups. For example, ethics and compliance were discussed as part of training and engagement with key suppliers.

From 2017 onwards, we track the Employee/Line Manager engagement on the importance of ethics and compliance. A new question will be added to the Culture Cohesion Tracker survey which asks employees "Does your line manager periodically talk with you and your team members about the importance of ethics and compliance?". The target baseline for 2017 will be set based on this new question. The targets for 2020 and 2030 have been set.

Every year, our internal audit team collaborates with the compliance team in audits and other inquiries that assess the effectiveness of our compliance

processes and controls. We use these multiple feedback channels to drive and enhance the culture of continuous improvement in our compliance activities.

Reporting of ethical concerns without fear of retaliation

It is paramount that we create a culture and atmosphere of trust amongst our employees that ensures they feel comfortable in bringing concerns and potential violations of the Code of Conduct to our attention, without fear of reprisals, retaliation, or negative response. We clearly state in our Code of Conduct that there is zero tolerance for retaliation related to reporting of ethical concerns. Confidentiality is guaranteed.

We offer multiple channels to report ethical concerns, through a dedicated email address, online, or via dedicated country-specific phone numbers. We respond to and investigate all

concerns promptly and take any necessary corrective actions. All concerns are logged and tracked regularly. Our hotline is open for employees and external stakeholders.

Our Compliance Hotline, allows for anonymous reporting. In 2016, our Ethics & Compliance office received 637 concerns, of which 228 were investigated by Ethics and Compliance Investigations as alleged violations of our Code of Conduct. In 2015, the Ethics & Compliance Office received a total of 225 enquiries and concerns. We can acknowledge a significant increase in absolute numbers, as we are now reporting as a combined company. This increase shows that we created a culture in which employees continue to feel comfortable raising concerns. For 2016, we also implemented corrective actions including 17 dismissals, and 40 written warnings, following these and other investigations.

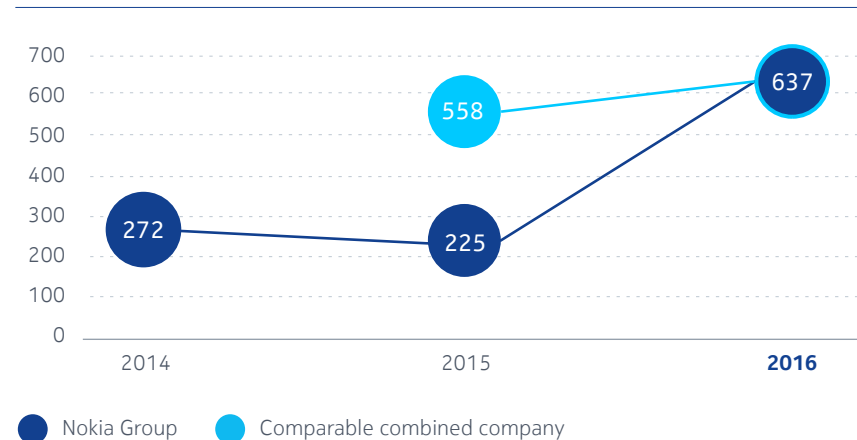


Compliance Hotline

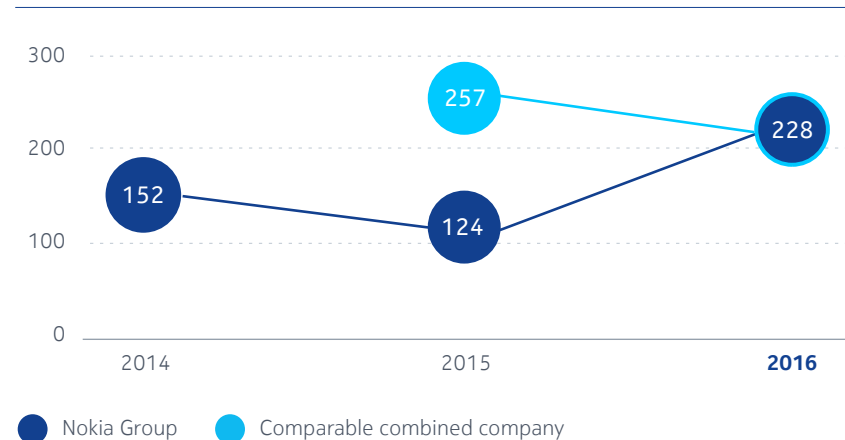
Email:
ethics@nokia.com

Online:
<https://nokiaethics.alertline.com>

Number of ethical concerns reported



Number of investigations by the Ethics & Compliance Office



As way of example, below are three anonymized examples of typical concerns that we receive via the Compliance Hotline.

Issue raised	Our guidance	Actions taken
A Research and Development Manager requested the reimbursement of membership and sponsorships fees for a business council organisation without disclosing that this individual served as the Vice-Chairman of its board. This individual had also not sought the appropriate approvals for such representation.	Nokia has issued a Policy on 'Conflict of Interest' and it provides guidelines on how to avoid conflicts of interest and how to disclose these when they arise.	The Conflict of Interest was substantiated. The employee was denied reimbursement of these fees and he was requested to step down from this business council organisation as he was representing the company without appropriate authorisation. Finally, he received a warning for his conduct.
An employee reported that confidential materials/ information had been left unattended at a Customer's onsite office, potentially having been disclosed to competitors who were also onsite the same day.	Nokia's section on 'Intellectual Property & Confidential Information' in its Code of Conduct states that Nokia confidential information and trade secrets must be protected from unauthorized disclosure and misuse, and must not be shared with third parties except under approved terms which restrict their disclosure and use.	The evidence gathered during the investigation did not provide enough proof to conclude that this incident was intentional but it did confirm that no competitor had had access to the materials. No individual sanctions were taken for these reasons. However, training sessions and onsite reminders on both Information Security and competition law were agreed to be carried out as remedial actions.
A supplier of immigration papers and visa services was reported to have been falsifying the fees for various visas and permits, and not to have been providing adequate documentation to support the invoices.	Nokia prohibits improper payments and any type of fraudulent actions carried out, and imposes the same guidelines on its suppliers.	As a result of the investigation, the relationship was terminated with the vendor for failing to comply with contractual obligations and Nokia's Code of Conduct.

Number of ethical concerns reported in 2016

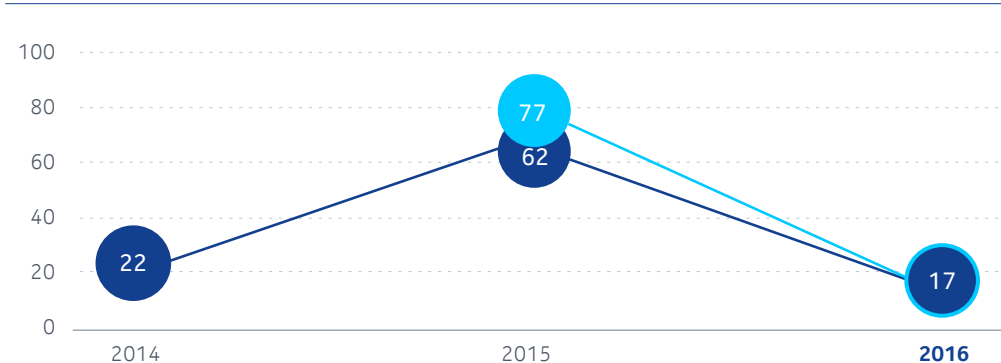
Category	Number of concerns
Conflict of Interest	34
Controllership	119
Dealing with Government Officials	3
Fair Competition	2
Fair Employment	200
Guidance	120
Health, Safety & Labor Conditions	60
Human Rights	0
Improper Payments	12
Intellectual Property & Confidential Information	51
Privacy	8
Trade Compliance	0
Working with Suppliers	25
Other	3
Total number of ethical concerns reported	637

In 2016, 86 allegations substantiated with "cause found" after Ethics and Compliance office investigation

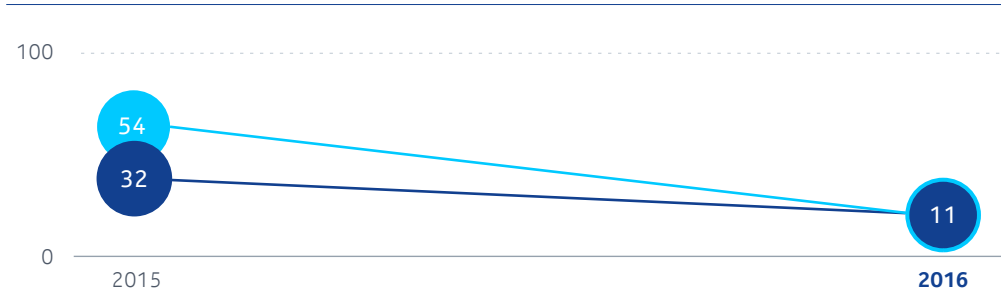
Total number of ethical concerns reported	637
Total number of investigations by Ethics and Compliance office	228
Number of allegations substantiated with "cause found" after investigation	86

● Nokia Group ● Comparable combined company Legend is applicable for all three graphs below

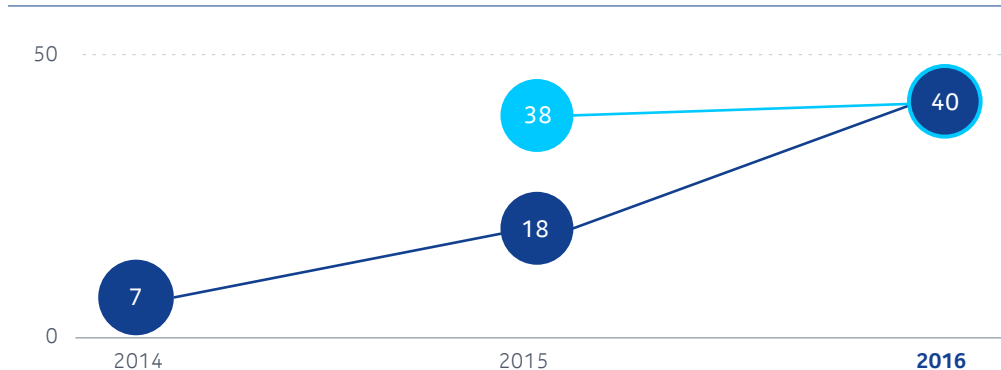
Number of employees dismissed on grounds of a violation of the code of Conduct



Number of employees given a verbal counselling related to Code of Conduct



Number of employees given a written warning on grounds of violation of Code of Conduct



Competition laws and anti-corruption

Nokia is committed to complying with competition and antitrust laws everywhere we do business. Nokia competes fiercely, but fairly. The principles for Nokia's competition law compliance are laid out in a Competition Law Compliance Policy available to our employees on our intranet. The same principles are incorporated into Nokia's Code of Conduct, which sets the standard for Nokia's ethical business behavior.

A key principle in our policy is that all Nokia executives and employees are responsible for understanding and respecting competition laws and for raising competition related issues for appropriate evaluation within the company. We implement as part of its overall legal compliance efforts, in which Nokia's internal lawyers act as an important support function and as a key contact point for the business to get relevant legal guidance.

We employ a multi-faceted approach to anti-corruption issues. We have clear and unequivocal policies concerning improper payments, facilitation payments, gifts and hospitality, sponsorships and donations, and other risk areas. We carry out training and regularly communicate to our employees regarding risks, and we review these risks and our mitigation measures with the company's senior leadership and Audit Committee. We carefully screen and monitor any third party representatives engaged to act on our behalf

and we demand the same high standards of conduct from them. We conduct periodic audits and risk assessments to ensure that we identify and respond to anti-corruption risks. We expect employees to ask questions and raise concerns whenever they believe there is a potential violation of law or policy, and we investigate all such concerns in a prompt, thorough and objective manner. When an investigation confirms a violation, individuals are held accountable.

We take a similar strict approach to working with our suppliers, read more under Responsible sourcing on [page 112](#).

Since acquiring Alcatel-Lucent in January 2016, Nokia has continued to work to resolve outstanding government investigations and proceedings relating to potential violations of anti-corruption laws by former Alcatel-Lucent businesses. For more information, please see our Form-20 report [here](#).

As a responsible equipment vendor, we also work hard to ensure the technology we provide is not used to infringe human rights, including the right to privacy, freedom of expression and assembly. We further work closely with our supply chain to encourage adherence to the same standards of ethical business to help ensure responsible sourcing and globally acceptable labor practices. During 2016 we have also increased our efforts in identifying and dealing with the risks of Modern Slavery, in line with the definition of modern slavery as given in the UK Modern Slavery Act and the International Labour

Organization (ILO). We intend to release our first Modern Slavery related report on this topic in June 2017.

In 2016 there were no significant fines or non-monetary sanctions for non-compliance with laws and regulations related to anticorruption or antitrust.

There were no significant fines or non-monetary sanctions for non-compliance with product health, safety, security, and environmental, data privacy, or export control laws and regulations



For more information, please visit our Form-20 report [here](#)

Addressing human rights

Communications networks can play a significant role in enabling free expression, access to opportunities and ideas as well as social, environmental, and economic benefits. We have a responsibility to ensure they are not used to limit or infringe on human rights.

During the 2016 integration of the Alcatel-Lucent business, we had the unique opportunity to compare and combine the best practices of two existing human rights due diligence processes. Furthermore, we intensified the implementation of extensive risk assessment and human rights due diligence as an integral part of our global sales process in order to further mitigate potential risks and cases of misuse.

Transparency is an increasingly important goal for Nokia. In 2016 we published our updated Human Rights Policy and complemented it further with a public Q&A document.

We continue to call for increased transparency from governments related to their surveillance activities and for greater clarity on the laws and regulations related to these topics.

See ID guiding principles and HRDD case examples on pages 105-107

Striking a balance

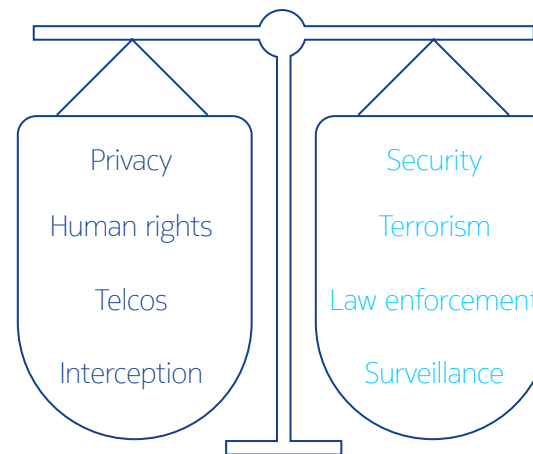
2016 saw a marked increase in the threat of terrorism. This alone has increased the spotlight on security on the one-hand, and increased calls for greater public safety on the other. There have been numerous terrorist attacks around the world and the threat in many regions continues to grow, resulting in heightened security in many countries. Terrorism exemplifies the growing challenge of balancing the privacy rights of the individual with an increased need for security. In this evolving global and technological context, getting that balance right has never been more pressing or more complex. It is therefore critical that we work closely with other stakeholders to jointly address the challenges.

Working with others

Nokia has been a fully active member of the Telecommunications Industry Dialogue Group (known as the ID) since its inception in 2013 and, as of October 2016, Nokia has chaired the group. Since February 2016, we have had official observer status with the Global Network Initiative (GNI), and in March 2017 we took a seat on the GNI board as a full member and as the first and only telecommunications equipment provider.

The Industry Dialogue has been disbanded as of April 1, 2017, since the majority of its members have taken up membership in the GNI. The members will continue to represent the Telecommunications industry from within the GNI

on issues related to freedom of expression and privacy. They also continue to encourage other telecommunications companies to join the dialogue. The report on the 2016 activities of the Industry Dialogue is available on the ID website.



Our new targets



2017

Conduct a formal Human Rights Impact Assessment for the new Nokia product portfolio with an externally verified expert.

2018

Successful completion of the first GNI assessment.

2020

Nokia as externally recognized leader in vendor related issues such as freedom of expression & right to privacy according to external benchmarking.

Our progress on implementing the ID Guiding Principles

For 2016, we will continue to report according to the ID Guiding Principles. Moving forward, we will adopt the GNI Principles in our future reports.

Principle

No 1

Create and/or maintain relevant policies, with Board oversight or equivalent, outlining commitment to prevent, assess and mitigate to the best of their ability the risks to freedom of expression and privacy associated with designing, selling and operating telecommunications technology and telecommunications services.

Our progress in 2016

Following our acquisition of Alcatel-Lucent, we undertook the extensive review of the Nokia Human Rights Policy, consulted with outside stakeholders, taking our commitment even further. The consequent update of the Policy reaffirmed our continued commitment to issues related to freedom of expression and privacy.

We also published a more detailed Human Rights Policy Implementation Guideline internally, which provides hands-on guidance to relevant teams on the processes related to human rights due diligence.

No 2

Conduct regular human rights impact assessments and use due diligence processes, as appropriate to the company, to identify, mitigate, and manage risks to freedom of expression and privacy — whether in relation to particular technologies, products, services, or countries — in accordance with the Guiding Principles for the Implementation of the UN Protect, Respect and Remedy Framework

Our due diligence practices follow the UN Guiding Principles for Business and Human Rights, in 2017 we continued strengthening the Nokia HRDD process even further by adopting best practices from the parallel former Alcatel-Lucent process.

We have for the first time published anonymized case examples in order to spotlight and elevate the narrative around the issues faced by telecommunications equipment providers which in our view are more informative and descriptive than simple numbers.

No 3

Create and/or maintain operational processes and routines to evaluate and handle government requests that may have an impact on freedom of expression and privacy.

As a vendor of telecommunications equipment, we sometimes receive government requests through our customers, usually regarding network functionality. In such cases, we handle these requests through our human rights due diligence process mentioned above.

No 4

Adopt, where feasible, strategies to anticipate, respond and minimize the potential impact on freedom of expression and privacy in the event that a government demand or request is received that is unlawful or where governments are believed to be misusing products or technology for illegitimate purposes.

Our Human Rights Policy is centered around 6 core commitments in which we state Nokia will provide passive lawful interception capabilities to customers who have a legal obligation to provide such. On the other hand we will not knowingly provide technology or services for the purpose of limiting legitimate freedom of speech. We employ a thorough due diligence process throughout our organization and particularly in our sales.

We encourage everyone to report any suspicion of misuse through our Compliance Hotline
 Email: ethics@nokia.com
 Online: <https://nokiaethics.alertline.com>

No 5

Always seek to ensure the safety and liberty of company personnel who may be placed at risk.

We are committed to providing a safe and healthy workplace where all employees are treated with respect and provided with equal opportunities. This commitment is further outlined in our Code of Conduct.

No 6

Raise awareness and train relevant employees in related policies and processes.

An introduction to the Human Rights Policy is a standard component of the annual Ethical Business Training (EBT). While we typically concentrate on more in-depth training in Human Rights to specific teams, the year of integration of Alcatel-Lucent required a greater focus on awareness training.

No 7

Share knowledge and insights with all relevant and interested stakeholders to improve understanding of the applicable legal framework and the effectiveness of these principles in practice, and to provide support for the implementation and further development of the principles.

We participate in major multi-stakeholder events and, when required, we provide feedback on reviews, guidance, and statements. We also share case studies and challenges from our operating environments with other ID members. More information on these activities is available on the ID website: www.telecomindustrydialogue.org

In February 2016 we became an observer member of the Global Network Initiative with the aim of becoming a full member in March 2017. In March 2017 we became a full member and a Board member – as the first telecommunications vendor.

Furthermore, Nokia was the Chair of the Telecommunications Industry Dialogue from October 2016- March 2017, successfully leading the final negotiations and membership application process for the relevant ID companies to the GNI.

We also participated in key events throughout the year to increase transparency as we believe one key form of transparency is to remain available and be actively engaged in the dialogue. Events included the Annual UN Forum for Business and Human Rights, as well as for example shared learning sessions with the GNI on network shutdowns.

No 8

Report externally on an annual basis, and whenever circumstances make it relevant, on progress in implementing the principles, and as appropriate on major events occurring in this regard.

We report on our progress in our annual sustainability report. Starting from 2017 People & Planet report, we will continue to report on our progress against the GNI principles instead of the ID Guiding Principles.

No 9

Help to inform the development of policy and regulations to support freedom of expression and privacy including, alone or in cooperation with other entities, using its leverage to seek to mitigate potential negative impacts from policies or regulations.

We aim to engage in constructive dialogue with all our stakeholders whenever the need arises. Our main forum for advancing issues related to freedom of expression and privacy has been the ID group, to be continued with the GNI. We also communicate and work closely with our customers and other external stakeholders on related issues.

No 10

Examine, as a group, options for implementing relevant grievance mechanisms, as outlined in Principle 31 of the UN Guiding Principles for Business and Human Rights.

We encourage reporting of any suspicion of misuse through

Email: ethics@nokia.com

Online: <https://nokiaethics.alertline.com>

In an effort to continuously improve on the quality of the mechanisms, we include a question in the Culture Cohesion Tracker survey implemented throughout the year specifically asking employees how comfortable they are in raising potential ethical concerns through the Ethics channels.

Risk assessment and due diligence

In order to drive implementation of our human rights policy, we are committed to taking steps to identify and mitigate the potential risks for Nokia product or technology misuse. Our primary tool for doing this is our Human Rights Due Diligence (HRDD) process.

The HRDD process is defined as a non-commercial cross-functional investigative process which is used to identify the potential risk of human rights violations using Nokia technology, and also to identify potential ways to mitigate these risks to ensure compliance to Nokia Group Human Rights Policy. It is also designed to ensure that the Nokia sales organization has adequate clarity about what can be sold where and under what conditions.

Nokia uses the Verisk Maplecroft (www.maplecroft.com) consulting service to help investigate the potential human rights risk on both a regional and country level. Countries are listed according to four risk categories: Extreme, High, Medium, and Low.

Identifying risk cases

Some of the technologies we provide contain the

risk for unlawful interception even if not specifically designed for interception, so instead of identifying single products specifically designed for this purpose, the main focus of the risk identification should always be on the intended use of the technology in question (use case). We use a risk matrix to help early identification of potential risk cases and trigger the required HRDD investigation.

Building a robust due diligence process

HRDD investigations are centrally facilitated by Nokia Corporate Responsibility Team using a global process to ensure full process & results' alignment from all regions.

The HRDD investigation is a consultative investigation. Where appropriate, HRDD cases undergo a final review by the HRDD Governance Council. Nokia CMO who chairs the Governance Council along with Nokia CEO, CLO, Business Group Head, and CCOO. Internal auditing is set-up to ensure regional compliance to process and to case flagging, and the potential deviations are included in the periodic reporting to the HRDD Governance Council.

Building on transparency – equipment vendors and government requests

Our experience is that equipment vendors do in fact receive government requests. These can come through our customers, who have received the request and come to us for implementing a functionality to comply with the request, or, as an increasing trend, governments or intelligence agencies approach equipment vendors directly for stand-alone capabilities. Our Human Rights Policy sets our position on such requests, i.e. we do not pursue business directly with such agencies on such functionalities (surveillance), and furthermore, we provide passive lawful interception capability only to those customers who have a legal obligation to provide this service in their telecommunications networks.

We are, in this report, publishing for the first time anonymized HRDD case examples in an effort to increase transparency on the challenges faced by telecommunications equipment vendors in this area. It is our firm belief the narrative on these challenges will be more informative and descriptive to move the dialogue further than simple numbers alone.

HRDD Use Case 1

Country	Extreme Risk Country
Requesting authority	Local Intelligence Agency
Request	The Intelligence Agency requested (directly from vendor) a stand-alone Lawful Interception (LI) solution to enable direct access to 2 local operators' networks.
HRDD Decision	 NO GO.
HRDD Decision Argument	This request was lawful in the local legislative context, however measures were not in place to ensure the principles of necessity, proportionality, and legality would be followed. Nokia policy is to provide passive lawful interception capability for licensed operators with a legal obligation to provide this service.

HRDD Use Case 2

Country	Extreme Risk Country
Requesting authority	Ministry of Defense
Request	To provide the army a surveillance, intelligence, and reconnaissance system based on LTE.
HRDD Decision	 NO GO.
HRDD Decision Argument	The country is known for its poor human rights conditions, and lack of rule of law. The technology required in this regard was ETSI -standards based technology, and lawful in the local legislative context. Our policy is to provide communication systems and standard networking capabilities to governmental customers for purposes such as public safety, railway communications, and smart city enablement.

HRDD Use Case 3

Country	Extreme Risk Country
Requesting authority	Local Telecoms Operator/Authority
Request	To provide LI for a local telecoms operator to fulfill a government request for direct access to authority X.
HRDD Decision	 NO GO.
HRDD Decision Argument	The country is known for its poor human rights conditions, and lack of rule of law. The technology required in this regard was ETSI -standard based technology, and lawful in the local legislative context. However, local law mandates a certain authority to conduct interception, but in the government request we received, it came from a different authority with no visible role in legislation, i.e. with no formal judicial oversight on lawful interception.

HRDD Use Case 4

Country	High Risk Country
Requesting authority	Local Regulator
Request	The local government (regulator) was looking for a direct solution to block selected sites and social media platforms.
HRDD Decision	 NO GO.
HRDD Decision Argument	Nokia will not knowingly provide technology or services for the purpose of limiting political discourse, blocking legitimate forms of free speech, or otherwise contributing to activities that are not consistent with internationally recognized human rights standards.

HRDD Use Case 5

Country	High Risk Country
Requesting authority	A local operator
Request	To provide an update to existing core network with ETSI-standard based lawful interception functionality.
HRDD Decision	 GO.
HRDD Decision Argument	Request was lawful, the operator was a privately owned entity with no government ownership. We provide passive lawful interception capability to licensed operators who have a legal obligation to provide this service.

HRDD Use Case 6

Country	Extreme Risk Country
Requesting authority	A local operator
Request	To provide an update to existing core network with ETSI -standards based lawful interception functionality
HRDD Decision	 GO.
HRDD Decision Argument	Request was lawful, the operator was a privately owned entity with no government ownership. We provide passive lawful interception capability to licensed operators who have a legal obligation to provide this service.

Data privacy and security

How companies protect customer, employee, or other sensitive data is one of the most important questions facing our industry today. Nokia has dedicated processes to address this which focus on technical protection, process, and people. For example, technical protection includes security information event monitoring (SIEM) by our security operation center (SOC), access controls, and making authentication and encryption mechanisms available for system users.

Process-related controls include business-driven governance, security as part of global business processes, integrated enterprise risk management, and active third-party management. Our internal processes address the proper handling, storage, transmission, and destruction of sensitive or confidential information.

Ongoing key Nokia programs to identify and protect critical data:

- Critical Information Protection program
- Focused Assessments
- Nokia Privacy program
- Selected ISO 27001 certifications

People-related mitigation relies on active security culture management, enabling and supporting employee security work and employment life-cycle management.

Getting privacy right

With the growing complexities provided by today's technology and business environment, it is

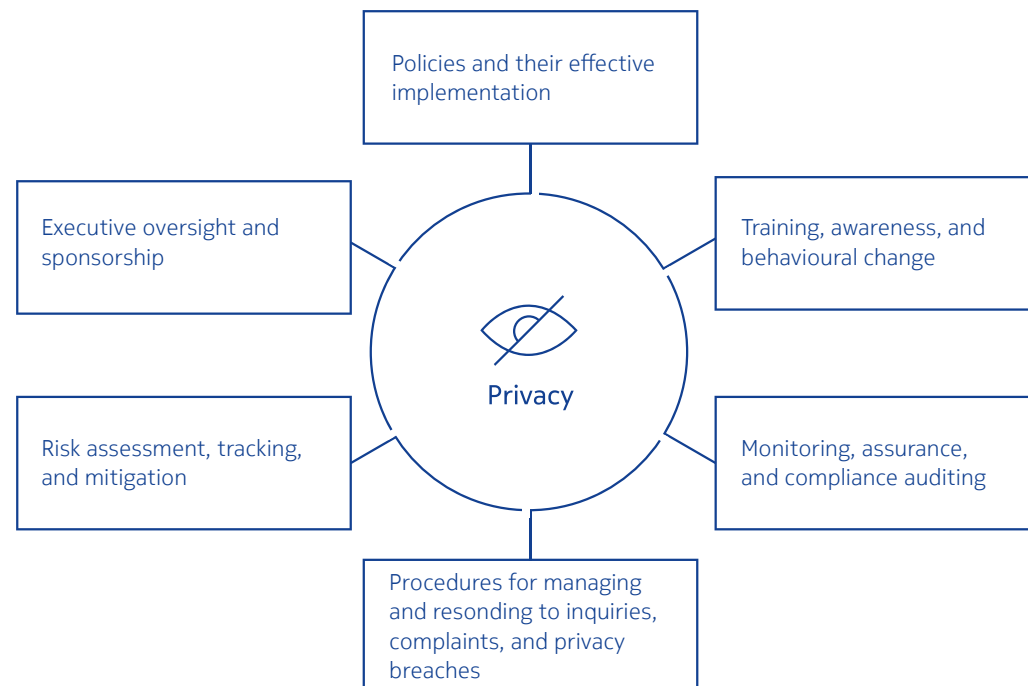
imperative that we lead and enable strategic and consistent management of privacy-related risks as well as ensuring we are in a position to make the most of all the opportunities ahead. With the arrival of 5G and IoT, in a world where everyone and everything are increasingly connected, cloud storage, big data, and other technology advances, getting privacy right is not only desirable, it is a necessity.

Our privacy management model is set out in our group-wide Privacy Management Policy, which

provides clear privacy principles and a governance framework to implement sound privacy-related practices across our businesses.

We continue to strengthen our framework with supporting policy and procedures. We review and update related data governance processes, ensuring they remain fit-for-purpose. Thanks to our programmatic approach, Nokia remains in a position of strength to safeguard personal data entrusted to us.

Our privacy management model



Our new targets



2017

Nokia has approved company-wide security baseline requirements. Plans for the deployment of both security and privacy requirements to all businesses and product programs will be in place and underway by the end of 2017.

2020

Our aim for 2020 is that Nokia be recognized as an industry leader in security and privacy. This will be assessed through external benchmarking.

Getting security right

Our market research reveals that security is a growing concern within the telecommunications industry.

Nokia is dedicated to protecting next-generation networks from attacks and is a leader in the provision of network security solutions. We hold our annual Nokia Security Day which has been combined with the Nokia Analyst Security Day and our annual Nokia HackAthon for the first time.

“Nokia is unique among big traditional “telecom” infra vendors in running a dedicated analyst event on security. Strong differentiation. The big takeaway for me was that there is no let-up in Nokia’s strategic emphasis on security...The roadmap is being worked on to ensure that the leadership it has established relative to other vendors is maintained. It seems to me that the gap is still significant.”

Analyst Patrick Donegan of Harden Stance

The Nokia breach management process is followed in the event of a breach/attack. The plan focuses on three key elements:

1. detection and analysis
2. containment, eradication and recovery
3. Post incident activities

Nokia established a response function that consists of three teams – Incident Response Teams (IRTs), Major Event Team (MET) and Nokia Crisis Management Team (CMT) – depending on the type of incident or crisis. Each team has well defined

tasks, and teams carry out training on an annual basis. Teams consist of subject matter experts from all areas of the company. Regular training and internal and external testing on Nokia’s Breach Management capability is provided. The testing includes annual internal table-top exercises and also annual external “outside-in” simulated attacks. As is the case for all international companies with Internet-facing services, we face daily attack attempts.

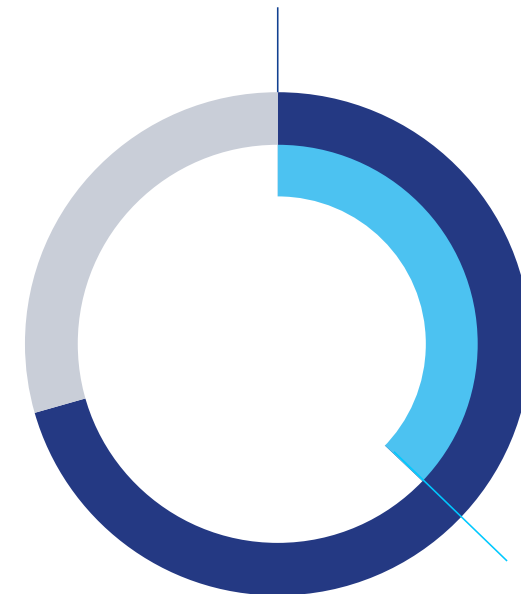
We actively and regularly validate our security throughout the year through:

- planned and unplanned internal and external security audits no less than annually,
- management system audits, social engineering tests, and technical verifications of our security capabilities
- internal ISO 27001 verification audits for business lines and products.
- ISO 27001 certificates for our Global Delivery Centers (GDCs).

All Nokia employees and external contractors are required to take mandatory Information Security e-learning courses every two years. New hires must take an e-learning course when starting with Nokia and our security awareness and culture is measured annually. We also run Red Team exercises every year where an external professional security company tests Nokia’s security capabilities.

68%

Issues consumers are worried about



39%

Issues personally experienced

Source: Nokia Acquisition & Retention study 2016

Privacy and security in our products

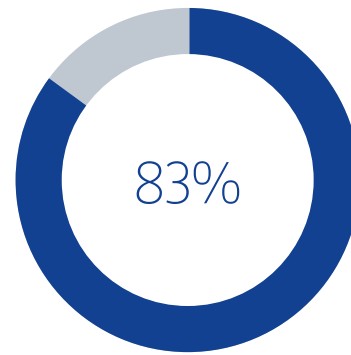
Data has been widely recognized as the currency of the 'smart' age. Trust, security and transparency are pre-requisites for adoption of smart technology. Privacy and security will be key for ensuring public safety and promoting consumer trust, so embedding the right level of data and privacy protection into connected devices is a critical priority. This is a shifting landscape that we are monitoring in order to respond appropriately for our customers.

Finding the optimum balance between a good user experience and protecting data is crucial for building trust in smart city networks. The technology required to ensure security is already available, but the challenge is to find effective ways of achieving scalability across billions of connected devices.

Nokia Threat Intelligence Report

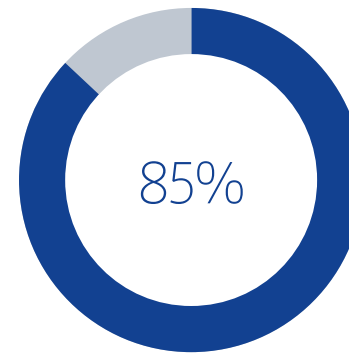
Issued twice per year, the [Nokia Threat Intelligence Report](#) examines general trends and statistics for infections in devices connected through mobile and fixed networks around the world. The latest report revealed a steady increase in mobile device infections throughout 2016, with malware striking 1.35 percent of all mobile devices in October – the highest level seen since reporting started in 2012. The report also revealed a surge of nearly 400 percent in smartphone malware attacks in 2016. Smartphones were the most-targeted devices in the second half of the year, accounting for 85 percent of all mobile device infections.

Nokia Threat Intelligence Report



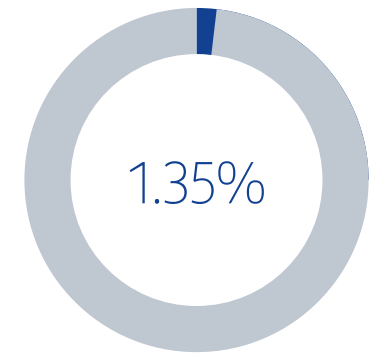
Increase in smart phone malware infections

The smartphone infection rate in mobile networks averaged 0.90% in the second half of 2016, up 83% from 1H 2016.



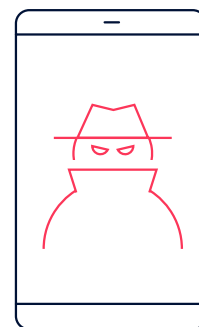
Smart phones account for most mobile infections

Smartphone infections accounted for 85% of the infections detected in the mobile network.



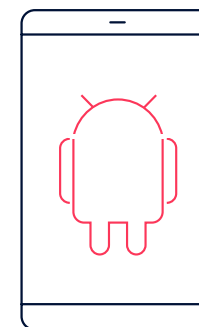
Mobile infections peaked in October

The infection rate rose steadily throughout 2016, reaching a new high of 1.35% of devices in October.



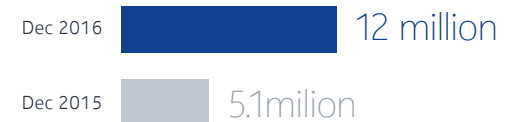
Cybercrime is moving to the mobile space

85%



The number of Android malware samples has scored

95%



Building security into networks

Nokia technologies and expertise help our customers protect their networks and services. We have worked as a security system integrator for many years. Today, we are involved in more than 500 security projects worldwide, offering capabilities that range from design to support. We also lead the industry in securing commercial LTE networks. We leverage our work in security standards forums to design solutions that fully address the security requirements of complex networks.

Nokia NetGuard security portfolio enables our customers to secure traditional and cloud-based network architectures. End users as well as Internet of Things (IoT) devices can be protected from cyber threats, and the solutions provide the on-demand security and privacy that IoT, big data, and cloud services require.



NetGuard Cloud Security enables our customers to combine our Cloud Security Director and Virtual Firewall to secure cloud deployments.

NetGuard Network Security helps our customers build a comprehensive firewall security solution that ensures that only authorized base stations can access the network.

NetGuard Security Management offers a complete security management solution to orchestrate identity, configuration, and inventory management and security compliance analytics.

NetGuard Endpoint Security is designed to detect various strains of malware. Deployed in a number of major networks around the world, the system currently monitors network traffic from over 100 million devices

Nokia IMPACT is an industry leading device management with over 1.5 billion devices managed and a device certification program, gives communication service providers, enterprises and governments a secure, standards-based platform on which to build and scale new IoT services. It provides robust, multi-layered security across the platform to safeguard data, identities, and devices.

Responsible sourcing

Our supply chain consists of three categories of procurement: product which refers to the materials that go into our products, services which we offer to customers such as network planning, installation and maintenance, and construction, and finally indirect supply which consists of goods and services we buy to run our business such as IT, logistics, financial, legal and marketing services. The majority of our manufacturing suppliers are based in Asia, whereas our Services suppliers are located around the world. 80% of our total supplier spend is distributed across approximately 480 suppliers.

In 2016, we made tremendous strides in bringing together the complex procurement systems of two

large companies into an integrated system. We also took the opportunity to leverage the best practices and elements of both systems to create the best responsible sourcing management system.

Working with suppliers

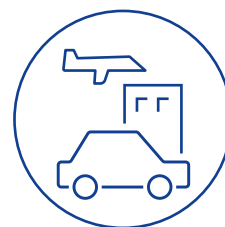
Before any work begins with a supplier, we expect them to meet the high ethical, social, and environmental standards set out in our [Supplier Requirements](#). These requirements are an integral part of all our supplier contracts. We expect suppliers to have the appropriate management systems, resources, and a code of conduct that shows a high commitment to respecting human rights, good labor practices and conditions as well

as clear ethical business conduct. We also expect our Tier 1 suppliers to apply the same standards to their own suppliers.

We strictly implement Nokia purchasing procedures in our relationships with existing suppliers as well as when taking potential new suppliers on board. We are transparent in our relationships with our suppliers, and gifts and entertainment are neither given or received beyond those of nominal value such as lunch in a canteen.

We qualify suppliers according to Nokia standards and practices, expect them to comply with all applicable laws and regulations, and show they share the values stated in our Code of Conduct.

Our supply chain in a nutshell



Product + Services + Indirect

Monitoring, assessment and auditing

We run robust assessments with our supplier network regularly to support them in meeting our ethical standards and improving performance where necessary. We monitor our suppliers through a number of methods, of which the most important are:

Nokia Corporate Responsibility Supplier Requirement audits

Our general audit covers the full comprehensive set of supplier requirements and Corporate Responsibility requirements are part of this full set. This type of audit is most commonly used with new high-risk suppliers or when a supplier has seen a significant change in its business situation. For example, we would use this type of audit if an existing supplier moves or is planning to move a manufacturing facility to another country.

Labor conditions and environmental management - in-depth audits

For our existing suppliers, we conduct specific Corporate Responsibility on-site audits. Implementation of these audits is aligned with the SA8000 methodology, and the audits cover document reviews, interviews with managers and

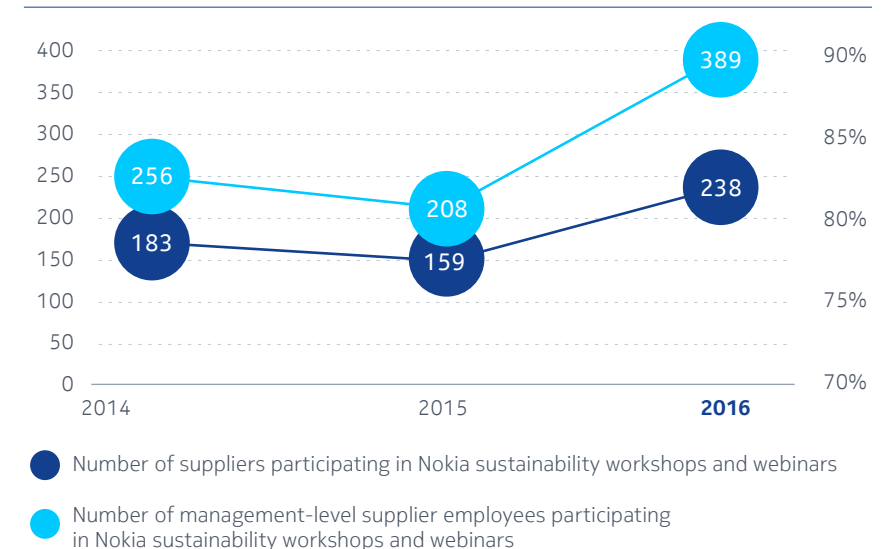
employees, and site visits, as well as inspections of facilities, production lines, and warehouses. We also use EcoVadis sustainability assessments to review the environmental, labour, health, safety, ethics and sustainable procurement management systems of our suppliers with a tailored questionnaire and supporting documents reviews.

In 2016, we implemented 390 supply chain audits, which included 45 on-site audits on Corporate Responsibility topics, 39 were on-site audits against our full set of supplier requirements, and 306 suppliers were assessed using the EcoVadis scorecards.

In 2016, we spent 109 auditor days conducting Corporate Responsibility in-depth audits (53 in 2015) at 39 supplier sites (16 in 2015) in Bangladesh, Thailand, Indonesia, China, India, Morocco, Egypt, Columbia, and Brazil, impacting a total of around 11 183 supplier employees. We found 440 instances of non-compliance of which 205 related to health and safety, 59 related to environment. Based on the findings, we made 673 recommendations for improvement, and these are being addressed through corrective action plans (see examples on following page). In addition, our customers conducted 6 onsite audits via the Joint Audit Cooperation (JAC) framework. Additionally, we ran 12 training workshops for suppliers operating

in high-risk countries such as Bangladesh, Indonesia, Thailand, India, China, Egypt, Morocco, Brazil, and Columbia. In 2016, we organized online trainings on conflict-free sourcing and climate change, and we arranged face-to-face training workshops establishing improvement plans and actions for 238 suppliers.

Training for suppliers



Our new targets



2020

50% of suppliers delivering high risk activity to meet or exceed "H&S preferred supplier" status

2030

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

Number of corporate responsibility on-site audits compared to 2015

Number of supplier sites audited

16 ↗ 45

Number of instances of non-compliance

156 ↗ 440

Number of recommendations

272 ↗ 673

Findings from our indepth audits

Category of findings	Instances of noncompliance	Number of potential risk areas identified	Total number of recommendations for improvement
Child labor (proof of age documents missing)	0	0	0
Forced labor (contract agreement issues/fine/deduction, etc.)	0	0	0
Health and safety	205	111	316
Freedom of association and right to collective bargaining	3	9	12
Discrimination	1	2	3
Disciplinary practices	1	1	2
Working hours	12	15	27
Remuneration	45	14	59
Management systems	114	73	187
Environmental management system	59	8	67
Total	440	233	673

Please note: This table is based on 39 CR in-depth audits conducted by Nokia

Sample - non-compliance and actions taken

Non-compliance identified	Actions Taken by supplier
Leave benefits such as casual leave, sick leave, and privilege leave are not granted to the contract labor (hired through labor contractors).	Supplier has taken the necessary actions to close the issue in the following ways: • Communicating and making the contractors aware of the basic legal requirements • Supplier and labour contractors amending the leave policy, ensuring the contract laborers are entitled to such leave benefits. • Communicating the leave policy to the affected employees (manual and notice board of the facility). • Supplier implemented the developed policy and shared the evidence of implementation with the affected employees (contract laborers)
Basic wages of the employees (contract laborers) were not as per the latest minimum wages notification by the government.	Supplier has taken necessary actions to close this gap in the following ways: • The supplier regularly keeps themselves updated on the legal minimum wages which keep changing over time (HR). • Contractors are notified of the changing minimum wages over time and the need to comply with them. • Employees are informed of the changes in the new salary structure and the effective date / month of the change. • Supplier shared the evidence of the changes being implemented with the affected employees (salary slip since the changes were implemented and the proof of payment provided for those months previously paid (less) since the effective month).
There were 3 cases of working on continuous work without weekly days off in the sample of employees reviewed.	Factory has implemented timekeeping devices for actual working hours including overtime: the system automatically tracks and reports on excessive overtime. Procedure developed and implemented for stricter controls including all overtime and rest days needing to be pre-approved by manufacturing director and general manager, monthly report of working hours to management team and product team members for action. All employees working above weekly maximum working hours will be warned by the system whenever they go through time-in and out.
Condition of notice period (30 days) was found to be imposed on the employee only where not imposed on the employer (in temporary labor contracts).	Supplier has incorporated changes in labor contracts and communicated changes to the employees.

Climate impacts – helping suppliers reduce and report

We demand that all our suppliers, with the exception of those with very low environmental impact, must have a documented environmental management system (EMS) in place. For key suppliers and for those with greater impacts, it must be certified to ISO 14001, and we track this compliance through audits and assessments.

We work closely with our supply chain to jointly create environmental improvement programs and better our upstream Scope 3 emissions reporting (overall Scope 3 means all indirect emissions that occur in our value chain, including upstream and downstream) through the CDP Supply Chain Program.

The major target for our environmental work with suppliers is to encourage key suppliers to report their climate impacts and set carbon reduction targets through the CDP Supply Chain Program. This helps us to plan improvement programs with our suppliers and improve reporting of our scope 3 emissions.



In 2016, 243 of our key suppliers, an increase of 63 from 2015 and representing 54% of our total procurement spend, responded to the CDPs request to disclose their climate performance information. Of these 192 disclosed their carbon emissions (an increase of 52 from 2015) and 127 also provided emission reduction targets (an increase of 35 from 2015). The total saving from these carbon reduction initiatives was 10 million metric tons of CO2 equivalents and around USD 938 million during the course of the year.

In addition, 70 of our suppliers calculated a Nokia allocation of their emissions based on the products and services we purchase from them and 80 suppliers provided emissions intensity data. Using hybrid methodology for calculation, based on suppliers information our emissions with participating suppliers totaled 472 609 metric tons of CO2e. By scaling up the allocated emissions to 100% of our suppliers, we estimated our scope 3 emissions from our supply chain to be approximately 1.7 million metric tons of CO2e.

Encouraging good health and safety practices

Working conditions within our supply chain are a key component of our sustainability approach

and tracking. As we have equipment installation and maintenance contractors in our supply chain, who spend much of their time working at height, in confined spaces, and driving long distances, we place special emphasis on health and safety. We aim to make sure contractors are aware of the potential dangers associated with their work, have and use the appropriate safety equipment, and receive the necessary training. Our health and safety guidance is further specified in standards around Road Safety, Work at Height, and Working with Electricity, and explained in our supplier workshops.

In 2016, we conducted 382 health and safety maturity assessments on suppliers providing us high risk activities such as working at height, transportation, and electrical work. These assessments included on-site evaluations conducted by our regional health and safety professionals.

While strengthening learning and capability building around our health and safety requirements, we also made it clear that failure to have controls in place will result in business consequences. As part of consequence management for incidents that occurred over 2016, we issued 29 warning notes to our suppliers and terminated business relationships with 4 suppliers.

Our new targets



2017

80% of all suppliers delivering high risk activity to be requalified using Nokia Supplier Maturity Assessment Process. Starting point – 70% of Nokia Suppliers and 5% of former Alcatel-Lucent suppliers covered by revised process.

2018

100% of all suppliers delivering high risk activity to be assessed using Nokia Supplier Maturity Assessment Process.

Our suppliers' climate impact assessment through CDP Supply Chain Program, compared to 2015

Number of suppliers assessed	Number of suppliers disclosing their carbon emissions	Number of suppliers that set GHG emission reduction targets	GHG savings due to suppliers' carbon reduction initiatives (millions metric tons CO2e)
180 ↗ 243	140 ↗ 192	92 ↗ 127	5.2 ↗ 10

Ensuring good labor practices in the supply chain

Over the last 12 months or more the US and Europe have seen an increased shift from voluntary to mandatory reporting of human rights due diligence and calls for increased visibility of supply chain activities.

Avoidance of modern day slavery in the supply chain

One example is the UK Modern Slavery Act which requires any business that has all or part of its

business in the UK with a turnover of more than GBP 36 million to publish an annual statement on slavery and human trafficking. The statement must report on the measures the company is undertaking in terms of due diligence procedures in relation to the Modern Slavery Act.

Nokia does not tolerate slavery, servitude, trafficking in persons and forced or compulsory labor in its own operations or in its supply chain.

Nokia will issue its first report to comply with the UK Modern Slavery Act in June 2017

Our new targets



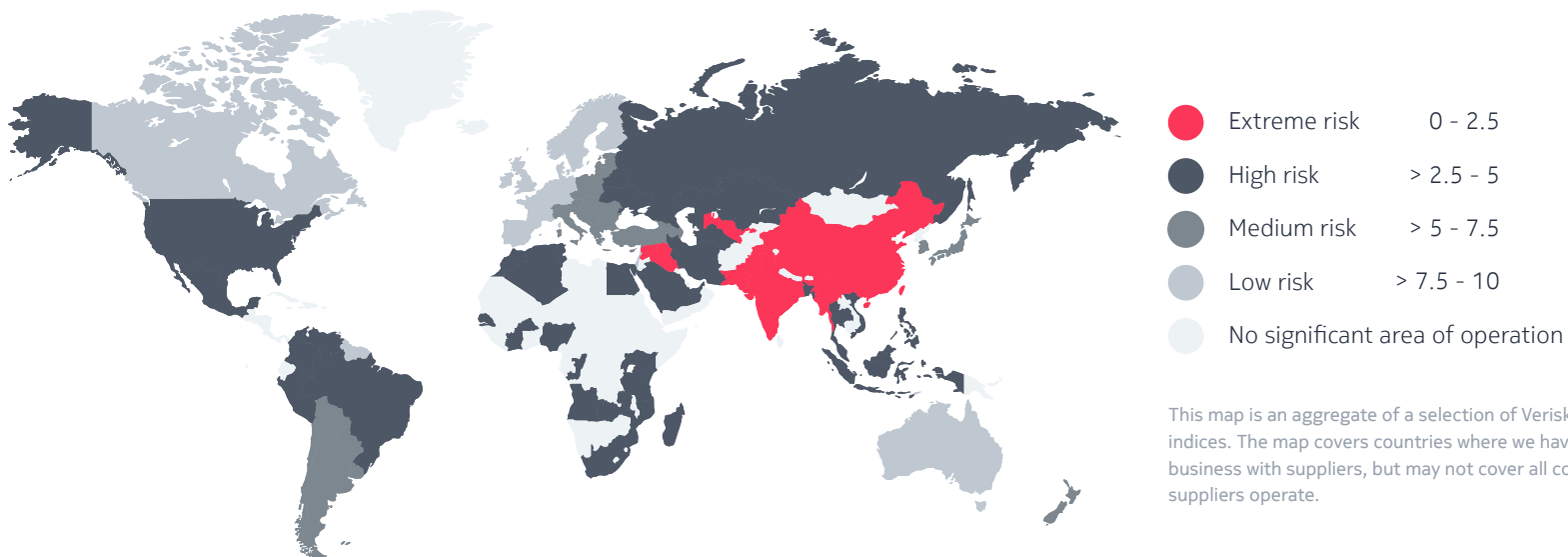
2020

Comprehensive supplier sustainability risk mitigation (90% of Suppliers assessed with Satisfactory Sustainability Score and 100 on-site audits conducted per year).

2020

Establish supplier worker empowerment program (enabling trainings on NokiaEDU and Worker Tollfree Helpline).

Nokia country presence modern slavery risks assessment



This map is an aggregate of a selection of Verisk Maplecroft indices. The map covers countries where we have significant business with suppliers, but may not cover all countries where our suppliers operate.

Child labor – zero tolerance

We have a strict policy against the use of child labor and endeavor to closely scrutinize, monitor, and remediate any, and all, potential risks. We have strict ethical and human resources policies which are designed to ensure that no one below the legal working age is hired in our business. If a child labor risk is identified, we immediately put in place a Child Labor Remediation Plan in line with SA8000 recommendations.

In 2016, we did not have any cases of child labor. Our processes and policies had been reviewed the previous year by Save the Children. We further reiterated zero tolerance on the subject at all audits and workshops with suppliers, strengthening the message on requirements to map the related risks and develop child labor mitigation and remediation plans for direct and indirect forms of child labor.

Freedom of association and collective bargaining

All employees have the right to form or join their own organizations and conduct collective bargaining. We expect our suppliers to uphold that right, without obstruction or discouragement. Where there may be legal restrictions in place, we find alternative means to enable both individuals and groups to raise concerns to management. As a rule, our Corporate Responsibility audits include a review of freedom of association as one component of employee-management communications.

In 2016, we noted potential risks of non-conformities as part of on-site audits related to worker-management communication, such as missing anonymous feedback and complaint channels or records of worker union representative elections.

Conflict minerals – finding a solution

We see the potential risks associated with the mining and minerals trade of the metals from which key minerals in electronic components are extracted. These risks may include military conflict, human rights violation and negative environmental impacts.

The traceability of our materials and ensuring our products are conflict-free is a priority for us, which is also reflected in our updated [Conflict Minerals Policy](#). We understand the challenges associated with conflict minerals and are determined to find long-term solutions that will help ensure responsible and conflict-free sourcing via legitimate trade, and improvements in those countries where the risk is greatest.

We require our suppliers to show their commitment to only sourcing these materials from environmentally and socially responsible sources. Materials that either directly or indirectly contribute to conflict are unacceptable. We collaborate with our industry peers through the Conflict Free Sourcing Initiative (CFSI), set up by the Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI), to improve the traceability of minerals and ensure responsible sourcing. We have developed a robust due diligence approach, aligned with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals.

We carried out training both in-person and online to drive awareness amongst suppliers. In 2016, we

once again encouraged suppliers to participate in the Conflict-Free Smelter Program (CFSP) audit to underscore and validate their status as a conflict-free supplier. As a result, 84% of smelters identified as part of Nokia's supply chain have been validated as conflict-free or are active in the validation process. This is a slight improvement on 2015 (83%). To further strengthen our due-diligence practices we also conducted 6 onsite audits for high-risk suppliers, assessing their conflict minerals due-diligence management systems.

All of our initiatives related to sustainability performance, such as audits, assessments, training and others, are reflected in the Sustainability pillar of our Supplier Performance Evaluation.

Our new targets



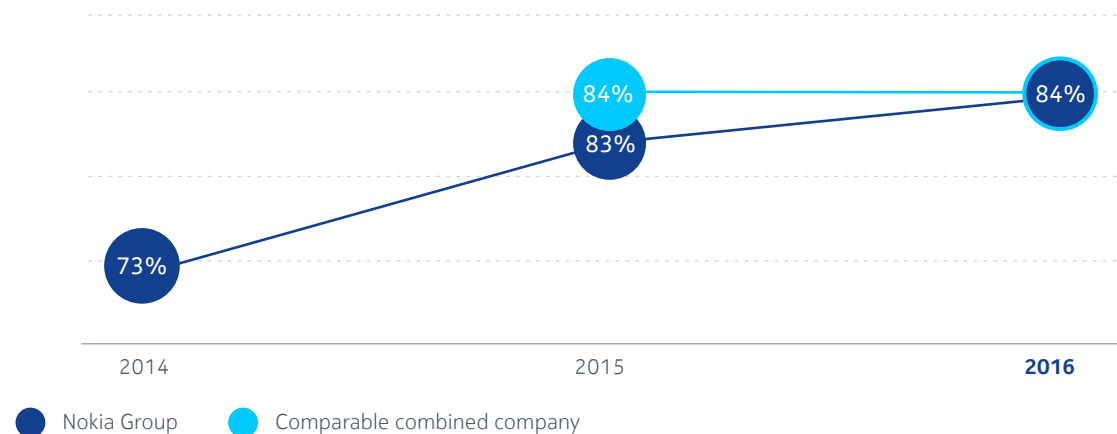
2018

Achieve full traceability of the smelters in our supply chain and their conflict-free status (Mobile Networks).

2020

Achieve full traceability the smelters in our supply chain and their conflict-free status (Nokia Corporation).

Share of smelters that have been validated as conflict-free or are active in the validation process



For more information on our due diligence results, please refer to our conflict minerals report available at the end of May 2017 [here](#)

Supplier Diversity

In 2016, the Nokia Supplier diversity team remained engaged within the Supplier Diversity community, with our customers, and internally. For example in the US, we continue to represent Nokia as a Board Director of both National and Regional Supplier Diversity Councils. As part of our activity we attended the major Supplier Diversity Conferences (National Minority Supplier Development Council - NMSDC, and Women's Business Enterprise National Council - WBENC), as well as Customer Supplier Diversity events.

Nokia was recognized by WBENC as one of their Top Corporations. This was the ninth year in a row to receive this recognition. We were also further recognized by the Texas regional Women's Business Council (WBCS) as one of their Corporate Champions.

Nokia utilizes diverse suppliers in a range of services; IT hardware, and software supply, logistics, engineering, training, installation, amongst others. In 2016, our US spend included 14% from diverse suppliers.

Women in the U.S. Supply Chain

In 2016, we drove an article by our association OFII (Organization for Foreign Investment), to highlight Nokia's minority business supply chain program in the US. You can find the interviews with women business owners [here](#), including Hispanic women, that are driving successful small businesses thanks to our program.

Nokia was recognized by WBENC as one of their Top Corporations, the ninth year in a row

Our achievements

We joined the Global Network Initiative as a member, thus committing to external GNI assurance

We are involved in 500 security projects worldwide

90 % of former Alcatel-Lucent employees successfully completed the Nokia Ethical Business training.

We arranged face-to-face training workshops establishing improvement plans and actions for 238 suppliers.

We published our updated Human Rights Policy and complemented it further with a public Q&A document.

We spent 109 auditor days conducting Corporate Responsibility in-depth audits, more than doubling the total of the previous year.

243 of our key suppliers, an increase of 63 from 2015, responded to the CDPs request to disclose their climate performance information.

We completed 382 health and safety maturity assessments on suppliers providing us high risk activities such as working at height, transportation, and electrical work.

84% of smelters identified as part of Nokia's supply chain have been validated as conflict-free or are active in the validation process, slightly increased from last year.

Respecting our people in everything we do

As a large global employer, we aim to build and maintain an inclusive working environment where our people feel highly valued, motivated, and encouraged to reach their full potential.



Making Nokia a great place to work

We strive to run our business in the utmost ethical manner, following international ethical business standards and guidelines, and ensuring our own people understand, follow, and implement those ethical standards in their everyday business and work practices. We work to ensure decent working conditions and fair employment, taking into account international and local laws and guidelines. Health and safety is a key priority for us, both with our own

employees and for our subcontractors. Creating a company culture where diversity, innovation, and continuous learning are encouraged is paramount to our success.

Employment by numbers

A motivated workforce is vital to our success. We aim to build a common high-performance culture

throughout the organization. This means pursuing continuous improvement and high performance in line with our values, and creating a great place to work with the highest possible employee engagement. Our employees are present in more than 100 countries around the world.

Our code of conduct

We are committed to follow and uphold the laws and regulations in all countries where we operate. Key principles and practices of our ethical business approach are set down for our employees in our Code of Conduct. We support, maintain, and constantly improve our employees' knowledge and understanding of good ethical business practice by providing guidance, training, and continuous communication with them. We offer multiple channels to report ethical concerns, through a dedicated email address, online or via dedicated country-specific phone numbers. We respond to and investigate all concerns promptly and take any necessary corrective actions. All concerns are logged and tracked daily. For more information please read the Integrity chapter, section [Promoting ethical behavior](#)

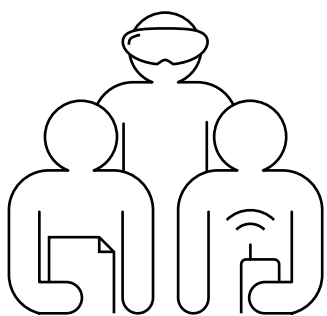
Our new target



2020

Nokia to be the "employer of choice" (in our size) for all of our major hubs in locations around the world and become the best regarded employer in our industry globally.

Average number of employees in 2016



102 687 2015: 56 690
2014: 51 499

Average number according to business



96.5%

worked for
Networks business



2.5%

worked for
Group common functions



1%

worked for
Nokia Technologies

During 2016



97%

of employees had permanent contracts (the rest were trainees or had fixed term contracts)



8 310

employees were hired, leading to 8% rate of new employee hires



10 749

employees left Nokia, leading to an 11% total attrition rate.



11

years was the average length of service by Nokia

Ensuring decent working conditions and fair employment

We uphold high standards of ethics and rights in our own internal activities, and aim to treat all our employees in a way that satisfies internationally recognized ethical and responsible business practices, customers, investors, partners and the relevant legislation, global or local.

A comprehensive management framework for labor conditions

We understand it is our basic responsibility to provide decent working conditions and to be seen to be fair and just in how we treat our own people. Our Code of Conduct provides the basis for our labor conditions, and is underpinned by a comprehensive set of global human resources policies and procedures that enable fair employment. We adhere to the International Labor Organization (ILO) Declaration on Fundamental Principles and Rights at Work and wherever we operate we meet the requirements of labor laws and regulations, and oftentimes strive to exceed those laws and regulations.

We are aligned with the SA8000 Standard, and the common industry code of conduct. Our policies, Standard Operating Procedures (SOP), and Employment Guidelines are implemented to help achieve the high standards we have set ourselves. The policies cover:

- Child labor avoidance
- Forced labor avoidance
- Freedom of association & collective bargaining
- Non-discrimination
- Humane treatment

- Working time
- Disciplinary practices
- Compensation
- Occupational health and safety.

This approach is also applied to our suppliers and partners. You can read more on our supplier practices on [pages 112-118](#) under Responsible Sourcing.

Zero tolerance for child and forced labor

We have a strict policy against using child labor and zero tolerance to all forms of forced, bonded, or imprisoned labor in our own operations and our supply chain. Where such a potential risk is identified, it is thoroughly investigated, and a remediation plan is put in place based on SA8000 recommendations. For more information on child and forced labor [see pages 117-118](#) under Conducting our business with Integrity.

Freedom of association and collective bargaining

As stated in our Global Employment Guidelines, all of our employees have the right to collective bargaining and freedom of association. Collective bargaining agreements are local, and in the vast majority of countries where we have collective bargaining agreements those also cover employees who have chosen not to be members of a union. Furthermore, employees are free to join, not join, or leave unions and associations of their own choice,

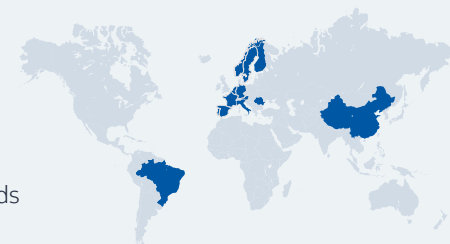
and select their representatives in accordance with the local and international practices. Nokia management supports, encourages, and implements active, open communication and dialogue with employees and/or employee representatives.

In countries where local works councils operate, we recognize their importance and work with them as required. We communicate regularly and continuously with employees directly as well as in specific meetings such as the European Works Council in Europe. Both employees and management are represented in the teams preparing and participating in the European Works Council meetings. We also offer the opportunity for free elections where employees can choose their union representatives.

All our production employees were represented by an independent trade union or covered by collective bargaining agreements.

Sample of main countries where we operate and where 100% (or very close to it) employees are covered by collective bargaining agreements

- | | |
|------------|---------------|
| • Finland | • Sweden |
| • France | • Norway |
| • Germany | • Romania |
| • China | • Belgium |
| • Austria | • Netherlands |
| • Portugal | • Italy |
| • Spain | • Brazil |



Non-discrimination

We do not tolerate discrimination in any way, shape, or form. We prohibit discrimination based on any personal attribute such as age, gender, nationality, opinions, memberships, religion, disabilities, or race in all employment practices, including recruitment, promotions, training, and pay levels. These topics are discussed later on pages 133-136.

Working time

We do not allow our people to work more than legally allowed. We define regular working hours in accordance with local laws. Young workers – from 15 to 18 years old or as specified by local legislation – are not permitted to carry out work that may be hazardous, unsafe, or unhealthy, are not allowed to work night shift, and have a maximum daily working time of eight hours. Working time is the time an employee must be available, ready to work and to perform duties monitored and regulated by the employer. We provide guidance through the worktime SOP, and encourage project recording to address resource planning issues versus working hours. We guarantee the minimum 1 day off every 7 days in our production operations.

We take work-life balance seriously in Nokia, providing training for managers on the signs and dangers of overload at work, as well as offering various extracurricular activities and facilities for sport, exercise, and well-being. We engage regularly with our employees on both a global and local level on these topics. In 2016, we rolled out our 1-in-90 process to all employees, establishing regular dialog at least once a quarter for mutual feedback and with the specific requirement to initiate a discussion on employee well-being and work/life balance, agree concrete actions as needed and do follow-up

latest in 3 months at the next such discussion.



Get 1 hour back

We are all striving to make our work meaningful, productive and engaging by focusing on what's important, minimizing routine tasks and reducing clutter. Nokia's Get 1h back movement can help us reach this goal: through time-saving techniques and "work smarter" tips it aims to give every one of us at least one hour back every week – moving us closer to a working environment which will support our future success.

Even small changes to our everyday way of working can make a huge difference. And when teams make these changes together, the impact can be even more powerful. This was an experience shared by a group of "Get 1h back forerunners" who piloted the time-saving techniques in spring. Over 250 Nokia people in Wroclaw, Poland, and Finland explored and verified the benefits of three Get 1h back initiatives; Meeting Experience, Yammer as a team tool and Content Co-creation using Office 365.

During 2016, a group of forward-thinking leaders decided it was time to simplify governance practices across Business Groups and Corporate Functions. Faster decision-making was the main goal. So, redundant governance meetings were cancelled and the frequency of other meetings was changed. As the guinea pig, in CIOO alone these moves cut 58% of meeting time and 56% of participants. The initiative continues with new ideas. For example, overall time spent on 2017 executive

governance is projected to be cut in half.

Disciplinary practices

We appreciate that our employees are generally motivated by their work, understand and follow our processes, and act consistently with our values and required standards of conduct and attendance. However, if an employee's conduct or attendance does not conform to these expectations, disciplinary action may be taken.

Our approach to disciplinary action, as stated in our disciplinary SOP, is to ensure fair and consistent treatment of all Nokia employees. The procedure recorded in the SOP sets out the steps that may be adopted in relation to conduct and/or attendance issues. In cases where local law and/or collective agreement(s) require additional or different procedures, Nokia follows local law and/or applicable collective agreements. Nokia will not tolerate any form of physical, mental, verbal abuse, or harassment whatsoever.

Compensation

All our employees have the right to compensation for a regular working week that equals a basic living wage and provides some discretionary income. We pay at least the minimum wage or the appropriate prevailing wage, whichever is higher, comply with all legal requirements on wages, and provide any legally or contractually required benefits. Where this is not the case, we work with the Fair Labor Association to take appropriate action that helps progressively realize a reasonable level of compensation. Furthermore, part-time or temporary workers are not excluded from our employee benefits plans due to the company policy or benefits practice.

We have a strong focus on developing diverse talent across the organization. This includes pay practices which are regularly reviewed to align pay with performance, experience, and skills required for every position. In 2016, awareness raising on diversity, that we included in training material to HR and managers during the annual salary review process, created a foundation for renewed success in this focus area.

Last year as part of the program Share in Success, approximately 85 000 employees in 54 countries were again given the opportunity to participate in the Employee Share Purchase Plan for the plan cycle in 2016. Approximately 30 500 employees enrolled in the Plan, which is approximately 36% of the eligible population.

Managing and monitoring labor conditions

Although we monitor and audit labor conditions across our businesses, we place special emphasis on our manufacturing operations. On December 31, 2016, we had twelve manufacturing facilities globally: one in Australia, one in Brazil, three in China, one in Finland, two in France, one in Germany, one in India, one in the United Kingdom, and one in the United States.

Our Labor Conditions Management Framework guides the implementation of our global employment policies and guidelines. We publish information related to policies and guidelines on our intranet. During 2016, the majority of our employment SOP were harmonized across former Alcatel-Lucent and former Nokia on a global level.. The local implementation plans are preceded by legal validation with differing timelines – over 95% of the countries have already fully implemented the globally harmonized SOP.

Consolidation and workforce rebalancing

With the acquisition of Alcatel-Lucent, Nokia is targeting cost savings as announced in its financial reports. We aim at generating these cost savings by critically assessing our business operations including, for example, subcontracting, real estate footprint, procurement, and our processes. Unfortunately, delivering against the commitment requires us also to reduce the number of employees as we eliminate overlaps and identify new areas of efficiencies.

Decisions involving personnel are never easy. We are committed to treating our people with respect and intend to provide support for the impacted employees throughout the transformation.

Recruitment

Recruitment of new talent is key to implementing our strategy, supporting youth employment, and enhancing our contribution to the communities in which we are present through our traineeship programs.

Our recruitment process is available to all employees and guarantees priority to internal candidates, with a guaranteed window of 10 working days for internal applicants, before any external recruitment is permitted. All non-executive vacancies must be advertised internally to allow employees to pursue internal progression. The internal job markets of both former companies (former Nokia and former Alcatel-Lucent) were made available to all employees only 6 weeks after the acquisition came into effect. Of all the hires we made in 2016, 42% were internal.

Nokia Corporation, including its affiliates, is committed to respecting candidate privacy and to complying with applicable data protection and privacy laws and regulations. In 2016, a renewed [Recruitment Privacy Statement](#) ("Statement") was publicly released to inform candidates about how Nokia processes information it collects about you during Nokia's recruitment activities.

Strengthening our health and safety performance

In our networks businesses, employees, contractors, and subcontractors face inherent risks when installing and maintaining equipment and constructing base stations on behalf of our customers. We focus on ensuring that all our employees, contractors, and subcontractors are aware of the risks related to their jobs and receive the necessary training and equipment to work safely—whether in the office or on site. We address job-related health and safety risks through training, analysis, assessments and consequence management. We have put in place a wide range of programs to improve our health and safety performance and encourage reporting of near misses and dangerous incidents by employees, contractors, and subcontractors.

Addressing key risks through training, analysis, assessments, and consequence management

Health and safety is embedded within our Code of Conduct and is therefore included in our Ethical Business Training. In this training we emphasize the importance of identifying and avoiding risks, and reporting incidents. In addition, we run campaigns that focus on the key safety risks for our employees, contractors, and subcontractors, and encourage open reporting of incidents and near misses by contractors, subcontractors, and employees.

In 2016, we continued to emphasize our non-negotiable rules called the Nokia Life Saving Rules,

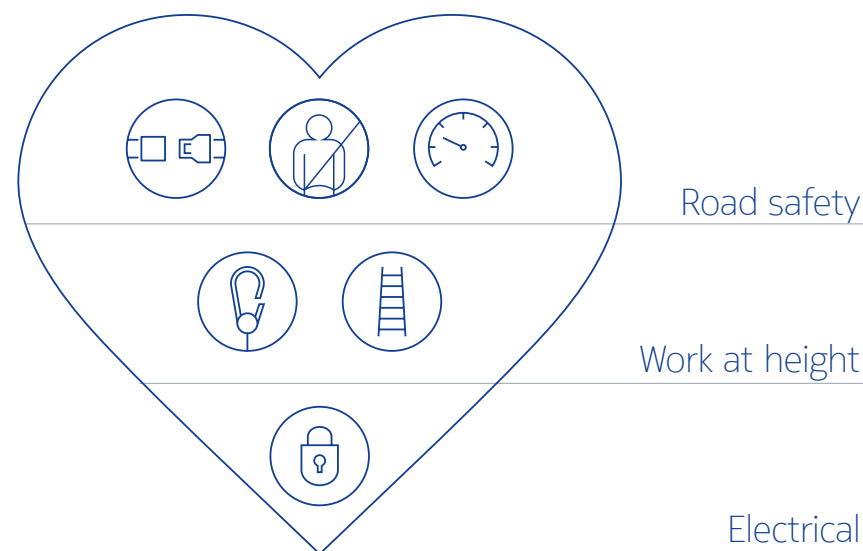
which include six simple safety rules related to our top risk areas: driving, working at height, contractor management, and electrical activities.

Everyone working for Nokia, including our subcontractors and suppliers, must follow these rules as an absolute minimum.

Health and safety performance, as well as the compliance of our contractors and subcontractors, are critical factors in our overall performance. To ensure that our contractors understand how seriously we take these requirements, we have a formal consequence-management process that follows all fatal, critical, and high-potential incident investigations. Where a contractor does not fulfil our expectations, we instigate a tiered form of consequence that ranges from a warning to termination of contract.

We analyze the root causes of incidents and high potential near misses putting in place both corrective and preventive measures to prevent the occurrence of similar incidents.

In 2016, we conducted project readiness reviews to more closely review high-risk projects in each market. We conducted 254 reviews across all markets, a significant increase compared to 87 in 2015. The assessments are conducted with a team of key health and safety stakeholders and project team members, assessing project readiness using a formalized process and assessment tool. Projects are scored and tracked to identify improvements as needed.



All-inclusive organizational engagement

Group Leadership Team representatives sit on the committee that reviews our health and safety performance on a quarterly basis. These meetings are held in order to review all fatal and high-potential incidents. In addition, our senior leaders are increasingly involved in matters of safety through regular reviews and site tours. We aim to create a culture among our employees and contractors that identifies hazards and supports active risk prevention and action so that we can significantly reduce the number of incidents that occur.

Our new targets



2017

H&S Awareness – 100% of employees to undertake mandatory training on health and safety behaviors and values. Nokia internal training “Making tomorrow safer”.

In 2016, we continued the senior leader tours to maintain engagement. We also closely monitor our H&S performance:

- Management reviews once a year
- Consequence management committee once a quarter
- Fatality prevention meeting and updates once a quarter
- Senior Leader reviews and leadership team face to face meeting twice a year
- Internal audits
- External verification to OHSAS 18001

Our health and safety management system serves as a basis for our overall program and is an integral part of how we manage health and safety. The majority of locations are certified to the internationally recognized OHSAS 18001 standard. In 2016, there were in excess of 20 external audits across the business, covering both former Nokia Networks' and former Alcatel-Lucent locations and activities. Recertification by Bureau Veritas, the Nokia selected globally accredited certification body was achieved, and during 2017 the management

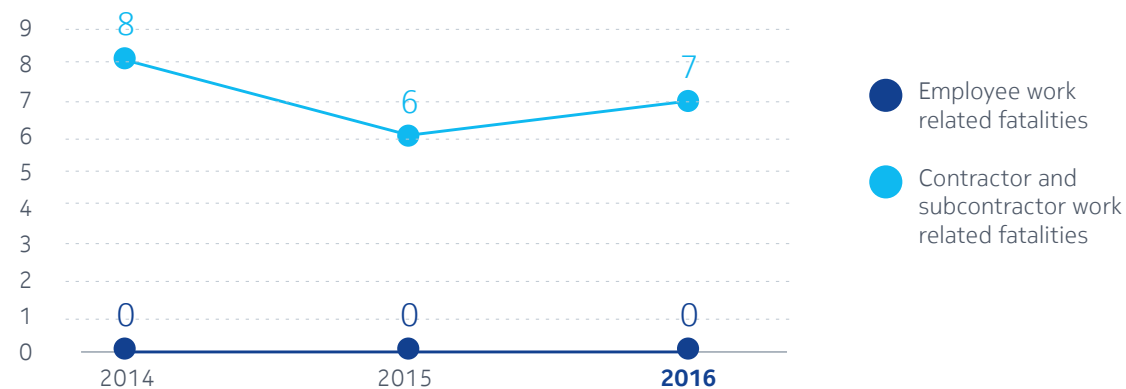
systems of the former companies will be integrated into one, and a single management system certificate sought.

Our health and safety performance in 2016

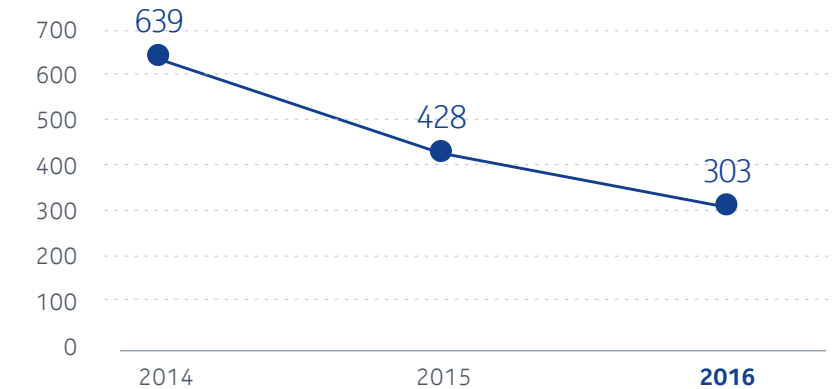
At Nokia Networks, employees, contractors, and subcontractors face inherent risks when installing and maintaining equipment and constructing base stations on behalf of our customers. In 2016, for the 4th year in a row there were no employee fatalities or critical injuries. We reviewed 67 incidents, issued 26 warnings, and terminated relationships with 4 contractors.

In 2016, we deeply regret 7 fatalities involving contractors or subcontractors carrying out work on behalf of Nokia. All of these fatalities were related to road accidents that occurred on public roads. We will continue to work with our partners, customers, and suppliers to ensure the safety of all individuals engaged in risk-related activities, as Nokia has a zero tolerance approach for non-compliance with safety rules. Health and safety excellence is a fundamental requirement for us.

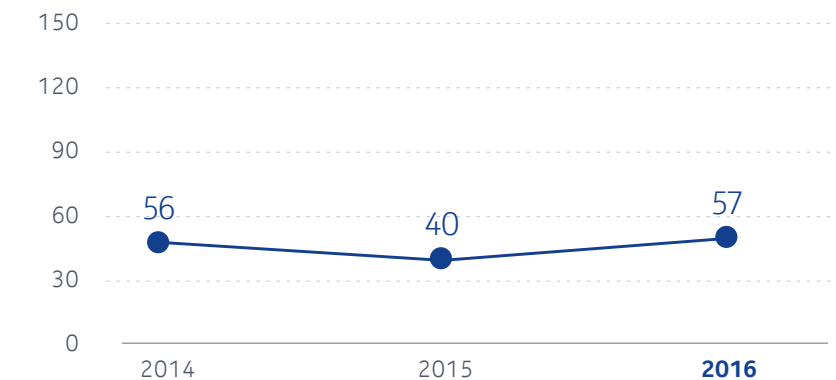
Work related fatalities



Near miss incidents reported



Lost-time incidents reported



Our incident and near miss tracking also includes cases from externals working for Nokia. Cut-off day of incident reporting is in early January (6th January for 2016). There can be some cases, especially from contractors, reported after the cut-off day.

Nokia's health and safety organisation puts most effort on prevention of critical and fatal incidents and we realize lost-time incidents data may not be as accurate as the aforementioned data.

Enhancing the company culture

Nokia has a number of different cultures, as a result of a range of factors including geography, leadership styles, business focus, and acquisitions – but we have just a single company culture. Our culture is built on our values and is embedded across the organization through governance structures, policies, and our systems and processes.

Understanding and engaging with the Nokia values

The Nokia values are an important building block in bringing our teams together. They are designed to guide our decisions, our ways of working, and the responsibilities we have towards our customers and other stakeholders. We strive to bring these values to life in how we think, act, behave, and communicate.

In a year of integration, we particularly emphasized a firm understanding of Nokia's vision, values and culture through trainings, town hall meetings and communication. In 2016 employee engagement was over 76% favorability. We measure cultural cohesion through our Culture Cohesion Tracker survey 5 times a year and in 2016, understanding of Nokia's vision rose from 85% favorable to 88%. In addition, one building block of the Tracker is 'Understanding New Nokia Mindset' which contains questions focused on behaviors, values, ethics and emotional connection and received 83% favorability at the end of 2016. We received over 70 000 responses covering a range of aspects of working for Nokia. In 2016 employee engagement was over 76% favorability. We had a culture advisory board representing the new Nokia and all its business groups and functions, which met every month to collaborate on global and business specific culture issues. We had 3 global initiatives where our people

were asked to give feedback on how we are doing in driving culture cohesion, how the operating model is coming into place, how we are executing on our strategy, and to what degree we are acting in line with our values, to name a few of the aspects we have been monitoring throughout the year.

In addition to the above activities, in order to bring people together, we held 524 face to face sessions, called coffee & connect, with over 8 000 employees attending worldwide and took in over 12 000 responses through an online project focusing on enablers and barriers called virtual co-creation.

Culture shaping, engagement, and employee involvement is an important role for leaders in Nokia. The Nokia Leadership Framework provides guiding principles to support leaders and their behavior in reaching our ambitious goals by coaching and supporting their teams.

Our new targets



2018

Introduction of the renewed Employee Engagement model with increased frequency and depth.

2020

90% employee engagement by 2020

The Nokia values

Respect

Acting with uncompromising integrity, we work openly and collaboratively, seeking to earn respect from others

Challenge

We are never complacent, ask tough questions, and push for higher performance to deliver the right results

Achievement

We take responsibility, and are accountable for driving quality, setting high standards, and striving for continuous improvement

Renewal

We constantly refine our skills, learn and embrace new ways of doing things, and adapt to the world around us

Human Capital Development

In 2016, NokiaEDU learning center provided around 259 800 training days for employees from the Networks business and Group functions (278 400 in 2015 when Alcatel-Lucent University figures are also included in the 2015 total). Around 56% of this training was instructor led (55% in 2015) and the remainder was web based. Part of the instructor-led training was conducted using cost-effective technologies such as virtual classroom learning. In addition to the training provided at the NokiaEDU, our training offering includes training arranged by our business units and third parties. In 2016, each employee spent an average of approximately 19 hours on training.

In 2016, NokiaEDU spent around EUR 54 million in training Networks business and Group functions employees. On Wednesday, December 7, 2016 we launched a Global Day of Learning.

Based upon the customer/stakeholder requirements in terms of addressing business performance issues, NokiaEDU apply a performance consulting methodology to analyze the problem and make recommendations to address the skills gap and the business impact issue. Where an existing learning solution does not meet the needs, a learning needs analysis will be completed and a learning solution is designed, developed, and delivered. The evaluation strategy (method and schedule) will be agreed and implemented, and this can also be tailored to meet the individual customer/stakeholder needs to include all or some of the evaluation levels including business impact and return on investment.

NokiaEDU also provides training to customers and suppliers, which in 2016 totaled around 102 000 training days. These Nokia product training days not only instruct how to operate and maintain our products, but also include more overall technology training on topics such as Internet of Things. Overall, NokiaEDU learning solutions received a user satisfaction score of 97.1% in 2016.

The Learning Store

In January 2016, NokiaEDU launched the Learning Store, a web-based application that enables Nokia employees to more easily locate and access relevant learning solutions. Employees can view a wide range of learning collections, including business skills, product and technology training and certifications. By the end of 2016, the Learning Store totaled more than **90 000** unique users and over 1.5 million page views. This highly-successful application has been extended to business partners and eventually to Nokia customers in 2017.

Leadership Programs

Nokia sponsors a range of programs for employees to achieve their leadership potential. In 2016, **1593** employees were identified to participate in corporate leadership training programs (1244 in 2015). Participants gave the programs an average overall satisfaction score of **98.1** out of 100 (5.41 out of 6 in 2015).



Global Day of Learning

The first Global Day of Learning (GDOL) provided a special event to celebrate and underscore our culture of learning and our core value of Renewal. It presented a unique opportunity through a full day's schedule of virtual and in-person learning events, where Nokia leaders highlighted how we are shaping our company and the future of technology. At the end of the day, our goal was for all employees to gain a better understanding of our strategy, how different parts of the company contribute to it, and what we need to do collectively to realize our ambition. In the days following the live event all the recordings of the sessions were made available as part of the Global Day of Learning Encore. The Global Day of Learning gathered 23 375 webcast participants (total of all sessions) (former Alcatel-Lucent 2015: 12 050), and 89% stated they would participate in another GDOL.

Support young talent and apprentices

Nokia values the importance of supporting graduate trainees and apprenticeships. We implement a range of programs in various countries where we operate. Our approach is by definition local as it is part of the local community identity. For example, in 2016, we had around 25 interns collaborating on our premises in Spain, and in Germany we are taking part in the 3-year vocational education program, with an equal share of theoretical studies and internships which the trainees spend with us. They are exposed to assignments in various business units to obtain a variety of experience.

In France, we promoted our technology innovation, such as 5G, IoT, and supported young talent in cooperation with universities & engineering schools. By providing internships and apprenticeships in France, our engineers help students better understand our technologies. We offered trainee positions and employed around 20 doctoral candidates and 202 trainees/apprentices and participants in the French governmental program, Voluntary International Experience (VIE). In addition to upper engineering school students, we also welcomed children (around 100) between the ages of 13 and 19 from hundreds of high schools through different programs such as “Passeport Avenir”, “Capital Filles” (dedicated to women), and “Ma Caméra chez les pros”. Moreover, we have a dedicated program to promote and hire disabled young through the “@talentEgal” association which you can read more about on [page 136](#) under the Diversity section.

In Finland, we offer summer traineeships (lasting a few weeks) as well as thesis work, during which final-

year students gain work experience while completing their degree work. Additionally, we participate in the Suomen Mentorit (Finland’s Mentors) trainee program where we offer 6-month trainee positions.

Supporting personal development

Personal development is key to retaining and engaging our employees, and developing their skills.

Nokia’s performance and talent management approach - called Nokia People Focus enables the company to have a strategic and integrated framework to company goals, individual performance and talent management, career development, reward, and recognition. Nokia is committed to people development and career growth. Regular manager and employee dialogs (1 in 90 dialog) focus on 5 key areas including goals and feedback, well-being, development, and coaching. Our integrated and forward-looking approach to talent development starts with all employees as well as development of top talent. All managers recommend development proposals for employees outlining clear actions for the coming 12 months. We encourage employees to complete a Personal Development Plan (PDP) in discussion with their line manager.

In 2016, 76% of former Nokia employees had a Personal Development Plan in place (73% for former Nokia in 2015). In 2016, 90% of all Nokia employees (former Nokia and former Alcatel-Lucent employees) had completed a performance evaluation. Previously former Nokia achieved a 98% rate in 2015. The percentage reduction could be attributed to the integration of new processes and the introduction of a new performance evaluation system to the former Alcatel-Lucent population in 2016.

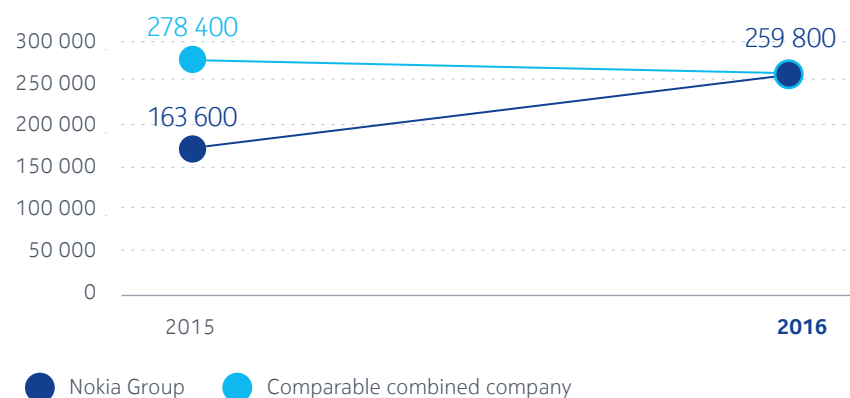
Mentoring Program for Gen Y in Germany

In Germany, we have implemented a mentoring program for our Gen Y employees aimed at enabling and maintaining our young talents. The 12-month program included so far 24 tandems accompanied by regular workshops and feedback sessions to overall strengthen individual profiles, improving skills for decision making or conflict management, sharing professional experience, and consulting for career development. Gen Y participants were inspired by role models and broadened their network to accelerate career opportunities in the future.

Working with AIESEC

The Nokia Group has strengthened its relationship with AIESEC, the global platform for young people to explore and develop their leadership potential, as a result of the acquisition of Alcatel-Lucent, a long-standing partner of AIESEC. An important milestone of this integration was our first appearance under the Nokia brand at the European, and then the Global Conference. Nokia vision and mission, and our dedication to innovations in the field of technology to change people’s lives resonated well with the conference’s overall topic of the European Youthspeak Forum ‘Mobilising Young People to Achieve the Sustainable Development Goals’. In 2016, we had 25 AIESEC trainees from all over the world gaining initial work experience.

Employee training days provided by NokiaEDU



Fostering talent

Capability needs are reviewed as part of the corporate strategic planning process and then prioritized in the learning and development agenda. In addition, each business identifies and manages a talent pool for succession and growth, with development covering a balance of Experiential Learning, Coaching and Mentoring, and Corporate Leadership Programs.

Recognizing individual performance

Our reward programs are designed to attract and retain key talents and engage our employees. They reflect our values, they are understood and valued by employees, and they contribute to our business success by balancing market competitiveness and affordability based on a total reward approach. Those are performance driven (both on an individual and company basis), flexible, and fair. The key elements of Nokia compensation structures are annual base salary, incentive / bonus programs, recognitions programs and long-term Incentives. For more information see Compensation section.

Our approach to performance management and rewards highlights the importance of quality dialog between line managers and employees, and greater rewards for individual contribution. Our employee reward and recognition program, Recognize Excellence, empowers employees and managers with a discretionary budget to perform peer-to-peer recognition and rewards. Aligned with and underpinned by our values, this allows more frequent and less formal ways of recognizing individual performance. The Recognize Excellence framework offers a set of recognition programs

and a tool, which makes it easy to acknowledge the contribution of colleagues. This framework incorporates the following programs:

- The Everyday Excellence, which has been created to foster a global and uniform approach to recognizing a colleague across the organization for on-the-spot peer-to-peer recognition throughout the year.
- The Business Excellence award is a flexible business driven award and is meant specifically for recognizing those whose contribution directly supports business objectives.
- The Premium Awards, has a business-specific eligibility: Deal of the Month, Innovation-, and Quality award programs are launched separately.

Opportunities for internal mobility

Nokia has a strong global presence and is concentrating on attracting and retaining the most competent talent. Based on the mode of operation and business needs, we balance local talent development with Global Mobility opportunities.

Global Mobility is encouraged and enabled typically through short-term assignments or alternatively, if the need is long term or even permanent, transfers under local agreements. In addition to these, we had 477 employees on long-term assignments across the regions in 2016.

Succession planning and development

Nokia has a focused talent and succession planning approach targeting successor skills and a needs/gap analysis culminating in regular development discussions and skills/competency building

Coaching and mentoring are an integral part of our employee development activities. Our coaching philosophy is conversation with a purpose. We help the coachees tap into and unleash their full potential, to focus their efforts on forward looking, incremental steps towards a goal. We have invested in training 184 coaches in 35 countries to support our employees. Mentoring is not “programized” but is available across the company, and our senior leaders participate actively as mentors. More information on the new women in leadership can be found on [page 134](#).

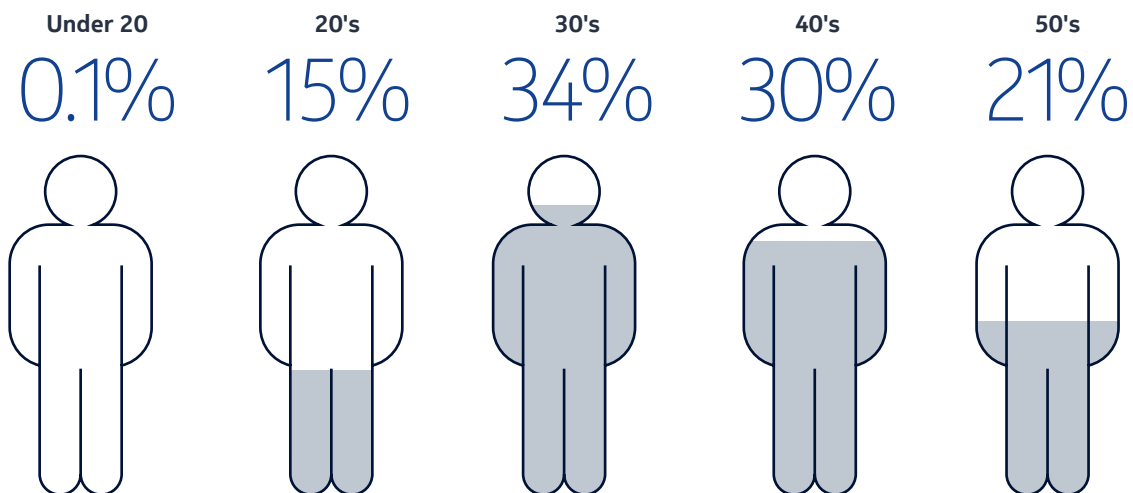
Diversity, inclusion, and anti-discrimination

Nokia cultivates a globally diverse workplace culture of respect across six continents. We believe that a diverse workforce is our platform for greater innovation, superior organizational performance, and delivering excellent service to our customer. We believe in the power of global sharing of ideas and culture.

We do not tolerate discrimination in any way, shape, or form. We prohibit discrimination based on any personal attribute such as race, ethnic origin, color, nationality, disability, religion, age, gender, sexual

orientation, gender identity, characteristics, or expression, in all employment practices, including recruitment, promotions, training, and pay levels. Nokia has a strong focus on developing diverse talent across the organization. This includes pay practices which are regularly reviewed to align pay with performance, experience, and skills required for every position. In 2016, awareness raising on diversity which we included in training material to HR and managers during the annual salary review process, created a foundation for renewed success in this focus area.

Average age range of Nokia employees in 2016



At the end of December 2016



78%

of our employees were men



14%

of the senior management positions were held by women



17%

share of females in line management and Group Leadership team



8

different nationalities in the 12-person Nokia Group Leadership team



~130

countries with Nokia employees

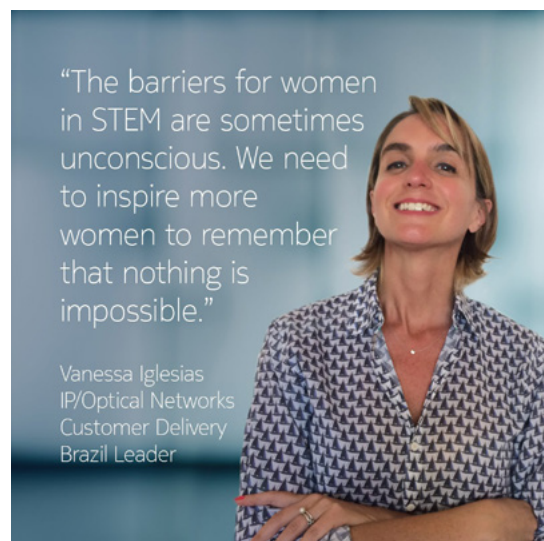


40

was the average age of a Nokia employee

Diversity within Nokia Board of Directors and Group Leadership team

At Nokia, Board diversity consists of a number of individual elements, including gender, age, nationality, cultural and educational backgrounds, skills, and experience. For 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. At the end of 2016, the gender balance of the Board was 75% male and 25% female. We aim to have representation of 40% of both genders in our Board by January 1, 2020.



Gender Balance

In 2016, Nokia's CEO Rajeev Suri shared Nokia's ambition to have a gender balance that reflects the world around us and a workplace where both men and women have an equal opportunity to succeed in every function and at every level. The Gender Balance Steering committee headed by Mr. Barry French, Executive Vice President, Marketing, Communications and Corporate Affairs, is driving an holistic action plan starting with awareness, and over 1900 leaders and managers were trained on gender balance topics in 2016.

On March 8, 2017, International Women's Day, Rajeev Suri signed the United Nations Women Empowerment Principles, stating that Nokia is committed to doing its part to eliminate the disparity in technology companies between men and women. Doing so is not just good business, it is also the right thing to do.



In 2016, 14% of our senior management positions were held by women. In total, women accounted for 22% of Nokia workforce in 2016. Nokia is committed to:

- Develop more talented women into leadership to bring the proportion of female leaders in every organization in line with the proportion of women in the workforce. In 2016, we launched 2 high-touch career development programs gathering 50 talented women, who are undergoing one year's Sponsorship, Mentoring, and Executive Coaching.
- Foster a gender-neutral culture through training for leaders and managers, and ensuring that all our processes and communications are gender-neutral and inclusive. In 2016, over 1900 leaders and managers were trained on gender balance topics.
- Build a long-term talent pipeline by helping to bring more girls into Science, Technology, Engineering, and Mathematics (STEM). In 2016, we celebrated our Nokia Role Models, as a source of inspiration for girls, through International Women's Day, the Girls in ICT Day, and Ada Lovelace Day.

"Whereas some companies talk about wanting 30% of their employees being women, we talk about reflecting the world we live in, which ultimately is approximately 50% men and 50% women. That is not something that we can make happen tomorrow, but any long-term aspiration short of that goal seems morally challenged."

Gender balance in ICT and the need for an urgent response, Rajeev Suri

Our new target



2017

2000 Nokia leaders, managers, employees to participate in Gender Balance training by the end of 2017

2020

Increase the % of women in leadership by 25% (baseline 2016)

StrongHer - an employee network that promotes gender diversity

Initiated and led by employees for employees, this award-winning initiative contributes to women's empowerment, helping them unleash their potential and magnify their business contribution, and increase the representation of women at all levels and in all job functions at Nokia. The network is a grassroots movement created in 2011 by 6 female employees in France and is open to all employees, men and women, executives and non-executives. Today, StrongHer has 1500+ members in 60+ countries worldwide on 5 continents, including 22% men. Members want a company where women have the same opportunities as men and are well represented in all business domains and functions.

StrongHer advances gender diversity by offering networking opportunities, personal development, and a think-tank on leadership and management. It also provides exposure to diverse role models for women and men, along with business contacts within and beyond the technology sector. StrongHer has been an eye-opener on the many causes for low representation of women in the ICT industry and in leadership roles. There is not just one "glass-ceiling", but some frequent explicit or more implicit patterns and reasons at various steps of women's life and career, caused by others and women themselves.

StrongHer works on 3 axes : DARE, ACT, and INSPIRE. To ensure impact on the 3 axes, StrongHer built and deploys 4 emblematic worldwide programs: **StrongHer Awards** to

spotlight talented women role models; Knowledge, Information and Wisdom for employees with **KIW-e Mentoring program** to help employees cross fertilize the innovation through the creation of an expert community to share business issues and improve visibility; **KIW-e webcast** where Executives and experts share business relevant knowledge in interactive sessions with employees; and Charter for managers to explicitly walk the talk on gender balance, to publicly commit to take gender inclusive actions and become certified champions of the StrongHer values.

StrongHer has also won international awards. It has been recognized by the International Telecommunications Union (ITU) and United Nations Women (UN Women) community when it won the GEMTECH Awards for its actions setting new standards in the ICT industry. (GEM-Tech = Gender Equality Mainstreaming – Technology). StrongHer was recognized by UNESCO as "an exceptional group and a real role model". It also won the 3rd position for "Excellence in Employee Engagement" at the MENA HR Excellence Awards.



Encouraging women and girls in business in the US

The Information Technology Industry Council (ITI) celebrated 100 years of innovation at the 2016 Tech Show. Everyone from thought leaders to the next generation of engineers and entrepreneurs got a hands-on experience of the latest tech trends. We were proud to sponsor the STEM show where students from the E.L. Haynes Charter School and the Seed School tried out our 'Future Thought' demo. We also held three mentorship sessions with the children.

We were honored to participate at the Information Technology Industry Council Centennial Celebration. Nokia was the premier sponsor of the ITI STEM Show and the ITI Tech Show. We showcased our Nokia Bell Labs through the presentation of the "Future Thought" project. We reached many underprivileged children with STEM interests. Read more online [here](#).

We encourage our employees to support educational and diversity activities. In 2016, a Nokia employee was one of the only private sector voices during the Federal Communications Commission (FCC) [TechGirls](#) long-day Shadow Day. The day consisted of a women's roundtable panel discussion along with four senior level female leaders from the FCC to advise, prepare, and mentor two 15-year-old TechGirls from the Palestinian Territories embarking on technology careers. Read [more](#)

Integration of people with disabilities / disabled people

It is Nokia policy to provide a reasonable accommodation to qualified persons with

disabilities to enable them to perform the essential functions of their job. We run a number of programs to ensure equal opportunities for disabled persons.

In France, the Mission Handicap program, designed in 2006 to better integrate disabled employees into the workplace, was established to meet the legal quota of 6% of disabled employees in French companies. The program includes several action plans such as hiring activities, equipment adaptations, tool or facility accessibility, training of employees including managers and colleagues, as well as communication and awareness sessions for all employees. Nokia reached a ratio of 4.3% of disabled employees by the end of 2016.

We are also a member of @talentEgal, a non-profit association gathering Nokia, Safran, SII, and several universities in France. @talentEgal helps disabled post-graduate students gain employment by providing them with training, internships or other work experience. In 2016, @talentEgal helped 41 disabled students.

In Germany, providing equal opportunities for disabled employees is a proven and professionally established commitment. Company and employee-elected representatives for severely handicapped employees work together to coordinate processes and actions for issues such as training and awareness, job postings, recruitment, working environment, and external partner cooperation. We have a sustainable implementation and, former Alcatel-Lucent Germany sites have had a permanent disabled quota of more than 5% since 2012.

Commitment to broader non-discrimination

We are partnering with our Employee Resource Groups in their engagement to raise awareness and contribute to Nokia's culture of Diversity, Inclusion, and non-discrimination. Nokia employees hosted the Veterans Day Observance, celebrated the Asian-Americans Heritage Month, Hispanic Heritage Month, and African-America History Month. These celebrations gathered speaker panels, and diverse activities.

In France and in the United States, we continue to offer to our employees, individuals and managers, awareness resources on best practices to support lesbian, gay, bisexual, and transgender people (LGBT) at the workplace.

Nokia has an open culture where employees can express themselves, as many are doing through our employee blog, including sharing the benefits of coming out at the work place. More information on awareness sessions can be found [here](#).

Our achievements

Understanding of Nokia's vision by our employees rose from 85% favorable to 88% (Source: Culture Cohesion Tracker survey)

Approximately 30 500 employees enrolled in the Employee Share Purchase Plan, which is around 36% of the eligible population

We conducted 254 health and safety project readiness reviews of high-risk projects across all markets, a significant increase compared to 87 in 2015

We delivered 102 000 training days to customers and suppliers and launched the first Global Day of Learning for our employees

1593 employees were identified for corporate leadership training programs, a rise of 350 over the previous year (1 244 in 2015)

On average 76% of former Nokia employees had a Personal Development Plan in place, an increase of 3% compared to last year (73% in 2015)

International Women's Day, our CEO signed the United Nations Women Empowerment Principles

We launched 2 high-touch career development programs for 50 talented women, who are undergoing Sponsorship, Mentoring, and Executive Coaching

Over 1900 leaders and managers were trained on gender balance topics

Making change happen together

We engage actively with a broad group of stakeholders to achieve a more sustainable, socially responsible world, and improve people's lives with technology through social investments

Our approach

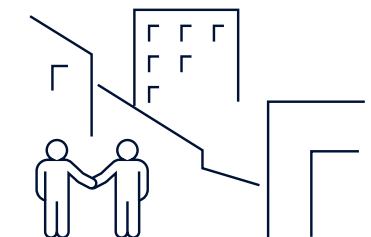
For Nokia, being part of the solutions to today's global challenges is our duty. We engage actively with our stakeholders to contribute to global efforts to achieve a more sustainable, socially responsible world, and improve people's lives with technology through social investments. We understand we cannot do this alone and are proud to work with a broad range of key stakeholders.

To achieve our sustainability goals, we collaborate closely with customers, suppliers, non-governmental organizations (NGOs), authorities, and industry peers, as well as universities. We work with our stakeholders not only to drive the sustainability of our products and solutions, but also to foster best practices, translate their expectations into business value, and supporting progress on sustainability goals.

Our key stakeholders from a sustainability perspective

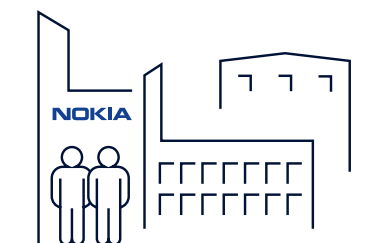
Our focus

Suppliers



- Driving improvements in cooperation
- Building competencies around sustainability
- Ensuring high standards of ethics through audits and assessments
- Encouraging climate reporting through the CDP

Employees



- Raising eco awareness
- Involving our employees in charity
- Leveraging human capital

Customers



- Arranging corporate responsibility reviews
- Reporting through EcoVadis
- Providing energy efficiency analysis and recommendations
- Showcasing possible future solutions supporting sustainable development

Our activity

We also engage with

Industry

- In 2016, we focused on topics such as
- Freedom of expression and privacy
 - Climate change
 - Supply chain sustainability
 - Connecting the unconnected
 - The UN Sustainable Development Goals

NGOs

- In 2016, we focused on topics such as
- Digital literacy
 - Empowering women and girls
 - Saving lives and providing access to better health

Universities

- In 2016, we focused on
- Research, training programs, and events that foster innovation
 - Promoting scientific innovation, digital health, talent, and knowledge creation through the Nokia University Donations Program

Investors

In 2016, we reviewed our sustainability activities regularly with investors and provided them with detailed information on our sustainability activities through for example CDP, RobecoSAM, Vigeo, and FTSE4GOOD.

Cooperating with others in our industry and beyond

Our cooperation and membership of major industry, government, and business organizations is also an important component that supports our sustainability agenda. We were a member of United Nations Global Compact, Global e-Sustainability Initiative, CDP supply chain program, The Telecommunications Industry Dialogue (ID), Climate Leadership Council, DIGITALEUROPE, Conflict-Free Sourcing Initiative, ITU-D, UN WEPs, GNI (Global Network Initiative), GSMA Humanitarian Connectivity Charter, ERT, International Chamber of Commerce, BIAC, OCDE, and several standardization bodies, as well as numerous university collaborations. We also have structured engagement with the World Economic Forum, the Broadband Commission, and B20.

United Nations Global Compact

Our sustainability report and company strategy conform to the United Nations Global Compact (UNGC) by incorporating information on our sustainability activities according to the 21 UNGC Advanced Level assessment criteria. For the second year in a row, our reporting is aligned with the UNGC Advanced Level criteria, ranking us in the top quadrant of companies reporting, according to the UNGC classification. In 2016 we renewed our membership to the UNGC as well as the UN Nordic regional network.

Carbon Disclosure

See our carbon disclosure work at [CDP](#)

Our work with the World Economic Forum

In 2016 we joined the World Economic Forum (WEF) as a partner. This international organization for public-private cooperation gathers those committed to improving the state of the world. We are proud to be among them. The Forum engages the foremost political, business, and other leaders of society to shape global, regional, and industry agendas, people from all walks of life who have the drive and the influence to make positive change. The Forum strives in all its efforts to demonstrate entrepreneurship in the global public interest while upholding the highest standards of governance. Moral and intellectual integrity is at the heart of everything it does.

Our CEO Rajeev Suri and other executives engage in discussions shaping the future of the digital economy and society. For example, through the Internet for All project, discussions include promoting the benefits of the Internet and connectivity to those currently unconnected. Rajeev Suri joined the stewardship board of the WEF's initiative Shaping the Future of Health and Healthcare in order to promote digital advancement as a means to deliver healthier lives and better healthcare - to keep populations healthy and to treat patients more effectively, solutions need to come from outside traditional healthcare. We also work with WEF focusing on improving gender balance. CMO Barry French is on the Steering Committee of the Gender Parity initiative. Our chairman, Risto Siilasmaa also signed the Compact for Responsive and Responsible Leadership.

Working with the UN Broadband Commission for Sustainable Development

At the UN Broadband Commission, our President and CEO actively engages to discuss how to connect the unconnected and advance the Sustainable Development Goals through technology. In particular, in 2016, he co-chaired the Working Group on Digital Health. This working group prepared recommendations together with the Novartis Foundation on how to make digital healthcare a reality, providing policy recommendations on how to use technology to achieve the best quality medical care in all parts of the world. Read more [here](#).

Currently, our President and CEO Rajeev Suri is chairing a Working Group on the Digitalization Scorecard - providing research on how to advance digital transformation in education, healthcare, e-government, agriculture, and transportation in order to make the benefits of digitalization more available to people.

Our participation in B20 Forum

We are proud to help drive discussions about digitalization in the B20 forum (business advisory body to the G20). At the end of September 2016, our President & CEO Rajeev Suri accepted an invitation to become a co-chair of the newly created B20 Germany task force "Digitalization", as well as the B20 Germany Business Advocacy Caucus. The B20 is an opportunity for Nokia to help shape the industry vision on digitalization and associated policy recommendations towards political leaders. B20 is

a grouping of global business leaders advising the G20 policy makers on key economic issues from an industry perspective.

ITU-D

We work with the ITU-D and in fact lead the ITU-D study on “ICT and Climate Change”. The drafting of the final report is available [here](#). Section three of this report on “Climate change mitigation” addresses the policies and technological efforts from ICT organizations that contribute by reducing their own GHG emissions. The report then recalls an estimation of the potential GHG reduction that can result from enabling the following economic sectors with ICT: mobility and logistics, manufacturing, food, buildings, energy, work and business, health, and learning. In this respect, particular attention is paid to urban areas where a growing proportion of the world population lives, and the benefits of innovative ICTs applied to “smart cities” are summarized and illustrated with references to some best practices.

European Round Table (ERT)

We are a key member of the European Round Table of Industrialists (ERT) forum. ERT advocates policies at both national and European levels, with the goal of improving European competitiveness, growth and employment. Our Chairman Risto Siilasmaa is personally involved in the work of the round table, leading Nokia engagements with this organization. We actively participate in the Energy and Climate Change (ECC) Working Group that seeks to create an holistic approach appropriate to the international

context to address the significant challenges that Europe and the planet are facing. Issues that were addressed and discussed in 2016 focused on:

- European policy framework for energy and climate change, including energy costs, EU ETS, carbon pricing
- International climate discussions
- Company reporting: Climate-Related Financial Disclosures

The Energy and Climate Change Working Group seeks positive dialogue with multiple stakeholders to develop constructive positions on a wide variety of issues. Nokia also contributed to ERT's initiatives: "Women in Leadership Positions" and "Key Initiatives to promote Women along the Talent Pipeline" - an annual report that contains voluntary targets for women in leadership positions set by 31 ERT member companies, together with figures on progress towards achieving these targets.

DIGITALEUROPE

We are a member of DIGITALEUROPE's Digital Sustainability Policy Group (formerly Environmental Policy Group), serving as chair of its working group on chemicals and contributing to groups focused on eco-design, resource efficiency, (including conflict minerals), waste and substance-related restrictions. We have also contributed to the statements issued by DIGITALEUROPE regarding the contribution of the ICT sector to the digital and low-carbon economies. Nokia's Markus Borchert, Senior Vice President Europe, is president of DIGITALEUROPE

Working together to save lives with GSMA

In October 2016 Nokia became a member of the [GSMA Humanitarian Connectivity Charter](#) which aims to support improved access to communication and information for those affected by crisis in order to reduce the loss of life and positively contribute to humanitarian response. Nokia will continue such cooperation and will partner with operators and NGOs in its initiative to help rescue operations, providing a limited number of its Nokia Saving Lives initiative solutions with a not-for-profit approach. The initiative is currently being tested with operators and NGOs.

Supporting customers' sustainability goals

We work with our customers in a number of key areas of sustainability. We have the greatest impact through the products we supply to our customers, both in terms of energy efficiency that helps reduce their carbon footprint and by providing solutions that drive efficiency as part of the services they offer to their consumer customers. We also work with our customers in supply chain management and ensuring responsible sourcing for example in supply chain assessments, where we cooperate with the Joint Audit Committee.

In 2016 we collaborated with customers on a number of other sustainability related areas including human rights through the Industry Dialogue, and going forward through the Global Network Initiative. For more information on our activities related to the Industry Dialogue and GNI, see [pages 100 – 107](#) in the Integrity section of this report. Also for example we supported the UN HeForShe diversity program by encouraging our own employees to sign the pledge. For more information on our activities related to gender diversity, see [pages 133-136](#) in the Respect section of this report.

It is essential to help operators meet the demands of data traffic growth in a sustainable way. Therefore, we continuously improve the energy efficiency of our products, develop software that helps manage energy consumption, support customers with energy optimization services, and create product and solution offerings that encourage the use of alternative energy sources and lower power consumption.

To enable massive improvements in energy efficiency, we are driving advanced power amplifier innovation, energy efficiency deployment studies for customer networks, industry initiatives, and standardization. Much of this energy is used to power cooling systems, for heating and lighting, consumed by uninterruptible and other power supplies, and in running idle resources. For example, analysis shows that cooling is responsible for up to 50% of the energy consumption of a base station site.

For more information on our activities related to the energy efficiency of our products visit [page 79](#) in the Environment section of this report

Collaborating with Non-Governmental Organizations (NGOs)

Corporate Community Investment (CCI) is based on business organizations recognizing that they have a responsibility both to their local communities and citizens as well as society in general. For Nokia, being socially responsible means using our resources, innovation, solutions, knowledge and influence to help improve people's lives, whether local or global. Through our products and solutions we can have the greatest impact.

Being part of the solutions to today's global challenges is our duty, and we are doing so by connecting the unconnected, empowering women, and saving lives.

A renewed model – Nokia Corporate Community Investment

In 2016, as a combined company, we had to realign all activities around community investment. We took the best practices of each company model, and

ensured they were an integral part of our business, closely aligning them to our business drivers, and therefore increasing our capacity to work more closely with our customers. As a result of the integration, and the creation of the new corporate community investment approach, we officially closed the former Alcatel-Lucent foundation. All programs run under the foundation were brought under the newly created Nokia Community Investment activity.

As part of our transformation, we have developed a new sustainability vision and group-wide corporate community investment program based on thematic and geographical approaches. Our collaboration and support focuses on the themes that are the most material and relevant with regards to our business drivers and are fully aligned with our most relevant SDGs targeted contributions.

Our collaboration and support focuses on how technology can improve access to better healthcare

& well-being, improved access to education, information and opportunities for all, with an emphasis on encouraging greater diversity. Our aim is to build a best-in-class approach to community investment that has a real impact on people's lives, engages our employees, and benefits from the strengths and innovations of our business and vision.

Our governance has also been renewed and realigned. A Donation Committee assesses and reviews submitted CCI projects for endorsement and project progress during quarterly meetings. The Board of Directors has an oversight on CCI activities and university donations twice a year. We apply the highest ethical standards in the way we are operating this activity through the recently published new Standard Operating Procedure on donations, other charitable contributions, and sponsorships. We have also developed the requisite training and communication to explain and promote the guideline internally.

Our new targets



2018

100% of corporate community investment programs to be measured against a monitoring and evaluating system.

100% of corporate community investment activities aligned with our group-wide strategy, business drivers and SDGs.

2025

Improve the lives of 2 000 000 people through our corporate and key regional community investment programs (baseline 2015).

Corporate Community Investment | Our CCI mission



Connecting the unconnected

In cooperation with our partners, create network solutions and platforms to:

- Connect the unconnected
- Bring benefits of our technologies, such as education



Empowering women

- Empower women and girls with skills to participate and join the connected world
- Attract women and develop their careers in the ICT business and STEM



Saving lives

Our technologies and employees are part of the solution

- To build resilience and response to worldwide challenges and natural disasters
- To connect people to better health



Our contributions to NGOs in 2016

For the first time, in 2016, our CCI performance is measured using the London Benchmarking Group (LBG) standards to assess the overall impact of our philanthropic activities.

In 2016, through Nokia Corporate Community Investment and the Alcatel-Lucent Foundation, we contributed corporate-level resources totaling Euro 3 million, which supported 42 community programs in collaboration with 39 community organizations. This figure does not include regional and country level programs and spend, where for example India spent over EUR 1 million on corporate responsibility programs.

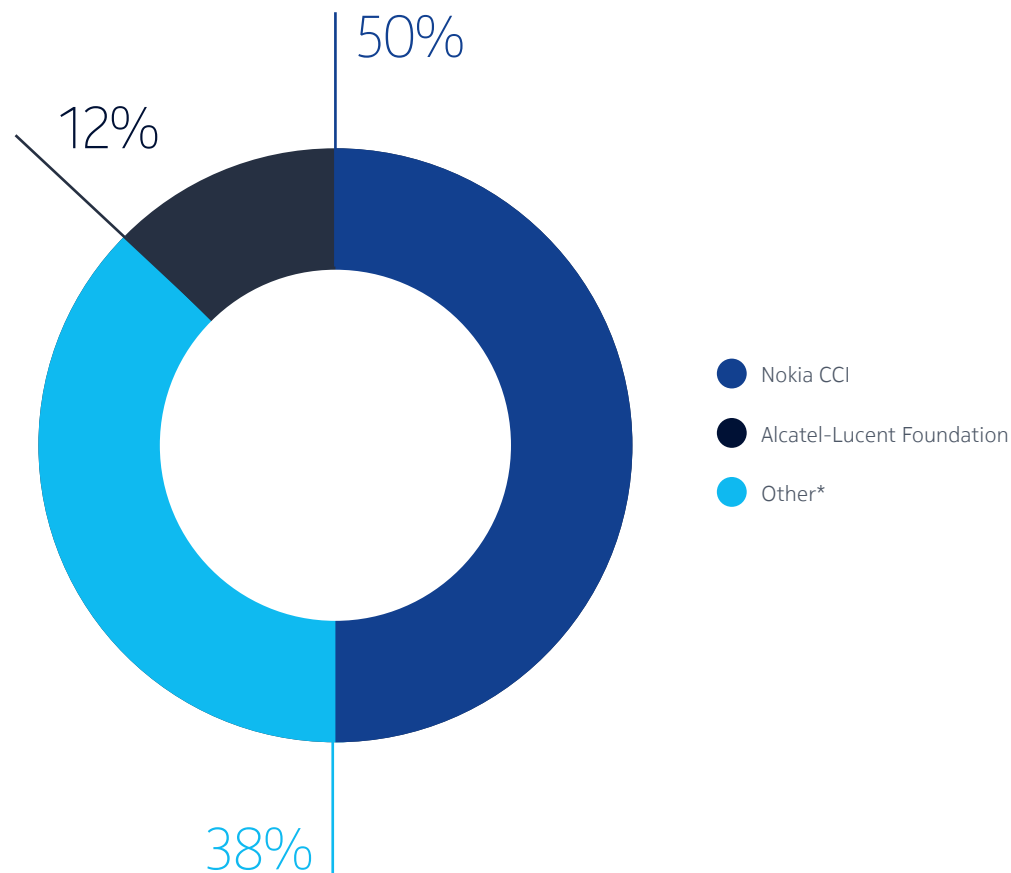
On corporate level programs, 695 employees volunteered a total of 8 080 hours

How many beneficiaries did our programs reach?

Nokia's community programs reached an estimated 868 346 direct beneficiaries. Children made up the largest proportion of the beneficiaries, with programs reaching 416 514 children. The majority (97%) of our CCI contributions align with our three thematic priority areas.

In addition to global corporate community investment programs, regional and business organizations can also run donation programs to increase reach and company impact in communities where we operate. For example, the India project with Save the Children will continue through 2017 based on specific agreement.

Nokia Corporate Community Investment spend 2016 by function



* Other includes local and regional spend, for which we have only partial information available for 2016

What we did in 2016

Save the Children Finland

Project:

The Best Start: improved early learning opportunities for marginalized children in Myanmar

Contribution:

4 employees volunteering 84 hours of time

Impact in 2016:

25 000 children have been enrolled in the ECCD kindergarten and are benefitting from early education programmes.

Continuing our partnership with Save the Children, The Best Start program in Myanmar is improving learning outcomes for children in Myanmar by enhancing access to quality early education services. Around half of the children in Myanmar complete primary school education on time, and rural, poor, ethnic minority children, girls and children with disabilities are most likely to drop out of education. Only 23% of children have access to early childhood care and development centers – these centers provide physical, social and cognitive development to help prepare children for formal education.

The partnership enabled the construction of 60 Early Childhood Care and Development (ECCD) centers across Myanmar in 2015 to provide rural communities with health, nutrition, education, social science, economics, child protection, and social welfare services. In 2016, The Best Start launched a kindergarten programme to provide

a year of basic education to children aged 5 before they start primary school. So far, 25 000 children, many of whom come from marginalized backgrounds, have enrolled in the foundation year and are benefitting from early childhood education services for the first time in their lives.

The centers will gradually be entrusted to local communities to ensure the sustainable continuation of early childhood education by establishing an ECCD Network Group comprised of local leaders and parents. Groups are responsible for coordinating center activities, center management and marketing to attract children to the program.

Enabling information sharing with mobile technology

Nokia expertise in mobile technology has been instrumental in creating a connected network of ECCD centers. Existing early education groups were having difficulties in organizing and sharing information between projects, often gathering information with paper and pencil without a central administration system. With Nokia's support, Save the Children has been able to develop software to connect groups through a central hub which collates data from all centers. The software is available on smartphones and tablets, and any data input is automatically uploaded to the central database allowing for program analysis and impact measurement.



Junior Achievement China

Project:

Innovate for Future Program 2.0 in China

Contribution:

131 employees volunteering 1782 hours

Impact in 2016:

400 students took part in program aimed at equipping them with skills for future careers.

Our partnership with Junior Achievement brings the business community and education sector together to help student cities gain skills for the world of employment. This year, 130 employees provided

mentoring support in four Chinese schools across two program that aimed to equip more than 400 students with skills required for future careers. In particular, the program was aimed at encouraging disadvantaged groups such as girls and children of migrant workers to pursue their dream careers.

During the Job Shadow Day, students were given the chance to shadow a Nokia mentor for the day to immerse them in the business world and see first-hand the skills required for different career paths. During the day, students were asked to design an innovative solution to a problem and given

the chance to present back to the group on their learnings from the day. The Junior Achievement Innovation Workshop gave students the opportunity to develop their problem solving skills to design innovative solutions to a given problem.

Fundación Adsis

Project:

New technologies for training and employment in Spain

Contribution:

41 employees volunteering 50 hours of time

Impact in 2016:

100 young people at risk of social exclusion develop new IT and social skills.

We partnered with non-profit organisation Fundación Adsis to tackle the issues of education and employment inequalities for young people at

risk of social exclusion in the Vicálvaro district of Madrid, Spain. The purpose of the project was to facilitate the social integration of those vulnerable to marginalization through the use of IT to improve their educational and social development.

The project focused on using IT as one tool for transformative change by raising young people's awareness of the benefits of using IT in everyday life and at work. Teachers were also encouraged to create new learning environments that were more engaging and relevant to young people using IT program.

.As a result of this project, 100 people aged 16-25 at risk of social exclusion developed new IT skills and participated in personal and social development activities. Equipping these young people with pre-employment and job skills will help them to enter the labor market and reduce their risk of social exclusion.

Children and Youth Foundation

Project:

Dreams Project in Finland

Contribution:

61 employees volunteering 488 hours of time

Impact in 2016:

Dreamsters inspired 24 000 young people and 1 300 teachers to follow their dreams.

Launched in 2015 in collaboration with Children and Youth Foundation, the Dreams Project aims to strengthen young people's future aspirations and help them take steps towards realizing them. The program draws on support from 'Dreamsters' who visit upper-elementary schools to share their own life experiences to highlight the importance

of having dreams and their drive in following these dreams. Dreamsters show young people how to take a positive outlook on life, and challenge them to be bold in finding their own strengths, to dream, and to work toward fulfilling their dreams. Supporting young people to follow their dreams helps to build their self-esteem and increases their trust in their own talent and possibilities.

Dreamsters challenged the whole school community – as well as themselves – to take part in various 30-day challenges.

The Dreams project not only targets pupils, but also works with teachers and parents to support young people and strive to achieve their own ambitions.

By 2018, the Dreams project aims to reach 80 000 aged 13 to 16 students in 300 Finnish upper-elementary schools. During the 2016 school year, Dreamsters visited 111 upper-elementary schools in Finland, inspiring nearly 24 000 young people and over 1 300 teachers to follow their dreams.

The Dreams Forum, held in May 2016, celebrated the work done in the first year of the program to raise aspirations of young Finns. The event was organized with the volunteered support of Nokia employees and brought together nearly 700 students and 91 teachers from 71 schools that the Dreamsters visited during the first year of the program to celebrate.

Re-imagining education through the connected world

Nokia has shown how rural education for children in Schlabendorf, Germany can be re-imagined through a cost-efficient technology and solution providing a small village with a myriad of opportunities through a high speed internet connection. Today, the test users of the village receive +50MB/s, which brings new possibilities for the community. One of the test users is Mrs. Brigit Kalz, who is running a science

lab for children in the village. The science lab was sponsored by Nokia with refurbished equipment and volunteers helped build it a few years ago. Now, Mrs. Kalz has around 200 project days per year with schools nearby in her science lab. The classes come to visit the science lab and can choose from different activities to learn (e.g. how urbanization affects to nature in rural areas, or other topics

related to geo-science). With internet access Mrs. Kalz can enlarge her portfolio of offering (e.g. geo-mapping exercises outdoors via internet connection with smart phones or preparation for the project day via video conferencing with the class).

Girls Day Germany



Every year technical enterprises, enterprises with technical departments and technical training facilities, universities, and research centers are invited to organise an open day for girls – Girls' Day. Girls' Day – 'Future Prospects for Girls' initiated a large campaign in which a wide range of professions and activities is presented to girls of 10 years

upwards. On the same day as the global Girls in ICT event, this day is aimed at girls 5th grade upwards, and should give them a one-day glimpse into the world of craft, science, IT and technology. The main goal is to strengthen their interest in these areas. As part of our annual participation in 2016, we were honored to be chosen to present our ideas to a select group of young girls in the presence of Federal Chancellor, Angela Merkel, in an event prior to the official Girl's Day. We were able to show how augmented and virtual reality using VR glasses can

support field work. We have participated in the Girl's Day for 10 years. [Read more](#)

In November 2016, Nokia also held its annual 'Our Greenhouse' event in Germany in 2016. The event provides networking and collaboration to encourage women to take up and advance their careers in the science and engineering (STEM) sectors, which is essential to achieve a 50/50 gender balance in employment. [Read more here](#)

Nokia Saving Lives

Our end-to-end Nokia Saving Lives initiative is truly unique in the industry. Getting re-connected is one of the first priorities of any rescue operation since networks often break down in disaster situations. With Nokia's [Ultra Compact Network](#), a highly portable base station, we can quickly re-establish connectivity with a standalone high-speed LTE network, so that rescue groups can communicate.

On top of this network solution, we deploy video camera-equipped drones managed over LTE to search for people and send footage from the disaster area – all guided from one control center. The drones stream video and other sensor data in

real time from the disaster site back to the control center over LTE. They provide valuable inputs like the exact locations of people and how to reach them, can carry thermal cameras, hazardous chemical sensors, and other applications.

The control center analyzes the collected information with Nokia Video Analytics technology and provides insights to responders to help them make decisions and prioritize tasks, making their work more efficient and safer. We plan to upgrade the drones' airtime to over two hours in the coming months, and increase the artificial intelligence of the whole solution.

As earthquakes, violent storms, and other disasters will continue to be an unfortunate part of our lives, we want to be ready to use Nokia Saving Lives in real-life emergencies when the need arises. So the next step is to work closely with rescue teams to refine our concept. We will have trials with several global and national relief organizations this year, to make sure that the technical concept fits their needs.

UNHCR – Raising awareness through technology

In support of the UN Refugee agency (UNHCR), we provided a Nokia OZO virtual reality camera, equipment, and support to The Humanitarian Cooperative to enable the creation of a film to raise

awareness and action on the current European refugee crisis. Read more on [page 68](#) in the Improving Lives section of this report

Sharing a little joy during the festive season

In December 2016, we once again took the opportunity and spirit of the festive season to engage with our employees and encourage them to participate in our annual charity donation program. Nokia donated small amounts to select charities that share our purpose of enabling the human possibilities of technology. Charities that are connecting the unconnected, enabling equal access to education and opportunities, and helping preserve the planet's resources, and saving lives. We gave employees the opportunity to choose their favorite charity from a selected list of smaller charities that are using technology to improve the

lives of people. These donations were in addition to Nokia's ongoing work with larger non-governmental organizations (NGOs) such as Children and Youth Foundation, Plan, Save the Children and UNICEF, where we provide our technical know-how and innovation. The donations were made through GlobalGiving, the first and largest global crowdfunding community that connects nonprofits, donors, and companies in nearly every country around the world.

This year we selected five charity projects from around the world. The selected charity projects:

1. Educating Syrian Refugee Girls at the Za'atari Refugee Camp in Jordan
2. Sending 100 girls to technology camp in Nigeria
3. Supporting kids to learn to code globally (multi-country)
4. Helping Syrian refugee children in Serbia
5. Supporting the Free Yezidi Foundation Women's Center in Iraq

Supporting local communities through volunteering

Volunteering is an important part of our employee engagement and enables us to make meaningful contributions to the communities where we operate. By working with local communities and projects of their choice, our employees can learn new skills and gain new perspectives, and the communities benefit from the professionalism and experience of our employees.

In 2016, as part of our overall Corporate Community Investment approach, we created Nokia Volunteering Guideline. Nokia has promoted volunteer activities as far back as the last century. We are committed to giving back to communities and encourage all employees to take part in volunteer programs. To support participation, each Nokia employee can dedicate working time to their community and contribute to a good cause. The guidelines and related support were launched company-wide in early 2017.

Our new target



2020

Foster the spirit of employee volunteerism across the company and increase their engagement.

Our key projects for the coming year 2017

In 2016, in addition to multiyear signature programs with Plan International, Save the Children and Oxfam, we approved and planned seven new key

projects for launch in 2017 with Unicef, RailsGirls, greenlight for girls, Anita Borg Institute, Junior Achievement, HundrED, and Codebus in Africa.

Seven new global programs for 2017

100% of Nokia's 2017 CCI collaborations listed below align with our three thematic priority areas.



Nokia is a main sponsor of the HundrED education initiative launched as part of the 100-year anniversary of Finland's Independence. HundrED aims to search for examples of optimal teaching and education practices and create a global sharing platform for teachers around the world. The initiative kicked off in Finland in January 2017 and aims to go global

[More information](#)



An official Finland 100 - year anniversary of Independence project that runs 1-day creative coding workshops for youth – especially girls – in ten African countries during spring 2017. The project is run in collaboration with Aalto University, Mehackit, Finnish embassies and several African tech hubs, schools and private companies. The aim is to provide equal opportunities for girls and boys to explore how technology can enable their future. The project celebrates technology, learning and youth empowerment.

[More information](#)



Nokia and greenlight for girls (g4g) are working together globally to help inspire young women in science. We begin our partnership by launching at Nokia headquarters in Espoo, Finland, hosting the first ever signature greenlight for girls event, g4g Day, with 200 girls. Following Espoo, we will launch g4g Days in Tampere with 100 girls, and Oulu also with 100 girls. The aim is to engage participants aged 11 – 15 from local schools, ideally with at least 20% coming from less advantaged communities, with hands-on Science & Technology workshops and activities run by role-model professionals.

[More information](#)



Rails Girls Summer of Code is a global fellowship program aimed at bringing more diversity into Open Source. Successful applicants are paid a monthly stipend, from July-September, to work on selected Open Source projects. It's about helping women and non-binary people dive into the world of programming full-time. They expand their knowledge and skills through 3 months of self-guided learning with the support of coaches and Open Source project maintainers.

[More information](#)



The Anita Borg Institute connects, inspires, and guides women in computing and organizations that view technology innovation as an imperative. As a social enterprise, they recognize women making positive contributions, and advise organizations on how to improve performance by building more inclusive teams. We are working with ABI through our "Women Transforming Technology" program, which drives our work with organizations, academic institutions, media, and the highly skilled women they serve.

[More information](#)



We will work with UNICEF over 2 years on their mHealth project in Indonesia for better health and nutrition. The objective of this pilot project is to strengthen community capacity to take appropriate actions to safeguard the nutritional and health status of children under five in Indonesia. Indonesia is one of our target countries for Corporate Community Investment.

[More information](#)



The STEM Innovation Camp is a one to two-day intensive experience for students aged 15-18, which develops their idea-generation and collaboration techniques. They learn how to arrive at innovative yet viable solutions by addressing real problems in business or the community.

[More information](#)

Collaboration with universities, cities, and other industries

We also collaborate with the public sector to further the use of technology in enhancing sustainable development and improving the day to day lives of citizens. In 2016, for example, we announced that we were joining the Bristol Is Open initiative that is creating a dynamic test bed in the UK to develop an open programmable city and explore how integrated technology solutions can benefit citizens – from helping solve problems such as traffic congestion, air pollution, and assisted living for the elderly, to trials of self-driving cars.

Digital innovation for improved healthcare

Health and well-being are of increasing importance as digitalization and the medical industry come

together securely. We work with hospitals, universities, and other medical institutions to bring digital innovations to a wide variety of health and wellness challenges.

In 2016, Nokia began collaboration with Helsinki University Hospital (HUS) and the Faculty of Medicine at the University of Helsinki. HUS comprises Helsinki University Hospital and four regional hospitals. Apart from diagnosis and treatment of patients, the Hospital's services include education and research of a high international standard in close collaboration with the University of Helsinki, Aalto University, and several medtech and pharmaceutical companies. One example project involves remote monitoring of the vital signs of patients who have suffered from a

stroke, using new medical-grade consumer products and software which enable the patient to stay at home rather than in hospital.

We are committed to medical research and working with numerous universities, health institutions, and enterprises to further study and gather anonymized health data. A snapshot of our collaborations in connected health is given below. To learn more visit our website [here](#).

Examples of medical use of Nokia connected devices

Partner	Concern	Description	Device used
Cornell University	Nutrition	An intervention using Wi-Fi scales and graphic e-mail feedback, the caloric titration method (CTM), to reduce age-related weight gain over 1 year among college students was evaluated. CTM intervention was effective in preventing age-related weight gain in young adults over 1 year and thus offers the promise to reduce overweight and obesity rates.	Body Scales
American Medical Group Association	Hypertension	Nokia teamed up with the American Medical Group Foundation (AMGF) to work on an 18-month project seeking to improve blood pressure control in patients with uncontrolled hypertension, in conjunction with the national Measure Up/Pressure Down® hypertension campaign	Blood Pressure Monitors

Partner	Concern	Description	Device used
Inserm-Université Pierre et Marie Curie	Activity & Hypertension	A study was built upon cross-sectional and longitudinal data from a pool of 19 000 adult owners of Nokia activity trackers and wireless blood pressure monitors. The aim of the study was to assess the link between physical activity levels and blood pressure. The study gave way to an abstract at the European Society of Hypertension	Data
Tampere University of Technology	Weight Management, Behavioral Science	The aim is to study randomized data sets of longitudinal weight data to determine how variations in weight are related to successful weight management and to develop coaching algorithms that would prove more efficient in self-guided behavioral change.	Data
Mayo Clinic	Chronic Heart Failure	Mayo Clinic uses remote monitoring for patients with Chronic Heart Failure with the help of the Nokia activity tracker, Body Scale, and Nokia Blood Pressure Monitor to decrease the number of readmission rates	Blood Pressure Monitors, Body Scales & Nokia Activity Tracker
Stanford University	Bariatric Surgery	The aim of the study is to assess the impact of a connected scale and an activity tracker on patients undergoing bariatric surgery. All patients undergoing bariatric surgery will be recruited preoperatively. They will be provided a recommended exercise regimen and also some general wellness information via the Health Mate application. Also, they will receive bi-monthly phone calls to monitor and encourage their progress	Nokia Activity Tracker & Body Scales

Trialling telemedicine in Taiwan

We are committed to assuring universal access to healthcare at a reasonable cost. Collaborating with Nokia through the ng Connect Program, Taiwan is achieving its economic and social healthcare goals by enabling broadband applications.

Taiwan has been operating its healthcare system as a single payer model for about 20 years. The priority is to provide complete coverage to all citizens. So far, it has been able to provide coverage to most of the metro, suburban, and rural areas while keeping costs at a reasonable level. Because of its single payer system, costs have been lower than other countries due in part to its favorable demographics. Demographics have been shifting rapidly as the population ages and are accelerating the cost of providing services. This trend, coupled with the country's objective of providing equal access to healthcare for everyone, wherever they live, will drive costs up in the near future.

One of the many initiatives to tackle these challenges involves performing certain services remotely and streaming information using high-speed networks to central locations for analysis and advice. This requires high-speed networks, new applications—in addition to regulatory, behavioral, and policy changes. The market trial for this telemedicine solution was conducted during 2016.

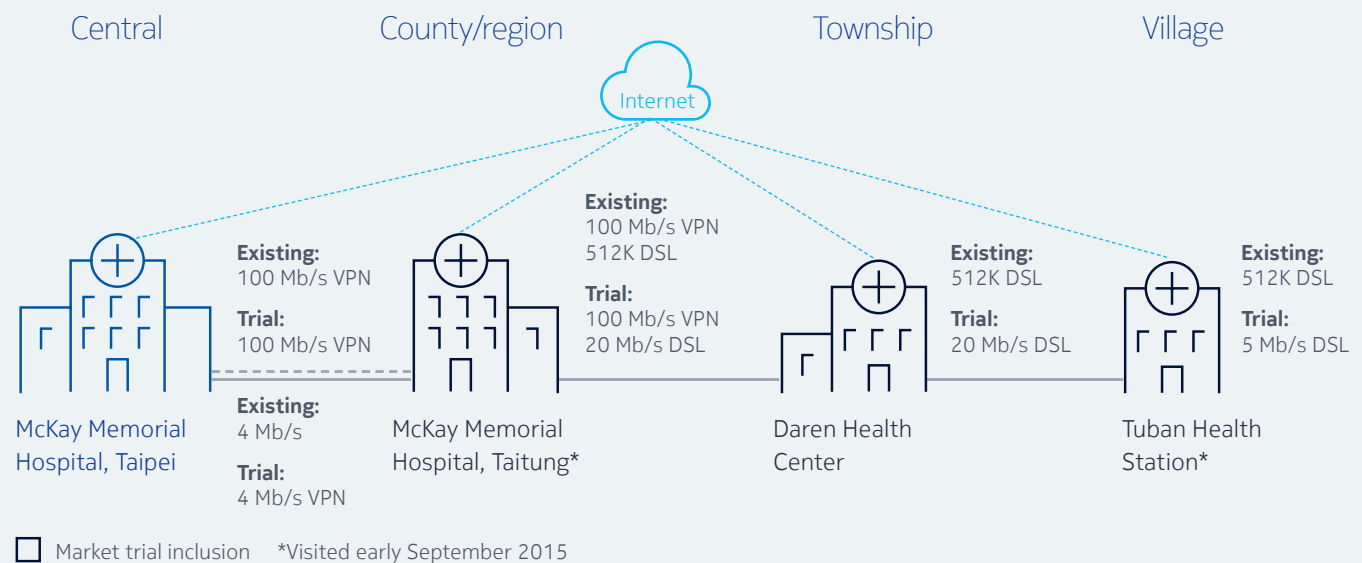
Currently, 34 percent of Taiwan's healthcare costs are spent on those aged 65 and over. That population is now about 11.5 percent of the total population—a percentage that is expected to grow to 24 percent by 2030.

A number of challenges need to be solved from the affects of an aging population to the need for better infrastructure. The solution required includes three key components in order to enable a remote healthcare solution:

1. An infrastructure capable of providing the bandwidth needed to view high-resolution medical images, as well as low latency to ensure seamless communication.
2. Software for video collaboration
3. Software to move, share, and manipulate high-resolution medical images

Nokia, Calgary Scientific, and Softfoundry have integrated their products to create this market trial solution. Qualitative feedback on the trial solution has been high. Feedback has come from the Taitung MacKay Memorial Hospital (Taitung MMH), the Taitung Health Bureau and, under its management, the Daren Township Clinic and the Tuban Village Health Station.

Existing and trial connection speeds



Making life smarter

We partner with cities around the world to help them realize new possibilities for people today and for generations to come, with a [combination of visionary thinking and shared, secure and scalable technology solutions](#). There is no single approach to creating a smart city, collaboration is key to making cities smart, safe, and sustainable.

On December 13, 2016 Nokia hosted an online future of smart cities debate with leading experts Léan Doody from Arup, Julian David from TechUK, Jeremy Green from Machina Research, and Thorsten Robrecht from Nokia. During the online panel debate the group of experts explored what makes a city 'smart', looking at three key pillars:

- Business – Trade agreements, governance, and innovation
- Wellbeing – Engagement, privacy issues, and public safety
- Technology – Digital infrastructure solutions and borderless data

The debate followed the release on November 11, 2016 of a Nokia-sponsored report: “[The Smart City Playbook](#)” by [Machina Research](#), a leading provider of market intelligence and strategic insight on the Internet of Things. This comprehensive publication is based upon a series of interviews with city project executives, and aims to provide smart city stakeholders with relevant insights on strategies,

solutions, and pitfalls to be avoided in the process of becoming smarter cities.

In an attempt to bring some order to the smart city universe, Machina Research has grouped their projects and activities under the headings smart, safe, and sustainable.



You can download a copy of the Smart City Playbook [here](#)

Smart

Smart applies to applications that aim at improving the quality of life for citizens, bolstering innovation, social and economic development, and making cities more attractive places to live and do business. Smart use cases cited by the report come from Dubai, Paris, and Singapore.

Safe

Safe describes applications aimed at helping to prevent, or minimize the risks and impact of adverse events including crime, accidents, environmental pollution, and natural disasters. Examples of safe city profiles identified by Machine Research include Mexico City, New York, and Shanghai.

Sustainable

Sustainable addresses applications intended to reduce the environmental impact (especially energy consumption and carbon emissions) of the municipality's own operations and the activities of business which operate within its jurisdiction, and citizens who live there. Look for sustainable city examples showing what's being done in Pune, San Francisco, or Vienna.

Intelligent traffic management in the Netherlands

In September 2016, we announced support for Europe's first dedicated testing facility for the use of unmanned aerial vehicles (UAV) for traffic management. The facility, at Twente Airport, near Enschede in the Netherlands, will enable Nokia to develop and trial its UAV Traffic Management (UTM) system for the use of drones in proximity of urban areas, people, manned aircraft, other drones, and

hundreds of other objects. Under a Memorandum of Understanding signed with the Municipality of Enschede, the Province of Overijssel, Unmanned Systems Center B.V. and Area Development Twente, Nokia will design and deliver the infrastructure to test and develop the Nokia UTM system at Twente Airport through real-life simulations and commercial demonstrations.

Making Dubai mission-critical ready

Nokia and the United Arab Emirates General Civil Aviation Authority (GCAA) have entered into a strategic collaboration to drive the development of an end-to-end UAS ecosystem that will make the UAE the first country in the world to allow the operation of drones by both businesses and government agencies in a safe, secure, and managed environment. The project is part of an initiative by the GCAA to make Dubai one of the world's smartest cities by 2017, and will allow Dubai government security network operator Nedaa to develop a next generation network for mission-critical and smart city services within the GCAA regulatory framework.

“Dubai has historically pioneered in providing exceptional quality of life, and an unparalleled business and technology innovation environment, Nokia has been an integral part of Dubai's security communications network since 2001, and the company's eagerness to adapt to our new, stringent security requirements gives us the confidence to make our city the safest and smartest in the world.”

Yousif Ali, Chief Technical Officer, Nedaa

Applying IoT for emergency services support, e-government, transportation, and healthcare

5G-ready high-bandwidth voice, video, and other data apps for mission-critical services

Bristol is Open - Pioneering programmable cities

Nokia has joined the Bristol Is Open initiative, becoming the first major telecoms vendor to participate in Bristol's unique living laboratory and underlining its commitment to smart city solutions, an increasingly important part of our connected world.

Bristol Is Open (BIO) encompasses the entire city, effectively transforming it into a dynamic test bed to explore how integrated technology solutions can benefit citizens - from helping solve problems such as traffic congestion, air pollution and assisted living for the elderly to trials of self-driving cars. BIO is a joint venture between the University of Bristol and Bristol City Council and it is funded by local and national government and the European Union, along with academic research funding and financial backing from the private sector.

Nokia was invited to join the project because of its track record in developing solutions for smart, sustainable cities, and its long history of collaborative research, including the Nokia-founded IoT Community for cross-industries collaboration.

Experts from across the company - including Nokia Bell Labs, who already have a strong relationship with Bristol University, particularly in the area of photonics - will provide consulting services to Bristol Is Open, while our IP networking division will provide network and infrastructure support. In addition, the Nokia-founded ng Connect Program will bring solution concepts and business model innovation, leveraging its ecosystem of 360+ companies from a wide range of industries and markets, into the BIO development program.

Small sensors, including the smartphones and, in the future, GPS devices of willing citizens, will supply information about many aspects of city life, including energy, air quality, and traffic flows to the three new fast networks in the center of the city. The high-powered operating system developed by Bristol University will dynamically host this machine-to-machine communication, allowing the development of a wide range of applications that are linked to the various sensors and actuators deployed across the city.

The BIO initiative was spurred by the continual need for sustainable growth, taking into account an increased awareness of pollution and the City Council's desire to offer an improved range of services to its citizens. The initiative promotes smart city growth within the UK and across Europe as governments seek to meet environmental targets.

Using agile infrastructure, through which it is possible to test applications and demonstrate their sustainability, we plan to use this exciting opportunity to test a whole range of applications from Nokia Bell Labs' innovations in video to environmental impact studies, healthcare, and public safety. Our first project in BIO will focus on video analytics on the city-wide CCTV system of over 1 700 cameras.

See more examples of smart solutions and projects on [pages 62 - 65](#) in the Improving Lives section of this report.

Cooperation with universities and academic institutions

Our work with academic institutions ranges from collaborative research, training programs, and events that foster innovation, to supporting talent and continuous learning. In addition, the Nokia University Donations Program enhances

collaboration between the world's leading experts from universities around the world with the aim of promoting scientific innovation, talent, and knowledge creation.

In 2016, we supported 36 universities through the University Donations program, including open donations to the Finnish Aalto University, Technical University of Tampere, Universities of Helsinki and

Oulu. European universities were also supported in Germany, Austria, Hungary, Sweden, France, and Denmark by topical donations.

In China, we supported, among others, the Beijing University of Posts and Telecom, Beijing Jiao Tong and Xidian Universities. In addition, the Soongsil and Yonsei University were supported in Korea, and Kyoto University in Japan. In the US, our support

included, the University California campuses in Berkeley, San Diego, Santa Barbara, as well as more eastbound universities: Princeton, Carnegie Mellow, Penn State, and New York. In Canada, Toronto University received a donation.

The topics of the donations varied from networking at edge, virtualization, and latency, to virtual reality, clinical cystic fibrosis research to Artificial Intelligence, which, for example, was supported by sponsoring the Berkeley Artificial Intelligence Research lab.

Nokia Bell Labs collaborates on today's key technical challenges with the best and brightest university students. Bell Labs has established relationships with the top universities and research institutes around the world, and with the appointment of our research executives, actively foster and expand those collaborations to build relationships.

During 2016 Bell Labs engaged in active collaboration with almost 40 academic partners across the globe. Through these collaborations we foster a shared compelling vision of the future and a deep engagement with the best and brightest minds on a range of exciting challenges including topics such as:

- Creating a 5G network with dynamically optimized bandwidth and latency for all services, users, devices, locations
- Creating 10 X optical network capacities cost-effectively
- Re-imagining interactivity between people, machines, and their environments
- Creating cognitive systems and networks
- Making the execution and scaling of complex services in the cloud as simple as using web apps

Americas

In the US, through the donation to Berkeley Artificial Intelligence Research Lab, we have supported high quality deep learning research. As an example, take a look at the paper [here](#) about the artificial creation of photographs out of Monet's paintings and vice versa.

Europe

From a donation to Aalto University Professor Riku Jäntti, there was a development on ambient re-scattering communications that increases the capacity of the system. Ambient re-scattering is a method where one is transmitting information by scattering an existing radio signal. This requires much less energy than using a standard system, where every node creates its own radio transmission. The system could be used for low energy sensor nodes.

China

A tele-health donation to Xidian University provided the background for a Nokia - China Mobile demo at Mobile World Congress 2017. The use case was inspired by the donation work, and Nokia built a 5G storyline and a live demo on top of the work. Read more [here](#)

Sustainability

Our work with a number of universities around the world also covers sustainability related topics that can bring social or environmental benefits. During 2016, Nokia acted as a sponsor for Aalto University CEMS program where a team of international masters students made an extensive analysis on Nokia sustainability impacts. An Aalto University professor acted as the academic tutor, and Nokia representative as the business tutor for this analysis which covered Nokia external social, environmental, and economic impacts throughout the value chain. It looked at both positive and negative impacts with the aim to quantify these external influences in terms of monetary value to the extent possible.

In addition, an Aalto University student working for Nokia made her masters thesis which focused on the Impacts of Connectivity on Sustainable Development, including environmental, social, and economic areas. The study focused mainly on Nokia activities and some 150 references, with close to 30 expert interviews being used as sources for the 100 - page thesis.

Our donations supported topics such as urban mobility, immersive interaction with virtual environments, technologies for future 5G systems, and the use of virtual reality in healthcare. In addition, our Technologies unit cooperated with Aalto University in Finland on an indoor positioning system for sustainable manufacturing. Indoor positioning can be used, for example, for asset tracking.

Our achievements

Corporate Community Investment strategy created and approved in 2016, and rolled out in Q1 2017

We became a member of the GSMA Humanitarian Connectivity Charter which aims to support improved access to communication and information for those affected by crisis

We are helping government security network operator Nedaa to develop a next generation network for mission-critical and smart city services in Dubai

In 2016 we contributed EUR 3 million from corporate-level resources, which supported 42 community programs in collaboration with 39 community organizations

Our community programs reached an estimated 868 300 direct beneficiaries, with children making up the largest proportion of the beneficiaries

We created Nokia Volunteering Guideline, giving guidance and encouragement to all employees to take part in volunteer programs

We announced that we were joining the Bristol Is Open initiative that is creating a dynamic test bed in the UK to develop an open, programmable smart city

Our donations supported topics such as urban mobility, immersive interaction, future 5G systems, and the use of virtual reality in healthcare

Around 76 cooperations with universities and academic institutions in 2016

Key sustainability data

The sustainability data presented in following pages relates to Nokia Group (continuing operations), including Nokia's Networks business groups, Nokia Technologies and Group Common and Other Functions. Former Alcatel-Lucent operations are fully included in our 2016 Nokia Group reporting. Historical performance data for year(s) (2014-) 2015 is provided with two different scopes. The Nokia Group continuing operations data covers Nokia as it was during 2014-2015. Where it was feasible to get comparable data, the "comparable combined company" data aims to provide a more meaningful historical comparison of the consolidated Nokia Group with Alcatel-Lucent.



Reporting principles

Scope and boundaries

The sustainability data presented in this report relates to Nokia Group, including Nokia's Networks business groups, Nokia Technologies and Group Common and Other Functions, for the calendar year 2016.

In late 2015, our shareholders voted overwhelmingly to approve the Alcatel-Lucent acquisition. In early January 2016 we announced that we had gained control of Alcatel-Lucent through the successful public exchange offer for all outstanding Alcatel-Lucent securities by holding nearly 80% of outstanding Alcatel-Lucent securities. On November 2, 2016, we achieved 100% ownership of Alcatel-Lucent. Former Alcatel-Lucent operations are fully included in our 2016 Nokia Group reporting. We use term "Comparable combined company" when we refer to information including combined Nokia Group and former Alcatel-Lucent data prior to the acquisition of Alcatel-Lucent in January 2016. Other newly acquired companies will be included in the reporting scope when they have been legally consolidated and integrated into Nokia systems. Nokia Group data is excluding Discontinued operations, which refer to the sale of the Devices and Services Business in 2014 and the sale of the HERE Business in 2015. Any exceptions to this scope for certain indicators are specified in data table notes. The most typical exception is that data for some indicators covers only Nokia's Networks business groups, which at the end of 2016 covered 92% of net sales and 97% of employees of the Nokia Group continued operations.

Adjustments and comparability

Adjustments to due structural change

Historical performance data for years 2014-2015 is provided with two different scopes. The Nokia Group continuing operations data covers Nokia as it was during 2014-2015. The comparable combined company data aims to provide a more meaningful historical comparison of the consolidated Nokia Group with Alcatel-Lucent. Therefore, 2014-2015 sustainability data from both legacy companies has been recalculated and combined for indicators where this was possible with the same definitions. For longer term historical development, please see previous Nokia and Alcatel-Lucent sustainability reports on www.nokia.com/people&planet

Adjustments due to methodology change

For most of the environmental data and for some social data, 2014-2015 values for Nokia Group continuing operations have been recalculated with a methodology aligned for the integrated company in 2016.

For facilities related data (energy, greenhouse gas emissions, waste and water data) 2014-2016 consumption data was amended to cover 100% of sites, including estimated data for non-reporting sites. Previously Nokia facility data and related greenhouse gas emissions data typically (but not as a strict rule) covered only measured data from sites over 3000 m², covering at least 80% of facilities' total net internal area (81% in 2015). The excluded "small sites" are typically multi-tenant buildings where energy, water and waste consumption fees are covered in the rent. Emission data from

excluded sites was previously estimated based on Nokia averages and reported under "Scope 3, Upstream leased assets".

Nokia reported emissions from its car fleet for the first time in 2015 and the scope was expanded in 2016 to cover benefit cars in addition to cars used for business purposes, typically in Global Services. 2015 emissions were recalculated with the new methodology.

Alcatel-Lucent obtained 100% ownership of ALDA Marine in March 2015. Prior to March 2015 Alcatel-Lucent had a 51% financial equity in ALDA and LDA had 49%. Marine fleet emissions from ALDA Marine were included in Scope 1 emissions of combined comparable company from 2014 onwards, while previously Alcatel-Lucent had reported emissions from fleet owned by ALDA Marine under Scope 3. When adjustments have been made compared to earlier reports, they are specified in data table notes.

Assurance

Our selected indicators have been assured by an independent auditor of Nokia, PricewaterhouseCoopers Oy. The scope of assurance covers 2016 data for Nokia Group Continuing operations for selected indicators. Please see more information on Independent Practitioner's Assurance Report on [page 178](#).

Data collection

The data published in this report is collected through various internal and external reporting systems and consolidated on an annual basis for sustainability reporting purposes.

Environmental data

Resource utilization

Energy data covers stationary and mobile sources combustion of fuels and consumption of electricity, heat, and cooling in facility operations, as well as combustion of fuels in the marine fleet.

Water data covers withdrawal of water from municipal sources in facility operations and the share of recycled water, which is recycled both for sanitary purposes and for irrigation.

Waste generation covers hazardous and non-hazardous waste generated in facility operations. In addition, we report packaging waste separately, reused in our distribution hubs operated by service providers, and the amount of equipment collected at the end-of-life.

Energy, water, and waste consumption data is collected from facility-level responders and is based on invoices or metered data. For facilities with no data availability, energy, water, and waste usage is estimated using annual intensity factors based on energy/m² and waste and water /employee in the reporting sites, to adjust collected data to account for 100 percent of Nokia facilities.

Waste data is collected from vendors, but it is not as accurate as energy and water data, as waste vendors often report amounts based on number of

waste bins emptied and average weight for waste type, instead of weighing each container.

Utilized waste includes waste that has been either reused, recycled, or the energy from it has been utilized. Non-utilized waste has been either sent to a landfill or incinerated without energy recovery. Composting of biowaste is recorded under recycling.

The definitions for what is reported under hazardous and non-hazardous waste have been made on a global level to keep corporate reporting simple. E.g. all discarded batteries and electric & electronical waste (WEEE) are reported globally under hazardous waste, although only different sub-categories of WEEE are defined hazardous in different countries. The actual waste treatment is always done according to local legal requirements.

Reported waste data is rounded to hundreds metrics tons. We ensure the total waste amount rounds correctly and summed sub-metrics match the total. This might lead to small rounding exceptions with the sub-metrics.

To ensure that 100% of energy utilized within the Nokia Real Estate Portfolio was accounted for, site-specific algorithms were employed to estimate electricity and natural gas usage at sites where actual data was not available. This adjustment accounted for less than 2% of electricity usage and less than 1% of natural gas usage, when compared to total usage respectively.

Our carbon footprint

Nokia approach to measuring greenhouse gas emissions follows the Greenhouse Gas (GHG) Protocol (www.ghgprotocol.org) developed by the

World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The GHG Protocol defines three scopes of CO₂e-emissions:

- Scope 1 – direct emissions, from sources owned or controlled by the company
- Scope 2 – indirect emissions, from the consumption of purchased electricity, heat, and/or steam. As per GHG Protocol Scope 2 Guidance – An amendment to the GHG Protocol Corporate Standard, published in 2015, we report both location-based and market-based Scope 2 emissions from 2014 onwards.
- Scope 3 – indirect emissions, as a consequence of the activities of the company, but from sources not owned or controlled by the company

Greenhouse gases

We report the emissions as CO₂e as per GHG Protocol's guidance. GHG Protocol is including six groups of greenhouse gases related to the Kyoto Protocol: Carbon dioxide (CO₂), Hydrofluorocarbons (HFCs), Methane (CH₄), Nitrous oxide (N₂O), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF₆). CO₂ equivalent (CO₂e) is the universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide.

Operational boundaries

We use the “operational control” approach for setting organizational boundaries for our GHG emissions inventory.

Scope 1 emissions

Direct CO₂e emissions from Nokia facilities include fuel combustion activities associated with

gas and oil usage within stationary and mobile sources, along with incidental releases of GHGs from refrigeration units, fire suppression systems, and R&D/manufacturing activities. Emissions are calculated by using most recent emission factors published by the United States Environmental Protection Agency (USEPA).

Direct CO₂e emissions from our mobile fleet are tracked by obtaining information from country-specific leasing suppliers, which are consolidated into one system. Emissions calculation is based on actual driven mileage and official CO₂ emission value per km of each car make and model. Applicable emission factors are sourced from car manufacturers. In the case that the distance traveled is not available from the leasing supplier, the budgeted annual mileage in the leasing contract is used for calculation.

Direct CO₂e emissions from our marine fleet are calculated based on the fuel type and fuel usage of marine vessels. Alcatel-Lucent Submarine Networks maintains a listing of all owned vessels with associated fuel consumption. All GHG estimation procedures are based on individual vessel assessments.

Scope 2 emissions

Indirect CO₂e-emissions include emissions from purchased electricity, heating, and cooling. As per GHG Protocol definitions, the location-based accounting method quantifies scope 2 GHG emissions based on average energy generation emission factors for defined locations, including local, subnational, or national boundaries. In our case, location-based emission factors are obtained from EPA eGrid for the US and from the

International Energy Agency (IEA) for all other countries.

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

GHG emissions associated with purchased steam and heat were calculated employing the applicable USEPA emission factor, which was based on the assumption that natural gas was used to fuel a boiler exhibiting an efficiency of 80%.

GHG emissions associated with purchased chilled water and cooling were calculated employing the same country emissions factors as electricity, based on an assumed efficiency of 100%.

Emissions avoided due to the purchase of renewable energy are calculated by comparing the carbon loading difference (tCO₂e) between the residual versus the location-based values. Renewable electricity covers different tracking instruments. Over the years, most widely used have been RES-E Guarantee of Origin certificates in Europe and Green-e RECS certificates in USA. In addition Nokia has purchased smaller amounts of supplier specific instruments.

Scope 3 emissions

For relevant scope 3 categories the calculation methodology for estimating emissions is described. For non-relevant scope 3 categories, an explanation is provided.

1. Purchased goods and services: emissions are reported based on data collected with CDP Climate Survey from Nokia's biggest suppliers, representing around 27% of total purchase spend in 2016 (23% in 2015). In 2016 we used a hybrid method for the first time, using emissions allocated for Nokia by the suppliers and as new method, also intensity based (GHG/€) allocation, where allocated emissions were not available or allocation was not reliable based on different internal quality measures. Collected data is then multiplied to cover 100% of spend. Around 65% of suppliers' emissions allocated for Nokia are suppliers' Scope 1+2 emissions and 35% suppliers' upstream scope 3 emissions, so data partly covers emissions beyond Tier 1. Suppliers providing transportation services for products are excluded as "emissions from transportation and distribution" are reported in a separate scope 3 category. Some suppliers provide both "purchased goods" and "capital goods" and for simplicity all their emissions are reported under purchased goods. 2016 disclosure is based on the latest CDP data representing suppliers' year 2015 emissions. We recognize that this emission category includes a lot of uncertainty, as suppliers have different qualities in their own reporting and in allocating emissions to Nokia, and due to the extrapolation Nokia does for data to represent 100% of Nokia spend.

2. Capital goods: the relevance of emissions from this category to be included in the Scope 3 inventory is assessed each year, as capital goods purchases vary from year to year. The threshold for inclusion is 0.5 % of total Scope 1+2+3 emissions. Emissions from capital goods are based on financial data on property, plant, and equipment additions during the reporting year and estimated by using the GHG Protocol Scope 3 Evaluator tool.
3. Fuel and energy related activities not included in Scope 1 and 2: not presently being assessed, because emissions are by calculation less than 0,1% of total Scope 3 emissions.
4. Upstream transportation and distribution: Data includes emissions from inbound and outbound logistics. "Former Nokia" data is based in 2016 on the top 13 (5 in 2014-2015) logistics supply partners (LSP) delivery data (tonne-km) and transportation mode. Former Alcatel-Lucent 2016 data is covering data from 12 LSPs. EPA's latest CO₂e emission factors were used to (re) calculate 2014-2016 emissions for both Nokia Group and Combined comparable company. Nokia changed reporting from pay weight to real weight in 2016 and due to feasibility, but no recalculation was done for past values for weight. Upstream emissions include emissions from transportation paid by Nokia. We call this category typically also "CO₂ from logistics" or "CO₂ from transport".
5. Waste generated in operations: not presently being assessed because emissions are by calculation less than 0,1% of total Scope 3 emissions.
6. Business travel: emissions are reported for business air travel, which has the biggest impact out of business travel modes. Travel information is obtained from our assigned Travel Agencies. Supplied data includes distance travelled, delineated by flight distance ranges and cabin class. Data from travel agencies is consolidated in a system which is used to calculate emissions from air travel. Emissions factors are obtained from EPA.
7. Employee commuting: 2015-2016 emissions are reported based on a worldwide survey conducted at former Alcatel-Lucent in December 2015. Since no employee commuting survey was conducted in 2016 for the combined Nokia company, the results of the previous survey were prorated, based on 2016 Nokia headcount per country. Based on the reasoning that socio-economic and educational achievements of the sampled population would be expected to be essentially similar to that exhibited by employees of the combined company, outcomes of that 2015 survey should ultimately provide a representative assessment of the commuting behavior of all Nokia employees in 2016 and Nokia Group employees in 2015. 2014 Nokia Group commuting values were calculated with the old methodology, based on a survey conducted in Nokia in 2010.
8. Upstream leased assets: not presently being assessed as leased vehicles and facilities are presently assessed in Scope 1 emissions.
9. Downstream transportation and distribution: not presently being assessed as the share of transportation and distribution paid by the customers is so small that emissions of this category were below 0.5% of total Scope 3 emissions.
10. Processing of sold products: not considered relevant because processing is not required for sold Nokia products.
11. Use of sold products: The calculation formula is following: $\sum [\text{total lifetime expected uses of products (hours)} \times \text{number of products sold in reporting period} \times \text{products power consumption (kW)} \times \text{emission factor for electricity (kg CO}_2 \text{ / kWh)}]$. Year 2014 and 2016 scope covers mobile and fixed networks products and IP/Optical Networks products. Applications and Analytics data is available for 2016 only. Product use time varies between 6 and 15 years, depending on the products. Energy use calculations are based on product group specific ETSI standards where ever standards have been published. Total product coverage is over 80%. Calculations are so far based on assumption that all MN, FN, ION and A&A products are powered by grid electricity. Emission factor used is IEA's latest world average CO₂ -emission factor.
12. End-of-life treatment of sold products: not considered relevant. Based on an LCA done by Nokia for a typical Nokia mobile network product (urban base station site in Europe), the use-phase accounts for over 84% of global warming potential, production (supply chain and own operations) for 14%, logistics for 2% and end-of-life treatment rounds to 0%. Furthermore, former Alcatel-Lucent reported a very small negative value for the end-of-life treatment associated with the recycled materials in their products. End-of-life treatment emissions are not significant either in other Nokia product categories.
13. Downstream leased assets: not presently being assessed because emissions are by calculation less than 0,1% of total Scope 3 emissions.
14. Franchises: not applicable, as Nokia does not have franchises.
15. Investments: not applicable, as this category is designed primarily for private financial institutions.

Reported emission data is rounded to hundreds metrics tons. We ensure the total Scope 1, 2 and 3 amount rounds correctly and summed sub-metrics match the total. This might lead to small rounding exceptions with the sub-metrics.

Social data

Year-end headcount is as published in financial reporting. It should be noted however that the other social data presented in the tables represent only employees included in Nokia's central HR databases, which differs from the total headcount value as follows: in 2016 a total of 1 669 employees were not included in the central HR database (in 2015 a total of 735 employees (scope: Nokia Group, Continuing operations)).

Hiring and attrition rates are calculated against the average at month-end permanent headcounts. Number of new employee hires includes "Hire, Rehire & Convert from Contractor/External transactions activity".

Employees with permanent contracts include internal employees not having data indicating employee is on "fixed term" contract or a trainee.

The definition of line manager is a manager with one or more subordinates. Nokia's executive management board is the Group Leadership team.

Training and education data is obtained from the NokiaEDU department, which covers former Nokia Academy and ALU University. Training provided for externals is not included in the employee-related numbers but reported separately. One training day includes 7 training hours. Average number of all training hours per employee also includes training

arranged by Business Groups or external parties, and training records approved by a line manager.

Mobility data is obtained from HR department's databases and includes long-term assignments.

Occupational health and safety data is obtained from the Health, Safety, Security and Environment (HSSE) department and the indicator name defines, whether the data covers Nokia employees and/or contractors and subcontractors. Cut-off day of incident reporting is in early January (6th January for 2016, 12th January for 2015). There can be some cases, especially from contractors, reported after the cut-off day. Nokia's HSSE organization puts most effort on prevention of critical and fatal incidents and we realize lost-time incidents data may not be as accurate as the aforementioned data.

Ethics data

Data on reported concerns and investigations are obtained from the Ethics and Compliance Investigation (ECI) team as recorded in the Case Management Tools, and included to the best of the team's knowledge. In 2016, there was one integrated ECI team for the combined company, but case management systems and reporting channels were kept separate for Nokia and former Alcatel-Lucent for the year 2016.

Supply chain data

Data on audits and supplier assessments is obtained from Procurement Quality Office. The EcoVadis platform is utilized in metrics related to EcoVadis assessments and the CDP platform related to climate change management. Conflict-free smelter information is reported through Conflict Minerals Reporting Template (CMRT), consolidated to Master Template and compared against Conflict-Free Sourcing Initiative's audit programme lists.

Environmental data

Greenhouse gas emissions

	2014		2015		2016		YoY (Combined company 2015-2016)*	2016 data assured	Notes
	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations				
Total GHG Scope 1 (Direct emissions from facilities and mobile sources) (tonnes CO2e)	9 300	124 400	18 500	177 300	185 600	5 %	✓		2
Emissions from Nokia facilities									3
Emissions of GHGs from fuel combustion in facilities	4 200	36 300	2 400	32 300	29 900	-7 %	✓		4
Emissions from Hydro-Fluoro-Carbon (HFC) refrigerants	5 100	5 700	3 400	6 200	1 400	-77 %	✓		
Emissions of GHGs from manufacturing, R&D and product development	-	100	-	500	33	-94 %	✓		5
Emissions from fire suppression system losses	-	1	-	400	1	-100 %	✓		5
Emissions from Nokia fleet									
Emissions from fuel combustion in car fleet	-	-	12 700	44 900	36 300	-19 %	✓		7
Emissions from fuel combustion in marine fleet	0	82 300	0	93 000	117 900	27 %	✓		8
GHG Scope 2 (Indirect emissions from purchased electricity and heat), Market-based (tonnes CO2e)	188 200	554 600	155 200	502 000	432 800	-14 %	✓		2, 25, 26
Emissions from purchased electricity	178 500	539 500	145 800	486 600	418 800	-14 %	✓		
Emissions from purchased cooling	3 400	3 400	3 100	3 100	3 300	6 %	✓		
Emissions from purchased heating	6 300	11 700	6 300	12 300	10 700	-13 %	✓		
GHG Scope 2 (Indirect emissions from purchased electricity and heat), Location-based (tonnes CO2e)	239 600	599 800	219 300	560 000	488 500	-13 %	✓		2,6, 25, 26
Emissions from purchased electricity	229 900	584 700	209 900	544 500	474 500	-13 %	✓		
Emissions from purchased cooling	3 400	3 400	3 100	3 100	3 300	6 %	✓		
Emissions from purchased heating	6 300	11 700	6 300	12 300	10 700	-13 %	✓		
Total Scope 1 and 2 GHG emissions, Market-based (tonnes CO2e)	197 500	679 000	173 700	679 300	618 400	-9 %	✓		1, 25
Total Scope 1 and 2 GHG emissions, Location-based (tonnes CO2e)	248 900	724 200	237 800	737 200	674 100	-9 %	✓		25

Environmental data

Greenhouse gas emissions

	2014		2015		2016		YoY (Combined company 2015-2016)*	2016 data assured	Notes
	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations				
GHG Scope 3, Indirect emissions	-	-	-	-	45 601 000				27
Emissions from purchased goods and services	2 700 000	-	2 500 000	-	1 725 900				9, 10
Emissions from upstream transportation and distribution	292 600	404 200	133 400	221 300	268 400	21 %	✓		2, 9
Emissions from capital goods	196 600	375 700	220 500	462 400	408 700	-12 %			
Emissions from business air travel	62 000	135 600	55 000	112 100	113 300	1 %			11
Emissions from employee commuting	70 000	185 700	83 500	159 000	154 700	-3 %			12
Emissions from use of sold products	-	41 210 000	-	-	42 930 000		✓		9, 24
Total Scope 1, 2 and 3 GHG emissions, Location-based	-	-	-	-	46 275 100				25, 27
Total Scope 1, 2 and 3 GHG emissions, Market-based	-	-	-	-	46 219 400				25, 27
GHG intensities and miscellaneous GHG information									
Total Scope 1 and 2 GHG emissions per net sales (€ million), Market-based	17	N/A	14	26	26	3 %			
Total Scope 1 and 2 GHG emissions per net sales (€ million), Location-based	20	N/A	19	28	29	3 %			
Car fleet CO2e/vehicle km	-	-	-	150	139	-8 %			
Emissions avoided due to purchased renewable electricity	57 000	62 200	68 300	72 700	62 800	-14 %			
Biologically sequestered carbon	0	0	0	0	0				13

Environmental data

Environmental data	2014		2015		2016		YoY (Combined company 2015-2016)*	2016 data assured	Notes
	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations				
Other air emissions (metric tonnes)									
Ozone Depleting Substances (ODS), as ODP	0,02	0,03	0,03	0,04	0,01	-69%			
Criteria air pollutants	-	56,9	-	53,3	46,8	-12 %			
Volatile Organic Compounds (VOC) emissions	-	1,5	-	1,4	1,2	-10 %		14	
NOx	-	28,1	-	25,9	22,8	-12 %			
SOx	-	2,1	-	3,4	2,4	-29 %			
Total Particulate Matter (PM) emissions	-	2,2	-	2,1	1,9	-13 %			
Other criteria air contaminants	-	22,9	-	20,5	18,5	-10 %			

Energy consumption

"Energy consumption in Nokia facilities (GWh) (1 GWh = 3 600 GJ) "								2
Electricity, total	448	1 225	414	1 138	1034	-9 %	✓	26
Heating, total	28	51	28	54	47	-13 %	✓	26
Cooling, total	6	7	6	6	6	6 %	✓	26
Fossil gas, total	23	166	12	149	138	-8 %	✓	26
Fossil oil, total	0,4	23	0,5	19	17	-10 %	✓	
Biofuel, total	6	6	6	6	3	-42 %	✓	
Facilities' energy, total (GWh)	511	1 478	467	1373	1246	-9 %	✓	
Direct energy	29	195	19	174	158	-9 %	✓	
Indirect energy	482	1 283	448	1198	1088	-9 %	✓	
Renewable electricity	200	225	206	228	213	-7 %		
Renewable electricity share of total electricity (%)	45 %	18 %	50 %	20 %	21 %	3 %	✓	
Total energy per net sales (MWh/€ million)	43	N/A	37	52	53	2 %		

Environmental data

Energy consumption

Energy consumption in Nokia fleet (GWh)							15
Marine fleet (Fossil oil use)	-	314	-	355	450	27 %	
Energy consumption outside of Nokia (GWh)							
Energy consumption of the sold products	-	78 500	-	-	81770		9, 24

Water consumption

Total water withdrawal (thousands m3)	1 070	2 993	787	2 623	3 158	20 %	✓	2, 16, 17
Total water withdrawal per employee (m3)	20	26	13	22	28	28 %		18
Water withdrawal by source (%)								
Municipal water supply	100 %	100 %	100 %	100 %	100 %	0 %		
Recycled/reused water (thousands m3)	11	11	11	11	23	117 %	✓	
Recycling/reuse % of total withdrawal	1,0 %	0,4 %	1,3 %	0,4 %	0,7 %	81 %	✓	
Total water use (thousands m3)	1 081	3 004	798	2 634	3 181	21%	✓	

Waste and recycling

Waste and recycling within Nokia (metric tonnes)								2, 19
Total waste	17 000	38 400	13 100	24 900	28 400	14 %	✓	
Reuse	1 600	1 800	2 200	2300	2 200	-2 %	✓	
Recycle	12 200	29 400	8 200	17200	19 400	13 %	✓	20
Energy recovery	2 400	2 400	1 800	1800	3 200	84 %	✓	20
Landfill	800	3 300	900	2900	2 800	-4 %	✓	
Incineration without energy recovery	0	1 500	0	700	800	0 %	✓	21
Total waste per employee (kg)	324	330	217	209	254	22 %		18
Total non-hazardous waste	16 400	33 100	12 700	22 000	24 800	13 %	✓	
Total hazardous waste	600	5 300	400	2900	3 600	22 %	✓	

Environmental data

Environmental data	2014		2015		2016		2016 data assured	Notes
	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	YoY (Combined company 2015-2016)*		
Waste and recycling								
Electronic waste from facilities	500	4 600	400	2 400	3 300	35 %		
Other hazardous waste	100	700	<50	500	300	-42 %		
Utilisation rate %	95 %	88 %	93 %	86 %	87 %	3 %		
Product end-of-life treatment (metric tonnes)								9, 22
Weight of equipment returned from customers for recycling	1710	3120	1670	3620	2450	-32 %		20
Weight of equipment returned from customers incinerated with energy recovery	90	90	90	90	140	56 %		20
Weight of equipment from customers sent to landfill	40	130	30	170	70	-56 %		
Number of returned equipment items reused/remanufactured	15 900	75 900	24 100	109 300	85 800	-22 %		
Weight of packaging materials reused in distribution hubs (metric tonnes)	2 400		2 500		2 300			9, 23

Environmental data

Notes

"-" means we do not have data available for that particular year or scope. N/A means this metric is not applicable for that scope, e.g. there is no net sales counted for Combined comparable company for 2014 .

* YoY (Combined company 2015-2016): comparison between year 2016 Nokia Group and 2015 Combined comparable company, where it was feasible to calculate 2015 data for Combined comparable company with comparable methodology

1. Due to updated renewable energy information associated with former Alcatel-Lucent activities for 2015, the 2015-2016 comparison was updated from -10% to -9% after the previous value was published in Nokia's Annual Report 2016
2. 2014-2015 values for Nokia Group continuing operations recalculated with a methodology aligned for combined company in 2016. See Reporting principles -chapter for more details.
3. Former Nokia calculated facility Scope 1 emissions only for stationary fuel combustion and HFCs in 2014-2015.
4. Update: Includes GHGs from CO₂, CH₄ and N
5. Includes all GHGs listed in Reporting principles
6. As an exception, 2014 combined company sub-metrics do not sum to total Scope 2 due to roundings.

Environmental data

Notes

7. 2015 Nokia Group value recalculated with a methodology aligned for combined company in 2016. See Reporting principles -chapter for more details.
8. 2014-2015 values recalculated to cover also vessels from ALDA Marine. See Reporting principles -chapter for more details.
9. Data covers Nokia's Networks business.
10. In 2016 we used a hybrid method for the first time, using emissions allocated for Nokia by the suppliers and as new method, also intensity based (GHG/€) allocation. See Reporting principles -chapter for more details.
11. 2015 Nokia figures recalculated to be in line with updated emission factors from EPA. 2014 figure excludes Nokia Technologies. 2014 emissions are not directly comparable as Nokia Group emissions are calculated with emission factors from GHG Protocol library and former Alcatel-Lucent values include other travel modes than air travel.
12. 2015 Nokia continuing operations figure recalculated to be in line with calculation methodology of 2016. 2014 continuing operations figure has not been recalculated, so it is not entirely comparable due to different methodology.
13. Biologically sequestered carbon (i.e. carbon dioxide emission from burning biomass/ biofuels) and emissions from fermentation are not relevant for Nokia as we do not burn or fermentate biomass or biofuels on-site. We use biogas in fuel cells in one of our offices.
14. VOC source is from fuel combustion. No significant quantities from solvents and halogenated hydrocarbon, indicator is not relevant and not consolidated.
15. Energy consumption is presented only for marine fleet, as energy consumption data from Nokia's vehicle fleet is not available.
16. No significant quantities of heavy metals discharges into water, indicator not relevant and not consolidated.
17. To account for 100% of employees, extrapolation procedures were applied. Water withdrawal in 2016 : sites with measured data account for 47% of our employees.
18. Based on average occupancy calculated from monthly site-specific occupancy statistics from facilities database. This calculation procedure results in a different value than the total headcount as of December 31 (disclosed in the Social indicators section of the report).
19. To account for 100% of employees, extrapolation procedures were applied. In 2016 waste within Nokia: sites with measured data account for 36% of our former Nokia employees and 71% of former Alcatel-Lucent employees.
20. 2014-2015 former Alcatel-Lucent data included in Combined comparable company has a combined figure for waste recycle and energy recovery and its reported under recycle.
21. Incineration without energy recovery-category includes data only from former Alcatel-Lucent sites.
22. Former Alcatel-Lucent data included in Combined comparable company includes product take-back, repairs and remanufacturing.
23. Data is available only for former Nokia sites, however excluding Nokia Technologies, which does not have significant distribution hubs.
24. Calculation methodology was updated in 2016 for the combined company and due to labor intensity only 2014 Combined comparable company value was recalculated with the new methodology. World average IEA emission factor used includes GWP only from CO₂, not other greenhouse gases.
25. Nokia uses internally market-based (not located-based) values for example in target setting and if only one value is given without further definitions, it's the market-based.
26. Facility provided data initially corrected for data-gaps. Intensity factors (kwh/m²-month) calculated to estimate usage for all non-responding sites. 100% of all sites in Real Estate Portfolio accounted for.
27. 2014-2015 total not counted due to missing comparable Scope 3 categories data.

Social and ethics data

	2014	2015		2016			
	Nokia Group continuing operations	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	YoY (Combined company 2015-2016)*	2016 data assured	Notes
Employment							
Number of employees, year-end situation	55 399	55 718	105 228	100 875	-4 %		
Share of employees with full-time contract	98 %	99 %	99 %	99 %	0 %		
Share of employees with permanent contracts	95 %	95 %	-	97 %			
Number of new employee hires	9 978	6 031	-	8 310			
Rate of new employee hires, %	19 %	11 %	-	8 %			
Total number of leavers	4 973	4 920	-	10 749			
Total attrition rate	10 %	9 %	-	11 %			
Attrition rate of voluntary leavers	6 %	6 %	-	6 %			
Percentage of open positions filled by internal candidates	-	38 %	-	42 %			8
Average length of service (in years)	-	-	-	11			
Number of expatriates worldwide	-	-	-	477			

Diversity & Equal Opportunity

Share of women within workforce	20 %	20 %	22 %	22 %	0 %		
Share of female line managers	15 %	15 %	-	17 %			
Share of women within senior management	13 %	12 %	-	14 %		✓	
Share of women on the executive management board	0 %	0 %	N/A	17 %			
Share of women in the board of directors	22% (2 of 9)	25% (2 of 8)	N/A	25% (2 of 8)			
Number of nationalities in the executive management board	5 (of 5)	4 (of 4)	N/A	8 (of 12)			
Share of non-Finnish in the executive management board	80 %	70 %	N/A	92 %			
Average age of employees at year-end	38	38	-	40			

Social and ethics data

	2014	2015		2016			
	Nokia Group continuing operations	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	YoY (Combined company 2015-2016)*	2016 data assured	Notes
Training & Education							
Total amount of training days provided by NokiaEDU to employees	194 300	163 600	278 400	259 800	-7 %		1
Total amount of training days provided by NokiaEDU to customers and suppliers	-	61 500	-	101 700			1
Average number of all training hours per employee	-	35	-	19		✓	
Percentage of instructor-led training	45 %	64 %	55 %	56 %	2 %		
Percentage of web-based training	55 %	36 %	45 %	44 %	-2 %		
Training costs of employee by NokiaEDU, € million	35	31	-	54			2
Percentage of employees with Personal Development Plan (PDP) in place	68 %	73 %	-	76 %			3
Percentage of employees that completed a performance evaluation	99 %	98 %	-	90 %			
Workplace Relations & Employee Engagement							
Share of employees responding to the engagement survey	94 %	92 %	N/A	20 %			4
Employee Engagement Index	86 %	87 %	N/A	76 %		✓	
Occupational Health & Safety							
Near miss incidents reported (including contractors)	630	428	-	303			
Lost-time incidents of employees	56	40	-	57			
Employee work related fatalities	0	0	0	0		✓	
Contractor and subcontractor work related fatalities	8	6	-	7		✓	

Social and ethics data

	2014	2015		2016			
	Nokia Group continuing operations	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	YoY (Combined company 2015-2016)*	2016 data assured	Notes
Ethics							
Total number of concerns reported	272	225	558	637	14 %	✓	5
- Fair Competition	-	1	7	2	-71 %		6
- Intellectual Property & Confidential Information	-	9	36	51	42 %		
- Conflict of Interest	-	14	31	34	10 %		
- Dealing with Government Officials	-	4	7	3	-57 %		
- Improper Payments	-	4	18	12	-33 %		
- Privacy	-	7	9	8	-11 %		
- Fair Employment	-	34	83	200	141 %		
- Controllership	-	58	100	119	19 %		
- Guidance	-	68	141	120	-15 %		7
- Health, Safety & Labor Conditions	-	6	90	60	-33 %		
- Human Rights	-	2	2	0	-100 %		
- Working with Suppliers	-	16	20	25	25 %		
- Trade Compliance	-	2	4	0	-100 %		
- Other	-	0	10	3	-70 %		
Number of investigations by the Ethics & Compliance Office	152	124	257	228	-11 %	✓	
Number of allegations substantiated with "cause found"	-	51	141	86	-39 %		
Number of employees given a verbal counselling related to Code of Conduct	-	32	54	11	-80 %		
Number of employees given a written warning on grounds of violation of Code of Conduct	7	18	38	40	5 %		
Number of employees dismissed on grounds of a violation of the code of conduct	22	62	77	17	-78 %		

Social and ethics data

Notes

N/A means this metric is not applicable for that scope. "-" means we do not have data available for that particular year or scope.

* YoY (Combined company 2015-2016): comparison between year 2016 Nokia Group and 2015 Combined comparable company, where it was feasible to calculate 2015 data for Combined comparable company with comparable methodology. Comparison calculations are done with non-rounded values.

commitment to protecting employee anonymity during feedback we cannot prove that each round saw unique respondents, though we are more than satisfied that reaching 20% of the population over 5 survey rounds easily exceeds the necessary levels for statistical representation and more over provides a more accurate window into how our employees were experiencing cultural cohesion and engagement during a year of change.

1. For the 2015 combined comparable figure, NokiaEDU covers legacy Nokia Academy and ALU University.
2. NokiaEDU was until 2015 called Nokia Academy. In addition to Nokia Academy costs, 2014-2015 costs include also Nokia Technologies overall training costs.
3. The 2016 figure covers only former Nokia.
4. In 2016 Nokia switched from the annual Employee Engagement Survey, a census style deployment, to the more focused approach of the Culture Cohesion Tracker (CCT). The CCT had a drastically reduced content and so was deployed five times in 2016, in place of the EES "one-round" approach in 2015. Due to Nokia's
5. All 2014 ethics numbers are excluding Nokia Technologies
6. Grouping of enquiry types was different in 2014 and can be seen in Nokia's People & Planet Report 2014, at http://www.nokia.com/en_int/about-us/sustainability/downloads/report-archive
7. Includes also category: Guidance-Investigation
8. 2015-2016 data are not fully comparable due to methodology change. 2016 data is from recruitment department.

Supply chain management data

	2014		2015		2016		YoY (Combined company 2015-2016)*	2016 data assured	Notes
	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	Comparable combined company			
Number of Corporate Responsibility on-site audits (focused on labor conditions and environment) against Nokia Supplier Requirements and SA8000	23	29	16	20	45		125 %	✓	1
Number of on-site system audits against Nokia Supplier Requirements	25	56	24	45	39		-13 %	✓	1, 2
Health & Safety assessments	-	71	-	59	382		547 %		1, 3
Number of suppliers assessed on Corporate Responsibility in EcoVadis Sustainable Supply Management platform	107	297	155	376	306		-19 %	✓	1
Percentage of active suppliers rated “satisfactory” or above on their assessment of sustainability by EcoVadis	-	-	61 %	-	70 %			✓	1
Number of suppliers assessed on their climate change impact based on their CDP reporting for Nokia	141	-	180	-	243				1
Number of suppliers that set GHG emission reduction targets (in CDP)	71	-	92	-	127			✓	1
Number of suppliers participating in Nokia sustainability workshops and webinars	183	-	159	-	238				1
Number of management-level supplier employees participating in Nokia sustainability workshops and webinars	256	-	208	-					1
Share of smelters that have been validated as conflict-free or are active in the validation process (out of known smelters in Nokia’s supply chain), %	73 %	-	83 %	84 %	84 %		0 %	✓	1, 4

Supply chain management data

Notes

N/A means this metric is not applicable for that scope. "-" means we do not have data available for that particular year or scope.

* YoY (Combined company 2015-2016): comparison between year 2016 Nokia Group and 2015 Combined comparable company, where it was feasible to calculate 2015 data for Combined comparable company with comparable methodology. Comparison calculations are done with non-rounded values.

1. All supply chain management data for Nokia Continuing Operations covers only Nokia's networks business.
2. Comparable company data includes former Alcatel-Lucent on-site system audits done against Alcatel-Lucent supplier requirements.
3. Comparable combined company values include data only from former Alcatel-Lucent
4. 2015 Comparable combined company value counted as average from Nokia and former Alcatel-Lucent figures

Financial data

	2014	2015		2016		
	Nokia Group continuing operations	Nokia Group continuing operations	Comparable combined company	Nokia Group continuing operations	2016 data assured	Notes
Net sales (EURm)	11 762	12 499	26 606	23 614	✓	1
Operating profit /loss (EURm)	1 414	1 697	2 887	-1 100	✓	2, 3
Spending in R&D (EURm)	1 904	2 080	-	4 904	✓	3

Notes

1. Combined company historicals reflect Nokia's new operating and financial reporting structure, including Alcatel-Lucent, and are presented as additional information as described in the stock exchange release published on April 22, 2016. These values are non-IFRS.
2. Included in the audited financial statements. Please see Auditor's Report from page 212 onwards in the "Nokia in 2016" Annual Report
3. In 2016, following the Acquisition of Alcatel Lucent, the Group adopted a new financial reporting structure which resulted in changes to allocation and presentation principles of certain costs. Comparatives for 2015 and 2014 have been recasted to reflect the new financial reporting structure.

Independent practitioner's assurance report

Our key sustainability indicators have been assured by an independent auditor, PricewaterhouseCoopers Oy.

Independent Practitioner's Assurance Report

To the Management of Nokia Corporation

We have been engaged by the Management of Nokia Corporation (business identity code 0112038-9, hereinafter also "the Company") to perform a limited assurance engagement on selected Nokia Corporation's sustainability information for the reporting period 1 January 2016 to 31 December 2016 as set out in Nokia Corporation's People & Planet Report 2016 on the Company's website (hereinafter "the Selected sustainability information").

Selected sustainability information

The scope of our work was limited to assurance over the information summarised below. The information covers Nokia Group (Continuing operations), as indicated in the People & Planet Report 2016. We have not been engaged to provide assurance on any information relating to prior reporting periods or to any other information in the People & Planet Report 2016.

Environmental indicators:

- Scope 1 greenhouse gas (GHG) emissions from facilities, by greenhouse gases (metric tons CO₂e)
- Scope 1 GHG emissions from mobile sources (metric tons CO₂e)
- Scope 2 GHG emissions, market based and location based (metric tons CO₂e)
- Scope 3 GHG emissions: upstream transportation and distribution (metric tons CO₂e)
- Scope 3 GHG emissions: use of sold products (tonnes CO₂e)

- Energy consumption within Nokia, by types of energy (GWh)
- Renewable electricity amount (GWh) and portion of total electricity consumption (%)
- Energy consumption of sold products (GWh)
- Water withdrawal in facilities (m³) and recycling/reuse (%)
- Waste amounts by disposal methods (metric tons) and utilisation rate (%), within Nokia
- Improved energy efficiency of two products (Case: Photonic Services Switch 1830 PSS-24x. Case: Surepay solution)
- Energy savings achieved in 2016 due to network modernisation (MWh)

Social indicators:

- Number of work related employee fatalities and number of work related contractor and subcontractor fatalities
- Number of ethical concerns reported
- Employee Engagement (%)
- Progress against target of "Establish a firm understanding for Nokia's culture and vision" (utilizing cultural cohesion -metric on Culture Cohesion Tracker CCT) (%)
- Training hours per employee
- Share of women within senior management (%)
- Number of leaders and managers trained in Gender Balance
- Progress in implementing the Guiding Principles of the Telecommunications Industry Dialogue (ID)

Improving people's lives indicators:

- Number of subscriptions served by Nokia's radio networks customers
- Number of Nokia's Corporate Community Investment (CCI) programs and € of CCI contributions

Supplier indicators:

- Share of smelters that have been validated as conflict-free or are active in the validation process (out of known smelters in Nokia's supply chain) (%)
- Number of suppliers that set GHG emission reduction targets (in CDP)
- Number of system audits against Nokia Supplier Requirements
- Number of Corporate Responsibility on-site audits (focused on labor conditions and environment)
- Number of suppliers assessed on Corporate Responsibility in EcoVadis Sustainable Supply Management platform and % of suppliers with a satisfactory performance level (score ≥ 45/100)
- Number of forced labor non-compliance instances from supplier audits
- Number of child labor incidents

Management's responsibility

The Management of Nokia Corporation is responsible for preparing the Selected sustainability information in accordance with the reporting criteria as set out in the Company's own documented standards and GHG Protocol (hereinafter "the Reporting criteria"). The Management of Nokia Corporation is also responsible for such internal control as the management determines is necessary to enable the preparation of Selected sustainability information that is free from material misstatement, whether due to fraud or error.

Practitioner's independence and quality control

We have complied with the independence and other ethical requirements of the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

PricewaterhouseCoopers Oy applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Practitioner's responsibility

Our responsibility is to express a limited assurance conclusion on the Selected sustainability information based on the procedures we have performed and the evidence we have obtained.

We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised) "Assurance Engagements Other than Audits or Reviews of Historical Financial Information". That standard requires that we plan and perform the engagement to obtain limited assurance about whether the Selected sustainability information is free from material misstatement.

In a limited assurance engagement the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement. An assurance engagement involves performing procedures to obtain evidence about the amounts and other disclosures in the Selected sustainability information. The procedures selected depend on the practitioner's judgement, including an assessment of the risks of material misstatement of the Selected sustainability information.

Our work consisted of, amongst others, the following procedures:

- Interviewing senior management of the Company.
- Visiting the Company's Head Office as well as two sites in Belgium and Poland.
- Conducting a web conference with one site in the United States.
- Interviewing employees responsible for collecting and reporting the Selected sustainability information at the group level as well as at the site level.
- Assessing how group employees apply the

reporting standards and procedures of the Company.

- Testing the accuracy and completeness of the information from original documents and systems on a sample basis.
- Testing the consolidation of information and performing recalculations on a sample basis.

Limited assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that Nokia Corporation's Selected sustainability information for the reporting period ended 31 December 2016 is not properly prepared, in all material respects, in accordance with the Reporting criteria.

When reading our assurance report, the inherent limitations to the accuracy and completeness of sustainability information should be taken into consideration.

Our assurance report has been prepared in accordance with the terms of our engagement. We do not accept, or assume responsibility to anyone else, except to Nokia Corporation for our work, for this report, or for the conclusions that we have reached.

Helsinki 19 May 2017

PricewaterhouseCoopers Oy

Heikki Lassila
Authorised Public Accountant (KHT)

Maj-Lis Steiner
Authorised Public Accountant (KHT)



Find out more about sustainability at Nokia and download our reports
nokia.com/people&planet