Observations for a better world

Annual report 2019

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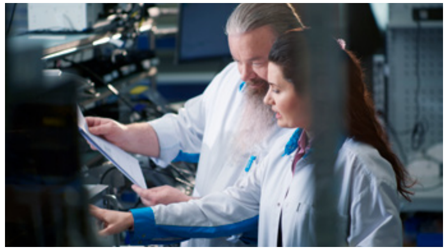

About this report: In its annual report, Vaisala applies the Integrated Reporting Framework, as defined by the International Integrated Reporting Council (IIRC). The primary purpose of an Integrated Report is to describe how a company creates value over time. We started our work towards this goal in 2016: this Vaisala annual report is the fourth one to apply the international <IR> Framework. Our aim is to develop our operations through exploring the different types of value Vaisala creates for its stakeholders. Thus, this comprehensive report includes information about Vaisala's sustainability, governance and financials, as well as value creation. Vaisala has published standalone sustainability reports since 2008.

This report caters also to those who gather data from GRI (Global Reporting Initiative) reports. You can find the GRI content index at the end of the Sustainable business practices section together with an Independent assurance report. Disclosure of non-financial information in accordance with Finnish Accounting Act chapter 3 a is presented in the Sustainable business practices section as well as in the Business model and Dashboard chapters included in the Creating value section and the Risk management chapter included in the Governance section.

How to navigate this report

Read more about this topic

Vaisala in brief

Vaisala is a global leader in weather, environmental, and industrial measurement. Building on over 80 years of experience, Vaisala provides its customers with reliable measurement solutions and services for better decision-making, safety, and efficiency. Vaisala is headquartered in Finland, and Vaisala's A shares are listed on the Nasdaq Helsinki stock exchange.

Key figures for 2019

403.6 net sales MEUR

41.1 operating result MEUR

1,800+ employees

30+ offices

18 countries

Business areas

Weather and Environment

Weather and Environment business area serves selected weather-dependent markets where accurate, real-time, uninterrupted, and reliable weather data is essential to run efficient operations.

Main markets: meteorology, aviation, ground transportation, and renewable energy

Industrial Measurements

Industrial Measurements business area serves a wide range of industrial customers. It offers a broad range of accurate and reliable measurement instruments that help our customers optimize their processes, improve efficiency, minimize energy consumption, and ensure the high quality of their end products.

Main markets: high-end humidity and carbon dioxide measurements, continuous monitoring systems, power, and high-end liquid measurements

65% Weather and Environment business area 261.3 MEUR

35% Industrial Measurements business area 142.3 MEUR

Our year

A year of sustainable innovations and growth

Creating observations for a better world through science-based and sustainable innovations has always been at the core of Vaisala. In 2019, we continued our work addressing the most pressing environmental and societal challenges of our time.

Climate change is undeniably a key global challenge today, making Vaisala's science-based innovations ever more relevant. Operating since 1936, we are committed to creating solutions that help tackle many of the most crucial challenges of our time. We do this by providing reliable, accurate, and high-quality means to observe and act on weather and environmental phenomena and their impacts as well as developing more sustainable industrial processes.

Visible outcomes of the changing climate are the increasing extreme weather events, Hurricane Dorian being one key example from the past year. In 2016, the Bahamas decided to invest in a new meteorology network by Vaisala to improve its weather forecasting capabilities. As Dorian struck in September 2019, Vaisala's solutions aided the island nation in sending out accurate and timely alerts. Thanks to these alerts, thousands of people were able to seek shelter in time.

Vaisala has similar capacity building projects ongoing in Vietnam and soon also in Ethiopia. In October, we signed a new and important contract for a project that will bring better weather services to the


Raimo Voipio, Chairman of the Board of Directors, and Kjell Forsén, President and CEO

Ethiopian people and accelerate local economic growth in important weather-sensitive sectors. The project is estimated to start in 2020 and run for two years.

Through our work, we address also several other global megatrends, such as urbanization, digitalization, well-being and health, as well as resource efficiency and circular economy. Here our industrial measurement business plays a key role. With our industrial solutions, customers gain better visibility into their processes and thus are able to save energy and natural resources, improve quality and productivity, and reduce waste.

Sustainability at the core of Vaisala's business

In addition to our commitment to the UN Global Compact, we have identified and committed ourselves to the UN Sustainable Development Goals that hold the highest relevancy for Vaisala. Our business is entwined with most of the goals, as the contribution of our products and solutions reaches from incubators at hospitals to optimizing processes, measuring air quality, and enabling safe transportation on the ground, at sea, and in the air. Going forward, we want to strengthen this linkage and work actively to reach the goals. Furthermore, our customers can develop the sustainability of their own operations with the help of our products.

The UN Sustainable Development Goals are also important in our own operations and business practices, where we aim to adhere to the highest standards of sustainability. We monitor and address topics ranging from energy efficiency to the environmental footprint of our products. We are also committed to respecting human rights, promoting diversity and equality, ensuring occupational health and safety, and preventing corruption, both in our own operations and in our global partner network.

Excellent year 2019 for Vaisala across businesses and markets

2019 was a great year for Vaisala. All business areas and geographic markets performed well and many also above our expectations.

In addition to good organic growth, we saw the first positive results from the acquisitions made in late 2018. Both the French

> With the increasing requirements for transparency and thorough understanding of the world's pressing phenomena, it is becoming more important than ever to base decisions of verifiable, comparable, and accurate data.

Leosphere, supplying remote wind sensing lidar instruments, and the Finnish K-Patents, a leader in liquid measurements, contributed to our growth and opened up many new business opportunities.

Vaisala has been a pioneer in science-based innovations throughout its history, and we continued on this path in 2019, bringing new products to the market. A key highlight of the year came in January, as we launched the world's first in situ 3-in-1 biogas measurement instrument for measuring methane, carbon dioxide, and humidity in demanding environments. The launch marked a new market entry for us and expands our expertise into the field of biogas measurements.

In 2019, we also stepped up our efforts in the digital sphere. In August, we added an important piece to our digital puzzle by acquiring the professional business-to-business weather services from the Finnish weather forecast services company Foreca. Going forward, we will focus on developing digital solutions for transportation, renewable energy, lightning, and data-driven operations, supporting customers in making reliable decisions in weather-critical operations.

To ensure the best possible environment for state-of-the-art research and innovation, we have invested into building new premises in connection with our head office in Vantaa, Finland. During the year, the construction work of our new R&D building proceeded well, and we look forward to finalizing the new premises towards the end of 2020.

Increasing demand for reliable measurements opens opportunities for growth

Throughout our history, Vaisala has been a key link in the chain for a well-functioning and safe society. With the increasing requirements for transparency and thorough understanding of the world's pressing phenomena, it is becoming more important than ever to base decisions on verifiable, comparable, and accurate data.

At Vaisala, we aim to build upon our position as the global market leader providing the world's most accurate and reliable measurements. We are committed to keeping up our high investments into research and innovation and working actively with our partners and the scientific community to find new solutions to make our planet safe and sustainable for generations to come.

We would like to sincerely thank our employees, customers, partners, and other stakeholders for their valuable contribution and close collaboration in 2019. Already for 83 years, Vaisala has been working towards its mission to create observations for a better world, and we look forward to continuing this journey together with you in the year 2020 and beyond.

Raimo Voipio

Raimo Voipio
Chairman of the
Board of Directors

Kjell Forsén

Kjell Forsén
President
and CEO

Highlights of the year

Q1

We launched a groundbreaking solution for the biogas industry. Vaisala MGP261 is the world's first instrument that measures methane, carbon dioxide, and humidity inside biogas process line.

Read more on page 39 and vaisala.com/annualreport

We signed a contract of approximately 15 million euros with the Argentine Air Navigation Service Provider (EANA). We equip 31 airports in Argentina with AviMet® Automated Weather Observing Systems (AWOS), including Runway Visual Range Systems.

Read more on page 32 and vaisala.com/annualreport

Vaisala's viewLinc monitoring system received the international Quality Innovation Award for its usability and reliable system design which utilizes the latest technologies in an innovative way.

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We started the deliveries of 13 next-generation Vaisala AUTOSONDE® AS41 automatic sounding systems to the Australian Bureau of Meteorology, which is the world's largest single order of such systems. Later in the year, we received an additional order of 12 more systems.

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Q2

We expanded our weather radar offering, announcing the development of an advanced X-band Weather Radar. The new radar provides highly accurate measurements for a limited area, filling in a gap in a national radar network or delivering precise information for an airport.

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We merited five of our suppliers with Supplier Awards in six categories. The awards were given out in the two-day Supplier Day 2019 event. The awarded suppliers were DHL Express Finland, Enics, PakkausÖhman, Plastoco, and Scanfil.

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Q3

We acquired the professional B2B weather services from the Finnish weather forecast services company Foreca Oy. The business was transferred to the renewed Vaisala Digital business line, serving weather-critical professional customers in transportation, energy, and industry segments.

Read more on page 38 and vaisala.com/annualreport

September 28, 2019 marked the 130th birthday of Vaisala's founder Professor Vilho Väisälä. To honor the day, we donated 130 Heureka Science Centre tickets to disadvantaged children in order to inspire curious youngsters into the field of science.

Read more on page 44 and vaisala.com/annualreport

Q4

We added potential for smart industries by bringing new smart probes for industrial needs. The six new probes DMP5, DMP6, DMP7, DMP8, MMP8, and HMP3 complement Vaisala's modular Indigo product family. The new products measure dew point and moisture in oil, providing customers with opportunities to save energy, optimize their processes, and improve product quality.

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We informed that Vaisala will modernize Ethiopia's weather and climate observation and forecasting systems, helping Ethiopia improve its weather services and adapt to the impacts of climate change. The value of the project is 13 million euros.

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Creating value

Observations for a better world

Our customer value is built on reliability, science-based technology leadership, industry expertise, engaged and talented employees, as well as strong partnerships. We drive excellence also in the future by focusing on great leadership, continuous learning, and Lean thinking.

Weather and Environment
Global leadership based on best products and solutions

Industrial Measurements
Growth through product leadership

We drive excellence in high-mix, low-volume businesses.

We build our success on

- Reliability
Application expertise
- Science-based technology leadership
- Engaged & talented people
- Vaisala Production System
- Strong financial position
Partnerships
- Sustainability

Our values guide us

Customer focus
We strive for deep understanding of our customers' needs and aim at meeting them in everything we do.

Innovation and renewal
We embrace pioneering innovation and drive change through continuous improvement and learning.

Strong together
We excel by sharing, learning, and working together with each other and our stakeholders.

Integrity
We are honest, respectful, and reliable. We promote sustainable and ethical behavior.

Business model

Partners

- Key customers
- Meteorological institutes
- Distributors
- R&D partners
- Universities and research organizations
- Manufacturing partners
- Suppliers and sub-contractors

Activities

- Research and development
- Sales and marketing
- Sensor production
- Manufacturing

Delivery models

1. Product shipments
2. System projects, including installations, testing, and training
3. Services, including calibration, maintenance, and digital solutions

Products and technologies

- Large product portfolio based on proprietary leading technologies
- Measurement sensors and instruments, systems, software, digital solutions and services for measuring weather, environment, and industrial conditions and processes

- **300** product families*
- Thin-film humidity sensors, infrared gas sensors, optical liquid sensors, optical weather and process sensors, and radio frequency technologies

*Our 300 product families include approximately 9,000 products.

Cost structure

- R&D investment 13.1% of net sales
- Personnel costs EUR 157.7 million
- Material costs EUR 111.6 million
- Asset-light business model
- Capital expenditure EUR 27 million

VAISALA

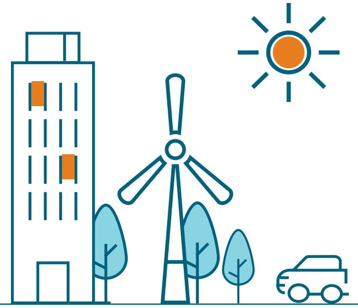
Value propositions

Reliable, high-quality measurements and observations for decision-making, safety, and efficiency

Global technology and market leader in weather and industrial measurements

Excellence in high-mix, low-volume businesses

Solid dividend payer



Resources

- Application expertise
- Engaged and talented people
- Vaisala Production System
- In-house cleanroom
- Science-based technology leadership
- Strong financial position

Sales channel

Direct global sales

- Sales personnel in **18** countries
- E-commerce

Distribution network

- Distributors and agents in over **100** countries
- Retailers

Customers in over **150** countries

Revenue streams

Products: 69% of total sales
Projects: 18% of total sales
Services: 13% of total sales

Net sales MEUR 403.6
EBIT MEUR 41.1

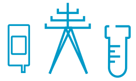
AMERICAS 37%
APAC 30%
EMEA 33%

Customer segments

Wide customer base covering public and private sector customers

WEATHER AND ENVIRONMENT

Meteorology
Aviation
Ground transportation
Renewable energy



INDUSTRIAL MEASUREMENTS

High-end humidity and
high-end carbon dioxide
Continuous monitoring systems
Power
High-end liquid measurements

Value creation model

We create value in continuous interaction with our stakeholders. The focus of our value creation is to provide our customers with solutions that help them make reliable decisions and improve their productivity and processes in the areas of weather and environment as well as industrial measurements. This way we are also able to have an impact on current challenges, related to different megatrends, and contribute to the United Nations' Sustainable Development Goals by increasing awareness, resource efficiency, and safety in societies.

Our fundamentals

RELIABILITY

APPLICATION EXPERTISE

SCIENCE-BASED TECHNOLOGY LEADERSHIP

ENGAGED AND TALENTED PEOPLE

VAISALA PRODUCTION SYSTEM

STRONG FINANCIAL POSITION

PARTNERSHIPS

SUSTAINABILITY

Value created

Customers
Reliable decisions, productivity, quality

Society and environment
Direct impact: Economic value, collaboration in the scientific community, active community outreach
Indirect impact: Better-informed societies, resource efficiency, safety

Employees
Purposeful work, well-being, learning

Investors
Responsible returns

Dashboard

Our fundamentals	Topic	Performance 2019	Target
Reliability Vaisala Production System Partnerships	On-time delivery accuracy*	94.8% (94.5%)	96%
	Product and delivery nonconformity rate	1.7% (1.2%)	Continuous reduction
Engaged and talented people	Employee engagement index	4.12/5 (4.05/5)	> 4.00/5
	Learning index	3.84/5 (3.84/5)	> 4.00/5
Science-based technology leadership Application expertise	R&D investments, % of net sales	13.1% (13.0%)	Over 10% of net sales
Strong financial position	Net sales growth year-on-year	16% (5%)	> 5% growth year-on-year
	EBIT % of net sales	10.2% (11.1%)	> 12%
	Return on equity (ROE)	17.7% (16.0%)	
	Earnings per share (EPS), euros	0.94 (0.82)	
Sustainability	Greenhouse gas emissions (Scope 1–3) in relation to net sales	47.1 tonnes CO_2e/MEUR (53.2 tonnes CO_2e/MEUR)	Continuous reduction
	Carbon footprint reduction, Scope 2	-90% from 2014 baseline (-90%)	> 90% by 2020
	Renewable energy of group consumption	93% (94%)	100% by 2020
	Waste recycling rate	53% (59%)	Continuous improvement
	Total recordable injuries rate (TRI)	2.6 injuries per million working hours (3.2)	Continuous reduction
	Suppliers scored for ESG metrics, % of spend	82% (93%)	Continuous improvement

* Does not include Leosphere, acquired in the fall of 2018.

UN Sustainable Development Goals

In 2019, we identified the most relevant UN Sustainable Development Goals for Vaisala. Solutions that are beneficial for society and the environment have always been at the core of our business. By integrating the goals to our strategy work, we can better assess our impacts on sustainable development and get inspiration for developing new business and sustainable business practices.

Sustainable solutions

Weather and Environment

UN Sustainable Development Goal (SDG)	The most relevant UN SDG targets for Vaisala	Vaisala's solutions	Read more
13 CLIMATE ACTION	**13.1** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries **13.3** Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning	Reliable weather measurements Weather infrastructure development/capacity building projects Measuring hurricanes with dropsondes	Megatrends: Climate change Value for society and environment: Better-informed societies, Safety
7 AFFORDABLE AND CLEAN ENERGY	**7.2** By 2030, increase substantially the share of renewable energy in the global energy mix **7.3** By 2030, double the global rate of improvement in energy efficiency	Optimizing wind and solar power production	Megatrends: Renewable energy, Smart energy production and utilization Value for customers: Reliable decisions
11 SUSTAINABLE CITIES AND COMMUNITIES	**11.2** By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all **11.6** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality	Improving safety of transport systems Air quality measurement networks	Megatrends: Resource efficiency and circular economy, Urbanization, Future of mobility, Digitalization Value for customers: Quality Value for society and environment

Industrial Measurements

UN Sustainable Development Goal (SDG)	The most relevant UN SDG targets for Vaisala	Vaisala's solutions	Read more
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**9.4** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes	Improving resource efficiency with industrial measurement solutions	Megatrends: Climate change, Resource efficiency and circular economy Value for customers: Reliable decisions, Productivity Value for society and environment: Resource efficiency
7 AFFORDABLE AND CLEAN ENERGY	**7.2** By 2030, increase substantially the share of renewable energy in the global energy mix **7.3** By 2030, double the global rate of improvement in energy efficiency	Improving energy efficiency in industrial processes Improving energy efficiency in buildings by optimizing air conditioning Biogas process optimization	Megatrends: Resource efficiency and circular economy, Renewable energy, Smart energy production and utilization, Urbanization, Digitalization Value for customers: Reliable decisions, Productivity Value for society and environment
3 GOOD HEALTH AND WELL-BEING	**3.8** Achieve universal health coverage, including financial risk protection, access to quality essential health-care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all	Monitoring of conditions in medicine manufacturing and supply chains Monitoring of conditions in hospitals and laboratories	Megatrends: Well-being and health, Digitalization Value for customers: Reliable decisions Value for society and environment: Better-informed societies

Sustainable business practices

UN Sustainable Development Goal (SDG)	The most relevant UN SDG targets for Vaisala	Vaisala's business practices	Indicators	Read more
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	**12.2** By 2030, achieve the sustainable management and efficient use of natural resources **12.4** Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil in order to minimize their adverse impacts on human health and the environment **12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse	Design for environment and long product life cycles Enabling the safe use and end-of-life processing of products Increasing the recycling rate	% of employees working on ISO 14001 certified sites Recycling rate	Environment: Environmental management, Waste, Water consumption, Products
7 AFFORDABLE AND CLEAN ENERGY	**7.2** By 2030, increase substantially the share of renewable energy in the global energy mix **7.3** By 2030, double the global rate of improvement in energy efficiency	Using renewable energy Improving energy efficiency in our facilities	% of renewable electricity Energy use and energy intensity Scope 2 emissions	Environment: Energy and emissions
13 CLIMATE ACTION	**13.3** Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning	Decreasing indirect emissions for example from commuting Raising awareness of climate change and encouraging personnel's climate friendly choices	Scope 3 emissions	Environment: Environmental management, Energy and emissions

UN Sustainable Development Goal (SDG)	The most relevant UN SDG targets for Vaisala	Vaisala's business practices	Indicators	Read more
8 DECENT WORK AND ECONOMIC GROWTH	**8.1** Sustain per capita economic growth in accordance with national circumstances **8.7** Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking, and by 2025 end child labor in all its forms **8.8** Protect labour rights and promote safe and secure working environments for all workers	Positive economic impact on communities through employment and taxes, both directly and through supply chain Upholding labor standards and occupational health and safety as well as managing human rights risks in our own operations and partner network	Economic value generated and distributed % of suppliers rated with ESG metrics and suppliers that have signed the Supplier Code of Conduct Total Recordable Injuries rate (TRI), Proactive reports, Employees in H&S committees	Value for society and environment: Economic value Ethics and compliance: Respect for human rights, Conflict minerals Responsible supply chains Occupational health and safety
10 REDUCED INEQUALITIES	**10.3** Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies, and practices and promoting appropriate legislation, policies, and action in this regard	Promoting diversity and providing equal opportunities , for example, in recruitment and development opportunities	Gender distribution (All/ Supervisor/ Management/ Board) Equality in remuneration	Personnel: Diversity, equality, and inclusiveness
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	**16.5** Substantially reduce corruption and bribery in all their forms	Ensuring compliance with our International Anti-Corruption Policy	% of employees completed the Code of Conduct training	Ethics and compliance: Prevention of corruption and bribery

Megatrends

Weather and Environment | Industrial Measurements

The global megatrends are transformational shifts that provide both a source for inspiration and opportunities for growth for Vaisala. We constantly assess markets and technologies to find new ways to engage with these megatrends. Together with our customers, we can create solutions to the pressing societal and environmental needs and challenges posed by these trends.

CLIMATE CHANGE

Climate change increases extreme weather, for example, and creates a chain of societal, environmental, and economic effects. The importance of reliable observations and forecasts to protecting lives and infrastructure is constantly increasing due to the impacts brought on by climate change. Mitigating climate change calls for more actions from the industry to optimize processes and decrease emissions.

Vaisala's response:

Vaisala helps its customers to establish weather observation networks and build up capabilities that improve their capacity to predict extreme weather. Our aim is to help nations to become more resilient to climate change through state-of-the-art environmental observations, forecasting, and early warning systems. We also support the scientific community in its efforts to increase knowledge of climate change. Additionally, Vaisala's instruments can be used to measure soil carbon flux.

With Vaisala's measurement instruments, our industrial customers get better visibility into their processes. Measurement data enables them to make decisions that enhance the efficiency of production processes as well as decrease emissions and thus also the carbon footprint of end-products.

RESOURCE EFFICIENCY AND CIRCULAR ECONOMY

In a resource efficient business, less is more, as raw materials are used in an economical and sustainable manner. Circular economy focuses on the reuse and reintroduction of materials back into the value chain instead of turning them into waste.

Vaisala's response:

Vaisala's measurement instruments help make production processes more efficient, improve productivity, save natural resources, and decrease loss of materials in industrial processes. Our instruments are durable, have long life cycles, and enable our customers to optimize their industrial processes, resource efficiency, and end-product quality.

With Vaisala's road weather solutions, road transportation customers can plan and allocate maintenance resources, such as maintenance routes and de-icing during winter, as well as optimize the need for road network pavement repairs.

RENEWABLE ENERGY

Various forms of clean and renewable energy are becoming increasingly competitive and common as well as help mitigate climate change. The variable nature of renewable energy sources highlights the importance of site selection, real-time forecasting capabilities, and continuous monitoring as ways to ensure stable energy production.

Vaisala's response:

Vaisala's measurement technologies help developers and owners to get more out of their wind power plants. With the help of reliable measurements, our customers can select the optimal site for their wind parks, for example, as well as monitor, predict, and plan operations. Vaisala's devices can also be utilized to optimize hydroelectric power plants.

Biogas provides significant opportunities. Vaisala's measurement solution for the biogas process optimization enables customers to generate more value from waste by decreasing production costs and increasing the efficiency of the biogas plant. Vaisala's products also support hydrogen economy, helping optimize the performance of fuel cells.

SMART ENERGY PRODUCTION AND UTILIZATION

The increased global demand for energy is an inevitable result of the expanding population and growth in digitalization and industrialization. To meet the future energy needs, production and consumption of energy need to become more efficient.

Vaisala's response:

Vaisala's measurement technologies improve energy efficiency by optimizing the control of many industrial processes. We help customers in a multitude of energy intensive industries to improve their energy efficiency and operations. Additionally, for instance accurate dew point measurements optimize product quality efficiently in many drying processes. The energy efficiency of buildings can also be optimized with measurements of humidity, carbon dioxide, and temperature, as indoor air is adjusted as needed. In power production, Vaisala supports smart electricity grids with online condition monitoring of power transformers.

With Vaisala's devices and precision weather forecasts, energy demand can be assessed and anticipated, enabling further optimization of energy distribution and production.

URBANIZATION

As cities grow, the number of people subjected to the environmental conditions in urban areas continues to grow. On the other hand, the concentration of population, traffic, and industrial processes brings on changes in weather and environmental conditions, such as air quality. Air pollution is a threat to the health and well-being of people. The World Health Organization (WHO) evaluates that poor air quality causes over four million deaths annually (January 14, 2020).

Vaisala's response:

Vaisala provides reliable instruments, systems, and digital solutions to measure air quality and road weather as well as urban weather and microclimates. This helps smart cities to overcome their challenges with urbanization and make informed decisions regarding sustainability, economic growth, safety, and well-being.

As industrial automation evolves, we offer diverse and advanced measurement technologies needed in buildings as well as industrial environments and processes that require precise and constant monitoring. Such environments include, for example, smart buildings, subway networks, industrial hubs, and large manufacturing facilities.

FUTURE OF MOBILITY

Automation, digitalization, and innovative energy sources will change traffic and the modes of transportation. Autonomous vehicles require ever more accurate environmental observations. Observations and analyses on the environment and road state enhance the safety and efficiency of traffic in different conditions. At the same time, the environmental impacts of fossil fuels have increased the need to find alternatives.

Vaisala's response:

Vaisala provides solutions that combine measurement technologies, computer vision, forecasts, and open data, thus providing transportation authorities with relevant information. Based on that data, they can make informed decisions and ensure the safety and efficiency of road, rail, sea, and air transport. Also drones and autonomous vehicles, for example, depend on reliable weather data.

Vaisala's solutions also help to further develop and enhance the use of fuel cells, lithium batteries, and biogas as the energy source of vehicles.

Weather and Environment
Industrial Measurements

WELL-BEING AND HEALTH

People are increasingly interested in their health and conscious about their surrounding environments. Environmental monitoring of indoor and outdoor conditions helps to secure people's health and well-being. Authorities are also tightening requirements on the safety of medicines and pharmaceutical supply chains.

Vaisala's response:

Vaisala's solutions help to ensure safe and healthy living, working, and production conditions inside buildings. Accurate and reliable monitoring of conditions is particularly important, for example, in laboratories and hospitals as well as in the refrigerators and incubators in these buildings. Our solutions also help to monitor the conditions in pharmaceutical manufacturing and supply chains.

Vaisala's ambient air quality sensors monitor urban environments and provide data for better decision-making to improve health and quality of life.

DIGITALIZATION

Digitalization changes the behavior and operation of consumers and companies. The Internet of Things (IoT) makes it possible to connect devices through cloud services. Data can also be utilized and combined in new ways, enabling the creation of new kinds of digital services.

Vaisala's response:

Vaisala's weather observation networks provide data for governmental organizations, research organizations, and the public. Our air quality and weather sensors can be connected seamlessly to the needs of smart cities, new data sources, and IoT technologies. Vaisala's computer vision application helps to optimize road maintenance and provides accurate data for autonomous vehicles.

In industrial measurements, we provide interfaces for our customers' systems, enabling reliable data transfer between systems and smooth process control. For example in the strictly regulated pharmaceutical industry, digital records and reporting provide substantial improvements for our customers' operations. Vaisala's instruments monitor also the conditions and energy efficiency of data centers that maintain our whole digital environment.

Business areas

Vaisala provides its customers with a wide offering of products and services for better decision-making, increased productivity, and improved safety and quality.

We have decades of experience in manufacturing measurement instruments. Our instruments are used for measuring weather-related phenomena and environmental conditions in industrial processes.

Weather and Environment business area

The Weather and Environment business area drives profitability and growth through expanding its product and decision support system offering.

Main markets

Meteorology

Aviation

Ground transportation

Renewable energy

Product categories

- Radiosondes and sounding systems
- Pressure, temperature, and humidity sensors as well as wind sensors
- Visibility and present weather sensors
- Ceilometers
- Remote wind sensing instruments
- Lightning sensors
- Weather stations
- Weather radars
- Air quality sensors
- Road state sensors

Digital decision support systems for

- B2B weather services
- Transportation
- Lightning observations
- Renewable energy

Partners

- Customers
- Meteorological institutes
- Governmental organizations
- Universities
- Research organizations

Growth through expansion

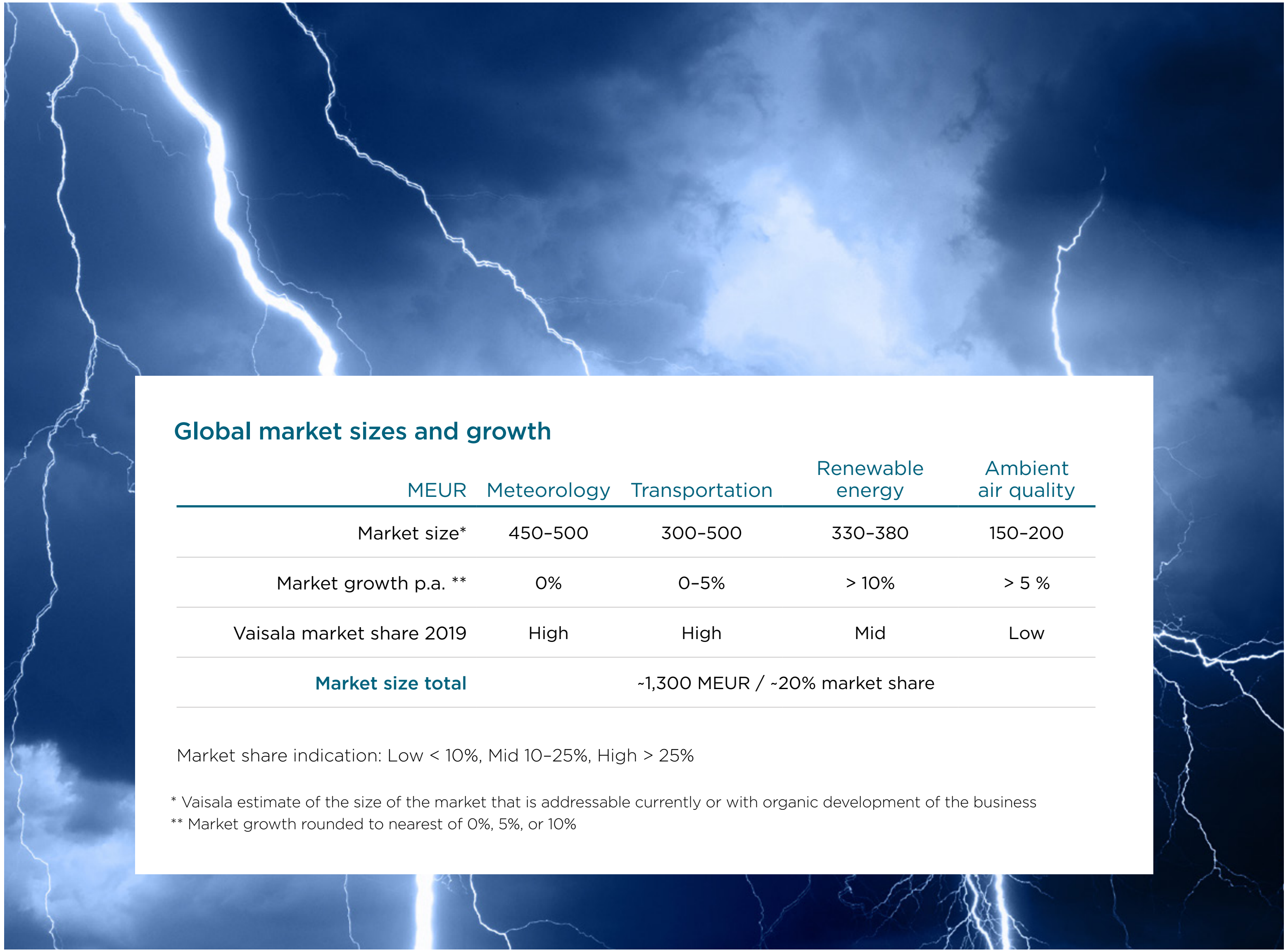
- We continue to strengthen our position as the provider of leading weather observation products.
- We drive success with large capacity building projects related to weather infrastructure development.
- We embrace digital transformation and grow our decision support system business.
- We develop new business in environmental measurements.

Competitive advantages

- Science- and research-based technology leadership combined with strong application and customer expertise
- Reliability and high customer satisfaction
- Fast, customer-configured deliveries
- Broad product and solution portfolio with global project deliveries

> Renewable energy becomes more and more competitive, and it plays an even more important role in mitigating climate change.

Jarkko Sairanen
EVP, Weather and Environment



Global market sizes and growth

MEUR	Meteorology	Transportation	Renewable energy	Ambient air quality
Market size*	450–500	300–500	330–380	150–200
Market growth p.a. **	0%	0–5%	> 10%	> 5 %
Vaisala market share 2019	High	High	Mid	Low
Market size total	~1,300 MEUR / ~20% market share			

Market share indication: Low < 10%, Mid 10–25%, High > 25%

* Vaisala estimate of the size of the market that is addressable currently or with organic development of the business
** Market growth rounded to nearest of 0%, 5%, or 10%

Changing world as the compass for our growth strategy

Vaisala's industry-leading weather observation technologies, instruments, and solutions lay the foundation for the Weather and Environment business area's strategy, enabling our customers to improve their ability to measure and forecast weather and weather phenomena.

In 2019, the implementation of the Weather and Environment business area's strategy progressed well. The order book increased significantly over the year, and the Transportation segment broke records with its largest orders of all time. In accordance with our strategy, we increased our investments in research and development compared to 2018. Large part of the growth came from remote wind sensing, as we acquired a wind lidar business at the end of 2018.

One of the main milestones of our research and development work was the announcement of an advanced X-band radar that we will bring to the market. It is ideal for airports, fills in gaps in weather radar networks located in difficult terrain, and improves reliable detection of snow, rain, and other weather events. Another milestone was the first deliveries of our Forward Scatter FD70 Series: these industry-leading instruments set new standards for measuring visibility, present weather, and precipitation. The feedback from our customers has been very positive.

Increasing importance of digital services

In the future, weather will have an even bigger impact on the movement of people and goods. Based on this, we set a new direction for our data and decision support business and established Vaisala Digital in the fall of 2019. The mission and objective of the business is to complement Vaisala's ability to provide our customers' weather-critical operations with industry-leading decision support systems, where the services work seamlessly with Vaisala's instruments. Vaisala Digital's new office in Finland is located in Keilaniemi, Espoo, which maximizes synergies with the strong software development community in the area.

To strengthen the development of Vaisala Digital, we acquired the business-to-business weather services from Foreca in August 2019. We foresee that these acquired skills bring significant opportunities to seamlessly provide authorities, contractors, and connected vehicle drivers with detailed insights of prevailing and forecasted road surface state along entire routes. Such data benefits also autonomous vehicles in the future.

Adapting to the challenges of climate change

In 2019, we significantly progressed with solutions driving sustainable development. These solutions help developing countries to better understand the risks of extreme weather events, adapt to them, and improve the weather forecasting and early warning preparedness. We have a unique and wide offering and capability to deliver system projects globally.

The project to further develop Ethiopia's weather infrastructure and weather forecasting capabilities, published in October 2019, is a great example of this. This project supports reliable observation and forecasting of local weather, thus minimizing the harms of extreme weather events and climate change. Further, this project improves the reliability of the weather-related early warning and forecasting services in Ethiopia.

Renewable energy becomes more and more competitive, and it plays an even more important role in mitigating climate change. Our remote wind sensing solutions help wind park developers and operators to optimize wind energy production. This is one of our wide-range product areas that support our customers in mitigating climate change in different fields – in accordance with Vaisala's mission "Observations for a better world".

Jarkko Sairanen
EVP, Weather and Environment

Industrial Measurements business area

The Industrial Measurements business area has a strong position in its flagship markets in high-end humidity and high-end carbon dioxide measurement offering. Industrial Measurements accelerates growth through a product leadership strategy based on continuous investment in research and development according to customer needs. The strategic priority is to achieve a strong foothold in the growth markets: power, continuous monitoring systems, and liquid measurements. Additionally, we seek to accelerate growth by identifying new growth markets.

Main markets

High-end humidity and high-end carbon dioxide measurements

High-end liquid measurements

Continuous monitoring systems

Power

Product categories

- **Industrial instruments:** The product area serves multiple industries and applications. Key products are instruments optimized for measuring high-end humidity and carbon dioxide as well as hydrogen peroxide vapor.
- **Continuous monitoring systems:** The most important applications for the product category are strictly regulated GxP environments, such as laboratories, cleanrooms, and warehouses. The product category provides instruments for measuring temperature, humidity, carbon dioxide, dew point, differential pressure, and other critical parameters.
- **Liquid measurements:** The core industries for this product category are, for example, the semiconductor industry, pulp and paper, as well as food and beverages and pharmaceutical industry. The process refractometers measure the dissolved solids in liquids.
- **New markets:** The product area serves the development of the energy sector by offering solutions for the optimization of the power and biogas industries, for example. The most important instruments are multi-gas DGA monitors, developed for continuous monitoring of power transformers, as well as products for biogas process optimization.

Industrial Measurements helps customers improve

- Product quality
- Productivity
- Energy efficiency
- Maintenance activities
- Regulatory compliance

Partners

- End-users
- Original equipment manufacturers
- Integrators
- Distribution network
- Research and development partners
- Manufacturing partners and suppliers

Competitive advantages

- Science- and research-based technology leadership combined with strong application expertise
- Best customer experience
- Fast delivery times
- Global sales and services network

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Our position in the market is favorable, as the demands for measurements grow stricter.

Sampsa Lahtinen
EVP, Industrial Measurements

Global market sizes and growth

MEUR	Industrial instruments	Continuous monitoring systems	Power	Liquid measurements
Market size*	600–700	150–200	200–250	80–100
Market growth p.a.**	5%	10%	10%	5%
Vaisala market share 2019	Mid	Mid	Low	Mid
Market size total	~1,200 MEUR / ~10% market share			

Market share indication: Low < 10%, Mid 10–25%, High > 25%

* Vaisala estimate of the size of the market that is addressable currently or with organic development of the business
** Market growth rounded to nearest of 0%, 5%, or 10%

Providing tools for better decisions

Environmental awareness and action for a better tomorrow are the hottest topics on the table today and for a good reason. In many industries, measurements are an important tool to decrease emissions and waste as well as to save energy. When industrial processes and conditions are measured reliably, it provides support for their sustainable development and a way to conserve both energy and natural resources.

The Industrial Measurements business area provides customers with visibility into these processes. Accurate and reliable measurement data enables them to control their activities conveniently and efficiently. Process optimization can help to reduce waste, energy consumption, and emissions, save resources, and improve product quality, which creates us a clear role in fighting climate change and minimizing its effects, for example. Indeed, Vaisala's mission "Observations for a better world" is at the core of all our operations.

Productive investments in research and development

The past year was a significant and successful one for us in many ways. The Industrial Measurements business area was able to implement its growth strategy according to plan, and we have six years of continuous growth behind us.

We introduced several new products to both the flagship and growth markets, such as the modular Indigo probes for demanding industrial applications. In addition, we introduced product innovations to life science applications, among others. We also launched our revolutionary measurement solution for optimizing biogas quality, which has been received well by our partners and customers. The product launches clearly demonstrate how our investment in research and product development yields results.

The year 2019 was also eventful in the area of liquid measurements. At the end of 2018, we expanded our expertise by acquiring K-Patents, a company specialized in liquid measurements. During the past year, the integration process progressed according to plan. The operations of K-Patents were fully transferred to Vaisala, and the acquired business became its own Liquid Measurements product area.

Our Life Cycle Services business was also refined in order to reflect the important role product lifecycle services, such as training, repair, and calibration services as well as field support, carry in our offering. We will continue to renew our service and product portfolio to provide our customers with better and more reliable measurements in the future as well.

Faced with positive challenges

Renewal and curiosity, Vaisala's cornerstones, are vital to us in Industrial Measurements, as our operating environment and the measurement challenges of our customers are constantly changing. We also need to evolve continuously to find new and better solutions to our customers' needs, and that's why we invest heavily in research and development. Curiosity is also a key prerequisite for identifying new measurement challenges.

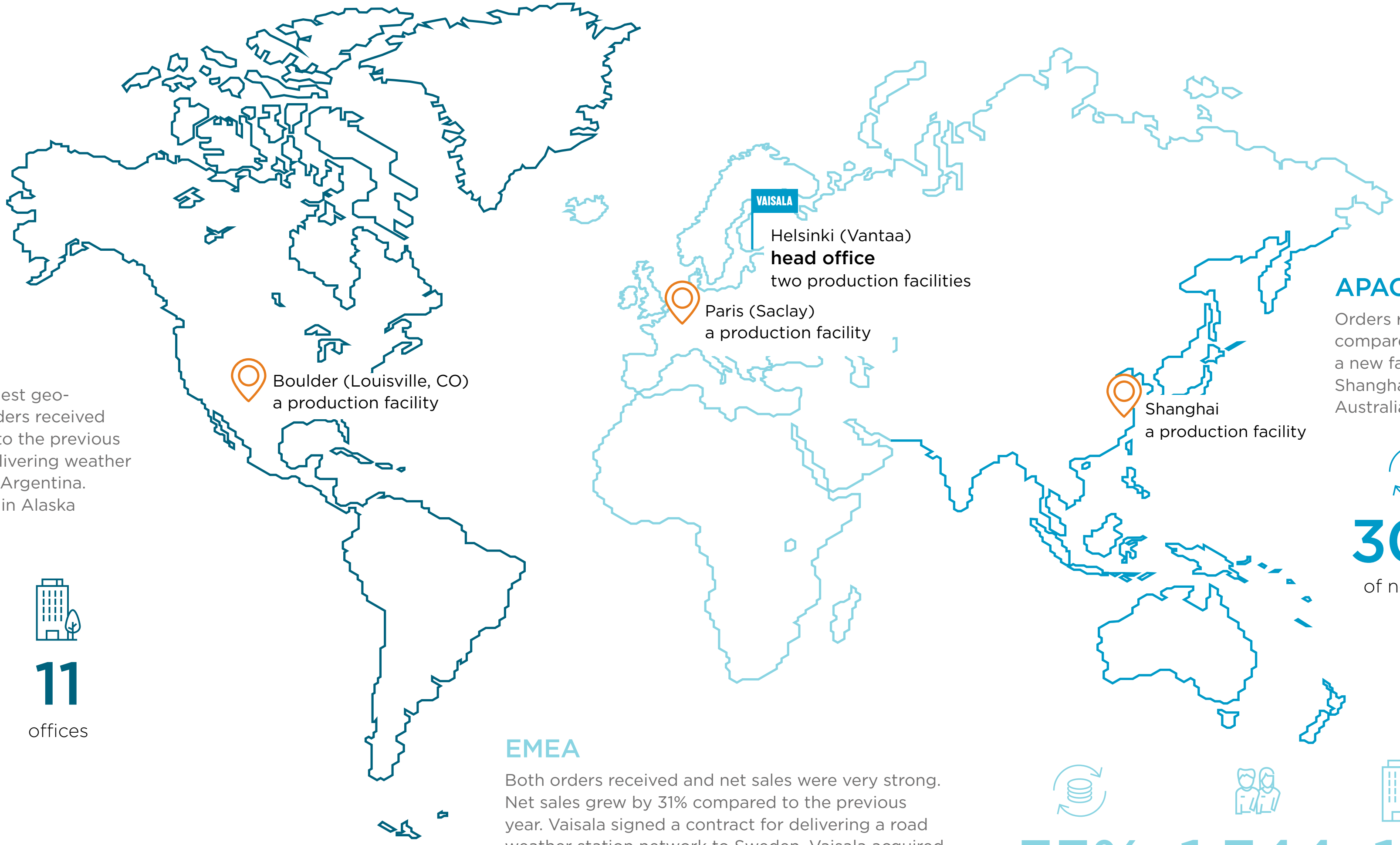
The ongoing development of our operating environment is a positive challenge for us. It is becoming increasingly demanding for the manufacturers to produce new products amid ever tightening regulations. At the same time, the industrial operators strive to achieve better results in terms of both quality and productivity. This all requires better and more reliable measurements, which is the area where Vaisala excels. Thus, our position in the market is favorable, as the demands for measurements grow stricter.

In addition to the development of our operating environment, the main reasons behind our success are found within our organization.

Our product leadership strategy is clear and working, and our foundation is solid: we have great technology combined with the right know-how, skills, and the will to tackle new challenges.

Sampsa Lahtinen
EVP, Industrial Measurements

Global markets



AMERICAS

Americas region remained the biggest geographical area in net sales. Both orders received and net sales increased compared to the previous year. Vaisala signed an order for delivering weather observing systems to 31 airports in Argentina. Large projects in the Bahamas and in Alaska proceeded according to plan.

37%	321	11
of net sales	employees	offices

EMEA

Both orders received and net sales were very strong. Net sales grew by 31% compared to the previous year. Vaisala signed a contract for delivering a road weather station network to Sweden. Vaisala acquired the B2B weather services from the Finnish weather services company Foreca in order to strengthen the digital offering for weather-critical operations.

33%	1,344	13
of net sales	employees	offices

APAC

Orders received and net sales increased compared to the previous year. Vaisala opened a new factory for wind lidar manufacturing in Shanghai, China. Large projects in Vietnam and Australia proceeded according to plan.

30%	163	11
of net sales	employees	offices

Operations

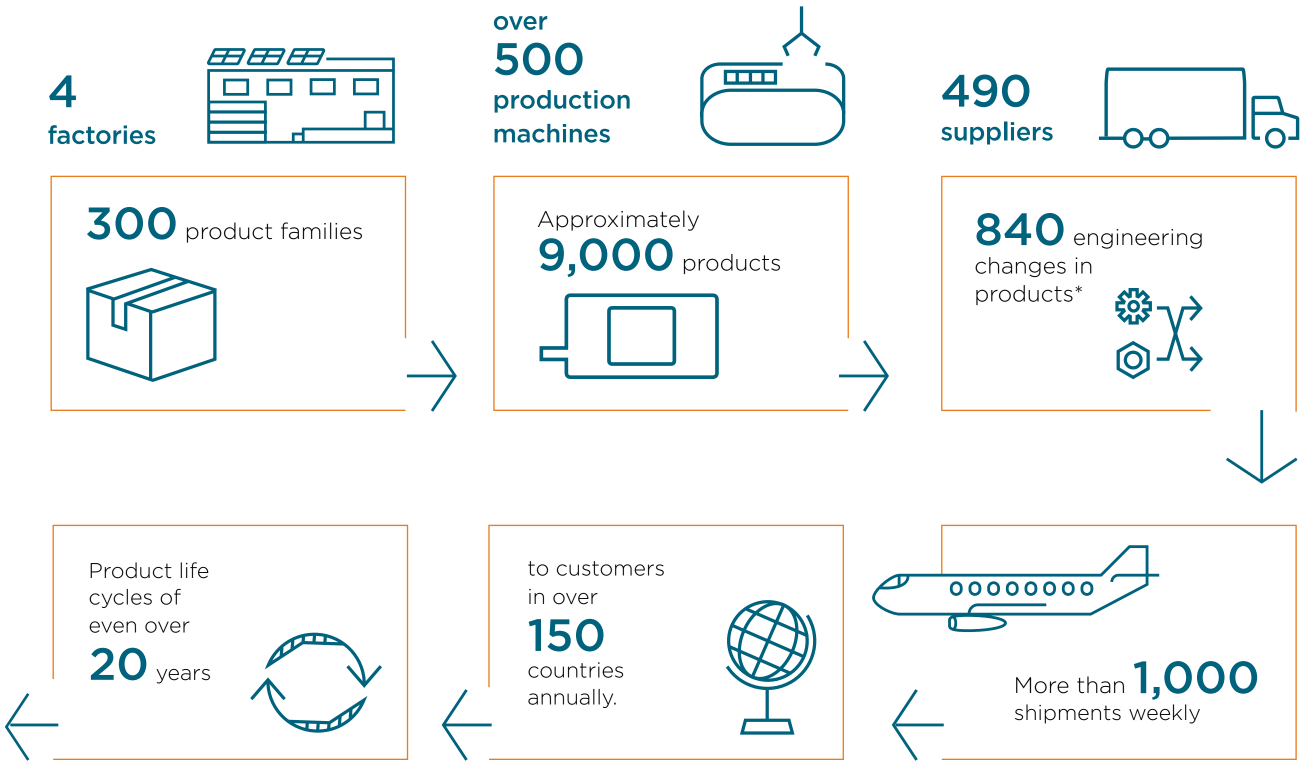
The foundation for Operations is the Vaisala Production System, which incorporates a Lean management system, systematic improvement, and standardized ways of working. In addition, Operations' strategy is guided by strategic choices: in-house manufacturing of key technologies and partnership-based sourcing.

Strategic development areas

The strategic development areas in 2019 were:

- Further development of Vaisala Production System
- Improving the product development process together with research & development
- Increasing productivity
- Intelligent Factory project for identifying and adopting new technologies

Our strategic objectives are to enable sales growth through an efficient supply chain and to be a great place to work.



* Does not include Leosphere, acquired in the fall of 2018.

Collaboration and Lean pave the way for productivity

In 2019, we drove our strategic development projects further. Overall, Operations' year was cost-efficient and our productivity improved excellently.

During the past year, our productivity increased by over six percentage points and exceeded our target of 64% in Finland. Our renewed practices played a part in this: we expanded our Lean program and renewed daily management practices.

Lean methods were applied in the collaboration between Operations and product development in order to speed up projects, gain more visibility into project status, and react faster to changes. In the Intelligent Factory project, we introduced automatic storage machines, a collaboration robot, and a software robot. We also explored the possibilities of utilizing artificial intelligence and automatic material transportation in Operations.

The integration of Leosphere and K-Patents, Vaisala's acquisitions from 2018, affected Operations in 2019. We transferred processes and best practices of the Vaisala Production System to Leosphere's factories in France and China, and K-Patents' operations moved to Vaisala's facilities.

Vaisala Production System evolves

The command of a large product portfolio has always been Vaisala's core strength. We manufacture products with short lead times and fast deliveries without compromising quality. The basis lies in Vaisala's threefold Production System:

1) Continuous and systematic improvement involves all personnel.
2) Standardized processes and ways of working ensure a smooth production flow.
3) Lean leadership spans the whole organization, which was one focus area in 2019.

The daily management practices were renewed: we standardized both team leaders' routines and the critical parameters to be reviewed regularly. Updated visual management methods afford us with better visibility into operations and enable timely action on deviations.

We continued training Lean and sharing good practices throughout Vaisala – also in teams where these methods were not used before. Trainings increased our problem-solving skills, and we also implemented cross-functional practices.

The renewals brought concrete benefits into our everyday work. They have enhanced clarity, made our operations faster, and improved the production flow even further. As a result, we saw the great increase in productivity.

Importance of suppliers

Supplier relationships are exceedingly important for our delivery capability, as we always manufacture orders per need without end-product storage.

Selected suppliers are involved in our product development processes. Suppliers have deep knowledge and expertise of their technology, helping us with superior product design. The product becomes easier to manufacture, more cost-efficient, more high-end, and more sustainable.

To honor these relationships, Vaisala organized its second Supplier Day event in the summer of 2019. The event was successful, generated inspiring discussions, enhanced collaboration, and provided our suppliers with a window to Vaisala's business. In these kinds of events, we can learn about our suppliers' capabilities and communicate the focus areas and future plans in Vaisala.

Operations in the future

Global sustainability challenges call for increasingly sustainable and efficient operations. We have always invested in sustainability and productivity: we have, for example, a systematized process to ramp down products, generating less excess material. Our recycling rate has always been on a good level, and our business model ensures that we have small inventories and thus generate minimal waste.

In the new decade, the role of Lean in Vaisala will grow. We keep on focusing on continuous improvement and improving our problem-solving skills. We strengthened these capabilities in 2019, which gave us a great foundation to master complexity. The world is becoming ever more complex, and along with new products and acquisitions, also our business will change. With the Vaisala Production System, we can guarantee efficient, timely, and faultless customer deliveries now and in the future.

Vesa Pylvänäinen
EVP, Operations

Stakeholder engagement

As our stakeholders influence the future of our business, we believe in a transparent and open relationship with them.

We identify and evaluate our stakeholders as part of our sustainability management and preparatory work for strategy reviews. The stakeholder analysis and materiality assessments are typically done at the beginning of the fourth quarter each year. The process can be an internally conducted update, or it can involve surveying or interviewing key stakeholders.

We determine the impact of various stakeholders on the company and analyze how our actions in turn affect them. We actively seek partnerships and joint opportunities with customers, suppliers, academia, research institutes, and other parties. We maintain a constant dialogue with our most important stakeholders.

The latest update to our stakeholder review and materiality assessment was done in the fall of 2019 based on feedback from our stakeholders. A more in-depth study was commissioned in 2016, when an external consultancy carried out a survey by interviewing investors, customers, employees, research partners, and Vaisala management. The results provided insight into our strategy, sustainability issue management, and reporting. Some of the key takeaways were how Vaisala should present value creation of its business to stakeholders, how this value creation should be discussed with them, and how it should be integrated into strategy, processes, and operations.

	Description	Main activities
Customers 	Thousands of private and public sector customers in more than 150 countries Distributors in more than 100 countries	• Continuous customer relationship development and management, e.g. in online channels, meetings, events, and exhibitions • Ongoing online surveys on customer training and field services operations as well as on technical support and services
Employees 	Over 1,800 professionals in more than 30 locations in 18 countries	• Learning and career development opportunities • Monitoring employee satisfaction and well-being • Active internal communications
Society and environment 	Universities and research collaborators, meteorological institutes, manufacturing partners and suppliers, governments and regulators, local communities, the media, the public, and the environment	• Partnerships and collaboration with academic and scientific institutions • Scholarships and donations • Close cooperation with our global supply chain • Sharing expertise with external organizations and decision-makers • Raising awareness of environmental issues among experts and the public • Press releases, activity in social media, and continuous improvement of media relations
Investors 	Major shareholders include descendants of the founder Professor Vilho Väisälä, Novametor Oy, Finnish pension funds and other financial institutions, the Finnish Academy of Science and Letters, and private households. Ownership outside Finland and nominee registrations amounted to 17.53% of shares on December 31, 2019.	• Quarterly result presentations and Q&A for investors, analysts, and media • Annual General Meeting • Stock exchange releases • Roadshows, investor and analyst meetings and conference calls

Value for customers

Vaisala's technologies and solutions help safeguard life and property, while enabling critical decision-making that facilitates productive, efficient, and high-quality operations. The common denominator is that by measuring the environment or a process accurately, our customers can make more reliable decisions and ensure more efficient, safer, and more sustainable operations in any application area.

In 2019, we invested especially in the cyber security of our products to guarantee that our customers can trust the operation of our solutions also in the future. Likewise, we continue developing Vaisala's internal and external Information Security Management System going forward.

Vaisala's automated weather observing system improves decision-making at 31 airports in Argentina

In March 2019, Vaisala signed a contract with the Argentine Air Navigation Service Provider (EANA), a state-owned company under Argentina's Ministry of Transport, for AviMet® Automated Weather Observing Systems (AWOS) including Runway Visual Range Systems to 31 airports across Argentina. The airports benefit from the state-of-the-art weather observing system: based on accurate and reliable data, they are able to prepare properly for weather-related situations.

AviMet is an airport weather system that collects, processes, and visualizes meteorological data in compliance with the International Civil Aviation Organization and World Meteorological Organization standards. AviMet helps Argentinian air traffic controllers, pilots, and other aviation personnel make critical decisions by providing real-time reports on airport weather conditions. AviMet can also be customized to detect lightning, runway surface condition, wind shear, and other severe weather phenomena critical to aviation.

The value of the contract is approximately EUR 15 million, making it the largest single airport instrumentation contract in Vaisala's history.

Read more:
vaisala.com/annualreport

Reliable decisions

We enable our customers to make reliable decisions based on accurate environmental observations. For example, investments in wind energy production are based on reliable data on wind conditions and wind field behavior. Our remote wind sensing solutions as well as our data and expert services help customers to make profitable investments and decisions. With our solutions, they are able to select the best possible location for efficient wind energy production as well as measure and plan the operation and profitability of their wind park.

With Vaisala's measurement instruments, industrial customers gain better visibility into their processes. For example in many industrial drying applications, reliable humidity measurement data helps to adjust the drying conditions to be as energy efficient as possible and thus ensure end-product quality. With carbon dioxide measurements, the carbon dioxide levels of different applications – such as greenhouses, incubators, and indoor air – can be optimized as needed. For example, the combined effect of humidity, temperature, and carbon dioxide is a vital factor in the cell cultures in incubators.

Productivity

The high quality and long life cycles of our products enable superior total cost of ownership. Vaisala's solutions improve the cost efficiency of our customers' operations as well as increase productivity. For instance, Vaisala's innovative instrument for the optimization of biogas process enables biogas plants to generate more value out of waste by measuring humidity, methane, and carbon dioxide directly from the production process. With the measurement data, customers can improve biogas quality as well as protect the CHP engine and the active carbon filters. This decreases the total costs, making biogas production more profitable.

Vaisala's new automatic sounding systems enable flexible remote soundings, reducing costs. The systems make it possible to carry out automatic soundings for one month at a time, relieving resources for critical weather forecasts. Thanks to these sounding systems, national weather services can extend the coverage of their upper-air networks to geographically remote and hard-to-reach locations and thus develop a more comprehensive synoptic upper-air program. Vaisala's automatic sounding and other observational systems can be connected to Vaisala's Observation Network Manager NM10 tool: its automatic data collection and device management enhance productivity further.

Quality

High-quality products and services have always been at the core of Vaisala, but it is equally important to us that our customers can ensure the quality of their own end-products and operations with the help of our technologies and expertise. For example, Vaisala's state-of-the-art weather observing systems provide reliable and comparable observations that likewise support reliable weather forecasts and climatology. Local air quality monitoring networks, on the other hand, help authorities to pinpoint and manage the problem areas, especially in cities, and make important decisions concerning air quality.

Accurate monitoring of industrial processes and test conditions helps to guarantee high-quality products. Since the expansion to the liquid measurement market, Vaisala has served industrial customers also in measuring liquid concentrations. For instance in food and beverage production as well as the pharmaceutical industry, concentrations need to be measured in every batch and in each factory to ensure even quality. The process refractometer, developed for industrial liquid measurements, provides our customers with accurate digital data on the liquid concentration and thus indicates end-product quality. Also the semiconductor industry uses Vaisala's refractometers to monitor chemical concentrations in silicon wafer production.

Liquid concentration measurements help to develop high-quality and safe medicines

The measurement of refractive index (RI) is employed by a wide variety of industries to determine the level of dissolved solids in liquids. This is a particularly important measurement in developing and manufacturing active pharmaceutical ingredients (APIs). Constant measurements become ever more important when industries are moving from batch production to continuous manufacturing.

When the pharmaceutical manufacturers monitor RI, it provides them with a deeper understanding of the process conditions. Based on this information, they are able to reduce the time used in product development, increase production capacity and stability, improve product quality, and demonstrate compliance with regulations.

Read more:
vaisala.com/annualreport

Value for employees

Vaisala offers versatile opportunities for talented and motivated professionals who value work with a purpose and the possibility to develop at work. Being at the forefront of solving the most difficult challenges of our time makes it exciting to work for Vaisala. We want to improve the well-being of our employees and make sure they have the chance to develop and continuously learn something new.

Purposeful work

Vaisala's products and solutions have true positive influence on the environment, societies, businesses, and individuals. Our employees value the opportunity to have an impact on some of the most critical challenges today. Sustainable and ethical behavior is an integral part of the values of both Vaisala and our employees. For example, we invest significantly in R&D, which guarantees that we can continue to respond to the issues of our time also in the future as well as grow our business sustainably. This increases the meaningfulness of working in Vaisala.

Vaisala strives for annual growth. In addition to the R&D investments, we support this growth by recruiting especially professionals from the fields of software development as well as sales and marketing, for instance.

We focus on good and motivating leadership, and we support supervisors and experts systematically in developing their leadership skills by organizing different training programs and courses. Our annual employee survey was conducted in January 2020. The Leadership Index remained on a good level and was 4.13 on a scale of 1–5. The key strenghts of Vaisala managers are being fair and objective as well as having a positive attitude towards initiatives. The employee survey had a response rate of 87%, with answers from 1,610 employees.

Well-being

At Vaisala, well-being at work is regarded as a whole, including the work community, leadership, the company, and the individuals themselves. Thus well-being consists of good leadership, motivating work community, balanced workload, meaningful work, as well as a safe working environment. As preventive measures, Vaisala supports well-being and energy at work by supporting sports and recovery, providing occupational healthcare, and preventing problems early on.

With these preventive measures, we aim to support our professionals in managing their work, ensuring recovery, and maintaining a healthy lifestyle. In Finland, we provide our personnel with sports and recreational clubs, well-being weeks, trainings on time management and recovery, as well as the opportunity to participate in a well-being analysis on stress and quality of sleep. In the United States, the Vaisala FIT program supports the well-being of employees.

Employee well-being is measured regularly in Vaisala employee surveys. The results show that Vaisala employees find their work meaningful and they feel that they are appreciated. There is some room for development in ensuring that workloads are manageable. In 2019, Vaisala Well-Being Index score was 3.97 on a scale of 1–5 and increased a little compared to 2018.

Learning and development

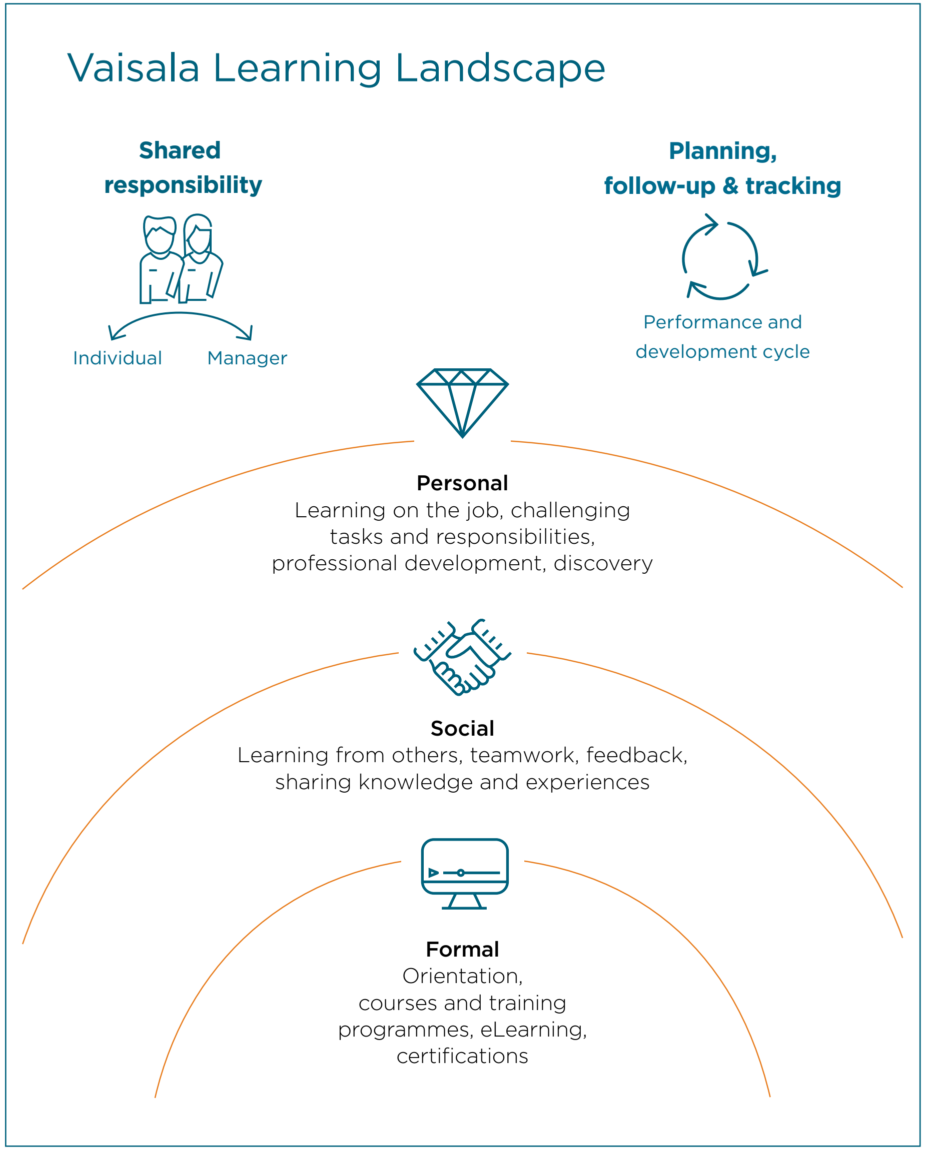
Vaisala's competitive strength stems from our talented, motivated, and engaged personnel. Changes in the business environment, technologies, working methods, and tools require our employees to learn and take in new things continuously. Likewise, the acquisitions from 2018 as well as the acquisition of Foreca's B2B weather services in the fall of 2019 have enriched Vaisala with new competences and enable interpersonal learning. We support and encourage the whole personnel to actively develop and keep up their knowledge and expertise.

During 2019, we launched a new Learning Management System that supports our personnel in their development endeavors in multiple ways. In the new, user-friendly learning system, we have increased especially the amount of e-learning courses and the possibilities to document one's trainings.

Vaisala's Learning Landscape depicts principles and methods for learning. It is the foundation for all learning activities and initiatives in Vaisala. Through this framework, we emphasize every employee's responsibility for their own learning and development. Managers play an important role in enabling and supporting learning, and it is the responsibility of all managers to plan development and learning activities together with their teams. Developing expertise and knowledge is always in line with Vaisala's values as well as our business needs and objectives. Defining competence development needs is part of the annual People Forum process.

In 2019, Vaisala Learning Index, derived from the personnel survey, was 3.84 on a scale of 1–5. Employee training costs amounted to EUR 1.89 million and averaged EUR 1,026 per employee in 2019.

In 2019, Vaisala's performance leadership model was renewed so that employees and supervisors are encouraged to discuss employees' performance and needs multiple times a year. The aim of these discussions is to enable employees to openly bring forth their wishes and needs regarding learning and development, for example. Also mutual feedback is encouraged. Year-round performance is evaluated and discussed in a more comprehensive development discussion, held once a year.



Value for society and environment

We bring value to societies through accurate and reliable environmental measurements as well as decision-making support for national and local authorities and businesses. This way we help societies become better-informed, more resource efficient, and safer. In addition, we create value through significant investments in R&D and collaboration with the scientific community.

Weather and environment observations require top-notch expertise

Vaisala renewed the Vaisala Digital unit and its focus areas, which included also the acquisition of the B2B weather services from the Finnish weather forecast services company Foreca Oy in the fall of 2019. Vaisala Digital offers scientifically and statistically validated observation, forecast, and intelligence information to enable better decisions and innovations on how we work in a changing environment. Vaisala Digital focuses initially on transportation, renewable energy, lightning, and data-driven operations. Accurate and reliable weather intelligence is an integral part of ensuring safe traffic during winter, for example.

In addition, Vaisala Digital develops industry-leading digital solutions to support its customers to make best decisions in weather-critical operations, such as winter maintenance. In addition to the B2B weather services, Vaisala Digital builds up enhanced competences in machine learning and artificial intelligence, which gain ever more importance in the future of developing weather critical information. Already now Vaisala's RoadAI gathers data on the condition of the Finnish road network, installed for example in postal delivery as well as maintenance vehicles, or offers route optimization for gritters operating in snow belt countries.

Read more:
vaisala.com/annualreport

Better-informed societies

Vaisala works together with nearly all meteorological institutes in the world, supporting them in providing accurate, real-time information and forecasts on weather all around the globe. The data provided by Vaisala's products is also used to increase weather awareness in different systems and services of society. We also collaborate with international funding agencies and weather experts to build capacity for weather observing networks and competence in developing economies. This way we help them to be better prepared for extreme weather and its impacts on different levels of society and economy.

Health services are also one of the foundation pillars of an informed society, and for example hospitals require accurate and reliable condition monitoring of their various activities. Vaisala's viewLinc Continuous Monitoring System monitors, among other spaces, blood and tissue banks that handle, store, and distribute human tissues. The critical parameters in blood and tissue banks require continuous monitoring, which ensures that these delicate and valuable materials are preserved and remain viable. Our solutions are also widely used to monitor the manufacture and supply chains of different medicines, thus ensuring their reliability and patient safety.

Resource efficiency

Vaisala's measurement technologies improve resource efficiency in various industrial production processes. Accurate measurements enable our customers to optimize their production as well as reduce their energy consumption and material loss. Additionally, digitalization plays a part in the resource efficiency of societies: for example, large data centers maintain the Internet, the global information highway, consuming a lot of energy. With the data from Vaisala's measurement instruments, the air conditioning in data centers can be optimized energy efficiently.

Vaisala's road weather stations and MD30 mobile detectors provide real-time data that, combined with road weather model, heat maps, and information systems, help to optimize road winter maintenance. Timely decisions on anti-icing, de-icing, and snow ploughing increase safety and resource efficiency as well as reduce the environmental effects of chemicals used in road maintenance. Computer vision solutions extend Vaisala's offering also to collecting and managing data on road surface condition. Identifying damages on the road surface, combined with observed and modeled data on weather conditions, enable us to provide high-quality data services also to developers creating technologies for autonomous vehicles. When damages are identified, they can also be fixed in a timely manner, which increases safety and makes sure that resources are used efficiently.

Safety

Our technologies help our customers maintain safe operating environments in many parts of society. Extreme weather, such as hurricanes, can have devastating consequences on local economies and livelihoods. Vaisala's hurricane-tracking dropsondes can make in situ measurements inside a hurricane, providing essential information for forecasting its path and intensity. This advance information helps to safeguard both lives and infrastructure. Weather also affects traffic safety: the aviation industry is dependent on accurate weather information to minimize delays and ensure safe operations; road authorities can mitigate accidents with roadside weather warnings; railway operators benefit from wind warnings; and also the maritime sector depends on weather forecasts. Even missions to space require safe weather conditions during launches.

The essential institutions in society, such as hospitals and production facilities, consume electricity to guarantee safe operations. Our solutions make it easy to maintain and monitor the devices that are critical for power production and distribution, such as high voltage transformers. Continuous transformer condition monitoring supports smart power grids, where electricity consumption is controlled and adjusted as needed. With reliable online monitoring, operators can move from reactive operations to preventive maintenance, which enables them to detect faults in time and thus prevent power outages that would risk the safety and operation of society.

More value from waste by optimizing the process

The biogas industry plays an important role in finding solutions for global waste management issues. Biogas production is an organic process which can be optimized to gain the best gas quality and profitability. Biogas is a flammable and corrosive gas, which has made the process optimization difficult. The three gases – humidity, methane, and carbon dioxide – have previously failed to be measured simultaneously directly from the production process. Especially the humidity levels of the gas have caused problems for the biogas plants.

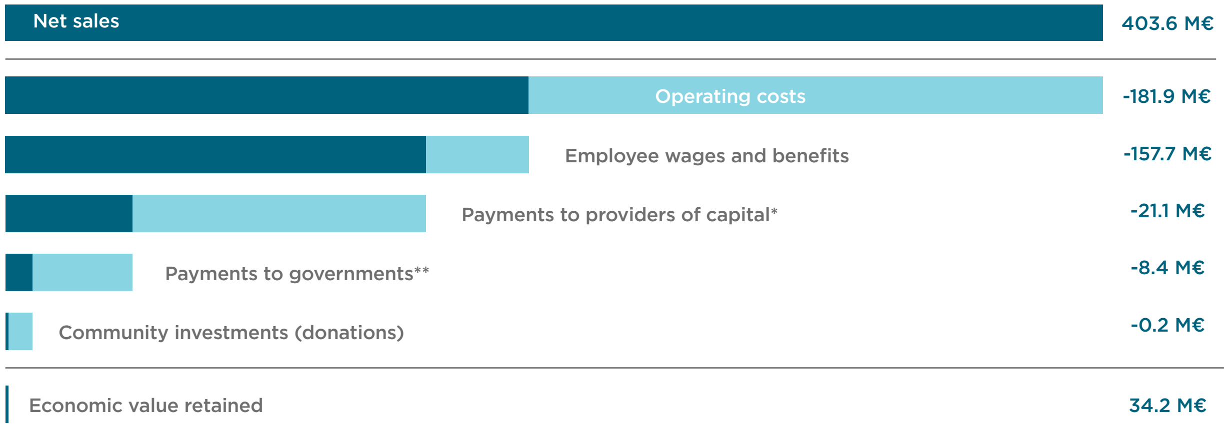
To improve the biogas quality and production efficiency, Vaisala released the MGP261 measurement instrument in January 2019. It is the world's first instrument to measure the humidity, methane, and carbon dioxide optically and directly from the process. It is an ideal solution for biogas production processes, such as anaerobic digestion of waste from various sources, and utilization of landfill gas. The measurement data provided by the MGP261 can be used to optimize the production process, which leads to reduced costs and improved efficiency. MGP261 enables more value from waste.

Read more:
vaisala.com/annualreport

Direct economic value generated and distributed

MEUR	2019	2018	2017	2016	2015
Net sales	403.6	348.8	332.6	319.1	318.5
Operating costs	-181.9	-166.2	-152.8	-144.8	-143.9
Employee wages and benefits	-157.7	-133.6	-129.9	-128.4	-130.0
Payments to providers of capital*	-21.1	-40.2	-17.8	-17.1	-16.4
Payments to governments**	-8.4	-8.4	-8.7	-7.9	-7.2
Community investments (donations)	-0.2	-0.1	-0.1	-0.7	-0.5
Economic value retained	**34.2**	**0.3**	**23.2**	**20.2**	**20.5**

Direct economic value generated and distributed



* Includes dividends and interest of borrowings

** Includes income taxes

Economic value

Vaisala has a positive impact on local communities through employment and taxes, both directly and through its supply chain. Responsible business practices and use of local suppliers create indirect benefits to local communities.

Vaisala as taxpayer

Vaisala's head office is located in Vantaa, Finland. Vaisala has established subsidiaries and branches in 16 countries. Our group structure is simple, and we have companies only in countries where we do business.

In addition to the tax data published in the financial statement, Vaisala provides here more information on its approach to tax, tax management, and global tax footprint.

Approach to tax

Vaisala values are the basis of all our activities, both within Vaisala and with our partners and customers. We value integrity; we are honest, respectful, and reliable. We promote sustainable and ethical behavior.

Vaisala is committed to ensuring that it follows local and international tax rules and regulations in all jurisdictions where it conducts its business. We only engage in tax transactions that have a sound business rationale. We do not operate in tax haven countries for tax reasons. We comply with OECD transfer pricing guidelines and local legislations in relation to all of our intercompany transactions.

Tax management

Tax team within centralized Finance & Control unit is responsible for managing and monitoring tax matters at Vaisala group level. Important matters of principle are presented and approved by Vaisala's Audit Committee.

Vaisala group has outsourced a large part of its foreign recurring tax compliance work to a few professional service providers to ensure competences and resources in complying with the local rules and regulations. Vaisala Finance & Control regularly monitors the transparency, quality, and outputs of these outsourcing engagements.

Global tax footprint

To ensure focus on process implementation and comparable data collection, Vaisala has decided to start its tax footprint initiative by reporting paid corporate income taxes, value added taxes, payroll taxes, excise taxes, and property taxes for the financial year 2019 and comparable figures for 2018. The principle of materiality has been observed in the collection and presentation of figures.

Vaisala benefits from R&D tax credits in the United States, Canada, and France. In addition, Vaisala has prior year tax losses in its subsidiaries located in the United States, Canada, and France, which reduced their corporate income tax payments in 2019. The tax contribution of the parent company in Finland totaled 26.2 (25.4) million euros.

Total taxes paid in 2019 - Vaisala group

18% Corporate Income Tax (CIT) (18%)
22% Value Added Tax (VAT) (22%)
59% Payroll Tax (58%)
1% Property Tax (1%)
0% Electricity Tax (0%)

19% Americas 9.4 MEUR (7.9)
8% APAC 4.1 MEUR (3.5)
73% EMEA 35.9 MEUR (32.6)

Tax	Paid in 2019 (MEUR)	Paid in 2018 (MEUR)
Corporate Income Tax (CIT)	9.0	7.7
Value Added Tax (VAT)	10.8	9.8
Payroll Tax	28.9	25.9
Property Tax	0.5	0.5
Electricity Tax	0.1	0.1
Total	**49.3**	**44.0**

Collaboration in the scientific community

In addition to its own research and development work, Vaisala is an active player in the scientific community. Scientific collaboration strengthens our position as an industry pioneer and an innovative technology leader. Vaisala continues to be a contributor to many organizations, advancing technological development in several fields of study.

Globally

We collaborate with the leading research institutes and universities to advance studies related to environmental and industrial measurements across various scientific and technological fields. Our collaboration partners also include the International Civil Aviation Organization (ICAO) as well as a number of national meteorological offices around the world. We also collaborate actively with researchers around the world in a wide variety of application areas, including volcanic lightning, field campaigns measuring detailed properties of lightning discharges, and extreme weather events.

Vaisala is an active participant in United Nations' World Meteorological Organization (WMO). WMO coordinates the study of the state and behavior of the Earth's atmosphere, including the weather and climate. It also facilitates its members' observational networks and free, unrestricted exchange of data and information. In addition, WMO supports research to optimize the production of weather-, climate-, and water-related services worldwide.

The Commission for Instruments and Methods of Observation (CIMO) is part of WMO. Vaisala's experts are actively involved in several CIMO expert teams focusing on the development of industry practices and standards related to meteorological measurements.

Vaisala is also a member of the Association of Hydro-Meteorological Equipment Industry© (HMEI), acknowledged by WMO. The association represents private industry providers of products and services in the meteorological, hydrological, environmental, and related fields. Its goal is to facilitate interaction between its members and a broad range of governmental and private organizations. As a member of HMEI, Vaisala's representatives participate in the expert teams of WMO's Commission for Basic Systems (CBS) in order to help to advance the improvement of environmental observations and weather forecasts worldwide.

Vaisala supports the Global Climate Observing System (GCOS) Reference Upper Air Network (GRUAN) in characterizing radiosonde data for climatological use. Vaisala's radiosonde experts are also in regular contact with European Centre for Medium-Range Weather Forecasts' (ECMWF) data assimilation experts in order to help ensure full use of radiosonde data in global numerical weather prediction models. Between 2015 and 2018 Vaisala co-funded a study by ECMWF that eventually led to an improvement of the radiosonde data use in the global Integrated Forecasting System of ECMWF.

We also participate in various industry standards development work in fields that are important to us. Vaisala is, for example, a member of ETSI (European Telecommunications Standards Institute), and we take active part in different committees and groups of International Electrotechnical Commission (IEC). Vaisala has participated and contributed also in the working groups of CIGRE (Conseil International des Grands Réseaux Électriques): the documentation created in these groups forms, for the most part, the basis for IEC's standards on assets of electricity transmission and distribution.

In the United States

Our collaboration partners include the National Oceanic and Atmospheric Administration (NOAA). Vaisala supports space-based lightning detection systems both in NOAA and around the world. From 2016–2017, we have collaborated with NOAA in the calibration and validation of the Geostationary Lightning Mapper (GLM), which was the first technology to map lightning from geostationary orbit. Vaisala's lightning data continues to be used as an important reference to validate the performance of the GLM.

Our other partners are, among others, the National Center for Atmospheric Research (NCAR), Pacific Northwest National Laboratory (PNNL), Colorado State University (CSU), and New Mexico Institute of Mining and Technology (NMT).

Vaisala is also a strong contributor and corporate sponsor to the American Meteorological Society (AMS) that is a leading scientific organization dedicated to atmospheric, oceanic, and hydrologic sciences. In addition to sponsorships, Vaisala representatives contribute to the AMS through a number of activities, including scientific committee memberships, reviewing and editing journals and articles, and actively sharing scientific advancements during its annual meeting and through a variety of topical conferences.

We have also collaborated with the United States Department of Energy (DOE) through the Office of Renewable Energy and Efficiency since 2015. Vaisala led a large multi-institution research team as part of the Wind and Water Power program's Wind Forecast Improvement Project 2 during 2015–2018. The research team consisted of collaborators from multiple institutions, such as NOAA and NCAR, and the project has resulted in numerous publications in AMS Journals. We now continue helping the atmospheric modeling community to develop state-of-the-art weather prediction. In 2019, we partnered with PNNL, NOAA, and NCAR to improve cloud and solar irradiance modeling in support of the US DOE's SunShot Initiative.

In Asia

In China, Vaisala has collaborated with the University of Nanjing (NJU) in the Nanjing Air Quality Testbed project. In the project, a dense air quality observation network and a predictive model is built in the city of Nanjing, providing data for decision-making related to air quality improvement.

In Europe

In Germany, Vaisala has a research collaboration agreement with the Fraunhofer Institute for microsensor technology development**.**

In Finland, Vaisala operates in close cooperation with various scientific stakeholders, including for example the Finnish Meteorological Institute (FMI), VTT Technical Research Centre of Finland Ltd., the University of Helsinki, the Tampere University, and Aalto University. We are also collaborating with the University of Jyväskylä to develop novel measurement methods and to utilize the University's expertise in material analysis.

Vaisala is a partner in the BC Footprint project, coordinated by the Tampere University and FMI. The project aims to create a novel concept and metrics that can be used to quantify black carbon emissions and their climate effects.

In the LuxTurrim 5G project, coordinated by Nokia Bell Labs, Vaisala has integrated air quality and weather sensors into smart light poles, enabling smart cities to roll out dense observation networks co-located with 5G mobile networks. The solutions have been piloted in the Nokia Campus in Espoo, Finland, and will next be tested in the Kera region likewise in Espoo.

In October 2019, Vaisala started cooperation with Technology Academy Finland TAF as a Millennium Technology Prize partner. The partnership will boost dialogue and cooperation between the industry, academic world, and public organizations on the topics of innovations and sustainable development.

Vaisala also has representation in the Technology Industries of Finland organization and in the International Chamber of Commerce (ICC) Finland, which promotes international trade and investment worldwide. Vaisala is also a member in FIBS, Finland's leading corporate responsibility network, and in the Climate Leadership Coalition (CLC). The purpose the CLC is to improve the competitiveness of Finnish businesses and research organizations and their ability to respond to the threats posed by climate change.

Vaisala is a shareholder and research partner of CLIC Innovation Oy, an open innovation cluster with the mission to create breakthrough solutions in bioeconomy, energy, and cleantech by facilitating joint research between industry and academia in Finland. Vaisala is also a project partner in the CITYZER project that ended at the end of 2019. The project developed new digital services and products to support decision-making processes related to weather and air quality in cities. The results were utilized in the Helsinki Metropolitan Air Quality Testbed (HAQT) project in which a dense air quality observation network and predictive model were built in cooperation with the University of Helsinki, FMI, and the Helsinki Region Environmental Services Authority HSY.

Active community outreach

In Vaisala, we are building a world in which environmental and industrial observations improve daily lives. As a global leader in measurement technology and as an active member of society, we support our stakeholders, promote higher education and research, and help new generations learn more about science.

Donations

Vaisala provides charitable donations with products, funding, or services to non-profit organizations as part of its community outreach activities. Our overall objective is to support organizations and projects that advance environmental awareness and science education. All our outreach activities are in line with our values and resonate well with topical issues close to our business, such as climate, weather, environmental and industrial measurements, and environmental sciences. Vaisala does not donate funds to political parties, causes, or campaigns.

Within science education, Vaisala aims to increase understanding of natural sciences, innovation, and the environment by supporting universities, scientists, and researchers focusing on these fields. Scholarships paid in the form of salary are outside the scope of Vaisala's community outreach activities.

Another focus are non-profit organizations working for environmental disaster prevention and recovery. Furthermore, impartial humanitarian organizations that provide protection and assistance to people affected by disasters are within the scope of possible donations.

In 2019, donations amounted to EUR 200,000 globally.

Professor Dr. Vilho Väisälä Award

Vaisala funds the Professor Dr. Vilho Väisälä Award, established in 1985 to encourage and stimulate interest in research in the field of environmental measurement instruments and observation methods. The award is administered by the World Meteorological Organization (WMO), which selects winners every second year.

In 2004, the WMO Executive Council decided to establish a second Professor Dr. Vilho Väisälä Award. The main focus of this award is meteorological instrument work in developing countries and countries with economies in transition. Both awards carry a cash prize of USD 10,000, and they are granted in connection with the CIMO TECO conference. Next awards will be granted in 2020.

Inspiring youngsters into the field of science

In September 2019, 130 years had passed since the birth of Professor Vilho Väisälä, Vaisala's founder. The impact of Väisälä's invaluable innovations can be seen all over the world, becoming ever more relevant in the time of global challenges, such as extreme weather and climate change.

Vaisala has always valued education, especially that of science, which is why we honored Väisälä's 130th birthday in 2019 by donating 130 Heureka tickets to underprivileged children. Heureka is the biggest science center in Finland.

Read more:
vaisala.com/annualreport

Value for investors

Vaisala is a stable, globally operating company based in Finland. The company's series A shares have been quoted on Nasdaq Helsinki stock exchange since 1994. Vaisala's target is to maintain high solvency and to pay a stable dividend which will increase in line with net profit development.

1

Technology leader and strong market position

- Leading technologies in environmental and industrial sensing with most accurate and reliable instruments, algorithms, and software
- Clear market leadership position in key products, high customer satisfaction, estimated total market size over EUR 2.5 billion
- High continuous investments in R&D (2019: 52.8 MEUR or 13.1% of net sales)

2

Growth potential in multiple dimensions

- New technologies
- New products, applications, and digital solutions by leveraging latest technologies and platforms
- Geographical expansion

3

Well diversified sales mix

- Vaisala is a global player in its relevant markets with representatives in more than 100 countries
- 2019 geographical net sales split: 37% Americas | 30% APAC | 33% EMEA
- Several customer segments in governmental and private sectors

4

Asset-light business model

- High-mix, low-volume business model
- Sales growth does not require capex: related annual capex around EUR 10 million
- Potential for productivity improvement with volume growth

5

Strong cash generation and financial position

- Enable investing in growth and long-term business development
- Strong cash conversion rate (2019: 1.0)
- Solvency ratio 55.7% (2019)
- Gearing -2.4% (2019)

6

Solid dividend payer

- Aim to distribute a stable divi-dend which will increase in line with net profit development
- Dividend per share for the last five years paid at the average rate of 87% on earnings and the average effective dividend yield of share 3.9%

7

Sustainable technologies in a responsible way

- Reliable partner, whose corporate responsibility work has been recognized, for example by CDP and RE100
- Member of several organizations that promote responsible business, such as Climate Leadership Coalition, Cleantech Finland, and the Caring for Climate initiative of the UN Global Compact
- Technologies, products, and digital solutions that contribute to building better-informed, safer, and more resource efficient societies

Sustainable business practices

Reporting principles, policies, and due diligence

Non-financial reporting

Disclosure of non-financial information in accordance with the Finnish Accounting Act chapter 3 a is presented in the Sustainable business practices section, in chapters Business model and Dashboard included in the Creating value section, and in the Risk management chapter in the Governance section. The Sustainable business practices section includes information on environmental matters, social and employee matters, respecting human rights, as well as anti-corruption and anti-bribery compliance.

Policies and due diligence

We endorse the United Nations Global Compact strategic initiative for sustainable business practices and follow the Global Compact's Ten Principles, which cover the areas of human rights, labor, environment, and anti-corruption. These ten principles are reflected in Vaisala's Code of Conduct, and we report on the implementation of the principles on an annual basis as part of our sustainability reporting.

The Code of Conduct guides our actions and operations and reflects Vaisala values: Integrity, Strong together, Innovation and renewal, and Customer focus. We expect all our employees and partners, such as distributors and representatives, to comply with our Code of Conduct in all their actions. We have a separate Supplier Code of Conduct that sets standards for our suppliers and subcontractors. We comply with all applicable laws and regulations in the countries in which we operate. Where differences exist between regulatory requirements and Vaisala's Code of Conduct, we strive to apply whichever sets the highest standard. We respect and comply with international conventions, such as the United Nations Declaration of Human Rights and the International Labour Organization's (ILO) Declaration on Fundamental Principles and Rights at Work.

Our Code of Conduct includes guidance on environmental matters, social aspects and employment matters, human rights, and anti-bribery and anti-corruption. Moreover, Vaisala Board of Directors has approved more detailed policies, such as the International Anti-Corruption Policy and the Quality, Environment, and Health and Safety (QEHS) Policy. The QEHS Policy is implemented through our global management system that includes our ISO 14001 certified Environmental Management System and ISO 45001 certified Health and Safety Management System.

We train our entire personnel regularly on the contents of the Code of Conduct and aim to bring up new angles on the matters in the trainings. In addition, separate trainings are organized on various topics, such as environment, health and safety, anti-corruption and bribery, and human rights risks management, some of which are mandatory for the entire personnel, and others are tailored to specific employee groups based on need.

Each Vaisala employee is responsible for complying with the Code of Conduct, and each manager monitors and supervises compliance with the Code of Conduct. Any suspected action against or violation of Code of Conduct should be escalated either anonymously to our whistle-blowing channel or directly to the legal department. We also monitor that our suppliers and other business partners comply with our Code of Conduct, for example through self-assessments and audits.

Implementing the GRI guidelines

To maintain transparency and consistency in our sustainability reporting, we apply the Global Reporting Initiative's (GRI) reporting guidelines. This report has been prepared in accordance with the GRI Standards: Core option. The GRI reference index can be found on pages 67–73 of this report.

Boundaries

Apart from the environmental data, our sustainability data is reported for the entire group and for all locations, which include also the operations of the companies acquired in the end of 2018. Our carbon footprint includes offices with more than 20 employees or otherwise significant operations as well as indirect sources. The indicators related to energy and water consumption as well as waste are reported from the most significant manufacturing sites, which are located in Finland, the United States, and France.

Independent assurance

According to our reporting process, we seek assurance for the report from a third-party assurance provider. An independent third party, Deloitte Oy, has at Vaisala management's request externally assured the contents and indicators of the Sustainable business practices section on pages 48–63 as well as indicator 201-1 on page 40. Independent assurance report can be found on pages 65–66.

Materiality

Vaisala's management reviews the material aspects, stakeholders, value creation model, and megatrends annually as part of the reporting process. The material issues are included in the Creating value and Sustainable business practices sections of the annual report. The GRI content index includes indicators that have been determined material to Vaisala in the materiality review process.

Environment

Environmental management

Our environmental responsibility work is guided by our Global Quality, Environment, and Health and Safety (QEHS) Policy and our ISO 14001 certified environmental management system, which covers our biggest manufacturing sites and offices. At the moment, 85% of our employees work in ISO 14001 certified locations. All of our certified locations are audited by an independent third party as part of our audit program.

Our environmental management system helps us to identify the most significant environmental impacts in each location and set environmental targets locally and for the entire company. Many of our locations have voluntary green teams that promote measures necessary for achieving the environmental targets.

We listen to our personnel in environmental matters and encourage them to make environmentally friendly choices. In 2019, we organised two climate change-related information and discussion events, opened a channel for personnel's suggestions related to climate action, as well as campaigned for sustainable workplace lunches and commuting. We also conducted a commuting survey which was answered by 27% of our staff globally. Based on the development ideas received from the survey, we have created a plan for promoting sustainable commuting.

Environmental impacts

We regularly assess our environmental impacts as part of our environmental management system and aim to continuously reduce the environmental impact of our product portfolio, business operations, and supply chain. The most significant environmental aspects related to our operations are energy consumption, waste, water consumption, the materials our products contain, and indirect emissions. Such emissions arise, for example, from purchased products and services, business travel, logistics, commuting, and energy consumption during product use.

The most significant environmental risks of our operations are related to potential emergency situations that can lead to local contamination. These risks are controlled, for example, as part of our emergency preparedness and management processes for hazardous substances.

Environmental performance indicators in 2019

CO_2

Emissions from 2014 baseline (Scope 2)

-90%

(2018: -90%)

Target 2020: -90%

Renewable electricity

93%

(2018: 94%)

Target 2020: 100%

Waste recycling rate*

53%

(2018: 58%)

Employees working on ISO 14001 certified sites

85%

(2018: 91%)

*Recycling rate includes reuse, material recycling, and composting.

Environmental impacts

MINIMIZING OUR ENVIRONMENTAL FOOTPRINT

MAXIMIZING OUR ENVIRONMENTAL HANDPRINT

Supply chain

1,200 t materials used

93% renewable electricity

Our operations

218 MWh solar energy generated

6,017 t CO_2 emissions from business travel

681 t CO_2 emissions from purchased energy

1,966 t CO_2 emissions from employee commuting

Manufacturing

53% recovered waste

23,117 m^3 water consumption

18.32 GWh energy consumption

Logistics

589 t products shipped

8,802 t CO_2 emissions from logistics

Product use

1,154 t CO_2 emissions from product use (weather radars)

Reducing customers' environmental footprint through product use

Service and maintenance

Extending life-cycles through calibration and updates

Vaisala services and calibrates over **60,000** instruments annually

Product end-of-life

Product recyclability

* CO_2 indicates CO_2-equivalent

Energy and emissions

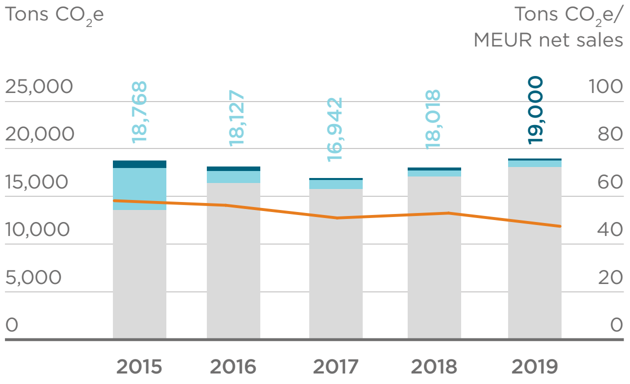
We believe in a future in which societies are powered by renewable energy. Vaisala is a member of RE100, a global initiative encouraging the world's most influential companies to make a 100% renewable energy commitment within a clear timeframe. To minimize our own impact on climate, we are committed to using 100% renewable electricity in our facilities by 2020. Even though our manufacturing sites in Finland and the United States are already using solar panels to produce clean energy, we still need to purchase most of our electricity from local energy companies.

93% of the electricity we consumed in 2019 came from renewable sources, mainly from wind power. The increased use of renewable electricity has reduced our energy consumption emissions by 90% compared to 2014 (Scope 2, market-based). In 2019, we also started to purchase data center services powered by renewable energy.

In the end of 2018, our production site in Finland joined the Finnish energy efficiency agreement for industries. According to the goals of the agreement, we improved our energy efficiency in 2019 by upgrading our HVAC system and building a heat recovery system to our cleanroom. However, our total energy consumption increased due to our new buildings that are being constructed in Finland and the USA as well as the acquisition of Leosphere SAS.

In 2019, our market-based Scope 2 emissions (calculated with supplier-specific emission factors) were 681 metric tons of CO_2e (2018: 667 CO_2e). Our location-based Scope 2 emissions (calculated with country-specific average emission factors) were 3,332 metric tons of CO_2e (2018: 3,545 CO_2e).

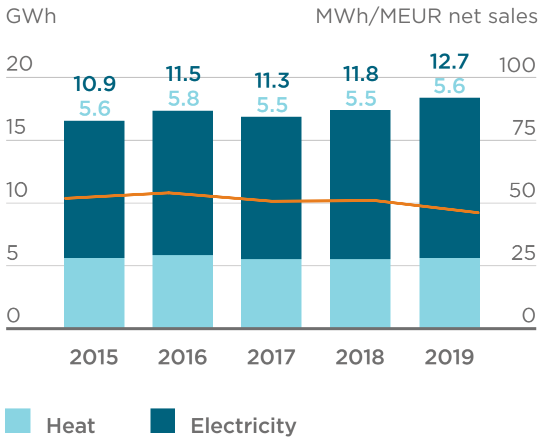
CARBON FOOTPRINT



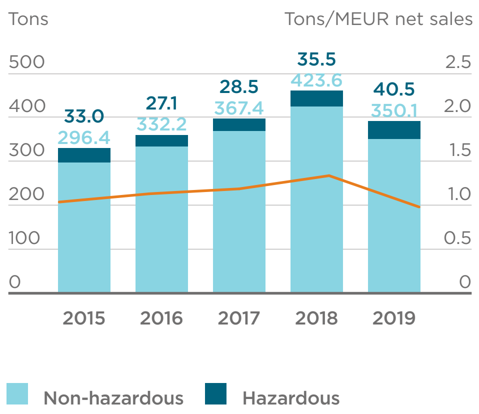
	2015	2016	2017	2018	2019
Scope 1	816	477	220	288	254
Scope 2	4,366	1,257	949	667	681
Scope 3	13,587	16,393	15,773	17,063	18,064

* Our Scope 3 emissions calculation has become more accurate for outgoing logistics, and therefore also the figures from the previous years are larger than reported previously.

ENERGY USE



WASTE*

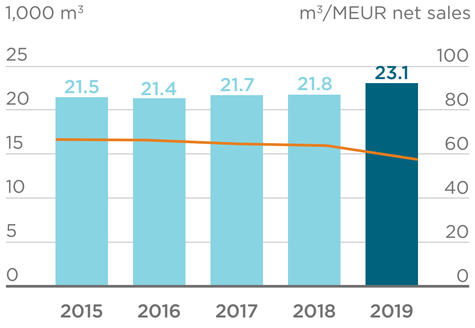


* As a change to previous years, waste electrical and electronic equipment (WEEE) have been calculated as part of hazardous waste, and therefore also the hazardous waste amounts from the previous years are larger than reported previously. The total waste amount does not include the temporary waste from our construction sites.

40.1%	Recycling
40.8%	Energy recovery
15.4%	Composting
3.1%	Landfill
0.6%	Reuse

39.3%	Physico-chemical treatment
29.4%	Incineration
23.4%	Recycling
7.3%	Recovery
0.6%	Landfill

WATER CONSUMPTION



Waste

On our main manufacturing site in Finland, waste is sorted into 14 categories to enable its efficient processing and use. In 2019, we conducted a study on the current state and development opportunities of waste management on our Finnish site. The aim was to find new ways to reduce the amount of waste and increase the recycling rate, for example by increasing material reuse and material recycling of waste. The study found some small improvement opportunities that we will pay attention to in 2020. All in all, the waste management was deemed to be functioning well, and for the time being, new ways to significantly increase the recycling rate were not found.

Water consumption

We use only municipal water, and our water consumption has remained steady for years. The sensor manufacturing process in our Finnish factory is our only water-intensive manufacturing process. Our own water cleaning facility purifies municipal water to be used in our cleanroom. After the cleanroom, all process water is treated before it is directed to municipal wastewater treatment.

Scope of environmental reporting

Most of our group's energy consumption, water consumption, and waste generation can be attributed to our manufacturing locations in Finland, the United States, and France, hence these key indicators are reported for these three locations. The energy consumption of these manufacturing locations does not include the fuel consumption of field-service vehicles due to the low number of such vehicles.

To calculate our carbon footprint, we collect data more extensively from those locations with more than 20 employees or otherwise significant operations. Vaisala's carbon footprint includes various parts of the company's value chain. Our reported carbon footprint is divided into three levels (Scope 1–3) in line with the GHG Protocol Corporate Accounting and Reporting Standard. Scope 1 includes field-service vehicles owned by Vaisala. Purchased-energy emissions (Scope 2) includes purchased power and heat. Other indirect emissions (Scope 3) includes business travel (flights, train travel, and rental cars), inbound and outbound logistics, the energy consumption of installed weather radars, commuting, and waste management (only in Finland, where 76% of the group's waste is generated). We have also identified purchased goods and services as a relevant category of scope 3 emissions, but for the time being, we don't have adequate data on our supply chain emissions to be able to include this category in our Scope 3 emissions.

Data sources and assumptions

Energy, water, and waste data are collected from various sources. In addition to having our own monitoring systems on sites, we collect data from the systems and invoices of our service providers.

For Scope 3 emissions calculation, we collect business travel data from our travel agency, outgoing logistics data from our logistics partners, and waste management data from our waste management service providers. For the incoming logistics and the energy consumption of weather radars, we use data from our internal systems, and for commuting, we use data from the commuting survey that was renewed in 2019.

The environmental figures for 2019 are estimates based on data that was available at the time of the publication of the report for the first 10–12 months of the year. For the missing part, the figures for November and December 2019 are estimates based on actual data for the past 12 months. There is no reason to assume that there are significant differences between the estimates and the actual figures for 2019.

The data on waste and water consumption on our production site in France is based on estimations while accurate data is still missing for the time being.

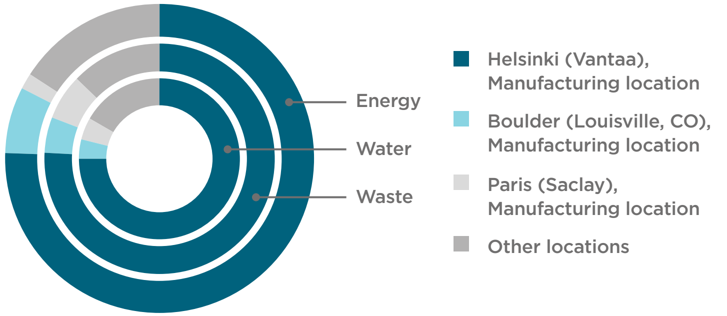
Emission factors

Greenhouse gas emissions are calculated using the best available conversion factors. These emission factors mainly come from the DEFRA database and GHG Protocol calculation tools. Certain emission factors come from other sources, such as our logistics partners, local energy companies, and vehicle manufacturers. For flights, we use DEFRA's emission factor with radiative forcing that takes into account also the non-CO_2 climate change effects of aviation.

To determine our Scope 2 carbon footprint, we primarily use the market-based calculation method, which takes our purchased-energy specific emissions into account. In this calculation, locations using 100% renewable energy use 0.0 g CO_2e / kWh as their emission factor. In addition, we report our location-based Scope 2 emissions, which are based on average country-specific emissions from energy production.

Our carbon footprint includes all greenhouse gases converted into carbon dioxide using global warming potential (GWP-100). With the further development and expansion of our footprint calculation, we have calculated our footprint retrospectively to ensure comparability between reporting periods.

DIVISION OF ENVIRONMENTAL IMPACTS BY LOCATION



Products

A significant portion of the environmental impacts generated by our products arise during their use. Our industrial products and solutions help our customers improve their environmental performance, and our weather measurement solutions support decision-making in society by providing a wide range of critical information.

The environmental footprint generated by products over their life cycle can be affected during the product design phase. Our product development process includes environmental requirements, and many of the required product qualities, such as energy efficiency, maintainability, and recyclability, are beneficial for the environment. The updateability and modular design of many of our products, combined with our field services, extend the product life cycle, which typically ranges from a year to over 20 years. However, we are aware that the global scarcity of resources and rapidly developing environmental requirements call for us to improve our product design process continuously. In 2019, we have continued the development work in order to respond to new environmental requirements and to advance environmentally sound design.

To ensure that our products are safe for people and the environment, we set strict requirements during the product design process for the materials used in our products. Components are analyzed early on in the new product development process to ensure compliance. We systematically collect information about substances that REACH* legislation has defined to be of very high concern as well as about compliance with RoHS** legislation. We do this in order to enable the safe use and end-of-life treatment of products. We also select new suppliers carefully and ensure that they meet our strict requirements. At the end of product life cycle, we advise customers to recycle the products in accordance with local best practices for electronics recycling or to return them to Vaisala for recycling.

* REACH = Registration, Evaluation, Authorisation, and Restriction of Chemicals
** RoHS = Restriction of Hazardous Substances in electrical and electronic equipment

Personnel

The total number of employees at the end of 2019 was 1,837; and the average number of personnel employed during the year was 1,829. The average age of personnel was 43 years. At the end of the year, 95% of employees were permanent and 5% temporary.

Turnover

During 2019, 193 permanent employees were recruited and 194 permanent employees left the company, out of whom 21 retired. The turnover rate for permanent employees was 11%, and the recruitment rate was 11%.

Major changes during the reporting period

On October 1, 2019 Vaisala closed the acquisition of professional business-to-business weather services from the Finnish weather forecast services company Foreca Oy. This acquisition strengthens Vaisala's digital offering for weather-critical operations by bringing valuable skills and a technology platform for weather forecasting, modelling, and impact analysis. Following the acquisition, nine Foreca employees joined Vaisala.

In August, Vaisala announced a refocus and reorganization of its digital business' operations. At the same time, the name of Digital Solutions business line was renamed to Vaisala Digital. While a new team for co-located transportation solutions development, including road, airport, and ports, will be ramped up in Finland, 21 employees in the United States were made redundant.

Collective agreements and trade unions

Vaisala recognizes Technology Industries of Finland as its trade union. Vaisala's employees in Finland are covered by three collective agreements: the collective agreement for employees in technology industries, the collective agreement for salaried employees in technology industries, and the collective agreement for senior salaried employees in technology industries.

Recruitments by age group

	-19	20-29	30-39	40-49	50-59	60-	Total
Male	14	88	67	36	18	1	**224**
Female	7	46	24	13	10	0	**100**
Total	**21**	**134**	**91**	**49**	**28**	**1**	**324**

Turnover by age group

	-19	20-29	30-39	40-49	50-59	60-	Total
Male	11	78	31	41	30	16	**207**
Female	4	36	20	14	13	16	**103**
Total	**15**	**114**	**51**	**55**	**43**	**32**	**310**

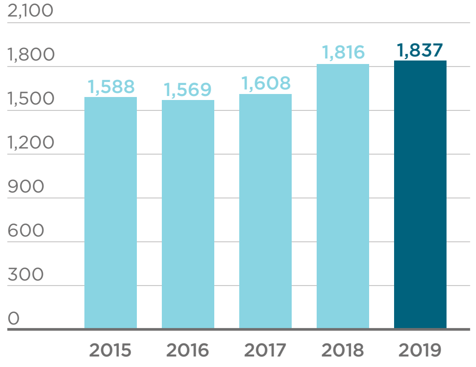
Recruitments by region

	Finland	Americas	EMEA	APAC	Total
Permanent	88	44	24	37	**193**
Temporary	99	2	26	4	**131**
Total	**187**	**46**	**50**	**41**	**324**

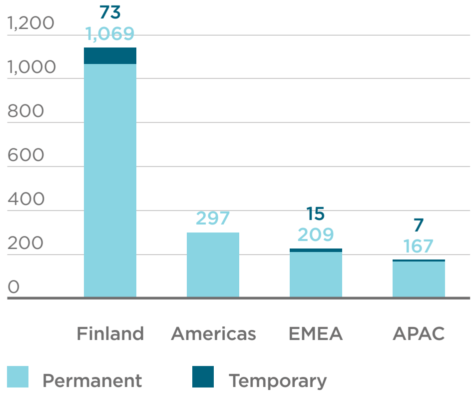
Turnover by region

	Finland	Americas	EMEA	APAC	Total
Permanent	65	84	31	14	**194**
Temporary	87	4	24	1	**116**
Total	**152**	**88**	**55**	**15**	**310**

PERSONNEL AT THE END OF THE YEAR



PERSONNEL BY REGION AND CONTRACT



Americas: North and South America
EMEA: Europe, Middle-East, and Africa
APAC: Asia-Pacific

Salaries and wages paid by the company are based on local collective and individual agreements, individual performance, and the requirements of each position. The base salaries are supplemented by a performance-based bonus system, which covers all Vaisala personnel.

Diversity, equality, and inclusiveness

We aim to treat all our employees and applicants equally in all recruitment, hiring, training, and development. Equality and fairness are also important elements of Vaisala's compensation policy. We do not distinguish between gender or other non-professional attributes in employee compensation or benefits plans.

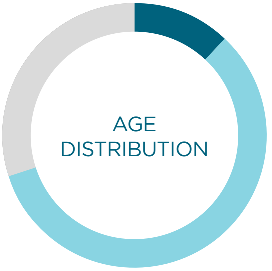
According to the Finnish Non-Discrimination Act, an employer must create a plan to advance equality. The aim of our equality plan is that Vaisala's personnel, jobseekers, and the subcontractors operating within Vaisala's guidance and offices as well as leased personnel will be treated equally, independently of their attributes. Furthermore, our goal is that our employees work within a safe, caring, communal, and accessible operating environment. In accordance with the Finnish Equality Act, we promote gender equality in a target-oriented and systematic manner. As part of preparing our equality plan, we conducted a wage survey that found the wage equality between genders to be on an excellent level, as women's wage was, on average, 100.8% of men's wage on the same job requirement level.

In North America, Vaisala Inc. is an Equal Opportunity Employer (EOE). All qualified applicants are considered for employment without regard to age, race, color, religion, gender, marital status, national origin, sexual orientation, disability, or veteran status.

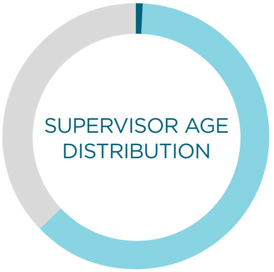
Also Leosphere SAS that Vaisala acquired in late 2018 aims to promote diversity. Moreover, the French law protects employees from discrimination in recruitment, remuneration, and career development, for example.

2% Doctoral degree
69% University degree
10% College/vocational school
16% High school/vocational institute
3% Comprehensive school

* Covers 81% of permanent personnel



12% < 30
59% 30–49
29% ≥ 50

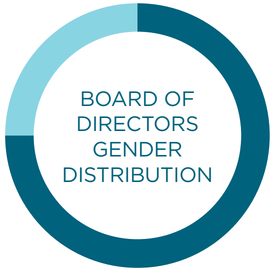


1% < 30
62% 30–49
37% ≥ 50

71% Male
29% Female

74% Male
26% Female

57% Male
43% Female



75% Male
25% Female

Occupational health and safety

Our occupational health and safety management and development is guided by our Global Quality, Environment, and Health and Safety (QEHS) Policy and our occupational health and safety system, which received the ISO 45001 certification in 2019.

We invest in health and safety training for employees and ensure that people working in risk-prone environments or jobs – such as working at heights, electrical work, and work involving chemicals or gases – have the necessary qualifications. Our new e-learning system streamlined organizing health and safety trainings globally. During 2019, our health and safety e-training, which was introduced in Finland in 2018, was expanded to other locations in English and in French.

In 2019, we conducted a safety survey for the first time in Vaisala. The purpose of the survey was to find out the state of our safety culture and identify possible development areas. 23% of our staff answered the survey. The results showed that work-related risks are generally well known, employees interfere with colleagues' risk-taking, and people know how to carry out their work safely. On the other hand, safety was not visible enough in daily management or in teams' targets. In the future, we will focus our efforts on this area by increasing the visible participation of management in safety culture development, for example.

Proactive reporting and investigation

We encourage our employees and contractors to proactively report any health and safety risks in the workplace and make suggestions to improve the safety of working conditions and methods. To prevent injuries, harmful exposure, and the recurrence of incidents, reported deviations and their causes are investigated. After the investigation, corrective measures are implemented without delay. A globally consistent reporting procedure and database improve the efficiency and transparency of monitoring health and safety performance.

Our goal for 2019 was to double the frequency of proactive reporting (risks, near misses, and suggestions for improvement) compared to the previous year. However, the reporting frequency was only 8.55 reports per 100 employees, and we fell far behind our target. We aim to increase the reporting frequency in the future by continuing to focus on education and increasing the understanding of the importance of proactive reporting.

Collaboration

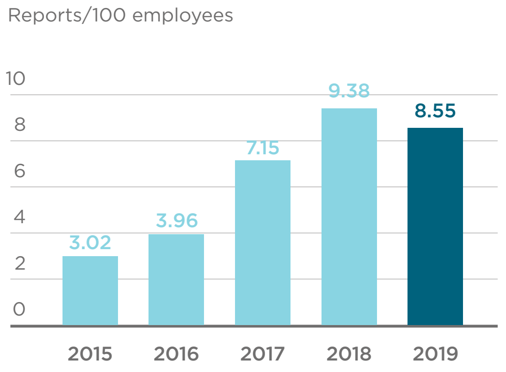
We have increased collaboration between employees and the employer by establishing Health and Safety Committees in several locations. At the moment, active Health and Safety Committees are operating in Finland, Canada, Germany, the United States, the United Kingdom, Japan, and China.

These committees meet at least four times a year. The representatives on the Health and Safety Committees currently make up 3.7% of all employees and represent 86.4% of the personnel. Our goal is to have at least one in three non-managerial employees on each committee.

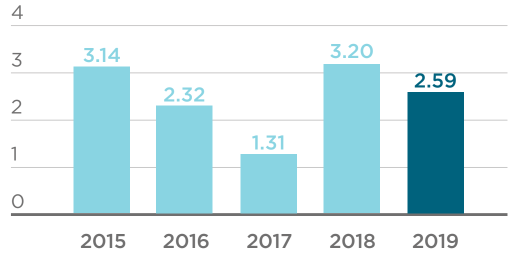
Injuries

A total of nine injuries occurred in 2019, and out of them six occurred at work. The injury rate was 2.59 injuries per million hours worked, and we did not reach our goal for 2019, which was 1.0 accidents per million hours worked. We continue to work towards our long-term goal of zero injuries and occupational diseases, and we believe we can achieve this goal through continuous improvement.

PROACTIVE REPORTING



INJURIES PER MILLION WORKING HOURS (TRI)



Ethics and compliance

Vaisala Code of Conduct

The Code of Conduct reflects Vaisala's values: Integrity, Strong together, Innovation and renewal, and Customer focus. All of our employees, partners, distributors, and agents must comply with the Code of Conduct under all circumstances.

All Vaisala employees must complete the Code of Conduct training at regular intervals and confirm their commitment to the Code and the International Anti-Corruption Policy. The mandatory Code of Conduct training was renewed in late 2019. Of all employees, 96% had completed the training by January 20, 2020. All new employees commit to complying with the Code of Conduct and the International Anti-Corruption Policy as part of their employment contracts as well as participate in induction training on the operating principles and procedures of the company. Violations of the Code of Conduct or the International Anti-Corruption Policy may lead to disciplinary action, including termination of employment.

Prevention of corruption and bribery

Vaisala has a zero tolerance policy towards all forms of corruption. Our International Anti-Corruption Policy strictly forbids offering, giving, soliciting, arranging, demanding, or accepting bribes, whether directly or through third parties. The Policy includes detailed guidelines on acceptable hospitality and entertainment. Periodical training for employees on the Code of Conduct also covers aspects related to the International Anti-Corruption Policy. In addition, a more specific Anti-Corruption Policy training has been tailored to employees who according to risk analysis might face challenging situations in their work.

To serve its customers as efficiently as possible, Vaisala conducts business through a network of partners: with distributors, agents, and resellers in more than 100 countries. Our business operations cover a large geographical area, meaning that we also operate in countries with a demanding business environment. For this reason, we pay special attention to selecting our business partners. An initial study is usually followed by a more profound due diligence process carried out by Vaisala employees or external consultants. Our agreements with our partners typically include strict requirements concerning immediate termination if a partner violates any aspects of our Code of Conduct or International Anti-Corruption Policy, both of which are attached to the agreements we sign with partners.

Supplier Code of Conduct

The Supplier Code of Conduct reflects Vaisala's values and operating principles and is based on principles created by the International Labor Organization (ILO), the United Nations Global Compact initiative, and the Responsible Business Alliance (formerly EICC). In addition, the Supplier Code of Conduct includes requirements concerning standards and procedures in line with the Business Social Compliance Initiative (BSCI) and Social Accountability International (SAI).

In addition, Vaisala's suppliers must take proper precautions to ensure that they do not source any minerals originating from conflict areas, in accordance with Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. Such minerals include tin, tungsten, tantalum, and gold mined in the Democratic Republic of Congo (DRC) or its neighboring countries, for example.

Compliance monitoring and violations

Compliance with the Code of Conduct and other guidelines is continuously monitored by regional and business area managers and immediate supervisors as well as by means of internal audits. If any Vaisala employee knows or suspects that the Code of Conduct or the International Anti-Corruption Policy is being violated, they must report the incident. Vaisala provides a whistleblowing channel for its employees and external stakeholders for reporting violations. In addition to reporting suspected violations, they may communicate other concerns through the channel. The channel can be used via email or regular mail, and messages can be sent anonymously.

Vaisala has a Compliance Committee, which monitors compliance with the Code of Conduct and other guidelines as well as processes reports of suspected non-compliance. The Committee consists of members from the Legal Department, Finance & Control, and Human Resources and is headed by the Senior Vice President for Compliance and Risk Management.

In 2019, the Committee became aware of two suspected violations of the Code of Conduct. One of the cases was not considered relevant, while the other case did not contain enough information to lead to further action after the initial investigation.

There were no confirmed complaints or sanctions by the authorities during 2019. No incidents of corruption, anti-competitive behavior, anti-trust or monopoly practices, or any other violations of laws or regulations were confirmed during 2019. Furthermore, there were no violations of human rights, labor rights, or environmental legislation or concerns related to these in the immediate supply chain.

Respect for human rights

Vaisala is committed to respecting human rights as defined in the United Nations' Universal Declaration of Human Rights and endorses ILO's Declaration of Fundamental Principles and Rights at Work. Vaisala does not condone violations of human rights or labor laws in any part of its supply chain. The company takes appropriate measures to ensure that the risk of violations of its Code of Conduct or Supplier Code of Conduct is minimized in its immediate supply chain.

Vaisala's internal supply chain risk assessment suggests that the risk of human rights violations is the highest beyond the third tier of suppliers. Typical issues are the same as in other electronics manufacturing supply chains, including unpaid or excessive overtime, dangerous working conditions, bonded labor, and low wages. Risks in Vaisala's supply chain are mitigated by carefully choosing preferred suppliers and working closely with first-tier suppliers, insisting on policies that go beyond the requirements of local laws.

Another area where we have identified a high need to understand and manage human rights risks is our global project subcontractor network, where we need to ensure, for example, that our partners follow adequate health and safety standards. Therefore, we have started to give concrete safety instructions to our subcontractors, in addition to the requirements in the Supplier Code of Conduct. We also focus on increasing the ability of our personnel to identify and manage human rights risks while operating with potential or selected subcontractors.

Read more
Read more about Vaisala's policies: vaisala.com/standards-and-policies
Vaisala Whistleblowing Channel can be reached at wbc@vaisala.com

Responsible supply chains

In its supply chain, Vaisala seeks to promote innovation and a competitive advantage responsibly through cooperation. Our business operations are based on a wide selection and low volumes, and this special expertise depends on the effective management of hundreds of suppliers and selected strategic partners. To deliver on our customer promise and meet stakeholder expectations, we must have a reliable and responsible supply chain. We set strict requirements for our suppliers, and we cooperate with them closely over the long term, which enables both parties to further develop their operations.

Typical product supply chain

Vaisala's direct suppliers are generally located close to its product development operations and manufacturing sites. We purchase subassemblies, components, and mechanical parts mainly from Finland and other European countries as well as the United States. Our upstream supply chains resemble other typical supply chains in the global electronics manufacturing industry.

Supplier management

Vaisala's supplier management model has four categories: potential, approved, preferred, and strategic suppliers. In addition to these categories, suppliers may be, for example, in phase-out when their contracts are being discontinued gradually or on watch-list when they are monitored closely due to serious issues experienced over the long term. The classification defines the relationship between Vaisala and the supplier and outlines the management model for each category. All suppliers are expected to meet certain requirements before they can be approved and categorized. The requirements for suppliers are based on the classification, risk assessment, and spend. Suppliers must also commit to the Supplier Code of Conduct.

We use a Supplier Sustainability Self-Assessment Questionnaire (SAQ) as part of supplier development in all categories in order to assess environmental, social, and governance (ESG) risks. The questionnaire exposes risks related to environmental management, occupational safety, social responsibility, governance, and supply chain management. If a supplier's score in the assessment does not meet Vaisala's requirements, the supplier is expected to implement corrective measures to improve their sustainability as part of their comprehensive development plan, and any weaknesses are addressed in cooperation with the supplier

As part of supplier management, we also audit our suppliers to check aspects related to quality and sustainability, such as their knowledge and application of our Supplier Code of Conduct, labor and human rights, occupational safety, environmental management, product safety (RoHS and REACH), and conflict mineral management.

In 2019, our direct supplier base grew by over 100 new suppliers, most of which came through the acquisitions made in late 2018. Integration of the new suppliers into the sustainability management processes of Vaisala's supply chain started in late 2019, and the work will be continued during the next years, prioritizing the suppliers based on risk and spend. By the end of the reporting period, no ESG risk evaluations had been made for the new suppliers, and most of the new suppliers had not signed Vaisala's Supplier Code of Conduct yet. Therefore, our supply chain sustainability management indicators went down compared to the previous year.

Read more
Read more about supplier management at Vaisala:
vaisala.com/suppliers

Key figures of Vaisala's direct supply chain*

490
(2018: 373)
suppliers

28
(2018: 32)
suppliers audited during the year

82%
(2018: 93%)
of purchases (based on spend) were made from suppliers rated on ESG metrics

87%
(2018: 91%)
of purchases (based on spend) were made from suppliers who had signed the Supplier Code of Conduct

* By direct suppliers, we mean suppliers related to our products, which includes manufacturing partners as well as mechanics and component suppliers.

50% Strategic suppliers (11 suppliers)
20% Preferred suppliers (46 suppliers)
25% Approved suppliers (334 suppliers)
5% Other (99 suppliers)

59% Finland (154 suppliers)
26% Other EU (138 suppliers)
10% North America (156 suppliers)
2% China (33 suppliers)
1% South-East Asia (5 suppliers)
1% Japan, South Korea, and Australia (4 suppliers)

UN Global Compact

Vaisala joined the UN Global Compact in 2008 and has committed to following the ten guiding principles of the initiative. These ten principles are reflected in Vaisala's Code of Conduct, and we report on the implementation of the principles on an annual basis as part of our sustainability reporting. Our sustainability reports have qualified for the Global Compact Advanced differentiation level since its introduction in 2010.

Human rights	
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights.	p. 59–60 Ethics and compliance
Principle 2: Make sure that they are not complicit in human rights abuses.	p. 59–60 Ethics and compliance

Labor standards	
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	p. 55 Collective agreements and trade unions
Principle 4: The elimination of all forms of forced and compulsory labor.	p. 59–60 Ethics and compliance
Principle 5: The effective abolition of child labor.	p. 59–60 Ethics and compliance
Principle 6: The elimination of discrimination in respect of employment and occupation.	p. 57 Diversity, equality, and inclusiveness; p. 59–60 Ethics and compliance

Environment	
Principle 7: Businesses should support a precautionary approach to environmental challenges.	p. 49 Environmental impacts
Principle 8: Undertake initiatives to promote greater environmental responsibility.	p. 49 Environmental management, p. 51 Energy and emissions, p. 52 Waste
Principle 9: Encourage the development and diffusion of environmentally friendly technologies.	p. 54 Products

Anti-corruption	
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.	p. 59–60 Ethics and compliance

Signing of non-financial information

Disclosure of non-financial information in accordance with Finnish Accounting Act is presented in the annual report's Sustainable business practices section, chapters Business model and Dashboard included in the Creating value section, as well as in the Risk management chapter included in the Governance section.

Vantaa February 12, 2020

Petri Castrén	Petra Lundström	Jukka Rinnevaara
Kaarina Ståhlberg	Tuomas Syrjänen	Pertti Torstila
Raimo Voipio Chairman of the Board	Ville Voipio Vice Chairman of the Board	Kjell Forsén President and CEO

Independent limited assurance report

To the Management of Vaisala Oyj

We have been engaged by Vaisala Oyj (hereafter Vaisala) to provide a limited assurance on Vaisala's corporate responsibility information and GRI indicators disclosed in the Vaisala's annual report for the reporting period of January 1, 2019 to December 31, 2019. The scope of the assurance was the content of the Sustainable business practices section and indicators on pages 48–63 and the indicator 201-1 on page 40 of the report.

Management's responsibility

Management is responsible for the preparation of the Sustainability Information in accordance with the Reporting criteria as set out in Vaisala's reporting principles on page 48 of the Non-Financial Information report and the Sustainability Reporting Standards 2016 (Core) of the Global Reporting Initiative. This responsibility includes: designing, implementing, and maintaining internal control relevant to the preparation and fair presentation of the Sustainability Information that are free from material misstatement, whether due to fraud or error, selecting and applying appropriate criteria, and making estimates that are reasonable in the circumstances.

Assurance provider's responsibility

Our responsibility is to express a limited assurance conclusion on the Responsibility Information based on our engagement. We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised) to provide limited assurance on performance data and statements within the Responsibility Information.

ISAE 3000 standard requires that we comply with ethical requirements and plan and perform the assurance engagement to obtain limited assurance whether any matters come to our attention that cause us to believe that the Responsibility Information has not been prepared, in all material respects, in accordance with the Reporting criteria.

We did not perform any assurance procedures on the prospective information, such as targets, expectations, and ambitions, disclosed in the Responsibility Information. Consequently, we draw no conclusion on the prospective information. Our assurance report is made in accordance with the terms of our engagement with Vaisala. We do not accept or assume responsibility to anyone other than Vaisala for our work, for this assurance report, or for the conclusions we have reached.

A limited assurance engagement with respect to responsibility related data involves performing procedures to obtain evidence about the Responsibility Information. The procedures performed depend on the practitioner's judgment, but their nature is different from, and their extent is less than, a reasonable assurance engagement. It does not include detailed testing of source data or the operating effectiveness of processes and internal controls, and consequently they do not enable us to obtain the assurance necessary to become aware of all significant matters that might be identified in a reasonable assurance engagement.

Our procedures on this engagement included:

- Conducting interviews with employees responsible for the collection and reporting of the Responsibility Information and reviewing of the processes and systems for data gathering, including the aggregation of the data for the Responsibility Information;
- Reviewing internal and external documentation to verify to what extent these documents and data support the information included in the Responsibility Information and evaluating whether the information presented in the Responsibility Information is in line with our overall knowledge of corporate responsibility at Vaisala;
- Performing analytical review procedures and testing data on a sample basis to assess the reasonability of the presented responsibility information;
- Performing site visit to Vantaa in Finland to review compliance with reporting policies, to assess the reliability of the responsibility data reporting process as well as to test the data collected for responsibility reporting purposes on a sample basis;
- Conducting an interview to Vaisala's Beijing site through a video conference;
- Assessing that the Responsibility Information has been prepared in accordance with the Sustainability Reporting Standards (Core) of the Global Reporting Initiative.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Our independence, quality control, and competences

We complied with Deloitte's independence policies which address and, in certain cases, exceed the requirements of the International Federation of Accountants Code of Ethics for Professional Accountants in their role as independent assurance providers and in particular preclude us from taking financial, commercial, governance, and ownership positions which might affect, or be perceived to affect, our independence and impartiality, and from any involvement in the preparation of the report. We have maintained our independence and objectivity throughout the year, and there were no events or prohibited services provided which could impair our independence and objectivity.

Deloitte Oy applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements. This engagement was conducted by a multidisciplinary team including assurance and sustainability expertise with professional qualifications. Our team is experienced in providing sustainability reporting assurance.

Conclusion

On the basis of the procedures we have performed, nothing has come to our attention that causes us to believe that the information subject to the assurance engagement is not prepared, in all material respects, in accordance with the Sustainability Reporting Standards (Core) of the Global Reporting Initiative or that the Responsibility Information is not reliable, in all material respects, with regard to the Reporting criteria.

Our assurance statement should be read in conjunction with the inherent limitations of accuracy and completeness for responsibility information.

Helsinki 12.2.2020
Deloitte Oy

Merja Itäniemi	Lasse Ingström
Authorized Public Accountant	Authorized Public Accountant

GRI content index

The Global Reporting Initiative (GRI) content index is provided to assist the reader in navigating through the annual report and to compare it to the GRI Standards Guidelines. For more information about the guidelines, please see globalreporting.org.

Content	Indicator #	References and reasons for omissions
GENERAL DISCLOSURES		
GRI 102: GENERAL DISCLOSURES 2016		
1. Organizational profile		
Name of the organization	102-1	Vaisala Oyj
Activities, brands, products, and services	102-2	3–4 Vaisala in brief
Location of headquarters	102-3	Vantaa, Finland
Location of operations	102-4	3–4 Vaisala in brief, 27 Global markets, 48 Boundaries, 151 Consolidated financial statements: Note 27. Subsidiaries
Ownership and legal form	102-5	107 Board of Directors' report: Ownership structure
Markets served	102-6	3–4 Vaisala in brief (main markets), 12 Business model
Scale of the organization	102-7	3–4 Vaisala in brief (net sales, number of offices, number of employees), 28 Operations (number of products), 111 Consolidated statement of financial position
Information on employees and other workers	102-8	56 Personnel by area and contract Gender distribution of temporary and part-time employees is not reported separately due to the small amount of such employees. Work performed by workers who are not employees is not reported due to the small amount of such work.
Supply chain	102-9	61–62 Responsible supply chains
Significant changes to the organization and its supply chain	102-10	55 Major changes during the reporting period, 61–62 Supplier management, 141 Consolidated financial statements: Capital structure
Precautionary principle or approach	102-11	54 Products, 84 Risk management
External initiatives	102-12	42–43 Collaboration in the scientific community, 63 UN Global Compact
Membership of associations	102-13	42–43 Collaboration in the scientific community, 55 Collective agreements and trade unions

Content	Indicator #	References and reasons for omissions
2. Strategy		
Statement from senior decision-maker	102-14	6–7 Chairman and CEO's message
Key impacts, risks, and opportunities	102-15	13 Value creation model, 14 Dashboard, 15–16 UN Sustainable Development Goals, 17–19 Megatrends, 84–87 Risk management
3. Ethics and integrity		
Values, principles, standards, and norms of behavior	102-16	11 Strategy, 59–60 Ethics and compliance
Mechanisms for advice and concerns about ethics	102-17	59–60 Ethics and compliance
4. Governance		
Governance structure	102-18	75–83 Corporate Governance Statement
Nominating and selecting the highest governance body	102-24	76 Selection criteria, diversity, and the independence of the members
Highest governance body's role in sustainability reporting	102-32	The Board of Directors approves the sustainability information included in the annual report.
5. Stakeholder engagement		
List of stakeholder groups	102-40	30 Stakeholder engagement
Collective bargaining agreements	102-41	70% of employees are covered by collective bargaining agreements.
Identifying and selecting stakeholders	102-42	30 Stakeholder engagement
Approach to stakeholder engagement	102-43	30 Stakeholder engagement
Key topics and concerns raised	102-44	30 Stakeholder engagement
6. Reporting practice		
Entities included in the consolidated financial statements	102-45	151 Consolidated financial statements: Note 27. Subsidiaries
Defining report content and topic boundaries	102-46	48 Reporting principles
List of material topics	102-47	13 Value creation model, 15–16 UN Sustainable Development Goals, 49–54 Environment, 55–57 Personnel, 58 Occupational health and safety, 59–60 Ethics and compliance, 61–62 Responsible supply chains

Content	Indicator #	References and reasons for omissions
Restatements of information	102-48	51 Carbon footprint, 52 Waste
Changes in reporting	102-49	48 Boundaries The reporting boundary for carbon footprint was set to include sites with at least 20 employees, as a change to the previous 15. This change did not have a significant impact on the reported figures.
Reporting period	102-50	Calendar year 2019
Date of most recent report	102-51	27.2.2019
Reporting cycle	102-52	Annually
Contact point for questions regarding the report	102-53	177 Contacts
Claims of reporting in accordance with the GRI Standards	102-54	This report has been prepared in accordance with the GRI Standards: Core option.
GRI content index	102-55	
External assurance	102-56	48 Independent assurance, 65 Independent limited assurance report
ECONOMIC PERFORMANCE		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	40 Economic value
GRI 201: ECONOMIC PERFORMANCE 2016		
Direct economic value generated and distributed	201-1	40 Direct economic value generated and distributed Figures are reported on Group level. We consider the regional level reporting of these figures proprietary information.
Defined benefit plans and obligations and other retirement plans	201-3	122–124 Consolidated financial statements: Note 6. Pension obligations Percentage of salary contributed and participation level are not reported.

Content	Indicator #	References and reasons for omissions
ENVIRONMENT		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	49–54 Environment
GRI 302: ENERGY 2016		
Energy consumption within the organization	302-1	51 Energy and emissions, 53 Scope of environmental reporting, 53 Data sources and assumptions Fuel consumption or sold energy are not considered material, as Vaisala does not consume process fuels or sell electricity in any significant quantities.
Energy intensity	302-3	51 Energy and emissions
GRI 303: WATER 2016		
Water withdrawal by source	303-1	52 Water consumption, 53 Scope of environmental reporting, 53 Data sources and assumptions
GRI 305: EMISSIONS 2016		
Direct (Scope 1) GHG emissions	305-1	51 Energy and emissions, 53 Scope of environmental reporting, 53 Data sources and assumptions, 53 Emission factors
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GRI 306: EFFLUENTS AND WASTE 2016		
Waste by type and disposal methods	306-2	52 Waste, 53 Scope of environmental reporting, 53 Data sources and assumptions
PERSONNEL		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	34–36 Value to employees, 55–57 Personnel
GRI 401: EMPLOYMENT 2016		
New employee hires and employee turnover	401-1	55 Turnover

Content	Indicator #	References and reasons for omissions
GRI 402: LABOR/MANAGEMENT RELATIONS 2016		
Minimum notice periods regarding operational changes	402-1	The personnel in Finland (62% of Vaisala's personnel) is covered by collective agreements of technology industries, which specify the minimum notice period. For other countries, the notice periods vary depending on legislation.
GRI 404: TRAINING AND EDUCATION 2016		
Percentage of employees receiving regular performance and career development reviews	404-3	36 Learning and development As all of our employees are offered the opportunity to have annual development discussions, regional and gender distribution are not considered relevant to report for this indicator. The figure excludes long-term absent and recently recruited employees.
GRI 405: DIVERSITY AND EQUAL OPPORTUNITY 2016		
Diversity of governance bodies and employees	405-1	57 Diversity, equality, and inclusiveness; 77 Composition of the Board of Directors Dec 31, 2019 (Board members' years of birth); 79 Members of the Management Group Dec 31, 2019 (Management Group members' years of birth)
GRI 406: NON-DISCRIMINATION 2016		
Incidents of discrimination and corrective actions taken	406-1	No incidents of discrimination
EMPLOYEE WELL-BEING		
Well-Being Index	Non-GRI	35–36 Well-being
OCCUPATIONAL HEALTH AND SAFETY		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	58 Occupational health and safety
GRI 403: OCCUPATIONAL HEALTH AND SAFETY 2016		
Workers representation in formal joint management-worker health and safety committees	403-1	58 Collaboration
Types of injury and rates of injury, occupational diseases, lost days and absenteeism, and number of work-related fatalities	403-2	58 Injuries Occupational disease rate, absentee rate, and lost day rate are not considered material in Vaisala. Data for contractors is too limited for reporting.

Content	Indicator #	References and reasons for omissions
ETHICS AND COMPLIANCE		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	59–60 Ethics and compliance
GRI 205: ANTI-CORRUPTION 2016		
Communication and training about anti-corruption policies and procedures	205-2	59 Vaisala Code of Conduct, 59 Prevention of corruption and bribery
Confirmed incidents of corruption and actions take	205-3	59 Compliance monitoring and violations (no incidents)
GRI 206: ANTI-COMPETITIVE BEHAVIOR 2016		
Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	206-1	59 Compliance monitoring and violations (no incidents)
GRI 307: ENVIRONMENTAL COMPLIANCE 2016		
Non-compliance with environmental laws and regulations	307-1	59 Compliance monitoring and violations (no incidents)
GRI 412: HUMAN RIGHTS ASSESSMENT 2016		
Employee training on human rights policies or procedures	412-2	Vaisala's Code of Conduct training that is organized annually includes also topics related to human rights.
GRI 416: CUSTOMER HEALTH AND SAFETY 2016		
Incidents of non-compliance concerning the health and safety impacts of products and services	416-2	59 Compliance monitoring and violations (no incidents)
GRI 417: MARKETING AND LABELING 2016		
Incidents of non-compliance concerning product and service information and labeling	417-2	59 Compliance monitoring and violations (no incidents)
GRI 419: SOCIOECONOMIC COMPLIANCE 2016		
Non-compliance with laws and regulations in the social and economic area	419-1	59 Compliance monitoring and violations (no incidents)

Content	Indicator #	References and reasons for omissions
RESPONSIBLE SUPPLY CHAINS		
GRI 103: MANAGEMENT APPROACH 2016	103-1-3	61–62 Responsible supply chains
GRI 308: SUPPLIER ENVIRONMENTAL ASSESSMENT 2016		
New suppliers that were screened using environmental criteria	308-1	61–62 Responsible supply chains
GRI 414: SUPPLIER SOCIAL ASSESSMENT 2016		
New suppliers that were screened using social criteria	414-1	61–62 Responsible supply chains
GRI 407: FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING 2016		
Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	407-1	59–60 Respect for human rights, 61–62 Responsible supply chains The topic is material only in some parts of the supply chain, not in Vaisala's own operations.
GRI 408: CHILD LABOR 2016		
Operations and suppliers at significant risk for incidents of child labor	408-1	59–60 Respect for human rights, 61–62 Responsible supply chains The topic is material only in some parts of the supply chain, not in Vaisala's own operations.
GRI 409: FORCED OR COMPULSORY LABOR 2016		
Operations and suppliers at significant risk for incidents of forced or compulsory labor	409-1	59–60 Respect for human rights, 61–62 Responsible supply chains The topic is material only in some parts of the supply chain, not in Vaisala's own operations.

Governance

Corporate Governance Statement 2019

Vaisala's general governance principles

Vaisala's corporate governance is based on and complies with the laws of Finland and Vaisala's Articles of Association. Consolidated financial statements and other financial reports are prepared according to the International Financial Reporting Standards (IFRS), approved by the EU. The company complies with the rules, regulations, and guidelines for listed companies issued by Nasdaq Helsinki Ltd and Finnish Supervisory Authority as well as Finnish Corporate Governance Code 2015 published by the Securities Market Association.

Vaisala Board of Directors has approved this Corporate Governance Statement in its meeting on February 12, 2020. Deloitte Oy, Audit Firm, the company's auditor, has verified that the statement has been issued and that the general description of internal audit and risk management systems associated with the financial reporting process conforms to the same in financial statements.

More information

This Corporate Governance Statement has been drawn up as a document independent of the Board of Director's Report and is available on the company's website at vaisala.com/investors. The Finnish Corporate Governance Code is available on website at cgfinland.fi/en.

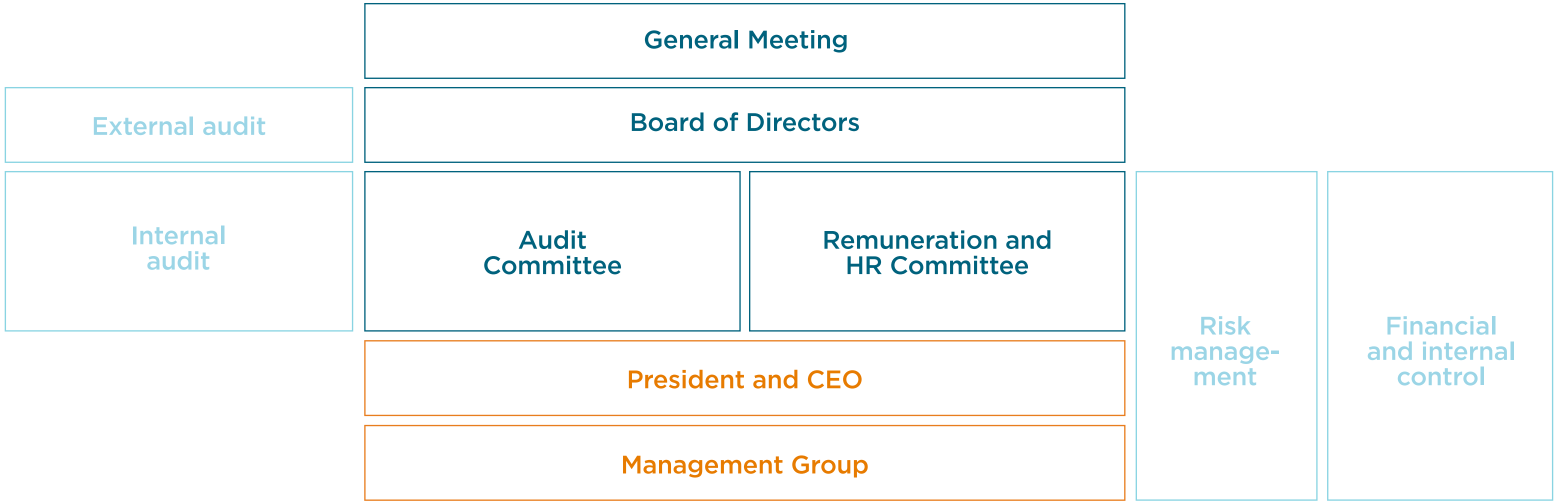
Deviation from the recommendations of the Corporate Governance Code and the explanation for the deviation

The term of the members of Vaisala's Board of Directors deviates from the Recommendation 6 of Corporate Governance Code, which recommends a term of one year. The term of Vaisala's member of the Board of Directors is determined in accordance with its Articles of Association. Under the Articles of Association, a member's term is three years, beginning at the close of the General Meeting in which the member is elected and ending at the close of the third subsequent Annual General Meeting.

A longer term of office of the Board members is justified by the long-term development of Vaisala's business as well as by the nature of the business. The practice has worked well, and Vaisala's shareholders are committed to it.

Governing bodies

The General Meeting, the Board of Directors, and the President and CEO, assisted by the Management Group, are responsible for the governance of the Vaisala Corporation.



General meeting

The General Meeting is the supreme decision-making body of Vaisala, in which all the shareholders of the company can participate in the supervision and control of the company and exercise their right to vote, speak, and ask questions. The Annual General Meeting is held once a year before the end of June on a date determined by the Board of Directors. It decides on the matters stipulated in the Finnish Limited Liability Companies Act and the Articles of Association. The decisions are mainly made with simple majority of votes.

The Chairman of the Board of Directors, members of the Board of Directors, and the President and CEO are present at the Annual General Meeting. The auditor is present at the Annual General Meeting. Board member candidates are present at the Annual General Meeting where they are elected. If the above-mentioned person or persons fail to attend the Annual General Meeting, Vaisala notifies the General Meeting of such non-attendance. The members of the Management Group participate in the Annual General Meeting, if possible.

Participation in the General Meeting requires that the shareholder is registered in Vaisala's shareholder register, maintained by Euroclear Finland Ltd, on the record date of the meeting, and that he/she registers for the meeting by the date mentioned in the meeting notice.

Shareholders are entitled to have an issue placed on the agenda of the Annual General Meeting, provided that the issue can be decided upon by the Annual General Meeting according to the Limited Liability Companies Act. The request must be submitted in writing to the Board of Directors early enough that the issue can be included in the meeting notice. The company announces the date by which the shareholder must notify the Board of Directors of an issue to be added to the agenda of the Annual General Meeting on its website. The date is available by the end of the previous financial year.

Vaisala publishes a notice of the Annual General Meeting no more than two months before the record date and no less than three weeks before the meeting on the company's website or in any other way that may be decided by the Board of Directors, or Vaisala may deliver it directly to shareholders when required by law. In addition, Vaisala publishes a meeting notice as a stock exchange release after the Board of Directors has decided on the convening of the Annual General Meeting. Agenda of the Annual General Meeting, proposals on decisions, and meeting documents are available on the company's website at least three weeks prior to the meeting. Documents of the Annual General Meeting will be held on the company's website for at least five years from the time of the meeting. Minutes of a meeting will be published on the company's website within two weeks of the meeting.

More information
Minutes of the meetings and other documents related to the General Meetings can be found on the company's website at vaisala.com/investors.

Board of Directors

Competence, composition, and election

The Board of Directors is responsible for the administration and the proper organization of the operations of the company. The Board acts in accordance with the Articles of Association and the applicable legislation as well as the instructions and recommendations of the Financial Supervisory Authority and Nasdaq Helsinki Ltd. In accordance with the Articles of Association, Vaisala Corporation Board of Directors comprises at least four and maximum eight members. The Annual General Meeting elects all Board members. The Board of Directors elects a Chairman and a Vice Chairman from among its members. Under the Articles of Association, the term of the Board members is three years. The term begins at the close of the General Meeting in which the member is elected and ends at the close of the third subsequent Annual General Meeting following the member's election.

Selection criteria, diversity, and the independence of the members

The primary goal in Board member election is to gather to the Board of Directors capability, expertise, and experience from various technologies, international relations, global business, and strategically significant industries. The Board should be considered as a whole that is capable of managing its tasks and duties in the best possible way. The goal of the election of the members of the Board of Directors is to ensure that the Board supports the development of the company's current and future business. In addition, the Board should consist of members of both genders and the members should have the chance to allocate a sufficient amount of time to managing their tasks. The goal is that at least 25% of Board members are always men and women. Vaisala Board of Directors in 2019 represents adequate expertise and experience as well as diversity on the established goals.

The majority of the Board members must be independent of the company, and at least two members in this majority must be independent of the company's major shareholders. The Board of Directors evaluates the independence of the members annually based on overall evaluation. This evaluation of a member takes into account information and analysis provided by the member himself/herself.

Meetings, duties, and decision-making

The Board of Directors convenes at least eight times a year and if otherwise needed. The President and CEO and the Chief Financial Officer also attend Board meetings. The other members of the Management Group attend Board meetings as required on the invitation of the Board of Directors. The Board of Directors may, on the basis of the Chairman's decision, establish working groups from among its members in individual cases to prepare the matters allocated for it in order to ensure the effective organization of the Board of Directors' work.

The Board of Directors operates in accordance with an approved written charter, published on the company's website. Meetings may, if necessary, be held as conference calls or e-mail meetings. Minutes of meetings are compiled in English, with annually running numbering. The General Counsel acts as the Secretary of the Board of Directors.

A member of the Board of Directors is not allowed to participate if he/she is biased in that issue between him/her and the company or between the company and a third party when there is possibility to achieve essential advantage to him/her, which may conflict with the company's interest.

The members of the Board of Directors are bound by obligations related to commercial and trade secrets as well as by the restrictions and requirements of the Market Abuse Regulation (EU) N:o 596/2014 (MAR) and the restrictions and obligations of Vaisala's Insider Policy. In their decision-making and other activities, the Board and its members must act in accordance with the interest of the company and all its shareholders as well as in accordance with the principles of due care and data protection.

The Board will have a quorum when more than half of the members are present. Decisions are made on a simple majority basis, and when the votes are even, the Chairman has the casting vote. When the votes for election of the Chairman are even, the Chairman is elected by drawing lots.

The President and CEO is responsible for the execution of the Board of Directors' decisions and reports to the Board on deficiencies or problems observed during the execution.

Main responsibilities of the Board of Directors are

- to decide on the election and dismissal of the President and CEO
- to decide on the employment terms of the President and CEO
- to decide on the election and dismissal of the members of the Management Group and their job descriptions based on the President and CEO's proposition
- to ensure that the company has organized internal control of accounting and financial management as well as to monitor the effectiveness of supervision
- to determine the company's strategy and oversee its implementation and to approve the strategic plans of the business areas
- to determine the company's long-term targets and to monitor their implementation and to accept business areas' long-term targets
- to assess the company's and its business areas' annual action plans
- to approve the company's and its business areas' financial targets
- to make the business decisions, the value of which exceeds the approval limit of the President and CEO according to the Approval Policy, such as business reorganizations, acquisitions and divestitures, major contracts and liabilities, investments, and financing arrangements
- to review and approve the company's most important policies and instructions, such as Approval Policy, Treasury Policy, Disclosure Policy, Dividend Policy, Risk Management Policy, Insider Policy, Code of Conduct, and Anti-Corruption Policy
- to decide on management remuneration and incentive systems

Members of the Board of Directors in 2019

In January 1–March 26, 2019 the Board of Directors comprised eight members. The Chairman of the Board of Directors was Raimo Voipio, the Vice Chairman was Yrjö Neuvo, and the members were Petri Castrén, Petra Lundström, Mikko Niinivaara, Kaarina Ståhlberg, Pertti Torstila, and Ville Voipio. The Board of Directors' secretary was General Counsel Katriina Vainio.

Composition of the Board of Directors Dec 31, 2019

Member	Member since	End of term	Born	Education	Nationality	Main occupation	Shareholding Dec 31, 2019
Raimo Voipio Chairman	1989 Chairman since 1994	2020	1955	M.Sc. (Eng.)	Finnish	Board professional	570,002 (A share) 454,296 (K share)
Ville Voipio Vice Chairman	2015	2021	1974	D.Sc. (Tech.)	Finnish	CTO, Si-Tecno Oy	396,087 (A share) 96,712 (K share)
Petri Castrén	2017	2022	1962	LL.M., MBA (University of Connecticut)	Finnish	CFO, Kemira Oyj	2,401 (A share)
Petra Lundström	2014	2021	1966	M.Sc. (Tech. Physics)	Finnish	Vice President, Nuclear Services, Fortum Power and Heat Oy	5,801 (A share)
Jukka Rinnevaara	2019	2020	1961	M.Sc. (Econ.)	Finnish	President and CEO, Teleste Corporation	720 (A share)
Kaarina Ståhlberg	2016	2022	1966	LL.M (Helsinki and Columbia Universities)	Finnish	General Counsel and M&A, Posti Group Oyj	5,201 (A share)
Tuomas Syrjänen	2019	2022	1976	M.Sc. (El. Eng.)	Finnish	Program Director – AI Renewal, Futurice Oy	2,070 (A share)
Pertti Torstila	2014	2020	1946	M.Sc. (Pol.)	Finnish	Board professional	5,801 (A share)
Total							**988,083 (A share)** **551,008 (K share)** **1,539,091 (Total)**

Shareholdings include also shares held by the Board of Directors' controlled organizations.
In accordance with the recommendation 10, all Board members are independent of the company and of significant shareholders of the company.

The Annual General Meeting held on March 26, 2019 confirmed that the number of Board members is eight. Petri Castrén, Petra Lundström, Kaarina Ståhlberg, Pertti Torstila, Raimo Voipio, and Ville Voipio continued as members of the Board of Directors. Jukka Rinnevaara and Tuomas Syrjänen started as new members of the Board. The Chairman of the Board of Directors is Raimo Voipio, and the Vice Chairman is Ville Voipio. The Board of Directors' secretary is General Counsel Katriina Vainio.

Attendance in board meetings 2019

Member	Attendance/ number of meetings	Attendance %
Raimo Voipio (Chairman)	18/18	100
Yrjö Neuvo (Vice Chairman until March 26, 2019)	3/4	75
Petri Castrén	18/18	100
Petra Lundström	17/18	94
Mikko Niinivaara	4/4	100
Jukka Rinnevaara	14/14	100
Kaarina Ståhlberg	18/18	100
Tuomas Syrjänen	13/14	93
Pertti Torstila	18/18	100
Ville Voipio (Vice Chairman as of March 26, 2019)	18/18	100

Board committees

The Board of Directors has two permanent committees: Audit Committee and Remuneration and HR Committee. The members and the chairs of the Committees are appointed annually from among the members of the Board of Directors in accordance with the charter of the respective committee.

Audit Committee

The Audit Committee assists the Board of Directors in supervising the company's accounting and asset management, risk management, as well as in organizing internal controls and external and internal audit. The Audit Committee manages its tasks in accordance with the charter approved by the Board of Directors, the Securities Market Association's Finnish Corporate Governance Code, as well as the applicable laws and regulations. The Audit Committee's charter is published as part of the charter of the Board of Directors on the company's website. The Audit Committee reports regularly about its meetings to the Board of Directors.

The Audit Committee comprises at least three members, appointed annually by the Board of Directors from among its members. The members of the committee must be independent of the company, and at least one member must also be independent of significant shareholders of the company. A member of the Audit Committee may not participate in the company's or its group company's daily management.

Remuneration and HR Committee

The Remuneration and HR Committee is responsible for preparing human resources matters pertaining to the compensation of the President and CEO as well as top management, evaluation of the performance of the President and CEO and the Management Group, and to remuneration and incentive plans. Additionally, the Remuneration Committee oversees the performance evaluation and successor planning of top management. The Remuneration and HR Committee's charter is available as part of the charter of the Board of Directors on the company's website. The Audit Committee reports regularly about its meetings to the Board of Directors.

The Remuneration and HR Committee comprises at least three members, appointed annually by the Board of Directors from among its members. The majority of the members of the committee must be independent of the company.

Committee members and their attendance in committee meetings in 2019

Committee	Members	Attendance/ number of meetings	Attendance %
Audit Committee	Kaarina Ståhlberg (Chair)	5/5	100
	Petri Castrén	5/5	100
	Mikko Niinivaara (until March 26, 2019)	1/1	100
	Jukka Rinnevaara (as of March 26, 2019)	3/4	75
	Ville Voipio (as of March 26, 2019)	4/4	100
Remuneration and HR Committee	Raimo Voipio (chair until March 26, 2019)	1/1	100
	Ville Voipio (chair as of March 26, 2019)	4/4	100
	Petri Castrén	5/5	100
	Petra Lundström (as of March 26, 2019)	4/4	100
	Mikko Niinivaara (until March 26, 2019)	1/1	100

All members of the Audit Committee as well as the Remuneration and HR Committee are independent both of the company and of significant shareholders.

President and CEO

The Board of Directors appoints the President and CEO. The President and CEO is responsible for the day-to-day management of the company in accordance with the guidelines and instructions given by the Board of Directors and informs the Board of Directors of the development of the company's business and financial situation. The President and CEO is responsible for ensuring that the company's accounting is legally compliant and that its financial affairs have been arranged in a reliable manner. Kjell Forsén has been the President and CEO of Vaisala as well as the Chairman of Vaisala Management Group since 2006. He was born in 1958 and holds a licentiate's degree in technology.

Management Group

The President and CEO is the Chairman of the Management Group. The Management Group comprises seven members. The Management Group meets at least once a month to assist the President and CEO in developing and implementing the strategy, managing operational business, as well as preparing matters handled by the Board. The Management Group draws up annual operational and financial plans as well as targets related to these plans, monitors the implementation of the plans, and prepares major investments and acquisitions. The President and CEO is responsible for the decisions made by the Management Group. Members of the Management Group are responsible for implementing the decisions in their own areas of responsibility.

Members of the Management Group are the Executive Vice Presidents of both business areas, the Chief Financial Officer, the Executive Vice President of Operations, the Executive Vice President of Human Resources, as well as the Group General Counsel. The General Counsel acts as secretary to the Management Group.

Members of the Management Group Dec 31, 2019

Director	Member since	Born	Education	Nationality	Position at Vaisala	Shareholding Dec 31, 2019
Kjell Forsén	2006	1958	Lic.Sc. (Tech.)	Finnish	President and CEO	49,132 (A share)
Mari Heusala	2019	1966	M.Sc. (Econ.)	Finnish	EVP, Human Resources	-
Sampsa Lahtinen	2013	1963	M.Sc. (El. Eng.)	Finnish	EVP, Industrial Measurements business area	15,206 (A share)
Kaarina Muurinen	2011	1958	M.Sc. (Econ.)	Finnish	CFO	29,096 (A share)
Vesa Pylvänäinen	2011	1970	M.Sc. (Econ.)	Finnish	EVP, Operations	15,212 (A share)
Jarkko Sairanen	2016	1963	M.Sc. (Ind. Eng.), MBA (INSEAD)	Finnish	EVP, Weather and Environment business area	14,776 (A share)
Katriina Vainio	2017	1967	LL.M.	Finnish	EVP, Group General Counsel	7,888 (A share)
Total						**131,310 (A share)**

Shareholdings include also shares held by the Management Group's controlled organizations.

Remuneration

The Annual General Meeting decides on the remuneration of the Chairman, Vice Chairman, and Board members as well as on the remuneration of the auditor.

The objective of remuneration is to encourage employees as individuals and as team members to achieve the financial and operational targets set. In determining the remuneration, Vaisala takes into account its financial performance, job grade classification commonly used by peer companies, and external remuneration references. All employees are included in an incentive (STI) plan that promotes the development of net sales and operating result.

Compensation of key executives includes a competitive salary and employee benefits according to local market practices as well as short-term incentive plans (STI) based on predefined annual performance indicators. Incentive plans promote development of net sales and operating result. The key executives also participate in long-term share-based incentive plans (LTI), which are based on the development of the company's profitability and total shareholder return (TSR).

The Board of Directors approves the company's incentive plans and their target groups annually. The Board of Directors also decides on the compensation of the President and CEO and approves the compensation of the direct reports of the President and CEO.

Remuneration of the Board of Directors

The Annual General Meeting held on March 26, 2019 decided that the annual fee payable to the Board members for the term until the close of the Annual General Meeting in 2020 is: the Chairman of the Board of Directors EUR 45,000 and each Board member EUR 35,000. Approximately 40 percent of the annual remuneration will be paid in Vaisala Corporation's series A shares acquired from the market and the rest in cash.

In addition, the Annual General Meeting decided that the compensation fee per attended meeting for the Chairman of the Audit Committee is EUR 1,500 and EUR 1,000 for each member of the Audit Committee, the Chairman and each member of the Remuneration and HR Committee, and any other committee established by the Board of Directors for the term until the close of the Annual General Meeting in 2020. The meeting fees will be paid in cash.

Remuneration of the Board of Directors

EUR 1,000	2019	2018
Petri Castrén	44	43
Petra Lundström	39	35
Yrjö Neuvo (until March 26, 2019)		35
Mikko Niinivaara (until March 26, 2019)	2	43
Jukka Rinnevaara (as of March 26, 2019)	37	
Kaarina Ståhlberg	41	43
Tuomas Syrjänen (as of March 26, 2019)	35	
Pertti Torstila	35	35
Raimo Voipio	46	48
Ville Voipio	42	35
Total	**321**	**317**

Remuneration of the management

President and CEO

The Board of Directors decides on the remuneration of the President and CEO. The overall compensation consists of a monthly salary, fringe benefits, a pension plan, and an incentive plan (STI) as well as the payment of share-based incentive plan LTI 2016. The maximum annual incentive is limited to 72 percent of the President and CEO's annual salary. The President and CEO belongs to a voluntary pension plan, which defines the retirement age as 62 years.

The notice period is 6 months for the President and CEO and 12 months for the employer. Severance pay and conditions of other severance payments are equal to the respective salary.

Management Group

The Board of Directors approves the compensation of the direct reports of the President and CEO. Overall compensation of the Management Group members consists of a monthly salary, fringe benefits, pension plan, and an incentive plan (STI) as well as the payment of share-based incentive plan LTI 2016. The maximum annual incentive (STI) is limited to 60 percent of the annual salary. The Management Group members belong to a voluntary pension plan, which defines the optional retirement age as 62 years.

Remuneration of the President and CEO (payment basis)

EUR 1,000	2019	2018
Salary	515	515
Bonuses	263	302
Share-based payment	514	502
Obligatory pension	135	146
Voluntary pension	120	120
Total	**1,547**	**1,586**

Remuneration of the members of the Management Group, excl. the Present and CEO (payment basis)

EUR 1,000	2019	2018
Salary	1,492	1,393
Bonuses	478	622
Share-based payment	1,061	1,319
Obligatory pension	342	360
Voluntary pension	242	235
Total	**3,616**	**3,929**

Share-based incentive plans

The share issue without payment approved by Vaisala's Annual General Meeting on April 10, 2018 doubled the total number of series K and A shares. All share-related figures have been adjusted to reflect the increased number of shares. Until the end of 2017, the cost of the share part of the share-based payments corresponded to the value of Vaisala's series A share closing price on the effective date of the incentive plan, and the cash-settled part of the share-based payments was valued at the closing price of the share. As of January 1, 2018, the cost of the share part of the share-based payments as well as the cash-settled (cash) part of the share-based payments correspond to the value of Vaisala's series A share closing price on the effective date of the incentive plan.

On December 16, 2015, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2016. The reward payment corresponded to 49% of the maximum target. On March 5, 2019, a total of 88,452 company's series A shares were conveyed without consideration to the 30 key employees participating in this incentive plan. The rest of the reward was paid in cash. Closing price of Vaisala's series A share was EUR 11.57 on the effective date of the incentive plan. A total expense of EUR 2.3 million was recognized of this plan in 2016–2019.

On December 15, 2016, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2017. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2020. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 400,000 series A shares and the reward payment will correspond to 65% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2017 to March 2020. Closing price of Vaisala's series A share was EUR 17.90 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 35 persons and the maximum reward payable totals to 237,900 Vaisala's series A shares, including the cash portion.

On February 7, 2018, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2018. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2021. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 320,000 series A shares, and the reward payment will correspond to 55% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2018 to March 2021. Closing price of Vaisala's series A share was EUR 22.10 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 30 persons and the maximum reward payable totals to 168,970 Vaisala's series A shares, including the cash portion.

On February 12, 2019, the Board of Directors resolved for approximately 45 group key employees a share-based incentive plan that is based on the development of the total shareholder return (TSR) and profitability in 2019–2021. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2022. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 330,000 series A shares. No reward will be paid if a key employee's employment or service ends before the reward payment date. In addition, Vaisala's Board of Directors requires that the President and CEO and each member of the Management Group retains his/her ownership of shares received under this plan until the value of his/her ownership in Vaisala corresponds to at least his/her annual gross base salary. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2019 to March 2022. Closing price of Vaisala's series A share was EUR 19.06 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 45 persons.

On June 28, 2019, Vaisala had conveyed a total of 2,195 company's series A shares without consideration to a person participating in the share-based incentive plans 2017 and 2018.

Expenses for the share-based incentive plans

MEUR	2015	2016	2017	2018	2019
Share-based incentive plan 2015	0.5	1.1	1.6	-0.1	
Share-based incentive plan 2016		0.7	1.2	0.6	0.2
Share-based incentive plan 2017			1.1	1.3	1.5
Share-based incentive plan 2018				0.6	1.2
Share-based incentive plan 2019					0.6
Total	**0.5**	**1.8**	**3.9**	**2.5**	**3.5**

Controls

Main features of the internal control and risk management systems pertaining to the financial reporting process

Internal control seeks to ensure the company's compliance with applicable laws, regulations, Code of Conduct, and with other recommendations as well as the reliability of financial and operational reporting. Furthermore, internal control seeks to safeguard the the assets of the company and to ensure overall effectiveness and efficiency of operations to meet strategic, operational, and financial targets. Internal control practices are aligned with the risk management process. The goal of the risk management is to support strategy and achievement of targets by anticipating and reacting to potential business threats and opportunities.

Vaisala's operating model of internal control and risk management related to financial reporting aims to provide sufficient assurance regarding the reliability of financial reporting and that the financial statements have been prepared in accordance with the applicable laws and regulations, accepted accounting principles (IFRS), and other requirements for listed companies. The principal components of internal control are control environment, risk assessment, control activities, communications, and monitoring.

Control environment

The Board of Directors has the overall responsibility for the internal control of financial reporting. The Board of Directors has established a written charter that clarifies its responsibilities and regulates the internal distribution of work of the Board of Directors and its committees. The Board of Directors has appointed the Audit Committee whose task is to ensure that established principles for financial reporting, risk management, and internal control are followed by and to enable appropriate external audit. The President and CEO is responsible for organizing an effective control environment and ongoing work on internal control as regards financial reporting. The internal audit reports all relevant issues to the Audit Committee and the President and CEO.

Internal audit focuses on developing and enhancing controls related to financial reporting by proactively assessing on internal control environment and by monitoring the effectiveness of the control design. Most important internal steering instruments for financial reporting comprise the Code of Conduct, Approval Policy, Treasury Policy, Credit Policy, Disclosure Policy, accounting policies, and other reporting instructions.

Risk assessment

Risk assessment as regards financial reporting aims to identify and evaluate most significant threats at the levels of Vaisala, reporting segments, functions, and processes. As a result of risk assessment, the company defines control targets through which it seeks to ensure that the fundamental requirements placed on financial reporting are fulfilled. Information on the development of essential risk areas as well as reactions to the risks are communicated regularly to the Audit Committee.

Control activities

The President and CEO is operationally responsible for internal controls. Internal control related to financial activities as well as to control of the business and the management has been integrated into Vaisala's business processes. The company has defined and documented significant internal control activities related to its financial statements reporting process as part of business processes. Approval mechanisms, access rights, segregation of duties, authorizations, verifications, reconciliations, and follow-up of financial reporting are essential internal activities. All business units have their own defined controller function whose representatives participate in planning and evaluating the unit's performance. They ensure that monthly and quarterly financial reporting follows the company's policies and instructions and that all financial reporting is delivered on time. The management follows up the achievement of targets through monthly management reporting routines. The Chief Financial Officer regularly reports the results of the internal control work and the efficiency of the control activities to the Audit Committee.

Communications

Vaisala seeks to ensure that the internal and external communication of the company is open, transparent, accurate, and timely. The Disclosure Policy defines how and when information should be given and by whom it is given. It also defines the accuracy and comprehensiveness of the information in order to fulfil the communication obligations. Code of Conduct, Approval Policy, Treasury Policy, Credit Policy, accounting policies, and reporting instructions as well as Disclosure Policy and Insider Policy are available on the company's intranet.

Monitoring

The Board of Directors, the Audit Committee, the President and CEO, and internal audit monitor the effectiveness of internal control related to financial reporting. The monitoring includes follow-up of monthly financial reports, review of the rolling forecasts and plans, as well as reports from internal audit and auditors. Internal audit assesses the effectiveness of operations and adequacy of risk management and reports the risks and weaknesses related to the internal control processes. Internal audit compiles an annual audit plan and reports the status of the plan and findings regularly to the Audit Committee and the Management Group. Furthermore, the Chief Financial Officer, the General Counsel, internal audit, and auditor coordinate audit planning and monitoring regularly.

General development measures in internal control and risk management in 2019

In 2019, internal audit focused on sales process, contract management, sourcing process, and integration process of acquired companies. The audit confirmed that the reviewed sales process works reliably. Following the integration of the 2018 acquisitions, internal audit verified the effectiveness of the integration process and recommended some improvements to future acquisitions and integrations. Other audits provided suggestions for continuously improving processes and internal controls. Harmonization of the control environment in Vaisala's recent acquisitions was one of the priorities of internal controls, and it will continue during 2020.

Related party transactions

Vaisala has defined principles for monitoring and assessing related party transactions as well as keeps a record of related parties. The Board of Directors resolves on all related party transactions that are not made in the ordinary course of business and implemented under arms-length terms.

Vaisala reports related party transactions in a note to financial statements. Vaisala has currently no related party transactions which would be material and in conflict with the ordinary course of business and not implemented under arms-length terms.

Auditing and auditor's fees

The company has one auditor, who must be a public accountant or an audit firm authorized by the Finland Chamber of Commerce. If an audit firm is not chosen to perform the auditing, a deputy auditor must be elected as well. Auditor's term of office covers the current fiscal year and expires at the close of the following Annual General Meeting. Annual General Meeting elects the auditor and decides on the compensation paid to them.

The Annual General Meeting held on March 26, 2019 re-elected Deloitte Oy, Audit Firm, as the Auditor for a term of one year. APA Merja Itäniemi has acted as an auditor with the principal responsibility of the company since March 26, 2014.

Auditor’s fees

EUR 1,000	2019	2018
Audit	488	423
Tax advice	30	22
Statements	16	1
Other fees	50	141
Total	**584**	**587**

Insiders

Vaisala maintains project- or event-specific insider lists when needed. 30-day closed window applies to the managers defined by the company before publishing Interim Reports, Half Year Financial Report, Financial Statement Release, and Financial Statements. Closed window ends on the day following the publication day. Closed window also applies to the persons engaged in preparation of those reports. The managers subject to transaction notification obligations comprise the Board of Directors, the President and CEO, as well as members of the Management Group. The company’s legal department is responsible for insider management, training, creation and maintenance of project- and event-specific insider lists, and monitoring of the same.

The President and CEO, Chief Financial Officer, and/or the General Counsel, two together, can decide, based on an evaluation of the conditions set out in the Market Abuse Regulation being met, to delay publication of insider information. When the company makes a decision on delay of disclosure, a project- or event-based insider list regarding the inside information will be established. Persons, to whom project- or event-specific inside information is disclosed, are entered into the project- or event-specific insider list.

Risk management

The objective of Vaisala's risk management is to identify and manage material risks related to strategy implementation and business operations. Vaisala has a Risk Management Policy, which has been approved by the Board of Directors and which covers the company's strategic, operational, hazard, and financial risks. The policy aims to ensure the safety of the company's personnel, operations, and products as well as the continuity and compliance of business operations.

The Board of Directors defines and approves risk management principles and policies and assesses the effectiveness of risk management. The Audit Committee reviews compliance with Risk Management Policy and processes. Vaisala's Risk Management Steering Group comprises key internal stakeholders. The Steering Group is responsible for the operational oversight of the risk management process and for assuring that all significant risks are identified and reported and that risks are acted upon on all necessary organizational levels and in all geographical locations.

Risk management is integrated into key business processes and operations. This is accomplished by incorporating applicable risk identification, assessment, management, and risk reporting actions into the core processes. The most significant risks are reported to the Vaisala Management Group quarterly and to the Audit Committee annually.

Vaisala's strategy and business operations are subject to various risks, which may have an adverse effect on the company. The list on the next page explains some of the risks with their potential impacts and how Vaisala manages those risks today. Risk likelihoods and impacts provided here are estimates, provided by a small group of subject area experts. No quantitative methods have been applied to assess either likelihoods or impacts.

Risks related to sustainable practices

Environment

We assess environmental risks as part of our environmental management system. The most significant environmental risks of our operations are related to potential emergency situations that can lead to local contamination. These risks are controlled, for example, as part of our emergency preparedness and our management process for hazardous substances.

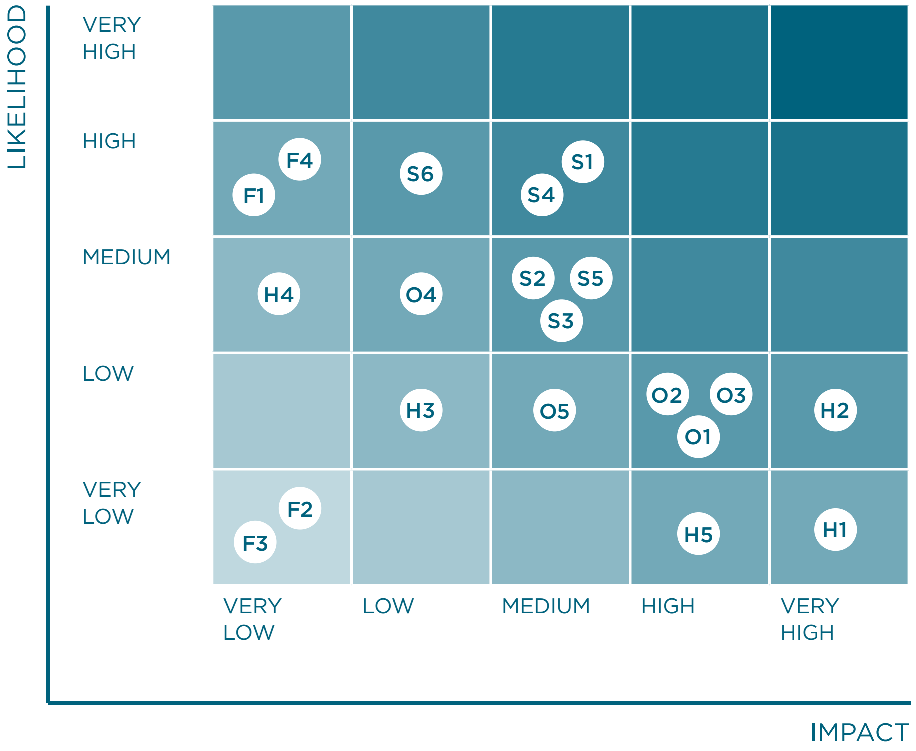
Climate change impacts on risks have been assessed. Climate change increases the likelihood of certain risks (*H4 Natural disaster, epidemic, civil unrest, terrorism* and *O1 Business continuity risks related to suppliers*). On the other hand, exceptional weather conditions, increasingly disastrous storms, floods, and drought may also provide Vaisala with new business opportunities.

Social and personnel matters

On an individual level, personnel risks relate to occupational health and occupational accidents. On corporate level, the risks are related to the company's ability to retain and attract new talents. These risks are controlled through Vaisala's occupational health and safety system and its continuous development. We also support the well-being of our employees, provide purposeful work, learning opportunities, and an equal work environment, as well as monitor employee satisfaction.

Respecting human rights and preventing corruption and bribery

Risks related to human rights violations as well as corruption and bribery impact corporate reputation, brand, and the company's ability to attract the best talent. Other potential consequences of these risks are judicial processes, penalties, contract cancellations, and exclusion from tenders. These risks are managed through recurring and compulsory Code of Conduct trainings as well as audits. Our suppliers sign the Supplier Code of Conduct that sets the requirement level for their operation. Our other core partners, such as distributors and agents, commit to complying with our Code of Conduct, which compliance is assessed and monitored.



Key risks 2019		Impact / Likelihood
Strategic risks		
S1	Industry consolidation, increased competition, loss of market leader and price premium position	medium/high
S2	Lack of success in winning large projects in weather business	medium/medium
S3	Failing to grow new business	medium/medium
S4	The competitive situation of remote wind sensing in China and its slow adoption in aviation applications	medium/high
S5	Political, legislative, or regulatory changes	medium/medium
S6	Continuation of the weak market situation in weather radar business	low/high
Hazard risks		
H1	Long disruption in the cleanroom's operation	very high/very low
H2	Field service personnel accident caused by working conditions	very high/low
H3	Critical failure of infrastructure supporting digital solutions	low/low
H4	Natural disaster, epidemic, civil unrest, terrorism	very low/medium
H5	Long disruption in radiosonde production	high/very low
Operational risks		
O1	Business continuity risks related to suppliers	high/low
O2	Cyber risk	high/low
O3	Long unavailability of IT systems	high/low
O4	Delay in a significant product launch	low/medium
O5	Significant reduction in the profitability of a large delivery project	medium/low
Financial risks		
F1	Credit risk	very low/high
F2	Liquidity and refinancing risk	very low/very low
F3	Financial credit and interest rate risk	very low/very low
F4	Currency risk	very low/high

Strategic risks

S1 Industry consolidation, increased competition, loss of market leader and price premium position
Vaisala is a market leader in many businesses. Loss of that position would lead to a significant reduction in profitability. Competitor mergers into larger companies are taking place especially in the weather business area, which will affect the competitive situation.

Managing risk

- Continued focus on product leadership
- Strive for outstanding customer experience and superior product quality
- Gathering and analyzing competitor information
- Active product portfolio management
- Focus on capacity building projects in the weather business

S2 Lack of success in winning large projects in weather business
Large infrastructure projects have a significant impact on net sales.

Managing risk

- Growing the number of projects in the sales funnel
- Frequent customer contacts
- Development of project funding solutions

S3 Failing to grow new business
Slow growth of Digital Solutions within Weather and Environment business area and Liquid Measurements within Industrial Measurements business area.

Managing risk

- Sales channel and sales skills development
- Industry knowledge acquisition and transfer
- Building of significant partnerships
- Building of local support network

S4 The competitive situation of remote wind sensing in China and its slow adoption in aviation applications
The market for lidar technology, used for remote wind sensing, is very competitive in China. The expansion of the applications into aviation business is slow.

Managing risk

- Partnerships and local production in China
- Integration of airport applications into the rest of Vaisala's product portfolio
- Lowering the unit cost

S5 Political, legislative, or regulatory changes
Changes in market environment and growing protectionism can lead to loss of market potential or increased cost of accessing the market.

Managing risk

- Geographic and market diversity of business
- Market and regulatory foresight
- Partnerships
- Following the economic and political developments in the United States, China, and Russia

S6 Continuation of the weak market situation in weather radar business
The demand for weather radars remains weak and the market very competitive.

Managing risk

- Developing new differentiating product features
- Starting deliveries of the X-band weather radar in the first half of 2020

Hazard risks

H1 Long disruption in the cleanroom's operation
Long disruption of cleanroom operations would have a major impact on the delivery capability of both business areas. Potential causes could include fire, contamination, or breakdown of key equipment.

Managing risk

- Emergency stock of sensor components, risk-based management of manufacturing equipment and spare parts, safety of facilities
- Business continuity planning
- Collaboration with manufacturing partners
- Business Interruption Insurance

H2 Field service personnel accident caused by working conditions
A serious accident caused by hazardous working conditions, for example when working at roadsides, in tall towers, or in extreme temperatures.

Managing risk

- Continuous development of occupational health and safety system, emergency procedures, job hazard analysis
- Tracking system for employees working in hazardous conditions

H3 Critical failure of infrastructure supporting digital solutions
Service unavailability due to, for example, a communications or software failure or power outage, causing significant harm to customers.

Managing risk

- Geographic system redundancy across multiple server sites
- Transition to cloud computing

H4 Natural disaster, epidemic, civil unrest, terrorism
Impaired business environment caused by external events.

Managing risk

- Geographic diversity of business
- Business Interruption Insurance
- Monitoring of the business environment

- Risk assessment of business opportunities
- Crisis management team

H5 Long disruption in radiosonde production
A long disruption in production can result in loss of long-term customers.

Managing risk

- Identification of critical production factors and managing their risks
- Safety of facilities
- Reserve stocks
- Business Interruption Insurance

Operational risks

O1 Business continuity risks related to suppliers
Long disruption in the operations of strategic suppliers, for example due to a natural disaster, an accident, or bankruptcy.

Managing risk

- Active supplier risk assessment
- Long-term supplier development plans
- Strategic supplier business continuity audits
- Parts stock at Vaisala

O2 Cyber risk
Interruptions to operations or digital services, financial loss, loss of trade secrets or personal data.

Managing risk

- ISO27000 compliant Information Security Management System (ISMS) creation and deployment
- Cyber insurance
- GDPR controls

O3 Long unavailability of IT systems
Unavailability of systems leads quickly to interruptions in operations, especially in manufacturing.

Managing risk

- IT Disaster Recovery Plan as part of Information Security Management System
- Shortening the resolution time of critical incidents
- Change management process of systems, including impact assessments and formal approvals
- Cyber insurance

O4 Delay in a significant product launch
A product development project may be delayed due to technical or resource-related issues, leading to additional costs and delayed profit.

Managing risk

- Continuous improvement of product development processes
- Use of Lean methods as part of product development

O5 Significant reduction in the profitability of a large delivery project
The profitability of a project can decrease, for example, due to technical difficulties, misunderstood assumptions during sales, or unfavorable contractual terms.

Managing risk

- Continuous improvement of project management
- Careful project change management

Financial risks

F1 Credit risk
Managing risk

- Secured terms of payment
- Business credit checks
- Diversification of customer pool

F2 Liquidity and refinancing risk
Managing risk

- Sustainable capital structure

F3 Financial credit and interest rate risk
Managing risk

- High credit rating of financial counter parties
- Low risk cash investment

F4 Currency risk
Managing risk

- Currency hedging

Board of Directors

RAIMO VOIPIO Chairman of the Board of Directors	VILLE VOIPIO Vice Chairman of the Board of Directors, Member of the Audit Committee, Chairman of the Remuneration and HR Committee	PETRI CASTRÉN Member of the Audit Committee, Member of the Remuneration and HR Committee	PETRA LUNDSTRÖM Member of the Remuneration and HR Committee
b. 1955, Finnish citizen, M.Sc. (Engineering)	b. 1974, Finnish citizen, Doctor of Science in Measurement Technology	b. 1962, Finnish citizen, LL.M, MBA (University of Connecticut, USA)	b. 1966, Finnish Citizen, M.Sc (Technical Physics)
Independent member of the Vaisala Board of Directors since 1989 and Chairman since 1994 End of term 2020 Main occupation: Board professional	Independent member of the Vaisala Board of Directors since 2015 End of term 2021 Main occupation: CTO, Si-Tecno Oy, R&D and strategy management	Independent member of the Vaisala Board of Directors since 2017 End of term 2022 Main occupation: Chief Financial Officer, Kemira Oyj	Independent member of the Vaisala Board of Directors since 2014 End of term 2021 Main occupation: Vice President, Nuclear Services, Fortum Power and Heat Oy
Vaisala shares held Dec 31, 2019: 570,002 A shares and 454,296 K shares Dec 31, 2018: 569,076 A shares and 454,296 K shares	Vaisala shares held Dec 31, 2019: 396,087 A shares and 96,712 K shares Dec 31, 2018: 395,367 A shares and 96,712 K shares	Vaisala shares held Dec 31, 2019: 2,401 A shares Dec 31, 2018: 1,681 A shares	Vaisala shares held Dec 31, 2019: 5,801 A shares Dec 31, 2018: 5,081 A shares

JUKKA RINNEVAARA Member of the Audit Committee	KAARINA STÅHLBERG Chairman of the Audit Committee	TUOMAS SYRJÄNEN Member of the Board of Directors	PERTTI TORSTILA Member of the Board of Directors
b. 1961, Finnish citizen, M.Sc. (Econ.)	b. 1966, Finnish citizen, LL.M. (Helsinki University and Columbia University, NY)	b. 1976, Finnish citizen, M.Sc. (El. Eng.)	b. 1946, Finnish citizen, M.Sc. (Political Sciences)
Independent member of the Vaisala Board of Directors since 2019 End of term 2020 Main occupation: President and CEO, Teleste Corporation	Independent member of the Vaisala Board of Directors since 2016 End of term 2022 Main occupation: General Counsel and M&A, Member of the Executive Board, Posti Group Oyj	Independent member of the Vaisala Board of Directors since 2019 End of term 2022 Main occupation: Program Director – AI Renewal, Futurice Oy	Independent member of the Vaisala Board of Directors since 2014 End of term 2020 Main occupation: Board professional
Vaisala shares held Dec 31, 2019: 720 A shares Dec 31, 2018: -	Vaisala shares held Dec 31, 2019: 5,201 A shares Dec 31, 2018: 4,481 A shares	Vaisala shares held Dec 31, 2019: 2,070 A shares Dec 31, 2018: -	Vaisala shares held Dec 31, 2019: 5,801 A shares Dec 31, 2018: 5,081 A shares

Shareholdings include direct holdings and shares held by interest parties and controlled organizations.
Read full CV information on the company's website at vaisala.com.


RAIMO VOIPIO
PERTTI TORSTILA
VILLE VOIPIO
PETRA LUNDSTRÖM
PETRI CASTRÉN
TUOMAS SYRJÄNEN
JUKKA RINNEVAARA
KAARINA STÅHLBERG

Management Group

KJELL FORSÉN
President and CEO, Chairman of Management Group since 2006

b. 1958, Finnish citizen, Lic.Sc. (Tech.)

Vaisala shares held
Dec 31, 2019: 49,132 A shares
Dec 31, 2018: 34,552 A shares

MARI HEUSALA
Executive Vice President, Human Resources since 2019

b. 1966, Finnish citizen, M.Sc. (Econ.)

Vaisala shares held
Dec 31, 2019: -
Dec 31, 2018: -

SAMPSA LAHTINEN
Executive Vice President, Industrial Measurements since 2013

b. 1963, Finnish citizen, M.Sc. (El. Eng.)

Vaisala shares held
Dec 31, 2019: 15,206 A shares
Dec 31, 2018: 7,430 A shares

KAARINA MUURINEN
Chief Financial Officer since 2011

b. 1958, Finnish Citizen, M.Sc. (Econ.)

Vaisala shares held
Dec 31, 2019: 29,096 A shares
Dec 31, 2018: 21,320 A shares

VESA PYLVÄNÄINEN
Executive Vice President, Operations since 2011

b. 1970, Finnish citizen, M.Sc. (Econ.)

Vaisala shares held
Dec 31, 2019: 15,212 A shares
Dec 31, 2018: 11,324 A shares

JARKKO SAIRANEN
Executive Vice President, Weather and Environment since 2016

b. 1963, Finnish citizen, M.Sc. (Ind. Eng.), MBA (INSEAD)

Vaisala shares held
Dec 31, 2019: 14,776 A shares
Dec 31, 2018: 7,000 A shares

KATRIINA VAINIO
Executive Vice President, Group General Counsel since 2017

b. 1967, Finnish citizen, LL.M.

Vaisala shares held
Dec 31, 2019: 7,888 A shares
Dec 31, 2018: 4,972 A shares

Shareholdings include also shares held by the Management Groups’ controlled organizations.
Read full CV information on the company’s website at vaisala.com.


SAMPSA
LAHTINEN
KATRIINA
VAINIO
JARKKO
SAIRANEN
KJELL
FORSÉN
MARI
HEUSALA
VESA
PYLVÄNÄINEN
KAARINA
MUURINEN

Information for shareholders

Annual General Meeting

Vaisala Corporation's Annual General Meeting will be held on Tuesday, April 7, 2020 at 6:00 p.m. Finnish time at Vaisala Corporation's head office, Vanha Nurmijärventie 21, 01670 Vantaa, Finland. The reception of persons who have registered for the meeting will commence at 5:00 p.m.

A shareholder, who wishes to participate in the Annual General Meeting, may register for the Meeting by giving a prior notice of participation no later than on April 2, 2020 at 4:00 p.m.

A prior notice of participation can be given:

- through Vaisala's website at vaisala.com/investors
- by email to paivi.aaltonen@vaisala.com

Possible proxy documents should be delivered in originals to Vaisala Oyj, Päivi Aaltonen, PL 26, 00421 Helsinki, Finland or by email to paivi.aaltonen@vaisala.com before the end of the registration time.

Payment of dividends

The Board of Directors proposes to the Annual General Meeting a dividend of EUR 0.61 per share for the fiscal year 2019 to be paid. The dividend would be paid to shareholders registered in the Register of Shareholders held by Euroclear Finland Ltd on the record date of the dividend distribution, April 9, 2020. The Board of Directors proposes that the dividend will be paid on April 20, 2020.

Change of address

Vaisala's shareholders are kindly requested to report written changes of address to the bank where they have their book entry account.

Listing of Vaisala shares

Vaisala Corporation has two classes of shares: the listed series A shares and the non-listed series K shares. The Vaisala series A shares are listed on the Nasdaq Helsinki and are registered at Euroclear Finland Ltd.

Publication of financial information

Vaisala Corporation publishes financial information in Finnish and English. All materials are available on Vaisala's website at vaisala.com.

The printed Finnish annual report will only be mailed upon request. The company's mailing list for financial reports can be joined on Vaisala's website at vaisala.com.

Interim Reports and Half Year Report

- April 28, 2020: Interim Report January–March 2020
- July 21, 2020: Half Year Financial Report 2020
- October 27, 2020: Interim Report January–September 2020

Silent period

Silent period begins 30 calendar days before the publishing of the Interim Reports, Half Year Financial Report, and Financial Statement Release and lasts until the publishing of the Interim Reports, Half Year Financial Report, and Financial Statement Release. Exceptions to this rule are the Annual General Meeting (if held during the silent period) and the publishing of a stock exchange release regarding a significant business event and the related communication. During silent periods, Vaisala's spokespersons refrain from discussing and commenting on issues related to the company's financial performance or meeting with capital market representatives.

Comprehensive investor relations pages and investor relations contact information can be found at vaisala.com/investors.

Financials

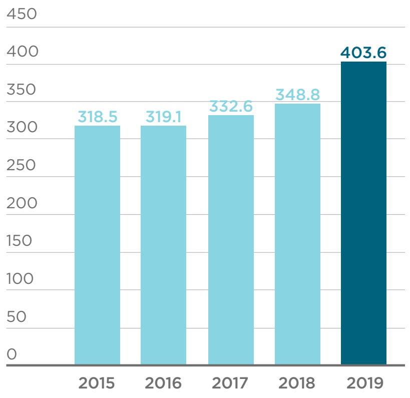
Key figures

35% Industrial Measurements 142.3 MEUR
65% Weather and Environment 261.3 MEUR

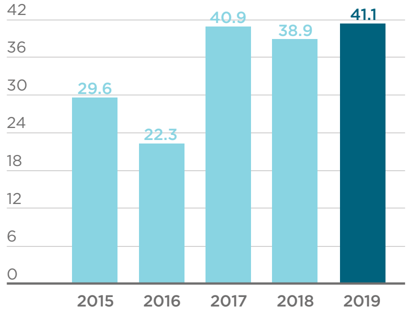
37% Americas 149.7 MEUR
30% APAC 119.6 MEUR
33% EMEA 134.3 MEUR

Americas: North and South America
APAC: Asia Pacific
EMEA: Europe, Middle-East and Africa

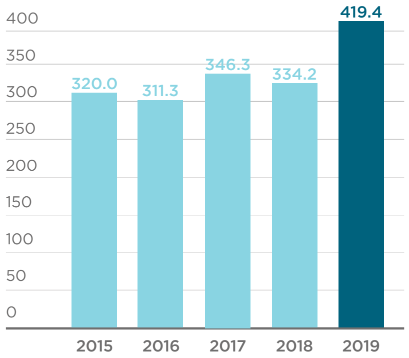
NET SALES, MEUR



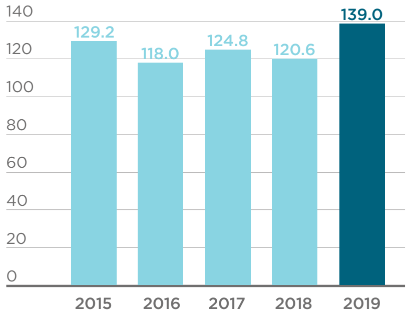
OPERATING RESULT (EBIT), MEUR



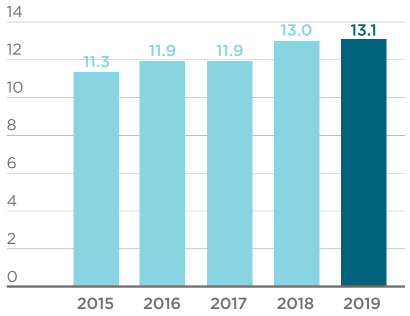
ORDERS RECEIVED, MEUR



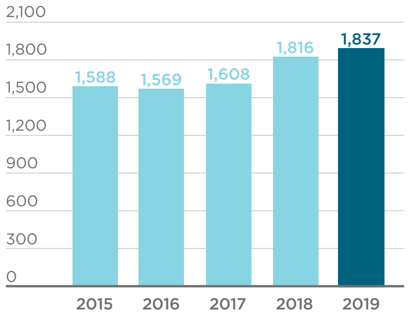
ORDER BOOK, MEUR



RESEARCH & DEVELOPMENT COSTS
% OF NET SALES



PERSONNEL AT YEAR-END



Board of Directors' Report 2019

Key figures

Financial key figures

	2019	2018	2017	2016	2015
Net sales, MEUR	403.6	348.8	332.6	319.1	318.5
Exports and international operations, %	98.0	98.0	97.0	98.0	98.0
Gross profit, %	54.8	53.1	52.3	51.6	51.1
Operating result, MEUR	41.1	38.9	40.9	22.3	29.6
% of net sales	10.2	11.1	12.3	7.0	9.3
Result before taxes, MEUR	40.2	37.5	38.1	22.1	33.0
% of net sales	10.0	10.8	11.5	6.9	10.4
Result, MEUR	33.6	29.5	27.2	18.8	27.5
% of net sales	8.3	8.5	8.2	5.9	8.6
Research and development costs, MEUR	52.8	45.4	39.6	38.0	36.1
% of net sales	13.1	13.0	11.9	11.9	11.3
Depreciation, amortization and impairment, MEUR	23.5	12.1	9,7	24.1	15.1

	2019	2018	2017	2016	2015
Cash and cash equivalents, MEUR	56.4	72.7	91.3	72.4	59.2
Equity, MEUR	198.3	182.9	185.4	178.5	181.3
Statement of financial position total, MEUR	361.5	334.4	273.8	255.0	264.0
Return on equity, %	17.7	16.0	15.0	10.5	15.7
Solvency ratio, %	55.7	55.6	68.9	71.1	69.7
Interest-bearing liabilities, MEUR	51.5	40.5	-	0.0	0.0
Gearing, %	-2.4	-17.6	-49.2	-40.6	-32.6
Capital expenditure, MEUR	26.8	14.5	8.5	7.7	8.3
% of net sales	6.6	4.2	2.5	2.4	2.6
Cash flow from operating activities, MEUR	40.8	48.3	49.2	41.8	38.8
Orders received, MEUR	419.4	334.2	346.3	311.3	320.0
Order book Dec 31, MEUR	139.0	120.6	124.8	118.0	129.2
Personnel expenses, MEUR	157.7	133.6	129.9	128.4	130.0
Employees, average	1,829	1,678	1,592	1,590	1,611
Employees Dec 31	1,837	1,816	1,608	1,569	1,588

Share key figures

	2019	2018	2017	2016	2015
Earnings/share (EPS), EUR	0.94	0.82	0.76	0.53	0.76
Earning/share (EPS), diluted, EUR	0.93	0.81	0.75	0.52	0.76
Cash flow from business operations/share, EUR	1.14	1.35	1.38	1.17	1.08
Shareholders equity/share, EUR	5.52	5.11	5.20	5.00	5.03
Dividend/share, EUR	*0.61	0.58	1.05	0.50	0.48
Dividend/earnings, %	**65.2	70.7	138.2	95.2	62.5
Effective dividend yield, %	**1.92	3.51	4.72	2.97	4.01
Price/earnings (P/E)	33.78	20.12	29.28	32.10	15.75
A share trading					
highest price, EUR	32.80	23.90	24.45	18.48	13.51
lowest price, EUR	15.95	15.85	15.94	10.91	10.71
volume weighted average price, EUR	23.56	20.14	20.13	14.14	12.17
closing price, EUR	31.75	16.50	22.25	16.85	11.97

	2019	2018	2017	2016	2015
Market capitalization on Dec 31***, MEUR	1,139.2	590.5	794.1	601.6	431.6
A shares traded					
pieces	3,442,439	3,710,610	4,298,504	4,062,272	5,015,344
% of total series	11.6	12.5	14.5	13.7	16.9
Number of shares, pieces	36,436,728	36,436,728	36,436,728	36,436,728	34,436,728
A shares, pieces	29,685,330	29,658,066	29,658,066	29,658,026	29,658,026
K shares, pieces	6,751,398	6,778,662	6,778,662	6,778,702	6,778,702
Outstanding shares Dec 31***, pieces	35,880,739	35,790,092	35,692,000	35,702,974	36,053,628

* Proposal by the Board of Directors
** Calculated according to the proposal by the Board of Directors
*** Including series A and K shares, excluding treasury shares. Series K shares are valued using the closing price for the series A share on the last trading day of December.

The share issue without payment approved by Vaisala's Annual General Meeting on April 10, 2018 doubled the total number of series K and A shares. All share related figures in this Board of Directors' Report have been adjusted to reflect the increased number of shares.

Trading information is based on Nasdaq Helsinki Ltd. statistics.

Calculation of key figures

Earnings/share, EUR	=	Result for the period +/- non-controlling interest / Average number of shares outstanding
Cash flow from business operations/share, EUR	=	Cash flow from business operations / Number of shares outstanding at the end of the period
Equity/share, EUR	=	Total equity attributable to owners of parent company / Number of shares outstanding at the end of the period
Dividend/share, EUR	=	Tilikaudelta jaettava osinko / Ulkona olevien osakkeiden lukumäärä kauden lopussa
Dividend/earnings, %	=	Dividend x 100 / Result for the period +/- non-controlling interest
Effective dividend yield, %	=	Dividend / share x 100 / Closing price for the series A share at the end of the period
Price/earnings (P/E)	=	Closing price for the series A share at the end of the period / Earnings / share
Market capitalization, MEUR	=	Closing price for the series A share x number of shares shares outstanding

Alternative performance measures

Vaisala presents in its financial reporting alternative performance measures, which describe businesses' financial performance and its development as well as investments and return on equity. In addition to accounting measures which are defined or specified in IFRS, alternative performance measures complement and explain presented information. Vaisala presents in its financial reporting the following alternative performance measures:

Net sales with comparable exchange rates	=	Net sales converted to euros with exchange rates used during comparison period
Gross margin, %	=	Net sales - Cost of sales / Net sales x 100
Operating result	=	Result before income taxes, financial income and expenses, and share of result in associated company as presented in Consolidated Statement of Income. Operating result describes profitability and development of business areas' performance.
Result before taxes	=	Result before taxes as presented in Consolidated Statement of Income.
Return on equity (ROE), %	=	Result for the period / Total equity (average) x 100
Solvency ratio, %	=	Total equity / Statement of financial position total – advances received x 100
Investmets	=	Gross investments in non-current intangible assets as well as property, plant and equipment
Order book	=	Undelivered customer orders at the end of the period
Gearing, %	=	Interest-bearing liabilities – cash and cash equivalents / Total equity x 100

Financial review 2019

Orders received and order book

MEUR	2019	2018	Change	FX*
Orders received	419.4	334.2	26%	23%
Order book, end of period	139.0	120.6	15%	

* Change with comparable exchange rates

In 2019, orders received increased by 26% compared to previous year and totaled EUR 419.4 (334.2) million. Orders received increased in both business areas and in all geographical areas following evenly strong order flow throughout the year. Growth was strongest in EMEA. Orders received growth was mainly generated by acquired businesses as well as increase in medium-sized and large orders in Weather and Environment Business Area. Growth of orders received without currency impact and acquisitions was 12%.

At the end of December 2019, order book amounted to EUR 139.0 (120.6) million and increased by 15% compared to previous year. Majority of order book growth came from Weather and Environment Business Area in Europe. EUR 13 million weather infrastructure project order with the National Meteorology Agency in Ethiopia, announced in October 2019, is not included in order book, as the order will be booked after the ratification by the Ethiopian Parliament. EUR 101.4 (91.0) million of the order book is scheduled to be delivered in 2020.

Financial performance

MEUR	2019	2018	Change	FX**
Net sales	403.6	348.8	16%	13%
Products	278.5	230.5	21%	
Projects	73.2	70.0	5%	
Services	51.9	48.3	7%	
Gross margin, %	54.8	53.1		
Operating expenses	177.3	148.3	20%	
R&D expenditure	52.8	45.4	16%	
% of net sales	13.1	13.0		
Amortization*	9.6	3.8		
Operating result	41.1	38.9		
% of net sales	10.2	11.1		

* Amortization of intangible assets related to the acquired businesses
** Change with comparable exchange rates

In 2019, net sales grew by 16% compared to previous year and were EUR 403.6 (348.8) million. Operations outside Finland accounted for 98 (98) % of net sales. Foreign currency translation impact on net sales growth was EUR 8 million, evenly distributed between business areas. Net sales grew in both business areas and in all geographical areas, EMEA growing strongest by 31%. Growth of net sales was strong in product business due to the acquired businesses, but also organic growth was strong. Growth of net sales without currency impact and acquisitions was 4%.

Net sales by geographical area

MEUR	2019	2018	Change
Americas	149.7	136.8	9%
APAC	119.6	109.6	9%
EMEA	134.3	102.3	31%
Total	**403.6**	**348.8**	**16%**

In 2019, gross margin improved to 54.8 (53.1) % as a result of net sales growth and related economies of scale obtained in product business.

In 2019, operating result increased from previous year and was EUR 41.1 (38.9) million, 10.2 (11.1) % of net sales. Net sales growth and improved gross margin increased operating result. Growth required also increase in operating expenses. Operating expenses included EUR 9.6 (3.8) million of non-cash amortization of intangible assets. Operating result declined due to costs in other operating income and expenses of EUR -2.7 (2.1) million. These costs included costs related to Vaisala's digital business refocus and reorganization, one-off expense related to a lease contract termination, and expenses related to termination of a product line in the US.

In 2019, financial income and expenses were EUR -1.1 (-1.5) million. This was mainly a result of USD currency hedging. Income taxes were EUR 6.6 (8.0) million and effective tax rate 16.3 (21.4) %. The low effective tax rate is especially result of a reassessment of deferred tax assets arising from unused tax losses carried forward in the companies acquired in 2018. Result before taxes was EUR 40.2 (37.5) million and result for the period EUR 33.6 (29.5) million. Earnings per share was EUR 0.94 (0.82).

Statement of financial position, cash flow and financing

Vaisala's financial position remained strong in 2019. Cash and cash equivalents decreased to EUR 56.4 (72.7) million at the end of December. Dividend payment amounted to EUR 20.8 (37.6) million in the second quarter. At the end of December, statement of financial position totaled EUR 361.5 (334.4) million. As a result of IFRS 16 Leases implementation, total assets increased by EUR 12.3 million and total liabilities by EUR 11.3 million.

In 2019, cash flow from operating activities totaled EUR 40.8 (48.3) million. Increase of EUR 7.5 million in inventories and EUR 8.0 million in receivables increased net working capital, which offset positive cash flow development of increased operating result.

On December 31, 2019, Vaisala had interest-bearing loans from financial institutions totaling EUR 40.2 (40.5) million, of which EUR 40.0 million related to utilized revolving credit facility. In addition, interest-bearing lease liabilities totaled EUR 11.3 (0.0) million.

Capital expenditure and acquisitions

In 2019, capital expenditure in intangible assets and property, plant and equipment totaled EUR 26.8 (14.5) million. Capital expenditure was mainly related to investments in machinery and equipment to develop and maintain Vaisala's production and service operations as well as to building projects in Vantaa, Finland and Louisville, Colorado US. On December 31, 2019, commitments related to Vantaa and Louisville building projects totaled EUR 9 (1) million.

Depreciation, amortization and impairment were EUR 23.5 (12.1) million. This included EUR 9.5 (3.8) million of amortization of identified intangible assets related to the acquired businesses.

On October 1, 2019 Vaisala closed acquisition of professional business-to-business weather services from a Finnish weather forecast services company Foreca Oy. This acquisition strengthens Vaisala's digital offering for weather-dependent operations by bringing valuable skills and assets in data analytics, forecasting, and impact analysis. Nine employees joined Vaisala.

Vaisala Digital refocus and reorganization of operations

In August, Vaisala announced refocus and reorganization of its digital business' operations. At the same time, Digital Solutions business line was renamed to Vaisala Digital. To drive business performance and innovation speed, Vaisala Digital focuses on transportation, renewable energy, lightning and data-driven operations by building up enhanced competences in machine learning and artificial intelligence and by consolidating its data centers into two locations. While a new team for co-located transportation solutions development, including roads, airports and ports, will be ramped up in Finland, 21 employees in the US were made redundant. These measures are estimated to bring an annual saving of some EUR 3 million from 2020 onwards. Related to these measures, Vaisala booked EUR 1.1 million of reorganization costs during the second half of 2019.

Personnel

The average number of personnel employed in 2019 was 1,829 (1,678). At the end of December 2019, the number of employees was 1,837 (1,816). 74 (73) % of employees were located in EMEA, 16 (19) % in Americas and 9 (8) % in APAC. 62 (61) % of employees were based in Finland.

Number of employees by geographical area

	Dec 31, 2019	Dec 31, 2018	Change
Finland	1,142	1,102	40
EMEA (excluding Finland)	224	225	-1
Americas	297	339	-42
APAC	174	150	24
Total	**1,837**	**1,816**	**21**

Number of employees by function

	Dec 31, 2019	Dec 31, 2018	Change
Sales and marketing	449	459	-10
R&D	407	399	8
Operations	441	423	18
Services	347	347	0
Administration	193	188	5
Total	**1,837**	**1,816**	**21**

Number of employees in Finland increased mainly as a result of expansion of R&D activities and acquisition of professional business-to-business weather services from Foreca Oy. In Americas, number of employees declined due to termination of a product line and reorganization of Vaisala Digital. Number of employees in APAC increased and 19 of the new employees joined Vaisala's new factory in Shanghai, China.

In 2019, personnel expenses totaled EUR 157.7 (133.6) million.

Share-based incentive plans

The share issue without payment approved by Vaisala's Annual General Meeting on April 10, 2018 doubled the total number of series K and A shares. All share-related figures have been adjusted to reflect the increased number of shares. Until the end of 2017, the cost of the share part of the share-based payments corresponded to the value of Vaisala's series A share closing price on the effective date of the incentive plan, and the cash-settled part of the share-based payments was valued at the closing price of the share. As of January 1, 2018, the cost of the share part of the share-based payments as well as the cash-settled (cash) part of the share-based payments correspond to the value of Vaisala's series A share closing price on the effective date of the incentive plan.

On December 18, 2014, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2015. The reward payment corresponded to 74% of the maximum target. On March 12, 2018, a total of 95,092 company's series A shares were conveyed without consideration to the 27 key employees participating in this incentive plan. The rest of the reward was paid in cash. Closing price of Vaisala's series A share was EUR 12.08 on the effective date of the incentive plan. A total expense of EUR 3.2 million was recognized of this plan in 2015–2018.

On December 16, 2015, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2016. The reward payment corresponded to 49% of the maximum target. On March 5, 2019, a total of 88,452 company's series A shares were conveyed without consideration to the 30 key employees participating in this incentive plan. The rest of the reward was paid in cash. Closing price of Vaisala's series A share was EUR 11.57 on the effective date of the incentive plan. A total expense of EUR 2.3 million was recognized of this plan in 2016–2019.

On February 10, 2016, the Board of Directors resolved for a share-based incentive plan, in which the earning criteria was uninterrupted employment of certain group employees for a defined number of years. This share-based incentive plan ended in March 2018, and the remaining reward, corresponding to 3,000 Vaisala's series A shares including the cash portion, was conveyed without consideration to the key employees participating in this incentive plan. The rest of the reward was paid in cash. A total expense of EUR 0.3 million was recognized of this plan in 2016–2018.

On December 15, 2016, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2017. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2020. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 400,000 series A shares and the reward payment will correspond to 65% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2017 to March 2020. Closing price of Vaisala's series A share was EUR 17.90 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 35 persons and the maximum reward payable totals to 237,900 Vaisala's series A shares, including the cash portion.

On February 7, 2018, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2018. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2021. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 320,000 series A shares, and the reward payment will correspond to 55% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2018 to March 2021. Closing price of Vaisala's series A share was EUR 22.10 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 30 persons and the maximum reward payable totals to 168,970 Vaisala's series A shares, including the cash portion.

On February 12, 2019, the Board of Directors resolved for approximately 45 group key employees a share-based incentive plan that is based on the development of the total shareholder return (TSR) and profitability in 2019–2021. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2022. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 330,000 series A shares. No reward will be paid if a key employee's employment or service ends before the reward payment date. In addition, Vaisala's Board of Directors requires that the President and CEO and each member of the Management Group retains his/her ownership of shares received under this plan until the value of his/her ownership in Vaisala corresponds to at least his/her annual gross base salary. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2019 to March 2022. Closing price of Vaisala's series A share was EUR 19.06 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 45 persons.

On June 28, 2019, Vaisala conveyed a total of 2,195 company's series A shares without consideration to a person participating in the share-based incentive plans 2017 and 2018.

Expenses for the share-based incentive plans

EUR million	2015	2016	2017	2018	2019
Share-based incentive plan 2015	0.5	1.1	1.6	-0.1	
Share-based incentive plans 2016		0.7	1.2	0.6	0.2
Share-based incentive plan 2017			1.1	1.3	1.5
Share-based incentive plan 2018				0.6	1.2
Share-based incentive plan 2019					0.6

2019 review by business area

Weather and Environment Business Area

MEUR	2019	2018	Change	FX**
Orders received	276.2	215.2	28%	27%
Order book, end of period	122.3	104.9	17%	
Net sales	261.3	232.3	12%	11%
Products	149.0	125.4	19%	
Projects	73.2	70.0	5%	
Services	39.1	36.9	6%	
Gross margin, %	49.9	48.6		
Operating expenses	113.0	96.7	17%	
R&D expenditure	34.0	30.5	12%	
of net sales, %	13.0	13.1		
Amortization*	6.8	3.8		
Operating result	17.7	17.7		
of net sales, %	6.8	7.6		

* Amortization of intangible assets related to the acquired businesses
** Change with comparable exchange rates

Weather and Environment Business Area's 2019 orders received increased by 28% compared to previous year and totaled EUR 276.2 (215.2) million. Growth of orders received was exceptionally strong in all regions, Europe growing strongest by 35%. Orders received of medium-sized and large orders increased. Orders included e.g. a EUR 15 million order for weather observation systems for 31 airports in Argentina, a EUR 7 million order for a new road weather station network in Sweden, and a large order for autosondes from Australia. Growth of orders received without currency impact and acquisitions was 15%.

At the end of December 2019, Weather and Environment Business Area's order book amounted to EUR 122.3 (104.9) million and increased by 17% compared to previous year. Order book for transportation customer segment increased especially in Europe and in Americas. In meteorology customer segment, order book for capacity building projects declined following deliveries of ongoing projects. EUR 13 million weather infrastructure project order with the National Meteorology Agency in Ethiopia, announced in October 2019, is not included in order book, as the order will be booked after the ratification by the Ethiopian Parliament. EUR 86.6 (76.8) million of the order book is scheduled to be delivered in 2020.

Weather and Environment Business Area's 2019 net sales grew by 12% compared to previous year and were EUR 261.3 (232.3) million. Net sales grew in all regions and growth was around 20% in Asia Pacific, Middle East and Africa region and in Europe. Net sales growth was strong in product business. Large multi-year projects in Vietnam, Bahamas, Argentina, Sweden, Australia and Alaska in the US, generated around 18 million net sales in 2019. Growth of net sales without currency impact and acquisitions was 2%. Net sales growth and related economies of scale obtained in product business increased gross margin to 49.9 (48.6) %. Gross margin in project business improved slightly and in services business gross margin was stable.

Weather and Environment Business Area's 2019 operating result was at previous year's level and totaled EUR 17.7 (17.7) million, 6.8 (7.6) % of net sales. Operating expenses increased in all cost categories mainly due to the acquired businesses and included EUR 6.8 (3.8) million of amortization of intangible assets related to the acquired businesses.

Industrial Measurements Business Area

MEUR	2019	2018	Change	FX**
Orders received	143.2	119.0	20%	17%
Order book, end of period	16.8	15.7	7%	
Net sales	142.3	116.4	22%	18%
Products	129.5	105.1	23%	
Services	12.8	11.4	13%	
Gross margin, %	63.9	62.1		
Operating expenses	63.4	48.5	31%	
R&D expenditure	18.8	14.9	26%	
of net sales, %	13.2	12.8		
Amortization*	2.8	0.0		
Operating result	26.1	23.9		
of net sales, %	18.4	20.5		

* Amortization of intangible assets related to the acquired businesses
** Change with comparable exchange rates

Industrial Measurements Business Area's 2019 orders received increased by 20% compared to previous year and totaled EUR 143.2 (119.0) million. Growth of orders received was strong in all regions. Growth of orders received without currency impact and acquisitions was 6%.

At the end of December 2019, Industrial Measurements Business Area's order book amounted to EUR 16.8 (15.7) million and increased by 7% compared to previous year. Order book increased in continuous monitoring systems and in services business. EUR 14.8 (14.3) million of the order book is scheduled to be delivered in 2020.

Industrial Measurements Business Area's 2019 net sales grew by 22% compared to previous year and were EUR 142.3 (116.4) million. Net sales grew strongly in all regions. Instruments generated one fourth of net sales growth and half of the growth was generated by acquisition of liquid measurements business. Growth of net sales without currency impact and acquisitions was 8%. Gross margin improved to 63.9 (62.1) % as a result of net sales growth and related economies of scale obtained in product business as well as positive currency impact. In addition, gross margin in services business developed positively.

Industrial Measurements Business Area's 2019 operating result increased compared to previous year and was EUR 26.1 (23.9) million, 18.4 (20.5) % of net sales. Net sales growth and gross margin improvement increased operating result. However, operating expenses increased in all cost categories and more than half of the increase came from the acquired business. Operating expenses included EUR 2.8 (0.0) million of amortization of intangible assets related to the acquired business. In addition, operating result included one-off expense related to a lease contract termination.

Group structure

Vaisala's headquarters are located in Vantaa, Finland. On December 31, 2019, Vaisala had subsidiaries in Australia, Brazil, Canada, China, Finland, France, Germany, India, Japan, Kenya, Malaysia, Mexico, United Kingdom and United States. The parent company has branches in Argentina and Colombia. In addition, Vaisala has permanent establishments and offices in South Korea, Sweden and United Arab Emirated. K-Patents Oy and Janesko Oy were merged into Vaisala Corporation on August 31, 2019.

Board of Directors

The Annual General Meeting held on March 26, 2019 confirmed that the number of the Board members is eight.

Members of the Board of Directors on December 31, 2019

- Raimo Voipio, Chairman
- Ville Voipio, Vice Chairman
- Petri Castrén
- Petra Lundström
- Jukka Rinnevaara
- Kaarina Ståhlberg
- Tuomas Syrjänen
- Pertti Torstila

Strategy and its implementation in 2019

During the second quarter, Vaisala's Board of Directors approved strategy for 2019–2023 and updated long-term financial targets. Fundamentals of profitable growth are reliable products and solutions that are based on leading technologies, perform with superb quality, create value for our customers and optimize total cost of ownership.

Industrial Measurements Business Area drives profitable growth through product leadership strategy in gas and liquid measurement technologies. In addition to Business Area's flagship markets, high-end humidity and high-end carbon dioxide, growth is sought from liquid measurements, continuous monitoring systems and power industry applications. Target is to exceed Vaisala's average growth. Objective is to win by most reliable measurements, best customer experience, fast delivery as well as excellent sales and service capabilities.

Industrial Measurements Business Area met its objective to exceed Vaisala's average growth with 22% of net sales growth. Business area's flagship markets, high-end humidity and high-end carbon dioxide, generated one fourth of business area's net sales growth in 2019 and half of the growth was generated by acquisition of liquid measurements business. During the year, continuous monitoring systems reached 30% growth compared to previous year. In industrial measurements, power industry applications had the highest growth. K-Patents in Finland was merged, and its production was moved to Vaisala's premises in Vantaa. During the year, sales and marketing, research and development and support functions of K-Patents were integrated to Vaisala's operative units and are now fully operating as part of Vaisala. Expansion of production to liquid measurements products was a demanding project, however, delivery capability remained on target level.

Industrial Measurements Business Area launched a disruptive biogas measurement instrument, which simultaneously measures methane, carbon dioxide and humidity in demanding environments. This equipment is optimized for biogas production processes.

Industrial Measurements Business Area also launched new humidity, dew point and moisture in oil probes to Indigo product family. These new options for humidity, dew point and moisture in oil measurements bring more possibilities for industries to save energy, optimize processes, and improve product quality. They will improve customers' process efficiencies by providing accurate and reliable measurement data.

In addition, Industrial Measurements Business Area released version 5.1 of viewLinc continuous monitoring system with several new features. These include extended interoperability with other computerized systems, easy and cost-effective integration of third-party devices and more flexible alarming with mobile devices and local devices. The business area also released temperature measurement probes for wireless data logger, which is intended as a data collection point in a viewLinc monitoring system. The temperature measurement range covers wide range of various temperatures in life science applications including -200°C liquified nitrogen containers and higher range up to incubators and stability chambers. In early 2019, Vaisala's wireless viewLinc continuous monitoring system won the annual Global Quality Innovation Award 2018. viewLinc was awarded for its usability and reliable system design, which is utilizing the latest technologies in an innovative way.

Weather and Environment Business Area's strategic intent is to remain undisputable global leader for weather observations. Business Area's strategy has four pillars: offer industry-leading products for weather observations, strive for excellence in large system project deliveries, develop digital solutions for selected weather critical operations, and expand into environmental measurements with urban air quality as spearhead. Objective is to win by focusing R&D in instrument and weather radar offering renewal, driving growth of wind lidar business, and developing innovative digital solutions targeted to intelligent transportation market.

Weather and Environment Business Area made excellent progress in large system project deliveries. Large multi-year projects in Vietnam, Bahamas, Argentina, Sweden, Australia and Alaska in the US generated one fourth of business area's project net sales in 2019. During the year, Vaisala refocused and reorganized its digital business' operations to bring annual savings of some EUR 3 million from 2020 onwards. Implementation of changes was completed, and impacts were already visible in the fourth quarter results. Leopshere's wind lidar business, which was acquired in late 2018, generated more than 10% of business area's net sales and about one third of the growth. Integration of Leosphere was focusing on sales and marketing, improvements in production and supply chain, and implementation of ERP and other IT applications. ERP implementation was completed during the second quarter.

Weather and Environment Business Area delivered the first forward scatter, a unique 3-in-1 device that includes a state-of-art visibility, present weather and precipitation quantification sensor. This forward scatter introduced Vaisala's latest security platform to prevent unauthorized access and running of unauthorized software. It has encrypted and secured communication, unique device activation code and secure remote software update capability.

Weather and Environment Business Area expanded its weather radar offering to include X-band radars. Smaller size and lower cost of X-band radar makes it an ideal gap filler. It is also suitable for airports. In difficult terrain, it improves capability to reliably detect snow, rain, and other weather activity.

In addition, Weather and Environment Business Area introduced a solution to transportation customer segment, which combines road surface data from a mobile sensor and computer vision both installed in vehicles. The solution provides customers with timely, accurate, easily accessible, and critical data in order to operate more efficiently and safely.

Weather and Environment Business Area also expanded its offering with a buoy-ready Windcube system to enable enhanced offshore wind resource assessment, even in harsh environments. The ability to measure wind speeds and direction from a floating lidar solution has been essential to accelerating the pace of offshore development.

Vaisala Operations manufactures products for both business areas and develops operational excellence in high mix low volume supply chain through Vaisala Production System. Strategic programs are productivity improvement, early involvement to product creation, as well as scouting and deploying latest smart factory technologies.

Operations met objectives set for direct labor productivity improvement and was participating in multiple product development projects together with business areas in order to ensure good producibility and timely production ramp-up. Integration of production of liquid measurements products required implementation of new technologies. The project was completed according to plan and without interruptions in production.

In 2019, Vaisala identified the most relevant UN Sustainable Development Goals (SDG). Solutions that are beneficial for society and the environment have always been at the core of the company's business. By integrating the goals to strategy work, Vaisala can better drive its impacts on sustainable development and get inspiration for developing new business and sustainable business practices.

Regarding Vaisala's sustainable business practices, the most relevant goals for Vaisala are SDG 12 – Responsible consumption and production as well as SDG 8 – Decent work and economic growth. Target of Vaisala's product development is to reduce footprint and maximize handprint of the products during their entire lifecycles by including design for environment in development projects. Long product lifecycles and minimization of service needs have significant impact on handprint. Global business has a positive economic impact on communities through employment, partner network and supplier network. Vaisala also promotes fulfillment of labor standards and occupational health and safety in its own operations and partner network.

For Weather and Environment Business Area, the most relevant goal is SDG 13 – Climate action. Reliable weather measurements enable science behind climate change, and for example, weather infrastructure development projects help to improve weather forecasting and early warning capabilities when severe weather events become common. For Industrial Measurements Business Area, the most relevant goal is SDG 9 – Industry, innovation and infrastructure. Industrial measurement solutions help Vaisala's customers to improve their resource efficiency and promote deployment of clean and environmentally friendly technologies and production processes.

Long-term financial targets

Based on strategic objectives Vaisala expects net sales growth during the strategy period. Growth will require new capabilities and resources in R&D, sales and marketing. In addition, amortization and depreciation expenses will increase following acquisitions and investments.

Vaisala's long-term financial targets are an average annual growth exceeding 5% and operating profit margin (EBIT) exceeding 12%.

Vaisala does not consider the long-term financial targets as market guidance for any given year.

Management Group

On December 31, 2019, Vaisala's Management Group members were

- Kjell Forsén, President and CEO, Chairman of the Management Group
- Mari Heusala, EVP, Human Resources
- Sampsa Lahtinen, EVP, Industrial Measurements Business Area
- Kaarina Muurinen, CFO
- Vesa Pylvänäinen, EVP, Operations
- Jarkko Sairanen, EVP, Weather and Environment Business Area
- Katriina Vainio, EVP, Group General Counsel

Risk management

The objective of Vaisala's risk management is to identify and manage material risks related to strategy implementation and business operations. Vaisala has a risk management policy, which has been approved by the Board of Directors and which covers the company's strategic, operational, hazard, and financial risks. The policy aims at ensuring the safety of the company's personnel, operations, and products, as well as the continuity and compliance of business operations.

The Board of Directors defines and approves risk management principles and policies and assesses the effectiveness of risk management. The Audit Committee reviews compliance with risk management policy and processes.

Vaisala's Risk Management Steering Group comprises key internal stakeholders. The Steering Group is responsible for the operational oversight of the risk management process and for assuring that all significant risks are identified and reported, and risks are acted upon on all necessary organizational levels and in all geographical locations.

Risk management is integrated into key business processes and operations. This is accomplished by incorporating applicable risk identification, assessment, management, and risk reporting actions into the core processes. The most significant risks are reported to the Vaisala Management Group quarterly and to the Audit Committee annually.

Vaisala is exposed to a number of financial risks in its operations of which key ones are interest rate risk, currency risk, refinancing and liquidity risks as well as financial credit and trade receivables credit risks. Vaisala's objective is to limit the impact of these risks on statement of income, statement of financial position and cash flow statement. The management of financial risks is based on the treasury and credit policies approved by the Board of Directors.

Interest rate risk

Interest rate risk refers to the uncertainty in statement of income, statement of financial position and cash flow statement arising from interest rate changes. The group is exposed to cash flow interest rate risk, if it has floating rate liabilities. At the end of the financial year all interest-bearing liabilities and loans were at fixed rates and totaled to EUR 51.5 (40.5) million. EUR 11.3 million of interest-bearing liabilities and loans related to lease liabilities. As the group does not have floating rate loans, the group is not exposed to interest rate risk arising from changes in interest rates.

Currency risk

Currency risk refers to the uncertainty in statement of income, statement of financial position and cash flow statement arising from exchange rate fluctuations. Vaisala's business is global and is exposed to transaction and translation risks in multiple currencies. The transaction risk is related to the currency flows of sales and expenses. The translation risk arises from net investments in entities outside the euro area.

Vaisala's sales are denominated in various currencies. In 2019, 47% of the group's sales was in EUR, 33% in USD, 7% in CNY, 5% in JPY and 3% in GBP. Expenses and purchases occur mostly in EUR and USD. The group's policy is to hedge foreign currency positions which consists of the order book, purchase commitments and net receivables, using foreign exchange forwards. Vaisala does not hedge forecasted cash flows that are not in the order book. Vaisala does not apply hedge accounting in accordance with IFRS and changes in fair value are recognized in the statement of income.

Intercompany loans and deposits are mainly initiated in subsidiaries' local currencies. Vaisala does not hedge intercompany loans, deposits or equities of subsidiaries. Translation of subsidiaries' equities into euros caused translation difference of EUR 0.5 (1.0) million. The most significant translation risk exposures are in USD.

The IFRS 7 currency risk sensitivity analysis is based on the group companies' foreign currency receivables, cash and cash equivalents and liabilities. The calculation does not include internal loans, order book or forecasted cash flows, but includes foreign exchange forwards in their nominal value. The effect of a 10% appreciation in all open net currency positions on Vaisala's result after taxes and equity would have been EUR -0.5 (-0.1) million. Three largest foreign exchange net exposures in euro and their sensitivity analysis based on a 10% change (before taxes) are presented in the following table:

Foreign exchange net exposures against EUR

	2019		2018
USD	-7,9	USD	-8,8
SEK	-3,5	INR	1,8
SGD	-2,3	CAD	0,9

Refinancing and liquidity risks

Refinancing and liquidity risk refers to the uncertainty in the ability to maintain liquidity. In order to ensure liquidity, cash and cash equivalents and availability of credit facilities are maintained at a sufficient level.

Vaisala's cash and cash equivalents amounted to EUR 56.4 (72.7) million.

On October 5, 2018, Vaisala signed a EUR 50 million unsecured revolving credit facility. The committed credit facility agreement matures in 5 years from the signing and it has no financial covenants. On December 31, 2019, Vaisala had interest-bearing liabilities totaling EUR 51.5 (40.5) million, of which EUR 40 (40) million related to utilized revolving credit facility, which matures on April 14, 2020. Group has no loans that would mature after five years or more. In addition, Vaisala has a domestic commercial paper program amounting to EUR 150 million that was not utilized as of December 31, 2019.

Financial credit risk

Financial credit risk refers to the uncertainty about the counterparty's ability to assume the obligations related to the financing. Vaisala is exposed to financial credit risk in respect of cash and cash equivalents and derivative financial instruments. Vaisala's cash and cash equivalents amounted to EUR 56.4 (72.7) million and the nominal value of derivative financial instruments to EUR 33.8 (26.9) million. Vaisala deposits its assets and concludes derivative financial contracts with counterparties with good creditworthiness and approved by the Board of Directors. The creditworthiness of banks is constantly assessed.

Trade receivables credit risk

Trade receivables credit risk means the customer-related uncertainty about the collectability of receivables. These trade receivables credit risks are managed by using letter of credit, advance payments and bank guarantees as payment terms. Additionally, trade receivables credit risk is managed by utilizing credit risk insurance and by monitoring customer liquidity. Management estimates that the group does not have significant credit risk concentrations because, due to its globally distributed customer base, no single customer or a group of customers constitutes a significant risk. During the financial year, credit losses and related reversals for trade receivables recognized in the statement of income amounted to EUR -0.2 (-0.6) million. Credit loss is recognized once it has been officially declared that the receivable will not be paid as a result of liquidation or bankruptcy.

Further information about risk management is available in the Annual Report's sections Governance/Risk Management and on the company's website at vaisala.com.

Decisions by Vaisala Corporation's Annual General Meeting

Vaisala Corporation's Annual General Meeting was held on March 26, 2019. The meeting approved the financial statements and discharged the members of the Board of Directors and the President and CEO from liability for the financial period January 1–December 31, 2018.

Dividend

The Annual General Meeting decided a dividend of EUR 0.58 per share. The record date for the dividend payment was March 28, 2019 and the payment date April 4, 2019.

Board of Directors

The Annual General Meeting confirmed that the number of Board members is eight. Petri Castrén, Petra Lundström, Kaarina Ståhlberg, Pertti Torstila, Raimo Voipio and Ville Voipio will continue as members of the Board of Directors. Jukka Rinnevaara and Tuomas Syrjänen were elected as new members of the Board of Directors.

The Annual General Meeting confirmed that that the annual remuneration payable to the Chairman of the Board of Directors is EUR 45,000 and each Board member EUR 35,000 per year. Approximately 40% of the annual remuneration will be paid in Vaisala Corporation's series A shares acquired from the market and the rest in cash. In addition, the Annual General Meeting confirmed that the meeting fee for the Chairman of the Audit Committee would be EUR 1,500 per attended meeting and EUR 1,000 for each member of the Audit Committee and Chairman and each member of the Remuneration and HR Committee and any other committee established by the Board of Directors for a term until the close of the Annual General Meeting in 2020. The meeting fees are paid in cash.

Auditor

The Annual General Meeting re-elected Deloitte Oy as the auditor of the company and APA Merja Itäniemi will act as the auditor with the principal responsibility. The Auditors are reimbursed according to invoice presented to the company.

Authorization for the directed repurchase of own A shares

The Annual General Meeting authorized the Board of Directors to resolve on the directed repurchase of a maximum of 300,000 of the company's own series A shares in one or more instalments by using company's unrestricted equity. The authorization is valid until the closing of the next Annual General Meeting, however, no longer than September 26, 2020.

Authorization on the issuance of the company's own A shares

The Annual General Meeting authorized the Board of Directors to resolve on the issuance of a maximum of 769,732 company's own series A shares. The issuance of own shares may be carried out in deviation from the shareholders' pre-emptive rights (directed issue). The authorization entitles the issuance of treasury series A shares as a directed issue without payment as part of the company's share-based incentive plan. The subscription price of the shares can instead of cash also be paid in full or in part as contribution in kind. The authorization is valid until September 26, 2020. The authorization for the company's incentive program shall however be valid until March 26, 2023.

The organizing meeting of the Board of Directors

At its organizing meeting held after the Annual General Meeting, the Board elected Raimo Voipio to continue as the Chairman of the Board of Directors and Ville Voipio as the Vice Chairman.

Kaarina Ståhlberg was elected as the Chairman and Petri Castrén, Jukka Rinnevaara and Ville Voipio as members of the Audit Committee. Ville Voipio was elected as the Chairman and Petri Castrén and Petra Lundström as members of the Remuneration and HR Committee. The Chairman and all members of the Audit Committee as well as the Remuneration and HR Committee are independent both of the company and of significant shareholders.

Vaisala's shares and shareholders

Share capital and shares

Vaisala's share capital totaled EUR 7,660,808 on December 31, 2019. Vaisala has 36,436,728 shares, of which 6,751,398 are series K shares and 29,685,330 series A shares. During the second quarter, number of series K shares decreased by 27,264 and number of series A shares increased by 27,264 as the Board of Directors decided that 27,264 series K shares were converted to series A shares. This conversion was registered into the Trade Register on May 27, 2019. The series K shares, and series A shares are differentiated by the fact that each series K share entitles its owner to 20 votes at a General Meeting of Shareholders while each series A share entitles its owner to 1 vote. The series A shares represented 81.5% of the total number of shares and 18.0% of the total votes. The series K shares represented 18.5% of the total number of shares and 82.0% of the total votes.

Trading and share price development

In 2019, a total of 3,442,439 series A shares with a value totaling EUR 81.0 million were traded on the Nasdaq Helsinki Ltd. During the year, the share price increased by 92% while OMX Helsinki Cap index increased by 15%. The closing price of the series A share on the Nasdaq Helsinki stock exchange was EUR 31.75. Shares registered a high of EUR 32.80 and a low of EUR 15.95. Volume-weighted average share price was EUR 23.56.

The market value of series A shares on December 31, 2019 was EUR 924.9 million, excluding company's treasury shares. Valuing the series K shares – which are not traded on the stock market – at the rate of the series A share's closing price on the last trading day of December, the total market value of all the series A and series K shares together was EUR 1,139.2 million, excluding company's treasury shares.

Treasury shares

In March 2019, a total of 88,452 of treasury shares were conveyed without consideration to the 30 key employees participating in the Share-based incentive plan 2016 under the terms and conditions of the plan. This directed share issue was based on an authorization given by the Annual General Meeting held on April 10, 2018.

In June 2019, a total of 2,195 of treasury shares were conveyed without consideration to an employee participating in the Share-based incentive plans 2017 and 2018 under the terms and conditions of the plans. This directed share issue was based on an authorization given by the Annual General Meeting held on March 26, 2019.

Following these directed share issues, the number of series A treasury shares is 555,989, which represents 1.9% of series A shares and 1.5% of total shares.

Major shareholders December 31, 2019

	A shares	K shares	Total	% of shares	% of votes
Novametor Oy	2,778,000	998,358	3,776,358	10.36	13.81
Finnish Academy of Science and Letters	373,072	1,757,760	2,130,832	5.85	21.57
Nordea Nordic Small Cap Fund	1,824,551	0	1,824,551	5.01	1.11
Mandatum Life Insurance Company Ltd.	1,192,100	274,800	1,466,900	4.03	4.06
Weisell-säätiö	1,440,000	0	1,440,000	3.95	0.87
Voipio Mikko	666,000	602,312	1,268,312	3.48	7.72
Ilmarinen Mutual Pension Insurance Company	1,131,486	0	1,131,486	3.12	0.69
Caspers Anja	406,560	562,936	969,496	2.66	7.08
Voipio Raimo*	514,002	454,296	968,298	2.66	5.83
Odin Norden Fund	944,055	0	944,055	2.59	0.57
Voipio Tauno	591,520	315,304	906,824	2.49	4.19
Voipio Lauri	561,692	83,376	645,068	1.77	1.35
Voipio Riitta	561,692	83,376	645,068	1.77	1.35
Vaisala Oyj	555,989	0	555,989	1.53	0.34
Voipio Ville	396,087	96,712	492,799	1.35	1.41
Total	**13,936,806**	**5,229,230**	**19,166,036**	**52.62**	**71.95**
Nominee registered shares**	5,396,675	0	5,396,675	14.81	3.28

* In addition to direct share ownership, Raimo Voipio's controlled organization IMAR Oy owned 56,000 series A shares.
** Includes 1,310,853 series A shares owned by Lannebo Fonder, which represented 3.60% of all shares and 0.80% of all votes (according to Lannebo's notification).

Ownership structure (series A and K shares) December 31, 2019

	Shares	% of shares
Households	14,803,830	40.63
Nominee registered and outside Finland	6,387,474	17.53
Private companies	4,923,821	13.51
Financial and insurance institutions	4,997,841	13.72
Non-profit organizations	3,988,370	10.95
Public sector organizations	1,335,392	3.67
Total	**36,436,728**	**100.00**

Ownership distribution (series A and K shares) December 31, 2019

	Share-holders	% of share-holders	Shares	% of shares
1–100	3,782	39.89	188,761	0.52
101–500	3,615	38.13	991,590	2.72
501–1 000	1,019	10.75	768,661	2.11
1 001–5 000	830	8.75	1,770,432	4.86
5 001–10 000	95	1.00	668,710	1.84
10 001–50 000	87	0.92	1,742,642	4.78
50 001–100 000	18	0.19	1,221,463	3.35
100 001–500 000	19	0.20	5,082,582	13.95
500 001–	16	0.17	24,001,887	65.87
Total	9,481	100.00	36,436,728	100.00
Nominee registered	**9**		**5,396,675**	**14.81**

Shareholders' agreements
The Board of Directors is not aware of any agreements concerning the ownership of the company's shares and the use of their voting rights.

Shareholding by the Board of Directors and the Management Group
On December 31, 2019, the Board of Directors held and controlled 988,083 (980,767) series A shares. These shares accounted for 3.3 (3.3) % of series A shares and 2.7 (2.7) % of total shares. The number of series K shares held and controlled by the Board was 551,008 (551,010). Total votes attached to the series A and K shares held and controlled by the Board were 12,008,243 (12,007,048), which accounted for 7.3 (7.3) % of the total votes of all shares.

On December 31, 2019 the President and CEO held and controlled 49,132 (34,552) series A shares. The President and CEO did not hold nor control any series K shares. Other Management Group members held and controlled 82,178 (67,896) series A shares but none series K shares.

Corporate Governance Statement includes more details on the shareholdings of the Board of Directors and the Management Group.

More information about Vaisala's shares and shareholders are presented on the company's website at vaisala.com/investors.

Donations

In September 2019, Hurrican Dorian hit the Bahamas and caused catastrophic damage. To help the country to recover for the severe disaster, Vaisala donated three new automated weather observation systems for airports.

Non-financial information

Disclosure of non-financial information in accordance with Finnish Accounting Act chapter 3 a is presented in the Sustainability section as well as in the Business model and Dashboard chapters, included in the Creating value section, and the Risk management chapter, included in the Governance section.

Corporate Governance Statement

Corporate Governance Statement is published as a part of the Annual Report as well as a separate report on the company's website at vaisala.com/investors.

Near-term risks and uncertainties

Recent coronavirus outbreak in China has affected Vaisala's capability to deliver products to China and may impact customers' demand for Vaisala's products. It is impossible to estimate duration of the situation as well as impacts on business and financial performance.

Uncertainties in international trade policies, political situation and governmental customers' budgetary constraints or changes in their sourcing criteria may reduce or delay demand for Vaisala's products and services.

Increasing competition or customers' preference for local manufacturing may reduce demand for Vaisala's products and services. Prolonged ramp-up, market acceptance, sales channel development, or regulatory certification of new products and services may postpone realization of Vaisala's growth and profitability plans. Customers' budgetary constraints, complex decision-making processes, changes in scope, and financing arrangements may postpone closing of infrastructure contracts in Weather and Environment Business Area.

Long interruption in production or disruption in suppliers' and subcontractors' delivery capability or product quality may impact significantly Vaisala's net sales and profitability. Cyber risk and downtime of IT systems may impact operations and delivery of digital solutions.

Vaisala's capability to successfully complete investments, acquisitions, divestments and restructurings on a timely basis and to achieve related financial and operational targets includes uncertainties and risks, which may negatively impact net sales and profitability.

Further information about risk management and risks are available in Annual Report and on the company website at vaisala.com/investors.

Market outlook 2020

Climate change and severe weather events drive need for continued replacement and enhancement of weather observation and forecasting capabilities. Related meteorology infrastructure market is expected to be stable or somewhat grow. Timing of projects may cause some annual volatility.

In transportation, market for weather observation systems is expected to be stable or somewhat grow. Airports market is expected to be stable driven by replacements as well as construction of new airport capacity, especially in China. Ground transportation and road surface state modelling market is expected to grow modestly, partly driven by new applications for automotive industry and smart cities.

Renewable energy market is expected to continue to grow and expectation for solar growth is higher than wind. Investments in new renewable energy capacity are expected to continue globally and highest investment volumes are expected in APAC.

In industrial measurements, increasing focus on energy and operations efficiency, longer product life cycles as well as increasing regulations and requirements for high-quality and security drive need for high-end industrial instruments and systems. Industrial instruments and liquid measurements markets are expected to continue to grow. Continuous monitoring systems and power industry markets' growth is expected to continue to exceed growth of industrial instruments.

Business outlook for 2020

Vaisala estimates its full-year 2020 net sales to be in the range of EUR 400–425 million and its operating result (EBIT) to be in the range of EUR 38–48 million.

Board of Directors' proposal for distribution of earnings

The parent company's distributable earnings amount to EUR 170,520,851.66, of which the result for the period is EUR 30,885,350.86.

The Board of Directors proposes to the Annual General Meeting that dividend of EUR 0.61 per share be paid out of distributable earnings totaling approximately EUR 21.9 million and the rest to be carried forward in the shareholders' equity. No dividend will be paid for treasury shares held by the company.

There have been no significant changes in the company's financial position since the close of the financial period. According to the Board of Directors, the proposed dividend distribution does not endanger the company's financial standing.

Annual General Meeting 2020

Vaisala's Annual General Meeting will be held on Tuesday, April 7, 2020 at 6:00 p.m. at Vaisala Corporation's head office, Vanha Nurmijärventie 21, 01670 Vantaa.

Vantaa, February 12, 2020

Vaisala Corporation
Board of Directors

The forward-looking statements in this release are based on the current expectations, known factors, decisions and plans of Vaisala's management. Although the management believes that the expectations reflected in these forward-looking statements are reasonable, there is no assurance that these expectations would prove to be correct. Therefore, the results could differ materially from those implied in the forward-looking statements, due to for example changes in the economic, market and competitive environments, regulatory or other government-related changes, or shifts in exchange rates.

Financial statements 2019

The audited financial statements comprise the consolidated statement of income, consolidated statement of comprehensive income, consolidated statement of financial position, consolidated cash flow statement, consolidated statement of changes in equity and notes to the consolidated financial statements, as well as the parent company income statement, parent company balance sheet, parent company cash flow statement and notes to the parent company financial statements.

CONSOLIDATED FINANCIAL STATEMENTS

Consolidated statement of income

EUR million	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Net sales	1, 2, 3	403.6	348.8
Cost of goods sold	5, 13, 16	-182.4	-163.7
Gross profit		**221.2**	**185.0**
Sales, marketing and administrative costs	5, 7, 16	-124.5	-102.8
Research and development costs	5, 7, 8, 16	-52.8	-45.4
Other operating income and expenses	4	-2.7	2.1
Operating result		**41.1**	**38.9**
Share of result in associated company	28	0.1	0.1
Financial income and expenses	9	-1.1	-1.5
Result before taxes		**40.2**	**37.5**
Income taxes	10	-6.6	-8.0
Result for the financial year		**33.6**	**29.5**
Attributable to			
Owners of the parent company		33.5	29.5
Non-controlling interests		0.1	-
Result for the financial year		**33.6**	**29.5**
Earnings per share for result attributable to the equity holders of the parent company	11		
Earnings per share, EUR		0.94	0.82
Diluted earnings per share, EUR		0.93	0.81

Consolidated statement of comprehensive income

EUR million	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Items that will not be reclassified to profit or loss (net of taxes)			
Actuarial profit (loss) on post-employment benefits	6	0.2	0.2
Total		**0.2**	**0.2**
Items that may be reclassified subsequently to profit or loss			
Translation differences		0.5	1.0
Total		**0.5**	**1.0**
Total other comprehensive income		**0.7**	**1.2**
Comprehensive income for the financial year		**34.3**	**30.7**
Attributable to			
Owners of the parent company		34.2	30.7
Non-controlling interests		0.1	-
Comprehensive income for the financial year		**34.3**	**30.7**

The notes are an essential part of the financial statements.

Consolidated statement of financial position

EUR million	Note	Dec 31, 2019	Dec 31, 2018
Assets			
Non-current assets			
Intangible assets	16	72.7	74.1
Property, plant and equipment	16	63.4	46.3
Right-of-use assets	17	12.3	-
Investments in shares		0.1	0.1
Investment in associated company	28	1.1	1.0
Non-current receivables	20	0.9	2.1
Deferred tax assets	10	9.8	9.8
Total non-current assets		**160.3**	**133.2**
Current assets			
Inventories	13	39.6	32.0
Trade and other receivables	12	77.3	74.7
Contract assets	3	25.0	17.8
Income tax receivables		2.8	0.9
Cash and cash equivalents	23	56.4	72.7
Total current assets		**201.1**	**198.0**
Assets classified as held for sale	26	**-**	**3.1**
Total assets		**361.5**	**334.4**

EUR million	Note	Dec 31, 2019	Dec 31, 2018
Equity and liabilities			
Equity	18		
Share capital		7.7	7.7
Other reserves		7.0	6.1
Translation differences		1.3	0.8
Treasury shares		-7.9	-9.0
Retained earnings		190.0	177.3
Total equity attributable to owners of parent company		**198.0**	**182.9**
Non-controlling interests		0.3	-
Total equity		**198.3**	**182.9**
Non-current liabilities			
Interest-bearing loans from financial institutions	21	-	0.2
Interest-bearing lease liabilities	17	8.3	-
Post-employment benefits	6	2.4	2.7
Deferred tax liabilities	10	8.1	9.4
Provisions	15	0.1	0.2
Other non-current liabilities	21	4.3	5.6
Total non-current liabilities		**23.3**	**18.0**

EUR million	Note	Dec 31, 2019	Dec 31, 2018
Current liabilities			
Interest-bearing loans from financial institutions	21	40.2	40.3
Interest-bearing lease liabilities	17	3.0	0.0
Trade and other payables	14	64.5	57.2
Contract liabilities	3	27.3	30.2
Income tax liabilities		1.7	1.4
Provisions	15	3.2	3.2
Total current liabilities		**139.8**	**132.3**
Liabilities directly associated with assets classified as held for sale	26	**-**	**1.1**
Total liabilities		**163.1**	**151.5**
Total equity and liabilities		**361.5**	**334.4**

The notes are an essential part of the financial statements.

Consolidated cash flow statement

EUR million	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Cash flow from operating activities			
Cash receipts from customers	1, 2, 3	391.5	346.7
Cash paid to suppliers and employees		-339.4	-289.3
Financial items paid	9	-2.3	-0.4
Income taxes paid	10	-9.0	-8.7
Cash flow from operating activities		**40.8**	**48.3**
Cash flow from investing activities			
Acquisition of subsidiaries, net of cash acquired	25	-7.3	-51.7
Capital expenditure on intangible assets and property, plant and equipment	16	-26.8	-14.5
Proceeds from sale of intangible assets and property, plant and equipment		0.5	0.1
Cash flow from investing activities		**-33.6**	**-66.1**
Cash flow from financing activities			
Dividends paid	18	-20.8	-37.6
Change in loan receivables		0.1	0.0
Proceeds from borrowings	21	80.0	40.0
Repayment of borrowings	21	-80.5	-2.6
Principal payments of lease liabilities	17	-4.1	-
Cash flow from financing activities		**-25.4**	**-0.1**

EUR million	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Change in cash and cash equivalents, increase (+) / decrease (-)		**-18.1**	**-17.9**
Cash and cash equivalents at the beginning of the financial year		72.7	91.3
Change in cash and cash equivalents		-18.1	-17.9
Cash and cash equivalents classifed as assets held for sale		-	-1.1
Transfer of cash and cash equivalents classified as assets held for sale to continuing operations		1.1	-
Effect from changes in exchange rates		0.7	0.4
Cash and cash equivalents at the end of the financial year	23	**56.4**	**72.7**

The notes are an essential part of the financial statements.

Consolidated statement of changes in equity

EUR million	Note	Share capital	Other reserves	Translation differences	Treasury shares	Retained earnings	Equity attributable to owners of the parent company	Non-controlling interests	Total
Equity at Dec 31, 2017		**7.7**	**3.0**	**-0.2**	**-10.1**	**185.1**	**185.4**		**185.4**
Adjustments to opening balance									
Effect of IFRS 2 amendment			3.9				3.9		3.9
Effect of IFRS 9 transition, net of taxes						-0.2	-0.2		-0.2
Effect of IFRS 15 transition, net of taxes						0.3	0.3		0.3
Equity at Jan 1, 2018		**7.7**	**6.8**	**-0.2**	**-10.1**	**185.2**	**189.3**		**189.3**
Result for the financial year	18					29.5	29.5		29.5
Other comprehensive income	18		0.0	1.0		0.2	1.2		1.2
Dividend distribution	18					-37.6	-37.6		-37.6
Share-based payments	7, 18		-0.7		1.1		0.4		0.4
Equity at Dec 31, 2018		**7.7**	**6.1**	**0.8**	**-9.0**	**177.3**	**182.9**		**182.9**
Result for the financial year	18					33.5	33.5	0.1	33.6
Other comprehensive income	18		0.0	0.5		0.2	0.7		0.7
Dividend distribution	18					-20.8	-20.8		-20.8
Share-based payments	7, 18		0.8		1.1		1.9		1.9
Transfer between items	18		0.0			-0.0	0.0		0.0
Changes in non-controlling interests that did not result in changes in control						-0.2	-0.2	0.2	0.0
Equity at Dec 31, 2019		**7.7**	**7.0**	**1.3**	**-7.9**	**190.0**	**198.0**	**0.3**	**198.3**

Notes to the consolidated financial statements

Basic information

Vaisala is a global leader in weather, environmental and industrial measurement. With more than 80 years of experience, Vaisala provides a comprehensive range of innovative observation and measurement products and services for chosen weather-related and industrial markets.

The parent company, Vaisala Corporation, is a Finnish public limited company, domiciled in Vantaa, Finland. The registered address is Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland (P.O. Box 26, FI-00421 Helsinki). The company's Business ID is 0124416-2.

These financial statements have been approved for publication by the Board of Directors of Vaisala Corporation on February 12, 2020. Under the Finnish Companies Act, shareholders have the right to approve, reject or make changes to the financial statements in the Annual General Meeting to be held after the publication. A copy of the consolidated financial statements is available on the company's website at vaisala.com/investors or at the parent company head office at the address Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland (P.O. Box 26, FI-00421 Helsinki).

Accounting principles for the consolidated financial statements

The consolidated financial statements of Vaisala have been prepared in accordance with International Financial Reporting Standards (IFRS) approved for adoption by the European Union, including International Accounting Standards (IAS) and the SIC and IFRIC Interpretations valid on December 31, 2019. In the Finnish Accounting Act and ordinances based on the provisions of the Act, IFRS refer to the standards and their interpretations adopted in accordance with the procedures laid down in regulation (EC) No. 1606/2002 of the European Parliament and of the Council. The notes to the consolidated financial statements are also in accordance with the Finnish accounting and corporate law.

The consolidated financial statements are presented in millions of euros, if not otherwise stated. All presented figures have been rounded and consequently the sum of individual figures may deviate from the presented sum. Financial statements are based on original acquisition costs, if not otherwise stated in the accounting principles. In the text sections figures from previous years are presented in parenthesis. Calculation of key figures and alternative performance measures are presented in the Board of Directors' Report.

Consolidation principles

The consolidated financial statements include the parent company Vaisala Corporation and those subsidiaries in which the group has control. The group has control of an entity when it is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Subsidiaries, acquired or founded during the financial period, are consolidated from the date on which control is transferred to the group and are no longer consolidated from the date that control ceases.

Business combinations are accounted for using the acquisition method. The consideration transferred is the fair value of transferred assets, issued equity interests and liabilities incurred to former owners. Any contingent consideration is recognized at fair value at the acquisition date and classified as a liability or equity. Contingent considerations classified as a liability are measured at fair value on each reporting date with changes recognized in consolidated statement of income. Identifiable assets acquired as well as assumed liabilities and contingent liabilities are measured initially at their fair values on the date of acquisition without deducting non-controlling interest. The amount by which the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition date fair value of any previous equity interest exceeds the fair value of identifiable net assets is recognized as goodwill. If the consideration transferred is lower than the acquired net assets, the gain is recognized in the consolidated statement of income on the acquisition date. All acquisition-related costs, except for the costs to issue debt or equity securities, are expensed in the periods in which the costs are incurred and the services are received.

The non-controlling interests' share of the result and of the comprehensive income for the financial year are presented in the consolidated statement of income and in the consolidated statement of comprehensive income. The non-controlling interests' share of the equity is presented as a separate item in the consolidated statement of financial position.

The group's intercompany transactions, unrealized margins on internal deliveries, receivables and liabilities as well as dividends are eliminated. Unrealized losses on internal transactions are also eliminated unless costs are not recoverable or the loss results from an impairment. The consolidated financial statements are prepared applying consistent accounting principles to similar transactions and other events under equal conditions.

The share of results of associated companies, i.e. companies of which Vaisala owns 20–50% or over which it otherwise has significant influence, are included in the consolidated financial statements applying the equity method. If Vaisala's share of an associated company's losses exceeds the carrying amount of the investment, the investment is recognized in the consolidated statement of financial position at zero value and further losses are not recognized unless the group has incurred obligations on behalf of the associated company. Unrealized gains on transactions between the group and its associated companies have been eliminated to the extent of the group's interest in the associated companies.

The group's share of associated companies' results is presented in the consolidated statement of income as a separate item before 'financial income and expenses'. Investments in associated companies are initially recognized at cost and the carrying amount is increased or decreased by the share of post-acquisition results. Distribution of profit received from an investment reduces the carrying amount of the investment.

Foreign currency translation

Items relating to the consolidated result and financial position are measured using the currency of the primary economic environment in which the entity operates ("the functional currency"). The consolidated financial statements have been presented in euros, which is the parent company's functional and presentation currency.

Transactions in foreign currencies are recorded in the functional currency using the exchange rate on the date of transaction. Receivables and payables in foreign currency have been valued at the rates quoted by European Central Bank on the last trading date of the financial year. Exchange rate differences resulting from the settlement of monetary items or from the presentation of items in the financial statements at different exchange rates from which they were originally recognized during the financial period or presented in the previous financial statements, are recognized as financial income or expenses in the financial period in which they arise.

Statements of financial position of subsidiaries in other functional currency than euro have been translated into euros using the rates quoted by European Central Bank on the last trading date of the financial year. Translating statements of income monthly average exchange rates have been used. Translating net income for the financial year using different exchange rates in the consolidated statements of income and in the consolidated statement of financial position, results in a translation difference, which is recognized in other comprehensive income. Translation differences arising from the elimination of the acquisition cost of foreign subsidiaries and the translation of the accumulated equity items after the acquisition are recognized in other comprehensive income. When a foreign subsidiary or associated company is disposed of or partly disposed of, the translation difference is recognized in the consolidated statement of income as part of the gain or loss on the sale.

Goodwill or fair value adjustments arising from the acquisition of a foreign entity are treated as assets and liabilities in the functional currency of the foreign entity and are translated at the rate of the last trading date of the financial year.

Key exchange rates

	Average rates		Period end rates	
	2019	2018	Dec 31, 2019	Dec 31, 2018
USD	1.1213	1.1838	1.1234	1.1450
CNY	7.7282	7.8097	7.8205	7.8751
JPY	122.29	130.77	121.94	125.85
GBP	0.8795	0.8853	0.8508	0.8945

New and amended IFRS standards that are effective for the year 2019

The following new or revised IFRSs have been adopted from January 1, 2019 in these consolidated financial statements:

IFRS 16 Leases

In 2019, Vaisala has applied IFRS 16 Leases which is effective for a financial year that begins on or after January 1, 2019.

General impact of application of IFRS 16 Leases

IFRS 16 provides a comprehensive model for the identification of lease arrangements and their treatment in the financial statements for both lessors and lessees. IFRS 16 superseded the lease guidance including IAS 17 Leases and the related Interpretations.

In contrast to lessee accounting, IFRS 16 substantially carries forward the lessor accounting requirements in IAS 17.

Impact of the new definition of a lease

The group made use of the practical expedient available on transition to IFRS 16 not to reassess whether a contract is or contains a lease. Accordingly, the definition of a lease in accordance with IAS 17 and IFRIC 4 continued to apply to those leases entered or modified before January 1, 2019.

The change in definition of a lease mainly relates to the concept of control. IFRS 16 distinguishes between leases and service contracts on the basis of whether the use of an identified asset is controlled by the customer. Control is considered to exist if the customer has:

- the right to obtain substantially all of the economic benefits from the use of an identified asset; and
- the right to direct the use of that asset.

Vaisala applies the definition of a lease and related guidance set out in IFRS 16 to all lease contracts entered into or modified on or after January 1, 2019 (whether it is a lessor or a lessee in the lease contract). The new definition in IFRS 16 did not change significantly the scope of contracts that meet the definition of a lease for the group.

Impact on lessee accounting

Operating leases

IFRS 16 changed how Vaisala accounts for leases previously classified as operating leases under IAS 17, and which were off-balance sheet.

On initial application of IFRS 16, for all leases (except as noted below), Vaisala:

a) Recognizes right-of-use assets and lease liabilities in the consolidated statement of financial position,
   - Vaisala applied simplified approach when adopting IFRS 16 in which right-of-use asset is initially measured at amount of the initial measurement of the lease liability less any lease payments made at or before the commencement date (at cost).
   - Subsequently right-of-use asset is measured at cost less accumulated depreciation and impairment losses, adjusted for any remeasurement of the lease liability.
   - The lease liability is initially measured at the present value of the future lease payments that are not paid at that date. The lease payments are discounted by incremental borrowing rate.
   - Subsequently, the lease liability is adjusted for interest and lease payments, as well as the impact of lease modifications, amongst others.

b) Recognizes depreciation of right-of-use assets and interest on lease liabilities in the consolidated statement of income;

c) Separates the total amount of cash paid into a principal portion (presented within financing activities) and interest (presented within operating activities) in the consolidated cash flow statement.

Lease incentives (e.g. rent-free period) are recognized as part of the measurement of the right-of-use assets and lease liabilities whereas under IAS 17 they resulted in the recognition of a lease liability incentive, amortized as a reduction of rental expenses on a straight-line basis.

Under IFRS 16, right-of-use assets are tested for impairment in accordance with IAS 36 Impairment of Assets. This replaces the previous requirement to recognize a provision for onerous lease contracts.

Vaisala does not apply the practical expedient as permitted by IFRS 16 not to recognize right-of-use asset and corresponding lease liability for short-term leases (lease term of 12 months or less) and leases of low-value assets. Right-of-use assets recognized in the statement of financial position consist of offices, other premises, land area, apartments and cars.

Majority of Vaisala's lease arrangements are fixed-term arrangements without one-sided extension or termination options and thus lease term is defined based on the duration of the arrangement. If an arrangement includes such conditions, management needs to estimate the likely lease term for each arrangement. Significant judgment needs to be exercised when making these estimates.

As at December 31, 2018, the group had non-cancellable operating lease commitments of EUR 16.6 million. The assessment indicated that EUR 12 million of these arrangements related to leases, which management estimated to be material and thus were recognized in the statement of financial position as a result of application IFRS 16. Additionally, lease term of a contract related to an operating lease commitment amounting to EUR 4 million was to start in the future. Rest of the arrangements were considered immaterial. The group recognized a right of use asset of EUR 12 million and a corresponding lease liability of EUR 11 million as of January 1, 2019. The weighted average lessee's incremental borrowing rate applied to lease liabilities recognized in the statement of financial position at the date of initial application was 2.8%.

As of December 31, 2019 the amount of right-of-use assets totaled EUR 12.3 million and the amount of lease liability EUR 11.3 million. The amount of depreciation related to right-of-use assets totaled EUR 4.1 million and interest expense related to lease liability EUR 0.3 million for the period January–December 2019. If the financial statements 2019 had been prepared according to IAS 17, rent costs would have been EUR 4.5 million for the period January-December 2019. Rent costs included in the consolidated statement of income in January–December 2018 totaled EUR 4.4 million.

Reconciliation

Operating lease commitments, Dec 31, 2018	**16.6**
Lease agreement starting in the future	-4.2
Lease agreements considered insignificant	-0.2
Other adjustments	0.1
Lease liability before discounting, Jan 1, 2019	**12.3**
Discounting	-1.5
Lease liability, Jan 1, 2019	**10.8**

Under IAS 17, all lease payments on operating leases were presented as part of cash flows from operating activities. Under IFRS 16, lease payments are presented as part of cash flows from financing activities. In January–December 2019 principal payments of lease liabilities in cash flow from financing activities amounted to EUR 4.1 million and interest expenses in the cash flow from operating activities amounted to EUR 0.3 million. The amount of rent costs included in the cash flow from operating activities in January–December 2018 totaled EUR 4.4 million.

Vaisala applied IFRS 16 retrospectively with the cumulative effect of initial application recognized as of January 1, 2019 without adjusting equity. Comparative information was not restated.

Impact on lessor accounting

As the group does not act as lessor, implementation of IFRS 16 has had no impact on the amounts recognized in the consolidated financial statements in this regard.

Other new and amended IFRS standards that are effective for the year 2019

In 2019, in addition to IFRS 16, the group has applied a number of amendments to IFRS Standards and Interpretations issued by the International Accounting Standards Board (IASB) that are effective for a financial year that begins on or after January 1, 2019. Their adoption has not had any material impact on the disclosures or on the amounts reported in these financial statements.

Accounting principles requiring management judgment and the main uncertainty factors relating to estimates

The preparation of financial statements in accordance with IFRS requires management to make estimates and judgment in the application of the accounting policies. The financial statements are based on estimates and assumptions concerning the future, the outcome of which may differ from the estimates and assumptions made. The estimates and judgments made are based on past experience and other factors, such as assumptions about future events that may reasonably be expected to occur in the circumstances. Estimates and assumptions are reviewed on a regular basis.

Estimates and judgment have been used in particular in the following areas for which significant accounting policies and accounting estimates and judgments have been described in the accompanying notes:

- Revenue recognition (note 3)
- Allowances for excess and obsolete inventory (note 13)
- Fair value allocation of purchase price in business combinations (notes 16 and 25)
- Impairment testing (note 16)
- Leases (note 17)

Other estimates are related mainly to environmental, litigation, warranty, credit and tax risks, the determination of pension obligations as well as the utilization of deferred tax assets against future taxable income.

Financial development

1. REPORTABLE SEGMENTS

§ Accounting principles

Vaisala has two operating and reportable segments; Weather and Environment Business Area and Industrial Measurements Business Area. Reportable segments are based on the type of business operations. Operating segments have not been aggregated to build the reportable segments.

Operating segments are based on the management reports reviewed by Vaisala Management Group, which is the chief operating decision-maker. Vaisala Management Group is responsible for allocating resources and assessing performance of the operating segments. Vaisala Management Group assesses the performance of the operating segment based on the operating result. The reporting provided to Vaisala Management Group is prepared in consistency with the principles of IFRS consolidated financial statements. Restructuring and M&A activities related costs as well as discontinued operations are not allocated to operating segments and are presented in Other operations. Transfer pricing between segments is based on arm's length principle.

Weather and Environment Business Area serves selected weather-dependent markets where accurate, real-time, uninterrupted, and reliable weather data is essential to run efficient operations. Main markets are meteorology, ground transportation, aviation, railway, maritime, safety and security, renewable energy, and ambient air quality.

Industrial Measurements Business Area serves a wide range of industrial customers. It offers a broad range of measurement instruments to ensure operational quality and productivity. Main markets are high-end humidity and carbon dioxide measurements, life science, and power industry.

Revenue recognition principles are presented in note 3, Revenue from contracts with customers.

Reportable segments

2019 EUR million	Weather and Environment	Industrial Measurements	Other operations	Vaisala total
Products	149.0	129.5		278.5
Projects	73.2			73.2
Services	39.1	12.8		51.9
Net sales	**261.3**	**142.3**	**0.0**	**403.6**
Revenue recognition at a point in time	168.6	140.0		308.6
Revenue recognition over time	92.7	2.3		95.0
Net sales	**261.3**	**142.3**	**0.0**	**403.6**
Operating result	**17.7**	**26.1**	**-2.7**	**41.1**
Share of result in associated company				0.1
Financial income and expenses				-1.1
Result before taxes				**40.2**
Income taxes				-6.6
Result for the financial year				**33.6**

Reportable segments

2018 EUR million	Weather and Environment	Industrial Measurements	Other operations	Vaisala total
Products	125.4	105.1		230.5
Projects	70.0			70.0
Services	36.9	11.4		48.3
Net sales	**232.3**	**116.4**	**0.0**	**348.8**
Revenue recognition at a point in time	144.1	107.5		251.7
Revenue recognition over time	88.2	8.9		97.1
Net sales	**232.3**	**116.4**	**0.0**	**348.8**
Operating result	**17.7**	**23.9**	**-2.7**	**38.9**
Share of result in associated company				0.1
Financial income and expenses				-1.5
Result before taxes				**37.5**
Income taxes				-8.0
Result for the financial year				**29.5**

2. GEOGRAPHICAL SEGMENTS

Vaisala's reportable segments operate in geographical areas which are Americas, APAC and EMEA.[1)]

Geographical segments

2019 EUR million	Net sales, by destination country[2)]	Net sales, by location country[3)]	Non-current assets[3)]
Americas	149.7	137.1	32.1
of which United States	120.1	129.5	31.7
APAC	119.6	63.9	3.5
EMEA	134.3	341.7	115.0
of which Finland	9.8	275.2	104.7
Eliminations		-139.1	
Total	**403.6**	**403.6**	**150.6**

Geographical segments

2018 EUR million	Net sales, by destination country[2)]	Net sales, by location country[3)]	Non-current assets[3)]
Americas	136.8	124.0	23.0
of which United States	103.7	117.0	22.8
APAC	109.6	50.4	1.7
EMEA	102.3	283.9	98.8
of which Finland	7.8	241.5	95.2
Eliminations		-109.5	
Total	**348.8**	**348.8**	**123.5**

1) Americas: North and South America, APAC: Asia Pacific, EMEA: Europe, Middle East and Africa
2) Sales to external customers have been presented as net sales by destination country
3) Net sales and non-current assets have been presented according to the group's and associated companies' countries

3. REVENUE FROM CONTRACTS WITH CUSTOMERS

Accounting principles

Vaisala's net sales consist of revenue recognized from contracts with customers. Net sales are divided into products, projects and services. Indirect taxes and discounts have been deducted from sales revenue. Exchange rate differences are recognized in the financial income and expenses.

Product net sales include revenue from products, spare parts and system deliveries. A system delivery contains a standard product delivery with limited amount of configuration. Each distinct product delivery is a performance obligation under IFRS 15. Revenue from the sale of product is recognized at a point in time when the control is transferred to the customer according to the delivery terms used.

Projects are integrated projects, in which observation solutions, consisting of products, services and software, are delivered. Solutions are integrated to customer systems according to customer specifications. Therefore, one project is one performance obligation under IFRS 15. Revenue for all projects is recognized over time using percentage of completion method. Progress is measured by cost-to-cost method, comparing incurred costs and forecasted costs, as it best describes the satisfaction of a performance obligation by transferring the promised asset to a customer. Projects meet the over-time revenue recognition criteria, either by creating an asset without an alternative use and Vaisala having an enforceable right to payment for performance completed to date and/or by creating an asset under customer control.

Services are divided into service contracts and one off service deliverables. Services may include maintenance, calibration and repair, modernization, extended warranties and data based solutions supporting decisions in weather-dependent operations. Service contracts are continuous services including for example extended warranty, availability of customer support and availability of spare part delivery. One service contract or one service deliverable is one performance obligation. Service contracts are recognized over time or at a point of time depending on the nature of the service and content of a contract. In case of one-off request services, the revenue is recognized at a point in time when the service has been rendered.

Standard warranty period for products is one year and 2, 5 or 10 years for selected products. Standard warranty period for services is 6 or 12 months. Extended warranty is a separately sold and priced service over a separately agreed period. Revenue for extended warranty is recognized over time starting at the time of standard warranty expiration. Provision for warranty costs is recognized as described in Note 15, Provisions.

Accounting principles requiring management judgment and the main uncertainty factors relating to estimates

Revenue recognition over time under IFRS 15 requires management judgment related to cost throughout the project delivery. When the outcome of a project cannot be estimated reliably, project costs are recognized as expenses in the same period when they arise and project revenues only to the extent of project costs incurred where it is probable that those costs will be recoverable. When it is probable that total costs necessary to complete the project will exceed total project revenue, the expected loss is recognized as an expense immediately.

Disaggregation of revenue

Disaggregation of revenue is presented in Note 1, Reportable segments and Note 2, Geographical segments.

Payment terms

Payment terms vary based on geographical areas. In product and service business, the standard payment term is 30 days net, but in some areas prepayments are commonly used. Project invoicing is based on milestones and typically follows the general project delivery terms where 30% is advance payment, 60% against delivery documents and 10% after site acceptance test. In project business the most common payment terms are letter of credit or as per contract.

Vaisala takes advantage of IFRS 15 practical expedient related to the significant financing component. In those cases, in which Vaisala expects, at contract inception, that the period between when Vaisala transfers a promised good or service to a customer and when the customer pays for that good or service will be one year or less, Vaisala does not adjust the promised amount of consideration for the effects of a significant financing component. Additionally, financing component is considered only if significant prepayment is received over one year in advance before related delivery.

Contract balances

The following table provides information about receivables, contract assets and contract liabilities from contracts with customers included in the statement of financial position.

Assets and liabilities related to contracts with customers

EUR million	Dec 31, 2019	Dec 31, 2018
Trade receivables	65.0	62.6
Contract assets	25.0	17.8
Contract liabilities	27.3	30.2

Contract assets include the balance of project and service revenue recognized but not yet invoiced.

In general, most of project revenue is recognized after the product manufacturing as percentage of completion increases and most of the performance obligation is satisfied. According to general project delivery terms, majority of project is invoiced before the delivery. Therefore, amount of contract assets is typically at its highest between product manufacturing phase of the project and delivery of the product to the customer. For services, which are satisfied over time, the customer is mainly invoiced in advance and only in some cases in arrears after the customer has received or consumed the service. Arrears invoicing generates contract asset balance as revenue is recognized before invoicing.

Contract liabilities include the balance of projects, services and products invoiced but revenue not yet recognized as well as customer payments related to contracts not yet invoiced. Project-related contract liabilities often arise in the early stages of a project, when the prepayment has been invoiced, but the project is only at an early stage and there is none or little revenue recognized under percentage of completion method. Services, which are recognized over time, are often invoiced in advance and therefore contract liability is generated in the beginning of service period. For products and services, which are recognized at a point in time, contract liability is generated when customer has been invoiced, but performance obligation has not been satisfied and consequently revenue has not been recognized.

In 2019, Vaisala recognized EUR 17 (20) million revenue that was included in the contract liability balance at the beginning of the financial year.

At the end of 2019, the performance obligations that are unsatisfied or partially unsatisfied, that is the order book, amounted to EUR 139.0 (120.6) million. Of the order book EUR 101.4 (91.0) million is estimated to be recognized as revenue in 2020 and EUR 37.6 (29.6) million is estimated to be recognized later.

4. OTHER OPERATING INCOME AND EXPENSES

Accounting principles

Other operating income and expenses comprise income and expenses that do not directly relate to the operating activity of business.

Other operating income

EUR million	2019	2018
Gain on the disposal of tangible assets	0.3	0.1
Gain on items related to business combinations	0.1	1.5
Indemnities	0.0	0.1
Other	0.5	0.4
Total	**0.9**	**2.1**

Other operating expenses

EUR million	2019	2018
Loss on the disposal of tangible assets	-	0.0
Restructuring expenses	2.2	0.0
Expenses related to termination of a contract	1.5	-
Total	**3.6**	**0.0**
Other operating income and expenses, net	**-2.7**	**2.1**

5. PERSONNEL EXPENSES AND NUMBER OF PERSONNEL

Personnel expenses

EUR million	2019	2018
Salaries	126.6	108.2
Share-based payments	3.5	2.4
Social costs	12.2	9.4
Pensions		
Defined benefit plans	0.1	0.0
Defined contribution plans	15.3	13.6
Total	**157.7**	**133.6**

Personnel expenses by function

EUR million	2019	2018
Procurement and production	48.2	44.0
Sales, marketing and administration	69.2	55.0
Research and development	40.3	34.6
Total	**157.7**	**133.6**

Personnel, average by business area

Persons	2019	2018
Weather and Environment	797	719
Industrial Measurements	390	329
Other operations	642	630
Total	**1,829**	**1,678**

Personnel, average by geographical area

Persons	2019	2018
Americas	321	345
APAC	163	144
EMEA (excluding Finland)	225	131
Finland	1,119	1,058
Total	**1,829**	**1,678**

Information on share-based payments is disclosed in Note 7, Share-based payments.

Information on key management compensation is disclosed in Note 29, Related party transactions.

6. PENSION OBLIGATIONS

Accounting principles

The group has several pension plans around the world based on local practices. These pension schemes are classified either as defined contribution or as defined benefit plans. In defined contribution plans expenses are recognized in the statement of income on an accrual basis. TyEL pensions managed in insurance companies are defined contribution plans.

In defined benefit pension plans, liability to be recognized is the net amount of the present value of the defined benefit obligation in the end of the financial year and the fair value of the plan assets adjusted by the unamortized portion of unrecognized past service cost. The defined benefit obligation is calculated by actuaries independent of Vaisala and it is based on the projected unit credit method in which the estimated future cash flows are discounted to their present value using the interest rates approximating high quality corporate bonds. Pension costs are recognized in the statement of income on an accrual basis over years of service. Actuarial gains and losses are recognized in statement of comprehensive income.

Defined benefit plans

The defined benefit plans are in the parent company. The additional pension coverage of parent company personnel was arranged by Vaisala Pension Fund that was closed on January 1, 1983. The pension fund liability was transferred to a pension insurance company on December 31, 2005 and the fund was dissolved in 2006. The company retains, however, an obligation under IAS 19 for future index and salary increases in terms of individuals covered by the Pension Fund who are employed by the company.

Defined benefit pension liability

EUR million	2019	2018
Fair value of funded obligations	4.9	5.0
Fair value of assets	-4.3	-4.3
Net liability in the statement of financial position at Dec 31	**0.6**	**0.7**

Amounts recognized in the statement of income and the statement of other comprehensive income

EUR million	2019	2018
Current service cost	0.0	0.0
Interest	0.0	0.0
Expense recognized in the statement of income	**0.0**	**0.0**
Net actuarial gain and loss	-0.2	-0.3
Total recognized in the statement of income and the statement of other comprehensive income	**-0.2**	**-0.3**

Pension costs in the statement of income have been recognized in sales, marketing and administrative costs.

Present value of the obligation

EUR million	2019	2018
Changes in the present value of obligation		
Present value of obligation Jan 1	5.0	5.7
Current service cost	0.0	0.0
Interest cost	0.1	0.1
Remeasurements		
Actuarial gain (-) / loss (+) arising from changes in financial assumptions	0.3	-0.3
Experience adjustment	-0.2	-0.2
Benefits paid	-0.3	-0.3
Present value of obligation Dec 31	**4.9**	**5.0**

Changes in the fair value of plan assets

EUR million	2019	2018
Fair value of plan assets Jan 1	4.3	4.9
Interest income on assets	0.1	0.1
Net return on plan assets	0.4	-0.2
Benefits paid	-0.3	-0.3
Contributions	-0.1	-0.1
Fair value of plan assets Dec 31	**4.3**	**4.3**

Changes of liabilities presented in the statement of financial position

EUR million	2019	2018
Liabilities Jan 1	0.7	0.8
Expense (+) / income (-) recognized in statement of income	0.0	0.0
Total recognized in other comprehensive income	-0.2	-0.3
Contributions paid	0.1	0.1
Liabilities Dec 31	**0.6**	**0.7**

Actuarial assumptions used

	2019	2018
Discount rate, %	0.58	1.58
Rate of salary increase, %	2.05	2.39
Rate of inflation, %	1.09	1.43
Annual adjustments to pensions, %	1.33	1.67

Sensitivity of the net liability changes in the principal assumptions

Assumption	Change in assumption	Increase in assumption	Decrease in assumption
Discount rate	0.25%	2.37% decrease	2.48% increase
Salary increase rate	0.25%	0.12% increase	0.12% decrease
Pension increase rate	0.25%	21.33% increase	20.82% decrease

Assumption	Increase by one year	Decrease by one year
Life expectancy at birth	5.03% increase	4.79% decrease

The sensitivity analyses presented above are based on the assumption that if one assumption changes, all other assumptions remain unchanged. In practice, this is unlikely, and changes in some assumptions may correlate with each other. The sensitivity of defined benefit obligation to changes in significant actuarial assumptions has been calculated using the same method as that used to calculate the pension liability recognized in the statement of financial position.

7. SHARE-BASED PAYMENTS

Accounting principles

Group's share-based payments are related to share-based incentive plans. Share-based payments are recognized as costs during the vesting period. The costs are based on an estimate of the amount of shares to be paid at the end of vesting period. Assumptions, on which estimates are based, are updated whenever changes occur and the effect of changes in assumptions are recognized in the statement of income.

As of January 1, 2018, the cost of the share part of the share-based payments as well as the cash part of the share-based payments correspond to the value of share closing price on the grant date of the incentive plan. Until the end of 2017, the cost of the equity-settled part of the share-based payments corresponded to the value of share closing price on the grant date of the share-based incentive plan, and the cash-settled part of the share-based payments was valued at the closing price of the share in the end of the financial year.

Expenses arising from share-based incentive plans

EUR million	2015	2016	2017	2018	2019	Total
Share-based incentive plan 2015	0.5	1.1	1.6	-0.1	-	3.2
Share-based incentive plans 2016		0.7	1.2	0.6	0.2	2.7
Share-based incentive plan 2017			1.1	1.3	1.5	3.9
Share-based incentive plan 2018				0.6	1.2	1.8
Share-based incentive plan 2019					0.6	0.6
Total	**0.5**	**1.8**	**3.9**	**2.5**	**3.5**	**12.2**

Share-based incentive plans

The share issue without payment approved by Vaisala's Annual General Meeting on April 10, 2018 doubled the total number of series K and A shares. All share-related figures have been adjusted to reflect the increased number of shares.

On December 18, 2014, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2015. The reward payment corresponded to 74% of the maximum target. On March 12, 2018, a total of 95,092 company's series A shares were conveyed without consideration to the 27 key employees participating in this incentive plan. The rest of the reward was paid in cash. Closing price of Vaisala's series A share was EUR 12.08 on the effective date of the incentive plan. A total expense of EUR 3.2 million was recognized of this plan in 2015–2018.

On December 16, 2015, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2016. The reward payment corresponded to 49% of the maximum target. On March 5, 2019, a total of 88,452 company's series A shares were conveyed without consideration to the 30 key employees participating in this incentive plan. The rest of the reward was paid in cash. Closing price of Vaisala's series A share was EUR 11.57 on the effective date of the incentive plan. A total expense of EUR 2.3 million was recognized of this plan in 2016–2019.

On February 10, 2016, the Board of Directors resolved for a share-based incentive plan, in which the earning criteria was uninterrupted employment of certain group employees for a defined number of years. This share-based incentive plan ended in March 2018, and the remaining reward, corresponding to 3,000 Vaisala's series A shares including the cash portion, was conveyed without consideration to the key employees participating in this incentive plan. The rest of the reward was paid in cash. A total expense of EUR 0.3 million was recognized of this plan in 2016–2018.

On December 15, 2016, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2017. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2020. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 400,000 series A shares and the reward payment will correspond to 65% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2017 to March 2020. Closing price of Vaisala's series A share was EUR 17.90 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 35 persons and the maximum reward payable totals to 237,900 Vaisala's series A shares, including the cash portion.

On February 7, 2018, the Board of Directors resolved for the group key employees a share-based incentive plan that was based on the development of group's profitability in calendar year 2018. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2021. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 320,000 series A shares, and the reward payment will correspond to 55% of the maximum target. No reward will be paid if a key employee's employment or service ends before the reward payment date. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2018 to March 2021. Closing price of Vaisala's series A share was EUR 22.10 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 30 persons and the maximum reward payable totals to 168,970 Vaisala's series A shares, including the cash portion.

On February 12, 2019, the Board of Directors resolved for approximately 45 group key employees a share-based incentive plan that is based on the development of the total shareholder return (TSR) and profitability in 2019–2021. The reward will be paid partly in Vaisala's series A shares and partly in cash in spring 2022. The cash proportion will cover taxes and tax-related costs arising from the reward to a key employee. The maximum amount of this plan originally corresponded to 330,000 series A shares. No reward will be paid if a key employee's employment or service ends before the reward payment date. In addition, Vaisala's Board of Directors requires that the President and CEO and each member of the Management Group retains his/her ownership of shares received under this plan until the value of his/her ownership in Vaisala corresponds to at least his/her annual gross base salary. The expenses of this share-based incentive plan are accrued over the term of the plan from April 2019 to March 2022. Closing price of Vaisala's series A share was EUR 19.06 on the effective date of the incentive plan. On December 31, 2019, this share-based incentive plan was directed to approximately 45 persons.

On June 28, 2019, Vaisala conveyed a total of 2.195 company's series A shares without consideration to a person participating in the share-based incentive plans 2017 and 2018.

8. RESEARCH AND DEVELOPMENT EXPENDITURE

Accounting principles

Research and development expenditure is recognized as costs in the financial year in which they incur, except for machinery and equipment acquired for research and development purposes, which are capitalized and depreciated on a straight-line basis.

According to IAS 38, an intangible asset is recognized in the statement of financial position only when it is probable that the expected future economic benefits will flow to the entity. Costs related to the development of new products and processes have not been capitalized as their future returns will not be realized until the products enter the market. According to IAS 38 no intangible asset arising from research shall be recognized and if an entity cannot distinguish the research phase from the development phase of an internal project, the entity treats the expenditure as if it were incurred in research phase only. It is typical for the industry that it is not possible to distinguish the research phase of an internal project that aims to create an asset from its development phase.

The statement of income includes research and development costs of EUR 52.8 (45.4) million in 2019.

9. FINANCIAL INCOME AND EXPENSES

Accounting principles

Exchange rate differences resulting from settlement of monetary items or from presentation of items in the financial statements at different exchange rates from which they were originally recognized during the financial period or presented in the previous financial statements, are recognized as financial income or expenses in the financial period in which they arise.

All derivative financial contracts are initially recognized at cost and subsequently remeasured at their fair value. Derivative financial contracts are valued at their fair value using the market prices of derivative financial contracts at the closing date of the financial year. Unrealized and realized gains and losses arising from changes in the fair value are recognized in the statement of income in 'financial income and expenses" in the period in which they arise.

Financial income

EUR million	2019	2018
Interest and financial income	0.3	0.3
Gains arising from changes in fair values of derivative financial contracts	1.3	1.6
Foreign exchange gains	3.0	4.1
Total	**4.6**	**6.0**

Financial expenses

EUR million	2019	2018
Interest expenses		
Current and non-current liabilities	0.3	0.1
Interest expenses on lease liabilities	0.3	-
Other financial expenses	0.3	0.2
Losses arising from changes in fair values of derivative financial contracts	2.5	4.1
Foreign exchange losses	2.3	3.0
Total	**5.7**	**7.4**
Financial income and expenses, net	**-1.1**	**-1.5**

Foreign exchange gains and losses include gains and losses mainly from revaluation of cash and cash equivalents, trade and other receivables, internal loans as well as trade and other payables.

10. INCOME TAXES

Accounting principles

The group tax expense includes taxes of group companies based on taxable profit for the financial year, tax adjustments for previous years and changes in deferred taxes. Taxes are recognized in the consolidated statement of income except when they are related with items recognized in other comprehensive income or directly in shareholder's equity. Current taxes are calculated on the taxable income based on the tax rates enacted or substantively enacted for each country by the end of the financial year. Taxes are adjusted for the taxes of previous financial periods, if applicable.

Deferred taxes are calculated for all temporary differences between the carrying amount of an asset or a liability and its tax base, and those are measured with enacted or substantively enacted tax rates by the end of the financial year. Main temporary differences arise from depreciation and amortization, accruals for share-based incentive plans and tax losses carried forward. Other temporary timing differences consist mainly of provisions, accruals of operating expenses and revenue related accruals. Deferred tax assets are recognized to the extent that it is probable that these can be utilized against future taxable profits.

Income taxes

EUR million	2019	2018
Tax based on taxable income for the financial year	9.1	8.7
Taxes from previous financial years	-0.6	-0.3
Change in deferred tax assets and liabilities	-1.9	-0.4
Total	**6.6**	**8.0**

Reconciliation statement between statement of income tax item and taxes calculated at the tax rate of the group country of domicile

EUR million	2019	2018
Result before taxes	40.2	37.5
Taxes calculated at the Finnish tax rate	8.0	7.5
Effect of foreign subsidiaries' tax rates	0.8	0.9
Non-deductible expenses and tax-free revenue	0.1	0.2
Taxes from previous financial years	-0.6	-0.3
Other direct taxes	0.1	0.1
Reassessment of deferred tax assets	-1.9	-0.4
Other	0.1	0.0
Total	**6.6**	**8.0**
Effective tax rate	**16.3%**	**21.4%**

Vaisala had in total of EUR 4.5 (16.4) million tax losses carried forward for which no deferred tax assets have been recognized as of December 31, 2019. Additionally, deferred tax liabilities in total of EUR 0.8 (9.3) million was recognized for intangible assets (including technology-based and customer related intangible assets) identified in business combinations.

Deferred taxes in the statement of financial position

EUR million	2019	2018
Deferred tax assets	9.8	9.8
Deferred tax liabilities	-8.1	-9.4
Total	**-1.7**	**0.4**

Gross change in deferred taxes recognized in the statement of financial position

EUR million	2019	2018
Deferred taxes Jan 1	0.4	7.1
Items recognized in the statement of income	1.9	0.4
Effect of business combinations	-0.8	-7.4
Translation differences	0.0	0.2
Items recognized in the equity	0.2	0.1
Items recognized in the statement of comprehensive income	-0.0	-0.1
Deferred taxes Dec 31	**1.7**	**0.4**

Changes in deferred taxes during 2019

EUR million	Jan 1, 2019	Recognized in the statement of income	Effect of business combinations	Translation differences	Recognized in equity	Recognized in the statement of comprehensive income	Dec 31, 2019
Deferred tax assets							
Internal margin of inventories and tangible and intangible assets	0.7	0.1		0.0			0.8
Employee benefits and share-based payments	1.9	0.2		0.0		0.0	2.0
Unused tax losses	2.8	1.2		0.0			4.0
Timing difference of amortization on intangible assets	2.2	-0.1					2.0
Other temporary timing differences	2.2	-1.3		0.0			1.0
Total	**9.8**	**0.0**		**0.0**		**0.0**	**9.8**
Deferred tax liabilities							
Timing difference of amortization on intangible assets	9.1	-1.9	0.8				8.1
Other	0.3	0.0			-0.2		0.0
Total	**9.4**	**-1.9**	**0.8**		**-0.2**		**8.1**
Deferred tax assets, net	**0.4**	**1.9**	**-0.8**	**0.0**	**0.2**	**-0.0**	**1.7**

Changes in deferred taxes during 2018

EUR million	Jan 1, 2018	Recognized in the statement of income	Effect of business combinations	Translation differences	Recognized in equity	Recognized in the statement of comprehensive income	Dec 31, 2018
Deferred tax assets							
Internal margin of inventories and tangible and intangible assets	0.6	0.1					0.7
Employee benefits and share-based payments	2.1	-0.1				-0.1	1.9
Unused tax losses	2.4	-0.3	0.6	0.2			2.8
Timing difference of amortization on intangible assets	0.3	0.2	1.7				2.2
Other temporary timing differences	2.2	-0.2	0.1	0.0	0.1		2.2
Total	**7.6**	**-0.4**	**2.4**	**0.2**	**0.1**	**-0.1**	**9.8**
Deferred tax liabilities							
Timing difference of amortization on intangible assets	0.5	-0.7	9.3				9.1
Other	0.0	-0.1	0.4	0.0			0.3
Total	**0.5**	**-0.8**	**9.7**	**0.0**			**9.4**
Deferred tax assets, net	**7.1**	**0.4**	**-7.4**	**0.2**	**0.1**	**-0.1**	**0.4**

11. EARNINGS PER SHARE

Accounting principles

Earnings per share is calculated by dividing the result for the period attributable to the parent company's shareholders by weighted average number of issued shares during the financial year. Diluted earnings per share is calculated by adjusting the weighted average number of shares outstanding during the financial year with the diluted effect of potential shares from the share-based payments.

The Annual General Meeting held on April 10, 2018 resolved to issue new shares to the shareholders without payment in proportion to their holdings that one new share was issued for each share (split). After the split Vaisala has 36,436,728 shares. The change in the number of shares has been adjusted retrospectively in the per share calculations.

Earnings per share

	2019	2018
Result attributable to the shareholders of the parent company, EUR million	33.5	29.5
Weighted average number of shares outstanding, 1,000 pcs	35,864	35,772
Effect of share-based incentive plans, 1,000 pcs	269	603
Weighted average diluted number of shares, 1,000 pcs	36,133	36,376
Earnings per share, EUR	0.94	0.82
Diluted earnings per share, EUR	0.93	0.81

Net working capital

12. TRADE RECEIVABLES AND OTHER RECEIVABLES

Accounting principles related to trade receivables and other receivables are presented in Note 21, Financial assets and liabilities.

Trade receivables and other receivables

EUR million	2019	2018
Trade receivables	65.0	62.6
Loan receivables	0.0	0.0
Advances paid	0.9	1.4
Value-added tax receivables	4.1	4.5
Other receivables	0.9	0.6
Derivative financial contracts	0.3	0.0
Other prepaid expenses and accrued income	6.2	5.6
Total	**77.3**	**74.7**

The fair value of trade and other receivables is, in all material respects, equivalent to their carrying amounts.

Expected credit losses of trade receivables

Dec 31, 2019	Trade receivables, gross amount	Credit loss allowance	Trade receivables, net amount
Current	38.4	0.1	38.2
Due less than 90 days	16.4	0.1	16.3
Due 91–180 days	1.3	0.2	1.1
Due over 180 days	1.6	0.7	0.9
Credit loss allowance other than those based on age analysis	9.5	1.0	8.5
Total	**67.1**	**2.0**	**65.0**

Expected credit losses of trade receivables

Dec 31, 2018	Trade receivables, gross amount	Credit loss allowance	Trade receivables, net amount
Current	46.2	0.1	46.0
Due less than 90 days	14.3	0.0	14.3
Due 91–180 days	1.0	0.2	0.8
Due over 180 days	1.7	0.7	1.0
Credit loss allowance other than those based on age analysis	1.7	1.1	0.5
Total	**64.8**	**2.2**	**62.6**

Expected credit losses of trade receivables

Jan 1, 2018 (on adoption of IFRS 9)	Trade receivables, gross amount	Credit loss allowance	Trade receivables, net amount
Current	41.1	0.1	41.0
Due less than 90 days	16.7	0.1	16.7
Due 91–180 days	1.4	0.2	1.2
Due over 180 days	1.6	0.8	0.9
Credit loss allowance other than those based on age analysis	1.1	0.7	0.5
Total	**62.0**	**1.8**	**60.2**

Reconciliation of credit loss allowance of trade receivables

EUR million	2019	2018
Credit loss allowance on Dec 31 - calculated in accordance with IAS 39	-	1.6
Amounts restated through opening balance of retained earnings	-	0.2
Opening balance for credit loss allowance on Jan 1 - calculated in accordance with IFRS 9	2.2	1.8
Change in credit loss allowance recognized in profit or loss during the financial year	0.2	0.6
Receivables recognized as final credit losses during the financial year due to uncollectability	-0.7	-0.2
Business combinations	-	0.2
Assets held for sale	0.3	-0.3
Exchange rate differences	0.0	0.0
Total	**2.0**	**2.2**

Credit losses and related reversals arising from trade receivables recognized for the financial year amounted to EUR -0.2 (-0.6) million.

Trade receivables by currency

EUR million	2019	2018
EUR	31.3	29.7
USD	21.3	23.3
GBP	3.7	2.7
JPY	5.1	4.3
AUD	0.8	1.1
CNY	1.3	0.6
CAD	0.8	1.1
Others	0.7	0.0
Total	**65.0**	**62.6**

13. INVENTORIES

Accounting principles

Inventories are stated at the lower of standard cost and net realizable value. Inventory cost includes the cost of purchase (including mainly purchase price, import duties and transport), direct labor and a proportion of production overhead. An allowance is recognized for excess inventory and obsolescence.

Accounting principles requiring management judgment and the main uncertainty factors relating to estimates

Allowance for inventory is recognized for possible excess, obsolescence and decrease in net realizable value below inventory cost. Estimates and judgment are required in determining the value of the allowance for excess and obsolete inventory. Management analyses estimates of demand and determines allowance for excess and obsolete inventory. Possible changes in the assumptions may cause revaluation of inventory valuation in the future periods.

Inventories

EUR million	2019	2018
Materials, supplies and finished goods	39.6	32.0
Total	**39.6**	**32.0**

The cost of inventories recognized in the statement of income as an expense corresponding to net sales was EUR 111.6 (97.2) million.

Write-offs and excess and obsolescence allowances for slow moving and obsolete inventory recognized during the financial year amounted to EUR 2.4 (1.9) million.

14. TRADE PAYABLES AND OTHER LIABILITIES

Accounting principles

Trade payables are recognized on an accrual basis and due to short maturity the carrying amount is considered to be the fair value. Trade and other payables are classified as current liabilities if they are due within 12 months from the balance sheet date or are to be settled within the normal operating business cycle. Accounting principles for derivative financial contracts are presented in note 21, Financial assets and liabilities.

Trade payables and other liabilities

EUR million	2019	2018
Trade payables	18.0	14.9
Personnel cost accruals	32.2	25.7
Derivative financial contracts	0.4	1.0
Other accrued expenses and deferred income	6.6	8.9
Other current liabilities	7.3	6.9
Total	**64.5**	**57.2**

Trade payables arise from ordinary course of business and they relate to purchases of inventories, intangible and tangible assets and other goods and services. Personnel cost accruals are mainly related to bonuses and unused vacations.

15. PROVISIONS

Accounting principles

A provision is recognized when group has a legal or constructive obligation as a result of a prior event, it is probable that an outflow of resources will be required to settle the obligation, and a reliable estimate of the amount can be made. The amount recognized as a provision is the best estimate of the expenditure required to settle the present obligation at the end of reporting period. If the effect of the time value of money is material, the amount of provision is the present value of the expenditure expected to be required to settle the obligation. The discount factor used in calculating the present value is selected so that it reflects the market view of the time value of money and the risks related to the obligations at the time of examination.

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by third party, the reimbursement is recognized as a separate asset but only when the reimbursement is virtually certain. The amount of provisions is reviewed at end of each reporting period and the amount is adjusted to reflect the current best estimate. A provision is reversed when the probability of financial settlement has been removed. A change in provision is recognized in the same item of the statement of income in which the provision was originally recognized.

Provisions can relate to restructuring of operations, loss-making contracts, warranties, legal disputes and other commitments.

Restructuring provision is recognized when a detailed and appropriate plan for restructuring has been prepared and the company has started to implement the plan or has announced it to those affected by it. Restructuring provisions include mainly lease termination penalties and redundancy payments.

A provision for a loss-making contract is recognized when unavoidable costs of meeting the obligation exceed the economic benefits expected to be received from the contract.

A warranty provision covers the cost of repairing or replacing the products. The warranty provision is based on past experience and an estimate of future costs.

Non-current provisions

EUR million	2019	2018
Provisions Jan 1	0.2	0.2
Increase in provisions	0.0	0.0
Tranferred to current provisions	-0.0	-0.0
Exchange rate differences	0.0	0.0
Provisions Dec 31	**0.1**	**0.2**

Current provisions

EUR million	2019	2018
Provisions Jan 1	3.2	1.3
Increase in provisions	1.3	2.3
Transferred from non-current provisions	0.0	-
Used provisions	-1.3	-0.5
Provisions Dec 31	**3.2**	**3.2**

In 2019 and 2018 provisions related to warranties, restructuring, loss-making contracts and other contractual commitments.

Intangible and tangible assets

16. INTANGIBLE AND TANGIBLE ASSETS

§ Accounting principles

Goodwill

Goodwill represents the excess of the consideration transferred of an acquisition over the fair value of the group’s share of the net assets of the acquired entity at the date of acquisition. Goodwill is calculated in the currency of the operating environment of the acquired entity. If the consideration transferred is lower than the net asset value of the acquired entity, the difference is recognized in the statement of income. Goodwill is not amortized, but tested annually for possible impairment and whenever there is an indication that the value may be impaired. For this purpose goodwill has been allocated to cash-generating units. Vaisala’s total goodwill is allocated to the cash-generating unit formed by the Weather and Environment Business Area. Goodwill is valued at acquisition cost less impairment losses. Impairment losses are recognized in the statement of income.

Technology-based and customer related intangible assets

Intangible assets identified in connection with acquisitions are measured at the fair value at the acquisition date. In business combinations consideration transferred has been allocated to technology-based and customer related intangible assets. Initial measurement of technology-based and customer related intangible assets has been prepared by applying income and cost approach method. Intangible assets identified in connection with acquisitions are amortized over their delivery times or estimated useful lifetimes.

Other intangible assets

Other intangible assets include mainly patents, trademarks and (software) licenses. Other intangible assets are recognized initially at acquisition cost and amortized using the straight-line method over their useful lifetime. Intangible assets that have an indefinite useful lifetime are not amortized, but are tested annually for impairment. The carrying amount of these intangible assets is not material.

Estimated useful lifetimes for intangible assets are:

Technology-based intangible assets	7–8 years
Customer related intangible assets	1–5 years
Intangible rights	3–20 years
Software licenses	3–5 years
Other intangible assets	3–5 years

Property, plant and equipment

Property, plant and equipment comprise mainly land and buildings as well as machinery and equipment. The carrying amount of assets are based on original acquisition cost less accumulated depreciation as well as possible impairment losses. The cost of self-constructed assets includes materials and direct labor as well as a proportion of overhead costs attributable to construction labor. If a tangible asset consists of several parts which have different useful lifetimes, these parts are treated as separate assets. Accordingly, expenses relating to the renewal of a part are capitalized and the remaining part is recognized as an expense. Otherwise, expenditures that incur later are included in the carrying amount of the tangible assets only if it is probable that the future economic benefit connected with the asset is for the benefit of group and that the acquisition cost can be reliably determined. Other repair and maintenance expenses are recognized in the statement of income when realized.

Depreciation is calculated using the straight-line method and is based on the estimated useful lifetime of the asset. Land is not depreciated. Estimated useful lifetimes for assets are:

Buildings and structures	5–40 years
Machinery and equipment	3–8 years
Other tangible assets	3–8 years

The residual values, depreciation methods and useful lifetimes of the assets are reviewed, and adjusted if necessary, in connection with each financial statement to reflect changes in the expectations of future economic benefit. Gains and losses on disposals are determined by comparing the disposal proceeds with the carrying amount of the asset and are included in the operating result.

Public grants received for investments are recognized as a reduction in the carrying amounts of tangible assets. Thus, grants are recognized in the form of lower depreciation over the useful lifetime of the asset.

Impairment

In the end of each reporting period, the group reviews assets for any indication of impairment. The need for impairment is reviewed at cash-generating unit level, i.e. at the lowest level of units which is mainly independent of other units and whose cash flows are separate and highly independent from the cash flows of other corresponding units. If there is an indication of impairment, the recoverable amount of the asset is assessed. Additionally, the recoverable amount is assessed annually for the following assets irrespective of whether there is indication of impairment: goodwill, intangible assets which have an indefinite useful lifetime, as well as incomplete intangible assets.

The recoverable amount is the higher of the asset's fair value less the cost arising from disposal and its value in use. In determining value in use, the estimated future cash flows are discounted to their present value using discount rates that reflect the average pre-tax cost of capital for the respective country and industry (WACC = weighted average cost of capital). The special risks associated with these assets are also taken into account in the discount rates. For an individual asset that does not independently generate future cash flows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

An impairment loss is recognized as an expense when the carrying amount of the asset is greater than its recoverable amount. An impairment loss is reversed if there has been a change in the circumstances that led to the estimates and the recoverable amount of the asset has changed since the impairment loss was recognized. An impairment loss is not reversed more than the carrying amount of the asset (less depreciation) without an impairment loss recognized. Impairment losses recognized for goodwill are not reversed under any circumstances.

Accounting principles requiring management judgment and the main uncertainty factors relating to estimates

In business combinations, IFRS 3 requires the acquirer to recognize an intangible asset separately from goodwill, if the recognition criteria are met. Recognition of an intangible asset at fair value requires management estimates of future cash flows. To the extent possible, management has used available market values as the basis for allocating costs to determine fair values. When this is not possible, which is typical especially for intangible assets, valuation is mainly based on the historical profits or costs of the asset and its intended use in the business. Valuations are based on discounted cash flows and estimated disposal and replacement costs and require management's estimates and assumptions about the future use of the assets and their effect on the financial position of the company. Changes in the focus and direction of the company's business operations may, in the future, result in changes in the original valuation. Group tests goodwill annually for impairment and assesses indications of impairment of property, plant and equipment and intangible assets as described above. The recoverable amounts of cash-generating units are determined using value in use calculations. Although management believes that the assumptions used are appropriate, the estimated recoverable amounts might differ materially from that realized in the future.

Intangible assets

EUR million	Goodwill	Technology-based intangible assets	Customer related intangible assets	Other intangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2019	25.2	37.3	11.8	33.1	0.4	107.8
Translation difference	0.3	0.0		0.1	0.0	0.4
Increases		-0.0		0.2	0.1	0.4
Business combinations	4.3	1.8	2.3			8.4
Decreases		-0.0		-0.7		-0.7
Transfers between items				0.1	-0.1	0.0
Acquisition cost Dec 31, 2019	**29.8**	**39.1**	**14.1**	**32.9**	**0.4**	**116.3**
Accumulated amortization and impairment Jan 1, 2019		1.4	2.3	30.0		33.7
Translation difference		0.0		0.1		0.1
Accumulated amortization of decreases and transfers		-0.0		-0.7		-0.7
Amortization for the financial year		5.4	4.0	1.1		10.5
Impairment for the financial year				0.0		0.0
Accumulated amortization and impairment Dec 31, 2019		**6.7**	**6.3**	**30.5**		**43.6**
Carrying amount Dec 31, 2019	**29.8**	**32.4**	**7.8**	**2.4**	**0.4**	**72.7**

Intangible assets

EUR million	Goodwill	Technology-based intangible assets	Customer related intangible assets	Other intangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2018	16.2	2.3	0.1	35.9		54.5
Translation difference	0.7	-0.0		0.4		1.0
Increases				1.1	0.1	1.2
Business combinations	8.3	35.0	11.7	0.5	0.0	55.6
Decreases		-0.0		-5.0		-5.0
Transfers between items				0.2	0.2	0.4
Acquisition cost Dec 31, 2018	**25.2**	**37.3**	**11.8**	**33.1**	**0.4**	**107.8**
Accumulated amortization and impairment Jan 1, 2018		0.1	0.0	33.8		33.9
Translation difference		0.1		0.2		0.3
Accumulated amortization of decreases and transfers		-0.0		-5.0		-5.0
Amortization for the financial year		1.2	2.3	0.9		4.4
Accumulated amortization and impairment Dec 31, 2018		**1.4**	**2.3**	**30.0**		**33.7**
Carrying amount Dec 31, 2018	**25.2**	**36.0**	**9.5**	**3.1**	**0.4**	**74.1**

Impairment testing

Vaisala assesses the value of goodwill, intangible assets which have an indefinite useful lifetime, as well as incomplete intangible assets for impairment annually and whenever there is an indication that the unit may be impaired. The recoverable amount of the cash-generating unit is based on value in use calculations and cash flows are based on four year forecasts approved by Vaisala management. Vaisala's total goodwill is allocated to the cash-generating unit formed by Weather and Environment Business Area.

In Weather and Environment Business Area cash-generating unit the recoverable amount exceeds the carrying amount by EUR 310 million. Weather and Environment Business Area sales are expected to grow in average 2% next four years. Terminal growth rate is 2% and Weighted Average Cost of Capital is 8.8%. Calculations indicate that assuming other assumptions remain unchanged, the cash-generating unit will not be impaired if net sales do not decrease by more than 12%, profitability decrease by more than 7% or discount rate increase by more than 16%.

In impairment testing the impact of the acquisition of Vaisala Digital Oy has been taken into account in the amount of goodwill, intangible assets and in cash flows generated by cash generating unit. Goodwill related to Vaisala Digital Oy has been allocated to the segment consisting of Weather and Environment Business Area.

Property, plant and equipment

EUR million	Land and waters	Buildings and structures	Machinery and equipment	Other tangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2019	4.6	56.1	73.3	0.1	7.0	141.2
Translation difference	0.0	0.1	0.4		0.0	0.5
Increases		1.0	5.8		19.3	26.2
Decreases		-0.0	-2.8			-2.8
Transfers between items		0.3	2.8		-2.7	0.4
Acquisition cost Dec 31, 2019	**4.7**	**57.5**	**79.5**	**0.1**	**23.7**	**165.4**
Accumulated depreciation and impairment Jan 1, 2019		38.1	56.8			94.9
Translation difference		0.1	0.3			0.4
Accumulated depreciation of decreases and transfers		0.0	-2.2			-2.2
Depreciation for the financial year		2.5	6.0			8.6
Impairment for the financial year		0.0	0.4			0.4
Accumulated depreciation and impairment Dec 31, 2019		**40.8**	**61.2**			**102.0**
Carrying amount Dec 31, 2019	**4.7**	**16.8**	**18.2**	**0.1**	**23.7**	**63.4**

On December 31, 2019, the carrying amount of machinery and equipment used in production was EUR 11.9 (10.7) million.

Property, plant and equipment

EUR million	Land and waters	Buildings and structures	Machinery and equipment	Other tangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2018	2.9	55.2	72.0	0.1	4.1	134.2
Translation difference	0.1	0.3	0.7	0.0	0.0	1.1
Increases	1.6	0.3	4.1		6.9	12.8
Business combinations		0.0	0.9	0.0	0.2	1.1
Decreases		-0.3	-6.4		0.0	-6.7
Transfers between items		0.7	2.1		-4.1	-1.3
Acquisition cost Dec 31, 2018	**4.6**	**56.1**	**73.3**	**0.1**	**7.0**	**141.2**
Accumulated depreciation and impairment Jan 1, 2018		35.9	58.0			93.9
Translation difference		0.1	0.6			0.7
Accumulated depreciation of decreases and transfers		-0.3	-7.1			-7.4
Depreciation for the financial year		2.4	5.2			7.6
Impairments for the financial year		0.0	0.0			0.1
Accumulated depreciation and impairment Dec 31, 2018		**38.1**	**56.8**			**94.9**
Carrying amount Dec 31, 2018	**4.6**	**18.0**	**16.5**	**0.1**	**7.0**	**46.3**

Depreciation, amortization and impairment by function

EUR million	2019	2018
Procurement and production	4.0	3.9
Sales, marketing and administration	14.3	7.5
Research and development	1.2	0.7
Total	**19.4**	**12.1**

Depreciation, amortization and impairment by asset group 2019

EUR million	Depreciation and amortization	Impairment	Total
Technology-based intangible assets	1.1	0.0	1.1
Customer related intangible assets	5.4		5.4
Other intangible assets	4.0		4.0
Buildings and structures	2.5	0.0	2.5
Machinery and equipment	6.0	0.4	6.4
Total	**19.0**	**0.4**	**19.4**

Depreciation, amortization and impairment by asset group 2018

EUR million	Depreciation and amortization	Impairment	Total
Technology-based intangible assets	1.2		1.2
Customer related intangible assets	2.3		2.3
Other intangible assets	0.9		0.9
Buildings and structures	2.4	0.0	2.4
Machinery and equipment	5.2	0.1	5.3
Total	**12.0**	**0.1**	**12.1**

17. LEASES

§ Accounting principles

Vaisala acts as a lessee and its lease contracts consist mainly of offices, other premises, land area, apartments and cars.

Majority of Vaisala's lease contracts are fixed-term arrangements without one-sided extension or termination options and thus the lease term is defined based on the duration of the contract. If an arrangement includes extension, termination or purchase option management estimates the probable lease term for each arrangement based on an understanding of the business needs.

A contract may include both a lease component and other components (such as a service fee), for which the contract consideration is allocated on the basis of relative separate prices. Other components are excluded from IFRS 16 calculation, except for service fees for car leases, which are included in the lease component.

For leases, right-of-use asset and corresponding lease liability are recognized in the statement of financial position.

The cost of initial measurement of the right-of-use asset comprise the following items:

- the amount of the initial measurement of the lease liability;
- any lease payments made at or before the commencement date, less any lease incentives received (such as rent free period);
- any initial direct costs incurred by the lessee; and
- the potential costs of restoring the underlying asset

Right-of-use assets are tested for impairment as described in Note 16, Intangible and tangible assets.

Subsequently right-of-use asset is measured at cost less accumulated depreciation and impairment losses, adjusted for any remeasurement of the lease liability.

The lease liability is initially measured at the present value of the future lease payments discounted by incremental borrowing rate. Incremental borrowing rate is the rate of interest that Vaisala would have to pay to borrow over a similar term, and with a similar security, the funds necessary to obtain an asset of a similar value to the right-of-use asset in a similar economic environment.

Lease liabilities include the net fair value of the following leases:

- fixed payments (including in-substance fixed payments), less any lease incentives receivable;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable by the lessee under residual value guarantees;
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option; and
- payments of penalties for terminating the lease, if the lease term reflects the lessee exercising an option to terminate the lease.

Leases based on extension options that are reasonably certain to be exercised are also included in the liability. Subsequently, the amount of lease liability is affected by, among other things, the interest accrued by the lease liability, the leases paid, the index increases in leases and the effects of changes in contract.

Depreciation of right-of-use assets, interest on lease liabilities and items arising from contractual changes are recognized in the consolidated statement of income.

Accounting principles requiring management judgment and the main uncertainty factors relating to estimates

The application of IFRS 16 requires management to consider the duration of the lease term if there is an option for extension, termination or purchase. When evaluating the likelihood of the option being exercised and, therefore, the duration of the lease term, management takes into account all known facts and circumstances that create a financial incentive to exercise, or not to exercise, the option on a contractual basis.

Management's estimates of the business needs and hence the likelihood of the exercise of various options are based on known short- and long-term strategies and action plans and on the possible reorganization plans and investment decisions based on them. When evaluating the likelihood of the exercise of options, the decision is also influenced by, among other things, the purpose of the use of the premises and the extent of the investments made.

Amounts recognized in the statement of financial position related to leases

Carrying amounts of right-of-use assets

EUR million	2019
Land and waters	1.3
Buildings and structures	10.3
Machinery and equipment	0.7
Total	**12.3**

Additions to the right-of-use assets during the financial year 2019 were EUR 4.0 million.

Interest-bearing lease liabilities

EUR million	2019
Non-current	8.3
Current	3.0
Total	**11.3**

Maturity of lease liabilities is presented in note 21, Financial assets and liabilities. Future cash outflows from leases not yet commenced at the end of the financial year is presented in note 24, Contingent liabilities and pledges given.

Amounts recognized in the statement of income related to leases

Depreciation of right-of-use assets

EUR million	2019
Buildings and structures	3.7
Machinery and equipment	0.5
Total	**4.1**

Other items recognized in the statement of income

EUR million	2019
Interest expense on lease liabilities	0.3

The total cash outflow for leases in 2019 was EUR 4.4 million.

Capital structure

18. SHAREHOLDERS' EQUITY

Accounting principles

The group's equity consists of share capital, reserve fund, fund of invested non-restricted equity, translation differences and retained earnings.

Shares issued by the parent company are presented as share capital. Expenses related to the share issues or acquisition of own shares are presented as a reduction of equity. If the company acquires back its own shares, the consideration paid including direct costs is deducted from the equity.

The Board of Directors' proposal for dividend distribution is not recognized in the financial statements. The dividends are recognized only after the Annual General Meetings' approval.

Shares and share capital

The Annual General Meeting held on April 10, 2018 resolved to issue new shares to the shareholders without payment in proportion to their holdings to that one new share was issued for each share (split). On April 24, 2019 Board of Directors of Vaisala Corporation decided to convert 27,264 series K share to series A shares. This conversion was registered into the Trade Register on May 27, 2019. After this Vaisala Corporation has 36,436,728 shares, of which 6,751,398 are series K shares and 29,685,330 series A shares. The shares do not have nominal value. The series K shares and A shares are differentiated by the fact that each series K share entitles its owner to twenty (20) votes at General Meeting of Shareholders while each series A share entitles its owner to one (1) vote. The shares have the same rights to dividend. Series K shares can be converted to series A shares according to specific rules stated in the Articles of Association.

On December 31, 2019 and 2018, the fully paid and registered share capital of Vaisala Corporation amounted to EUR 7,660,807.86. The Annual General Meeting held on April 10, 2018 resolved to delete stipulations in Articles of Association on minimum and maximum share capital.

Share capital and reserves

EUR million	Number of shares 1,000	Share capital	Other reserves	Treasury shares	Total
Dec 31, 2017	**17,846**	**7.7**	**3.0**	**-10.1**	**0.6**
Adjustment to opening balance - IFRS 2 amendment			3.9		3.9
Jan 1, 2018	**17,846**	**7.7**	**6.8**	**-10.1**	**4.4**
Share-based compensation	49		-0.7	1.1	0.4
Share issue without payment	17,895				
Translation difference			0.0		0.0
Dec 31, 2018	**35,790**	**7.7**	**6.1**	**-9.0**	**4.8**
Share-based compensation	91		0.8	1.1	1.9
Transfers between items			0.0		0.0
Translation difference			0.0		0.0
Dec 31, 2019	**35,881**	**7.7**	**7.0**	**-7.9**	**6.8**
Own shares held by the company	556				
Total	**36,437**				

Other reserves

Other reserves consist of reserve fund and invested non-restricted equity. Share-based payments are also recognized in other reserves. The reserve fund, EUR 0.5 (0.4) million, includes items based on local rules of subsidiaries. Eligibility of the reserve fund is subject to restrictions based on local regulations. Invested non-restricted equity includes funds transferred from the share premium fund. On December 31, 2019 the amount of other reserves totaled to EUR 0.1 (0.1) million.

Own shares

Own shares (treasury shares) include the acquisition cost of own shares held by the group and are presented as a deduction from retained earnings.

	Number of shares	Purchase price EUR million
Treasury shares Dec 31, 2017	372,364	10.1
Distribution of treasury shares to key employees	-49,046	-1.1
Purchase of treasury shares	323,318	-
Treasury shares Dec 31, 2018	**646,636**	**9.0**
Distribution of treasury shares to key employees	-90,647	-1.1
Treasury shares Dec 31, 2019	**555,989**	**7.9**

On December 31, 2019 the company held 555,989 (646,636) series A shares representing 1.5% (1.8) of the total number of shares and 0.3% (0.4) of the voting rights. The consideration paid for the shares held by the company was EUR 7.9 million.

Treasury shares can be used as consideration in possible acquisitions or in other business related arrangements, to finance investments, as part of the company's incentive program, or be retained, conveyed, or cancelled by the company.

Translation differences

Translation differences include the translation differences arising from the elimination of the acquisition cost of non-euro area group companies and from post-acquisition equity items, and the translation differences arising from translation of profit or loss for the period. The group has not hedged any equity denominated in foreign currency.

The result for the financial year is recognized in retained earnings.

Dividend

For the financial year 2018 a dividend of EUR 0.58 per share was paid, totaling to EUR 20.8 million.

The Board of Directors proposes to the Annual General Meeting to be held on April 7, 2020 that a dividend of EUR 0.61 per share to be paid for the financial year 2019, representing a total dividend of approximately EUR 21.9 million. The proposed dividend has not been recognized as a dividend liability in these financial statements.

19. FINANCIAL RISK MANAGEMENT

Vaisala is exposed to a number of financial risks in its operations of which key ones are interest rate risk, currency risk, refinancing and liquidity risks as well as financial credit and trade receivables credit risks. Vaisala's objective is to limit the impact of these risks on statement of income, statement of financial position and cash flow statement. The management of financial risks is based on the treasury and credit policies approved by the Board of Directors.

Interest rate risk

Interest rate risk refers to the uncertainty in statement of income, statement of financial position and cash flow statement arising from interest rate changes. The group is exposed to cash flow interest rate risk, if it has floating rate liabilities. At the end of the financial year all interest-bearing liabilities and loans were at fixed rates and totaled to EUR 51.5 (40.5) million. EUR 11.3 million of interest-bearing liabilities and loans related to lease liabilities. As the group does not have floating rate loans, the group is not exposed to interest rate risk arising from changes in interest rates.

Currency risk

Currency risk refers to the uncertainty in statement of income, statement of financial position and cash flow statement arising from exchange rate fluctuations. Vaisala's business is global and is exposed to transaction and translation risks in multiple currencies. The transaction risk is related to the currency flows of sales and expenses. The translation risk arises from net investments in entities outside the euro area.

Vaisala's sales are denominated in various currencies. In 2019, 47% of the group's sales was in EUR, 33% in USD, 7% in CNY, 5% in JPY and 3% in GBP. Expenses and purchases occur mostly in EUR and USD. The group's policy is to hedge foreign currency positions which consists of the order book, purchase commitments and net receivables, using foreign exchange forwards. Vaisala does not hedge forecasted cash flows that are not in the order book. Vaisala does not apply hedge accounting in accordance with IFRS and changes in fair value are recognized in the statement of income.

Intercompany loans and deposits are mainly initiated in subsidiaries' local currencies. Vaisala does not hedge intercompany loans, deposits or equities of subsidiaries. Translation of subsidiaries' equities into euros caused translation difference of EUR 0.5 (1.0) million. The most significant translation risk exposures are in USD.

The IFRS 7 currency risk sensitivity analysis is based on the group companies' foreign currency receivables, cash and cash equivalents and liabilities. The calculation does not include internal loans, order book or forecasted cash flows, but includes foreign exchange forwards in their nominal value. The effect of a 10% appreciation in all open net currency positions on Vaisala's result after taxes and equity would have been EUR -0.5 (-0.1) million. Three largest foreign exchange net exposures in euro and their sensitivity analysis based on a 10% change (before taxes) are presented in the following table:

Foreign exchange net exposures against EUR

	2019			2018	
EUR million	Net position	Sensitivity	EUR million	Net position	Sensitivity
USD	-7.9	+/- 0.8	USD	-8.8	+/- 0.9
SEK	-3.5	+/- 0.3	INR	1.8	+/- 0.2
SGD	-2.3	+/- 0.2	CAD	0.9	+/- 0.1

Refinancing and liquidity risks

Refinancing and liquidity risk refers to the uncertainty in the ability to maintain liquidity. In order to ensure liquidity, cash and cash equivalents and availability of credit facilities are maintained at a sufficient level.

Vaisala's cash and cash equivalents amounted to EUR 56.4 (72.7) million.

On October 5, 2018, Vaisala signed a EUR 50 million unsecured revolving credit facility. The committed credit facility agreement matures in 5 years from the signing and it has no financial covenants. On December 31, 2019, Vaisala had interest bearing liabilities totaling EUR 51.5 (40.5) million, of which EUR 40 (40) million related to utilized revolving credit facility, which matures on April 14, 2020. Group has no loans that would mature after five years or more. In addition, Vaisala has a domestic commercial paper program amounting to EUR 150 million that was not utilized as of December 31, 2019.

Financial credit risk

Financial credit risk refers to the uncertainty about the counterparty's ability to assume the obligations related to the financing. Vaisala is exposed to financial credit risk in respect of cash and cash equivalents and derivative financial instruments. Vaisala's cash and cash equivalents amounted to EUR 56.4 (72.7) million and the nominal value of derivative financial instruments to EUR 33.8 (26.9) million. Vaisala deposits its assets and concludes derivative financial contracts with counterparties with good creditworthiness and approved by the Board of Directors. The creditworthiness of banks is constantly assessed.

Trade receivables credit risk

Trade receivables credit risk means the customer-related uncertainty about the collectability of receivables. These trade receivables credit risks are managed by using letter of credit, advance payments and bank guarantees as payment terms. Additionally, trade receivables credit risk is managed by utilizing credit risk insurance and by monitoring customer liquidity. Management estimates that the group does not have significant credit risk concentrations because, due to its globally distributed customer base, no single customer or a group of customers constitutes a significant risk. During the financial year, credit losses and related reversals for trade receivables recognized in the statement of income amounted to EUR -0.2 (-0.6) million. Credit loss is recognized once it has been officially declared that the receivable will not be paid as a result of liquidation or bankruptcy.

20. NON-CURRENT RECEIVABLES

EUR million	2019 carrying amounts	Fair values	2018 carrying amounts	Fair values
Non-current rent deposits	0.9	0.9	0.8	0.8
Advance payment for lease agreement*	-	-	1.0	1.0
Other non-current receivables	0.0	0.0	0.2	0.2
Total	**0.9**	**0.9**	**2.1**	**2.1**

* As a result of implementation of IFRS 16 Leases, advance payments for lease agreements are no longer recognized in non-current receivables as of January 1, 2019, instead those are recognized as part of a right-of-use asset.

21. FINANCIAL ASSETS AND LIABILITIES

Accounting principles

Financial assets

Financial assets are classified into following categories: at amortized cost and at fair value through profit and loss. Financial assets are measured on the basis of the entity's business model for managing the financial assets and the contractual cash flow characteristics of the financial assets or by applying fair value option in connection with the original acquisition. All purchases and sales of financial assets are recognized on the clearance date.

Financial assets measured at amortized cost are held to maturity date within a business model to collect contractual cash flows and these cash flows consist solely of payments of principal and interest on the principal amount outstanding. Financial assets measured at amortized cost include mainly trade receivables, prepaid income, accrued income and other receivables.

In initial recognition of financial asset classified as at amortized cost, the asset is measured at fair value including transaction costs that are directly attributable to the acquisition. Due to their nature current trade receivables' and other receivables' carrying amount approximates to its fair value. Interest income related to these financial assets is measured with the effective interest rate method and is included in the financial income. Financial assets are derecognized from the statement of financial position when the contractual rights to the cash flows from the financial asset expire or the entity substantially transfers the risks and rewards outside the group. Profit or loss related to the derecognition of financial assets from the statement of financial position is recognized in the statement of income. Impairment losses are recognized in the statement of income.

Financial assets recognized at fair value through profit and loss are financial assets that are held for trading purposes such as derivative financial instruments for which Vaisala does not apply hedge accounting according to IFRS 9. Realized and unrealized gains and losses arising from changes in fair value are recognized in the statement of income in the period in which they arise. Financial assets held for trading as well as those maturing within 12 months are included in current assets.

Impairment of financial assets

Credit loss allowance for trade receivables and contract assets is measured applying simplified approach according to IFRS 9 as no significant financing component is included in those assets. Lifetime expected credit losses are determined based on the provision matrix, utilizing different credit risk across different receivable groups. The groupings are based on aging buckets, geographical regions, existence of collaterals and insolvency proceedings or other evidence of an increased credit risk of the receivables. Expected credit loss risks for different receivable groups are based on historical loss rates and management estimates. Changes in the credit loss allowance based on lifetime expected credit losses as well as final credit losses are recognized in the statement of income.

Cash and cash equivalents are recognized in the statement of financial position at original cost. Cash and cash equivalents consist of cash on bank accounts and bank deposits.

Financial liabilities

Financial liabilities are classified into following categories: at amortized cost and at fair value through profit and loss. Financial liabilities are initially measured at fair value based on the original consideration received. Transaction costs are included in the original carrying amount of the financial liabilities. Subsequently all financial liabilities, except for derivative financial instruments, are measured applying the effective interest method at amortized cost. Financial liabilities are included both in current and non-current liabilities and those may be both interest-bearing and non-interest-bearing. Liabilities maturing in less than 12 months are presented in current liabilities. Financial liabilities are derecognized from statement of financial position when the obligation specified in the contract is discharged, cancelled or expires.

Derivative financial instruments

The group's all derivative financial contracts are foreign exchange forward contracts. The group has sales in a number of foreign currencies, of which the most significant are the USD, CNY, JPY and GBP. All derivative financial contracts are classified at fair value through profit and loss and are initially measured at fair value on the closing date of the derivative financial contract. Derivative financial contracts are subsequently measured at fair value through profit and loss at the end of each reporting date. The fair value of a foreign exchange forward contract is measured at the present value of the future cash flows. Unrealized and realized gains and losses arising from changes in the fair value are recognized in the statement of income in financial income and expenses in the period in which they arise. Derivatives are included in the statement of financial position in other receivables and payables. The group does not apply hedge accounting under IFRS 9 to foreign exchange forward contracts.

The fair value of the derivative financial contracts is based on information that is observable for the assets or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices). In addition to the quoted prices, Vaisala prepares own assessment using commonly acceptable valuation techniques. Hence Vaisala's derivative financial contracts belong to the level 2 in fair value hierarchy. There were no transfers between the hierarchy levels in 2018 or 2019.

The group has a number of investments in foreign subsidiaries whose net assets are exposed to currency risk. The group does not hedge the currency risk related to subsidiaries' net assets.

Non-current assets held for sale and discontinued operations

A non-current asset (or disposal group) is classified as held for sale if its carrying amount will be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. A sale is considered highly probable when Group Management is committed to a plan to sell the asset, the asset can be sold immediately in its current condition with general and common terms and the sale will be completed within one year from the date of classification.

Non-current assets held for sale are measured at the lower of their carrying amount and fair value less cost to sell. Depreciation of these assets is ceased on the date of classification. The result of discontinued operations is presented as a separate item in the consolidated statement of income. Non-current assets classified as held for sale, groups of disposed items, items which relate to assets held for sale recognized in statement of comprehensive income as well as liabilities included in the groups of disposed items are presented separately from other items in the consolidated statement of financial position.

Classification of financial assets and liabilities as of December 31, 2019

EUR million	Fair value through profit and loss	Amortized cost	Carrying amount of statement of financial position items	Fair value	Note
Financial assets					
Non-current receivables		0.9	0.9	0.9	20
Trade receivables and other receivables	0.3	65.8	66.1	66.1	12
Cash and cash equivalents		56.4	56.4	56.4	23
Total	**0.3**	**123.0**	**123.3**	**123.3**	
Financial liabilities					
Interest-bearing non-current lease liabilities		8.3	8.3	8.3	17
Other non-current liabilities		4.0	4.0	4.0	21
Interest-bearing current loans from financial institutions		40.0	40.0	40.0	21
Interest-bearing current lease liabilities		3.0	3.0	3.0	17
Interest-bearing current liabilities		0.2	0.2	0.2	21
Trade payables and other liabilities	0.4	21.7	22.0	22.0	14
Total	**0.4**	**77.2**	**77.6**	**77.6**	

Classification of financial assets and liabilities as of December 31, 2018

EUR million	Fair value through profit and loss	Amortized cost	Carrying amount of statement of financial position items	Fair value	Note
Financial assets					
Non-current receivables		2.1	2.1	2.1	20
Trade receivables and other receivables	0.0	63.2	63.3	63.3	12
Cash and cash equivalents		72.7	72.7	72.7	23
Total	**0.0**	**138.0**	**138.0**	**138.0**	
Financial liabilities					
Interest-bearing non-current loans from financial institutions		0.2	0.2	0.2	21
Other non-current liabilities		5.3	5.3	5.3	21
Interest-bearing current loans from financial institutions		40.1	40.1	40.1	21
Interest-bearing current liabilities		0.2	0.2	0.2	21
Trade payables and other liabilities	1.0	17.5	18.4	18.4	14
Total	**1.0**	**63.3**	**64.2**	**64.2**	

On October 5, 2018, Vaisala signed a EUR 50 million unsecured revolving credit facility. The committed credit facility agreement matures in 5 years from the signing and it has no financial covenants. The facility will be used for working capital needs, for financing of acquisitions and for general corporate purposes. On December 31, 2019, Vaisala had interest-bearing liabilities totaling EUR 51.5 (40.5) million, of which EUR 40 (40) million related to utilized revolving credit facility, which matures on April 14, 2020. Vaisala has no loans that would mature after five years or more.

Maturity and interest rates of interest-bearing liabilities 2019

EUR million	2020	2021–2024	2025–2029	2030–2033	Interest rates
Revolving credit facility	40.0				0.65%
Other interest-bearing loans	0.2				1%
Lease liabilities	3.3	4.9	2.2	2.7	0.5–11.67%
Yhteensä	**43.5**	**4.9**	**2.2**	**2.7**	

Maturity and interest rates of interest-bearing liabilities 2018

EUR million	2019	2020	2021	Interest rates
Revolving credit facility	40.0			0.65%
Loans from financial institutions	0.1	0.1	0.1	2.39–4.96%
Other interest-bearing loans	0.0	0.2		1%
Total	**40.1**	**0.3**	**0.1**	

Derivative financial contracts

EUR million	2019	2018
Nominal value of derivative financial contracts made to hedge against exchange rate risk		
Foreign exchange forwards	33.8	26.9
Nominal value, total	**33.8**	**26.9**

Nominal value of derivative financial contracts in currencies

	2019		2018	
	currency million	EUR million	currency million	EUR million
USD	23.5	20.7	26.0	21.6
AUD	-	-	1.2	0.7
CNH	19.0	2.4	20.0	2.5
GBP	1.3	1.5	-	-
JPY	350.0	2.9	270.0	2.1
SEK	43.0	4.0	-	-
SGD	3.5	2.2	-	-
Total		**33.8**		**26.9**

Maturity of derivative financial contracts

EUR million	2019	2018
Less than 90 days	8.2	12.1
Over 90 days and less than 120 days	5.3	2.9
Over 120 days and less than 180 days	8.5	8.2
Over 180 days and less than 360 days	11.8	3.8
Total	**33.8**	**26.9**

Fair value of derivative financial contracts made to hedge against exchange rate risk

EUR million	2019	2018
Foreign exchange forwards	-0.1	-0.9

22. LIABILITIES IN CASH FLOW FROM FINANCING ACTIVITIES

Reconciliation of movements of liabilities to cash flow arising from financing activities

EUR million	Dec 31, 2018	Jan 1, 2019	Cash flow effect	Non-cash changes	Dec 31, 2019
Loans from financial institutions	0.2		-0.2		-
Credit facility	40.0		0.0		40.0
Lease liabilities*	-	10.8	-4.1	4.6	11.3
Other interest-bearing liabilities	0.2		-0.0		0.0
Exchange rate differences			-0.3		
Total	**40.5**	**10.8**	**-4.6**	**4.6**	**51.5**

* As a result of implementation of IFRS 16 Leases, lease liabilities were generated as of January 1, 2019.

Reconciliation of movements of liabilities to cash flow arising from financing activities

EUR million	Dec 31, 2017	Cash flow effect	Business combinations	Dec 31, 2018
Loans from financial institutions	-	-2.6	2.9	0.2
Credit facility	-	40.0		40.0
Other interest-bearing liabilities	-		0.2	0.2
Total	**-**	**37.4**	**3.1**	**40.5**

23. CASH AND CASH EQUIVALENTS

Accounting principles related to cash and cash equivalents are presented in Note 21, Financial Assets and Liabilities.

Cash and cash equivalents

EUR million	2019	2018
Cash and cash equivalents	56.4	72.7

The fair values of cash and cash equivalents are equivalent to their carrying amounts.

24. CONTINGENT LIABILITIES AND PLEDGES GIVEN

Contingent liabilities and pledges given

EUR million	2019	2018
For own loans/commitments		
Bank guarantees issued for obligations	16.7	19.5
Pledges given	-	0.8
Rental and leasing contracts*	-	16.6
Total	**16.7**	**36.8**

* As a result of implementation of IFRS 16 Leases, rental and leasing commitments are not generated as of January 1, 2019.

In the end of the financial year, Vaisala was committed to a lease contracts for which the lease term had not yet started. Payments related to those contracts are estimated to be EUR 1.8 million.

Investment commitments

Group had commitments related to Vantaa and Louisville building projects in total of EUR 9 (1) million as of December 31, 2019. In addition, Vaisala had other commitments related to intangible and tangible assets for EUR 2 (3) million.

Purchase commitments

Group had purchase commitments totaling to EUR 15 (12) million. Additionally, group had commitments under the purchase agreements totaling a maximum of EUR 18 (18) million, if realized.

Consolidation

25. BUSINESS COMBINATIONS

Business combinations in 2019

On October 1, 2019 Vaisala acquired all the shares in Vaisala Digital Oy offering business-to-business weather services from Foreca Oy. Foreca's professional business-to-business weather services strengthens the offering and development of the Vaisala Digital product line for highly weather-dependent customers by bringing new expertise to the team, as well as industry leading technology platform for forecasting, modeling and weather impact analysis. Vaisala Digital Oy serves weather-dependent professional customers in transportation, energy, and industry segments.

Vaisala Digital Oy was established on September 1, 2019 as a result of demerger of Foreca Oy. Therefore, no information on net sales for 2018 is available.

Net sales of the acquired company between October 1, 2019 and December 31, 2019 were EUR 0.4 million and operating result EUR 0.0 million. If the acquisition had occurred on January 1, 2019, management estimates consolidated net sales would have been EUR 406 million and operating result EUR 41 million for the financial year 2019.

The preliminary consideration transferred was EUR 7 million.

Goodwill was preliminarily recognized for EUR 3.8 million and allocated to Weather and Environment Business Area cash-generating unit. Goodwill reflects the synergies which Vaisala expects to realize especially from the access gained to automotive market. Vaisala also expects to realize synergies from possibilities to develop new epoch-making solutions by combining Vaisala's competencies together with acquired competencies and expertise.

Acquisition related costs were immaterial.

As the acquisition was finished during the last quarter of the financial year, the assets acquired, liabilities assumed and consideration transferred related to the business combination have been recognized provisionally.

The preliminary amounts of the assets acquired and liabilities assumed recognized and the cash flow from the acquisition were as follows:

EUR thousand	Fair value recognized on acquisition
Goodwill	3,764
Technology-based intangible assets	1,807
Customer related intangible assets	2,253
Brand	24
Non-current receivables	2
Trade receivables and other receivables	250
Cash and cash equivalents	139
Total assets	**8,238**
Deferred tax liabilities	817
Current liabilities	421
Total liabilities	**1,238**
Net assets	**7,000**
Purchase price paid in cash	-7,000
Cash and cash equivalents acquired	139
Total net cash outflow on acquisition	**-6,861**

Business combinations in 2018

On October 10, 2018 Vaisala acquired all the shares in Leosphere SAS, a French company specializing in developing, manufacturing and servicing turnkey wind lidar (light detection and ranging) instruments for wind energy, aviation, meteorology and air quality. The acquisition supports Vaisala's Weather and Environment Business Area's strategy to drive industry leadership and growth through strengthening its position as a global leader providing remote wind sensing technologies, which are relevant for several Vaisala's key customer segments.

In 2017, Leosphere's net sales were EUR 27 million.

Net sales of the acquired company between October 11, 2018 and December 31, 2018 were EUR 9.9 million and operating result EUR 3.2 million. If the acquisition had occurred on January 1, 2018, management estimates consolidated net sales would have been EUR 367 million and operating profit EUR 34 million for the financial year 2018.

The consideration transferred was EUR 54 million. The consideration transferred includes EUR 3.8 million contingent consideration to be paid on the basis of the financial performance after the acquisition. The range of the outcome of the contingent consideration is from EUR 1 to 6.6 million.

Goodwill was recognized for EUR 8.6 million and allocated to Weather and Environment Business Area cash-generating unit. Goodwill of this acquisition reflects the synergies for Vaisala expected to arise especially from faster access to markets utilizing laser based technology in their measurements and the possibilities for Vaisala group related to know-how and expertise obtained in the acquisition.

During the measurement period, provisionally recognized assets and liabilities have been adjusted to reduce the amount of inventory by EUR 0.8 million and to increase the corresponding amount of deferred tax liabilities by EUR 0.2 million in the purchase price allocation. As a result, the amount of goodwill increased by EUR 0.6 million from the provisionally recognized amount.

Acquisition related costs amounted to EUR 1.6 million and those have been included in the consolidated statement of income for 2018.

The amounts of the assets acquired and liabilities assumed recognized and the cash flow from the acquisition were as follows:

EUR thousand	Fair value recognized on acquisition
Goodwill	8,849
Technology-based intangible assets	27,321
Customer related intangible assets	7,123
Other intangible assets	215
Tangible assets	771
Non-current receivables	1,299
Deferred tax assets	2,327
Inventory	7,677
Trade receivables and other receivables	13,289
Cash and cash equivalents	10,672
Total assets	**79,543**
Deferred tax liabilities	7,050
Non-current liabilities	2,262
Provisions	357
Current liabilities	16,328
Total liabilities	**25,997**
Net assets	**53,546**
Purchase price paid in cash	-49,747
Cash and cash equivalents acquired	10,672
Total net cash outflow on acquisition	**-39,075**

On December 31, 2018 Vaisala acquired all the shares in K-Patents Oy and Janesko Oy (K-Patents). K-Patents develops, manufactures and services in-line liquid measurements instruments for industrial applications. The acquisition broadens Industrial Measurements Business Area's product offering to liquid measurements and strengthens its position in the industrial measurement market.

In 2017, K-Patent's net sales were EUR 11.4 million.

The consideration transferred was EUR 15 million.

Acquisition related costs were immaterial.

The amounts of the assets acquired and liabilities assumed recognized and the cash flow from the acquisition were as follows:

EUR thousand	Fair value recognized on acquisition
Technology-based intangible assets	7,718
Customer related intangible assets	4,556
Other intangible assets	320
Tangible assets	332
Other financial assets	50
Deferred tax assets	32
Inventory	1,996
Trade receivables and other receivables	2,032
Cash and cash equivalents	2,548
Total assets	**19,584**
Deferred tax liabilities	2,460
Non-current liabilities	37
Current liabilities	2,087
Total liabilities	**4,584**
Net assets	**15,000**
Purchase price paid in cash	-15,000
Cash and cash equivalents acquired	2,548
Total net cash outflow on acquisition	**-12,452**

A contingent consideration liability relating to prior acquisitions totaling EUR 0.2 (0.2) million was paid in 2019. The remaining contingent consideration related to prior acquisitions was EUR 4.0 (4.2) million in the end of financial year 2019. Additionally, reversal of contingent consideration liability amounting to EUR 0.1 (1.0) million was recognized in the financial year 2019 as other operating income based on the financial performance after the acquisition.

26. NON-CURRENT ASSETS CLASSIFIED AS HELD FOR SALE AND RELATED LIABILITIES

Vaisala had classified Weather and Environment Business Area's renewable energy digital solutions business as non-current assets held for sale in the financial year 2018. The liabilities related to non-current assets classified as held for sale were EUR 1.1 million. This business is no longer meeting the criteria of non-current assets held for sale and classification of those assets as non-current assets held for sale was ceased accordingly as of September 30, 2019.

Non-current assets held for sale

EUR million	2019	2018
Tangible assets	-	0.1
Receivables	-	1.8
Cash and cash equivalents	-	1.1
Total	**-**	**3.1**

27. SUBSIDIARIES

Name	Country	Group ownership %, Dec 31, 2019	Group ownership %, Dec 31, 2018
Vaisala Holding Oy	Finland	100	100
Vaisala Limited	United Kingdom	100	100
Vaisala Pty Ltd	Australia	100	100
Vaisala GmbH	Germany	100	100
Vaisala KK	Japan	100	100
Vaisala Inc.	United States	100	100
Vaisala China Ltd	China	100	100
Vaisala Canada Inc	Canada	100	100
Vaisala SAS	France	100	100
Vaisala Sdn Bhd	Malaysia	100	100
Vaisala Servicos De Marketing Ltda	Brazil	100	100
3TIER R&D India Pvt Ltd	India	100	100
Vaisala East Africa Limited	Kenya	100	100
Vaisala Mexico Limited, S. de R.L. de C.V.	Mexico	100	100
Leosphere SAS	France	92.53	100
Upwind SAS	France	100	100
SCI Septentrion	France	100	100
Minas Ltd	China	-	100
K-Patents Oy	Finland	-	100
K-Patents Inc.	United States	100	100
K-Patents (Shanghai) Co.,Ltd.	China	100	100
Janesko Oy	Finland	-	100
Vaisala Shanghai Sensors Ltd	China	100	-
Vaisala Digital Oy	Finland	100	-

On August 31, 2019 K-Patents Oy and Janesko Oy were merged into Vaisala Corporation. On October 1, 2019 Vaisala Corporation acquired all the shares in Vaisala Digital Oy.

UK based subsidiary Vaisala Limited (register number 01487125) will apply for exemption from auditing of local financial statements under local law (section 479A of the Companies Act 2006).

28. ASSOCIATED COMPANY

Accounting principles related to associated companies are presented in Consolidation principles.

The group has one associated company, SAS Meteorage. SAS Meteorage is a French company, which maintains lightning detection networks and sells information related to lightning strikes. Ownership in Meteorage supports Vaisala's role in the global lightning detection community.

Company name	Place of incorporation and principal place of business	Share of ownership	Measurement method
SAS Meteorage	France	35%	Equity method

Summarized financial information of the associated company

EUR million	2019	2018
Non-current assets	2.3	2.2
Current assets	3.3	2.4
Liabilities	2.6	1.9
Net assets	**3.0**	**2.7**
Vaisala's share of net assets	1.1	1.0
Net sales	3.9	3.5
Result for the financial year	0.4	0.3

The information presented in the table is based on the latest available financial information.

Carrying amount of investments in associated company

EUR million	2019	2018
Carrying amount at Jan 1	1.0	0.9
Share of result	0.1	0.1
Dividend received	-0.1	-0.0
Exchange rate differences	0.0	0.0
Carrying amount at Dec 31	**1.1**	**1.0**

The carrying value of the associated company does not include goodwill.

Transactions with associated company and receivables and liabilities

EUR million	2019	2018
Sales	0.6	0.1
Receivables	0.1	0.0

Other notes

29. RELATED PARTY TRANSACTIONS

Related parties of Vaisala group are the parent company, subsidiaries, associated company, members of Board of Directors and Vaisala Management Group. Related party transactions are based on market prices of goods and services and on common market terms. Only transactions that are not eliminated in the consolidated financial statements are disclosed as related party information.

The subsidiaries are presented in note 27, Subsidiaries and the associated company in note 28, Associated company. Transactions with the associated company as well as receivables and liabilities are presented in note 28, Associated company.

Employee benefits of management

EUR 1,000	2019	2018
Salary and bonuses of the President and CEO (payment basis)		
Forsén Kjell		
Salary	515	515
Bonuses	263	302
Share-based payments	514	502
Obligatory pension	135	146
Voluntary pension	120	120
Total	**1,547**	**1,586**
Remuneration of the members of Vaisala Management Group (excl. the President and CEO) (payment basis)		
Salaries	1,492	1,393
Bonuses	478	622
Share-based payments	1,061	1,319
Obligatory pensions	342	360
Voluntary pensions	242	235
Total	**3,616**	**3,929**

The retirement age of the President and CEO is 62 years. The President and CEO has a voluntary compensation based retirement plan. Compensation equal to 12 months' salary is paid to the President and CEO, if employer terminates the CEO agreement. In case the President and CEO resigns, compensation equal to 6 months' salary is paid.

Remuneration of the Board of Directors 2019 (payment basis)

EUR 1,000		Annual remuneration	Compensation, Audit Committee	Compensation, Remuneration and Human Resources Committee	Total
Castrén Petri	Member of the Board	35	4	5	44
Lundström Petra	Member of the Board	35		4	39
Niinivaara Mikko (until March 26th)	Member of the Board		1	1	2
Rinnevaara Jukka (since March 26th)	Member of the Board	35	2		37
Ståhlberg Kaarina	Member of the Board	35	6		41
Syrjänen Tuomas (since March 26th)	Member of the Board	35			35
Torstila Pertti	Member of the Board	35			35
Voipio Raimo	Chairman of the Board	45		1	46
Voipio Ville	Vice Chairman of the Board (since March 26th 2019)	35	3	4	42
Total		**290**	**16**	**15**	**321**

Remuneration of the Board of Directors 2018 (payment basis)

EUR 1,000		Annual remuneration	Compensation, Audit Committee	Compensation, Remuneration and Human Resources Committee	Total
Castrén Petri	Member of the Board	35	5	3	43
Lundström Petra	Member of the Board	35			35
Neuvo Yrjö	Vice Chairman of the Board	35			35
Niinivaara Mikko	Member of the Board	35	5	3	43
Ståhlberg Kaarina	Member of the Board	35	8		43
Torstila Pertti	Member of the Board	35			35
Voipio Raimo	Chairman of the Board	45		3	48
Voipio Ville	Member of the Board	35			35
Total		**290**	**18**	**9**	**317**

To the President and CEO and the members of the Board have not been granted loans nor have guarantees or commitments been given on their behalf.

30. AUDITOR'S FEES

Authorized Public Accountants Deloitte

EUR million	2019	2018
Audit	0.4	0.4
Tax advice	0.0	0.0
Statements	0.0	0.0
Other fees	0.0	0.1
Total	**0.5**	**0.5**

Other audit companies

EUR million	2019	2018
Audit	0.1	0.1
Other fees	0.0	0.0
Total	**0.1**	**0.1**

Other work than audit services given by the principal auditor Deloitte Oy during the year 2019 were EUR 0.1 (0.1) million.

31. APPLICATION OF NEW AND REVISED STANDARDS AND INTERPRETATIONS IN ISSUE BUT NOT YET EFFECTIVE

IASB published the following new or revised standards which the group has not yet adopted and which may have an effect on the consolidated financial statements of the group. The group will adopt each standard as from the effective date, or if the effective date is other than the first day of the financial year, from the beginning of the next financial year after the effective date.

At the date of authorisation of these financial statements, the group has not applied the following new and revised IFRS Standards that have been issued but are not yet effective and had not yet been adopted by the EU (marked with*):

- IFRS 17 Insurance Contracts*
- IFRS 10 Consolidated Financial Statements and IAS 28 (amendments): Sale or Contribution of Assets between an Investor and its Associate or Joint Venture
- Amendments to IFRS 3 Definition of a business*
- Amendments to IAS 1 and IAS 8 Definition of material
- Amendments to IFRS 9, IAS 39 and IFRS 7: Interest Rate Benchmark Reform
- Amendments to IAS 1 Classification of Liabilities as Current and Non-Current*

The management does not expect that the adoption of the standards listed above will have a material impact on the financial statements of the group in future periods.

IFRS 17 Insurance Contracts

The new standard establishes the principles for the recognition, measurement, presentation and disclosure of insurance contracts and supersedes IFRS 4 Insurance Contracts. The standard is effective for a financial year beginning on or after January 1, 2021, with early application permitted. It is applied retrospectively unless impracticable, in which case the modified retrospective approach or the fair value approach is applied. An exposure draft Amendments to IFRS 17 addresses concerns and implementation challenges that were identified after IFRS 17 was published. One of the main changes proposed is the deferral of the date of initial application of IFRS 17 by one year to a financial year beginning on or after January 1, 2022. The application of the standard in the future is not anticipated to have an impact on the group's consolidated financial statements as the group does not hold any insurance contracts.

IFRS 10 and IAS 28 (amendments) Sale or Contribution of Assets between an Investor and its Associate or Joint Venture

The amendments to IFRS 10 and IAS 28 deal with situations where there is a sale or contribution of assets between an investor and its associate or joint venture. The effective date of the amendments has yet to be set by the IASB; however, earlier application of the amendments is permitted. The application of these amendments may have an impact on the group's consolidated financial statements in future periods should such transactions arise.

Amendments to IFRS 3 Definition of a Business

The amendments clarify that while businesses usually have outputs, outputs are not required for an integrated set of activities and assets to qualify as a business. To be considered a business an acquired set of activities and assets must include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs.

Additional guidance is provided that helps to determine whether a substantive process has been acquired.

The amendments introduce an optional concentration test that permits a simplified assessment of whether an acquired set of activities and assets is not a business. Under the optional concentration test, the acquired set of activities and assets is not a business if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar assets.

The amendments are applied prospectively to all business combinations and asset acquisitions for which the acquisition date is on or after the first financial year beginning on or after January 1, 2020.

The application of these amendments may have an impact on the group's consolidated financial statements in future periods should such transactions arise.

Amendments to IAS 1 and IAS 8 Definition of Material

The amendments are intended to make the definition of material in IAS 1 easier to understand and are not intended to alter the underlying concept of materiality in IFRS standards. The concept of 'obscuring' material information with immaterial information has been included as part of the new definition.

The threshold for materiality influencing users has been changed from 'could influence' to 'could reasonably be expected to influence'.

The definition of material in IAS 8 has been replaced by a reference to the definition of material in IAS 1. In addition, the IASB amended other Standards and the Conceptual Framework that contain a definition of material or refer to the term 'material' to ensure consistency.

The amendments are applied prospectively for a financial year beginning on or after January 1, 2020.

Vaisala will revise its materiality assessment principles to reflect the new definition, but the adoption of the amendments is not expected to have an impact on the consolidated financial statements in future periods.

Amendments to IFRS 9, IAS 39 and IFRS 7 Interest Rate Benchmark Reform

The amendments will affect entities that apply the hedge accounting requirements of IFRS 9 or IAS 39 to hedging relationships directly affected by the interest rate benchmark reform. The amendments modify specific hedge accounting requirements, so that entities would apply those hedge accounting requirements assuming that the interest rate benchmark is not altered as a result of the reform. The amendments are effective for a financial year beginning on or after January 1, 2020. The application of the standard in the future is not anticipated to have an impact on the group's consolidated financial statements as the group does not apply hedge accounting.

Amendments to IAS 1 Classification of Liabilities as Current or Non-Current

The amendments provide a more general approach to the classification of liabilities under IAS 1 based on the contractual arrangements in place at the reporting date. They affect only the presentation of liabilities in the statement of financial position.

The amendments clarify that the classification of liabilities as current or non-current should be based on rights that are in existence at the end of the reporting period and align the wording in all affected paragraphs to refer to the "right" to defer settlement by at least twelve months and make explicit that only rights in place "at the end of the reporting period" should affect the classification of a liability.

The classification is unaffected by expectations about whether an entity will exercise its right to defer settlement of a liability. The amendments also make clear that settlement refers to the transfer to the counterparty of cash, equity instruments, other assets or services.

The amendments are applied retrospectively for a financial year beginning on or after January 1, 2022.

Vaisala will revise the classification of liabilities as current and non-current, but the adoption of the amendment is not expected to have an impact on the consolidated financial statements for future periods.

PARENT COMPANY FINANCIAL STATEMENTS*

Parent company income statement

EUR	Note	Jan 1–Dec 31, 2019	Jan 1– Dec 31, 2018
Net sales	2	266,326,391.86	241,898,219.10
Cost of production and procurement	4, 5	-128,260,380.19	-121,681,321.66
Gross profit		**138,066,011.67**	**120,216,897.44**
Cost of sales and marketing	4, 5	-29,477,713.41	-26,298,091.69
Cost of administration			
Research and development costs	4, 5	-39,747,647.97	-36,526,100.55
Other administrative costs	4, 5	-32,397,308.76	-27,830,244.73
Other operating income	3	397,981.41	330,137.53
Operating result		**36,841,322.94**	**29,892,598.00**
Financial income and expenses	6	1,658,532.38	5,231,588.24
Result before appropriations and taxes		**38,499,855.32**	**35,124,186.24**
Result before taxes		**38,499,855.32**	**35,124,186.24**
Direct taxes	7	-7,614,504.46	-6,385,321.15
Result for the financial year		**30,885,350.86**	**28,738,865.09**

*The parent company financial statements are prepared in accordance with the principles of Finnish Accounting Standards (FAS).

Parent company balance sheet

EUR	Note	Dec 31, 2019	Dec 31, 2018
Assets			
Non-current assets			
Intangible assets	8		
Intangible rights		1,571,161.36	1,647,438.34
Other intangible assets		12,194,377.05	3,241,104.78
Advance payments and intangible assets in progress		268,587.21	247,574.08
Total intangible assets		**14,034,125.62**	**5,136,117.20**
Property, plant and equipment	8		
Land and waters		2,904,868.22	2,904,868.22
Buildings		19,625,625.01	21,409,923.55
Machinery and equipment		14,282,026.94	12,583,934.58
Other tangible assets		74,417.51	69,212.81
Advance payments and construction in progress		16,816,177.51	5,845,826.82
Total property, plant and equipment		**53,703,115.19**	**42,813,765.98**
Investments	8		
Holdings in group undertakings		81,329,965.75	89,333,080.51
Other shares and holdings		111,714.29	100,000.00
Total investments		**81,441,680.04**	**89,433,080.51**
Total non-current assets		**149,178,920.85**	**137,382,963.69**

EUR	Note	Dec 31, 2019	Dec 31, 2018
Current assets			
Non-current receivables			
Other receivables		38,970.93	20,616.00
Total long-term receivables		**38,970.93**	**20,616.00**
Inventories			
Materials, consumables and finished goods		25,882,341.23	19,882,874.35
Total inventories		**25,882,341.23**	**19,882,874.35**
Current receivables			
Trade receivables	17	38,783,327.95	35,020,144.27
Loan receivables	17	22,444,428.94	26,255,750.84
Other receivables	9, 17	3,008,205.05	2,777,712.86
Prepaid expenses and accrued income	10, 17	19,605,675.93	16,784,205.68
Total current receivables		**83,841,637.87**	**80,837,813.65**
Cash and cash equivalents		45,525,976.64	52,082,989.57
Total current assets		**155,288,926.67**	**152,824,293.57**
Total assets		**304,467,847.52**	**290,207,257.26**

Parent company balance sheet

EUR	Note	Dec 31, 2019	Dec 31, 2018
Shareholders´ equity and liabilities			
Shareholders´ equity	13		
Share capital		7,660,807.86	7,660,807.86
Fund of invested non-restricted equity		422,034.34	414,924.89
Retained earnings		139,213,466.46	130,403,020.97
Result for the financial year		30,885,350.86	28,738,865.09
Total shareholders´ equity		**178,181,659.52**	**167,217,618.81**
Provisions	12	97,119,25	97,119.25
Liabilities			
Non-current			
Other non-current liabilities	14	3,659,468.77	4,399,779.08
Current			
Advances received		2,509,216.85	2,126,806.46
Trade payables	17	15,291,117.22	12,212,804.97
Loans from financial institutions	15	40,000,000.00	40,000,000.00
Other current loans	17	10,904,795.08	16.795,874.93
Other current liabilities	17	4,060,266.18	2,083,242.52
Provisions	12	1,731,381.81	1,733,728.50
Accrued expenses and deferred income	16, 17	48,032,822.84	43,540,282.74
Current liabilities total		**122,529,599.98**	**118,492,740.12**
Total liabilities		**126,286,188.00**	**122,989,638.45**
Total shareholders´ equity and liabilities		**304,467,847.52**	**290,207,257.26**

Parent company cash flow statement

EUR thousand	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Cash flow from operating activities			
Cash receipts from customers		256,804	247,706
Cash paid to suppliers and employees		-214,372	-201,849
Cash flow from operating activities before financial items and taxes		**42,432**	**45,857**
Paid financial items, net	6	785	746
Dividend received from business operations	6	1,658	4,392
Income taxes paid		-6,660	-6,912
Cash flow from operating activities		**38,215**	**44,082**
Cash flow from investing activities			
Investments in shares	8	-7,772	-66,469
Investments in intangible assets	8	-540	-840
Investments in property, plant and equipment	8	-16,822	-10,678
Divestments	8	300	37
Loans granted	17	-2,165	-
Repayments on loan receivables	17	6,454	1,111
Cash flow from investing activities		**-20,545**	**-76,839**

EUR thousand	Note	Jan 1–Dec 31, 2019	Jan 1–Dec 31, 2018
Cash flow from financing activities			
Proceeds from short-term borrowings	14	80,000	42,203
Repayment of short-term borrowings	14	-85,965	-
Dividend paid	13	-20,810	-37,580
Cash flow from financing activities		**-26,775**	**4,623**
Change in cash and cash equivalents increase (+) / decrease (-)		**-9,105**	**-28,134**
Cash and cash equivalents at Jan 1		52,083	79,874
Change in cash and cash equivalents increase (+) / decrease (-)		-9,105	-28,134
Cash received in merger		2,548	343
Cash and cash equivalents at Dec 31		**45,526**	**52,083**

Notes to the parent company financial statements

1. ACCOUNTING PRINCIPLES

The financial statements of the parent company Vaisala Corporation have been prepared according to the Finnish Accounting Standards (FAS). Financial statement data are based on original acquisition costs or nominal value, less possible impairment, if not otherwise stated in the accounting principles outlined below.

Net sales and revenue recognition principles

The parent company's net sales consist of revenue recognized from contracts with customers. Net sales are divided into products, projects and services. Indirect taxes and discounts have been deducted from sales revenue. Exchange rate differences are recognized in the financial income and expenses.

Product net sales include revenue from products, spare parts and system deliveries. A system delivery contains a standard product delivery with limited amount of configuration. Revenue from the sale of product is recognized at a point in time when the control is transferred to the customer according to the delivery terms used.

Projects are integrated projects, in which observation solutions, consisting of products, services and software, are delivered. Solutions are integrated to customer systems according to customer specifications. Revenue for all projects is recognized over time using percentage of completion method. Progress is measured by cost-to-cost method, comparing incurred costs and forecasted costs. Projects meet the over-time revenue recognition criteria, either by creating an asset without an alternative use and Vaisala having an enforceable right to payment for performance completed to date and/or by creating an asset under customer control. The applied revenue recognition principles fulfill the Finnish Accounting Standard requirement related to the predictability of project margin.

Services are divided into service contracts and one-off service deliverables. Services may include maintenance, calibration and repair, modernization, extended warranties and data-based solutions supporting decisions in weather-dependent operations. Service contracts are continuous services including for example extended warranty, availability of customer support and availability of spare part delivery. Service contracts are recognized over time or at a point in time depending on the nature of the service and content of a contract. In case of one-off request services, the revenue is recognized at a point in time when the service has been rendered.

Standard warranty period for products is one year and 2, 5 or 10 years for selected products. Standard warranty period for services is 6 or 12 months. Extended warranty is a separately sold and priced service over a separately agreed period. Revenue for extended warranty is recognized over time starting at the time of standard warranty expiration. Provision for warranty costs is recognized in the balance sheet.

Other operating income and expenses

Other operating income and expenses include income and expenses, which are not directly attributable to operational activities.

Other operating income consists mainly of gains on the disposal of assets as well as income other than revenue from contracts with customers, such as reversal of contingent liabilities related to acquisitions and indemnities. Other operating expenses consist mainly of losses on disposal of assets.

Research and development expenses

Research and development expenses are booked as cost in the financial period in which they occur.

Share-based incentive plans

Parent company's share-based payments are related to share-based incentive plans. Share-based payments are recognized as costs in the income statement and as accrued expenses in the balance sheet during the vesting period. The costs are based on an estimate of the amount of shares to be paid at the end of the vesting period. Assumptions, on which the estimates are based, are updated whenever changes occur and the effects of changes in assumptions are recognized in the statement of income.

As of January 1, 2018, the cost of the share part of the share-based payments as well as the cash part of the share-based payments correspond to the value of share closing price on the grant date of the incentive plan.

Pensions

The parent company's statutory pension insurance and voluntary pension plans are managed by external pension insurance companies. The pensions are all defined contribution plans and the contributions are expensed to the statement of income as incurred.

The additional pension coverage of parent company personnel was arranged by Vaisala Pension Fund that was closed on January 1, 1983. The pension fund liability was transferred to a pension insurance company on December 31, 2005 and the fund was dissolved in 2006. The pension liability of the fund is fully covered.

Income taxes

Tax expense includes taxes based on taxable profit for the financial year and tax adjustments for previous years. Current taxes are calculated on the taxable income on the basis of the tax rates enacted by the end of the financial year.

Non-current assets

Non-current assets consist of intangible assets, property, plant and equipment as well as investments. Carrying amounts of non-current assets are measured at cost less accumulated depreciation, amortization and impairment and plus revaluations. Depreciation and amortization according to plan is calculated on a straight-line basis over the expected useful lifetime of the asset. Land and investments are not depreciated. The cost of assets produced for own use includes also overhead costs attributable to the production work.

No interest is capitalized in non-current assets. Estimated useful lifetimes for assets are:

Intangible rights	3–10 years
Buildings and structures	5–40 years
Machinery and equipment	3–8 years
Other tangible assets	3–8 years

Other intangible assets include assets that have an indefinite useful lifetime and are not amortized. Additionally, merger losses have been allocated to other intangible assets and their useful lifetime is 6 years.

Inventories

Inventories are stated at the lower of standard cost and net realizable value. Inventory cost includes the cost of purchase (including mainly purchase price, import duties and transport), direct labor and a proportion of production overhead. An allowance is recorded for excess inventory and obsolescence.

Provisions

Provisions are future expenditure and losses arising from obligations, for which the company is committed and for which it is not certain or likely that revenue will be generated in the future and which are likely to occur. A change in the provision is recognized in the same item of the income statement in which the provision was originally recognized.

Provisions can relate to restructuring of operations, loss-making contracts, warranties, legal disputes and other commitments.

Derivative financial contracts

All parent company's derivative financial contracts are foreign exchange forward contracts. The parent company has sales in a number of foreign currencies, of which the most significant are USD, JPY and GBP. All derivative financial contracts are initially measured at fair value on the closing date of the derivative financial contract. Derivative financial contracts are subsequently measured at fair value through profit and loss at the end of the financial year. The fair value of a foreign exchange forward contract is measured at the present value of the future cash flows. Unrealized and realized gains and losses arising from changes in the fair value are recognized in the income statement in financial income and expenses in the period in which they arise. Derivative financial contracts are included in the balance sheet in prepaid and accrued expenses. The parent company does not apply hedge accounting.

Foreign currency translation

Transactions in foreign currencies are recorded using the exchange rate on the date of transaction. Receivables and payables in foreign currency have been valued at the rates quoted by European Central Bank on the last trading date of the financial year. Foreign exchange gains and losses arising from revaluation of cash and cash equivalents, trade and other receivables, loan receivables as well as trade and other payables are recognized as financial income and expense in the income statement.

2. NET SALES

Disaggregation of revenue

Net sales by market area

EUR thousand	2019	2018
Americas	78,551	74,735
of which United States	55,444	46,956
APAC	82,637	82,190
EMEA	105,139	84,973
of which Finland	8,959	7,657
Total	**266,326**	**241,898**

Net sales by business area

EUR thousand	2019	2018
Weather and Environment		
Products	64,142	56,409
Projects	48,446	52,046
Services	5,871	5,073
Total	**118,459**	**113,528**
Industrial Measurements		
Products	27,387	24,331
Services	1,952	2,486
Total	**29,340**	**26,817**
Net sales from subsidiaries	118,527	101,554
Total	**266,326**	**241,898**

Net sales by timing of revenue recognition

EUR thousand	2019	2018
Revenue recognized at a point in time	94,440	83,782
Revenue recognized over time	53,359	56,562
Net sales from subsidiaries	118,527	101,554
Total	**266,326**	**241,898**

Net sales from subsidiaries are mainly recognized at a point in time.

Payment terms

Payment terms vary based on geographical areas. In product and service business, the standard payment term is 30 days net, but in some areas prepayments are commonly used. Project invoicing is based on milestones and typically follows the general project delivery terms where 30% is advance payment, 60% against delivery documents and 10% after site acceptance test. In project business the most common payment terms are letter of credit or as per contract.

Assets and liabilities related to net sales

The following table provides information about receivables and liabilities from contracts with customers included in the balance sheet.

Assets and liabilities related to net sales

EUR thousand	Dec 31, 2019	Dec 31, 2018
Trade receivables	38,783	35,020
Accrued revenue	15,451	11,089
Advances received	2,509	2,127
Deferred revenue	14,762	18,509

Accrued revenue includes the balance of project and service revenue recognized but not yet invoiced. In general, most of project revenue is recognized after the product manufacturing as percentage of completion increases and most of the performance obligation is satisfied. According to general project delivery terms, majority of a project is invoiced before the delivery. Therefore, the amount of accrued revenue is typically at its highest between product manufacturing phase of the project and delivery of the product to the customer. For services, which are satisfied over time, the customer is mainly invoiced in advance and only in some cases in arrears after the customer has received or consumed the service. Arrears invoicing generates accrued revenue as the revenue is recognized before invoicing.

Advances received are customer payments related to contracts not yet invoiced.

Deferred revenue includes the balance of projects, services and products invoiced but revenue not yet recognized.

Project-related contract liabilities often arise in the early stages of a project, when the prepayment has been invoiced, but the project is only at an early stage and there is none or little revenue recognized under percentage of completion method. Services, which are recognized over time, are often invoiced in advance and therefore deferred revenue is generated in the beginning of the service period. For products and services, which are recognized at a point in time, deferred revenue is generated when customer has been invoiced, but performance obligation has not been satisfied and consequently revenue has not been recognized.

In the financial year 2019, the parent company recognized EUR 9 (16) million revenue that was included in the deferred revenue balance at the beginning of the period.

On December 31, 2019, the order book amounted to EUR 68.4 (50.1) million. Of the order book, EUR 49.8 (36.9) million is scheduled to be recognized as revenue in 2020 (2019) and EUR 18.6 (13.2) million is scheduled to be recognized later.

3. OTHER OPERATING INCOME

EUR thousand	2019	2018
Gains on disposal of assets	293	10
Other operating income		
Reversal of contingent consideration	91	143
Indemnities and other	14	177
Total	**398**	**330**

4. PERSONNEL EXPENSES AND NUMBER OF PERSONNEL

Personnel expenses

EUR thousand	2019	2018
Wages and salaries	72,753	65,055
Pension costs	12,078	11,284
Other personnel costs	2,088	2,117
Total	**86,919**	**78,457**

Personnel average

Persons	2019	2018
In Finland	1,086	1,050
Outside Finland	7	6
Total	**1,093**	**1,056**

Personnel Dec 31

Persons	2019	2018
In Finland	1,135	1,049
Outside Finland	8	7
Total	**1,143**	**1,056**

Salary and remunerations of the President and CEO (payment basis)

EUR thousand	2019	2018
Forsén Kjell		
Salary	515	515
Bonus	263	302
Share-based payment	514	502
Obligatory pension	135	146
Voluntary pension	120	120
Total	**1,547**	**1,586**

The retirement age of the President and CEO is 62 years. The President and CEO has a voluntary compensation based retirement plan. Compensation equal to 12 months' salary is paid to the President and CEO, if employer terminates the CEO agreement. In case the President and CEO resigns, compensation equal to 6 months' salary is paid.

Remuneration of the Board of Directors 2019 (payment basis)

EUR thousand		Annual remuneration	Compensation, Audit Committee	Compensation, Remuneration and Human Resources Committee	Total
Castrén Petri	Member of the Board	35	4	5	44
Lundström Petra	Member of the Board	35		4	39
Niinivaara Mikko (until March 26th)	Member of the Board		1	1	2
Rinnevaara Jukka (since March 26th)	Member of the Board	35	2		37
Ståhlberg Kaarina	Member of the Board	35	6		41
Syrjänen Tuomas (since March 26th)	Member of the Board	35			35
Torstila Pertti	Member of the Board	35			35
Voipio Raimo	Chairman of the Board	45		1	46
Voipio Ville	Vice Chairman of the Board (since March 26th)	35	3	4	42
Total		**290**	**16**	**15**	**321**

Remuneration of the Board of Directors 2018 (payment basis)

EUR thousand		Annual remuneration	Compensation, Audit Committee	Compensation, Remuneration and Human Resources Committee	Total
Castrén Petri	Member of the Board	35	5	3	43
Lundström Petra	Member of the Board	35			35
Neuvo Yrjö	Vice Chairman of the Board	35			35
Niinivaara Mikko	Member of the Board	35	5	3	43
Ståhlberg Kaarina	Member of the Board	35	8		43
Torstila Pertti	Member of the Board	35			35
Voipio Raimo	Chairman of the Board	45		3	48
Voipio Ville	Member of the Board	35			35
Total		**290**	**18**	**9**	**317**

To the President and CEO and the members of the Board have not been granted loans nor have guarantees or commitments been given on their behalf.

5. DEPRECIATION, AMORTIZATION AND IMPAIRMENT

EUR thousand	2019	2018
Amortization of intangible assets	1,761	857
Depreciation of property, plant and equipment	5,919	5,496
Impairment of tangible assets	85	123
Total	**7,765**	**6,476**

In the financial year 2019 amortization of intangible assets included amortization EUR 1.1 (0.1 million) related to merger losses included in other intangible assets.

6. FINANCIAL INCOME AND EXPENSES

EUR thousand	2019	2018
Dividend income		
From group companies	1,658	4,392
Other interest and financial income		
From group companies	904	2,353
From others	1,498	1,841
Write-down of loan receivables	-89	-88
Interest and other financial expenses		
To group companies	-253	-210
To others	-2,903	-4,328
Foreign exchange gains and losses	843	1,271
Total	**1,659**	**5,232**

7. DIRECT TAXES

EUR thousand	2019	2018
Taxes from the financial year	7,700	6,417
Taxes from previous years	-86	-32
Total	**7,615**	**6,385**

8. NON-CURRENT ASSETS AND OTHER LONG-TERM INVESTMENTS

Intangible assets 2019

EUR thousand	Intangible rights	Other intangible assets	Advance payments and intangible assets in progress	Total
Acquisition cost Jan 1, 2019	29,535	3,376	248	33,158
Increases	245	10,050	99	10,393
Transferred in merger	270	3		272
Decreases	-390			-390
Transfers between items	97		-78	19
Acquisition cost Dec 31, 2019	**29,756**	**13,428**	**269**	**43,453**
Accumulated amortization and write-downs Jan 1, 2019	27,887	135		28,023
Accumulated amortization of decreases and transfers	-390			-390
Amortization and write-downs for the financial year	688	1,099		1,787
Accumulated amortization and write-downs Dec 31, 2019	**28,185**	**1,234**		**29,419**
Carrying value Dec 31, 2019	**1,571**	**12,194**	**269**	**14,034**

Intangible assets 2018

EUR thousand	Intangible rights	Other intangible assets	Advance payments and intangible assets in progress	Total
Acquisition cost Jan 1, 2018	33,285	134		33,418
Increases	338	3,242	102	3,682
Decreases	-4,287			-4,287
Transfers between items	199		146	345
Acquisition cost Dec 31, 2018	**29,535**	**3,376**	**248**	**33,158**
Accumulated amortization and write-downs Jan 1, 2018	31,452	0		31,452
Accumulated amortization of decreases and transfers	-4,287			-4,287
Amortization and write-downs for the financial year	722	135		857
Accumulated amortization and write-downs Dec 31, 2018	**27,887**	**135**		**28,023**
Carrying value Dec 31, 2018	**1,648**	**3,241**	**248**	**5,136**

Property, plant and equipment 2019

EUR thousand	Land and waters	Buildings	Machinery and equipment	Other tangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2019	2,820	49,309	55,464	69	5,846	113,509
Increases		122	3,654		13,064	16,840
Transferred in merger			279	5		284
Decreases		-0	-1,513			-1,513
Transfers between items		66	1,778		-2,093	-249
Acquisition cost Dec 31, 2019	**2,820**	**49,497**	**59,663**	**74**	**16,816**	**128,871**
Accumulated depreciation and write-downs Jan 1, 2019		33,517	42,881			76,398
Accumulated depreciation of decreases and transfers		0	-1,505			-1,506
Depreciation for the financial year		1,973	3,946			5,919
Write-downs		0	59			59
Accumulated depreciation and write-downs Dec 31, 2019		**35,489**	**45,381**			**80,870**
Revaluation	84	5,618				5,702
Carrying value Dec 31, 2019	**2,905**	**19,626**	**14,282**	**74**	**16,816**	**53,703**

Property, plant and equipment 2018

EUR thousand	Land and waters	Buildings	Machinery and equipment	Other tangible assets	Advance payments and construction in progress	Total
Acquisition cost Jan 1, 2018	1,193	48,520	53,536	69	3,686	107,004
Increases	1,627	107	3,045		5,899	10,678
Decreases			-3,815		-14	-3,829
Transfers between items		681	2,699		-3,725	-345
Acquisition cost Dec 31, 2018	**2,820**	**49,309**	**55,464**	**69**	**5,846**	**113,509**
Accumulated depreciation and write-downs Jan 1, 2018		31,581	43,015			74,596
Accumulated depreciation of decreases and transfers			-3,817			-3,817
Depreciation for the financial year		1,936	3,561			5,496
Write-downs			123			123
Accumulated depreciation and write-downs Dec 31, 2018		**33,517**	**42,881**			**76,398**
Revaluation	84	5,618				5,702
Carrying value Dec 31, 2018	**2,905**	**21,410**	**12,584**	**69**	**5,846**	**42,814**

On December 31, 2019, the carrying amount of machinery and equipment used in production was EUR 9.4 (8.9) million.

Investments 2019

EUR thousand	Holdings in group undertakings	Other shares and holdings	Total
Acquisition cost Jan 1, 2019	89,333	100	89,433
Increases	7,112		7,112
Transferred in merger	125	12	137
Decreases	-15,240		-15,240
Carrying value Dec 31, 2019	**81,330**	**112**	**81,442**

In the financial year 2019, additions include acquisition costs of the shares of Vaisala Digital Oy. The decrease relates to K-Patents Oy's and Janesko Oy's merger into the parent company on August 31, 2019.

In the financial year 2018, additions include acquisition costs of the shares of Leosphere SAS, K-Patents Oy and Janesko Oy. The decrease relates to Vionice Oy's merger into the parent company on September 28, 2018.

Investments 2018

EUR thousand	Holdings in group undertakings	Other shares and holdings	Total
Acquisition cost Jan 1, 2018	22,668	100	22,768
Increases	70,364		70,364
Decreases	-3,699		-3,699
Carrying value Dec 31, 2018	**89,333**	**100**	**89,433**

9. OTHER RECEIVABLES

EUR thousand	2019	2018
Advances paid	554	132
Value added tax receivables	2,070	2,588
Other	385	58
Total	**3,008**	**2,778**

10. DEFERRED ASSETS

EUR thousand	2019	2018
Tax receivables	507	531
Deferred revenue	15,451	11,089
Derivative financial contracts	280	29
Deferred interests	159	2.287
Other deferred assets	3,208	2,848
Total	**19,606**	**16,784**

Derivative financial contracts

EUR million	2019	2018
Nominal value of derivative financial contracts made to hedge against exchange rate risk		
Foreign exchange forwards	33.8	26.9
Nominal value, total	**33.8**	**26.9**

Nominal value of derivative financial contracts in currencies	2019		2018	
	Currency million	EUR million	Currency million	EUR million
USD	23.5	20.7	26.0	21.6
AUD	-	-	1.2	0.7
CNH	19.0	2.4	20.0	2.5
GBP	1.3	1.5	-	-
JPY	350.0	2.9	270.0	2.1
SEK	43.0	4.0	-	-
SGD	3.5	2.2	-	-
Total		**33.8**		**26.9**

Maturity of derivative financial contracts

EUR million	2019	2018
Less than 90 days	8.2	12.1
Over 90 days and less than 120 days	5.3	2.9
Over 120 days and less than 180 days	8.5	8.2
Over 180 days and less than 360 days	11.8	3.8
Total	**33.8**	**26.9**

Fair value of derivative financial contracts made to hedge against exchange rate risk

EUR million	2019	2018
Foreign exchange forwards	-0.1	-0.9

11. DEFERRED TAX ASSETS AND LIABILITIES

Deferred tax assets

EUR thousand	2019	2018
Deferred depreciation and amortization	258	223
Share-based payments	1,255	1,052
Provisions	324	366
Bad debt provision	-	69
Total	**1,966**	**1,710**

Deferred tax assets and liabilities have not been recognized in the parent company's balance sheet. Deferred tax liabilities arising from revaluation have not been taken into account. If realized, the tax effect of revaluation would be EUR 1.1 million at the current tax rate of 20%. Other deferred tax liabilities were not material.

12. PROVISIONS

Non-current provisions

EUR thousand	2019	2018
Provisions Jan 1	97	97
Provisions Dec 31	**97**	**97**

Current provisions

EUR thousand	2019	2018
Provisions Jan 1	1,734	852
Increases	832	900
Decreases	-835	-18
Provisions Dec 31	**1,731**	**1,734**

The provisions in the financial years 2019 and 2018 include warranty provision, loss-making project provisions and other contractual provisions.

13. SHAREHOLDERS' EQUITY

The parent company's shares are divided into series K shares and series A shares. The Annual General Meeting held on April 10, 2018 resolved to issue new shares to the shareholders without payment in proportion to their holdings so that one new share was issued for each share (split). Vaisala Corporation's Board of Directors decided in its meeting on April 24, 2019, that 27,264 series K shares will be converted to series A shares. This conversion was registered into the Trade Register on May 27, 2019. Consequently, Vaisala Corporation has 36,436,728 shares, of which 6,751,398 are series K shares and 29,685,330 are series A shares. The shares do not have nominal value. The series K shares and A shares are differentiated by the fact that each series K share entitles its owner to 20 votes at a General Meeting of Shareholders while each series A share entitles its owner to 1 vote. The shares have the same rights to dividend. Series K shares can be converted to series A shares according to specific rules stated in the Articles of Association.

On December 31, 2019 and 2018, the fully paid and registered share capital of Vaisala Corporation amounted to EUR 7,660,807.86. The Annual General Meeting held on April 10, 2018 resolved to delete stipulations in Articles of Association on minimum and maximum share capital.

Shareholders' equity

EUR thousand	2019	2018
Share capital Jan 1	7,661	7,661
Share capital Dec 31	**7,661**	**7,661**
Fund of invested non-restricted equity Jan 1	415	297
Gain on transfer of treasury shares	7	118
Fund of invested non-restricted equity Dec 31	**422**	**415**
Retained earnings Jan 1	159,142	166,929
Effect of change in accounting principles	-	-40
Dividend paid	-20,810	-37,580
Distribution of treasury shares	1,082	1,093
Loss on transfer of treasury shares	-201	-
Retained earnings Dec 31	**139,213**	**130,403**
Result for the financial year	30,885	28,739
Total equity	**178,182**	**167,218**

Distributable funds

EUR thousand	2019	2018
Retained earnings	139,213	130,403
Result for the financial year	30,885	28,739
Fund of invested non-restricted equity	422	415
Total	**170,521**	**159,557**

For the financial year 2018 a dividend of EUR 0.58 per share was paid, a total of EUR 20.8 million.

14. NON-CURRENT LIABILITIES

On December 31, 2019, the parent company had non-current non-interest-bearing liabilities in total of EUR 3.7 (4.4) million. Liabilities consist of contingent considerations related to acquisition of subsidiaries, and they will mature in 2021-2022. During the financial year 2019, non-current liabilities related to acquisition of subsidiaries in total of EUR 0.1 million were reversed and recognized in other operating income. At the end of the financial year, the parent company had no non-current liabilities that will mature after five years.

15. LOANS FROM FINANCIAL INSTITUTIONS

On October 5, 2018, Vaisala signed a EUR 50 million unsecured revolving credit facility. The committed credit facility agreement matures in 5 years from the signing and it has no financial covenants. The facility will be used for working capital needs, for financing of acquisitions and for general corporate purposes. On December 31, 2019, the parent company had interest-bearing liabilities totaling to EUR 40.2 (40.2) million, of which EUR 40 million related to utilized revolving credit facility, which matures on April 14, 2020. At the end of the financial year, Vaisala had no loans that would mature after five years or a longer period of time.

16. ACCRUED EXPENSES AND DEFERRED INCOME

EUR thousand	2019	2018
Personnel expense accruals	26,884	20,024
Deferred revenue	14,762	18,509
Derivative financial contracts	360	955
Direct tax accruals	838	5
Other accrued expenses and deferred income	5,189	4,047
Total	**48,033**	**43,540**

Notes related to derivative financial contracts are presented in Note 10, Deferred assets.

17. RECEIVABLES AND LIABILITIES FROM OTHER COMPANIES IN VAISALA GROUP

EUR thousand	2019	2018
Reveivables		
Current loan receivables	22,445	26,256
Trade receivables	16,826	12,272
Other receivables	6	6
Prepaid expenses and accrued income	2,222	5,541
Total receivables	**41,499**	**44,075**
Liabilities		
Current loans	10,702	16,630
Trade payables	1,163	634
Other liabilities	1	1
Accrued expenses and deferred income	3,568	4,369
Total liabilities	**15,433**	**21,633**

18. CONTINGENT LIABILITIES AND PLEDGES GIVEN

Contingent liabilities and pledges gives

EUR thousand	2019	2018
For own debt or liability		
Bank guarantees issued for obligations	16,285	18,942
For group companies		
Guarantees	67	358
Leasing commitments		
Payable during the following financial year	197	180
Payable later	97	130
Total leasing liabilities	**294**	**309**
Total contingent liabilities and pledges given	**16,646**	**19,609**

Investment commitments

On December 31, 2019, the parent company had commitments related to Vantaa building project in total of EUR 3 (1) million. In addition, the parent company had other commitments related to intangible and tangible assets for EUR 2 (3) million.

Purchase commitments

On December 31, 2019, the parent company had purchase commitments totaling to EUR 10 (10) million.

19. AUDITOR'S FEES

EUR thousand	2019	2018
Audit	357	290
Statements	16	1
Tax advice	11	10
Other fees	39	141
Total	**422**	**442**

Signing of the Board of Directors' report and financial statements

Vantaa, February 12, 2020

Petri Castrén	Petra Lundström	Jukka Rinnevaara
Kaarina Ståhlberg	Tuomas Syrjänen	Pertti Torstila
Raimo Voipio Chairman of the Board	Ville Voipio Vice Chairman of the Board	Kjell Forsén President and CEO

Auditor’s report

(Translation of the Finnish original)

To the Annual General Meeting of Vaisala Oyj

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of Vaisala Oyj (business identity code 0124416-2) for the year ended 31 December 2019. The financial statements comprise the consolidated income statement, statement of comprehensive income, balance sheet, statement of cash flows, statement of changes in equity and notes, including a summary of significant accounting policies, as well as the parent company’s income statement, balance sheet, statement of cash flows and notes.

In our opinion

- the consolidated financial statements give a true and fair view of the group’s financial position, financial performance and cash flows in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU.
- the financial statements give a true and fair view of the parent company’s financial performance and financial position in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements.

Our opinion is consistent with the additional report submitted to the Audit Committee.

Basis for Opinion

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the Auditor’s Responsibilities for the Audit of the Financial Statements section of our report.

We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

In our best knowledge and understanding, the non-audit services that we have provided to the parent company and group companies are in compliance with laws and regulations applicable in Finland regarding these services, and we have not provided any prohibited non-audit services referred to in Article 5(1) of regulation (EU) 537/2014. The non-audit services that we have provided have been disclosed in note 30 to the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

We have also addressed the risk of management override of internal controls. This includes consideration of whether there was evidence of management bias that represented a risk of material misstatement due to fraud.

Key audit matter	How our audit addressed the key audit matter
Revenue recognition of product and project sales Refer to Notes 1,2 and 3 • Vaisala group net sales EUR 403,6 million consists of product, service and project sales. Product and project sales account for EUR 351,7 million of the net sales. • Revenue from the product sales is recognized at a point in time when the control is transferred to the customer according to the delivery terms used. Large number of sales contracts and different nature of terms of contracts increase the risk of misstatement in timing of revenue recognition. • Revenue for projects is recognized over time using percentage of completion method. Progress is measured by cost-to-cost method, comparing incurred costs and forecasted costs. • Revenue recognition over time under IFRS 15 requires management judgment related to cost throughout the project delivery. • This matter is a significant risk of material misstatement referred to in EU Regulation No 537/241, point (c) of Article 10(2).	• Our audit procedures included an assessment of revenue recognition process and assessment of controls relating to timing of revenue recognition. • We have reviewed Vaisala´s accounting manual and principles regarding different types of revenue contracts to evaluate, whether they are in line with IFRS 15 accounting principles. • We have audited the accurate timing and the amount of revenue arising from the sales of products and from the projects. • As a part of our audit procedures covering the revenue recognition principles of product sales, we have compared the sales transactions recorded in accounting to the related sales agreements and delivery documentation. • Regarding to the projects we have compared the project calculations to the existing agreements and to the possible amendments to the agreements. • We have audited the project estimates prepared and reviewed by the management as well as the realization of these estimates and assessed the level of completion based on the documentation received. • We have evaluated the appropriateness of the presentation in the financial statements.
Inventory valuation Refer to Note 13 • Vaisala consolidated balance sheet includes inventory amounting to EUR 39,6 million. Inventory valuation is associated with the excess and obsolescence risk. • As disclosed in the note 13 Vaisala has recognized write-offs and excess and obsolescence allowances for slow moving and obsolete inventory. • Estimation and judgment are required in determining the value of the allowance for excess and obsolete inventory. Management analyses estimates of demand and determines allowance for excess and obsolete inventory. • This matter is a significant risk of material misstatement referred to in EU Regulation No 537/241, point (c) of Article 10(2).	• Our audit procedures included an assessment of Vaisala inventory process and assessment of controls relating inventory valuation. • We have assessed the valuation principles used by the group and analyzed the slow moving inventory to be able to assure the accuracy of obsolesce provision accounting. • We have audited inventory valuation by comparing the accounting values to the acquisition and manufacturing costs as well as to the net realizable values to evaluate that value of inventory do not exceed the lower of the acquisition and manufacturing costs or net realizable value. • We have assessed management judgements and estimates regarding the future life cycle and demand of products. • We have evaluated the appropriateness of the presentation in the financial statements.

Responsibilities of the Board of Directors and Chief Executive Officer for the Financial Statements

The Board of Directors and Chief Executive Officer are responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU, and of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and Chief Executive Officer are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and Chief Executive Officer are responsible for assessing the parent company's and the group's ability to continue as going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or cease operations, or there is no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of Financial Statements

Our objectives are to obtain reasonable assurance on whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and Chief Executive Officer's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the parent company or the group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Other Reporting Requirements

Information on our audit engagement

We were first appointed as auditors by the Annual General Meeting on March 26, 2014 and our appointment represents a total period of uninterrupted engagement of 6 years.

Other Information

The Board of Directors and Chief Executive Officer are responsible for the other information. The other information comprises the Board of Directors' Report and the information included in the Annual Report, but does not include the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. With respect to the Board of Directors' Report, our responsibility also includes considering whether the Board of Directors' Report has been prepared in accordance with the applicable laws and regulations.

In our opinion, the information in the Board of Directors' Report is consistent with the information in the financial statements and the Board of Directors' Report has been prepared in accordance with the applicable laws and regulations.

If, based on the work we have performed on the other information that we obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Other opinions

We support that the financial statements should be adopted. The proposal by the Board of Directors regarding the treatment of distributable funds is in compliance with the Limited Liability Companies Act. We support that the Board of Directors of the parent company and the Chief Executive Officer should be discharged from liability for the financial period audited by us.

Vantaa, February 12, 2020

Deloitte Oy
Audit Firm

Merja Itäniemi
Authorised Public Accountant (KHT)

Contacts

Kaarina Muurinen
Chief Financial Officer
kaarina.muurinen@vaisala.com

Paula Liimatta
Business Controller and Head of Investor Relations
paula.liimatta@vaisala.com

Nina Eklund
Director, Corporate Communications and Brand
nina.eklund@vaisala.com

Marjo Hietapuro
Sustainability Manager
marjo.hietapuro@vaisala.com

Vaisala Corporation
P.O. Box 26
FI-00421 Helsinki, Finland

vaisala.com

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Vaisala Corporation
P.O. Box 26
FI-00421 Helsinki, Finland
B211913EN