VAISALA

Business Review 2024

Instruments and intelligence for climate action

At Vaisala, we give the world the means to measure what matters. We are a global leader in measurement instruments and intelligence for climate action. We equip our customers with devices and data to improve resource efficiency, drive energy transition, and care for the safety and well-being of people and societies worldwide.

At Vaisala, everything starts with innovation. True innovation stems from diverse teams working together, challenging each other to find the best solutions. We foster a collaborative environment where our teams can develop groundbreaking, science-based innovations.

Our purpose is

Taking every measure for the planet.

With climate action and technology leadership at our core, we strive to amplify our positive impact on the challenges of both our customers and the planet, driving sustainable growth.

We invite you to explore our year 2024 and join us on the journey of enabling data-driven climate action our planet needs.

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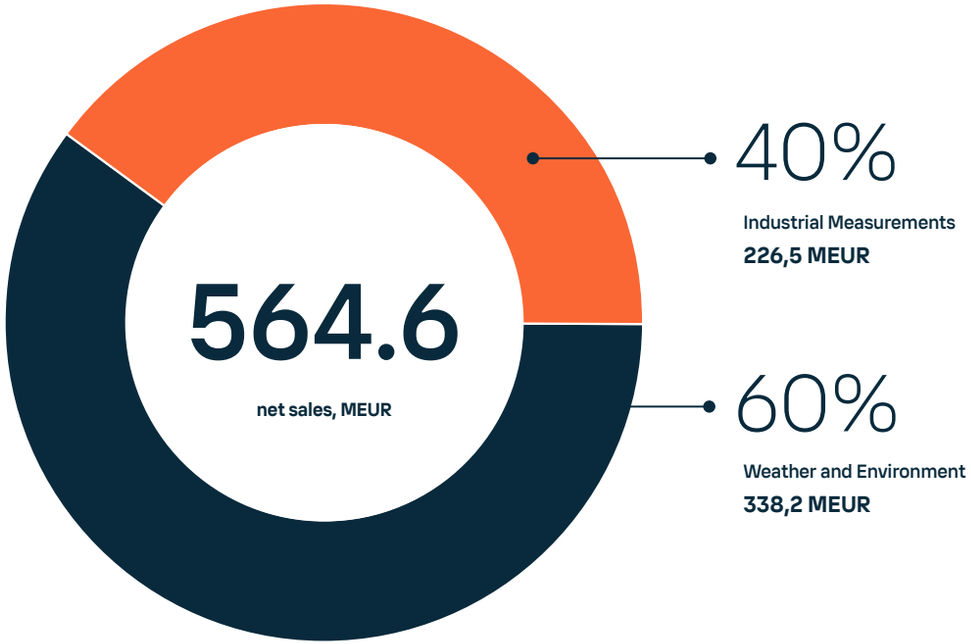
INFORMATION ABOUT VAISALA'S ANNUAL REPORT 2024

Vaisala's Annual Report 2024 consists of two separate reports: ***Business Review*** as well as ***Governance and Financial Review***.

Both reports are available in English and in Finnish. They are downloadable on our Annual Report website at **vaisala.com/annualreport**. In this Annual Report, we apply integrated reporting elements.

Excellent fourth quarter as market gradually improved



Total recordable injury frequency (TRIF)

1.82

injuries per million working hours

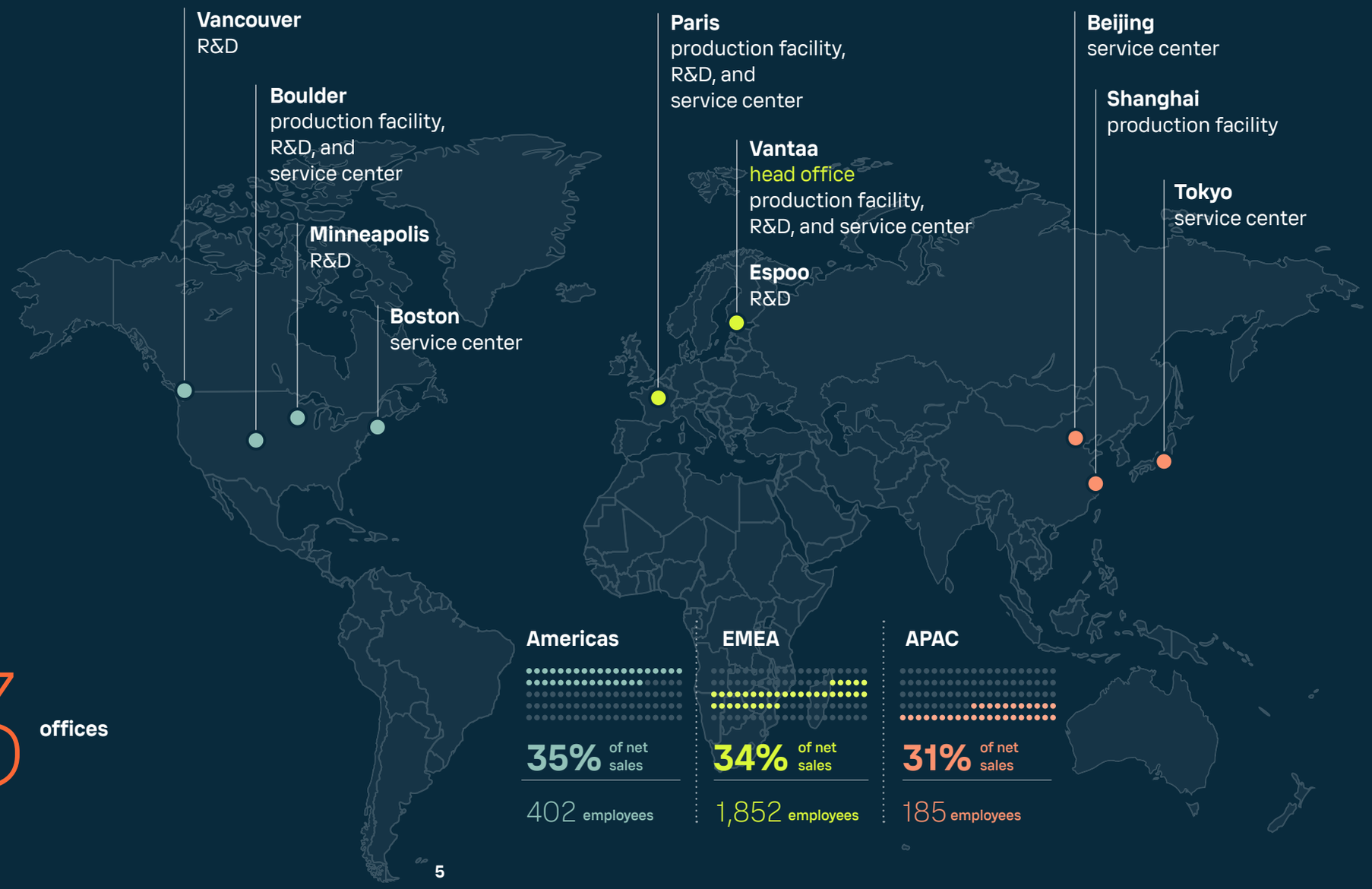
Employees working on ISO 14001 and 45001 certified sites

86%

Key figures for 2024

82.9 operating result (EBIT), MEUR	**215.0** order book on December 31, 2024, MEUR	R&D **12%** of net sales	**100%** renewable electricity	**2,400+** employees	**4.0/5** employee engagement rate

Operating all over the world



Americas
35% of net sales
402 employees

EMEA
34% of net sales
1,852 employees

APAC
31% of net sales
185 employees

18 countries

23 offices

Leading the way in climate action and innovation

In 2024, the world continued to face complex challenges, with increasing geopolitical tensions and uncertainty in the business environment. Regardless of the market challenges, we showed resilience with good growth in our Weather and Environment business and a strong position in Industrial Measurements.

It is our responsibility to be a technology leader

Alongside the critical concerns globally, the fight against climate change remains one of the most pressing challenges requiring urgent attention. With 2024 marking the warmest year on record, our renewed purpose of *Taking every measure for the planet* is more important than ever.

At Vaisala, we see it as our responsibility towards our stakeholders – shareholders, customers, colleagues, and the planet alike – to be a technology leader enabling climate action. Vaisala is dedicated to providing measurement instruments and insights for understanding, mitigating, and

Chair of the Board Ville Voipio and President and CEO Kai Öistämö

adapting to climate change, turning data into decisions, and decisions into meaningful action for our planet.

In 2024, our global team continued executing our strategic priorities. In Weather and Environment, we built upon our global leadership in weather systems through important customer deals to deliver weather radars to the State Meteorological Agency of Spain and a project to modernize 14 airports in Indonesia. We acquired Speedwell Climate and Maxar's WeatherDesk to build Vaisala Xweather's position as a weather intelligence partner for insurance and finance customers, as well as Nevis Technology to expand our offering in the offshore wind market. In Industrial Measurements, we launched several new products and were able to resiliently hold our position globally despite the challenging market.

In 2024, we continued our focus on research and development as a key part of our technology leadership, with R&D investments amounting to 12% of net sales. We shifted our R&D focus towards new technologies and products. Moreover, we continuously develop our operations, embracing digitalization and AI as tools to simplify and scale for added customer experience, quality, and profitability. In 2024, we also started building a new automated logistics center in Vantaa, Finland. With state-of-the-art automation technology, the facility will centralize all our various logistics functions currently dispersed across our Vantaa campus into one centralized location in Finland, ensuring fast deliveries to customers around the world.

None of this work would be possible without our professional and dedicated global team of diverse perspectives and backgrounds. To ensure our position as a preferred employer, we actively track employee engagement. Our annual Voice of People survey shows continuous strong results across indices, with 84% (2023: 85%) of our employees being proud to work for Vaisala and an Employee Net Promoter Score of 28 (29). We are grateful for the engagement and dedication and are committed to improving our employee development and well-being further.

> With 2024 marking the warmest year on record, our renewed purpose of *Taking every measure for the planet* is more important than ever.

Towards the end of the year, we also announced changes in the Vaisala Leadership Team. As of January 2025, Samuli Hänninen joined the Vaisala Leadership Team and continues to lead the Xweather business, Anne Jalkala started leading the Weather, Energy and Environment business and Jarkko Sairanen the Industrial Measurements business area. Lorenzo Gulli joined the company to lead strategy and M&A, and Sampsa Lahtinen retired after a successful decade at Vaisala, more than tripling the Industrial Measurements business in size. Our warmest thank you to Sampsa! We look forward to working together with the new Leadership Team.

Commitment across the entire value chain

Our commitment to the planet covers the sustainability of our solutions, operations, and the entire value chain worldwide. We have integrated the United Nation's Sustainable Development Goals (SDGs) both into our strategic planning and the development of new products for climate action. We continue our commitment to the UN Global Compact initiative and its 10 principles regarding human rights, labor standards, environment, and anti-corruption.

In terms of our carbon footprint, our main opportunity is to decrease indirect scope 3 emissions, which represent over 99% of Vaisala's total emissions. In 2023, we set science-based targets to reduce greenhouse gas emissions by 2030. The targets were approved by the Science Based Targets initiative (SBTi) in April 2024. During the year, we have started several actions to further reduce our emissions, such as introducing developments in R&D by making carbon footprint evaluation part of every new product design and shifting from air to road transport in European distribution. We also received a gold medal by EcoVadis, reflecting our commitment to sustainability throughout our supply chain.

Among the best in the world for sustainable growth

In 2024, one of our highlights was the recognition by TIME Magazine as one of the world's best companies for sustainable growth. Based on revenue growth, financial stability, and taking care of the environment, Vaisala took the 38th place in the first edition of World's Best Companies – Sustainable Growth ranking by TIME Magazine and Statista. For us, caring for the climate and driving sustainable growth go hand in hand, and it is a true honor to be recognized by TIME for precisely this combination.

Taking every measure – together

Whereas the TIME recognition focused on financial metrics and environmental footprint, we recognize that our true impact on the planet comes through the work with and for our customers. We are grateful for the great collaboration with our stakeholders, from customers and shareholders to partners and colleagues, and look forward to continuing our work for the planet in the years and decades to come.

Ville Voipio
Chair of the Board

Kai Öistämö
President and CEO

Highlights 2024

In February, we revealed our ***new brand identity and purpose Taking every measure for the planet***. With our new purpose, we aim to take a more active role in enabling impactful climate action through reliable measurement instruments and intelligence.

We were selected to deliver ***18 weather radars*** to the State Meteorological Agency of Spain, our largest-ever order.

We announced a new subscription-based SaaS application, ***viewLinc Cloud***, to help life science companies save resources by moving to secure cloud-based monitoring.

We were selected to provide a ***project of airport weather systems and equipment*** strengthening airport safety and weather resiliency in Indonesia.

VAISALA Xweather

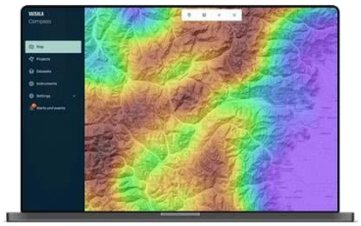
We introduced ***Xweather Insight***, a weather confidence platform for optimizing daily business operations and enhancing preparedness and resilience against severe weather.

We launched a ***high-precision air quality sensor AQT560*** to combat urban air pollution.

We were delighted to welcome ***Girish Agarwal***, our new Chief Digital & Information Officer, to the Vaisala Leadership Team as of June 2024.

We announced that Vaisala Xweather delivers worldwide real-time air quality data to drivers of ***BMW Group cars***.

We expanded our subscription-based business by ***acquiring Speedwell Climate Ltd***, a leader in climate and environmental risk transfer.



We introduced ***Vaisala Compass***, a weather-based decision-making platform for the renewable energy industry to mitigate challenges related to weather fluctuation and uncertainty.

In October, we announced ***changes to our Leadership Team***. Jarkko Sairanen was appointed to lead the Industrial Measurements business area, and the business leadership for Vaisala's Weather and Environment business area was divided between Anne Jalkala and Samuli Hänninen as of January 2025.

We launched ***a new measurement product, MGP241***, that measures CO_2 and humidity and is specifically designed to bring transparency to carbon capture, storage, and utilization projects.

We launched a new solution for industrial indoor and process measurements, ***Vaisala Echo***, which connects our measurement devices and monitoring software to create an intelligent measurement infrastructure.

To expand our leadership in AI-led weather forecasting and enhance our offering to the insurance, finance, and energy segments, we acquired US-based Maxar Intelligence's ***WeatherDesk*** business related assets.

We launched ***Vaisala WM80***, a new robust ultrasonic wind sensor for optimized wind turbine and maritime performance.

In December, we were delighted to announce our ***new Executive Vice President, Strategy and M&A, Lorenzo Gulli***, who joined the Vaisala Leadership Team as of January 2025.

Read more about the events of 2024 at vaisala.com.

Our business

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PRODUCT AND TECHNOLOGY LEADERSHIP

To develop our technology leadership, we invest strongly in our growth markets that range from sensors to digital solutions.

Global megatrends drive our innovation

Global megatrends provide a source of innovation and opportunities for growth. We develop solutions to address the pressing societal, environmental, and industrial needs and challenges posed by these megatrends together with our customers. We are committed to creating innovative solutions that empower people and communities to take data-driven climate action.

Climate change – more than a megatrend

Climate change is humanity's most pressing challenge. It is a key driver of extreme weather, leading to increased temperatures, rising sea levels, and significant health concerns. It also intensifies challenges for already vulnerable communities. Reliable measurement instruments and intelligence play a vital role in understanding, mitigating, and adapting to climate risks. With 2024 marking the warmest year on record, our renewed purpose of Taking every measure for the planet is more important than ever.

Climate change connects to other transformational megatrends which affect nations, businesses, societies, and individuals worldwide: the shift towards sustainable energy and decarbonization, the rise of artificial intelligence and the need for process optimization, and the focus on health and well-being. Together with our customers, we are dedicated to finding solutions that tackle the complex demands of these widespread changes.

Modern weather intelligence improves storm preparedness in Italy

ARPA Lombardia, the environmental protection agency for the Lombardia region in northern Italy, has enhanced its weather data collection with two innovative Vaisala solid-state X-band Weather Radar WRS400s. This upgrade has improved storm awareness and damage mitigation in the densely populated Milan district, which has faced increasing severe weather events like heavy rain and hail. The new radars have enabled ARPA Lombardia to provide accurate storm warnings and better precipitation identification, including hail probability.

Energy transition and decarbonization

The global energy shift from fossil fuels to renewable sources like wind, solar, biogas, and hydrogen requires careful site selection, real-time forecasting capabilities, and continuous monitoring to ensure stable production. Our instruments and intelligence help customers monitor their power plants and infrastructure in real time and enhance the output of these variable sources.

Decarbonization, the reduction of carbon emissions for a low-carbon economy, is achieved, for instance, through electrification, energy efficiency, and carbon capture and storage. We aid in these areas by providing instruments and systems for energy efficiency and electrification. Our instruments are used, for example, to monitor the dew point in the lithium-ion battery manufacturing process, improving quality, sustainability, and cost-efficiency. They are also used in carbon capture applications to measure the inlet and outlet CO_2 for process and efficiency optimization, as well as in carbon utilization applications such as measuring the CO_2 concentration to optimize the mineralization of carbon dioxide into concrete.

AI and process optimization

Artificial intelligence and process optimization are reshaping industries, enabling smarter decisions, automating tasks, and contributing to limiting climate change.

Reliable and accurate data is essential for AI and process optimization. Our instruments provide precise data even in the most demanding environments. They are used for diverse applications, such as collecting data points from various locations for data center environmental monitoring, weather forecasting, and winter maintenance optimization. Vaisala Xweather's customers use weather and environmental data to optimize their processes.

The growing infrastructure requirements for AI are driving the demand for computational power and data storage and thus the growth of semiconductor and data center markets. Our instruments enable high-quality electronic manufacturing and data center efficiency. For instance, semiconductor manufacturers use Vaisala's moisture, temperature, and other monitoring instruments to achieve the required quality standards and optimal production output. Data center operators use our temperature and humidity measurement instruments for energy optimization.

Health and well-being

Vaisala's solutions play a significant role in people's growing health consciousness, stricter pharmaceutical safety requirements, and climate change impacts. Our solutions monitor the development, manufacturing, and supply chains of pharmaceutical drugs and vaccines, as well as the bio-decontamination of spaces and equipment. We also provide accurate and reliable condition-monitoring solutions that are crucial in labs and hospitals, particularly in cold storage and incubators.

Our technologies also support people's health and well-being by monitoring indoor air quality in public buildings and offices. Outdoors, our ambient air quality systems monitor urban environments and provide data for better decision-making.

As extreme weather events increase due to climate change, reliable measurements and observations become critical because people face heightened risks to their health and well-being. Our solutions enable societies and institutions to build capabilities to understand, mitigate, and resiliently adapt to changing environments with environmental observations, forecasting, and early warning systems.

CASE

Accurate measurements deliver solid results in concrete carbon curing

As our climate continues to heat up, the need for technologies that can efficiently utilize and store carbon dioxide becomes critical. Carbonaide offers the most effective and robust carbonization technology for pre-cast concrete manufacturers to reduce the product's cement consumption and decrease its carbon footprint even further by mineralizing CO_2 into concrete. Their expertise is in transforming concrete from a large emission source into a carbon sink.

Refining our purpose and strategic priorities

Vaisala is at the intersection of several global megatrends. This gives us an excellent position in the market, drives our strategy work, and offers opportunities for sustainable growth and innovation.

Our strategy focuses on driving sustainable growth and global leadership in measurement instruments and intelligence for climate action. Through our products and technologies, we enable our customers to optimize processes, drive the energy transition, and care for the safety and well-being of people and societies worldwide.

Our purpose *Taking every measure for the planet* emphasizes our active role in enabling data-driven climate action. This communicates how our measurement technologies provide customers with relevant data to improve their operations and create a positive climate impact, and to show our full commitment to sustainability.

We build our strategy on four main success drivers

At the center of our strategy are four success drivers: deep customer understanding and application know-how; product and technology leadership from sensors to digital solutions; excellence in supply chain; and purpose-driven culture and talent.

Customer understanding and application know-how

Our measurement solutions are based on a thorough understanding of our customers' needs in diverse applications from meteorology and renewable energy to industrial processes and life science. We continuously collaborate with our customers and partners to meet their measurement requirements and enable climate action.

Product and technology leadership

To develop our technology leadership position, we invest strongly in our growth markets that range from sensors to digital solutions. We make significant investments into R&D. In 2024, Vaisala's R&D investments were 12% of net sales. We continuously develop our innovation process and practices.

Excellence in supply chain

Our offering includes hundreds of product families and thousands of products, and we serve customers in over 150 countries. As different applications require different products and solutions, our products are almost always made to order. This requires excellence and agility throughout our supply chain and operations. We continuously develop scalable ways of working and adopt new technologies like automated and data-driven smart factory.

Purpose-driven culture and talent

Our motivated and talented employees are a key factor behind our success, and we continue developing our culture. We aim to enhance the well-being and personal growth of our people and build a diverse and inclusive community to support our business and our positive impact on the planet. We encourage pioneering, curious, and committed cultural behaviors. We have established employee resource groups to promote empowerment and inclusivity at work.

Strategic priorities to drive scalable and sustainable growth

To complement the success drivers of our current strategy, we have identified four strategic priorities for execution to both sustain our market leadership and expand into new markets with growth opportunities.

We continue our growth in industrial measurements with breakthrough technologies. We grow by expanding in energy transition as well as building recurring revenue in data business. We drive profitability as a global leader in weather systems. Also, we simplify and scale our operations for greater impact and efficiency.

Instruments and intelligence for climate action

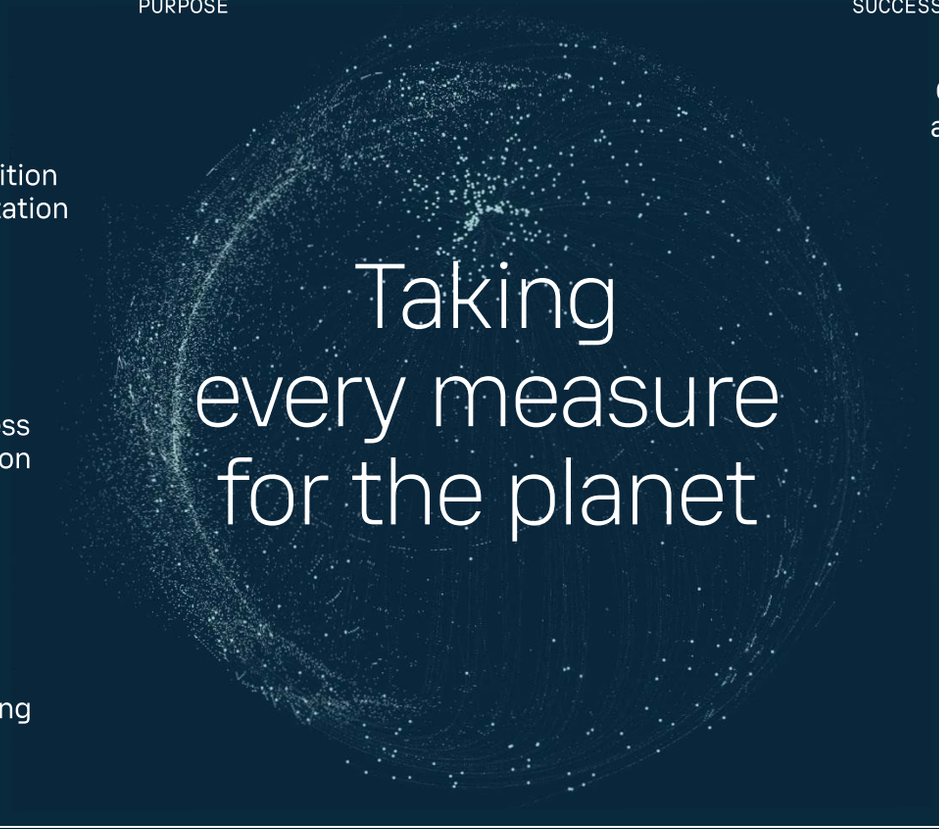
MEGATRENDS

Energy transition & decarbonization

AI & process optimization

Health & well-being

PURPOSE



Taking every measure for the planet

SUCCESS DRIVERS

- Customer understanding and application know-how
- Product and technology leadership
- Excellence in supply chain
- Purpose-driven culture and talent

STRATEGIC PRIORITIES

- Grow in industrial measurements with breakthrough technologies
- Expand in energy transition and build recurring revenue in data
- Drive profitability as global leader in weather systems
- Simplify and scale

VALUES

Customer focus · Innovation & renewal · Strong together · Integrity

Business model at the core of leading technologies

Partners

- Key customers and end-users
- Meteorological institutes and agencies
- Distributors and integrators
- R&D partners
- Universities and research organizations
- Manufacturing partners
- Suppliers and subcontractors

Functions

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

Delivery models

- Product shipments
- Projects, including installations, testing, and training
- Digital solutions (DaaS/SaaS)
- Services, i.e. calibration, maintenance

Products and technologies

- Wide and leading product portfolio based on proprietary technologies and application expertise
- Measurement sensors and instruments, systems, software, digital solutions, and services for measuring weather, environmental, and industrial conditions and processes
- Thin-film sensors, optical weather and process sensors, and radio frequency technologies
- About 300 product families include approximately 10,500 products.

VAISALA

Value propositions

World-leading measurement instruments and intelligence for decision-making, safety, and efficiency

Global technology and market leader in weather, environmental, and high-end industrial measurements

Excellence in supply chain

Solid dividend payer

Resources

- Product and technology leadership
- Application know-how
- Engaged and talented employees
- Vaisala Production System
- In-house cleanroom
- Strong financial position

Sales channels

Direct global sales

- Sales employees in approx. 20 countries
- E-commerce

Distribution network

- Distributors and agents in over 100 countries
- Retailers

Customers in over 150 countries

Customer segments

Wide customer base covering public and private sector customers

Industrial Measurements

Industrial
Life science
Power

Weather and Environment

Meteorology
Aviation
Roads
Renewable energy

Cost structure

- R&D investment 12% of net sales
- Personnel costs 225.3 MEUR
- Material costs 125.1 MEUR
- Asset-light business model
- Capital expenditure 19.1 MEUR

Revenue streams

Net sales 564.6 MEUR →

Products 70%
Projects 14%
Services 9%
Subscription sales 7%

→

Americas 35%
APAC 31%
EMEA 34%

→

EBIT 82.9 MEUR

Decarbonizing industries and the planet

In Industrial Measurements business area, we focus on product leadership and aim to grow with breakthrough technologies. Our instruments and solutions provide customers with reliable and accurate data that helps them optimize their processes profitably and decrease their environmental footprint, among others.

We serve a wide range of customers in various industries. We maintain our strong position in high-end humidity and carbon dioxide measurement markets. We expect the growth to continue in the life science and power markets.

The growth of Industrial Measurements' business is based on continuous investments in research and development, in our core technologies for humidity and carbon dioxide measurements as well as other key technologies to enable new application areas. We are expanding our product portfolio to include cloud-based measurement solutions, accelerating industrial decarbonization, focusing on strengthening customer experience and service business, as well as expanding geographically.

Global market size and growth

Market size
~1,700
MEUR

CAGR
5–10
% p.a.

We contribute to the global industrial decarbonization, energy transition, and resource efficiency with a wide array of applications that enable our customers to make a positive impact on the planet. For instance, our instruments are used in data centers, battery manufacturing, life science, power transformers, and CCUS (carbon capture, utilization, and storage) as well as a variety of other industrial processes. Our accurate and reliable measurements are excellent tools for optimizing processes and minimizing energy consumption.

In 2024, we launched several significant products which strengthen our position as a leading measurement technology company. Launched in November, Vaisala Echo indoor measurement architecture seamlessly connects the hardware and software tools and enables cost-effective monitoring of industrial processes, especially for the small and medium-sized companies.

We also expanded our subscription and cloud-based offering for Continuous Monitoring System by launching viewLinc Cloud. It serves especially our life science customers by reducing the need for heavy local infrastructure and allowing for agile scalability.

Another major launch was the new MGP241 designed for the growing CCUS market. MGP241 is the first compact inline CO_2 monitoring and measurement tool available for CCUS. Shortly after its launch, it received the Product Development Makers Award from Aalto Design Factory.

Jarkko Sairanen, previous Executive Vice President, Weather and Environment, was appointed Executive Vice President, Industrial Measurements, as of January 1, 2025. After over a decade of successfully leading and significantly expanding the Industrial Measurements business, **Sampsa Lahtinen**, previous Executive Vice President, Industrial Measurements, retired after 2024.

"We contribute to the global industrial decarbonization, energy transition, and resource efficiency with an array of instruments and systems for multiple applications that enable our customers to make a positive impact on the planet. Due to the slow first half of 2024, the yearly growth was flat. However, we were able to utilize the initial recovery of the markets leading to record sales in the last quarter.

Sampsa Lahtinen
EVP, Industrial Measurements business area until December 31, 2024

Product categories

- **Industrial instruments:** The product area serves customers in various industries to ensure reliability and high quality, as well as to help them reduce carbon emissions. Industrial instruments are used, for example, in data centers, battery manufacturing, life science applications, electronics and semiconductor industries as well as in biogas and CCUS applications. Key products include various instruments for industrial humidity and carbon dioxide measurements as well as specialized products for vaporized hydrogen peroxide and methane measurements.
- **Continuous monitoring systems:** The key markets are regulated manufacturing and production environments in the life science industry, such as laboratories, cleanrooms, and warehouses, as well as other demanding industrial applications where environmental monitoring is important. The products include data loggers for temperature, humidity, carbon dioxide, differential pressure, and other critical parameters, as well as monitoring software and cloud-based SaaS solutions for local and remote use.
- **Power:** The product area serves the energy sector by offering measurement solutions for the power industry. The key products are the Dissolved Gas Analyzer (DGA) developed for online monitoring of power transformers as well as moisture in oil instruments.
- **Liquid measurements:** The inline process refractometers measure concentration of different liquids in various industrial applications. Some of the key markets are the pulp and paper, food and beverage, chemical, semiconductor, and life science industries.

We help customers to improve

- environmental footprint
- product quality
- productivity
- energy efficiency
- maintenance activities
- regulatory compliance

We partner with

- end-users
- original equipment manufacturers
- integrators
- distribution network
- research and development partners
- manufacturing partners and suppliers

Our competitive advantages are

- technology leadership based on science and research combined with strong application expertise
- best customer experience
- fast and reliable delivery times
- global sales and services network

Expanding global weather leadership

Our reliable weather and environmental measurements help customers make data-driven decisions to ensure people's safety, protection of property, and efficient operations. Our customers range from energy, power, mining, and technology companies to meteorological institutes, airport operators, road authorities, and urban resilience providers.

We primarily focus on helping our customers understand, mitigate, and adapt to climate change. Be it renewable energy producers, meteorological institutes, cities, public authorities, or car manufacturers, we seek to provide intelligent solutions to our many customers who are at the forefront of climate action.

In Weather and Environment business area, we seek growth from expanding in energy transition and building recurring revenue in the weather and environmental data to support decision-making. In the more mature market of weather systems, such as meteorology and aviation, we aim to drive profitability as a global market leader.

In 2024, we continued developing our offering in the subscription-based data and software business. Vaisala

Global market size and growth

Market size
~2,400–3,000
MEUR

CAGR*
0–10
% p.a.

* CAGR for meteorology, aviation, and roads businesses 0–5% p.a., for renewable energy ~10% p.a.

Xweather introduced ***new data services for electric vehicle manufacturers***, helping them to estimate vehicle ranges better. We also launched ***Xweather Insight***, a weather confidence platform improving short-term forecast accuracy by up to 50 percent. Furthermore, ***we acquired Speedwell Climate***, a leader in climate and environmental risk transfer, which enables us to develop our offering for insurance and financial services sector regarding weather-related uncertainties. To expand our leadership in AI-led weather forecasting and enhance our offering to the commodity and energy trading markets, we acquired US-based Maxar Intelligence's ***WeatherDesk business*** related assets.

In our renewable energy business, we launched ***Vaisala Compass***, cloud-based software that optimizes the entire life cycle of wind and solar energy projects from the initial site assessment through operations. In the fall of 2024, we acquired ***Nevis Technology***, a UK-based company specializing in software, weather monitoring systems, and services. The acquisition allows us to offer new products to offshore platforms, particularly in the offshore wind market.

We continued to develop our hardware and introduced ***a new air quality measurement instrument AQT560*** which enables, for instance, cities, road authorities, and community leaders to protect public health and avoid pollution hot spots. In October, we unveiled our ***multi-GNSS support*** and industry-first message authentication to help secure radiosonde soundings against hybrid and cyberthreats. In December, we launched ***Vaisala WM80***, a new robust ultrasonic wind sensor for optimized wind turbine and maritime performance.

During 2024, we announced two new large system projects. In May, we were selected to deliver 18 dual-polarization C-band weather radars to the State Meteorological Agency of Spain. In August, we announced our largest ever aviation weather project strengthening airport safety and weather resiliency at 14 airports in Indonesia (not in the order book).

The business leadership for Vaisala's Weather and Environment business area was divided between **Anne Jalkala** and **Samuli Hänninen** as of January 1, 2025. Anne Jalkala, previous Chief Strategy and Sustainability Officer, was appointed to lead the Weather, Energy and Environment business. Samuli Hänninen continues to lead the Xweather business, and he joined the Vaisala Leadership Team as of January 2025. **Jarkko Sairanen**, who led the Weather and Environment business area until the end of 2024, was appointed Executive Vice President, Industrial Measurements, as of January 1, 2025

"In 2024, we continued to grow the Weather and Environment business as well as improve profitability. In addition to the solid organic growth, we expanded our future prospects through three acquisitions: Speedwell Climate, Nevis Technology, and Maxar Intelligence's WeatherDesk. With these acquisitions, we accelerated our play in energy transition and subscription-based data business further.

Jarkko Sairanen
EVP, Weather and Environment business area until December 31, 2024

Decision-making support solutions for

- transport
- lightning observations
- renewable energy
- B2B weather services
- industries
- automotive
- air quality
- platform companies
- insurance and financial sector operators

Product categories

- ceilometers and lidar-based vertical atmospheric profilers
- visibility and present weather sensors
- lightning sensors
- road and surface state sensors
- air quality sensors
- pressure, temperature, wind, and humidity sensors
- weather stations
- wind lidars
- weather radars
- radiosondes and sounding systems
- weather and environmental data and forecasts

Growth through expansion

- decision-making support solutions, IoT measurement instruments, as well as weather and environmental data and forecasts
- solutions for developers, operators, and traders in renewable energy
- large meteorological infrastructure development projects

We help our customers to

- understand and prepare for increasing extreme weather events
- enhance the development and operations in renewable energy
- ensure the functionality of critical transport infrastructure
- optimize weather-dependent commercial operations and processes
- make well-informed decisions

We partner with

- industry-specific service providers
- meteorological institutes and agencies
- authorities and other governmental organizations
- universities and research organizations
- companies and software developers

Our competitive advantages are

- technology leadership based on science and application know-how
- integrated solutions from sensors to analytics
- ability to deliver large-scale projects globally
- based on being a reliable partner throughout the entire life cycle of products
- models based on machine learning and AI

Operations get an upgrade

Vaisala's Operations organization sources, manufactures, and ships all our products. Our factories operate in Finland, France, the United States, and China.

In 2024, Operations prepared for future growth by scaling up production capabilities. We started building a new automated logistics center on our Vantaa campus, Finland. We expect the new facility to be fully operational by the end of 2025. It will combine all our various logistics functions currently dispersed across our Vantaa campus into one centralized location, streamlining operations. The investment will double the logistics capacity and enable the conversion of current logistics space into production use thus increasing the production capacity by 20%.

The cleanroom renewal continued enabling the adoption of new production technologies and upgrading the quality of the existing facilities.

We continued advancing our Smart Factory concept throughout the year. In 2024, Smart Factory has been focusing on scalability, increasing automation, and building new data capabilities. We have increased the use of mobile robots in material transfers, developed scalable integrations within manufacturing systems and new ERP, as well as built new data solutions for better situational awareness in Operations.

In 2024, our Operations team has also implemented emission reduction measures, such as transitioning from air to road transport in Europe and sourcing process gases with lower carbon footprint. We are also actively working to enhance the sustainability of our supply chain, for example, by utilizing EcoVadis to evaluate our suppliers' sustainability practices and support their improvement efforts.

Our Design for Manufacturability efforts emphasize close collaboration with our Research & Development teams. By involving Operations early in the product design process, we ensure that new products are optimized for efficient, scalable manufacturing from the outset.

Operations in numbers 2024

- **4** factories
- About **300** product families
- Product life cycles of more than **20** years
- Over **500** pieces of production equipment
- About **60,000** different components
- To customers in over **150** countries annually
- **450** suppliers
- Over **1,100** engineering changes in products
- Over **1,400** shipments weekly

"With a high order book, our Operations team is scaling up production capabilities to meet increased customer demand efficiently and reliably. These initiatives will help us maintain our commitment to quality, delivery timelines, and customer satisfaction even as we grow.

Vesa Pylvänäinen
EVP, Operations

Creating value

24 UN Sustainable Development Goals

26 UN Global Compact

27 Sustainability

29 Value creation model

30 Value for customers

32 Value for employees

34 Value for society and the environment

42 Value for investors

VAISALA

SUSTAINABLE FUTURE

We are committed to creating a more sustainable future for the planet. This means we integrate sustainability into everything we do, from our strategy and governance to our products and services.

UN Sustainable Development Goals accelerate business

In 2024, we continued developing our business and practices in line with the UN Sustainable Development Goals that are the most relevant for Vaisala. The goals help us to better assess our impacts on sustainable development and inspire the development of new business and sustainable practices.

Sustainable solutions

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 in industrial processes Enabling the adoption of new technologies, such as carbon capture **Fact** By using Vaisala's refractometer, a dairy customer reduced waste by two thirds.	Megatrends: AI and process optimization Value for customers: Reliable decisions, Productivity Value for society and the environment: Resource efficiency
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.	Increasing understanding of climate change and enabling preparation for extreme weather events Measuring greenhouse gases **Fact** Vaisala's radiosondes cover over 70% of the radiosondes used in the Global Climate Observing System (GCOS) Reference Upper-Air Network (GRUAN). GRUAN is an international network of research sites that aims to improve understanding of climate change.	Value for customers: Productivity, Quality Value for society and the environment: Better-informed societies, Safety
7 AFFORDABLE AND CLEAN ENERGY	**7.2** By 2030, increase the share of renewable energy in the global energy mix substantially. **7.3** By 2030, double the global rate of improvement in energy efficiency.	Improving energy efficiency in buildings and industrial processes Optimizing wind and solar power production Optimizing the production and upgrading of biogas **Fact** A customer decreased its natural gas consumption by 20% by using Vaisala's probes in its drying process of gypsum plaster blocks.	Megatrends: Energy transition and decarbonization Value for customers: Reliable decisions, Productivity Value for society and the environment: Resource efficiency, Safety
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 development and manufacturing in regulated industries like life science **Fact** All of the 50 largest pharmaceutical companies globally use Vaisala's measurement technology.	Megatrends: Health and well-being Value for society and the environment: Better-informed societies
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 the safety and sustainability of transport systems Monitoring ambient air quality **Fact** Vaisala's air quality sensors have been delivered to 60 countries.	Megatrends: Health and well-being Value for society and the environment: Safety

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. **12.5** By 2030, reduce waste generation substantially through prevention, reduction, recycling, and reuse.	Sustainable product design and long product life cycles Effective recycling practices	% of employees working on ISO 14001 certified sites	Our contribution to a sustainable future
7 AFFORDABLE AND CLEAN ENERGY	**7.2** By 2030, increase the share of renewable energy in the global energy mix substantially. **7.3** By 2030, double the global rate of improvement in energy efficiency.	Using renewable energy Reducing the energy consumption of products	% of renewable electricity % of renewable energy	Our contribution to a sustainable future Sustainability statement: ESRS E1 Climate change
13 CLIMATE ACTION	**13.3** Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.	Reducing emissions Encouraging employees' climate-friendly choices	Emissions	Our contribution to a sustainable future Sustainability statement: ESRS E1 Climate change

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 labor, end modern slavery and human trafficking, and by 2025 end child labor in all its forms. **8.8** Protect labor rights and promote safe and secure working environments for all workers.	Positive economic impact on society through direct employment and taxes, as well as through the supply chain Upholding high labor standards and ensuring occupational health and safety Managing human rights risks in our value chains	Total Recordable Injuries rate (TRI) and Proactive reports % of supplier spend in the EcoVadis assessment scope and improvement in suppliers' scores	Value for society and the environment: Economic value Our contribution to a sustainable future Sustainability statement: ESRS S1 Own Workforce, ESRS S2 Workers in the value chain, Conflict minerals, ESRS G1 Business conduct
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 career development	Diversity indicators, such as gender distribution Equality in remuneration Diversity, equity, and inclusion index	Value for employees: Well-being Our contribution to a sustainable future Sustainability statement: ESRS S1 Own Workforce
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	**16.5** Reduce corruption and bribery in all their forms substantially.	Ensuring compliance with our Anti-Corruption Policy	% of employees that completed the Code of Conduct training	Our contribution to a sustainable future Sustainability statement: ESRS G1 Business conduct

UN Global Compact

Vaisala joined the UN Global Compact in 2008 and has committed to following the 10 guiding principles of the initiative. These 10 principles are reflected in Vaisala's Code of Conduct, and we report on the implementation of the principles as part of our annual reporting.

Human rights	
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain
Principle 2: Make sure that they are not complicit in human rights abuses.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain

Labor standards	
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain
Principle 4: The elimination of all forms of forced and compulsory labor.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain
Principle 5: The effective abolition of child labor.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain
Principle 6: The elimination of discrimination in respect of employment and occupation.	Our contribution to a sustainable future Sustainability statement: ESRS S1 Own workforce, ESRS S2 Workers in the value chain

Environment	
Principle 7: Businesses should support a precautionary approach to environmental challenges.	Our contribution to a sustainable future Sustainability statement: ESRS E1 Climate change
Principle 8: Undertake initiatives to promote greater environmental responsibility.	Our contribution to a sustainable future Sustainability statement: ESRS E1 Climate change
Principle 9: Encourage the development and diffusion of environmentally friendly technologies.	Our contribution to a sustainable future Sustainability statement: ESRS E1 Climate change

Anti-corruption	
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.	Our contribution to a sustainable future Sustainability statement: ESRS G1 Business conduct

Our contribution to a sustainable future

We drive our sustainability work in line with our purpose:
Taking every measure for the planet.

We are committed to creating a more sustainable future for the planet. This means we integrate sustainability into everything we do, from our strategy and governance to our products and services. It also means that we align our sustainability efforts with the United Nations Sustainable Development Goals, reduce our greenhouse gas emissions in line with our science-based targets, and follow a strong code of conduct in all our operations.

Our main contribution to society comes from creating instruments and intelligence that help industries, nations, people, and the planet to thrive. Our products and services help, for example, reduce our customers' environmental footprint, as well as understand and prepare for increasing extreme weather events. We are committed to developing the best possible measurement tools and data that contribute to the ongoing energy transition as well as the safety and well-being of people and societies worldwide.

Mindful of our own environmental footprint and social impacts, we have adopted environmentally friendly, socially responsible, and ethically sound business practices.

Our facilities run on 100% renewable electricity, and we have set science-based targets for reducing our emissions. Moreover, our product development process includes environmental requirements, such as compliance with environmental regulations, energy efficiency, and recyclability. The maintainability, updateability, and modular design of many of our products, combined with our field services, extend the product life cycles, which can last for over 20 years. We also aim to minimize waste generation in our processes and implement efficient recycling practices.

To assess and enhance the sustainability of our supply chain, we have partnered with EcoVadis, which conducts supply chain sustainability assessments. Also, Vaisala itself has been assessed by EcoVadis and received a gold medal, which places Vaisala in the top 5% of companies assessed.

At Vaisala, we are committed to respecting human rights and mitigating human rights risks across our operations and supply chain. We prioritize occupational health and safety of both our employees and workers in the value chain. In 2024, our total recordable injury frequency (TRIF) was 1.82 injuries per million working hours. In our work community, we actively champion diversity, equity, and inclusion, promoting social equality. In addition, we implement strict measures to prevent any form of corruption in our business activities.

Reducing emissions based on science

The Science Based Targets initiative (SBTi) is a partnership between the United Nations Global Compact, World Resources Institute (WRI), World Wide Fund for Nature (WWF), and CDP. Their framework provides companies with a clearly-defined science-based path to reduce emissions in line with the Paris Agreement goals – limiting global warming to well below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.

During the past year, we got our emissions reduction targets approved by SBTi, and they are the following:

> Vaisala commits to reduce absolute scope 1 and 2 GHG emissions 52% by 2030 from a 2021 base year*. Vaisala also commits to reduce scope 3 GHG emissions from purchased goods and services, upstream transportation and distribution, business travel, employee commuting, and use of sold products 52% per million EUR value added within the same period.

To achieve these goals, we have started several initiatives to reduce our carbon footprint. We are designing new products with lower energy consumption and lower material carbon footprints, identifying and implementing emission reduction opportunities with our suppliers, and reducing logistics emissions, for example by shifting from air to road transport in distributing our products in Europe.

* The target boundary includes land-related emissions and removals from bioenergy feedstocks.

CASE DEMONSTRATING VAISALA'S HANDPRINT

Quantified climate action through building energy efficiency

As global energy consumption rises, enhancing energy efficiency in infrastructure and buildings is crucial for mitigating climate change. The United Nations' Intergovernmental Panel on Climate Change (IPCC) highlights the importance of energy efficiency in achieving global climate targets. Vaisala's TempCast weather sensor and Xcast machine learning model combination offers a solution that helps reduce building energy use. We piloted this solution in 2024 by reducing the carbon footprint of the Myllypuro campus of the Metropolia University of Applied Sciences in Helsinki, Finland.

Vaisala, in cooperation with Metropolia, Eeneman Oy, Business Helsinki, Bravida, and Nordic Data Exchange, runs a project to measure the energy savings impact of the hyperlocal weather forecasting technology at Metropolia's Myllypuro smart campus in Helsinki as the testing location. The Vaisala TempCast weather sensor, installed on the 12,000 m² campus, produces continuous hyperlocal weather data. The data enables our Xcast machine learning model to produce more accurate weather forecasts, allowing the campus to optimize its district heating usage. In just 2.5 months of active use, our solution achieved a 2.8% energy saving in the building (7.64 MWh), when compared to Eeneman's model of the building using a general weather forecast. Further testing is underway with other parts of the heating system at Myllypuro campus, promising additional energy savings.

We also measured the carbon emissions prevented by this project. Improving the efficient use of district heating reduces the amount of energy needed, thus lowering emissions for the campus. After accounting for the solution's carbon footprint, the solution meaningfully decreased the Myllypuro campus' energy carbon footprint. Over its lifetime, this solution could potentially save around 1.6 tons of CO_2e, equivalent to driving approximately 6,500 kilometers with an average gasoline-powered car.

Given that the district heating used at the Myllypuro campus has a relatively low carbon intensity, other buildings using energy with higher carbon footprints would see even greater emission reductions with our solution. As a highly scalable solution, energy savings and emission reductions increase when implemented across multiple buildings. The project underscores our dedication to providing cutting-edge measurement instruments and intelligence solutions for climate action.

Read more

This Business Review provides a general overview of Vaisala's sustainability work. Our full sustainability statement in accordance with the European Sustainability Reporting Standards (ESRS) is available as part of the Board of Directors' Report in the Governance and Financial Review.

Positive handprint on society

We create value in continuous interaction with our stakeholders. Our business leaves a positive handprint on society especially through our customers.

Our measurement solutions empower our customers to make informed decisions and optimize their productivity and processes in the areas of weather and environment as well as industrial measurements. By doing so, we can have a positive impact at the intersection of multiple megatrends and contribute to the UN Sustainable Development Goals by increasing awareness, resource efficiency, and safety in societies.

Megatrends Energy transition and decarbonization | AI and process optimization | Health and well-being

Our fundamentals

- Product and technology leadership
- Application know-how
- Engaged and talented people
- Vaisala Production System
- Partnerships
- Strong financial position
- Sustainability

Taking every measure for the planet

VAISALA

We enable data-driven climate action.

Value created

Customers
Reliable decisions, productivity, quality

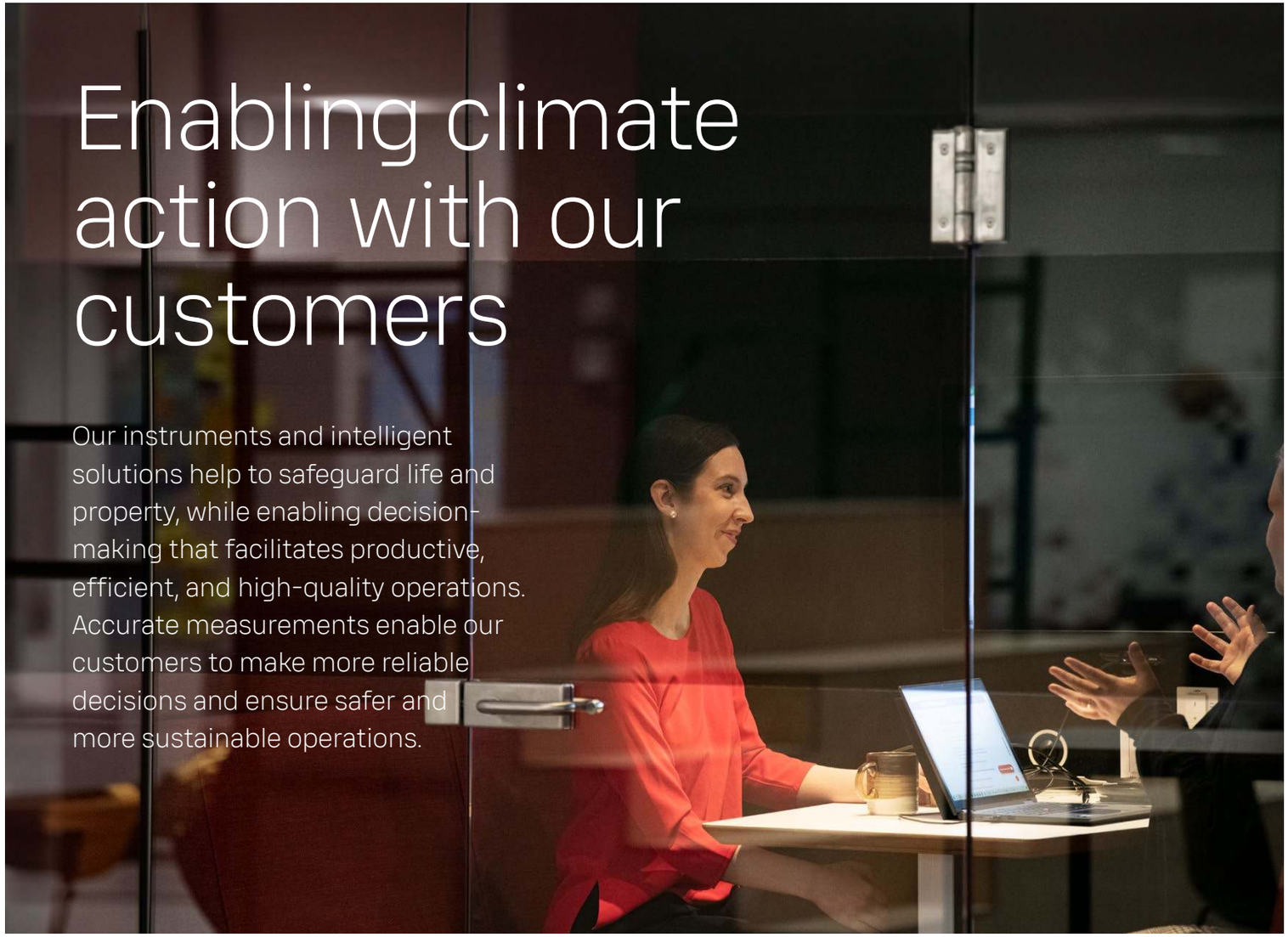
Employees
Purposeful work, well-being, learning and development

Investors
Responsible returns

Society and the environment

Direct impact
Economic value, active community outreach and scientific collaboration

Through customers
Better-informed societies, resource efficiency, safety



Enabling climate action with our customers

Our instruments and intelligent solutions help to safeguard life and property, while enabling decision-making that facilitates productive, efficient, and high-quality operations. Accurate measurements enable our customers to make more reliable decisions and ensure safer and more sustainable operations.

Our measurement solutions are based on a thorough understanding of our customers' needs in diverse industries and applications from meteorology and renewable energy to industrial processes and life science. We work together with our customers and partners to meet their measurement needs and enable climate action. In 2024, we continued to develop our customer experience in our customer-facing digital channels as well as conducting various culture and process development initiatives.

Reliable decisions

We enable our customers to make data-driven decisions with relevant, accurate, and reliable data and forecasts. For example, the city of Oak Creek, Wisconsin, ***uses localized weather data to combat unpredictable weather patterns***. Oak Creek's Public Works saved 80 tons of salt in one winter event by operating according to localized road weather forecasts from Wx Horizon. With our solution, municipalities can improve their winter maintenance operations, save money, and prioritize public safety. The solution provides invaluable insights into how weather impacts the road network and enables proactive decision-making, leading to more effective and efficient snow and ice management practices that benefit the entire community.

Transitioning away from fossil fuels has never been so urgent as now. We equip our customers with devices and data to drive energy transition and decarbonization. Electric vehicles (EVs) offer one solution for reducing carbon emissions. Addressing drivers' concerns about real-life range in varying weather conditions accelerates EV adoption. Vaisala Xweather's unique combination of data allows automakers to simulate the effects of weather and road conditions on the energy consumption of EVs. Range anxiety is often cited as a major obstacle for EV sales. ***Improving the dependability of range predictions in varying weather conditions*** helps drivers better predict schedules, prepare trip itineraries, and feel in control behind the wheel.

Productivity

Our instruments and intelligence improve the cost and resource efficiency of our customers' operations, thus increasing productivity. In the rapidly growing solar energy sector, accurate, reliable, and easily deployable weather monitoring systems are crucial — particularly as projects scale in size and complexity. Accurate weather data is indispensable in optimizing performance and ensuring the reliability of solar energy systems, from initial site assessment through long-term operations. In Italy, ***Integrating AWS810 Solar Edition into Circet Italia's customers' daily operations*** has provided numerous benefits for monitoring, optimizing, and improving their solar energy output.

For industries that use compressed air, accurate dew point measurement is important as the companies must balance the need to produce compressed air at the lowest possible cost while maintaining its quality and availability. To support the customers with these requirements, ***SmartAir uses Vaisala Indigo80*** to ensure that dew point readings are correct.

Quality

High-quality instruments and solutions have always been at the core of Vaisala. It is also 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, our weather observing systems provide reliable and comparable observations that support precise weather forecasts and climate projects.

With the rise of electrification and the shift towards green energy, the demand for ***more powerful and safer rechargeable batteries*** is rapidly growing. Manufacturing these batteries is a delicate process performed in highly controlled, ultra-low humidity environments. The midstream stage of battery manufacturing involves electrode production, cell assembly, and cell finalization. These steps take place in dry rooms where humidity control is especially important to prevent unwanted reactions. A dryer produces dry air to the dry rooms, and the dew point of the dry air is measured to ensure the right dryness level. The dew point sensors in the dryer need to be highly responsive to control the dryer quickly and accurately to avoid under or over-drying. These issues can be avoided with accurate sensors with a fast response time.

Read more examples of how Vaisala creates value for customers at vaisala.com.

CASE

Enhancing sustainability through accurate biogas upgrading assessment

In an era where sustainable and renewable energy sources are imperative, biogas stands out as a promising solution. However, maximizing its potential necessitates efficient utilization, achieved through biogas upgrade systems. These, such as the ones engineered by Pentair, play a pivotal role in maximizing the potential of biogas as a sustainable and clean energy source.

To surmount the array of challenges posed by the biogas upgrading assessment, our MGP261 and MGP262 multigas probes can be utilized. This proved to be instrumental in addressing the specific requirements of this assessment.

CASE

Improving offshore safety through weather intelligence

As the offshore wind energy industry continues its rapid expansion, ensuring the safety of workers and assets in these remote and often dangerous environments has never been more crucial. The stakes are high, and as safety concerns rise, so does the need for advanced weather intelligence solutions that can help mitigate these risks. Offshore wind energy has grown significantly, with ambitious renewable energy goals driving new projects worldwide. However, the expansion into harsher and more remote marine environments comes with unique challenges.

To ensure the safety of offshore wind workers and infrastructure, the sector must adopt more sophisticated weather monitoring and forecasting solutions. Comprehensive weather intelligence is vital for planning and executing operations, from construction and maintenance to personnel transfers and emergency responses. Real-time weather data helps operators anticipate and respond to dangerous conditions, reducing the likelihood of accidents and costly delays.

Our employees driven by making a difference

Vaisala offers versatile opportunities for talented and motivated professionals who value purpose-driven work and continuous learning. We support the well-being of our people and provide them with various learning opportunities to grow and develop.
Learning is part of everything we do.

Purposeful work

Vaisala's products and solutions enable climate action and have a positive impact on the environment, societies, businesses, and individuals. Our people are driven by the opportunity to solve some of the most pressing challenges of our time. We uphold sustainable and ethical behavior as a core value of both Vaisala and our employees. We invest in research and development to ensure our continued ability to respond to global issues and grow our business sustainably. This makes working at Vaisala meaningful and rewarding.

We conducted our annual employee survey in October 2024. The survey results show that Vaisala's people were engaged and proud of their work. The Engagement Index in the survey remained on a good level and was 4.0 on a scale of 1–5. The survey had a response rate of 85%, with answers from 1,959 employees.

In 2024, we focused on improving our onboarding process, rotation opportunities, and feedback culture, among others. Our goal is to foster a purpose-driven and future-proof culture, based on meaningful work and supporting Vaisala's strategy and growth.

We continued our focus towards diversity, culture, and empowerment with our first Diversity, Equity, and Inclusion (DEI) training program. This initiative aims to educate and empower our employees to embrace diversity and promote equity at every level. In the 2024 Voice of People survey the DEI index was 4.0 and stayed on the same level as in 2023.

Furthermore, we continued and developed our Employee Resource Groups program, illustrating our commitment to creating a workplace where everyone feels seen, heard, and valued. These groups will serve as pillars of support, creating spaces for employees to connect, share experiences, and drive positive change within the organization. These initiatives mark significant steps in our journey toward a more inclusive Vaisala community.

We emphasize strong and inspirational leadership, and we support managers and experts systematically in developing their leadership skills by organizing training programs and courses. During 2024, we trained managers in, for example, coaching skills and change management.

The Leadership Index remained on a good level and was 4.0 on a scale of 1–5. The key strengths of Vaisala managers are fairness and objectivity, ability to listen, and positive attitude towards initiatives.

Well-being

At Vaisala, we value well-being at work as a holistic concept, encompassing the work community, leadership, the company, and the individuals themselves. Well-being consists of strong leadership, motivating and inclusive work community, balanced workload, meaningful work, and a safe working environment. We promote well-being and energy at work by supporting sports and recovery, providing occupational healthcare, and preventing problems early on.

These preventive measures help our people to manage their work, ensure recovery, and maintain a healthy lifestyle. In Finland, we offer our employees sports and recreational clubs, sports and cultural benefit, company bike benefit, trainings on time management and recovery, and the opportunity to participate in a well-being analysis on stress and quality of sleep. In 2024, we continued the low threshold Employee Assistance Programs (EAP) first piloted in 2022. EAP service offers easily accessible discussion support in different life situations. In the United States, Vaisala Wellness Hub is dedicated to enhancing employee well-being through various wellness events, challenges, and tools.

We measure also employee well-being annually in Vaisala's employee surveys. The results show that Vaisala employees find their work meaningful and are proud to work for Vaisala. We also strive to ensure that workloads are manageable. In October 2024, Vaisala Well-Being Index score was 3.9 on a scale of 1–5.

We advanced diversity, equity, and inclusion (DEI) as part of our culture work in 2024. DEI topics are vital for our business – not only for the benefits they bring for innovation but also for sustainability. As a sustainability leader, we take it as our responsibility to promote sustainable and fair work life, and we want to make sure that all Vaisala people feel well in their community. In 2024, we continued to execute our DEI strategy that lays the foundation for systematic development, versatile actions, and KPIs to ensure an inclusive community.

During the year, we organized keynote sessions and discussions on DEI topics. DEI topics are also included in our employee survey, and the Diversity and Equity Index was 4.0 on a scale of 1–5. You can read more about the topic in the sustainability statement, under the section Social information.

Learning and development

In addition to cutting-edge technologies, our competitive strength stems from our talented, engaged, and purpose-driven people. Our employees embrace continuous learning to adapt to the changes in the business environment, technologies, ways of working, and tools.

We have continued our workplace development in 2024 with the objective of creating an improved work environment for various working modes. We have also modernized meeting rooms and common facilities.

We support our employees in actively developing and maintaining their expertise and knowledge. Managers play a key role in enabling and supporting learning, and they plan development and learning activities together with their teams. Developing expertise and knowledge aligns with Vaisala's values and behaviors as well as our business needs and objectives. We define competence development needs as part of the annual People Forum process.

In 2024, we offered new development opportunities to all employees, such as coaching skills, self-leadership, and change leadership trainings. We have expanded training opportunities for our experts and conducted trainings in Influencing skills and presentations skills, for example. We also provided new online learning opportunities on global platforms. In addition, we focused on mentoring and conducted various global and local mentoring programs. Vaisala Learning Index, derived from the employee survey, was 3.8 on a scale of 1–5. Employee training costs amounted to 1.62 million euros and averaged 683 euros per employee in 2024.

CASE

Building a more inclusive Vaisala

At Vaisala, fostering a diverse, equitable, and inclusive culture is essential to our success. In 2024, we made significant strides in increasing multicultural representation, particularly in leadership. Our efforts to increase multicultural representation, reflect our commitment to ensuring that our leadership mirrors our workforce and represents the diverse, global nature of our customer base. Our multicultural talent now comprises 33% of top management, surpassing our target, and 10% of management roles align with our goals. We also focused on career development with 9% of our employees receiving promotions during 2024, reflecting our commitment to equitable growth opportunities. However, diverse representation in tech roles (18%) and sites like Finland (10%) remains a priority.

These efforts are important to driving innovation, reflecting global markets, and creating a workplace where everyone succeeds. We are committed to enhancing recruitment, reducing bias, and expanding development pathways to build a truly inclusive future at Vaisala.

More resource efficient societies and safer environment

At Vaisala, we aim to make a positive impact on society and the environment by enabling data-driven climate action. We bring value to society through accurate and reliable measurements and data as well as decision-making support for 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.

Better-informed societies

We partner with nearly all meteorological institutes in the world, supporting them in gathering accurate weather observations for weather forecasts that are critical for societies. 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 these societies to be better prepared for extreme weather and its impacts.

Norsepower pioneers the decarbonization of maritime shipping with a mission to reduce the industry's environmental impact. Norsepower's Rotor Sail™ technology is an advanced wind propulsion system designed to enhance the fuel efficiency and environmental performance of ships. Norsepower wanted to utilize remotely-

measured wind data to evaluate and enhance the performance of their Rotor Sail system. By utilizing the ***accurate, undisturbed remote wind measurements*** provided by our WindCube® Nacelle, they gained critical insights into wind conditions onboard. The result is a significant leap forward in maximizing energy efficiency, achieving peak performance, and amplifying the environmental benefits of reduced fuel consumption.

Resource efficiency

Our measurement solutions improve resource efficiency in various industrial production processes. Accurate measurements enable our customers to optimize their production as well as reduce their energy consumption leading to reduction in emissions.

The global demand for data centers is being driven by cloud-based services, AI, automation, and digitization. These data handling facilities house large amounts of IT infrastructure and require high levels of power to run the equipment and to cool it. The latest servers are more energy efficient and able to operate at higher temperatures. By utilizing our measurement technologies, data center customers can ***ensure that the efficiency of their cooling operations is underpinned by accurate data***.

The accuracy of renewable energy forecasts has significantly improved in recent decades, enabling us to generate remarkably precise predictions even several days in advance. Weather forecasting is continuously developed and has received significant investments in R&D to understand the physics and dynamics of the Earth's terrestrial, oceanic, and atmospheric systems, and in data ingest, data assimilation, and supercomputing systems that has brought weather forecasting into the modern digital age. We continually refine our methods through research and development. ***Every aspect of our approach improves***: our observations become more reliable, our global and regional forecasts grow more precise, and machine learning continuously adapts to an ever-increasing amount of data.

CASE

Long-term partnership and full lifecycle solution ensure sustainable, reliable environment monitoring

Sensitive goods like pharmaceuticals demand strict monitoring of parameters like humidity and temperature throughout the supply chain. H.Essers has worked with us to develop a cost-effective, sustainable solution that ensures accurate long-term monitoring while saving time and effort for their staff.

Belgian family-owned H.Essers has grown to become one of Europe's leading transport and logistics services providers for industries such as chemistry, healthcare, and infrastructure. The main aim with our consultative approach has been to help H.Essers choose the right continuous monitoring solutions to run their business, supported by lifecycle services that ensure longevity and sustainability.

CASE

Industry-first solution to help secure radiosonde soundings against hybrid and cyberthreats

Recognizing the need to secure accurate weather forecasts, we introduced new features in our radiosonde RS41 models: multi-GNSS support and industry-first message authentication. These features help meteorological agencies defend against hybrid threats, such as GPS interference and cyberattacks. Our new solution directly addresses this evolving cybersecurity threat landscape, empowering meteorological agencies to collect reliable atmospheric data and deliver forecasts society can trust.

Safety

Our technologies help our customers maintain safe operating environments in many parts of society. For example, the construction of a new building prompted one of Denmark's largest pharmacy businesses ***Regionsapoteket Midtjylland*** to invest in our viewLinc Continuous Monitoring System (CMS) to confirm regulatory compliance in the production, handling, and storage of medicines. The solution enables Regionsapoteket to monitor and report production conditions around the clock. This is essential if there is any suspicion that a specific medication batch deviates from required storage and handling conditions. Thus, viewLinc is a crucial factor in allowing the customer to achieve regulatory compliance through data integrity and to guarantee the quality and safety of the medications that it produces.

Hurricanes can have devastating consequences for local economies and livelihoods. They affect millions of people and businesses along the Atlantic and Gulf of Mexico coasts each year, making them crucial to understand and predict. The hurricane season in 2024 was notably active and unusual. Strong hurricanes like Milton and Helene, significant damage and fatalities, unusual weather patterns, and late-season activity all contributed to making this season one of the most extreme on record. As climate change continues to reshape global weather patterns, hurricanes are becoming increasingly unpredictable in terms of strength, trajectory, and impact. Warming sea surface temperatures are extending the length of and increasing the intensity of hurricane seasons.

The data from our measurement instruments makes it easy to maintain and monitor the high voltage transformers that are critical for power production and distribution. Continuous transformer condition monitoring also supports smart power grids, where electricity consumption is controlled and adjusted as needed. Reliable and continuous online monitoring enables preventive maintenance. This, in turn, enables operators to detect faults in time and prevent power outages that would risk the safety and operation of society.

Read more examples of how Vaisala creates value for society and the environment at vaisala.com.

CASE

Innovative tech boosts winter road safety in Alabama

The Alabama Department of Transportation (ALDOT) West Central Region is responsible for managing state and federal roads, including traffic management, across 13 counties in the state of Alabama, U.S., where they face unique challenges in winter road maintenance. Though summers are hot and humid, weather conditions across the state can include tornadoes and snow. Accurately predicting weather conditions has proven difficult. To improve their understanding of changing weather patterns and provide hyperlocal information to the public, ALDOT found the ideal combination of actionable insights, ease of use, and cost efficiency by integrating our Wx Horizon with GroundCast™ and TempCast™ sensors together with existing RWS200 road weather stations.

Economic value

Vaisala as taxpayer

In addition to the tax data published in the financial statement, we provide here more information on our approach to tax, tax management, and global tax footprint.

Approach to tax

Vaisala aims to govern tax matters in a sustainable manner. Vaisala's approach to tax is aligned with our overall business strategy, values, and Vaisala's Code of Conduct. Our values guide all of our activities both within Vaisala and with our partners and customers.

Vaisala strives to be a good corporate citizen, with high commitment to technology leadership and sustainable development. We are committed to comply with tax legislation in all countries where we operate. We aim to pay the right amount of tax at the right time to the relevant authorities in the countries where we create value.

We strive to structure our business in an efficient manner to ensure that our business can grow and meet strategic business targets. We aim to keep our tax costs at a stable and predictable level to protect growth and shareholder return. As we operate in many jurisdictions, we need to ensure that we are not subject to double taxation, so that we pay tax only once on the profits made.

We only engage in transactions driven by commercial considerations, and we do not seek abusive tax results.

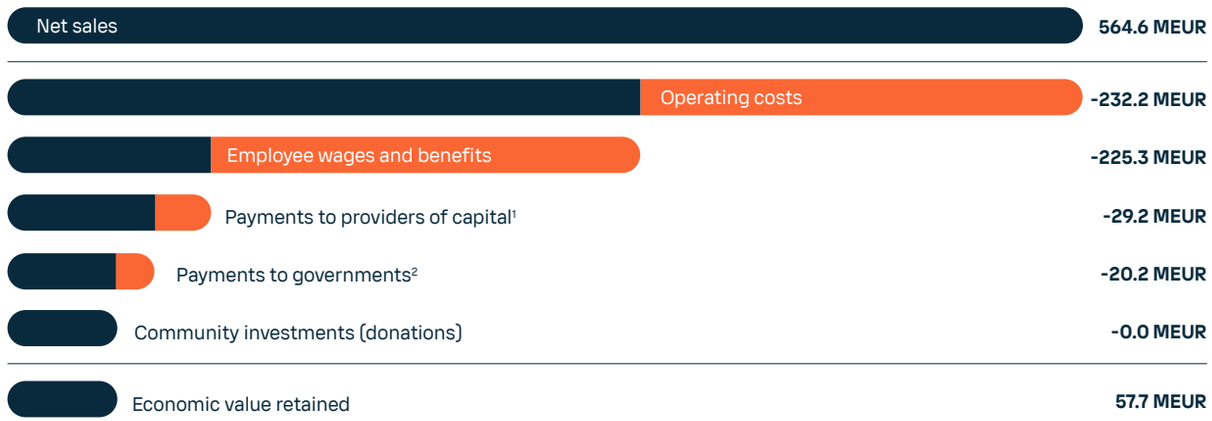
Our transfer pricing is aligned with the arm's length principle in accordance with OECD Transfer Pricing Guidelines. The rationale of the chosen transfer pricing methods is properly documented and aligned with the substance of the economic activity. The arm's length principle applies to all intra-group transactions.

We can take advantage of tax incentives when they are aligned with our business. We seek to implement them in the manner intended by the relevant statutory framework.

Direct economic value generated and distributed in 2020–2024

MEUR	2024	2023	2022	2021	2020
Net sales	564.6	540.4	514.2	437.9	379.5
Operating costs	-232.2	-239.2	-237.9	-192.1	-162.2
Employee wages and benefits	-225.3	-210.9	-190.4	-174.3	-154.1
Payments to providers of capital[1]	-29.2	-28.3	-25.3	-22.5	-22.4
Payments to governments[2]	-20.2	-14.6	-15.9	-10.5	-6.6
Community investments (donations)	-0.0	-0.0	-0.3	-	-0.1
Economic value retained	**57.7**	**47.5**	**44.4**	**38.5**	**34.1**

Direct economic value generated and distributed in 2024



[1] Includes dividends and interest of borrowings

[2] Includes income taxes

We maintain a professional and constructive relationship with the tax authorities in the jurisdictions in which we operate.

Tax management

In our centralized Finance & Control function, Chief Financial Officer (CFO) has the overall oversight of tax matters in the group. Vaisala's tax function (Group Tax Team) is responsible for implementing and monitoring tax policies to ensure that all Vaisala group companies comply with them consistently. The Group Tax Team is also responsible for securing efficient management of Vaisala's tax obligations.

Vaisala has engaged service providers to provide support and ensure compliance with local rules and regulations in foreign recurring tax compliance work, where needed. Vaisala's Finance & Control monitors the transparency, quality and outputs from these engagements.

Important matters of principle are presented and approved by the Audit Committee. Material tax topics are presented to the Audit Committee at least annually.

Global tax footprint

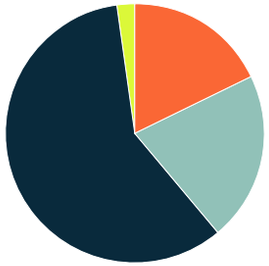
We report corporate income taxes, value-added taxes, payroll taxes, and property and other taxes paid in 2024 and comparable figures for 2023. We observe the principle of materiality in the collection and presentation of figures.

We benefit from R&D tax credits in France and Finland. In addition, prior year tax losses in the United States reduced our corporate income tax payments in the United States in 2024. The tax contribution of the parent company in Finland totaled 40.9 (38.3) million euros in 2024.

Vaisala's Tax Strategy is available on our website www.vaisala.com/en/tax-strategy.

Total taxes paid 2024 – Vaisala Group

PAID IN 2024 – ALL VAISALA COMPANIES (2023)



- **18%** Corporate Income Tax (CIT) (16%)
- **21%** Value-Added Tax (VAT) (20%)
- **59%** Payroll Tax (61%)
- **2%** Property and other taxes (2%)

TOTAL TAXES PAID BY REGION 2024 (2023)

- **14%** APAC 12.1 MEUR (8.7)
- **71%** EMEA 62.8 MEUR (53.1)
- **15%** Americas 13.5 MEUR (16.7)

Tax	Paid in 2024 (MEUR)	Paid in 2023 (MEUR)
Corporate Income Tax (CIT)	15.8	12.7
Value-Added Tax (VAT)	18.7	16.0
Payroll Tax	51.8	48.2
Property and other taxes	2.0	1.7
Total	**88.4**	**78.6**

Strengthening scientific collaboration and community outreach

In addition to our own research and development work, scientific collaboration strengthens our position as an industry pioneer and an innovative technology leader. We continue to be a contributor to many organizations, advancing technological development in several fields of study as well as supporting higher education, research, and science education.

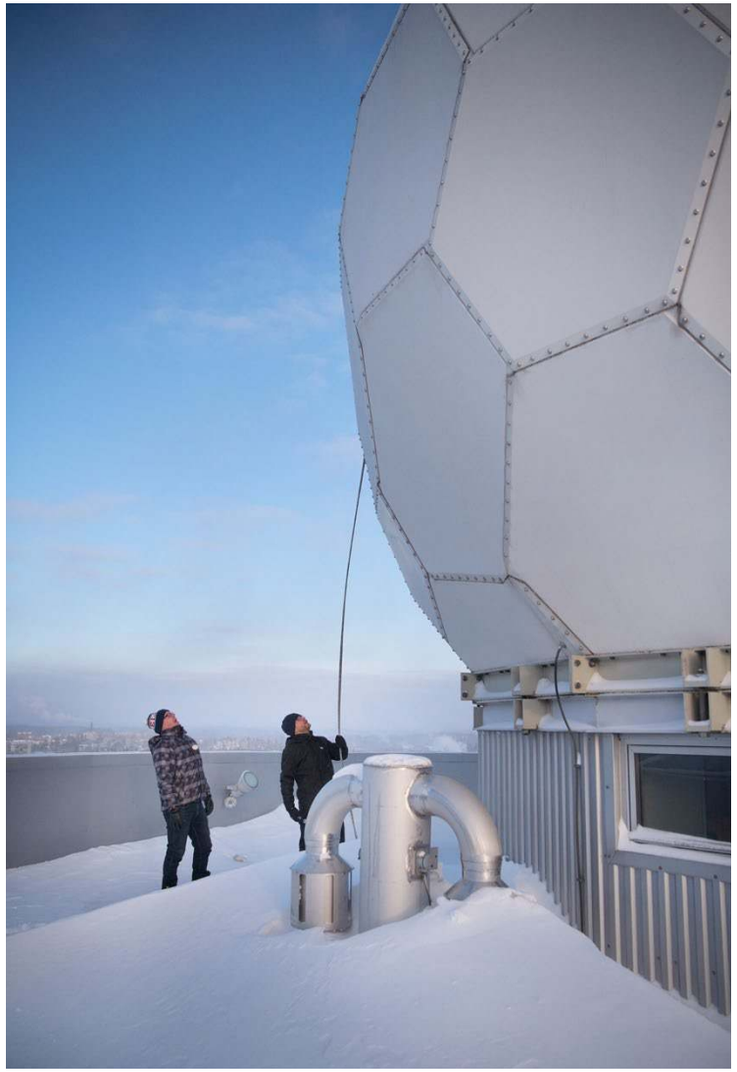
Vaisala is a wide-ranging, research and innovation-focused technology company, and our collaboration partners include several different organizations, research institutions, corporations, meteorological institutes, and universities from around the world and from different fields of technology.

Participating in the most significant scientific commissions and organizations in our field

Our solutions are used to observe and measure aviation weather, and thus we are active in the International Civil Aviation Organization (ICAO), a specialized agency of the United Nations (UN). The World Meteorological Organization (WMO), likewise an agency of the UN, coordinates the study of the state and behavior of the Earth's atmosphere, including weather and climate. We participate in various expert teams and commissions working under WMO

These groups focus on developing weather observations and forecasts globally. Such expert teams include the Infrastructure Commission and its Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT) as well as the Standing Committee on Earth Observing Systems and Monitoring Networks (SC-ON). We are an active member of the Association of Hydro-Meteorological and Environmental Industry (HMEI).

We also participate in various industry standards development work in fields that are important to us, for example as a member of the European Telecommunications Standards Institute (ETSI) as well as in different national committees and groups of the International Electrotechnical Commission (IEC). We also apply IEC61400-50 and IEC61400-15 wind energy standards. We are an active member of the Task 52 "Large-Scale Deployment of Wind Lidar" of the International Energy Agency's Wind Technology Collaboration Programme (IEA Wind TCP). It consists in participating in seven working groups dedicated to standardization of wind lidar technology. Vaisala also participates 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.



In Finland, we operate in close cooperation with various scientific stakeholders, including the Finnish Meteorological Institute (FMI), VTT Technical Research Centre of Finland Ltd., the Helsinki Region Environmental Services Authority HSY, and different universities. We have representation in the Technology Industries of Finland and its branch groups, such as in the semiconductor group. We follow closely the Research Council of Finland's Flagship Programmes, such as PREIN (Photonics Research and Innovation Flagship) and FAME (Advanced Mathematics for Sensing, Imaging and Modelling Flagship), that support high-quality research and increase the economic and societal impact emerging from the research as well as opportunities in doctoral pilots related to these Flagship Programmes. Furthermore, we also partner with Technology Academy Finland (TAF) as a Millennium Technology Prize partner.

In the United States, our collaboration partners comprise, for example, the National Oceanic and Atmospheric Administration (NOAA) and the National Centre for Atmospheric Research (NCAR). We are also a strong contributor to the American Meteorological Society (AMS) that is a leading scientific organization dedicated to atmospheric, oceanic, and hydrologic sciences. Vaisala representatives contribute to the AMS through several activities, such as scientific committees, journals, and articles. We are also a partner at the Clean Energy and Equitable Transportation Solutions (CLEETS) NSF-UKRI Global Center, where climate, energy, data science, and transportation experts come together to accelerate decarbonization of road transportation.

In France, we have strong partnerships with local research centers located on the Saclay campus. One of the collaboration partners is the French Aerospace Lab ONERA in the field of lasers, lidar research, and advanced signal and data processing. Other partners include Thales and the III-V Lab also on integrated optical technologies, SIRTA Atmospheric Research Observatory, and IFP Energies Nouvelles (IFPEN).

We also contribute to the CAR 2 CAR Communication Consortium that aims to provide technological solutions towards accident-free traffic. Its objective also is to support the highest safety level and improved traffic efficiency.

Seats in different sustainability and commerce organizations

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

We are a shareholder and research partner of CLIC Innovation Oy. CLIC is 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.

Enhancing academic research and science education

Academic research around the world has always been an integral part of the development of our science-based innovations. For instance, two of WMO's awards carry the name of Vaisala's founder Professor **Vilho Väisälä**. They are granted every other year to distinguished research in the field of environmental measurement instruments and observation methods as well as meteorological instrument work in developing countries and countries with economies in transition.

Our experts collaborate with universities, and our employees include master students and doctoral candidates. For example, we collaborate with Sorbonne University which uses Vaisala's condition monitoring system in its environmental research on pesticides.

We participate in the APTWind project, a European Industrial Doctoral Network granted under Horizon Europe, the European Union's flagship funding programme for doctoral education and postdoctoral training of researchers. In this program we co-lead a Ph.D. student with Fraunhofer. We also collaborate with FMI by co-leading a postdoctoral candidate for studies of using ceilometers for novel observations of the atmosphere in the Tandem Industry Academia program.

In the United States, we collaborate with the Colorado State University (CSU) in the field of weather radars, among others. In 2023, Vaisala's Board of Directors renewed the annual donation of USD 25,000 to the university for three years. We also support the NSF AI Institute for Research on Trustworthy AI in Weather, Climate, and Coastal Oceanography (AI2ES) and collaborate with them on research projects. The vision of AI2ES is to create trustworthy AI methods for diverse environmental science users that will revolutionize our understanding and prediction of high-impact atmospheric and ocean science phenomena.

Support for important climate and environmental projects

We provide 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. We do not donate funds to political parties, causes, or campaigns.

Another focus is 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.

CASE

Product Development Project with Aalto University: Curiosity that drives innovation

In the fast-changing world of technology and industry, staying ahead means always innovating. At Vaisala, we live out this idea through our active role in Aalto University's Product Development Project (PDP), which we have done for the past 16 years.

This partnership with students from various backgrounds isn't just about solving tough problems — it's about sparking a culture of curiosity and innovation. By nurturing curiosity and creativity, we are not just solving today's problems. We are also energizing and inspiring people and shaping the future of product development.

Data-driven technology leader

We are a stable, sustainable, and globally operating company headquartered in Finland. As a technological leader in our field, we aim for long-term growth as well as a globally leading position in weather, environmental, and industrial measurements by responding to different megatrends and investing in research and development.

In line with its strategic objectives, Vaisala's long-term financial targets include an average sales growth of 7%, systematic improvement of EBITA %, and maintaining strong cash conversion over time.

Vaisala's series A shares have been listed on the Nasdaq Helsinki stock exchange since 1994. Our target is to maintain high solvency and pay a stable dividend which will increase in line with net profit development.

1 Technology leader and strong market position

- Leading technologies in weather, environmental, and industrial measurements with the most reliable instruments, algorithms, and software
- Clear market leadership position in key products, high customer satisfaction, estimated total market size of EUR 4 billion
- High continuous investments in R&D (2024: 68.6 MEUR or 12% of net sales)

2 Growth potential in multiple dimensions

- New technologies
- New products, applications, and digital solutions that leverage the latest technologies, platforms, as well as business models based on recurring revenue
- Expansion into new customer segments and geographical regions

3 Well diversified sales mix

- Vaisala is a global player in its relevant markets with representatives in more than 100 countries
- 2024 geographical net sales split: 35% Americas | 31% APAC | 34% EMEA
- Several customer segments in governmental and private sectors

4 Asset-light business model

- Scalable business model with low net working capital requirement
- Sales growth does not require large CAPEX investment: annual maintenance CAPEX roughly at 2–3% of sales
- 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 (2024: 0.95)
- Solvency ratio 52.4% (2024)
- Gearing 13.2% (2024)

6 Solid dividend payer

- Aim to distribute a stable dividend which will increase in line with net profit development
- Dividend per share for the last five years paid at the average rate of 62% on earnings and the average effective dividend yield of share 1.7%

7 Technology with an impact in a responsible way

- Technologies, products, and digital solutions that enhance customers' decision-making and development of operations and that contribute significantly to solving global challenges related to climate change, energy transition and decarbonization, and well-being and health, for example.
- We use 100% renewable electricity. The Science Based Targets initiative (SBTi) approved Vaisala's near-term science-based emission reduction targets in April 2024.

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