



**Corporate  
Responsibility  
Report  
2015**

**VAISALA**

# Vaisala World

Through its customers, Vaisala is involved in many areas of the society. Our mission is to offer customers high reliability and added value through our products and services. This applies in macro scale from observation systems for entire countries down to minuscule controlled environments in a multitude of industries.



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The papers used for the printed report are Curious Matters 270 g/m<sup>2</sup> and Galerie Art Volume 115 g/m<sup>2</sup>.

# Chairman's Message

In 2016, Vaisala celebrates its 80 year anniversary. Looking back at the past decades, it is a pleasure to recognize that Vaisala has maintained its commitment to those founding principles my grandfather held true. At Vaisala, we continue to keep science and innovation at the heart of our business. We continue to look at the future with a curious nature, and focus relentlessly on delivering the most reliable and highest quality solutions to customers. We take our responsibility to society and communities very seriously.

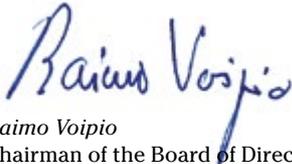
Today, in a world that is changing all the time, it is more important than ever that we push to become more efficient, and continue our investments into research and development. It is in our nature to uncover new solutions for challenges that the world is facing. By providing the very best observations, measurements and information, Vaisala continues to raise the bar for accurate and reliable measurements, without compromise.

When human lives are at stake, and our systems are supporting the decision-makers, it is crucial to provide the best possible data. There is no 'good enough' in Vaisala. As the number of commercial observation networks grow to disseminate weather information, it is important to remember that the accuracy of these measurements is critical. It is clear that scientifically reliable, high quality weather observation systems for example, that are capable of serving a nation's security warnings, are increasingly important. These systems require accurate, verified, consistent and gapless weather measurement data to create reliable forecasts, regardless of economic cycles.

Vaisala, our partners, and our customers, all play an important part in the paradigm shift that the recent agreement achieved at COP21 in Paris. Over 190 nations reached a consensus for this international agreement to reduce greenhouse gas emissions, helping to tackle the challenges of global warming. As is expected, there is naturally some skepticism around the agreement, however I believe that this is an important milestone, a decision that will help steer the course towards a safer, more sustainable future.

From this perspective, I see opportunities for growth, as well as challenges ahead. As the landscapes in which we operate become increasingly competitive, they also continue to provide fertile ground for innovation. It is imperative that we continue to focus on efficiency, quality, and delivering the very best possible – living up to the Vaisala brand and what we stand for, in everything we do.



  
Raimo Voipio  
Chairman of the Board of Directors



# President's Message

Vaisala celebrates its 80 year anniversary in 2016. Throughout the past decades, Vaisala has been looking to improve measurements in weather observations, as well as in controlled environments. Vaisala has also maintained its curiosity, which drives novel solutions that help our customers make better decisions. For us this is a passion, to uncover innovative solutions to problems and issues our customers face every day. At Vaisala we have continued to engage in activities that are designed to help ensure the long-term viability of the planet, particularly from the perspective of the environment.

## 100% Renewable by 2020

It is our responsibility to apply the very latest technologies, in order to be able to deliver the most accurate and reliable products and services. Not only for our customers, but also to help enable scientists to better understand climate change, and reduce its potential impacts.

In 2015, Vaisala announced its objective to be 100% powered by renewable energy in 2020. This may seem like a bold statement, but we are moving closer to this target every day. On the grand scale, we are a small company, however it is important to play our part in the global effort to reduce the amount of carbon-based energy. Renewable energy sources are dependent on the weather for production. Vaisala has an important role here too, as we work to develop the solutions to enable predictable and reliable operations for renewable energy producers.

We continue to pursue our ambitious strategy to be a part of the renewable energy revolution. Bringing our curiosity to the table, we are supporting the full spectrum of wind and solar energy development and operations. Vaisala is committed to help make renewable energy even more viable.

## Novel Solutions for Better Observations

In Vaisala we have long been at the forefront of observing the changes that have been happening in the environment. In the 1930s, the scientific community was yearning to measure and better understand weather phenomena, as well as enable weather prediction. It was Professor Vilho Väisälä who perfected a device which measures temperature, humidity, and pressure from the upper atmosphere. Over the decades since, Vaisala has become a truly global company, serving customers in every country, with 1,600 staff worldwide. In the 1970's, research and development work into developing the HUMICAP® sensor brought new customers, opened new markets and created new applications for Vaisala. The HUMICAP® has revolutionized the industrial capabilities of humidity measurement, as well as make

more precise measurements. This innovation also enabled the further development of the radiosonde. The evolution of the radiosondes continues, now with the latest RS41.

We have an obligation to simply be a good steward of the planet, as climate change continues to be the greatest threat to humankind. For example, high voltage transformers are a critical component in the generation and transmission of electricity worldwide. For the renewable energy industry in particular, they are also a key point of vulnerability. This is because any downtime experienced will prevent the export of electricity, leading to substantial financial losses for asset owners and operators as well as energy shortfalls for national grids. Lead times for transformer repairs and replacements can be several months, greatly exacerbating associated business interruption costs. Our solution, the Vaisala Moisture, Hydrogen and Temperature Transmitter MHT410 provides reliable early warning detection to transformer problems with 24/7 asset monitoring.

In April 2015, Nepal was hit by a 7.8 magnitude earthquake which killed over 9,000 people and injured more than 23,000 as hundreds of thousands of people were made homeless. Following the devastating earthquake, Vaisala responded to support the Department of Hydrology and Meteorology (DHM). The DHM had been hit hard by the earthquake. Three regional DHM office buildings had sustained major damages. Several meteorological observation networks were also damaged. After the disaster, there was huge demand on weather data and forecasting as bad weather hindered rescue operations. In response, Vaisala donated one automatic weather station and provided access to Thunderstorm Manager for DHM to help support the rescue efforts in Nepal. Today the rebuilding continues and people from around the world are working hard to support Nepal on the road to recovery.

## Continued Focus on Safety

The Vaisala GLD360 provides continuous monitoring of storm events wherever they occur. Last year, there was particularly vigorous activity in the Pacific, attributed partly to a potent El Niño. While Hurricane Sandra became the strongest hurricane to develop so late in the season, in November 2015, the year was underscored by Patricia which developed in late October. Hurricane Patricia reached wind speeds of 200 mph, and became the strongest tropical cyclone ever recorded in the western hemisphere. These systems provide real-time monitoring that allows decision-makers to prepare for extreme weather events, providing vital data to enable accurate forecasting.

Another area where Vaisala continues to play an important role is in road network monitoring,

where we provide both hardware and information systems. Here too, Vaisala is participating in projects that are seeking to make a better impact for the future. Working with a consortium led by NTT DATA, the Exeter City Council and Devon County Council are conducting a ground-breaking, two-year intelligent transport project. Through the project, the group aims to identify solutions that will alleviate traffic congestion in and around Exeter, a historic city in the county of Devon, in south-west England. The Engaged Smart Transport project will use real-time traffic and weather sensor data, combined with other data sources such as eyewitness and behavioral information to better understand the factors affecting people's travel behavior. It will reveal where and why congestion happens and identify solutions to address these problems. The consortium has been awarded match-funding by Innovate, the UK Government's innovation agency. Vaisala is supporting this project with environmental sensors that provide information on local weather and road conditions.



### **Partnering for Effect**

To leverage our position as the world leader in our field, we have joined some important initiatives in 2015. Vaisala has become a signatory of the Caring for Climate program of the UN Global Compact. This initiative emphasizes the need for strong corporate action to work towards the mitigation of climate change. Vaisala also joined the Finland based Climate Leadership Council, a coalition that catalyzes businesses and research organizations to create business opportunities out of climate change technology. Moreover, as part of our commitment to clean energy, we joined the ranks of other leading companies in the RE100 business coalition advocates the transitioning of the private sector to use renewable energy.

We believe in observations for a better world, curiosity, courage, and science-based innovation. Vaisala is always looking towards the future, with a positive spirit. In 2015, we took several steps in support of these words, and I take pride in Vaisala being a participant in these ongoing efforts.

A handwritten signature in blue ink that reads "Kjell Forsén". The signature is written in a cursive, flowing style.

*Kjell Forsén*  
President and CEO



# Observations for a Better World



# Vaisala at a Glance

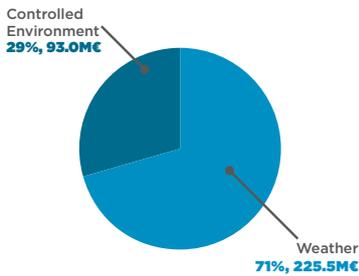
Vaisala is a global leader in environmental and industrial measurement. Building on 80 years of experience, Vaisala provides observations for a better world. We are a reliable partner for customers around the world, offering a comprehensive range of innovative observation and measurement products and services. Headquartered in Finland, Vaisala employs approximately 1,600 professionals worldwide and is listed on the NASDAQ Helsinki stock exchange.

[www.vaisala.com](http://www.vaisala.com) [www.twitter.com/VaisalaGroup](https://www.twitter.com/VaisalaGroup)

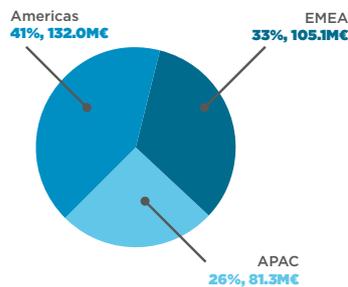
## Vaisala Group Key Figures

Net sales .....	318.5 M€
Operating costs .....	274.3 M€
Operating result .....	29.6 M€
Personnel, Dec.31, 2015 .....	1,588
Personnel expenditures .....	130.0 M€
Offices .....	32 offices in 15 countries
R&D Expenditures (% of net sales) .....	36.0 (11.3%)
Total Market Value of Vaisala A and K shares (A-shares only), Dec.31, 2015 .....	431.6 M€ (350.4 M€)

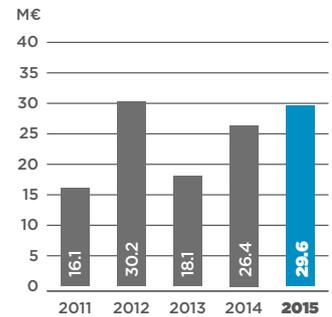
**Net Sales by Business Area 2015**



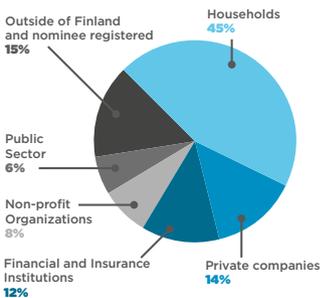
**Net Sales by Region 2015**



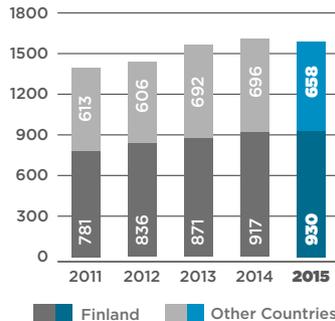
**Operating Results**



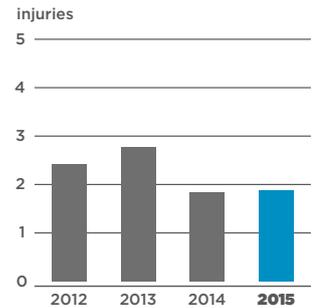
**Shareholders**



**Personnel**



**Lost Time Injuries per 1 Million Hours\***



\* LTI 1-day

# Highlights of 2015

Vaisala performed well in 2015 despite challenging market conditions. Both business areas increased their orders received mainly in Americas, and Controlled Environment Business Area's order intake grew in all regions totally by 18%. Net sales growth was strong and the three hundred million barrier was crossed as the highest ever net sales were EUR 318.5 million. The Controlled Environment Business Area performed especially well as its net sales increased by 16% year-on-year to EUR 93.0 million. The Weather Business Area net sales were EUR 225.5 million and increased by 3%. The operating result was EUR 29.6 million and increased by 12%. The EUR 3.2 million improvement was due to higher net sales but certainly the restructuring and related cost savings had a positive impact as well. Vaisala's orders received were EUR 318.5 million resulting in 8% increase from previous year.

## January

In January, Vaisala announced the restructuring of its business. The goal of the restructuring was to strengthen customer focus across all functions and to ensure operational efficiency through simplification of the organization. The changes led to 52 positions being made redundant, out of which 18 impacted the operations in Finland. The restructuring is estimated to result in annual cost savings of EUR 4 million.

## February

The Federal Aviation Administration chose Vaisala as the supplier for real-time lightning data. The data will be used to generate more accurate short-term weather forecasting for use in aviation and aerospace operations in order to improve the safety of en-route flights and terminal areas. The contract covers the contiguous United States, the Caribbean, Alaska, and Hawaii.

## March

Vaisala celebrates forty years of aviation weather with its customers. In 1975 Vaisala developed a weather station that collected various weather observations automatically at Helsinki Vantaa Airport, and in 2015, Vaisala has installed over 1900 of these Automated Weather Observing Systems (known as AWOS) around the world. Today, Vaisala supports aviation with weather observations, severe weather information and winter weather decision making and monitoring tools.

Vaisala signed a USD 5.8 million contract with the U.S. National Weather Service (NWS) to deliver Vaisala Sigmet Digital Receiver and Signal Processors, when NWS is upgrading their NEXRAD weather radar network. Vaisala has delivered weather radar signal processors and software as well as other meteorological products and services, including upper air sounding systems, precision and global lightning data, and various weather instruments to the NWS over the past decades.

## May

In May, Vaisala launched the Nomad 3 Data Logger, a flexible and highly portable data management device that makes wind measurement easier and more economical for developers and operators around the globe. As the wind energy market expands into increasingly distant and more complex terrain worldwide, the portability and connectivity of data logging equipment for field technicians continues to grow in importance, something the Nomad 3 Data Logger has been engineered to achieve.

## June

Vaisala played a critical role in supporting SunEdison Inc., and its power-plant holding company, TerraForm Power Inc., in the \$2.4 billion purchase of First Wind Holdings Inc. in late 2014. Prior to finalizing the deal, asset valuation was required to determine the worth of First Wind's existing portfolio. Announced in June, Vaisala was selected by SunEdison to deliver the necessary analysis to evaluate key development assets.

## September

Vaisala announces its climate commitment of becoming 100% powered by renewable energy by the year 2020. As Vaisala is strongly involved in the renewable energy industry through its customers, we see a clear benefit in advancing the development and use of renewable energy sources. Vaisala also became a member of RE100, a business coalition that promotes corporations' transitioning into renewable energy.

## October

Vaisala signed a multi-year contract with the Commonwealth of Pennsylvania to deliver and manage a statewide Road Weather Information Network. The network collects and distributes operationally relevant weather and pavement conditions to the Pennsylvania Department of Transportation for the purpose of maintaining safe and optimum traffic mobility conditions on state roads and highways.

## November

The CDP Nordic 2015 report published in November, included Vaisala on the Nordic Climate Disclosure Leadership Index (CDLI) for the second year in a row. The CDLI includes the top 10 percent of the Nordic reporting companies. Vaisala earned a score of 99A- of the maximum 100A.

Vaisala also announced in November that it has signed a long-term commercial partnership agreement with Schneider Electric, the global specialist in energy management and automation. The partnership enables global wind developers, owners, and operators to benefit from enhanced forecasting services provided by Vaisala through Schneider Electric's software platform.

Read more on these stories:

[www.vaisala.com/en/press/news/2015/](http://www.vaisala.com/en/press/news/2015/)



## NASA's Curiosity Rover Uncovers Liquid Brine Conditions on Martian Surface

**The first evidence of liquid water on Mars was announced in May 2015. These findings were based on the atmospheric observations by Curiosity Rover. The Rover continues its work on Mars with Vaisala pressure and humidity sensor technology onboard.**

NASA's Curiosity Rover has performed surface measurements around the Gale crater near the Martian equator for more than two years. The rover features pressure and humidity devices designed to observe the Martian atmosphere that have been developed by the Finnish Meteorological Institute (FMI). The Rover Environmental Monitoring Station (REMS) instrument suite, as well as the Sample Analysis at Mars (SAM) and Dynamic Albedo of Neutrons (DAN) instruments have made it possible to assess that, during night time perchlorate salts on the upper layer of the Martian surface are able to absorb sufficient moisture to form a brine solution, even if the temperature is well below zero degrees Celsius.

The humidity device REMS-H and pressure device REMS-P have been developed by FMI and are based on Vaisala's sensor components. Vaisala has equipped the FMI devices onboard the rover with standard Vaisala HUMICAP® humidity sensors and specially customized Vaisala BAROCAP® pressure sensors. Thanks to the long-term stability and accuracy of these sensors, as well as their ability to tolerate dust, chemicals, and harsh environmental conditions, the technologies are especially suitable for such demanding applications.

### Uncovering Martian Secrets

Compared to Earth, Mars is a dry planet. However, there have been observations of small amounts of water in the atmosphere in the past, though never in liquid form. Martian surface temperatures vary during the night from -135 to -70 °C, and the Martian top surface layer along its equator achieves plus degree temperatures during the day time. Considering the temperature and low pressure of the atmosphere on

Mars, it has been estimated that liquid water could not be present on Mars.

Now, NASA's Mars Science Laboratory (MSL) and the observations it has carried out by the Gale crater, and specifically based on the measurements made by FMI and Vaisala technology, together combined with numerical models, have demonstrated otherwise.

"In the Martian atmosphere, below the surface layer at a few centimeters depth, lie sufficient quantities of perchlorate salts, which are able to absorb water from the atmosphere. The result is a thin membranous salt-water solution, or pockets of liquid with salt content, that form during the night - despite the fact that the water film temperature is well below freezing," Head of Research at FMI, Ari-Matti Harri, states. "During the day, the surface layer temperature rises, and this causes the liquid accumulated during the night to evaporate as gas. It is important to note that these findings do not yet conclude the possible existence of organic compounds on Mars." However, it can be assumed that the observed area along the Gale crater is representative of conditions throughout the Martian surface.

### The Ultimate Laboratory for Atmosphere Research

The atmospheres of Mars and Earth have similar dynamics, because the axial tilt of the planets' rotation axes (25° Mars and 23,5° Earth), as well as the rotation times, meaning the length of the day (a Martian day is 24 hours and 37 minutes) are very close to each other. The dry Martian atmosphere represents a simplified laboratory model of the Earth's atmosphere. "By studying the simplified, dynamically Earth-like, atmosphere we can potentially learn something that we might miss on Earth because of the effects of water systems, vegetation, and high humidity levels," Ari-Matti Harri concludes.

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NASA's quest to 'follow the water' has resulted in the strongest evidence yet; that liquid water flows intermittently on present-day Mars. Learn more on the latest discovery at: <http://go.nasa.gov/1KOrJsv>

# Strategy

We see ourselves as being the leading provider of operational value for our customers in weather and controlled environment markets. We focus on customer value, reliability, and simplification to create value by bringing together our technological expertise and the needs of our customers. We believe that increasingly loyal customers drive us towards long-term profitable growth.

Vaisala's goal of profitable growth will be achieved through the implementation of the strategic themes: creation of customer value, reliability, and simplification.

Additional customer value will be created in Weather Business Area by building new business around decision support services that are offered to renewable energy, aviation and roads customers. Controlled Environment Business Area will focus on enhancing offering and developing the sales channel for life science and industrial customers in order to create value for customers' operations.

Reliability will create customer satisfaction and loyalty. High quality of products and services, well-functioning customer service and on-time actions will deliver reliable customer experience.

Simplification will create operational efficiency. Optimized global networks, streamlined supply chains, common capabilities and continual improvement in all functions will ensure increased efficiency of Vaisala's operations.

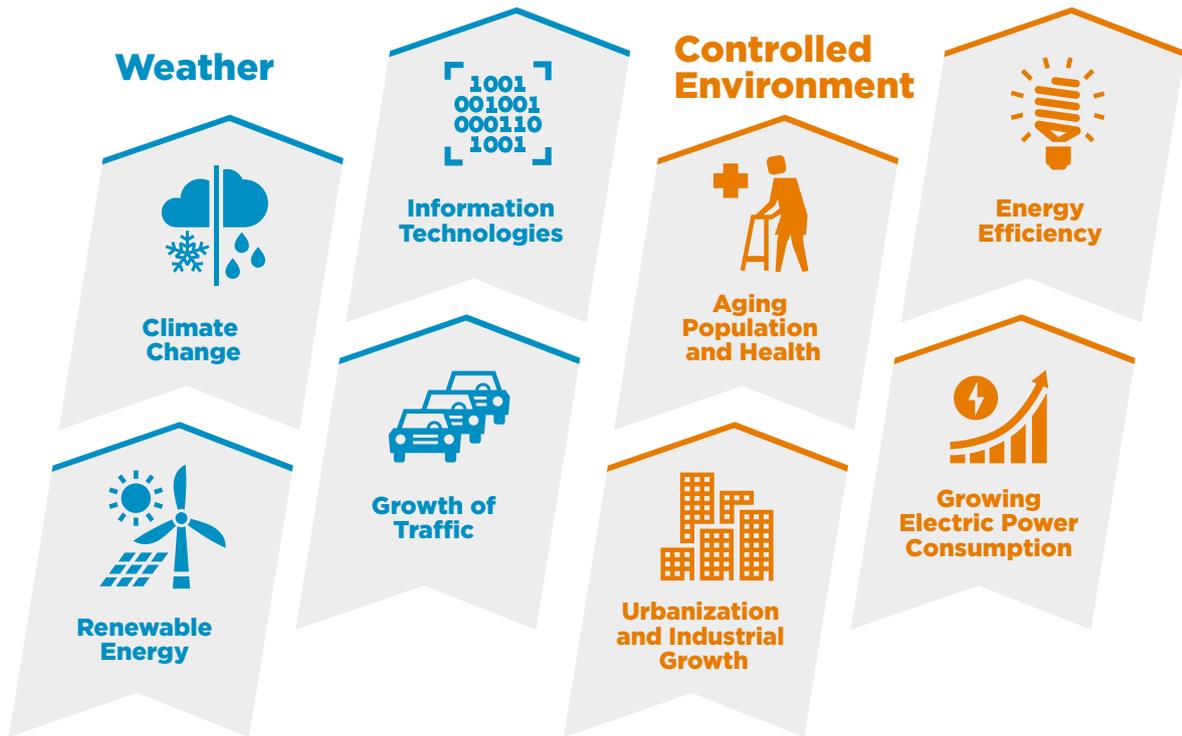
## Vaisala's Long-term Financial Targets

Vaisala targets an average annual growth of 5%. In selected growth businesses such as renewable energy, life science and power transmission the target is to exceed 10% annual growth.

Vaisala's objective is profitable growth and the target is to achieve 15% operating profit (EBIT) margin towards the end of the year 2018.

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

## Global Mega Trends and Growth Enablers for Vaisala



Vaisala's markets are directly affected by several mega trends and market drivers.

## Strategy Implementation in 2015

In 2015, Vaisala continued the investments in strategic growth areas in Weather and Controlled Environment Business Areas.

### Weather Business Area

Weather Business Area continued its efforts to create customer value by building new business around information services that are offered to renewable energy, aviation and roads customers. Several new advanced products and software were launched to enhance growth as well as to replace existing products. Key launches included Observation Network Manager NM10, IRIS Focus and Thunderstorm Manager.

Vaisala continued its efforts to drive growth in renewable energy business, however, the sales performance did not yet meet expectations. The renewable energy market continued to be vibrant and growing, but market entry took longer than anticipated due to long authorization and approval processes, evolving business models and customers' postponed decision making. Nevertheless, Energy business unit continued to invest in building new offering for renewable energy customers and gaining industry acceptance of the existing product portfolio. A good example of building new offering was the launch of Nomad 3, a flexible and portable data management device, which enables wind energy developers and operators to operate more efficiently.

### Controlled Environment Business Area

Controlled Environment Business Area's product leadership strategy provided a strong growth platform during 2015. Controlled Environment Business Area continued to grow through industrial measurement solutions in various industries across all regions.

Controlled Environment Business Area continued investing in its growth markets, Life Science and Power Transmission. Continuous monitoring systems offered to Life Science and other industrial customers had double digit growth with improving profitability which is already contributing to Controlled Environment Business Area's operating profit even though investment phase still continues. Vaisala enhanced its offering for Power Transmission customers by launching MHT410 for high voltage transformers. The Vaisala Moisture, Hydrogen and Temperature transmitter MHT410 was launched to the market in July. Other key launches include new products to the Vaisala Carbon Dioxide, Humidity and Temperature Transmitter Series GMW80 integrating the new generation CARBOCAP® sensor.

Regional expansion continued by contracting new distributors in countries with high industrial potential. This had a positive impact on distributor sales, which achieved double digit growth.

## Corporate Governance

The General Meeting of Shareholders, the Board of Directors and the President and CEO, assisted by the

Management Group, are responsible for the operations of Vaisala Corporation.

### General Meeting

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

### Board of Directors

Vaisala's Board of Directors is responsible for the administration and the proper organization of the operations of the Company. In accordance with Vaisala's Articles of Association, the Company's Board of Directors comprises at least four and maximum eight members. All Board members are appointed by the Annual General Meeting. The Board of Directors elects a Chairman and a Vice Chairman from among its members.

The majority of the Board members must be independent of the Company and at least two members in this majority must be independent of the Company's major shareholders. The Board of Directors evaluates the independence of the members annually. In addition, the Board should consist of members of both sexes and the members should have the chance to allocate a sufficient amount of time to managing their tasks.

The term of the members of Vaisala's Board of Directors deviates from the Recommendation 10 of Corporate Governance Code, which recommends a term of one year. The term of the Vaisala's member of the Board of Directors is determined in accordance with its Articles of Association. Under the Articles of Association, a member's term is three years, beginning at the close of the General Meeting in which the member is elected and ending at the close of the third subsequent Annual General Meeting.

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

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

At the end of 2015, the Board of Directors consisted of seven members, five male (71%) and two female (29%).

**President and CEO**

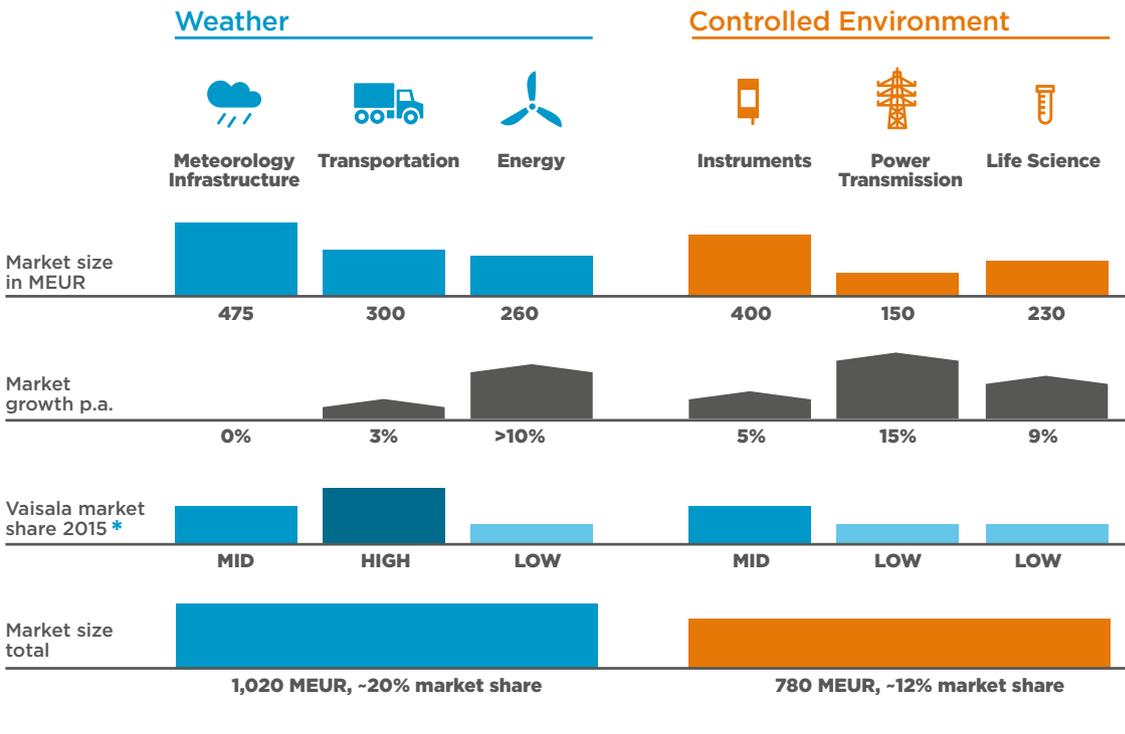
Vaisala's President and CEO is appointed by the Board of Directors. The President and CEO is responsible for the everyday management of the company in accordance with the guidelines and instructions given by the Board of Directors, and informs the Board of Directors of the development of the Company's business and financial situation. The President and CEO is responsible for ensuring that the company's accounting is legally compliant and that its financial affairs have been arranged in a reliable manner.

**Management Group**

The President and CEO is the Chairman of Vaisala's Management Group. The Management Group meets once a month to assist the President and CEO in developing the strategy, implementing the strategy, managing operational business, as well as preparing matters handled by the Board. It consists of the heads of business areas, finance and control, operations, and human resources. The Management Group had six members in 2015.

More information on Vaisala's corporate governance can be found online at [www.vaisala.com/investors](http://www.vaisala.com/investors)

**Vaisala Markets, Global Market Sizes and Growth in 2015**



**Market share indication**

- LOW <10%
- MID 10-25%
- HIGH >25%

\* Vaisala's own estimate of the size of market that is addressable currently or with organic development in the roadmaps.

## Sustainability Management

Sustainability in Vaisala is managed by various guiding principles. The main principles are Vaisala's Code of Conduct, Supplier Code of Conduct, Environmental Policy, Anti-Corruption Policy and Community Outreach Policy, together with a number of practical guidelines as well as quality and environmental standards. Vaisala complies with all national laws and regulations wherever it operates.

Sustainability in Vaisala is seen as threefold. Foremost, we comply with a set of strict methods that are characteristic of a responsible company, and insist on the same standard from our collaborators. Secondly, we derive advantage through our stakeholders by being a responsible actor in society and lastly, we transform markets and customer requirements by creating shared value with sustainable solutions.

The business case for sustainability in Vaisala is primarily founded on a broad portfolio of information services, which entail close partnering with customers; this allows us to provide decision-support systems and services that improve efficiencies in customers' operations. As an example, forecasting renewable energy production has a major impact on energy utilities, displacing vast amounts of fossil fuel and keeping grid operations reliable.

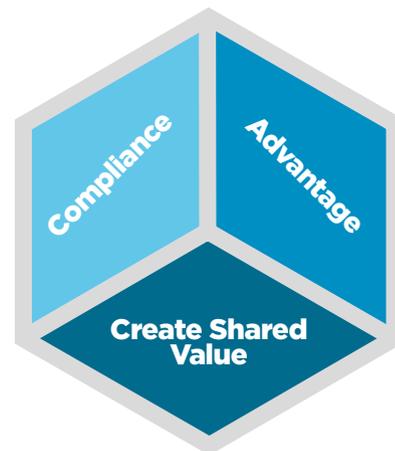
We constantly seek ways in which we can include a sustainability element in our products or services thereby generating added value for our customers and at the same time lessening their environmental impacts through the use of our solutions.

Vaisala's senior management has set an ambition level for the sustainability strategy and formulated a long-term sustainability vision for Vaisala: to become a world-leading sustainable supplier in selected market segments. This requires us to be able to maintain a competitive advantage in our chosen marketplaces and excel in providing sustainable products and services to our customers.

Internal sustainability practices are subject to guidance from the Group's Sustainability Manager in cooperation with all internal stakeholders. The sustainability function resides in the Marketing & Communications function headed by the Chief Marketing Officer who reports to the CEO. In practice, the most important guidance is set out in our Code of Conduct and our other internal policies and emphasized in personnel and leadership training.

The company's operations with the largest impact on our sustainability have been identified as new product development, sourcing, manufacturing, services and maintenance, business travel and employee commuting. Our manufacturing sites follow a certified ISO 14001 environmental management system and periodically report on their environmental performance to the Chief Quality Officer, who reports to the CEO. We do not currently offer monetary incentives for management or personnel to reach specific sustainability targets. Instead, all members of staff are assessed based on not only the job performance but also on how they adhere to the company values.

### Sustainability in Vaisala is Founded on Three Core Principles



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Our sustainability vision is to become a world leading sustainable supplier in selected market segments

# Material Aspects

These are the material aspects that guide Vaisala's sustainability strategy and priorities. We have surveyed our key stakeholders to learn more about how they perceive Vaisala's sustainability work and which aspects they would like to have us pursue further. The materiality assessment below describes which aspects have been determined

material and in which parts of the value chain they are relevant. The assessment has been conducted with input from a wide range of Vaisala stakeholders. The list of aspects is the basis for our sustainability strategy and objective setting and reporting.

	Vaisala Group	Contractors	Supply Chain	Distribution Channels	Customers
	<b>PEOPLE</b>				
Safety & well-being	●	●	●	●	●
Talent	●			●	●
Customer relationship	●	●	●	●	●
Stakeholder engagement	●	●	●	●	●
Human rights			●		
	<b>INTEGRITY</b>				
Abiding to laws and regulations	●	●	●	●	●
Anti-corruption	●	●	●	●	●
Supply chain management	●	●	●		
Community outreach	●				
	<b>SUSTAINABLE TECHNOLOGIES</b>				
Safety and efficiency of customer operations	●	●	●	●	●
Research and innovation	●		●	●	●
Resource efficiency	●		●		●
Climate change	●				●
Handprint	●			●	●
	<b>PERFORMANCE</b>				
Economic responsibility	●	●	●	●	●
Quality	●	●	●	●	●
Environment	●		●	●	●
Operational efficiency	●	●	●	●	●
Footprint	●	●	●		●

# Organization

Vaisala is organized into a matrix where business, R&D and services are conducted by two business areas: Weather and Controlled Environment. The business areas are supported by group wide functions of Operations and Support Units. Sales teams are divided into the two business areas.

## Weather

Weather customers care for the safety and wellbeing of people and effectiveness of operations under all weather conditions. They include meteorological institutes, airports and airlines, road and railroad authorities, renewable energy customers, maritime market segments, as well as defense forces. We bring operational benefits to our customers through a wide offering of products, projects, weather information and services.

The Weather business is a partner to customers whose primary interest is the safety and protection of lives and property through effective operations and decision-making support under any weather conditions. Accurate, real-time, uninterrupted and reliable weather data is the cornerstone for efficient operations. The Business Area is divided into three business units, Meteorology Infrastructure, Transportation, and Energy.

## Meteorology Infrastructure

National meteorological institutes provide weather forecasts and warnings to safeguard people and property. They use weather observation data also to measure extreme weather phenomena and follow the changing climate. Turnkey projects and capability improvement for prediction of severe weather are imperative for customers in the developing markets.

Vaisala's offering to the meteorological institutes includes a versatile range of high-end products, integrated measurement systems and services. Vaisala is the trusted partner of meteorological and hydrological institutes whose primary interest is safety and wellbeing of people and safeguarding of property. Customer needs vary from standard weather observation equipment to further automation of weather networks and remote monitoring systems.

Vaisala weather observation products and systems are also used in defense weather observation applications. Defense forces and security organizations use Vaisala's weather observation systems and solutions to support operational decision-making and improve safety and efficiency in air, land and sea operations. In addition to their defense functions, many national defense organizations also control civilian airports and contribute to national weather forecasts.

## Transportation

The Transportation business unit serves a broad range of customers who need to safeguard lives,

ensure continued operations and strive for sustainable transportation networks.

Aviation organizations, airport operators and airport service providers are responsible for passenger safety, flight schedules and the overall efficiency of the airports. Vaisala's aviation weather observation offering provides real-time and reliable observation information to all relevant airport stakeholders under all weather conditions. The Airports segment supports effective operational decision-making to improve the safety, efficiency and environmental compatibility of airport operations.

The national, regional, and municipal road authorities ensure safe and smooth traffic management and maintenance operations. The Vaisala Road and Railroad business helps them to improve mobility and safety by measuring, forecasting and integrating environmental observations to support operational efficiency, and optimized decision-making.

Safety, security and efficiency are top requirements also in various maritime operations. Accurate and reliable weather information is vital in ensuring safe operations in ports, on ships and offshore platforms. Maritime customers include the shipbuilding industry, offshore oil and gas platforms, and ports. Reliable measurements and environmental observations help customers enhance their operational efficiency and optimize decision-making.

## Energy

Weather is the largest variable impacting electricity generation, transmission, and demand and it provides the fuel for renewable energy projects. Energy customers work with Vaisala to support efficient, reliable, and profitable electrical energy systems around the globe with a wide range of measurement, assessment, forecasting, and asset management products and services.

Our real-time and historical lightning information ensures continuous energy generation, improved safety, and reduced costs in both energy production and transmission. Renewable energy developers and operators use Vaisala equipment and services to support the entire project lifecycle, from greenfield prospecting and due diligence to operational forecasting and plant optimization.

## Controlled Environment

Controlled Environment serves customers in multiple industries with over 30-year industry knowledge. The main drivers for our customers are operational quality, risk reduction, productivity and energy savings. Our customers operate in different types of environments – from small incubators to massive engine rooms and high rise buildings – where reliable measuring and monitoring of the ambient conditions are a prerequisite for successful

operations. Customers use our fixed and hand held measurement instruments as well as calibration services for temperature, humidity, dewpoint, carbon dioxide, moisture and hydrogen in oil, and pressure. Large customer groups include pharmaceutical, biotechnical, medical device and drug distribution companies, as well as power generation and transmission, automotive, semiconductor, electronics, and building automation integrators.

The Controlled Environment Business Area is organized into three regions: Americas; Europe, Middle-East and Africa; and Asia-Pacific.

### Group-wide Functions and Support Units

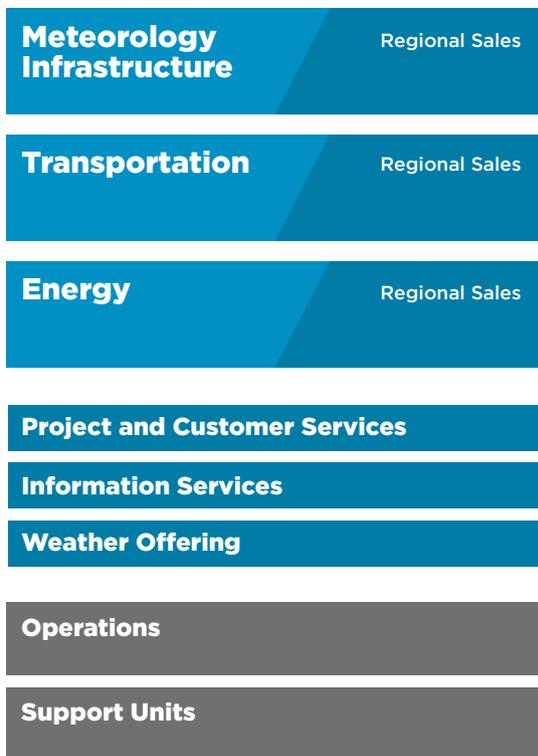
Vaisala's Operations function serves both Business Areas and includes manufacturing, logistics, supply-chain management and related activities.

Support units include Finance & Control, Marketing & Communications, Group Quality, Human Resources, Legal & Facilities, and Group Business Infrastructure.

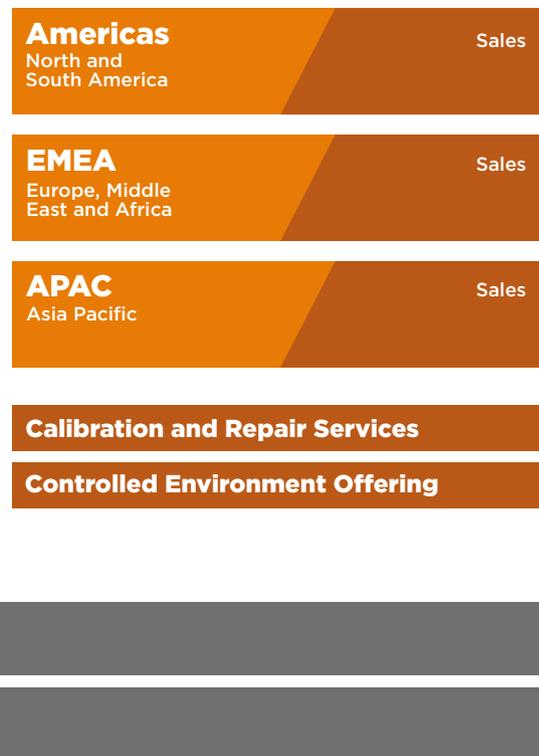
The operational sales and services functions and research and development teams are within the business areas. To ensure an efficient way of working and two-way information sharing in the matrix model, the organizational reporting structure includes several dotted line roles that link the business areas and functions together.

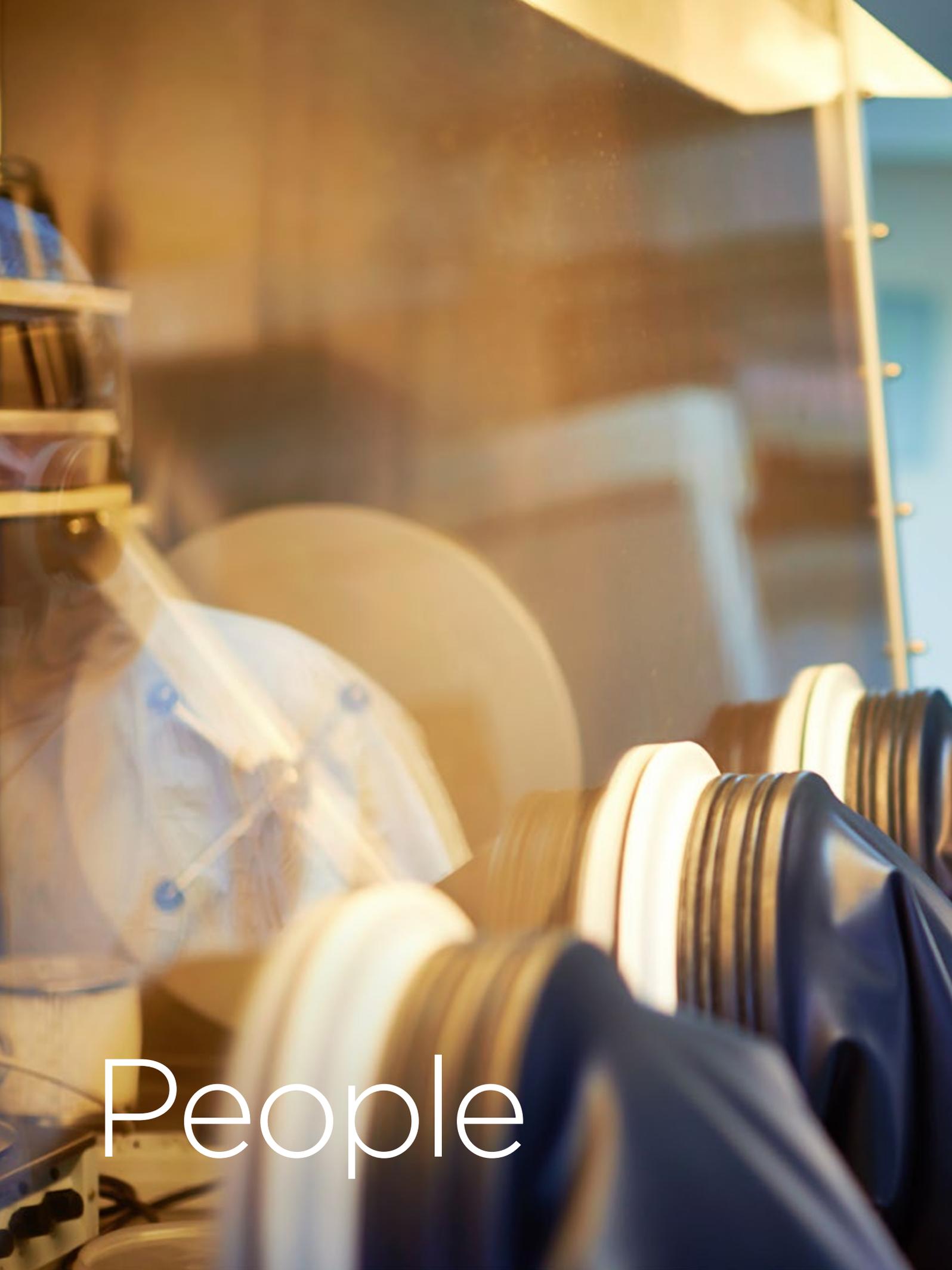
## Vaisala Organization

### Weather



### Controlled Environment





People





# Stakeholders



Vaisala wants to have an engaging relationship with its stakeholders, as they are the ones who influence the future of our business. We strive to be open and transparent, responding to stakeholders' needs to our best abilities. We are active in many corners of society and want to influence and convince people with our expertise. Working with environmental issues is a priority in our scope of societal affairs and it is in these forums we believe we have the most to offer.

## Stakeholder Process

We identify and evaluate our stakeholders as part of our risk management and corporate responsibility processes. Both of these assessment methods are carried out internally and are part of corporate-wide processes. We determine the impact of various stakeholder groups on the company and analyze how our actions in turn affect stakeholders. We actively seek partnerships and joint opportunities with partners, customers, suppliers, academia, research institutes, and other parties. We recognize that not all our stakeholders will either want to or be able to take part in our sustainability communication and will not always voice their opinions about what they consider material to our reporting. We try to fill this gap by keeping abreast of good reporting practices in other companies within our industry. In this chapter we discuss our relationship with what we regard as our key stakeholders.

A broad sustainability stakeholder survey was commissioned in 2013, we believe that these results are still valid. The results clarified stakeholders' expectations and since then we have been able to better align the Group's sustainability prioritizations with those of our stakeholders.

As stated in the beginning of the report, the dialogue with Vaisala's different stakeholders has led us to choose four themes concerning what Vaisala and the stakeholders find material for the company. These themes are People, Integrity, Sustainable Technologies, and Performance.

We seek to engage academia, the scientific community, customers, partners, the media, and various organizations in dialogue with us in order to convey to them what it is we do best and why Vaisala is worth their attention. We have prioritized our stakeholders into three levels according to how significantly they influence Vaisala.

## Customers

Vaisala's major customer groups are:

- Meteorological infrastructure and services
- Airport authorities and airlines
- Road and rail organizations
- Maritime
- Energy industries
- Life science companies
- Industrial companies and integrators

<b>1</b>	<b>Customers</b>	<b>Employees</b>	<b>Investors and Financial Institutions</b>
<b>2</b>	<b>Suppliers and Contractors</b>	<b>Universities and Research Collaborators</b>	<b>The Environment</b>
<b>3</b>	<b>Regulators and Decision-makers</b>	<b>External Organizations and Interest Groups</b>	<b>Media and the General Public</b>

**Stakeholder activities:**

- Annual customer satisfaction survey across markets and regions.
- Ongoing online survey for industrial customers.
- Monthly online survey on technical support and services.
- Ongoing feedback surveys on customer training and field service operations.

**Employees**

Vaisala employs nearly 1,600 professionals and their well-being is important to us. Our goal is a work environment that encourages innovation and offers the opportunity for long-term professional development. The corporate culture at Vaisala emphasizes reasonable hours and workloads. Furthermore, we believe that success comes from the work of dedicated employees who take care of their own well-being. We regularly monitor our staff for perceptions on their work. The results have shown us that not only are the members of our staff motivated by their assignments, but that they are proud to work for Vaisala and feel that their work is meaningful and rewarding. We are proud of these results and want to develop the company further, embracing our employees' commitment.

**Stakeholder activities:**

- Annual staff survey for the entire staff and pulse surveys mid-year.
- Performance and Development Cycle which incorporates annual development discussions, objective setting and performance review as well as a People Forum.
- Internal development programs for managers and subject area experts, Vaisala Business Learning Program, LEAD-training and mentoring.

**Investors, Owners and Financial Institutions**

Vaisala Oyj is a publicly listed company on the NASDAQ Helsinki stock exchange. The largest individual shareholders include descendants of founder Professor Vilho Väisälä, Novamator Oy, Finnish pension funds and other financial institutions, and the Finnish Academy of Science and Letters. The foundation donates its earnings from Vaisala shares to the Yrjö, Vilho and Kalle Väisälä Fund, which supports research in natural sciences. Other large shareholders include private households, private companies, and non-profit organizations. Foreign ownership amounted to 14.8% of share capital in December 31, 2015.

**Stakeholder activities:**

- We arrange an interim results report and presentation and Q&A to investors, analysts and the media each quarter
- Annual General Meeting
- Stock exchange releases

- Roadshows, investors and analysts meetings, conference calls and seminars.
- We also set up meetings with institutional investors and organize events for analysts. The previous Capital Markets Day was held in Vaisala's Head Office in 2015.

**Suppliers and Contractors**

Vaisala seeks long-term partnerships with its suppliers and wants to build mutual trust between its partners. We do this by giving our partners a good insight into our demand forecasting, constructive performance feedback as well as our support and help. In return, we expect our suppliers to respect our values and vision, and enable our commitment to quality and sustainable production to preserve our reputation and high quality of our products.

**Stakeholder activities:**

- Suppliers that cover more than 80% of Vaisala's total spend are part of a sustainable supply chain scheme, which includes sustainability scoring, on-site audits, performance reviews and ESG and compliance requirements to sub-suppliers.

**Universities and Research Collaborators**

Research and development activities are a key prerequisite for Vaisala's success. We place a special emphasis on the continuous development of our expertise. Vaisala collaborates in several projects with meteorological authorities and leading research institutes in the field, such as the National Oceanic and Atmospheric Administration (NOAA), Colorado State University, and the US National Center for Atmospheric Research (NCAR) in the United States, and the American Meteorological Society. In Finland, Vaisala collaborates with VTT Technical Research Centre of Finland, University of Helsinki, University of Eastern Finland and Aalto University. In Asia, Vaisala is working in many projects together with the Chinese Meteorological Administration's Institute of Urban Meteorology and the Nanjing University for Information Science and Technology (NUIST). Vaisala collaborates closely with a number of national meteorological offices around the world and is an active participant in UN's World Meteorological Organization (WMO). Vaisala also collaborates with the German Weather Service's Meteorological Observatory at Lindenberg and the Finnish Meteorological Institute on several projects.

**Stakeholder activities:**

- Vaisala grants research scholarships to universities, students and researchers every year in the United States, China and Finland. Read more about our cooperation in the Society chapter of this report.



## The Environment

The environment is not only at the core of our business, it is also an important stakeholder for us. We have always regarded the natural environment as something captivating and something we need to measure carefully. As our products are directly linked with natural phenomena, we find it important to understand these phenomena and relate to them in our work.

### Stakeholder activities:

- We encourage our staff to take a general course in meteorology and arrange expert talks in our offices, at conferences, and in schools and universities.

## Regulators and Decision-makers

Various government bodies stipulate regulations that directly affect both Vaisala and its customers. Lately, regulations concerning hazardous substances and conflict minerals, put forward through EU and US legislation, have directly impacted Vaisala's supply chain and customers.

### Stakeholder activities:

- Vaisala constantly monitors upcoming regulation e.g. through relevant industry organizations and legislators.

## External Organizations and Interest Groups

Vaisala is a member of the Federation of Finnish Technology Industries, and has members in several of the Federation's expert working groups. Vaisala is also a member of the International Chamber of Commerce Finland (ICC) and our experts participate in ICC's working groups.

Vaisala is a member of the Finnish Water Forum, a joint public-private cooperation platform that represents the variety of actors in the Finnish water sector. Moreover, Vaisala is part of the Finnish Corporate Responsibility Network FIBS, and the Finland based Climate Leadership Council CLC.

Vaisala is a Sustaining Member of the American Meteorological Society and is a sponsor of its Freshman and Undergraduate Scholarship Program.

### Stakeholder activities:

- Activities depending on organizations' and working groups' planned activities.

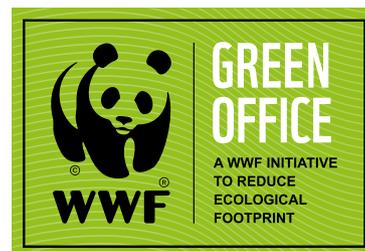
## Media and the General Public

Our goal is to ensure that Vaisala is recognized as a responsible and innovative thought leader in environmental monitoring by generating positive coverage with clear and consistent messages and establishing relevant media relationships. As a publicly listed company, Vaisala also guarantees that timely, accurate and transparent financial communications are available to all its stakeholders.

The general public is dependent on reliable weather forecasts. Farmers, sailors, motorists, pilots and event organizers are just a few examples of people who rely on weather forecasts to support their activities. Vaisala is indirectly providing the general public with accurate and reliable weather data through meteorological institutes.

### Stakeholder activities:

- Continuously maintaining dialogue with media in main markets
- Active monitoring and dialogue on social media





## Young Ambassadors' Program

Text contributed by CIMO and YFU.

Thirteen Finnish high school students were awarded the 2015 Finland-U.S. Young Ambassadors' Summer Exchange Scholarship. The Young Ambassador' program was initiated in 2011 by the Center for International Mobility (CIMO) and Youth for Understanding Finland (YFU), with support from the U.S. Embassy in Helsinki. These 13 grantees were selected after careful consideration of 291 applications from throughout Finland.

The Finland - US Young Ambassadors' Program is administered by Youth For Understanding USA (YFU USA) and Suomen Youth For Understanding ry (YFU Finland). YFU USA is proud of its relationship with YFU Finland and both organizations have been exchanging since 1958. YAP scholarship winners were carefully selected after an application process which



included a group interview. The selection committee met at the YFU office in Helsinki. All thirteen scholars' students demonstrated an exceptional desire to learn about the United States, its land and its people - and also showed special interest and knowledge in environmental matters throughout the selection process.

### Vaisala's Honorary Ambassador

Vaisala was a sponsor of the 2015 Young Ambassadors' Program and appointed one of the youngsters to be a special Vaisala Ambassador. The group visited Vaisala's North American Headquarters in Boulder, Colorado and learned first-hand how we work together with research partners and how atmospheric measurements are being conducted every day around the world.

The scholarship recipients participated in a six week program in Washington D.C. and Colorado. The program focused on innovations in green technologies and introduced the participants to various initiatives underway in the United States generally and Colorado in particular. The objective was to showcase U.S. institutes and individuals who are using energy innovation to shape their future. The participants met with government and non-government officials in Washington and had their arrival orientation there and then spent 5 weeks living with American families in Colorado. During their stay in Denver and Highland area, the scholars visited several institutions which have demonstrated innovation in energy technology.

The focus of the visits and the scholarship was on environmental studies and businesses. Apart from visiting Vaisala, the study tour included among others, The National Center of Atmospheric Research (NCAR) in Boulder, Museum of Nature and Science in Denver, National Renewable Energy Laboratory NREL in Golden, Colorado University in Boulder, Laboratory for Atmospheric and Space Physics LASP in Boulder, The Solar Technology Acceleration Center SolarTAC in Denver, and National Earthquake Info Center NEIC in Golden.

**The visit at Vaisala's Boulder Operations showed the Young Ambassadors first-hand how meteorologists use atmospheric measurements to predict weather.**



## Managing Talent



Motivated and highly educated staff are a cornerstone of Vaisala's success. Retaining creative and skilled people is not necessarily simple, and we want to make every member of our staff feel valued and respected. Although on average, employees stay with us for more than a decade, we do not take this for granted but aim for highly motivating career plans. This kind of long-term commitment has provided us with extremely competent staff dedicated to developing superior technology and long-term customer relationships.

### Preferred Employer of the Future

A reputation and image as a good employer are important to us when competing for talented individuals. We want to be acknowledged as a great company to work for and want potential employees to learn about the opportunities that we offer. Technology and research-intensive companies like Vaisala are reliant on a constant and growing talent pool on the job markets. To attract talent to Vaisala, we engage researchers, academics and students, and focus on retaining critical expertise in the company and constantly develop our personnel.

Risks and opportunities relating to personnel are part of our risk management, and our Code of Conduct lays down the basic principles regarding our treatment of personnel.

### Competence Development

In 2015 both Vaisala's competence development activities focused on sales support, customer and application knowledge as well as process development.

ERP upgrade implemented in January 2015 was supported by comprehensive training programs in order to support its many users in applying re-designed processes, new functionalities as well as using new systems and solutions integrated with ERP. The upgrade was followed by further process, working practice and related competence development throughout the year. Interactive training sessions with supportive e-learning modules were developed to facilitate the implementation of process changes and usage of new applications and tools.

Weather Education program started in the USA and in Europe, and 180 people attended the training sessions. The program was designed to enhance participants' understanding of weather phenomena, its impact on weather related customers and how Weather Business Area's offering is aligned with customer requirements. Also the development of value selling capabilities continued.

Vaisala Business Learning Program continued with strategy and leadership modules and strategic

business assignments. Also Leadership development Program LEAD continued and Leading Quality modules were organized in all regions.

Vaisala's approach to competence development combines internal and external learning programs, co-operation with universities and researchers, job-rotation, international assignments, mentoring and coaching processes. Vaisala maintains a comprehensive e-learning platform to complement other learning methods. The online eLearning environment hosts more than 40 interactive modules.

It is our objective that all Vaisala employees have regular development discussions with their supervisors to discuss their work duties, career aspirations, competence requirements and professional development. To develop our people further, we promote job rotation between our business units and offices in different countries.

Staff training costs amounted to approximately EUR 700 per employee in 2015. Due to several local sources of training records, there is no precise overall statistic on the number or duration of training events.

### Mentoring

Vaisala has a mentoring program to support the professional development of its employees. We use mentoring as a method of accelerating employee development and provide learning opportunities for both the mentor and the mentee.

The program is a structured, goal oriented 12–18 month process where mentees and mentors build a professional relationship. It consists of a facilitated kick-off session, coaching activities during the program as well as a facilitated feedback session at the conclusion of the program. The core of the program is built on regular meetings between the mentor and mentee.

In addition to offering a learning opportunity to the participants the mentoring program also increases cross organizational understanding through the selection of mentees and mentors from different Vaisala units and enhances the leadership and coaching culture at Vaisala.

## Well-being at Work

Vaisala Fit wellness program started in our North American Offices during 2015. The purpose is to positively re-enforce employees' well-being through encouraging healthy lifestyle choices. The program is run by a virtual committee and each office has their own FIT coordinator.

Aligned with 'Well-being at work' theme, Finland based teams started interactive training sessions in early 2015. All teams in Finland will conduct trainings by the end of 2016. In the training sessions, teams discuss the factors of well-being and collaborations with the help of case exercises. The participants also innovate how these factors could be better acknowledged in their daily work. Early care model was renewed in Finland during last year and trainings on the topics were offered for managers.

A global Pulse Survey was conducted to map the level of employee well-being and engagement at Vaisala. The results show that Vaisala employees are proud to work at Vaisala, find their work meaningful and consider their goals as relatively clear. In addition, the leadership of immediate superiors is a key strength at Vaisala.

## Collective Agreements and Trade Unions

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

Salaries paid by the company are based on local collective and individual agreements, individual performance and the demand level of each job. The base salaries are supplemented by results-based bonus systems, which cover all Vaisala personnel.

Minimum notice periods are based on labor legislation in each country we operate. For Finland this means a minimum notice period from two weeks to six months depending on the length of employment.

## Diversity, Equality and Inclusiveness

We demonstrate equal employment opportunity in all recruitment, hiring, and working practices such as training and development. In North America, Vaisala Inc. is an Equal Opportunity Employer (EOE). Qualified applicants are considered for employment without regard to age, race, color, religion, sex, marital status, national origin, sexual orientation, disability, or veteran status. If an applicant needs assistance or an accommodation during the application process because of a disability, the company is pleased to provide it. No applicant will be penalized as a result of such a request.

According to the Finnish Non-Discrimination Act, section 4, an employer must create a plan to advance equality. The goal is that people at Vaisala work within a safe, caring, communal and accessible operating culture.

The equality plan is a plan on how Vaisala Oyj, as an employer, in the course of their operations, shall promote equality and prevent and address discrimination. The goal of our equality plan is that Vaisala's personnel, jobseekers and the subcontractors operating within Vaisala's guidance and offices, as well as leased personnel, will work and be treated equally, independently of their attributes.

Equality and fairness are also important elements of Vaisala's compensation policy. We do not distinguish between gender or other non-professional attributes in employee compensation or benefits plans.

## Major Changes during the Reporting Period

At the end of 2015, our staff had decreased by 25 employees or 1.5% compared with the situation a year earlier. The total staff count at the end of the reporting period was 1,588 (1,613 in 2014) and the average age of personnel was 42.9 years. Altogether 18 employees retired during the year and their average retirement age was 64.8 years.

The number of employees decreased also due to organizational restructuring that started in January 2015. The announced estimates on staff reductions concerned up to 60 full-time equivalent employees. After the statutory co-operation negotiations were completed, altogether 52 positions were terminated of which 18 resided in Finland. The reductions took place through redundancies, retirement options and terminations of temporary contracts. Vaisala provided a range of support measures for those affected by the restructuring, including support and training for re-employment of affected workers.

The Energy business implemented an efficiency improvement program throughout the year that was initiated in 2014. This included moving production from the acquired Newton office to the North American manufacturing facility in Boulder, Colorado. The Boston office grew in size due to staff and operations being relocated from our Vancouver office as well as the Newton Office, which was closed in 2015. The Vaisala Office in New Delhi, India was also closed and operations were moved to Bangalore.

Whenever we face a situation in which there are job losses or personnel relocations, we draw up a plan on the types of training and support that we can arrange. In some cases where organizational changes result in job losses, we may offer outplacement assistance packages that support the person's future employability and help with career transition. In the last couple of years, such packages have been offered to employees in the U.S., Canada and Finland who have been made redundant due to structural changes.



## A Giant Leap in Seattle

Giant Leap is Vaisala's internship program for university and polytechnic students who are in at least their third year. Up to 20 students work with real-life projects that have genuine business relevance for a period of three months over the summer. Challenging but also rewarding, the program is designed for students with a variety of skills, qualities, and educational backgrounds.

Holger Teichgraeber recounts his experiences from his Giant Leap internship at Vaisala Seattle Operations. He has a Bachelor's degree in Mechanical Engineering, having studied in Germany and was a Masters student at the Energy Resources Engineering Department at Stanford University, when he joined Vaisala's Giant Leap internship program. "Weather has a big impact on the energy sector and while from an engineering background, it is exciting to learn about it every day", Holger starts explaining.

### Real Business Challenges for Ambitious Students

In his project, Holger was determining the value of renewable energy forecasting in global electricity markets. His focus was specifically on wind power. In order to find out what value the forecasts have, he researched and modeled electricity market rules for countries all over the world. "After looking at markets in India, China, Europe and the United States, the diversity of rules that I found is astonishing. Would you have guessed that in the United States, there are over 100 different electricity market regulators that all impose different rules?" Holger says. "The project was a great way to combine my interests in engineering, policy and economics and I am very enthusiastic about the results", he concludes

Eric Gruit, Senior Scientist at Vaisala Seattle Operations was Holger's project tutor. "The work Holger completed is highly valuable to both Vaisala and the renewable energy industry as a whole since it clarifies how we incentivize better forecasting around the world. In the project, we took the unique perspective of the



**Holger Teichgraeber participated in the ambitious Giant Leap internship program in 2015.**

power producer, rather than the electricity system operator, and asked the question, 'How do the existing market rules impact my bottom line when my power generation deviates from what I promised in advance?' So, we analyzed how much existing forecast errors cost in terms of imbalance charges that are imposed on the market participants, and perhaps more importantly, how much they are reduced if forecasting accuracy incrementally improves," Eric recounts.

The outcome of the project shows that many markets charge an amount equivalent to about 3% of the value of the energy due to current levels of forecasting error and that incremental improvements to forecast accuracy can reduce that amount. However, the rate of reduction is relatively meager, meaning that the overall incentive for market participants to invest in more accurate forecasting techniques is currently small. This presents a policy challenge to the industry to find a "Goldilocks" solution where imbalance charges are high enough to incentivize more accurate forecast, but not so much as to discourage participation on the system.

The 2016 internship program brings more young bright minds together again to work on exciting and ambitious challenges in several Vaisala locations.

More information about the program can be found at: [www.facebook.com/VaisalaGiantLeap/](http://www.facebook.com/VaisalaGiantLeap/)

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Expert talk on "The value of more accurate power forecasting in global electricity markets": <http://bit.ly/1QQ5c6N>



## Open Weather Data Challenge

**We believe that weather data, much of which is free and open to anyone, are underutilized. Open weather data can be used to create and deploy disruptive technologies, or develop applications that can address weather and/or climate-related issues around the world.**

Every day, millions of people are touched by the technologies Vaisala creates. Our technologies provide information on weather and other environmental phenomena to meteorologists, road authorities, and other renewable energy industry players, as well as controlled industrial environments.

The challenge was launched at Slush 2015 convention in Helsinki, the place where entrepreneurs, tech talent, investors, media and corporate executives meet. Vaisala's Chief Technology Officer and Head of Technology Kevin Petty opened up the competition by challenging individuals and groups of people to come up with ways that catalyze weather data into something even more valuable than it is today.

"We want you to access open source, freely available weather related data and solve the problem that's of interest to you", Mr. Petty summarized. "The types of problems that I'm talking about are endless... There's going to be opportunities where you take weather related data and combine it with other datasets to come up with something entirely new, something that nobody has ever heard of". The next innovative use of this vast amount of data could be just around the corner.

### Competition Calling for Solutions

To make this challenge more interesting to a wider audience, a competition was set up to encourage people from a variety of backgrounds to give it a go. We are especially looking for software and weather enthusiasts to leverage open weather data in innovative ways. Three key elements that we are looking in a winning solution are:

#### Novelty

We are looking for novel ideas and applications. The idea and application should demonstrate originality and uniqueness, with a focus on innovation.

#### Potential for Impact

At Vaisala, we believe that weather observations can lead to a better world. From this point of view, we will gauge the idea's potential at impacting weather- and climate-related issues.

#### Feasibility

The key to any innovation is its ability to be realized. How feasible is it that the idea can make the impact it is set out to achieve?

The winner will be announced on March 31st 2016 and awarded a 20,000 € and acknowledged publicly as the Vaisala Open Weather Data Challenge winner.

More information:

<http://www.vaisala.com/weatherchallenge>





# Occupational Health and Safety



Vaisala continues to strengthen its focus on safety at work. Global objectives, such as enhanced visibility of management commitment, mitigation of risks, and inclusion of third party employees in the scope of safety management, are set to guide the way to world class safety performance. We believe that zero injury is achievable and we are committed to attaining that goal through continual improvement.

The Global Health & Safety Team plays a key role in driving a global compliance program. The team provides expertise and support to Vaisala operations by issuing tools and corporate guidelines ensuring that the best practices are used wherever we operate. In 2015, was on ensuring sufficient competencies for controlling and reporting hazard risks and to support regulatory compliance on all sites.

## Common Processes and Procedures

All employees are entitled to remain in good health at work, and staff well-being is a theme of great importance at Vaisala. We want to ensure that the working environment and methods are safe, regardless of the country of employment or employee status. This commitment extends to our contractors and service partners.

We develop common procedures and unified requirements in cooperation with our employees and ensure implementation through training and regular audits.

## Reporting and Investigation

We encourage an active approach in reporting. Employees are directed not only to report incidents and hazards, but also to suggest safety improvements to the workplace and working methods. In order to prevent injuries and a recurrence of incidents, reported non-conformities are investigated and corrective actions based on root causes are implemented promptly. As an example of increased awareness and sense of responsibility, our employees reported more near misses, hazards and OH&S improvements than ever before. Proactive reporting frequency increased by over 500% compared to 2014, from 8 cases to 48 reported cases. These reports allowed us to interfere early with hazards and risks and gave us several opportunities to prevent injuries.

To increase the transparency of incident management and to share lessons learned, we have developed an Environment, Health & Safety (EHS) reporting system which covers all Vaisala operations. A globally harmonized reporting procedure and database allows for improved health and safety performance follow-up.

Total Recordable Injury (TRI) rate decreased by

**35%**

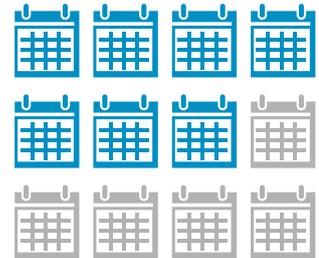
compared to previous year.



**7**

injury free months in

**2015**



TRI was below target rate of

**3.4**

injuries

at

**3.1**

Proactive reporting frequency increased

**500%**

from previous year.

The reporting represents the whole Vaisala Group and focus on:

- Lost Time Injuries of at least one day's absence, normalized as rate of injuries per million hours worked (LTI-1); and
- Total Recordable Injuries (TRI), all injuries and illnesses requiring care beyond first aid: medical treatment cases, restricted work cases, lost time injuries, fatalities and occupational illnesses, normalized as rate of injuries per million hours worked.

## Employee Participation Essential

Occupational safety is a joint cause requiring ongoing effort from both employees and management in order to maintain and develop a safe working culture. Although Vaisala is considered a low risk workplace, hazards do exist and we make sure these do not go unnoticed. Risk assessments and job hazard analyses are conducted by those employees who are the best experts of the task being evaluated. Employees are also included in incident investigations and root cause analysis. Moreover, health and safety information and lessons learned are shared with all levels of the organization.

In Finland, Seattle, WA and Canada it is a statutory requirement for the employer and employees to meet in health and safety committees. In Finland, our Health and Safety Committee consists of eight employee representatives and two management representatives. Their objective is to improve safety culture throughout the site, follow-up on incident reporting and implement the global EHS strategy and action plan. This committee meets a minimum of four times annually, and in between meetings it organizes events and information sharing sessions for staff. The Canadian committee is formed of six members, four of whom are non-management staff representatives. The committee meets on a monthly basis to e.g. conduct site inspections and talk about recent incidents or injuries at the workplace. Under legislation, committee members are entitled to eight hours of paid training per year. In our Seattle office the OH&S committee is made up of 3 non-managerial employees and 3 managers who meet on a monthly basis.

Currently the representatives in health and safety committees make up 0.9% of the total workforce, representing 59% of staff. We intend to have at least one non-management employee representative on each site of more than 10 employees. When this target is achieved, employee representation in health and safety matters will be doubled, helping us to raise awareness throughout the organization.

## Increasing Importance in the Value Chain

Reliability is Vaisala's key customer promise. Our reputation as a trustworthy business partner is a fundamentally important and this is also reflected to

Health and Safety. Low incident rate means smoother operations and reduced risks for ourselves as for our customers.

Our customers are becoming more safety oriented and requiring adherence to strict Health and Safety standards from their suppliers and sub-suppliers. For Vaisala to remain an attractive business partner, we need to answer to the increasing demands. To guarantee efficient Health and Safety management and continual improvement, Vaisala has implemented OHSAS 18001 compatible Health and Safety management system. We are also following closely the development of ISO 45001 standard with conceivable certification when the standard is finalized.

## The Journey Towards Zero

Positive development of safety culture and high employee morale requires commitment from both staff and the management. Providing a safe working environment and ensuring that staff remain in good health is a foundation for a reliable and thriving workplace. We rely on a three-way approach, where compliance, competence and risk control form the framework for our Health and Safety vision. The objective is to ensure reliable business operations and at the same time, a responsible work environment.

Increasing employee awareness is a continuous effort that will build up a safety culture, where employees understand their responsibilities, are able to take care of their own safety as well the safety of others.



Integrity





## Vaisala's Values

Our way of operating is innovative and driven by the following four values. They make up the basis of all our activities, both within Vaisala and with our partners and customers.



### Customer Focus

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

### Innovation and Renewal

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

### Strong Together

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

### Integrity

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

Our Giant Leap interns get to experience first-hand how our values are put into practice in everything we do.





## Weather-Ready Nation Ambassador

Destructive, damaging weather can wreak havoc across communities, especially those with limited resources or education about preparing for severe weather impacts. We can all contribute to building a better informed and prepared public, with smarter business and community planning that are able to leverage more resilient societal infrastructures.

As one of the first companies to join the Weather-Ready Nation Ambassador™ program, Vaisala is privileged to continue its work with the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS) on this important initiative. Embracing the concept of a collaborative Weather Enterprise, the Weather-Ready Nation (WRN) brings together government organizations, private enterprise and academia in an effort to build communities that are ready, responsive and resilient to severe weather events. This requires the participation and commitment of a nationwide network of partners, but Vaisala also hopes to drive a global Weather Enterprise perspective that will extend the concept of actionable weather information in the defence of life and property to nations and communities far beyond the United States.

### Vaisala's Role as an Ambassador

WRN Ambassadors serve a pivotal role in affecting societal change, with the underlying charge of helping to build nations that are ready, responsive, and resilient to the impacts of extreme weather. This goes well beyond commercial, business interests, and for Vaisala, the Ambassador program speaks directly to our company's values and ethics.

As such, the Ambassador program represents an extension of Vaisala's contribution to, and collaboration with, the Weather Enterprise at large. Whilst Vaisala's portfolio is designed to better manage the socio-economic impacts of severe weather, with this also comes a wider moral imperative – and that is to ensure that the application of technology, and the harnessing of innovation, truly benefits nations at large.

We believe this is at the core of sustainable development and creating shared value; the notion that one should strive to keep ecosystems in balance in order to build for the future. In building weather-ready nations, Vaisala sees the human-weather ecosystem as being pivotal to socio-economic sustainability; this is the protection of life and property that is at the heart of meteorological agencies around the globe.

### Capacity Building in Exposed Climates

Extreme weather events, such as typhoons, floods and lightning storms, often occur in regions that are already highly exposed to adverse weather conditions. Many of these countries lack the preparedness and infrastructure to deal with extreme weather events in a safe manner. Vietnam with its population of more than 90 million citizens and 3,500 kilometres of coastline is an example of a country where weather and climate has a substantial impact on the safety of people and livelihoods.

In 2016, Vaisala announced that it will deliver a comprehensive weather observation network to the National Hydro-Meteorological Service of Vietnam. In this project Vaisala will establish a high quality nation-wide meteorological infrastructure in the country. This includes weather radar and lightning detection networks, software toolkit for weather forecasting supplied by the Finnish Meteorological Institute as well as training and spare parts. The funding of the contract is arranged through the Finnish Concessional Credit instrument provided to National Hydro-Meteorological Service of Vietnam. This instrument is part of Finland's development cooperation portfolio, governed by the Ministry for Foreign Affairs of Finland. When complete, the National Hydro-Meteorological Service of Vietnam will have the capabilities needed to ensure that the whole nation is served with high quality meteorological data and weather forecasts.





# Code of Conduct

In order to ensure and further promote responsible business practices, Vaisala has a Code of Conduct which is to be followed by all employees. The Code embodies our rules for behavior in conducting business at or with Vaisala, and translates our values and responsibility into actions taken by our staff every day. The Code highlights important issues such as regulatory compliance and integrity, human rights, workplace behavior and safety, anti-corruption, healthy competition and environmental aspects of our operations.

The first Code of Conduct was introduced to the organization in 2008. Since then, all employees have been required to complete an online training module which is also part of the orientation program for new employees.

In December 2015, a revised Code of Conduct was published, together with a new training module. At the time of reporting in February 2016, 93.5% (84.4%, 2014) of current Vaisala employees had completed the new Code of Conduct training module either online or in separate training sessions.

Vaisala has a separate Supplier Code of Conduct which sets forth the minimum expectations that are required from our suppliers and subcontractors.

## Vaisala's Code of Conduct

Vaisala Group ("Vaisala") is a global leader in environmental and industrial measurement. Our goal is to provide reliable environmental observations for better decision making, safety and efficiency. We aim at growing and conducting long-term profitable business in an ethical and responsible manner. We endorse the United Nations Global Compact strategic initiative for sustainable business practices and support the Global Compact's Ten Principles which are derived from the areas of human rights, labor, environment and anti-corruption.

This Code of Conduct ("Code") sets forth the most important principles and practices guiding Vaisala and its employees in all of their actions. As Vaisala's reputation is reliant on the conduct of its employees, each Vaisala employee is expected to comply with the requirements set forth in this Code without exception.

Vaisala's business partners are required to endorse the principles of this Code as part of their contractual relationship with Vaisala. We have a separate Supplier Code of Conduct in which we require that our suppliers and subcontractors meet the standards and requirements set forth in the Supplier Code of Conduct.

This Code has been approved by Vaisala's Board of Directors on October 5th, 2015.

### 1. Compliance with Laws

We comply with all applicable laws and regulations in the countries in which we operate. Where differences exist between local laws, regulations, customs or norms and this Code, Vaisala strives to apply which

ever sets the highest standard. In addition to following formal legal norms, we make no compromise in acting in an ethical manner. Our ambition is to be a good corporate citizen and let our commitment to integrity show through in all our actions.

### 2. Human Rights

We respect human rights as defined in the United Nations' Universal Declaration of Human Rights and we seek to promote them in our conduct and practices. In particular, we refrain from using any form of forced or child labor and insist on the same from our business partners. We endorse the International Labour Organization's Declaration of Fundamental Principles and Rights at Work, which entail, inter alia, respecting our employees' right to peaceful assembly, freedom of association and collective bargaining.

### 3. Employees

We value innovation and curiosity and encourage the professional and personal growth of our employees. We recognize the value of diversity and do not accept any form of discrimination, harassment or other offensive or inappropriate behavior from or towards our employees. We are committed to providing a safe working environment and require the same from our business partners.

### 4. Anti-Corruption

We maintain a zero tolerance approach towards all forms of corruption and abide by the anti-corruption laws applicable in the countries in which we operate. Our reputation as an honest and reliable company is of paramount importance to us, and each employee is expected to safeguard this reputation. The monetary value of any gifts, entertainment or other types of hospitality offered to clients or business partners, or received by Vaisala's employees, must be reasonable and appropriate under the circumstances. Making any offers to public officials or other business partners with an intent to improperly influence their decisions is strictly prohibited.

### 5. Use of Vaisala's Funds and Assets

Vaisala's funds and assets are to be used for the benefit of Vaisala only, and they may not be used for any unlawful or improper purpose. Employees must avoid and report events or circumstances where their personal interests may be in direct or indirect conflict with the interests of Vaisala. Such scenarios could include a situation where a Vaisala employee holds a financial interest in a competing entity or in a business partner.

### 6. Competition

We recognize the importance of healthy competition in the marketplace and encourage fair competition worldwide. We comply with all laws and regulations concerning competition and expect the same from

our competitors and business partners. Business practices we renounce include participating in cartels, abusing one's dominant position in the market place and fixing prices with competitors.

### **7. Environment**

Our investment in and commitment to sustainable business practices demonstrates our ambition to be a good corporate citizen. The environment is a key stakeholder for us, and we comply with all generally accepted international environmental standards and often seek to exceed those standards. In addition, we constantly seek to include a sustainability element in our products and services.

### **8. Implementation and Monitoring**

We implement this Code by training our employees and requiring periodical acknowledgements of their compliance with this Code. Further, compliance with this Code is continuously monitored by regional/business unit heads and immediate supervisors and is also subject to internal audit. If any Vaisala employee becomes aware of or suspects a violation of this Code, they are required to report their concerns through the internal communication channel which provides anonymity. Violating this Code will lead to appropriate corrective action, up to and including the termination of employment or business relationship.

### **Regulatory Compliance**

We believe that responsible business conduct is based on fairness and integrity. Vaisala complies with all national laws and regulations, and does not respond to suspicious business proposals. We continuously follow up changes in legislation and keep our staff informed

through internal communication, such as the company intranet, and training for key employees.

There were no confirmed complaints, incidents or sanctions by authorities during 2015. Specifically, no incidents of corruption, anti-competitive behavior, anti-trust or monopoly practices or any other breach of legislation or regulations were confirmed during 2015. Furthermore, there were no reported concerns or breaches of human rights, labor rights, or environmental legislation in the adjacent supply chain.

### **Compliance Committee**

Vaisala has a compliance committee whose task is to oversee that all parts of Vaisala's operations are in line with the Code of Conduct as well as all other legislation and regulation. The committee has members from the Legal Department, Finance & Control and Human Resources and is headed by Senior Vice President for Compliance and Risk Management.

### **Grievance Mechanisms**

Vaisala provides an internal grievance mechanism for its employees through a dedicated channel, the Fair Play Forum. The channel operates by e-mail and regular mail and accepts both anonymous and signed messages. Responsibility for the channel and actions taken on cases put forward in the forum lies with the Compliance Committee. Cases are handled confidentially by the Committee.

The Fair Play Forum also acts as a medium for clarifying questions about our Code of Conduct or the Code of Conduct training. All Vaisala employees are required to take part in annual training covering the Code of Conduct. This channel also serves our suppliers.





# Supply Chain Management



We believe that by actively engaging with our suppliers to bring sustainability topics forward, there will be a mutually beneficial impact on both our suppliers' and our own performance.

We rely on hundreds of suppliers in our operations, and therefore we have recognized sustainable supply chain management to be an important element in deploying our vision. We also believe that by actively engaging with our suppliers to bring sustainability topics forward, we can contribute to tangible improvements in both our suppliers' and our own performance.

## Typical Product Supply Chain

Vaisala's direct suppliers are located close to its manufacturing sites. The company sources components and mechanical parts primarily from Finland, Western-Europe, and the United States, and to a lesser extent from key Asian countries. Raw materials used in Vaisala's own sensor factory are currently sourced exclusively from Europe. The upstream supply chains resemble those of other typical global electronic manufacturing industry supply chains.

In addition to the sensor factory in Helsinki, Finland, which produces sensors for all product families, Vaisala's manufacturing involves assembly, configuration, and calibration of electronic and mechanical equipment. Typically, our products are highly customized according to customer specifications, and therefore all products are made to order, thus keeping inventories of finished goods low. Final products are shipped directly to customers from the manufacturing sites in Helsinki and in Boulder, Colorado.

Product life cycles are typically from 1 to 20+ years, with scheduled recalibrations and maintenance during that time. Recalibration and maintenance are performed at one of Vaisala's four service centers or in many cases on site. At the end of the product life cycle, customers are instructed to follow

the best available local practices for recycling electronic equipment, or to return products to Vaisala for recycling. Vaisala is required by the European Union Waste Electrical and Electronic Equipment (WEEE) Directive to finance the take-back, reuse, and recycling of products that is placed on the EU market.

## Engaging Suppliers

With the purpose of communicating our sustainability expectations better and ensuring a responsible supply chain from materials sourcing all the way to our distributors, Vaisala has a Supply Chain Sustainability Development program which is being further developed in 2016. The scheme is intended to be a long-term process for better identifying and managing risks and opportunities, aligning our supply chain partners' sustainability efforts with our own, and encouraging continuous development and closer collaboration through a constructive dialogue. The tools and resources of the program is part of continuous supply chain management and ESG-topics are brought up regularly with key suppliers.

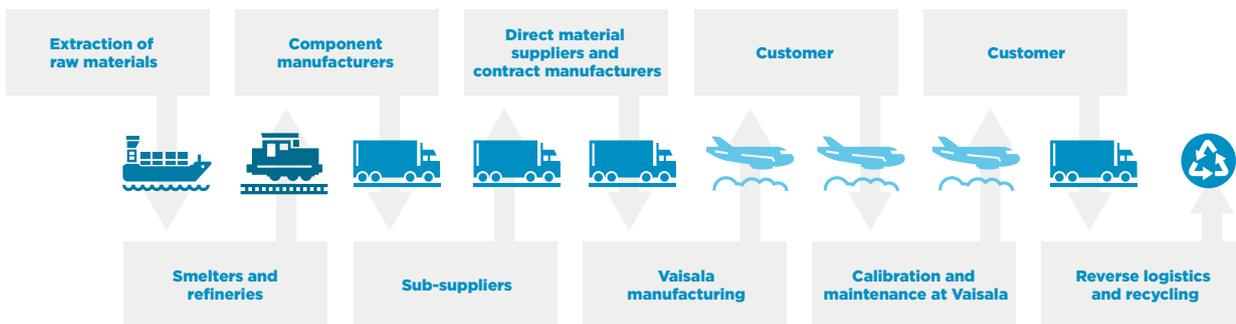
### Key components of the program:

- Supplier Code of Conduct
- Supplier ESG Self-assessment Questionnaire
- ESG-guidance for suppliers
- Audits and quarterly meetings with key suppliers, as part of supplier management

## Rating Suppliers on ESG-metrics

Vaisala applies a Supplier ESG Self-assessment Questionnaire (SAQ) as part of supplier monitoring. The SAQ rates the supplier by asking a series of questions relating to the governance of the supplier and its adherence to standards and labor and environmental laws. The scoring categories are between the supplier exceeding expectations to being far below expectations. The SAQ

Simplified description of a typical supply chain for electronic equipment manufacturing.



forms a part of the supplier risk assessment and raises red flags for breaches in labor and human rights, and environmental issues. If a supplier scores in the lowest category, a corrective action plan must be put in place at once. The SAQ-scoring is discussed bi-annually or when needed with each direct supplier. New suppliers are scored at the time of contract negotiations.

At the end of 2015, Vaisala had 580 direct suppliers. Our target is that at least 80% of total euros spent on direct suppliers would be covered by SAQ-responses, the target for 2015 was met at 86%. There were 8 new suppliers in 2015, two of them had an SAQ-score before the end of the reporting period.

### Supplier Code of Conduct

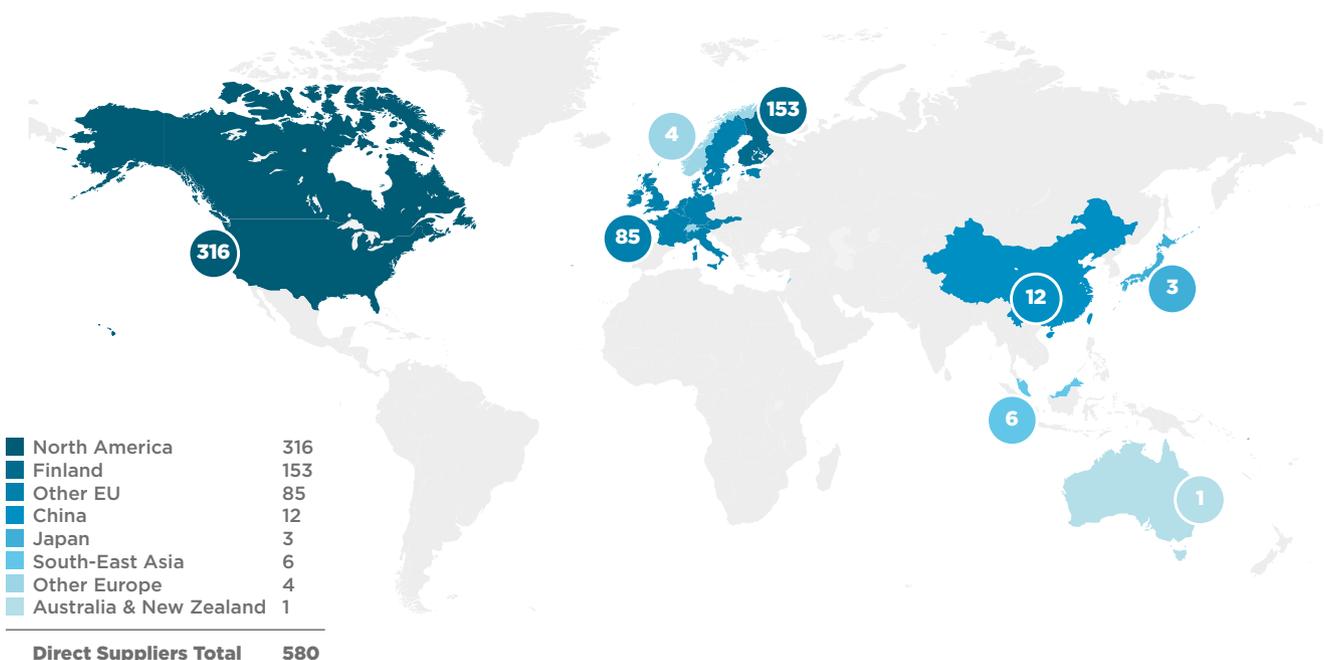
The Supplier Code of Conduct reflects Vaisala's values and the Vaisala Code of Conduct, and is based on principles created by the International Labor Organization (ILO), the United Nations Global Compact initiative, and the Electronic Industry Citizenship Coalition (EICC). The Code of Conduct contains language from standards and policies formulated by the above-mentioned organizations, as well as those of the Business Social Compliance Initiative (BSCI) and Social Accountability International (SAI).

[Read more: Vaisala's Supplier Code of Conduct](http://bit.ly/1piC2R9)  
<http://bit.ly/1piC2R9>

### Compliance to Human Rights and Labor Laws

Vaisala does not condone infringement of human rights or breaches of labor laws in any part of its supply chain and takes appropriate measures to ensure that the risks of any violations of the company's Code of Conduct or its Supplier Code of Conduct are minimized in the adjacent supply chain. Moreover, due to the enforcement of Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, suppliers to Vaisala must ensure that proper precautions are taken in order not to source any materials that have their origin in conflict areas, including but not limited to the tin, tungsten, tantalum, and gold mined in the Democratic Republic of Congo (DRC) or in adjoining countries.

### Vaisala's direct material suppliers





## Community Outreach



Vaisala believes in a world where environmental observations improve daily life. As the global leader in environmental measurement and an active member of society, we acknowledge that the company has a responsibility to support its stakeholders in society and the research community.

Vaisala may provide charitable donations of products, funding or services to non-profit organizations through its Community Outreach Program. The Program's overall objective is to support organizations and projects that advance environmental awareness and science education. All our outreach activities should be in line with Vaisala's values and resonate well with environmental issues such as climate, weather, environmental measurement and environmental sciences.

In 2015, donations were EUR 466,000 globally. Our objective is to focus our donations and continuously correlate them with the community outreach policy. Vaisala does not donate funds to political parties, causes or campaigns.

### Current Sponsorships

Following the guidelines set by Vaisala's Community Outreach Program, we sponsor a variety of different causes.

#### Professor Vilho Väisälä Award

Vaisala funds the bi-annual Professor Vilho Väisälä Award. The award was established in 1985 to encourage and stimulate interest in research in the field of environmental measurement instruments and methods of observation. It is administrated by the World Meteorological Organization, which selects the winners on a biennial basis. The award consists of a medal, diploma and a cash prize of USD 10,000.

In 2004, the WMO Executive Council decided to establish a second Professor Vilho Väisälä Award. The main focus of this award is meteorological instrument work in developing countries and countries with economies in transition. At the same time, the WMO Executive Council adopted new guidelines for granting the Professor Vilho Väisälä Awards. Both awards are granted biannually in connection with the WMO TECO/METEOREX conference and carry a cash prize of USD 10,000. More information about the awards: [www.wmo.int](http://www.wmo.int)

#### Scholarships and Research Collaborations

Vaisala has a research and development cooperation with the University of Arizona in the field of lightning detection. Moreover, the company supports the research on radar meteorology at the Colorado State University. Vaisala also participated in the Distinguished Professor Program (Finland) by supporting scientists at the Finnish Meteorological Institute and University of Helsinki.

#### Young Ambassadors Program

Vaisala sponsors the Finland-US Young Ambassadors scholarship program that sends 15 Finnish youngsters on a six week excursion to the United States. The program is aimed at 16–17 year old students who do well in their studies and have a special interest for environmental issues. The program is cooperation between the US Embassy in Finland, the Center for International Mobility (CIMO) and Youth For Understanding, an international exchange organization.

#### Millennium Technology Prize

Vaisala's success is based on a constant stream of world-class innovations. It is only natural that we are



Finnish artists Signmark and Olli Hartonen raised awareness around equality for handicapped children in Nepal.



Our Beijing team gathers an annual donation of supplies to two rural schools to help children study despite the poor conditions.

a proud supporter of the Finnish tribute for better life, The Millennium Technology Prize. The biannual prize is awarded to groundbreaking technological innovations that enhance the quality of people's lives in a sustainable manner. The next laureate will be awarded in 2016. Previous winners include Professor Stuart Parkin for discoveries leading to increased data storage density; Linus Torvalds for Linux, the open source operating system; Shinya Yamanaka for ethical stem cells research; and Michael Grätzel for dye-sensitized solar cells. In 2015, Vaisala participated in a Millennium Technology Prize event in Shanghai, which focused on "Cleantech and Urbanization" in order to promote nominations for high caliber candidates for the 2016 Prize.

Read more:

<http://taf.fi/en/millennium-technology-prize/>

### **New Children's Hospital**

Vaisala is an honorary in-kind donator for the new children's hospital being built in Helsinki Finland in 2017. Vaisala will be contributing humidity, temperature, and carbon dioxide measurement instruments to the hospital. The equipment is valued at an estimated EUR 225,000 and will be integrated into the hospital's building automation solution.

### **Helping Rural Schools in China**

The team in Vaisala's Beijing Office in China has supported two schools in the poor rural areas the last five years. The supported schools are Changpo Primary School in Yongshan County, Zhaotong City, Yunnan Province and the Qingshuihe Boarding School, YuShu Tibetan Autonomous Prefecture. The donations include clothes, books, stationary, toys and more, donated by Vaisala staff in China.

### **Climbing for a Cause**

In April 2015, Nepal was hit by a 7.8 magnitude earthquake which killed over 9,000 people and injured more than 23,000 as hundreds of thousands of people were made homeless. Vaisala supported local authorities by providing data and equipment to safeguard the rescue operations.

The Finnish rap-artist Signmark and Olli Hartonen travelled to Nepal in the fall of 2015. Signmark raps in sign language, while Olli transfers these lyrics to sound. With their trip, the duo gathered funds to support the rebuilding of a local school in Kathmandu, to raise awareness around equality for handicapped children, and to establish opportunities to study music. Vaisala helped the artists to realize their dream, performing at Mount Everest Base Camp, while at the same time supporting the education of deaf children in the country.

### **Vilho, Yrjö and Kalle Väisälä Fund**

In the 1960's, Professor Vilho Väisälä, the company's founder, donated Vaisala shares to the Finnish Academy of Science and Letters. These shares were used to establish the Vilho, Yrjö and Kalle Väisälä Fund. The Fund provides grants annually for research in mathematics, physics, geophysics, meteorology and astronomy.

In 2015, the Fund granted a total of EUR 1.3 million to 81 researchers. The Fund's available grants are dependent on Vaisala's profits and thus the company has an economic responsibility towards the Fund.

### **Raising Awareness**

Vaisala partners with Heureka Science Centre in Finland in order to increase awareness of atmospheric sciences among children and adolescents. As an example, Vaisala sponsors the Science on a Sphere exhibition at Heureka.

### **Focus Areas**

#### **Science education**

Students and their teachers, in contexts that promote natural sciences, innovation, and environmental awareness. Universities, scientists and researchers who help increase the understanding of environmental observations and their implications. Scholarships paid in the form of salary are outside the scope of this program.

#### **Non-profit organizations working in environmental disaster prevention and recovery**

Non-profit organizations that protect lives and assets – particularly in connection with the prevention of environmental hazards. Impartial and neutral humanitarian organizations that provide protection and assistance to people affected by disasters.



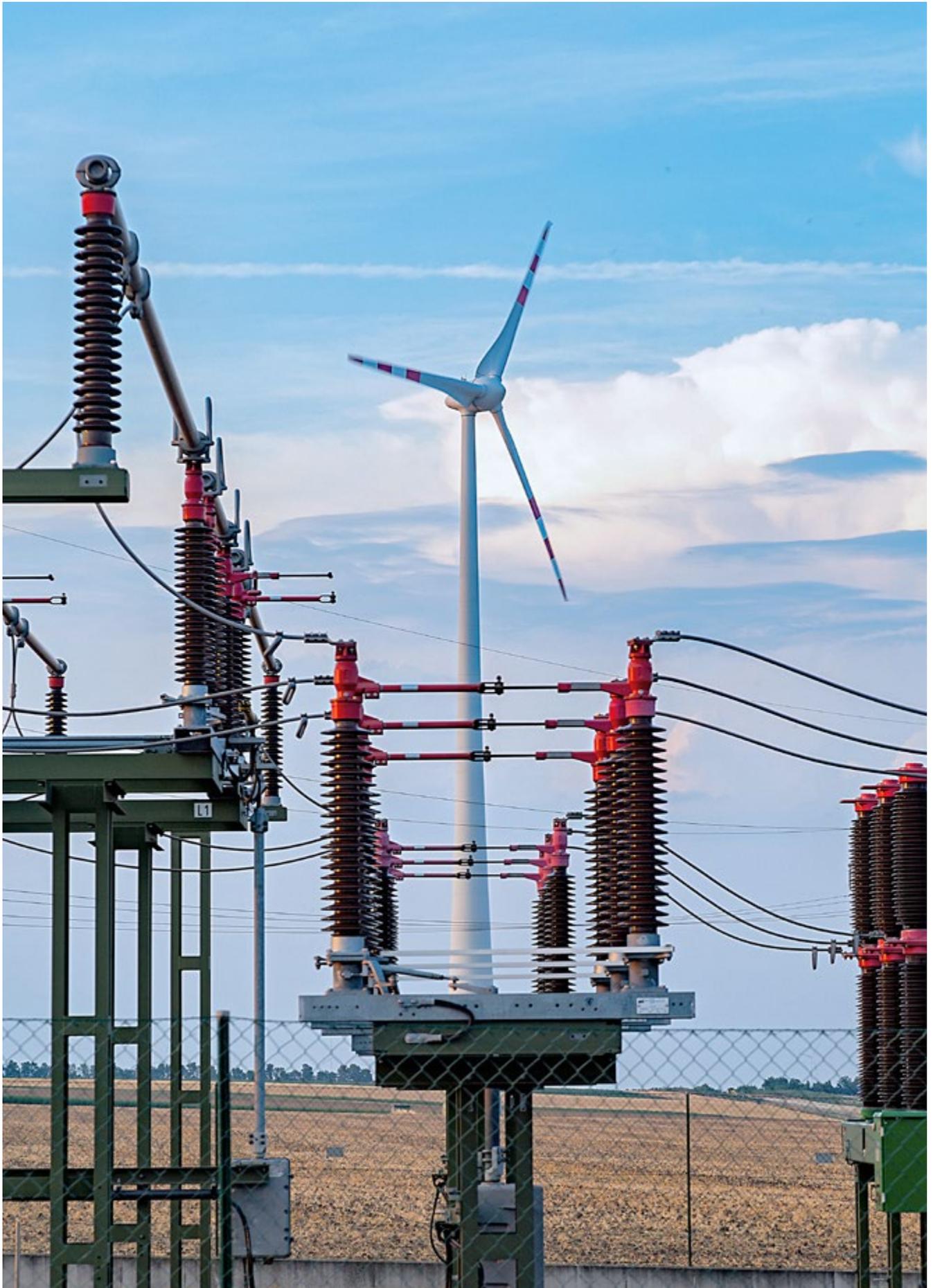
**TAF**

TECHNOLOGY  
ACADEMY  
FINLAND

AWARDING THE MILLENNIUM TECHNOLOGY PRIZE

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[The Vilho, Yrjö and Kalle Väisälä Fund granted donations to 81 researchers in 2015](#)





## Mona Lisa Preserved by Vaisala

By Jean-Francois Bore, Application Sales Engineer, Vaisala

*"I am sure you know of the Mona Lisa, known as La Joconde in French, one of the most popular works of art in the world. You also know that it can be found in the world-renowned Louvre Museum in Paris. But what you may not know is that Vaisala helps preserve the Mona Lisa by measuring the stability of the humidity and temperature environment within its glass vitrine."*

### La Joconde

This 77 x 53 cm painted portrait of a woman called Mona Lisa was created by Leonardo da Vinci. The portrait is believed to have been painted at the beginning of the XVIth century. Every year millions of people from all around the world visit Paris' Louvre Art Gallery to discover Mona Lisa's enigmatic smile.

In Le Louvre, the Joconde portrait is to be found in the "salle des Etats" dedicated to the Venetian Renaissance. It is in this exhibition hall that the giant "the Wedding at Cana" (6.6 x 9.9 m) painted in 1563 by Veronese faces the vitrine of La Joconde.

### Safeguarding the Mona Lisa

Mr Wilfried Gesbert is a climate engineer for Cofely Axima. He is in charge of the climate regulation in different areas of the museum and has been specially assigned to monitor the conditions in the glass vitrine. "As a normal Louvre visitor you cannot even imagine the complexity of the installation" Mr Gesbert says. The vitrine has been tailor designed by the Italian company Goppion. Mona Lisa is illuminated by a LED lamp located in the wooden desk that Toshiba specially developed for this painting. Mr Gesbert explains "it minimizes ultraviolet radiations and helps enhance the colors of the painting". The glass of the vitrine is bullet proof and non-reflective. A state-of-the-art air treatment system enables air to circulate through the vitrine, in the surrounding walls and in the wooden desk to keep the desired relative humidity and temperature level. Because La Joconde is painted with oil on a poplar wood support, maintaining the humidity at an appropriate level is vital for its conservation. Changes in humidity can cause the support to contract and expand. After 500 years, the wooden support does have signs of warping" Mr Gesbert stresses.

And this is where Vaisala helps. Invisible to the public, there are two Vaisala HMT333 Humidity and Temperature Transmitters which operate inside the vitrine behind the painting. One is located near Mona Lisa's right hand and the other is located near her right eye. The relative humidity is constantly maintained at 50%RH and the temperature at 21°C. Two beds of silica gel located in the wooden desk also help compensate relative humidity fluctuations.

Once a year, the vitrine is opened, and all monitoring equipment and installed devices are carefully checked to ensure the Mona Lisa is being cared for. After this the vitrine is re-sealed and the Mona Lisa is returned to her state-of-the-art vitrine for one more year.



Vaisala's Jean-Francois Bore by Mona Lisa at Louvre Museum.



# Sustainable Technologies





## Sustainable Technologies

Vaisala delivers weather and climate-based products and solutions to meet a wide range of needs in the meteorological, transportation, energy, and other industries. In addition, Vaisala provides environmental measurement and monitoring capabilities that support industrial applications and the life sciences sector. Ultimately, Vaisala's technology and solutions help to safeguard life and property, while enabling critical decision making that facilitates effective, efficient operations.

As Vaisala strives to be a sustainable and responsible company, ensuring that its products and services are produced according to our high standards, we are in a unique position to reduce potential impacts our customers' operations are having on the environment and society.

We strive to reduce our footprint (Vaisala's own operations) and improve our handprint (our customers' operations). In this report, we highlight numerous instances where our technologies impact both the footprint but also the handprint of Vaisala.

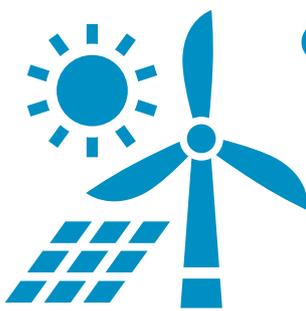
### Climate Change: Next Steps

The majority of the international scientific community agrees that climate change, which includes global warming, is happening, and there is a high level of certainty that it is human induced through activities such as fossil fuel use and deforestation.

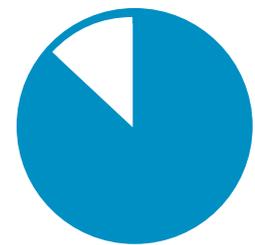
While there is an extremely small minority of scientists that discount climate change, it is difficult to ignore the fact that mounting peer-reviewed scientific research, along with observed environmental conditions such as rising sea levels, increasing global temperature, and declining ice sheets, support the fact that climate change is indeed occurring.

At Vaisala, we believe that the climate is changing and there is a very high likelihood that humans are substantially contributing to the changes being observed. Vaisala further believes that it has an obligation to be a front-runner among companies that are tackling climate challenges. Vaisala is engaged in activities that are designed to ensure the long-term viability of the planet, particularly from the perspective of the environment. This includes enabling scientists to better understand climate change and reduce its potential impacts.

The Climate Conference in Paris in December 2015 laid out the foundation where nearly 200 countries agreed to keep the average global temperature rise below 2°C of the pre-industrial levels, and ultimately attempt to limit the increasing temperature to 1.5° degrees. The question is how to do this without threatening the livelihood and prosperity of people in poor, developing countries, while ensuring that all countries do their part to achieve the goal. The magnitude of the challenges ahead require not only governments but businesses to step forward and embrace sustainable consumption and at the same time provide new solutions for climate change mitigation.



Committed to use  
100% renewable  
energy by  
**2020**



**87% Complete**

## Developing Partnerships

The World Meteorological Organisation says weather forecasting "is a vital element" needed "in order to meet the food, fodder, fibre and renewable agri-energy needs of rapidly growing populations". Vaisala is actively engaging with many organizations, to educate and share knowledge on meteorology and best practices in both environmental measurements and forecasting. The trend towards improving the environmental performance of businesses, authorities, and individuals alike, creates the demand for increasingly precise and reliable observations, which Vaisala is able to provide.

As urbanization continues to grow and societies become increasingly dependent on technology, humankind is more and more vulnerable to extreme weather events and other environmental hazards. The more information we have, and the more precise it is, the better we can protect lives and property. With the right partners, Vaisala works to deliver best solutions to scientists and authorities alike to enable accurate climate monitoring and weather observations.

## Capacity Building

Vaisala helps its customers to build their weather observation infrastructure, which increases their capacity to measure, forecast, and prepare for the weather. As extreme weather events continue to increase, the need for ever more sophisticated and accurate warning systems are needed to keep people safe during dangerous weather events.

Vietnam uses weather monitoring systems and sophisticated storm preparations to minimize the impact of severe storms, which are common in the country. Recently, Vaisala announced it will deliver weather radar and lightning detection networks, as well as software to further improve weather forecasting.

Improving forecasts is extremely important also in industrialized countries. For example, in a 2008 study, it was discovered that having 12 hours warning of a flood in the US meant that, on average, the amount of damage was reduced by 60 per cent. When that warning time was reduced to two hours, the damage reduction fell to 20 per cent. A 2014 study found that Switzerland's transport sector could save between \$56.1 million and \$60.1 million by using meteorological data.

## Going 100% Renewable Energy

Vaisala announced its target to become a 100% renewable energy powered company by 2020. This will cut the company's direct greenhouse gas emissions by more than 90% and more than a third of combined direct and indirect emissions. Vaisala is a member of RE100 which aims to encourage the world's most influential companies to make a 100% renewable energy commitment with a clear timeframe for reaching their goal. By early 2016,

Vaisala reached 87% of this target. Most of this has been achieved by switching to renewable electricity sources. For example, the main manufacturing site in Helsinki Finland is powered by electricity sourced from wind and solar power plants.

For the past two years (2014–2015), Vaisala has scored very high in CDP index (99 points out of 100) demonstrating a superior approach to climate change mitigation and transparent reporting. CDP is an independent, not-for-profit organization that maintains the largest database of corporate climate change information in the world. The database is used by institutional investors to evaluate companies' risk management abilities when it comes to climate change.

## Positive Handprint

Vaisala strives to have a clearly positive influence on societies. Being a manufacturing and services company, we inherently impact the environment through sourcing raw materials and components, manufacturing electronic equipment, and distributing them to customers. We believe that despite our environmental impacts, the positive impacts of applying our technologies ultimately outweigh the impacts of manufacturing sensors and hardware that make the core of our observation systems. We are looking into opportunities and methods that can benefit our operations, from applying novel environmental strategies, such as those on net positive environmental impacts and circular economy approaches.

## Climate Initiatives

Vaisala's President and CEO Kjell Forsén signed a commitment letter in 2015 for the UN Global Compact initiative, Caring for Climate. Companies who are a part of this leadership platform, recognize that climate change is an urgent issue that require extensive action from governments, businesses and citizens in order to risk serious damage to global prosperity and security. Signatories commit to take practical actions to increase energy efficiency and reduce emissions relating to their products, services and processes. It also entails setting voluntary emission targets and cooperating with other organizations to contribute favorably to a building a low carbon economy.

Vaisala was also invited to join the Finland based Climate Leadership Council (CLC), a group of companies determined to develop solutions that tackle global environmental challenges and will bring the world closer to carbon neutrality. The Council has established several working groups where our experts work together with other members to find sustainable solutions together.

Finally, Vaisala is also a member of Cleantech Finland, which is a network of companies that offer solutions to environmental and energy-efficiency problems.



# Vaisala and the Future of Renewable Energy

By Pascal Storck, Ph.D., Vaisala Global Manager of Energy Services

The business of renewable energy had a great 2015, with record global investment of \$329 billion, installing 64 GW of wind and 57 GW of solar generation capacity, roughly enough new electricity generation to meet the demand of half the residents of the United Kingdom. One of the factors driving the growth of renewables is increased awareness that carbon dioxide emissions, in large part from the world's power plants, is causing our climate to change. No longer the rhetoric of environmentalists, climate change became a major issue on the international stage in 2015 with global leaders from Barack Obama to Vladimir Putin and Angela Merkel discussing its threat to society. Even military leaders and Pope Francis issued public statements urging broad, immediate action.

In the months leading up to the Paris climate meeting at the end of 2015, dozens of countries made pledges to reduce carbon emissions, including major commitments to renewable energy. These came from nations large and small, but most crucially from countries undergoing rapid economic growth along with the top carbon emitters. Brazil pledged to reach 45% renewable energy by 2030 and India to reach 40% renewable energy by 2030. China, the world's largest carbon emitter, committed to cut emissions per gross domestic product by 60–65% of 2005 levels and increase its installed wind capacity to 300 GW and solar capacity to 100 GW. The United States, the world's largest economy, pledged \$800 million per year in financing for climate adaptation efforts in developing countries, doubling its 2014 investment totals. The U.S. also passed its 2016 budget with five-year extensions of wind and solar incentives that give the renewable energy industry the stability it needs to continue near-term growth.

As 2015 drew to a close, 195 nations banded together in Paris and made a historic commitment to reduce greenhouse gas emissions with a parallel pledge to increase renewable energy as a central solution to the problem. 2015 was nothing short of a breakthrough regarding awareness and agreement about the dangers of climate change.

While it's clear that we are now on a transformative path, the magnitude of what was agreed at the COP21 meeting can not be understated and the real work has only just begun. Making the migration from a carbon intensive, ever-expanding civilization to a near fossil fuel free existence will be one of the greatest technological and economic transformations in the history of the world.

But why now, and why a focus on renewable energy? The simple answer is that we are running out of time to prevent catastrophic climate change and given this pressure, we need many solutions. For perspective, think of carbon emissions as a simple



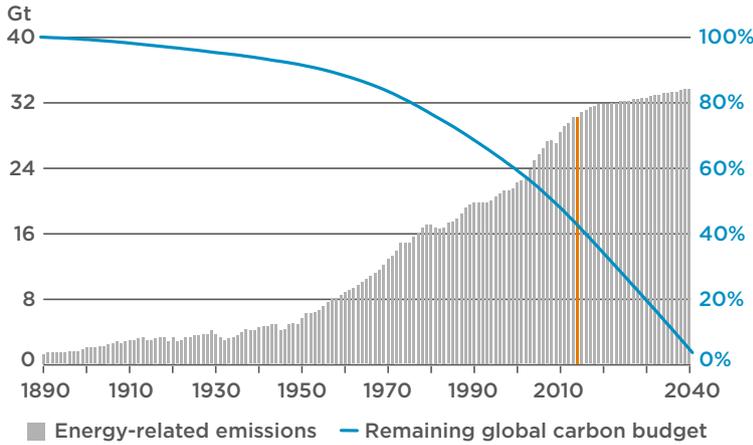
Dr. Storck is an internationally recognized expert on the topics of renewable energy assessment and forecasting.

budget. Scientists agree that to have a 50% chance of limiting total global warming to 2 degrees centigrade, we can only inject a total of 3,000 billion tons of carbon dioxide into the Earth's atmosphere. So far, humanity has emitted approximately 2,000 billion tons and puts an additional 32 billion tons into the atmosphere every year according to the IEA. If we continue to emit at the current rate, we will use up the remaining budget by 2045, only 30 years from now.

While 30 years may seem like enough time to act, keep in mind that this window for action is nearly identical to the lifespan of electricity generation projects, the majority of which still rely on fossil fuels. Furthermore, energy demand is growing rapidly in much of the developing world, and let us not forget that over one billion people still lack access to electricity. The same IEA report illustrating the carbon budget also shows that while the pledges of all nations will slow emissions growth, overall increased demand still dominates, resulting in ever-growing emissions (INDC scenario in Figure). Thus we must begin significantly decreasing the amount of carbon dioxide we emit into our atmosphere to stay within this budget – and therein lies the impetus for monumental change. Bill Gates looked at the same data and concluded that our current path and existing pledges will not be sufficient and nothing short of an "energy miracle" will be required to avoid the worst impacts of climate change.

Studies suggest that if we begin now, we can reduce annual emissions by about 2–3% per year and stay within our carbon budget. If we wait ten years to reduce emissions, we will have to do so much faster,

**Global energy-related CO<sub>2</sub> emissions in the INDC Scenario and remaining carbon budget for a >50% chance of keeping to 2 °C**



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at a rate of about 5% or more per year. To put this in perspective, if the U.S. had to reduce its carbon footprint by 5% in one year using only wind and solar capacity, it would have to install, in a single year, the total amount of wind and solar power installed over the past 30 years. And that’s just one country – the same 5% reduction has to happen on a global scale.

With stakes this high, this is obviously not a conversation of whether to invest in wind or solar or hydro or biomass or energy efficiency or storage – or whether to do so in Europe or America or China or India. This change requires massive investment in all clean technologies combined with staggering growth in renewable energy generation capacity on a global scale. In January of 2016, U.N. chief, Ban Ki-moon challenged global investors to at least double investment in clean energy by 2020 from the record set in 2015. Meeting this challenge requires that we act immediately, but also intelligently.

Against the backdrop of the global climate change challenge, and the opportunity for renewable energy, Vaisala has launched its energy segment to help the global community of developers, investors, and utilities accelerate the transition to renewables. Acceleration means developing the most "energetic" projects that produce power when society most needs and values it. Acceleration means providing critical weather measurement and analytics for a smarter electricity grid. Acceleration means providing markets the information they need to optimize variable energy production from wind and solar with energy demand through new technologies like storage and demand response.

Vaisala is no stranger to energy. Our 40 years of experience helping utilities mitigate the dramatic cost and outage impact of lightning on transmission is a testament to that. However, as renewable energy penetration grows, the global energy system will increasingly depend on the weather, not only for electricity demand and stable operations, but also for fuel.

Vaisala supports renewable energy customers in making profitable, sustainable decisions throughout the project life cycle. Beginning with greenfield development, our weather models and measurement technologies provide the information required to make sound investment decisions and target the best project locations. Our industry-leading energy assessment methodology reduces performance risk with accurate estimates of future production, ensuring the best projects receive financing and at favorable terms.

As technology and markets change, Vaisala innovates and adapts to them. For example, modern wind turbines dwarf those of only a decade ago and now commonly stand 100 meters tall. This shift requires access to reliable wind data at the heights where today’s turbines operate. With the 2007 introduction of the Triton Sonic Wind Profiler, Vaisala provides a cost-effective way to collect accurate hub-height wind data. Also, as many of the best wind sites are taken, developers are forced to target more remote, challenging locations with complex terrain, cold climates, and marginal wind resources. Vaisala’s advanced modeling capabilities and measurement technologies remove these barriers.

On the operations side, our energy forecasting services provide the accuracy necessary to integrate renewables while reducing curtailment, imbalance penalties, and the need for back-up power from fossil fuel sources. Our monitoring equipment and services, help clients manage assets by spotting issues that are costly, and even dangerous, if undetected, such as turbine blades damaged by lightning or transformer failures.

Through decades of experience, Vaisala understands that the challenges of renewable energy are real. Yet they pale in comparison to the risks of failing to meet our carbon reduction commitments. We all must be part of the solution by remaining steadfast and compelling ourselves, our society, our leaders, and our industries to do the hard and necessary work to build a sustainable future.



## UAE Wind Atlas Informs Middle Eastern Wind Development

**Vaisala and Masdar partner to enable free access to investment-critical wind resource data of the United Arab Emirates.**

Vaisala has partnered with the Masdar Institute to develop the UAE Wind Atlas – the first publicly available wind resource database in the Middle East. Launched at the World Future Energy Summit, this highly significant investment and infrastructure planning tool is free to access through the International Renewable Energy Agency's (IRENA) Global Atlas.

As the United Arab Emirates (UAE) seeks to satisfy domestic energy demand by diversifying its oil-rich energy portfolio, progressive economic policies and a supportive stance on renewable energy look set to make the country a leader within the region. While, as a desert nation, the UAE is primarily recognized for its strong solar potential, wind energy will play an important role in broadening the range of renewable energy sources and providing security of supply when solar energy falls short, such as during night time hours.

Given the variable nature of wind generation, siting and integrating high penetrations of wind energy pose unique challenges. Bringing online large volumes of wind power in a cost-effective manner demands the formation of comprehensive energy policies and infrastructure plans.

These, in turn, require a detailed understanding of available wind resources and their variability over time and space. To fill this crucial information gap, the Masdar Institute sought Vaisala's advanced wind analysis capabilities and extensive experience in large-scale renewable energy mapping efforts.

Masdar sees the UAE Wind Atlas as a mission critical tool for evaluating the country's potential, particularly due to wind's unique characteristics as a resource. "Wind information has to be generated at a number of heights and a whole altitude profile needs to be produced as different turbine technologies work at different heights," said Director Hosni Ghedira of the Masdar Institute. "Also, unlike solar, wind can vary significantly across short distances so high-resolution spatial information is vital."

With 10 years of hourly meteorological data at multiple heights and a spatial resolution of 500-meters, the wind atlas developed by

Vaisala and the Masdar Institute provides a comprehensive view of the UAE's wind resource to support wind energy investment decisions. To complete the atlas, Vaisala employed an advanced ensemble modeling approach, calibrated by available observations and tested to find the most accurate fit for the country's unique local environment.

Adnan Z. Amin, Director-General of IRENA, said, "The launch of the UAE Wind Atlas marks another key milestone in our efforts to bring a comprehensive clean energy resource map to the global community. The support provided by Masdar Institute's Research Centre for Renewable Energy Mapping and Assessment and Vaisala has been critical to help developers of clean energy projects find valuable information to assist in their investment decisions."

Pascal Storck, Global Manager of Energy Services at Vaisala, added, "International partnerships, such as the one we have developed with Masdar and IRENA, provide an extremely effective means of knowledge-sharing and serve as an industry-catalyst as we aim to integrate ever-increasing amounts of wind energy into existing power generation portfolios of fossil and renewable assets."

Vaisala was the first to map worldwide wind and solar resources at high-resolution and over the past 10 years has conducted further large-scale resource planning and integration studies in over 20 countries. Recognized as a world-leader in the domain, the firm recently embarked on a 3-year project with the U.S. Department of Energy to improve the reliability of wind energy forecasting in areas of complex terrain.

To access publicly available information from Vaisala's UAE wind study, visit IRENA's Global Atlas at <http://globalatlas.irena.org/> or the Masdar Institute's interactive portal at ReCREMA at <http://recrema.masdar.ac.ae/>

For more information about the range of services offered by Vaisala to the renewable energy sector, go to [www.vaisala.com/energy](http://www.vaisala.com/energy)





# Using Weather Information to Reduce Accidents and Improve Traffic Flow

## The Trouble Spots

The Oregon Department of Transportation (DOT) manages over seven thousand miles of roadway throughout the state. Like most Departments of Transportation, Oregon's road network has its trouble spots - locations where accidents are more common due to congestion or weather-related incidents.

Just southwest of Portland, Oregon, there is a state highway that connects U.S. Route 26 and Interstate 5. This state highway, Oregon Route 217, has numerous interchanges where drivers are moving on and off the system, and these interchanges are close together. Because of the on and off volume of traffic, speeds often vary near the entrance and exit locations. It is not uncommon for rear-end crashes to occur near the interchanges. Further, where Oregon Route 217 (OR 217) and U.S. Route 26 intersect, there are curved ramps. When wet or icy these ramps are troublesome for drivers moving too fast. Vehicles slide off the roadway in adverse weather conditions because they are not prepared for the conditions and lose grip.

## Implementing Driver Notification

Oregon DOT wanted to ensure the corridor was safe for drivers, and that they were properly notified of speeds and weather conditions along the route. The first location to be addressed was the trouble spot at the intersection of OR 217 and U.S. Route 26.

At three of the ramps in this interchange, where the roadways curve, Oregon DOT placed two Vaisala roadway weather systems, one on each side of the highway. The weather systems provided pavement temperature, condition, visibility, and a grip value. The grip measurement provided a numerical value to indicate how slippery conditions were for drivers, and allowed the DOT to monitor if conditions were deteriorating or improving.

Dennis Mitchell, Region 1 Traffic Engineer and ATMS Program Manager with the Oregon DOT, commented, "Accidents on the ramps were

almost always a result of weather conditions." The weather systems at this intersection were installed to warn drivers of conditions and reduce accidents. The Oregon DOT knew they wanted to use pavement condition information because it could be used to activate warning signs. Using an algorithm based on conditions reported from the Vaisala weather systems, message signs activate and notify drivers to slow down on ramps. "It worked very well," Mitchell added.



Vaisala's web resource on sustainable road maintenance is especially targeted towards highway and street authorities. We want to provide tangible solutions on how to condition roads in a sustainable, yet safe manner.

Crashes were reduced by nearly 21% and throughput increased by 5% during commute times.

The other trouble spot to address was the main corridor of OR 217. An automated system to notify drivers about changing speeds through the main corridor was planned, and with the successful application of weather information at the OR 217 and the U.S. Route 26 junction, a grant from the Federal Highway Administration (FHWA) allowed Oregon DOT to add weather information and modify the software program used to activate the signs. "FHWA wanted [Oregon DOT] to test the weather information in the corridor, and see if would make a difference for drivers," Mitchell noted.

Two additional Vaisala weather stations were placed along the corridor, again monitoring weather and grip conditions. The software and algorithms were modified to address both traffic speeds and weather conditions. The system continuously monitors weather and traffic congestion, and whichever has the largest affect to drivers is used to activate automated message signs. With timely information,

drivers can quickly react and to slow down to avoid an incident.

## Ensuring Safe & Smoother Traffic Flow

Oregon DOT realized the results of the curve warning system and corridor weather stations right away. Having weather information along the corridor, and being able to notify drivers based on conditions, reduced crashes by nearly 21%. Further, there was a significant reduction in the severity of incidents, and throughput increased by 5% during commute times.

Throughput is the number of vehicles passing through the corridor, an indication of improved efficiency. Corridor reliability also improved, with average daily variability in travel times decreasing by 10%. Using traffic and weather information together, Oregon DOT was able to improve service to drivers in their state, and ensure safer travel with improved traffic flow.

## Sustainable Highways

By Jonathan Tarleton, Head of Transportation Marketing, Vaisala

Late last year Vaisala launched a web resource for our highway and street authorities around the world. This resource is meant to grow and change as new materials and reports are generated, giving the authorities key facts, figures, and strategies on how to ensure their operations are sustainable. In winter road maintenance, we can look at sustainability in terms of the impact on the environment and/or having enough resources to fund and maintain a level of service that equals our societal rewards.

Winter road maintenance is all about balancing effort with impact. If you live in an area that receives snow and ice your road agency could decide not to use road chemicals to help the environment; however, at the same time, not using these chemicals can have a similar negative impact on the environment. Crashes or stopped traffic, for example, can cause environmental issues as well. Road crews could also apply so much chemical to the road that it is nearly impossible for snow or ice to freeze to the roadway, but this is obviously not good for the environment, the road network infrastructure, and it is not even necessary. Most road chemicals, like salt, are mined from the earth so how can they be bad? They are not when used in moderation, but when used in excess even salt can become very damaging to the ecosystems of the nearby bodies of water, our drinking water, or the infrastructure of our roadways and bridges.

The truth is, the entire concept is nothing new for winter road maintenance, is it? They apply chemicals and manpower to a road network to keep people, goods, and services flowing, and although maintenance vehicles and chemicals can viewed as a negative environmental impact, what about pollution from gridlocked traffic, or crashes that spill fuel and oil? It is all about balancing our efforts with our rewards. Today, municipal governments, road authorities, and even entire countries are being asked to make sure they are sustainable. This resource can guide our customers to ensure they are doing everything they can, and are able to communicate the sustainable actions they are embarking on.



## Outages Happen 24/7 – So should Power Transformers Monitoring

**Unpredicted power outages that affect electricity supply for tens of thousands of people and businesses can be the result of a failed power transformer. In the worst cases, the failure can lead to dangerous fires and explosions at the facility, jeopardizing staff and property at site.**

Transformers are among the most expensive assets in a power network. Maintenance breaks are also expensive. Servicing a single transformer can take weeks and cost hundreds of thousands of euros. Age, increased load levels, and network failures all take their toll on transformers, increasing the risk of unpredicted faults and outages. The first step in extending the life of a transformer is implementing predictive maintenance practices, such as monitoring hydrogen and moisture levels with an in-situ probe.

Hydrogen levels and their rate of change indicate the severity of fault incidents. Moisture levels reveal the transformer's cellulose condition and the oil's ability to insulate. Increased moisture levels reduce transformer lifetime.



Receive information on transformer fault situations with reliable and robust online MHT410 transmitter.

Many networks suffer from maintenance debt, trying to get by with ageing transformers that run the risk of failure before they can be serviced or replaced. To reduce risk of failure especially in these high risk transformers, accurate and real-time monitoring of the transformer oil is essential. Traditional periodic checks can be insufficient for assessing the performance and safe load conditions, as temperature variations and other factors can rapidly change moisture levels with potentially serious consequences.

### Reliable and robust hydrogen monitoring

The MHT410 Vaisala Moisture, Hydrogen and Temperature Transmitter is a reliable solution for monitoring insulating oil in power transformers online. Unlike conventional solutions, the MHT410's sensors directly measure representative transformer oil to provide non-stop, accurate trend data. The transmitter can be easily installed and mounted onto an operational transformer in minutes by one person, with no necessary field adjustments. The MHT410 is also robust. With its non-membrane technology, the MHT410 can handle both under-pressure and overpressure conditions. It doesn't have pumps, hoses, batteries, valves, membranes, or other sensitive wearing parts that could fail or lead to outages. It also withstands wide-ranging temperature changes, vibration, and harsh outdoor conditions.

### Extending the Life Cycle of Multi-million Euro Equipment

Condition-based maintenance can extend the operational life of a transformer by years, but accurate real-time moisture data is essential. Moisture in a transformer deteriorates the cellulose insulation, reduces the performance of the oil, and accelerates ageing.

A permanent online measurement system protects transformers by enabling timely and cost-efficient maintenance. Minimize unexpected outages by using MHT410 transmitter.

Learn more about monitoring transformer conditions: <https://www.youtube.com/watch?v=AlpUEtovCgQ>



## Vaisala's Enhanced GLD360 Looks into the Eye of the Storm

Hurricanes and typhoons are weather phenomena that can have a major effect on populations near the coast. And while the focus of hurricanes is typically on the wind, Vaisala also monitors lightning activity using its Global Lightning Dataset GLD360. In October 2015, Vaisala was closely monitoring lightning activity associated with Hurricane Patricia. Hurricane Patricia is one of the strongest tropical cyclones ever recorded in the western hemisphere, with wind speeds of 200 mph. Patricia began as a tropical cyclone, forming in the eastern Pacific. It rapidly intensified into a Category 5 hurricane, making landfall on October 23 at 6:15 p.m. CDT near Cuixmala in Jalisco state of southwest Mexico. As the storm approached Mexico, it was interesting to watch the continuous lightning pattern using GLD360.

GLD360 provides continuous monitoring of storm events wherever they occur, at sea and on land. In comparison with other tropical cyclones, the lightning associated with hurricane Patricia was especially remarkable. It had sustained eye-wall lightning for more than 30 hours, a phenomenon not sustained for more than a few hours, in any tropical cyclone, since Super-Typhoon Haiyan, back in 2013, regarded as one of the strongest storms ever, with sustained winds of 195 mph.

Ron Holle, meteorologist and lightning authority, adds, "Patricia is now among the few storms that show lightning in a tight circle in the eyewall. More than 90% of named systems do not. Those that have continuous lightning along the track are typically very strong."

With a record breaking count of 30, the northern hemisphere saw more major hurricanes and typhoons of category 3, 4 and 5 in 2015 than in any previous season. Particularly vigorous activity in the Pacific, attributed partly to a potent El Niño, has made a major contribution. Tracking lightning activity within these major storms allows meteorologists to understand the strength and potential impact of storms, and helps them make important decisions for their communities, such as sending out timely warnings.

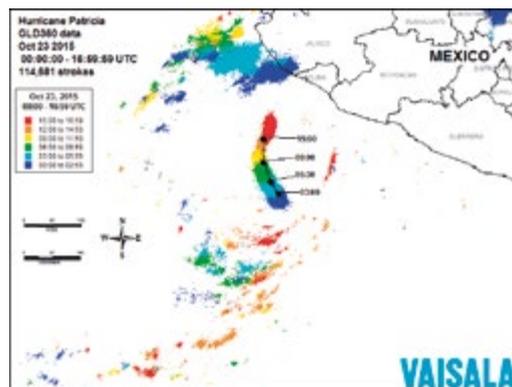
### Advancing Global Lightning

As a leader in global lightning detection, Vaisala is continuously enhancing the network and bringing the most accurate information possible to customers around the world. GLD360 was upgraded during 2015, which enhanced

its performance, reinforced its effectiveness for lightning and severe weather warnings at both a local and regional level, and improved its value to meteorological agencies, providing additional lightning information within their own countries, and in neighboring countries and oceans.

"The enhancements made to GLD360 and its detection of total lightning has given us an even more detailed insight to lightning associated with storms like Patricia," says Ryan Said, lead Vaisala GLD scientist.

GLD360 provides valuable information and insightful views of global weather patterns and severe weather events. Today, the GLD360 is used by meteorological agencies, aviation, mining, shipping and governmental organizations across the globe including the Federal Aviation Administration and the U.S. National Weather Service.



Vaisala's Global Lightning Dataset GLD360 observed more than 1.2 billion lightning strikes in 2015.



# Performance





## Economic Responsibility



Sound financial development and performance is the foundation of a sustainable company. Together with prudent risk management, we can leverage our opportunities and risks for maximum benefit. For us, economic responsibility means creating added value to the company's stakeholders, managing finances and resources efficiently, and securing long-term profitable growth and financial stability.

### Market situation in 2015

Macroeconomic conditions were moderate in 2015, and also weather observation and industrial measurement markets were stable. However, performance of different market segments and geographic areas varied significantly. Demand for weather radars and industrial measurement solutions developed well. Heavy decline in commodity prices, especially in crude oil and natural gas, affected market conditions in offshore business and commodity exporting economies. Depreciation of euro improved Vaisala's financial performance.

In EMEA weather observation markets in Russia and its neighboring countries were affected by difficult economic conditions and depreciated currencies. In rest of EMEA weather observation market was stable, but demand was slightly below very active 2014. Demand for industrial measurement solutions increased in EMEA in 2015.

In Americas weather observation market was quiet in the first half of 2015. However, good demand from North American customers improved market activity significantly during the second half of the year. Market environment for industrial measurement solutions was stable.

In APAC weather observation market was active in 2015, also supported by good demand from China. Demand for industrial measurement solutions was good in Japan, in the rest of APAC deceleration of Chinese manufacturing industry affected market conditions especially in the second half of the year.

### Market Outlook for 2016

Even though global economy has recently slightly decelerated, the latest forecasts still predict moderate development for 2016 and Vaisala is expecting stable weather observation and industrial measurement market conditions. However, differences in business conditions between customer groups and regions are expected to remain.

In weather observation market especially weather radars have favorable market outlook, and also demand from renewable energy industry is expected to increase. Heavy decline in commodity prices, especially in crude oil and natural gas, is affecting market conditions in offshore business and commodity exporting economies. Competition in weather observation market is expected to continue intensifying. In weather observation market it continues to be challenging to forecast customers' timing for decision making and acceptance of larger customer projects, having potentially material impact on overall Vaisala weather business.

In industrial measurement market especially power transmission and life science are expected to grow faster than other targeted markets.

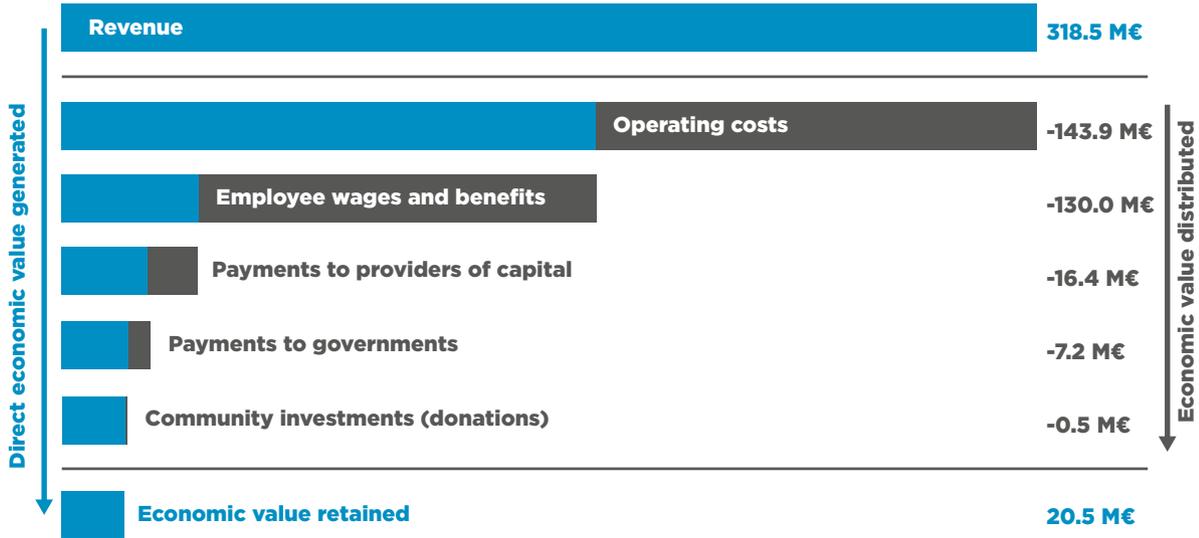
In EMEA demand for weather observation solutions is expected to remain stable. Demand from Russia and its neighboring countries is still expected to be constrained by economic weakness in the area. Demand for industrial measurement solutions is expected to remain solid.

In Americas demand for weather observation and industrial measurement solutions is expected to remain stable.

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In 2015, research and development expenses amounted to EUR 36.1 million, representing 11.3% of net sales. The increase was mainly due to R&D expenses of the acquired companies, as well as investments in new offering development and renewing our instrument portfolio.

## Direct Economic Value Generated



In APAC weather observation market is expected to cool off slightly compared to active year 2015, as a result of lower demand from China. Demand for industrial measurement solutions is expected to remain good in Japan, but elsewhere in APAC uncertainty has increased due to deceleration of Chinese manufacturing industry.

### Business Outlook for 2016

Vaisala estimates its full year 2016 net sales to be in the range of EUR 305–335 million and the operating result (EBIT) excluding non-recurring items in the range of EUR 28–38 million.

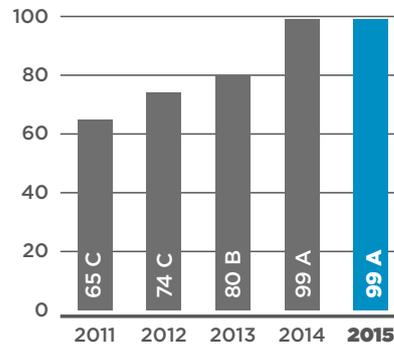
### Vaisala's Shares

Vaisala's share capital totaled EUR 7,660,808 on December 31, 2015. On December 31, 2015, Vaisala had 18,218,364 shares, of which 3,389,351 are series K shares and 14,829,013 are series A shares. The K shares and A shares are differentiated by the fact that each K share entitles its owner to 20 votes at a General Meeting of Shareholders while each A share entitles its owner to 1 vote. The A shares represent 81.4% of the total number of shares and 17.9% of the total votes. The K shares represent 18.6% of the total number of shares and 82.1% of the total votes.

Vaisala is included in the OMX GES Sustainability Finland index. The index is a benchmark index comprising of Finnish listed companies, all leaders in terms of sustainability. The index criteria are based upon international guidelines for environmental, social and governance (ESG) issues and support investor considerations to the UN Principles for Responsible Investment (PRI).

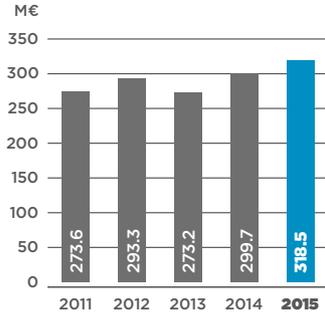


### CDP Score

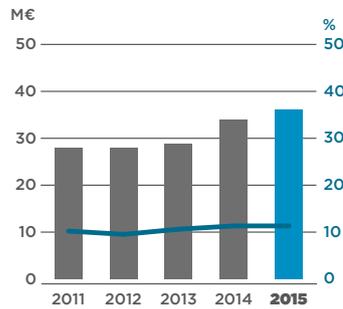




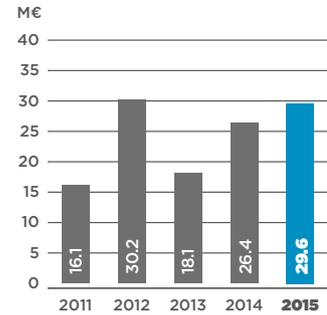
### Development of Net Sales



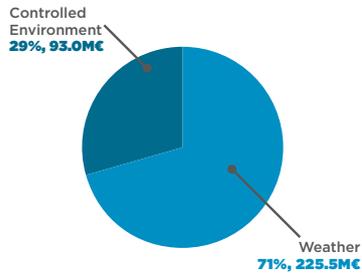
### R&D Expenditure % of Net Sales



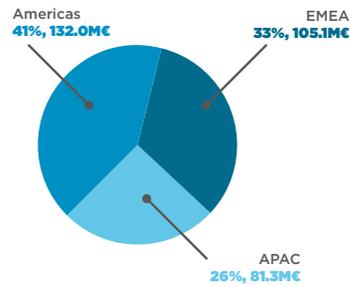
### Operating Result



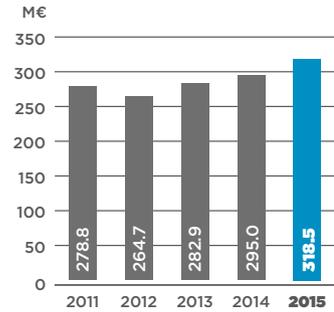
### Net Sales by Business Area



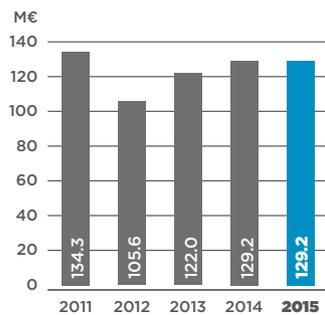
### Net Sales by Region



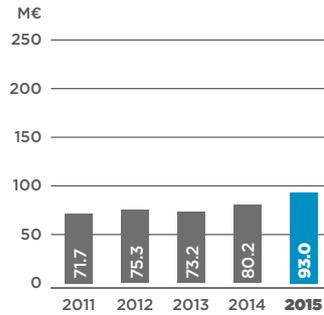
### Orders Received



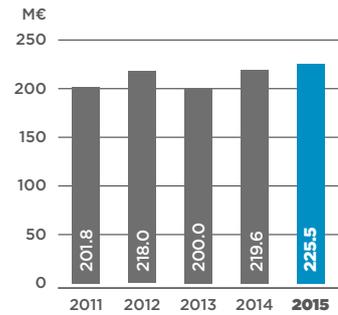
### Order Book



### Net Sales Controlled Environment



### Net Sales Weather







## Risk Management

The objective of Vaisala’s risk management is to identify and manage material risks related to strategy implementation and business operations. Vaisala has a risk management policy which has been approved by the Board of Directors, and which covers the Company’s strategy, operational, hazard and financial risks. The policy aims at ensuring the safety of the Company’s personnel, operations and products, as well as the continuity and compliance of business operations. The Board of Directors defines and approves risk management principles and policies, and assesses the effectiveness of risk management. The Audit Committee reviews compliance with risk management policy and processes.

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

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

Vaisala’s business operations are subject to various risks which may have an adverse effect on the company. The list below is not complete but it explains some of the risks with their potential impacts and how Vaisala manages those risks today.

interruptions in business. Also increasing competition, changes in price levels and exchange rates may impact Vaisala’s net sales and profitability.

Vaisala’s capability to successfully complete investments, acquisitions, divestments and restructurings on a timely basis and to achieve related financial and operational targets represent a risk which may impact net sales and profitability.

The ongoing business expansion in renewable energy market may be delayed due to long authorization and approval processes, evolving business models and customers’ postponing decision making. Delays in new product ramp-ups and market acceptance of new offering may postpone the realization of Vaisala’s growth plans.

Suppliers’ and subcontractors’ delivery capability or operating environment as well as product quality may impact Vaisala’s net sales and profitability. Also uncertainty of Finnish labor market may cause interruptions in operations. Cyber risk and availability of IT systems may impact operations, delivery of information services or Internet-based services or cause financial loss.

Further information about risk management and risks are available on the company website at [www.vaisala.com/investors](http://www.vaisala.com/investors), Corporate Governance and Vaisala as an Investment.

## Near-term risks and uncertainties

Uncertainties in world economic and political situation as well as changes in customer behavior may cause demand slowdown or delays in customer projects. Especially market situation in China and continuing conflicts in Middle East and Africa may cause

### Vaisala’s Risk Map

#### Strategic risks

Risk	Impact	Management
Global lowering of price level and gradual loss of price premium	Lower gross margin	Continued focus on product leadership
Success of growth businesses not meeting targets	Reduced return on investments	Strong engagement with target industries
New product market entry slower than planned	Delayed return on investment, cost overruns due to engineering of legacy products	Priority setting, resourcing, early piloting and concepting

### Operational risks

Risk	Impact	Management
Availability of IT systems	Interruptions to operations, especially manufacturing	Stabilization of operational IT environment, shortening of resolution time of critical incidents
Business continuity risks related to suppliers	Delays in deliveries, and consequent loss of customers	Improvement of supplier selection criteria, monitoring of suppliers' overall performance
Cyber risks	Interrupts to operations or information services	Priority setting, resourcing, early piloting and concepting
Change management performance	Reduced revenue or profitability caused by failed or delayed investment, acquisition, divestment or restructuring projects	Continuous progress follow-up
Project delivery performance and interdependencies	Uncertainty of revenue forecasting, lower profitability	Continuous sales and delivery process follow-up and improvement
Political, legislative or regulatory changes	Loss of market potential, or increased cost of accessing a market	Geographic and market diversity of business

### Hazard risks

Risk	Impact	Management
Fire, contamination, or other major disruption in the clean room operation	Major impact on delivery capability both for Controlled Environment and Weather Business Areas	Emergency stock of sensor components, risk based management of production equipment and spare parts
Field service health and safety risks related to working conditions and travel destinations	Harm to health or safety of personnel	Continuous development of occupational health and safety system, emergency procedures
Failure of infrastructure supporting information service businesses	Reduced availability of information services	Geographic system redundancy across four server sites
Natural disaster, epidemic, civil unrest, terrorism	Impaired business environment leading to cancellation of orders, or delays in deliveries and revenue	Geographic business diversity

### Financial risks

Risk	Impact	Management
Credit risk	Credit loss	Secured terms of payment, business credit checks, diversification of customer pool
Liquidity and refinancing risk	Unavailability of credit facilities	Sustainable capital structure
Financial credit and interest rate risk	Financial credit loss, lower finance income	High credit rating of financial counter parties, low risk cash investment
Currency risk	Lower net profit due to foreign exchange rate movements	Currency hedging



## Keeping Data Centers Cool

**Increasing demand for data processing and storage capacity has led to major companies investing in new facilities that provide web-based services to an ever-higher number of users. In these facilities, having the correct conditions – such as temperature and humidity – is vital for maintaining the equipment and securing operations.**

Data centers are energy-intensive facilities, currently consuming more than 1.3% of the world's total electricity production. This energy is transformed into heat that has to be conveyed and dissipated away from the equipment racks in order to maintain the correct operating temperature. Cooling and air conditioning is one of the most important processes in any data center. Data center cooling can be done in a variety of ways, depending on the location and the local climate.

Refrigerant cooling consumes a lot of energy, but its usage can be reduced by taking the climate into consideration when choosing the location for the data center. In dry climates evaporative cooling is effective at dissipating heat. In cold climates direct cooling with dry, cold air can be used. Locations near water offer the possibility to dissipate the heat into the water.

### The Right Temperature

The ASHRAE 2011 guidelines for conditions in data centers recommend an inlet air temperature and humidity envelope of 18...27 °C and 25...80%RH (dew point temperature 5...15 °C) respectively. In a traditional setup the equipment room is airconditioned by dividing the equipment into rows (hot aisles) and feeding conditioned, cool air between the rows (cold aisles), usually through the floor. When cool air travels through the equipment racks from a cold aisle to a hot aisle, it conveys the heat generated by the equipment through the ceiling. Temperature is controlled using a Computer Room Air Conditioner unit (CRAC), which performs both heating and cooling functions (though not simultaneously). For heating, the

CRAC recirculates warm air from the hot aisles with cool make-up air; for cooling, incoming air is chilled to achieve the correct temperature.

### Maintaining Humidity Levels

In addition to temperature, monitoring and controlling the humidity of the equipment room is also critical. Especially in cool climates where air-side economizers are used, the absolute water content of the air is naturally low. The relative humidity of air decreases when it is heated, meaning that it may fall below the desired level. Air that is too dry increases the risk of static electricity and requires additional humidification by means of spray or evaporative humidifiers.

When the outdoor temperature exceeds acceptable limits, the incoming air has to be cooled. In order to minimize the need for energy-consuming mechanical refrigeration, cooling can be achieved by spraying water mist – which instantly evaporates – into the incoming air. When the humidity of the air before and after the humidifier is known, the control system is able to adjust the humidifiers to ensure maximum adiabatic cooling efficiency while maintaining the relative humidity limits and avoiding possible corrosion problems related to too high relative humidity. In systems where liquid is used as the heat carrier, the coolant may be cooled in cooling towers, which are heat exchangers that employ a similar evaporative cooling principle. Efficient control of a cooling tower requires accurate humidity and temperature measurements, which in turn enable maximum cooling efficiency with minimized energy usage and also provides a means for monitoring the cooling power of the tower.

### Vaisala HUMICAP® — Reliable Humidity Measurements

The Vaisala offering for data center management includes instruments for measuring temperature, relative humidity, wet bulb temperature, dew point temperature, enthalpy, and weather parameters.

The wide range of Vaisala HUMICAP® relative humidity and temperature instruments includes industrial grade and HVAC transmitters that are suitable for use in data centers. Vaisala HUMICAP® sensors are known for their accuracy, excellent long-term stability, and negligible hysteresis.

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Data centers currently consume more than 1.3% of the world's total electricity production.

# Environment

Vaisala wants to be involved in establishing a sound foundation for a better quality of life, environmental measurement, safety, and productivity. Accordingly, the main purpose of many of our products is to contribute to the quality of the environment and the safety of people and property. Our industrial products and solutions provide our customers with the means to improve their operational performance, and our weather measurement systems increase safety and predictability in weather critical operations.

## Environmental Management

Environmental Management System (EMS) is an integral part of our global management system structure. The ISO 14001 standard has been the foundation of our certified EMS for over a decade already. The certification covers not only all manufacturing sites but many other offices as well. In fact as many as 92% of all Vaisala employees work in our ISO 14001 certified offices. All certified offices are audited by independent third party and are part of our internal audit program.

Our EMS helps us identify the most significant environmental impacts at each Vaisala site and set relevant corporate and local environmental objectives. Currently five offices, housing 79% of our staff, have committed to take environmental aspects to the next level and formed green teams of voluntary employees to champion improvement actions. Although the focus of this internal program has been on conserving energy and minimizing waste, the offices have also come up with numerous actions including cell phone recycling, green commuting events, and supporting wildlife on company premises. The principal themes shaping the foundation for Vaisala's environmental management are climate change and scarcity of resources.

## Managing our Impacts

We minimize negative environmental impacts by improving efficiency of our product portfolio, business operations and supply chain in a systematic way. Managing our own operations and activities is the cornerstone of our commitment to environmental sustainability. Another important factor contributing to environmental sustainability is realized through our offering and solutions that we provide to our customers. Vaisala has been taking great strides in developing its technology and offering to improve customers' operational performance, reduce their costs and environmental impacts. Moreover, progress towards serving the utilities sector with decision support and optimization services for renewable energy assets is creating significant efficiency improvements in energy production. There were no environmental incidents or sanctions by authorities for Vaisala during the reporting period.

## Operational Efficiency

We actively work to improve environmental performance across the value chain. The main environmental impacts from our own activities are greenhouse gas emissions associated with purchased energy consumed in our facilities and the use of water and other natural resources. Vaisala has two manufacturing sites, the Head Office in Finland is responsible for most of our manufacturing activities and our operations in Boulder, Colorado also perform product assembly. Together these two sites account for approximately 88% of energy use, 79% of water consumption and 91% of waste generation of the Group. Therefore, Group figures cover environmental data from these two sites, if not mentioned otherwise.

## Renewable Energy

Vaisala believes in a future where societies are powered by renewable sources of energy. In order to minimize our own impacts on climate change we have committed to use 100% renewable energy by 2020. After years of improving energy efficiency this commitment was the natural next step towards more environmentally conscious operations. Although both of our manufacturing sites in Finland and United States already operate their own solar arrays producing clean electricity we still need to purchase most of the energy we use from local energy companies. At the beginning of 2016, 87% of Vaisala's energy consumption originated from renewable energy sources. Vaisala is also a member of RE100 that encourages the world's most influential companies to make a 100% renewable energy commitment with a clear timeframe for reaching their goal.

## Carbon Footprint

For the second year in row, the CDP Nordic report includes Vaisala on the Nordic Climate Disclosure Leadership Index (CDLI). This index consists of the top 10 percent of the Nordic reporting companies. Vaisala earned a score of 99A- of the maximum 100A. The high score illustrates our excellence in understanding climate change risks and opportunities and



our capability in delivering high quality information to help investors in decision making.

Our carbon footprint contains a range of upstream and downstream components, of which purchased energy, business travel, and logistics are the most significant. Over the years we have continually improved our greenhouse gas accounting. Accuracy has also improved and the scope of calculations is now more comprehensive than ever before. Vaisala calculates the carbon footprint of its operations using well-known methods such as the Greenhouse Gas Protocol.

## Emissions Reductions

In 2015, our largest facility in Helsinki with over 900 employees, our office in Boston, Massachusetts housing nearly 90 employees and our Office in Birmingham, UK accommodating 70 employees, all switched to acquiring 100% renewable energy. These sites consume more than 80% of all energy purchased by Vaisala. The direct emission reduction due to this was nearly 1,880 tonnes CO<sub>2</sub>-e in 2015 and will be a permanent reduction of around 4,120 tonnes CO<sub>2</sub>-e each year from 2016 onwards, a 68% reduction of Vaisala's Scope 2 emissions compared to 2014.

We are constantly striving to reduce energy consumption and improve cost efficiency in our operations. On Vaisala's Helsinki site, these efforts have resulted in energy efficiency improvement of more than 12% compared to a 2008 baseline. This has cumulatively reduced our energy use by 1,770 MWh (6,372 GJ) and greenhouse gas emissions by 2,375 tonnes CO<sub>2</sub>-e. In fact total energy consumption has remained fairly flat over the past decade while business and headcount has grown significantly.

## Reduction of Water Use

Our manufacturing processes are not water intensive, although some process water is needed for operations in our in-house cleanroom. We have a state-of-the-art water cleaning facility on site that purifies municipal water to be used for manufacturing processes. The water is also treated before draining and closed loops are used whenever possible. A substantial amount of the total water use results from sanitation. In 2015 we focused on improving water efficiency of water fixtures and restricted water flow from faucets. This simple action has reduced water consumption from 40% up to 74% per faucet. In 2015 we used a total of 21,460 m<sup>3</sup> of water on Group level which is 8.7% less than in 2014.

## Responsible Waste Management

We have been improving our waste management practices to minimize the environmental impacts of the waste we produce in our facilities. In 2015, only 2% of the total waste from our manufacturing sites ended up in landfills. In addition to our main operations in Finland, our offices in Tokyo, Japan and Birmingham, UK are also zero-waste-to-landfill sites. The North American head office in Boulder, Colorado has

similarly made great strides in improving its waste recovery rate by introducing new composting and recycling practices and steadily reducing total waste amounts over the past years.

## Products and Solutions

Vaisala's products are built to last and withstand everything extreme weather conditions have to offer year after year. Our calibration services and field service engineers help customers ensure that Vaisala products are as reliable and long-lived as they are known for. The upgradability and modular design of many of our products help the customer to keep up with the fast developing technology without having to invest as often in new equipment. This is also important from an environmental standpoint.

Our studies have demonstrated that when an electronic product has a long operational life cycle, energy consumption becomes one of the most significant factors in the total environmental footprint. Knowing this, we pay particular attention to the energy efficiency of our products from the very start, at the design phase. Some of our products are even capable of using small photovoltaic panels as their sole source for energy in the field.

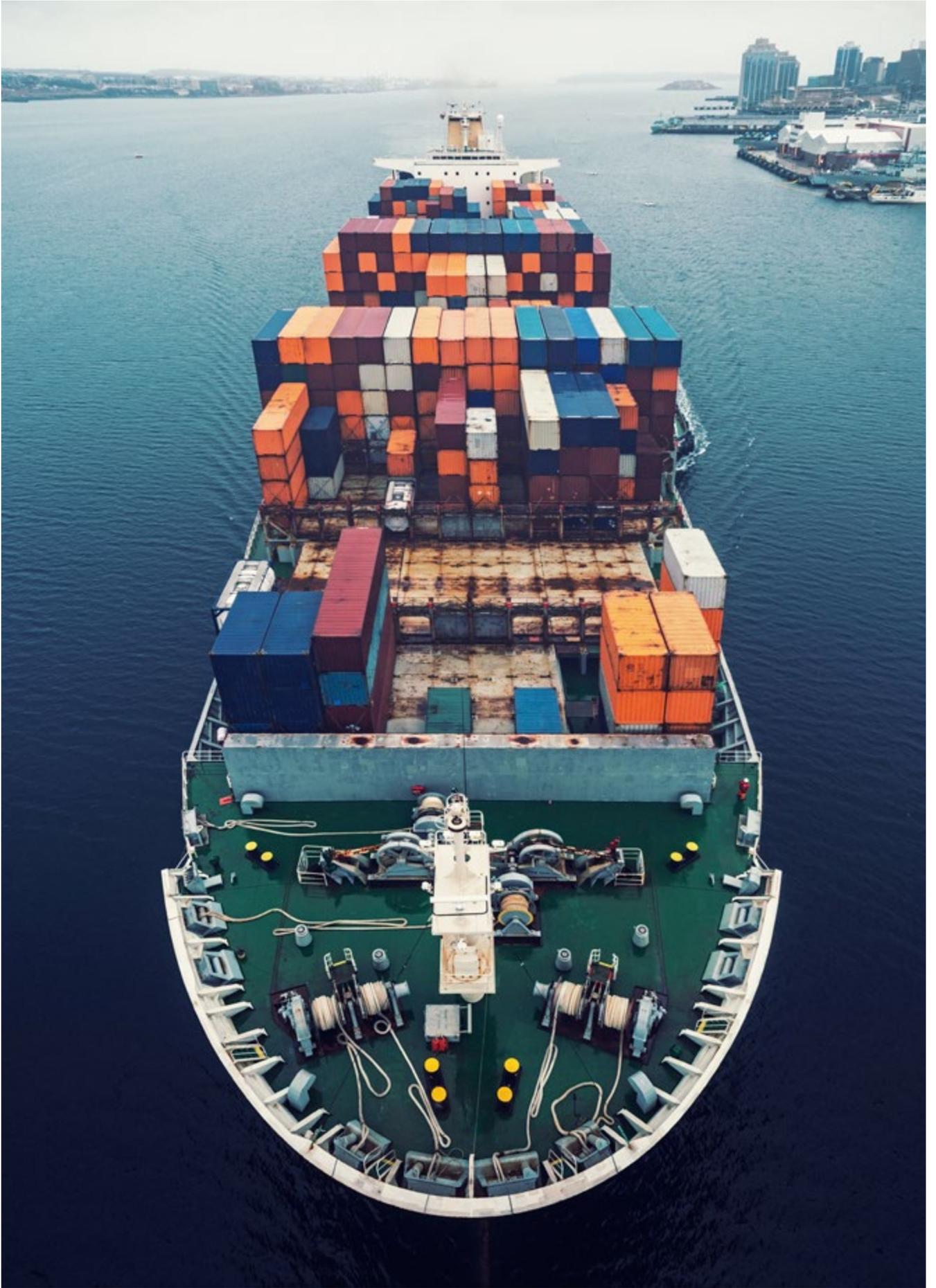
## Suppliers and Supply Chain

Our commitment to environmental sustainability extends to our supply chain, and we expect suppliers to adhere to the environmental requirements laid out in Vaisala's Supplier Code of Conduct. We aim to raise sustainability standards throughout the supply chain by working with our suppliers, encouraging them to improve their management system and to implement similar processes with their own suppliers.

We have worked hard to increase transparency in our supply chain and maintain compliance with ever more rigorous legal requirements. Last year we continued surveying suppliers to identify the smelters used in our supply chain, in order to comply with the regulations affecting many of our customers. We also rate our suppliers on the basis of environmental, social, and governance related topics. A low score indicates that a supplier's performance is not meeting our requirements and therefore a corrective action plan must be put in place at once.

## Smart Logistics

Serving customers in over 150 countries requires world-class planning and flawless execution from our logistics team. Streamlining our outbound logistics was a focus area in 2015 which resulted in consolidation of shipments, improved emissions reporting and accounting, and reduction of emissions. We have also moved to paperless trade processes, which allows us to deliver export documentation electronically to the logistics company, saving significant amount of paper. Finally, we have also managed to reduce the number of handling activities in our logistics processes.





## Autosonde Installation in Antarctica

Vaisala working together with our partners, installed an AUTOSONDE at Korean Antarctic Jang Bogo station, Terra Nova Bay, Antarctica. Korea Polar Research Institute (KOPRI), the operator of Jang Bogo station, will use the AUTOSONDE to measure prevailing conditions in this remote and challenging environment.

The scale and scope of Vaisala's capabilities are often highlighted. And these proven capabilities are based on facts. From harsh Arctic environments to tropical regions, even in outer space, Vaisala products can be found collecting and analyzing valuable data for our customers. These harsh environments put Vaisala's products to the ultimate test, every day. The Autosonde installed in Antarctica is no exception.

### Year-Round Research

Kalle Rieppola, Vaisala Field Service Engineer, who completed the installation, got to experience the constraints of working at one of the most remote locations in the world, first hand.

Some 1,000 to 5,000 people are living at various research stations on Antarctica throughout the year. The AUTOSONDE installation took place during the Antarctic summer, when the conditions are mild enough to support key activities in preparation for the coming year. The summer period allows organizations and research institutes the opportunity to stock up on supplies. Also, new teams arrive to replace people that have been on the continent for the previous year. During his time with scientists, engineers and researchers on the KOPRI base, Kalle highlighted that the vast open space can be misleading. "For example, when you see a mountain in the distance, it looks to be just a few kilometers away. And then you learn it is actually over 30 kilometers away." Kalle says that during his brief time on the continent, the schedule to complete the installation was tight. He states that it was truly an unforgettable trip and with a smile notes that eventually the AUTOSONDE will need to be updated to use the new Vaisala Radiosonde RS41.

Chanseok Park, Vaisala Sales Manager for Korea states, "KOPRI is conducting regular soundings from mid-February to late October. They also conduct ozone soundings once a week around the period of 'ozone hole occurrence' from mid-August to mid-October. The KOPRI staff in Antarctica is very satisfied with the performance of the AUTOSONDE in such a demanding environment." In collaboration with the Korea Meteorological Administration (KMA), a researcher has been dispatched from KMA headquarters to Jang Bogo station to operate the AUTOSONDE and analyze sounding data. After the internal data evaluation was completed, the AUTOSONDE started to share its data to the World Meteorological Organization's Global Telecommunication System. In addition to the AUTOSONDE, a complete Vaisala Automatic Weather Station system and optical sensors such as ceilometer and present weather sensor are supporting the operational research activity.

According to KOPRI, "We were looking for truly reliable automated sounding system which can operate in extremely demanding condition and there's no doubt that we have made the right choice." Korea is the 10th country which has more than two research bases in Antarctica."



The Vaisala DigiCORA® Unmanned Sounding System AUTOSONDE is an important tool in the drive for meteorological data availability. With AUTOSONDE, national weather services can extend the coverage of their upper-air networks to geographically remote, hard-to-reach locations and thus develop a more comprehensive synoptic upper-air program. Vaisala's AUTOSONDE has proved itself over the years in a wide range of climates. It is an integral part of many national upper-air networks.





# About This Report



# Reporting Principles

The fundamental purpose of sustainability reporting is, we believe, to communicate non-financial information, as well as financial information to all parties that may be affected by our actions. This is why, we choose to voluntarily report on our corporate responsibility and familiarize our stakeholders with Vaisala. Public reporting offers not only examples of sustainable business behavior, but also allows us to improve our internal processes and achieve our business objectives. We also feel that the report reaches different stakeholders than those we normally attract with corporate publications such as financial reporting. We welcome feedback on our reporting and sustainability efforts. You are kindly invited to contact us at [responsibility@vaisala.com](mailto:responsibility@vaisala.com).

Vaisala applies the Global Reporting Initiative's (GRI) G4 guidelines in its corporate responsibility reporting and is in accordance with the guideline's Core criteria. A content index is provided at the end of the report for cross-reference. For some indicators, we also refer to Vaisala's Financial Statements and the Corporate Governance Statement, both of which are available on our website.

We also report corporate responsibility information directly to selected organizations. We prioritize reporting to CDP, Global Compact, customers, institutional investors and ESG-rating firms.

According to our reporting process, we seek assurance for the report from a third party assurance provider. Standard disclosures for 2015 with a reference to external assurance in the GRI content index have been externally assured by an independent third party, Ernst & Young Oy.

You can find further information on our website that is not incorporated in this report. In particular, we encourage you to have a look at the sustainability section of the website ([www.vaisala.com/sustainability](http://www.vaisala.com/sustainability)).

The materiality of reported key performance indicators has been determined according to guidelines given by the GRI G4 Guidelines. The materiality index in the beginning of this report together with the content index at the end of the report lists all material aspects and indicators that we have determined to be material in our sustainability reporting. We review Vaisala's material aspects, which steer our prioritization of topics to be covered in both sustainability management and reporting, periodically. The material aspects reflect the Group's strategic priorities and concerns raised by stakeholders. We take a value chain perspective and define at which part of the chain each aspect is of importance. The list of material aspects can be found on page 15 of this report, under the heading Material Aspects.

Data gathering is a substantial part of reporting and we have internal processes and practices in place to ensure the validity of our figures. The figures are also verified by a third party assurance provider. Vaisala uses the Oracle e-Business Suite for its personnel figures and Hyperion Financial Management for its financial figures. Occupational Health and Safety information and environment figures are collected and managed in dedicated management systems.

## Information Gathering and Data Management

Vaisala is committed to continuous sustainability reporting. Reports are published annually at the end of the first quarter, and the reporting covers the previous calendar year in full. Following the GRI boundary guidelines, our financial and human resource data is reported for the entire Group and in all locations. The scope of our environmental data divided into Group Environmental Key Performance Indicators, which cover the manufacturing sites; and Carbon Footprint, which covers manufacturing sites and offices with more than 15 employees; and indirect sources.

# UN Global Compact

Vaisala joined the UN Global Compact in 2008 and has committed itself to following the ten guiding principles of the initiative. Consequently, we report on our progress on annual basis. Vaisala is an active member in its local UNGC network, The Global Compact Nordic Network. Engaging in the local network gives us the possibility to influence the network's activities and benchmark our efforts to other companies. Vaisala's Corporate Responsibility report has qualified for the Global Compact Advanced differentiation level since its introduction in 2010. Vaisala is also an active member according to the initiative's definition.

## Human Rights

<b>Principle 1:</b> Businesses should support and respect the protection of internationally proclaimed human rights.	Embedded in Vaisala's Code of Conduct and Supplier Code of Conduct. Mandatory annual Code of Conduct training for entire personnel.
<b>Principle 2:</b> Make sure that they are not complicit in human rights abuses.	Mandatory annual Code of Conduct training for entire personnel.

## Labor Standards

<b>Principle 3:</b> Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	Embedded in Code of Conduct and Supplier Code of Conduct. Employee representatives, according to local legislation.
<b>Principle 4:</b> The elimination of all forms of forced and compulsory labor.	Covered in Code of Conduct and Supplier Code of Conduct.
<b>Principle 5:</b> The effective abolition of child labor.	Covered in Code of Conduct and Supplier Code of Conduct.
<b>Principle 6:</b> The elimination of discrimination in respect of employment and occupation.	Covered in Code of Conduct and Supplier Code of Conduct.

## Environment

<b>Principle 7:</b> Businesses should support a precautionary approach to environmental challenges.	We systematically identify and evaluate our environmental impacts and hazards to mitigate any negative effects they might incur.
<b>Principle 8:</b> Undertake initiatives to promote greater environmental responsibility.	Signatory of The Federation of Technology Industries' Energy Conservation Agreement. Participates in WWF Finland's Green Office program and refurbishes facilities to meet green standards. Committed to 100% renewable energy by 2020.
<b>Principle 9:</b> Encourage the development and diffusion of environmentally friendly technologies.	Vaisala is constantly developing Best Available Technology (BAT) products to meet the increasing demand for highly accurate measuring instruments, e.g. for climate change research.

## Anti-Corruption

<b>Principle 10:</b> Businesses should work against corruption in all its forms, including extortion and bribery.	Covered in Code of Conduct, Supplier Code of Conduct and Vaisala's International Anti-Corruption Policy. Vaisala's management enforces a strict zero-tolerance policy on any forms of bribery and corruption.
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## Local Network and National Cooperation

Vaisala is part of a Global Compact local network, The Nordic Network, which has Global Compact participants from Denmark, Finland, Greenland, Iceland, Norway and Sweden. The network provides a learning forum for its members, displaying best practices in corporate responsibility as well as in implementing the ten principles. The network convenes twice per year in a member country. Vaisala is also represented in the network's Steering Group.

In order to benchmark with other industrial companies, Vaisala also takes part in discussions between other Finnish signatory companies. A group of companies meets on a regular basis to exchange best practices with each other and to promote Global Compact for companies that are not yet Global Compact members.

Read more about The Nordic Network:  
[www.gcnordic.net](http://www.gcnordic.net)



# Independent Assurance Report

## To the Management of Vaisala Oyj

At the request of the Management of Vaisala Oyj (hereafter Vaisala) we have performed a limited assurance engagement on certain economic, environmental and social information for the reporting period 1 January to 31 December 2015 (hereafter corporate responsibility information). Further information about the scope of the assurance engagement can be found in the GRI index on pages 84–87 of the report.

## Management's responsibility

The Management of Vaisala is responsible for the preparation and presentation of the corporate responsibility information in accordance to Vaisala's internal reporting instructions and the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines G4. (hereafter the reporting principles).

## Assurance Provider's responsibility

It is our responsibility to present an independent conclusion on the corporate responsibility information based on our work performed. We do not accept nor assume responsibility to anyone else except to Vaisala for our work, for the assurance report and for the conclusions that we have reached.

We have conducted the assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 'Assurance Engagements Other than Audits or Reviews of Historical Financial Information'. The ISAE 3000 standard requires compliance with ethical requirements as well as planning and performing the assurance engagement to obtain limited assurance on whether the corporate responsibility information has been prepared, in all material respects, in accordance with the reporting principles.

## Assurance Provider's independence and quality assurance

We comply with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the IESBA (International Ethics Standards Board for Accountants). We apply ISQC 1 (International Standard on Quality Control) and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

## Limitations of the Engagement

Assurance is provided only on the information outlined in the GRI index on pages 84–87 of Vaisala Corporate Responsibility Report 2015. We have not been engaged to provide assurance on amounts or disclosures relating to other topics or to prior reporting periods presented in the Annual and Sustainability Report 2015.

In a limited assurance engagement the evidence gathering procedures are more limited than in a

reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement. The procedures selected depend on the Assurance Provider's judgment, including an assessment of the risks that the corporate responsibility information would not, in all material respects, comply with the reporting principles. We have planned and performed our engagement to obtain sufficient appropriate evidence on which to base our conclusion.

We have performed, among others, the following procedures:

- a. An update of our knowledge and understanding of Vaisala's material sustainability reporting topics, organisation and activities,
- b. An assessment of suitability and application of the reporting principles regarding the stakeholders' needs for information,
- c. Interviews with senior management to understand Vaisala's corporate responsibility leadership,
- d. Interviews with personnel responsible for gathering and consolidating the corporate responsibility information to understand systems, processes and controls related to gathering and consolidating the information,
- e. Visiting a site in United States and a site in Finland to obtain evidence of the data gathering and consolidation process,
- f. Reviewing evidence retrieved from internal and external data sources and checking the data to reporting information on a sample basis,
- g. Performing recalculation of information on a sample basis and reviewing the underlying data that is the basis of narrative disclosures related to the data.

Our assurance report should be read in conjunction with the inherent limitations of accuracy and completeness for corporate responsibility information. This independent assurance report should not be used on its own as a basis for interpreting Vaisala's performance in relation to its principles of corporate responsibility.

## Conclusion

Based on our work described in this report, nothing has come to our attention that causes us to believe that the corporate responsibility information has not been prepared, in all material respects, in accordance with the reporting principles, or that the Information is not reliable, in all material respects, based on the reporting principles.

Helsinki, 14 March 2016

**Ernst & Young Oy**

Mikko Järventausta  
Partner, Authorized  
Public Accountant

Jani Alenius  
Leader of Climate Change  
and Sustainability Services



## Key Performance Indicators

In this section, we present the key metrics of Vaisala's sustainability program. The figures comprise of the most important metrics for the following indicators:

- Financial
- Personnel
- Occupational Health and Safety, and
- Environment

The indicators are derived from Vaisala's material aspects analysis and follow the GRI G4 reporting guidelines. The indicators have been verified by a third party assurance provider, their statement is on page 72 of this report.

## Financial Indicators

<b>Key figures</b>					
<b>EUR million</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Net sales	273.6	293.3	273.2	299.7	318.5
Operating profit	16.1	30.2	18.1	26.4	29.6
R&D expenditure % of net sales	10.2%	9.5%	10.6%	11.3%	11.3%
Income taxes*	4.2	6.4	6.6	6.1	7.2

\* Deferred taxes not included

<b>Personnel expenses</b>					
<b>EUR million</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Total payroll & benefits	77.8	87.0	84.7	94.9	105.5
Share-based remunerations		0.4	0.6	1.0	1.0
Social costs	8.1	7.6	8.8	9.8	11.7
Pension expenses, net	8.2	9.4	10.6	10.6	11.7
<b>Total</b>	<b>94.1</b>	<b>104.5</b>	<b>104.7</b>	<b>116.3</b>	<b>130.0</b>

<b>Gross taxes by geographical area</b>					
<b>EUR 1,000</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
EMEA	3,683	4,430	4,397	5,472	7,037
of which Finland	3,341	4,067	4,089	5,199	6,601
Americas	-185	1,523	1,563	82	-384
of which United States	-97	1,526	1,319	69	-400
APAC	722	416	684	539	588
<b>Total</b>	<b>4,220</b>	<b>6,369</b>	<b>6,644</b>	<b>6,093</b>	<b>7,241</b>

**Financial ratios**

	2011	2012	2013	2014	2015
Return on equity (ROE)	5.7%	11.7%	6.3%	14.3%	15.7%
Solvency ratio	74%	75%	72%	71%	70%
Earnings per share (EUR)	0.57	1.20	0.60	1.30	1.52
Dividends per share (EUR)	0.65	0.90	0.90	0.90	0.95*

\* Board's proposal to the Annual General Meeting

**Financial assistance from governments by country**

EUR 1,000	2011	2012	2013	2014	2015
Finland	689	873	568	355	1,314
Canada	-	-	48	-	-

**Direct economic value generated\***

EUR million	2011	2012	2013	2014	2015
Revenues	273.6	293.3	273.2	299.7	318.5
Economic value distributed					
Operating costs	-150.9	-143.5	-133.1	-142.3	-143.9
Employee wages and benefits	-94.1	-104.5	-104.7	-116.3	-130.0
Payments to providers of capital	-11.8	-11.8	-16.2	-16.3	-16.4
Payments to government	-4.2	-6.4	-6.6	-6.1	-7.2
Community investments (donations)	-0.7	-0.3	-0.1	-0.3	-0.5
Economic value retained	11.9	26.8	12.5	18.5	20.5

\* As defined in GRI G4 EC1 indicator, please see <http://bit.ly/1AanTEv> for reference

Global Donations	2011	2012	2013	2014	2015
EUR 1,000	664	259	75	310	466

# Personnel Indicators

## Employees by employment contract, type and gender

	Permanent		Temporary	
	1524		64	
	Male	Female	Male	Female
	1077	447	35	29
Full time	1034	410		
Part time	43	37		

*Self-employed workers do not make up a significant part of the workforce*

Total Workforce	2011	2012	2013	2014	2015
Employees at end of period	1,394	1,442	1,563	1,613	1,588
Finland	55.5%	57.3%	55.7%	56.9%	58.5%
Rest of Europe	8.2%	7.7%	7.0%	7.2%	7.2%
Americas	27.6%	26.3%	29.2%	27.3%	25.7%
Asia, Australia and Oceania	8.7%	8.7%	8.1%	8.6%	8.6%
Women	28.4%	29.5%	30.3%	29.9%	30.0%
Men	71.6%	70.5%	69.7%	70.1%	70.0%
Staff in R&D	19.4%	19.5%	19.8%	22.3%	21.4%
Staff in manufacturing	n/a	n/a	n/a	10.5%	11.9%
Permanent	n/a	95.8%	96.6%	96.3%	96.0%
Temporary	n/a	4.2%	3.4%	3.7%	4.0%

Turnover 2015	Temporary	Permanents	Turnover rate %	Turnover rate, permanent employees
Recruitment (+)	204	102		
Turnover (-)	246	87	15.5%*	10.4%**

\* number of employees leaving the company in the reporting period divided by total number of employees at the end of the period

\*\* number of permanent employees leaving the company in the reporting period divided by total number of permanent employees at the end of the period

Turnover	-19	20-29	30-39	40-49	50-59	60-
Male	10	60	36	28	19	21
Female	3	30	17	14	6	2
<b>Total</b>	<b>13</b>	<b>90</b>	<b>53</b>	<b>42</b>	<b>25</b>	<b>23</b>
%	5.3%	36.6%	21.5%	17.1%	10.2%	9.3%

<b>Turnover by region</b>	<b>Finland</b>	<b>Other Europe</b>	<b>Americas</b>	<b>Asia and Australia</b>	<b>Total</b>
Permanent	75	11	60	13	<b>159</b>
Temporary	74	3	7	3	<b>87</b>
<b>Total</b>	<b>149</b>	<b>14</b>	<b>67</b>	<b>16</b>	<b>246</b>

<b>Recruitments 2015</b>	<b>-19</b>	<b>20-29</b>	<b>30-39</b>	<b>40-49</b>	<b>50-59</b>	<b>60-</b>
Male	13	76	31	16	5	5
Female	2	34	9	9	4	0
<b>Total</b>	<b>15</b>	<b>110</b>	<b>40</b>	<b>25</b>	<b>9</b>	<b>5</b>
%	7.4%	53.9%	19.6%	12.3%	4.4%	2.5%

<b>Recruitments by region</b>	<b>Finland</b>	<b>Other Europe</b>	<b>Americas</b>	<b>Asia and Australia</b>	<b>Total</b>
Permanent	66	5	22	9	<b>102</b>
Temporary	84	7	8	3	<b>102</b>

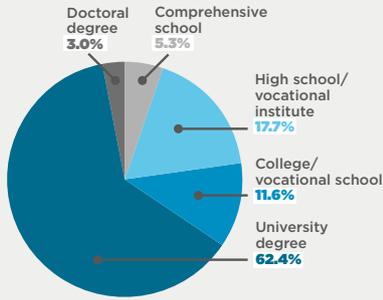
<b>Number of retired, Finland</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Global	n/a	n/a	<b>18</b>
Finland	9	7	<b>11</b>
Average age	62.9	63.3	<b>64.8</b>

<b>Staff turnover 2011-2015</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Employees +/-	+203/-161	+234/-151	+230/-176	+257/-176	<b>+204/-246</b>
Turnover	11.5%	10.5%	11.9%	10.9%	<b>15.5%</b>
Turnover, permanent employees	5.4%	6.2%	6.0%	6.4%	<b>10.4%</b>

<b>Development discussions</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Rate of total staff that has had a development discussion with their supervisor during the last 12 months (March 2016). Excludes long time absent and recently recruited employees.	90%	92%	95%	98%	<b>98%</b>

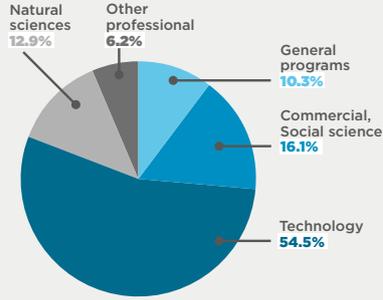
<b>Training EUR 1,000</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2015</b>	<b>2015</b>
Total employee training cost	1,543	1,271	1,318	1,270	<b>1,052</b>
Average training cost per employee	1.1	0.9	0.9	0.8	<b>0.7</b>

### Personnel by Level of Education



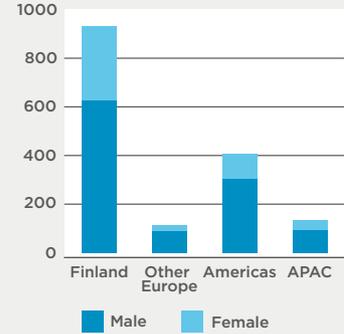
Covers 89% of permanent employees

### Personnel by Area of Education

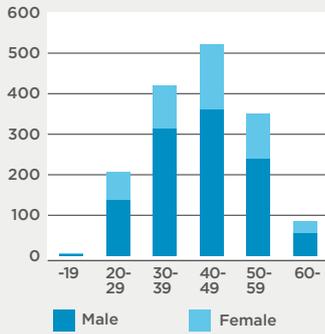


Covers 86% of Group's personnel

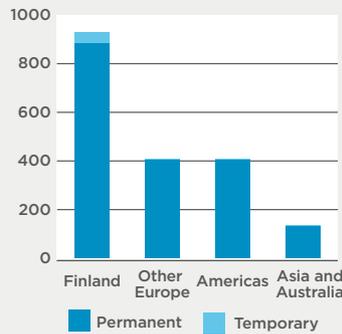
### Personnel by Region and Gender



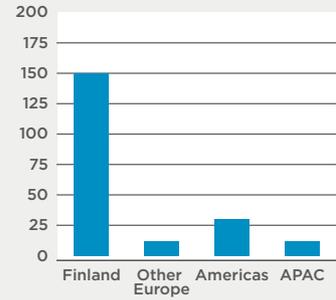
### Personnel by Age Group and Gender



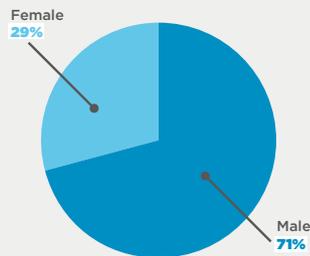
### Personnel by Region and Contract Type



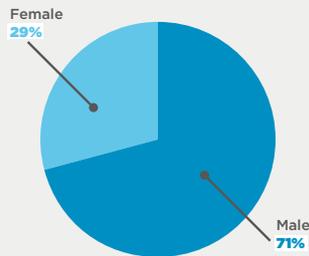
### Personnel Recruited by Region



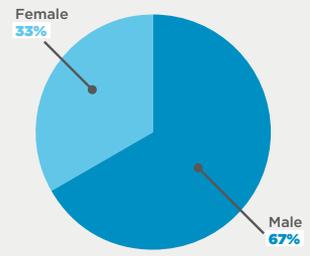
### Supervisor Gender Distribution



### Board of Directors Gender Distribution

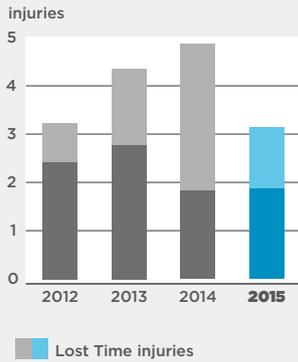


### Management Group Gender Distribution

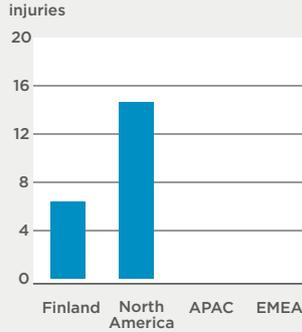


# Occupational Health and Safety Indicators

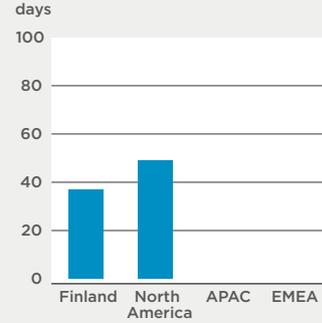
**Total Recordable Injuries and Lost time injuries per 1 Million Hours\***



**Total Recordable Injuries per Region per 1 million hours\***



**Days of Absence due to Injury**



\*Scope broadened in 2014, previous year's data not comparable.

Recordable Injuries per gender 2015	Finland	North America	Asia and Australia	Europe, Middle-East and Africa	Total
Male	4	3	0	1	8
Female	2	0	0	0	2

Total Recordable Injury (TRI) rate decreased by

**35%**

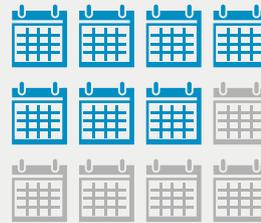
compared to previous year.



**7**

injury free months in

**2015**



TRI was below target rate of

**3.4**

injuries

at

**3.1**

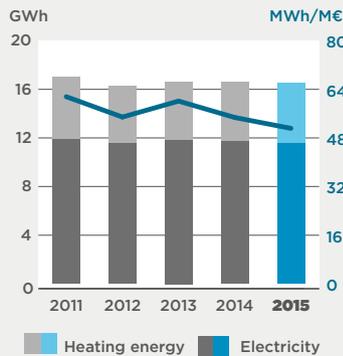
Proactive reporting frequency increased

**500%**

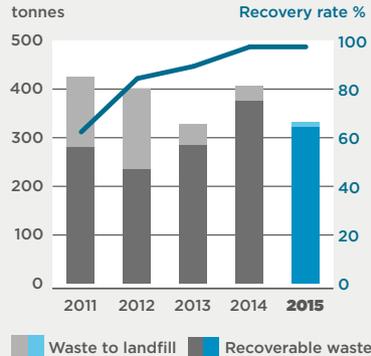
from previous year.

# Environment Indicators

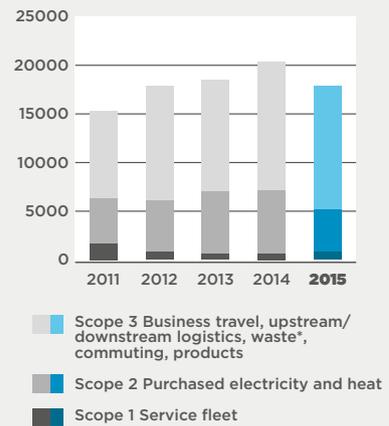
## Group Energy Consumption



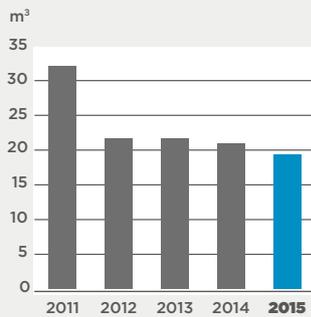
## Group Waste



## Carbon Footprint



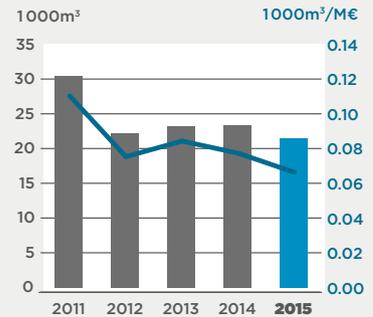
## Water Usage per Employee



## Energy Consumption per Employee



## Group Water Consumption



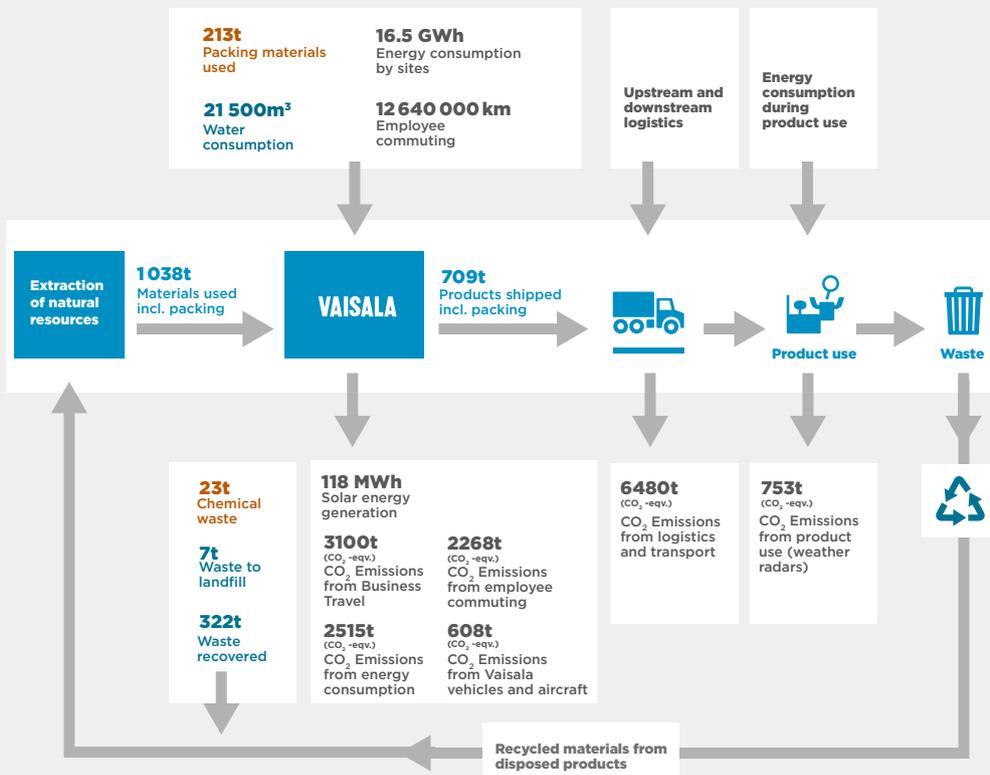
Carbon Footprint	2011	2012	2013	2014	2015
Scope 1   Service fleet	1,685	792	601	626	816
Scope 2   Purchased electricity and heat	4,630	5,318	6,462	6,536	4,366
Scope 3*   Business travel, upstream/downstream logistics, waste, commuting, products	11,713	12,198	11,780	13,528	13,231
<b>Total</b>	<b>18,028</b>	<b>18,308</b>	<b>18,843</b>	<b>20,690</b>	<b>18,412</b>

\* Waste emissions include only main facility in Helsinki, Finland. Installed base is calculated for one product family, the C-band weather radar.

Waste (Group)	2011	2012	2013	2014	2015
<b>Recoverable waste*</b>					
Hazardous waste (tons)	17.5	18.1	20.3	19.6	22.6
WEEE (tons)	15.1	3.6	5.4	11.0	10.4
Biowaste (tons)	10.7	42.7	33.9	41.3	42.0
Energy Waste (tons)	10.1	38.1	43.7	45.4	47.6
Other (tons) (wood, paper, combustible waste, metal)	227.0	131.5	181.1	258.3	199.4
<b>Total recoverable waste (tons)</b>	<b>280.4</b>	<b>234.1</b>	<b>284.4</b>	<b>375.5</b>	<b>322.0</b>
<b>Waste to landfill</b>					
Waste to landfill (tons)	165.6	43.0	31.7	9.1	7.1
<b>Total waste (tons)</b>	<b>446.0</b>	<b>277.0</b>	<b>316.1</b>	<b>384.6</b>	<b>329.1</b>
<b>Waste recovery rate, %</b>	<b>63%</b>	<b>84%</b>	<b>90%</b>	<b>98%</b>	<b>98%</b>
<b>Total waste tons/€M sales, Group</b>	<b>1.63</b>	<b>0.94</b>	<b>1.16</b>	<b>1.28</b>	<b>1.03</b>
<b>Waste per employee (kg/employee)</b>	<b>490.51</b>	<b>270.80</b>	<b>294.63</b>	<b>343.40</b>	<b>295.42</b>

\*All recoverable waste is utilized as material or energy

## Vaisala's Environmental Impacts



## Methodologies and Assumptions

Energy, water and waste data are collected from various sources. If on-site monitoring is not available, service provider bills are used. Electricity and district heating bills are used for the reference documents for energy consumption. Solar energy generation as well as water consumption are measured with on-site meters. Waste data is obtained from bills and waste operator customer portals when available.

All energy efficiency improvement actions have been calculated individually using the best available information from for instance equipment manufacturers and applying the financial control method outlined in "The GHG Protocol: A Corporate Accounting and Reporting Standard". The baseline year 2008 was determined when Vaisala joined the energy efficiency program of the Federation of Finnish Technology Industries. Emissions in the base year were 3,834 tonnes CO<sub>2</sub>e and includes our Head Office in Finland.

Greenhouse gas emissions are calculated by using best available conversion factors. These factors come from various reliable sources including DEFRA emission factor database and GHG Protocol calculation tools. Some emission factors are from more specific sources such as logistics partners and local energy utility companies and emission factors from vehicle manufacturers in case of Vaisala's fleet.

The carbon footprint includes all greenhouse gasses converted into CO<sub>2</sub> using Global Warming Potential GWP-100. As our GHG accounting has improved and extended we have calculated the carbon footprint retroactively in order to maintain comparability over the reporting periods, but comparability from year to year is still imperfect.

## Scope of Environmental Reporting

Vaisala's carbon footprint includes various components from the corporate value chain. The carbon footprint is divided into three scopes according to The Greenhouse Gas Protocol Account and Reporting Standard. Data collection and reporting scope for the carbon footprint is more extensive than for group environmental key performance indicators. Data is collected from all offices with more than 15 employees. Scope 1 includes Vaisala's vehicles such as field service vehicles. Scope 2 includes purchased electricity and heat. Scope 3 consists of business flights, rental cars, inbound and outbound logistics, energy consumption of installed base of weather radars, employee commuting, and waste treatment (from Finland only).

Vaisala's Environmental Key Performance Indicators (EKPIs) include, energy consumption, water consumption and waste generation. The scope of group level EKPIs include our manufacturing sites in Helsinki, Finland and Boulder, CO, United States which are estimated to account for 83% of total energy consumption, 79% of total water consumption and 91% of total waste whereas total mean all Vaisala offices globally. Intensity indicators are calculated by comparing the previously mentioned key performance indicators to company revenue and/or headcount of the two manufacturing sites. We are frequently evaluating the comprehensiveness of the scope of reporting EKPIs and are ready to extend the scope if deemed necessary.



# GRI Content Index

The Global Reporting Initiative content index is provided to assist the reader in navigating through the report and to compare it to the GRI G4 Guidelines. The report is in accordance with the core criteria of the guidelines. Standard disclosures for 2015, with a reference to external assurance in the GRI content index, have been externally assured by an independent third party, Ernst & Young Oy. The independent assurance report is on page 72 of this report. For more information about the guidelines or the application levels, please see [www.globalreporting.org](http://www.globalreporting.org)

Vaisala Material Aspects  People  Integrity  Sustainable Technologies  Performance

Description	Reference	Reasons for omission	Vaisala Material Aspect	Assurance	Global Compact Principle
<b>General Standard Disclosures</b>					
G4-1	Provide a statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability	3-5			

<b>Organizational Profile</b>					
G4-3	Name of the organization	8			
G4-4	Primary brands, products, and services	16-17			
G4-5	Location of the organization's headquarters	88			
G4-6	Number of countries where the organization operates	8, 88			
G4-7	Nature of ownership and legal form	8			
G4-8	Markets served	16-17, 20			
G4-9	Scale of the organization	8, 13, 58, 88			
G4-10	Workforce information	76-78		●	Principle 6
G4-11	Report the percentage of total employees covered by collective bargaining agreements	25		●	Principle 3
G4-12	Describe the organization's supply chain	36			
G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain	25			
G4-14	Approach to the precautionary principle	34-35			
G4-15	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	71			
G4-16	List memberships of associations and national or international advocacy organizations	22			

<b>Identified Material Aspects and Boundaries</b>					
G4-17	Entities included in the organization's consolidated financial statements or equivalent documents. Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	The report's scope include all affiliates and wholly owned companies of the parent company Vaisala Oyj.			
G4-18	Process for defining the report content and the Aspect Boundaries	14-15, 70			
G4-19	List all the material Aspects identified in the process for defining report content	15			
G4-20	Reporting of Aspect Boundaries within the organization	15			
G4-21	Reporting of Aspect Boundaries outside the organization	15			
G4-22	Effect of any restatements of information provided in previous reports, and the reasons for such restatements	70, Re-statements are explained within the text were applicable.			
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	70			

<b>Stakeholder Engagement</b>					
G4-24	List of stakeholder groups engaged by the organization	20			
G4-25	Basis for identification and selection of stakeholders with whom to engage	20			
G4-26	Organization's approach to stakeholder engagement	20			
G4-27	Key topics and concerns that have been raised through stakeholder engagement	20-22			

### Report Profile

G4-28	Reporting period for information provided	Calendar year 2015				
G4-29	Date of most recent previous report	26 March 2015				
G4-30	Reporting cycle	Annual				
G4-31	Contact point for questions regarding the report or its contents	91				
G4-32	The 'in accordance' option the organization has chosen.	In accordance with the GRI G4 Core option.				
G4-33	Organization's policy and current practice with regard to seeking external assurance for the report.	70				

### Governance

G4-34	Governance structure of the organization	15, Corporate Governance Statement				
<b>Ethics and Integrity</b>						
G4-56	Organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	32, 34-35				All principles
G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines	35				All principles
G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines	35				All principles

				Vaisala Material Aspect	Assurance	Global Compact Principle
Description	Reference	Reasons for omission				
<b>Disclosures on Management Approach (DMA)</b>						
G4-DMA	Materiality and impacts	11-13, 15				
<b>Indicators</b>						
<b>Category: economic</b>						
Aspect: Economic Performance				Performance		
G4-EC1	Direct economic value generated and distributed	75	Figures reported on Group level. We consider the regional level reporting of these figures trade secrets.		●	
G4-EC3	Coverage of the organization's defined benefit plan obligations	Financial Statements, p. 32, 41, 52	There is no single Group policy, as practices differ between countries. Percentage of salary and participation level not reported.		●	
G4-EC4	Financial assistance received from government	75			●	
<b>Category: environmental</b>						
Aspect: Energy				Performance		
G4-EN3	Energy consumption within the organization	80-81	Vaisala does not consume fuels or sell electricity in any significant quantities, therefore these are not considered material.		●	Principles 7, 8
G4-EN4	Energy consumption outside of the organization	80-81	The scope is the installed base of Vaisala's C-band Weather Radar. We will aim to broaden the scope continually from the next reporting period onwards, with more products when additional installed base data is gathered.	Technology	●	Principles 7, 8, 9
G4-EN5	Energy intensity	80			●	Principle 8
G4-EN6	Reduction of energy consumption	63-64			●	Principle 8
Aspect: Water				Performance		
G4-EN8	Total water withdrawal by source	80-81			●	Principles 7, 8
Aspect: Emissions				Performance		
G4-EN15	Direct greenhouse gas (ghg) emissions (scope 1)	80-81			●	Principles 7, 8
G4-EN16	Energy indirect greenhouse gas (ghg) emissions (scope 2)	80-81			●	Principles 7, 8
G4-EN17	Other indirect greenhouse gas (ghg) emissions (scope 3)	80-81	The data includes business travel and commuting for the Group; logistics and waste for Finland; and installed base of one product group, the C-band weather radar. Scope of reporting will be reviewed annually.		●	Principles 7, 8
G4-EN18	Greenhouse gas (ghg) emissions intensity	80-81			●	Principles 7, 8
G4-EN19	Reduction of greenhouse gas (ghg) emissions	64			●	Principle 8
Aspect: Effluents and Waste				Performance		
G4-EN23	Total weight of waste by type and disposal method	81			●	Principles 7, 8

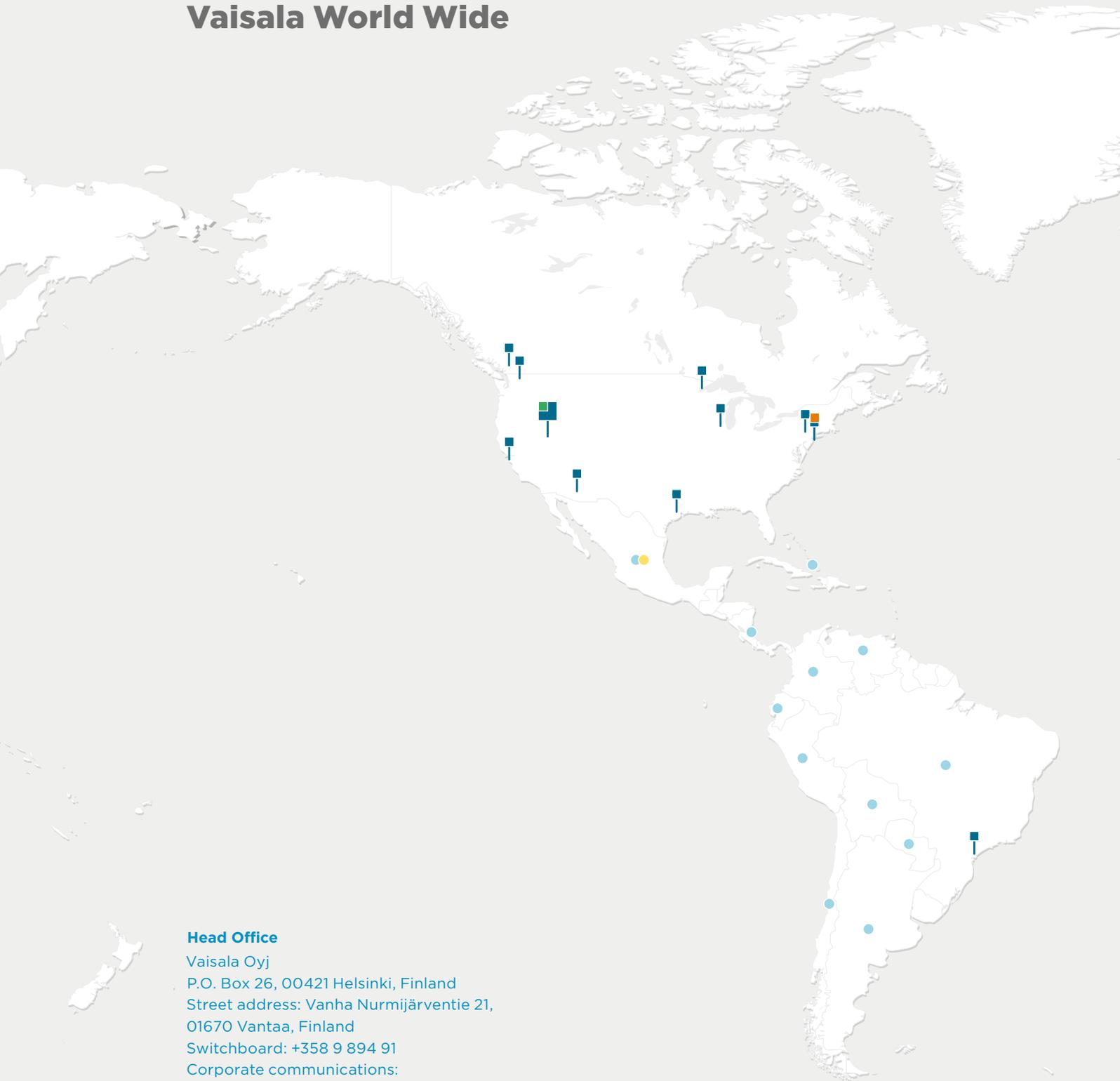
	Description	Reference	Reasons for omission	Vaisala Material Aspect	Assurance	Global Compact Principle
	Aspect: Compliance			Integrity		
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	35			●	Principle 7
	Aspect: Supplier Environmental Assessment			Integrity		
G4-EN32	Percentage of new suppliers that were screened using environmental criteria	37			●	Principle 7
	Aspect: Environmental Grievance Mechanisms			Integrity		
G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	35			●	Principle 7
	<b>Category: social</b>					
	<b>Sub-category: labor practices and decent work</b>					
	Aspect: Employment			People		
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	76-77	More accurate reporting will be reviewed during next reporting period for the rate of recruitments and turnover.		●	Principle 6
	Aspect: Labor/Management Relations			People		
G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	25			●	Principle 3
	Aspect: Occupational Health and Safety			People		
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	28-29			●	Principle 3
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	28-29	Occupational disease rate, absentee rates, and lost day rate have been determined not to be material in Vaisala due to low frequency. Data for contractors is too limited for reporting.		●	
G4-LA7	Workers with high incidence or high risk of diseases related to their occupation	28-29				
	Aspect: Training and Education			People		
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	25			●	Principle 6
G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	77	Performance reviews are a key indicator for Vaisala's human resources development. As 98% of staff had had a development discussion in the past 12 months, we determine region and gender not material in this case.		●	
	Aspect: Diversity and Equal Opportunity			People		
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	76-78	Vaisala does not register ethnicity or minority group status in most of its operating countries, except where it is a regulatory requirement. Minority status has also been determined as not material. Age information was unavailable at the time of reporting..		●	
	Aspect: Supplier Assessment for Labor Practices			Integrity		
G4-LA14	Percentage of new suppliers that were screened using labor practices criteria	37			●	Principles 3, 4, 5
	Aspect: Labor Practices Grievance Mechanisms			Integrity		
G4-LA16	Number of grievances about labor practices filed, addressed, and resolved	35			●	Principles 3, 4, 5
	<b>Sub-category: human rights</b>					
	Aspect: Investment			Integrity		
G4-HR2	Total hours of employee training on human rights policies or procedures	34	The e-learning platform does not account for hours spent on training, but instead registered completion of the course.		●	Principles 1, 2
	Aspect: Non-discrimination			Integrity		
G4-HR3	Total number of incidents of discrimination and corrective actions taken	35			●	Principle 2
	Aspect: Freedom of Association and Collective Bargaining			Integrity		
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	37	Aspect was determined not material in Vaisala's own operations, only in specific areas of the supply chain. For details of supply chain risk mapping, the information is proprietary.		●	Principles 1, 2, 3

Description	Reference	Reasons for omission	Vaisala Material Aspect	Assurance	Global Compact Principle
Aspect: Child Labor			Integrity		
G4-HR5 Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	37	Aspect was determined not material in Vaisala's own operations, only in the supply chain.		●	Principle 5
Aspect: Forced or Compulsory Labor			Integrity		
G4-HR6 Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	37	Aspect was determined not material in Vaisala's own operations, only in the supply chain.		●	Principle 4
Aspect: Supplier Human Rights Assessment			Integrity		
G4-HR10 Percentage of new suppliers that were screened using human rights criteria	37			●	Principles 1, 2
Aspect: Human Rights Grievance Mechanisms			Integrity		
G4-HR12 Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	35			●	Principles 1, 2
<b>Sub-category: society</b>					
Aspect: Anti-corruption			Integrity		
G4-SO4 Communication and training on anti-corruption policies and procedures	34	Every employee is in the scope for these policies and procedures. Therefore, the breakdown of staff has been deemed not material.		●	Principle 10
G4-SO5 Confirmed incidents of corruption and actions taken	35			●	Principle 10
Aspect: Public Policy			Integrity		
G4-SO6 Total value of political contributions by country and recipient/beneficiary	38, 75			●	Principle 10
Aspect: Anti-competitive Behavior			Integrity		
G4-SO7 Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	35			●	Principle 10
Aspect: Compliance			Integrity		
G4-SO8 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	35			●	Principle 10
Aspect: Supplier Assessment for Impacts on Society			Integrity		
G4-SO9 Percentage of new suppliers that were screened using criteria for impacts on society	37			●	Principle 10
Aspect: Grievance Mechanisms for Impacts on Society			Integrity		
G4-SO11 Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms	35			●	Principle 10
<b>Sub-category: product responsibility</b>					
Aspect: Customer Health and Safety			Integrity		
G4-PR2 Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	35			●	
Aspect: Product and Service Labeling			Integrity		
G4-PR4 Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	35			●	
Aspect: Compliance			Integrity		
G4-PR9 Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	35			●	

References: Vaisala Financial Statements 2015 and Corporate Governance Statement

<http://www.vaisala.com/en/investors/reports/annualandinterimreports/2015/Financial%20Statements%202015.pdf>

# Vaisala World Wide

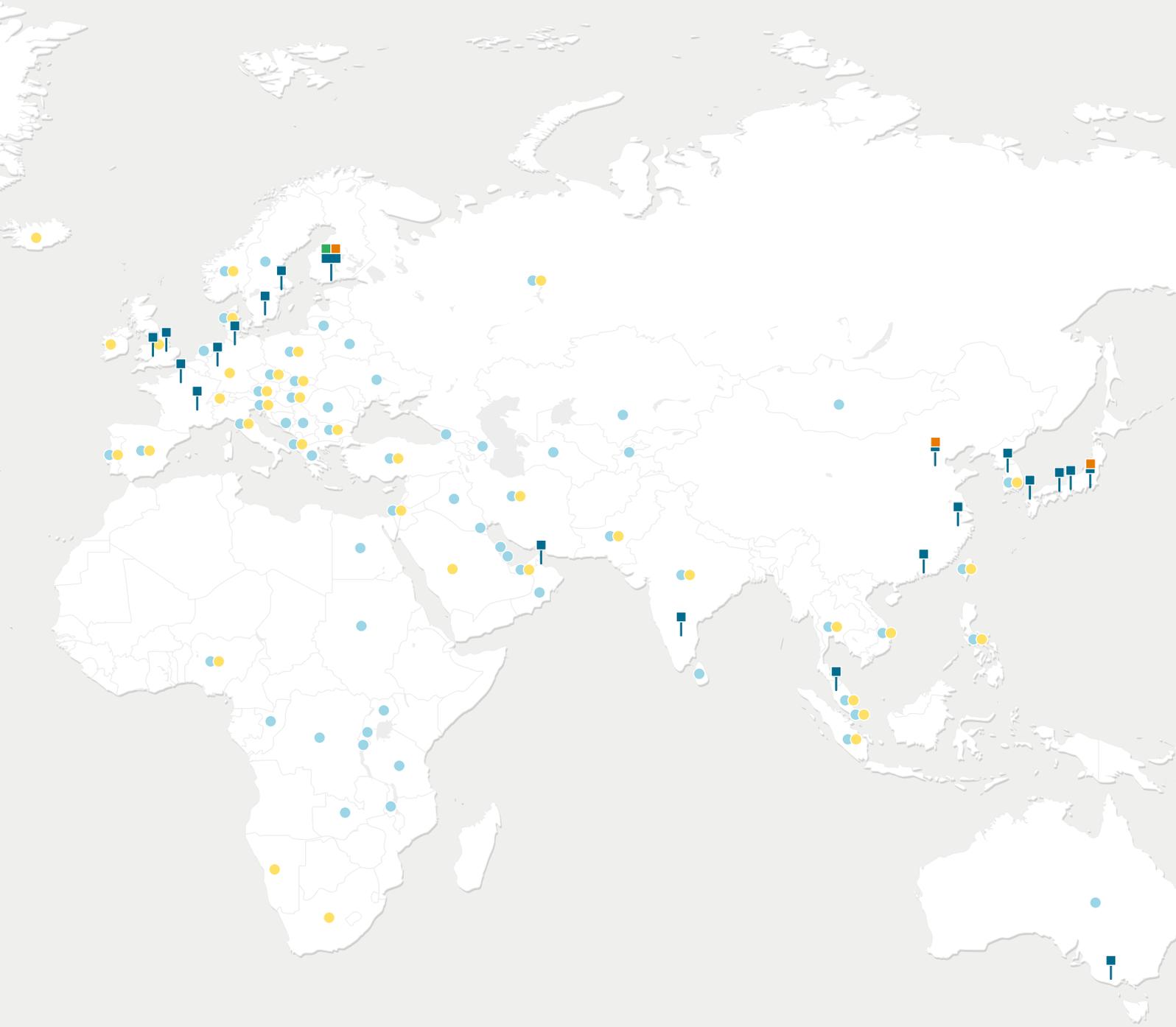


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- Office
- Manufacturing
- Service Center
- Representative (Weather)
- Representative (Controlled Environment)

**VAISALA**

# Vaisala in Numbers



Vaisala developed **oil moisture measurement technology**, which has become world-wide standard and has been used for over

**15 years**

by leading power industry customers in more than

**30 countries**

worldwide.

Our southernmost installed system is a Vaisala **AUTOSONDE** at the Jang Bogo station on Antarctica.



**1900+**

installed **Airport Weather Observation Systems** in

**100+**

countries.

**CO<sub>2</sub> instruments** proven for over



**15 years**

in hundreds of applications and dozens of industries worldwide.

Forecasting for

**130,000+ MW**

of wind generation capacity worldwide.

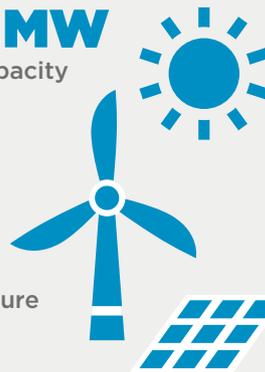
**1000+**

wind and solar project assessment reports.

Vaisala has helped secure

**US\$10B**

in solar project financing globally.



**4 411 m**

**Daocheng Yading Airport** located in China, the highest airport in the world, has a comprehensive Vaisala system installed.

**10+ years**



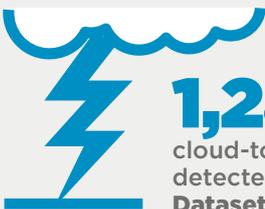
of **SF6 gas moisture measurements**. Proven track record with thousands of dew point measurement installations.



According to the **World Meteorological Organization**

**2015 was the hottest year on record**

globally and the first time that temperatures were about 1°C above the pre-industrial era.



**1,280,781,313**

cloud-to-ground lightnings in 2015 as detected by **Vaisala Global Lightning Dataset GLD360**.



**2500+**

deployments of **Triton Wind Profiler**.

**Vaisala HUMICAP Humidity and Temperature Transmitter Series HMT330** - Close to

**80,000**

installations world-wide.



**+15M hours**

of **wind measurement data** collected worldwide with the **Triton Wind Profiler**.

## Sustainability Contacts in Vaisala

If you have questions or comments regarding the report or Vaisala's corporate responsibility activities, please feel free to contact us.

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