




# Outotec Sustainability Report 2018

CO-CREATING FOR  
FUTURE PLANTS

 Sustainable use of  
Earth's natural resources

**Outotec**

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## Co-creating for future plants

Customers increasingly seek co-creation and trust Outotec to solve demanding challenges together with them. As a signal of this, customer visits to our research centers increased significantly during 2018. By working closely with customers from as early in the project as possible, we can add significant value to the solution. By sharing knowledge and combining forces with customers, partners and the scientific community, we create solutions that benefit all parties.

Customers show great interest in efficiency and profitability improvements through digitalization and other measures. Increasing the recovery of and cutting emissions score high on our customers' agenda. The availability of energy, along with reducing energy consumption, is a major topic. Water is an increasingly critical resource, too. A recent, tragic dam collapse in Brazil highlights the importance of tailings management and dry stacking technologies.

### YEAR OF TANGIBLE IMPROVEMENTS OVERSHADOWED BY ONE PROJECT PROVISION

Building on our mission, 'Sustainable use of Earth's natural resources', our strategy is to provide customers with leading technologies, superior customer service and excellent execution.

We made significant progress in many areas in 2018. Market recovery continued at the beginning of the year, but macroeconomic uncertainty and reduced metal prices started to impact customers' readiness to implement

large-scale investments. At the same time, small and medium-sized investments continued at a good level. Towards the end of the year, the market activity picked up again, and we expect the demand for our products and services to be solid in 2019.

Brownfield investments of existing sites continued to dominate, as there are relatively few ongoing greenfield projects. The electric car market, renewable energy generation and storage generate projects involving copper, cobalt, nickel and lithium. The market for gold is active as well. We received orders for process equipment, plants and services related to all these metals. Copper- and gold-related projects account for 50% of our sales.

We proceeded well towards our profitability and growth targets, which, unfortunately, was overshadowed by the EUR 110 million provision we had to make in the last quarter to cover the possible costs relating to the ilmenite smelter project in Saudi Arabia. Our order intake, sales, and cash flow improved. We were also pleased to see customer satisfaction improve in 2018.

Although we achieved our general sustainability target to keep the share of Environmental Goods and Services in our order intake above 90%, we did not achieve our targets related to commercialization of new water treatment solutions and waste-to-energy plants.

In accordance with our strategy, our work continues to further improve profitability, customer satisfaction and supply chain management. We also seek growth in services.



## EXCITING COLLABORATION AND INNOVATION

The European Commission appointed Outotec and Aalto University in Finland to co-ordinate research on recycling in the battery industry in Europe. In this report, we present the case about battery metals, together with cases of urban infra revolution and our customer's view on sustainable mining. All these cases are great examples of co-creation.

Leading technologies are our core strength. We work closely with our customers in R&D. We also innovate new ways to quantify and communicate the impacts of our technologies and services to customers. We have started to use a tool to quantify the environmental impacts for the entire life-cycle of Outotec's technologies and offer life-cycle support for customers.

## VALUES CROWDSOURCED

As a continuation of our strategy, vision and portfolio work, we updated the company's values utilizing crowdsourcing within the company. Nearly 700 participants took part in the reshaping work. The work resulted in the shared values Care for the customer, Take ownership, Foster renewal, and Perform together.

Our employee survey showed a small improvement in 2018. We maintained the level reached in the previous year when the engagement index improved radically. We continue to find ways to simplify our working processes and improve employee engagement as well as project excellence.

We will also continue our target related to increasing the number of female leaders.

## COMMITTED TO SUSTAINABILITY

We respect The Universal Declaration of Human Rights. Likewise, Outotec is committed to supporting and implementing the principles of the UN Global Compact concerning human rights, working life, environmental affairs and anti-corruption.

We have also established science-based targets to reduce the climate impacts of our operations. Our science-based targets, spanning until the year 2025, are part of the global initiative by CDP, UN Global Compact, WRI and WWF.

At the beginning of 2019, Outotec was ranked 12th in the Global 100 Index of the most sustainable companies in the world. We were included in the Index for the seventh consecutive year. In October 2018, we achieved the EcoVadis Gold Certificate for our corporate responsibility practices.

We carried out a new materiality assessment with a view on company strategy, stakeholder expectations, current sustainability trends and relevant sustainability frameworks. As a result, our key sustainability themes in this report and our sustainability work in general, are Sustainable technologies and innovations, Engaged experts, and Responsible supply chain. Fundamentals in all our work are Health and safety, Financial performance as well as Ethics, compliance and governance.

Outotec's 4,000 industry experts, our customers, investors and partners

collaborate for the sustainable use of Earth's natural resources. Positive impacts spread and benefit societies at large. Thank you for being committed to sustainability. Our pioneering work for helping our customers to meet their goals continues. Future plants are co-created.

## Markku Teräsvasara

President and CEO

# This is Outotec

**Outotec develops leading technologies and services for the sustainable use of Earth's natural resources. Our comprehensive offering creates the best value for our customers in the mining, metal, energy, and chemical industries. Our 4,000 top experts are driven by each customer's unique challenges across the world.**

Outotec's unique position as a leading technology and service provider for the mineral processing and metallurgical industry is founded on a century of scientific knowledge and operational experience of processing virtually all types of ores and minerals. The innovative research done at our in-house R&D centers and continuous development work realized together with our customers have resulted in several breakthrough technologies that have become industry benchmarks in sustainability.

Our product portfolio includes hundreds of various plant concepts, processes, and pieces of equipment that are marketed under the Outotec brand. In addition, we have a variety of service products related to the maintenance and upgrade of the equipment and plants delivered by Outotec.

Our customers are large global mining companies, small and medium-sized mining, metallurgical and energy companies in developed countries as well as local mining and metallurgical companies in emerging regions. Customers are investing either in new processing plants or modernizing their existing plants to increase the profitability of their operations, improve their resource efficiency, or reduce their emissions, energy consumption

or fresh water use. We deliver entire processes or plants, or a single piece of equipment, with related engineering, sourcing, commissioning, training and life-cycle services. New mining or industrial plant investments involving also Outotec technologies may be subject to stakeholder questions and public debate in the target countries. These questions are mainly targeted to our customers.

We sell products and services to over 80 countries through our market area network.

Outotec, headquartered in Espoo, Finland, operates globally with subsidiaries and branch offices in 42 countries. The sustainability issues covered in this report are relevant in all the countries where Outotec is present. Our major operations, each having over 200 employees, are in Finland, Australia, Germany, South Africa, and Chile. Local customer centers in nine market areas provide full support for our customers' businesses – both in the everyday running of their operations and when they make new investments. In addition, we use sales agents in countries where we do not have an established presence.

Our two reporting segments – Minerals Processing and Metals, Energy & Water – are dedicated to the creation of sustainable technologies and life-cycle services for our customers.

Outotec has been listed on the NASDAQ Helsinki since 2006, and the company was rated in the Mid Cap category in 2018. The company's market capitalization at the end of 2018 was EUR 563 million. Outotec's total capitalization was EUR 377 million, of which EUR 227 million was funded by equity and EUR 150 million by a hybrid bond. The parent company Outotec Oyj

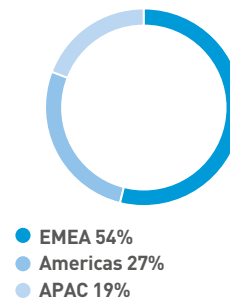
has 100% ownership of its subsidiaries.

There were no major changes in Outotec's company structure, the ownership, or supply chain during 2018. The number of active suppliers reduced by 500 from 2017. The company withdrew its businesses from Iran due to the United States trade sanctions and terminated its service workshop in the United Arab Emirates as part of organizational restructuring.

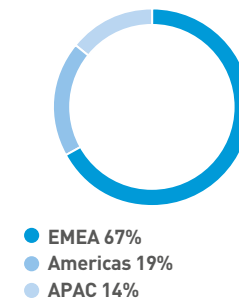
Outotec's legal entities and ownership structure are presented in our [Financial Statements 2018 at www.outotec.com/investors](http://www.outotec.com/financial-statements-2018)



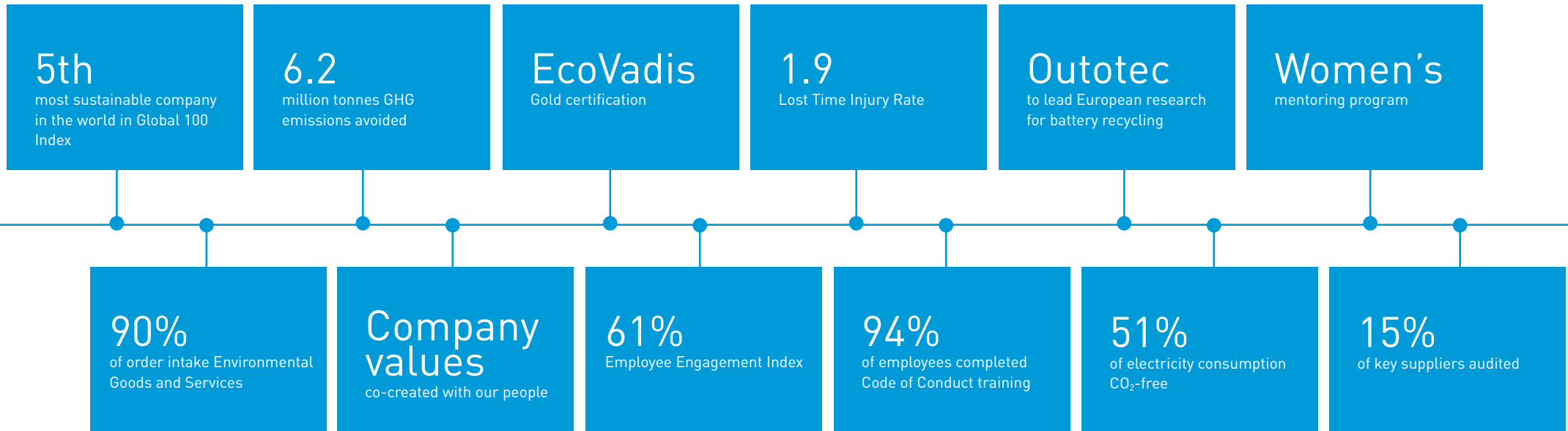
**SALES EUR 1,276 MILLION, BY REGION**



**PERSONNEL 4,012, BY REGION**



# Sustainability highlights in 2018



## Our strategy

Outotec's strategy is to serve customers with leading technologies, superior customer service and excellent execution.

In line with our mission - targeting the sustainable use of Earth's natural resources - Outotec is committed to protecting the environment in all its activities. We strive to serve our customers using our wide range of leading minerals and metals processing technologies and life-cycle services. By 2020, we also aim to achieve superior customer service and excellent execution.

Our commitment to sustainability binds us to take a holistic view of our customers' business. As countries start implementing the Paris climate agreement, we expect carbon emission controls to start playing an increasing role in addition to existing stringent restrictions on emissions of harmful substances to air or water.

Megatrends such as urbanization, resource efficiency and sustainability, coupled with digitalization bring opportunities for Outotec. While safety has long been a top priority for our industry, environmental performance and social license to operate are also increasingly at the forefront of our customers' minds, not least because of tightening regulation. We also see many unused business opportunities and some threats in China, the country producing over half of the world's metals and owning an increasing share of the world's mining assets. Volatility and the cyclical nature of our business is expected to continue, which drives us to further grow our service business.

The key in our climate change strategy, made in 2016, is harnessing our technology for the transition to a low-carbon industry. We have complemented the estimated impacts of megatrends with the opportunities and risks defined in connection with our climate change strategy work. Read more in [Financial performance and value creation, p. 30](#).

Our short-term priority is to improve our profitability to achieve economic sustainability. We also work to grow our service business to enhance our ability to create value over the cycles.

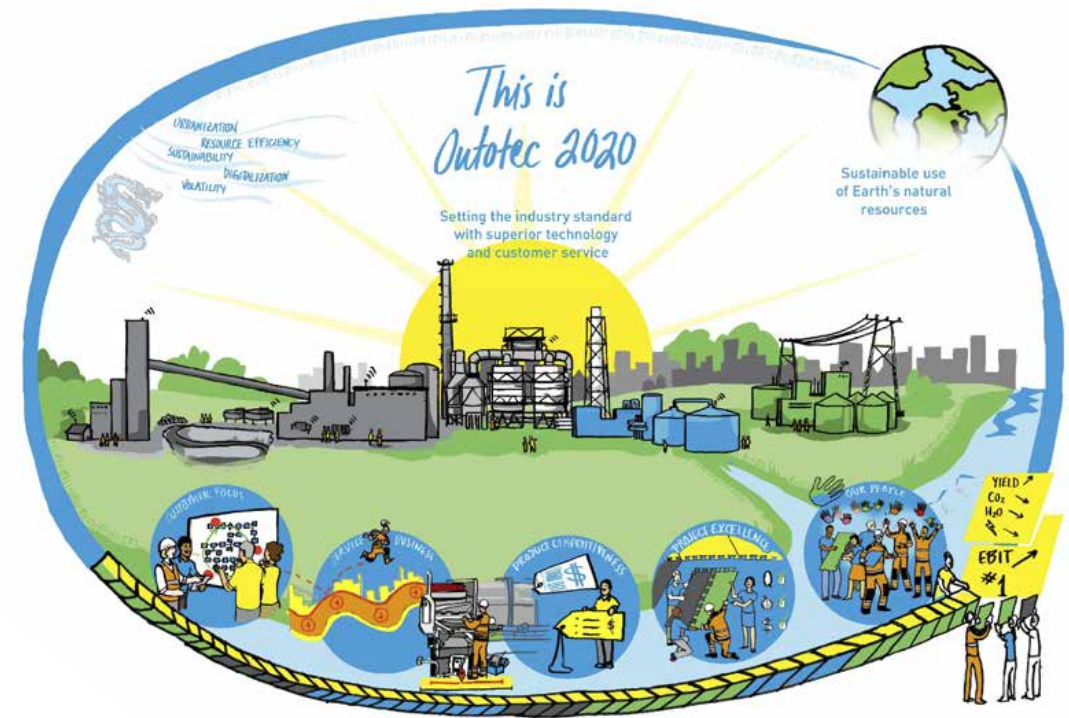
### TO BE ABLE TO REACH OUR 2020 VISION, WE ARE WORKING ON FIVE DEVELOPMENT AREAS

#### 1) Customer focus

To deliver the best customer experience we will develop our account management, sales and leadership competences and improve responsiveness.

#### 2) Service business

Services bring us a steady revenue flow, long-term customer relationships and sustained margins. We will increase local presence and focus on our existing customer relationships and installed base to maximize customers' return on investment. We aim to increase productivity by digitalization.



#### 3) Product competitiveness

We work to improve the cost competitiveness of our products by further differentiation through digitalization and improvements in energy and environmental performance. By redesigning products, by changing components without compromising on quality, and by searching for lower cost supply alternatives we aim to reduce sourcing costs.

#### 4) Project excellence

We work to improve the quality of our project deliveries and bring flexibility to the cost base.

#### 5) Our people

Engaged experts are key to our success. To improve employee engagement, we are working to create an environment for our people to develop, succeed and find joy in their work. Leadership development is one focus area in this work.



## Most significant topics

**Outotec conducted a new materiality assessment in 2018 engaging employees and other stakeholders in the discussion. As a result, three topics regarding Outotec operations were defined as having the most impact on the economy, environment and/or society, and three topics that were defined our foundation for sustainability.**

In August–October 2018 our Sustainability Working Group carried out a new materiality assessment, viewing first the company strategy, stakeholder expectations, current sustainability trends, and relevant sustainability frameworks. Potential topics that reflect Outotec’s major economic, environmental and social impacts, or influence the decisions of stakeholders were first identified together with an external partner, based on previous materiality assessments run in 2011 and 2014.

Representatives of key stakeholder groups and Outotec people were interviewed, and there was an online survey at company’s external website and in internal channels, so that anyone having interest in the company could have a say about Outotec’s impacts and matters that affect his/her decisions regarding Outotec. We also asked feedback and development ideas in the survey.

The Sustainability Working Group discussed and reviewed the results and Outotec’s key stakeholders in a workshop, prioritized the material topics and redefined the list of key stakeholders. Stakeholders were evaluated based on their significance to Outotec’s business and on Outotec’s impact on the stakeholder group. The Executive Board

validated the results of the materiality assessment and our new materiality approach in October 2018.

### DEFINING THE REPORT CONTENT AND BOUNDARIES (GRI 102-46)

The materiality principle was applied in the materiality assessment so that we considered the interests and expectations of stakeholders, Outotec values, policies, strategy, and targets. We also considered the externally assured measurements of our positive indirect environmental impacts, the environmental regulation, which we assume to be tightening, and increasing emphasis on social license to operate, as well as the main topics and future challenges of the minerals and metals processing sector.

In December 2018, the core team of our Sustainability Working Group reviewed the material topics against GRI Standards and defined the boundaries for each material topic and related indicators that form the contents of this report.

### MATERIAL TOPICS (GRI 102-47)

Based on the materiality assessment, Sustainable technologies and innovations, Engaged experts, Responsible supply chain, Health and safety, Financial performance, as well as Ethics, compliance and governance were defined as the most material topics for Outotec.

Health and safety, Financial performance as well as Ethics, compliance and governance were considered as the foundation of our

sustainability approach. Sustainable technologies and innovations, Engaged experts, and Responsible supply chain together with our own environmental performance create

Outotec’s total impact on the Earth and climate change. All these topics are reviewed in this report.





Material topic	Material aspects	Boundaries
<b>Sustainable technologies and innovations</b>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Emissions</li> <li>• Customer health and safety</li> <li>• Environmental compliance</li> <li>• Local communities</li> </ul>	<p>The aspects cover the key impacts on our customers' employees and operations, either caused by Outotec, or which Outotec contributes to or is linked with:</p> <ul style="list-style-type: none"> <li>• Operation of customers' plants</li> <li>• Health and safety of people</li> <li>• Social acceptance</li> <li>• Resource efficiency</li> <li>• Customer satisfaction</li> <li>• Climate change</li> <li>• Biodiversity</li> <li>• Local environment</li> <li>• Financial performance</li> </ul>
<b>Engaged experts</b>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Labor/management relations</li> <li>• Training and education</li> <li>• Diversity and equal opportunity</li> </ul>	<p>The aspects cover the key impacts on Outotec's employees and operations at project sites, either caused by Outotec or which Outotec contributes to:</p> <ul style="list-style-type: none"> <li>• Employee motivation and competences</li> <li>• Talent retention</li> <li>• Customer satisfaction</li> <li>• Financial performance</li> </ul>
<b>Responsible supply chain</b>	<ul style="list-style-type: none"> <li>• Procurement practices</li> <li>• Supplier environmental assessment</li> <li>• Supplier social assessment</li> </ul>	<p>The reporting covers our direct suppliers and supervised contractors. Key impacts Outotec may be linked with are:</p> <ul style="list-style-type: none"> <li>• Reputation</li> <li>• Quality</li> <li>• Respecting human rights</li> <li>• Compliance and ethical business practices</li> <li>• Employment and local development</li> <li>• Climate change</li> <li>• Financial performance</li> </ul>
<b>Health and safety</b>	<ul style="list-style-type: none"> <li>• Occupational health and safety</li> </ul>	<p>The reporting covers our employees, premises and project sites as well as supervised contractors. Outotec may cause or contribute to the impacts or be linked with them (e.g. unsafe act or condition):</p> <ul style="list-style-type: none"> <li>• Health, safety and security</li> <li>• Working environment</li> <li>• Injuries and lost working time</li> <li>• Occupational diseases</li> </ul>
<b>Financial performance</b>	<ul style="list-style-type: none"> <li>• Economic performance</li> <li>• Indirect economic impacts</li> </ul>	<p>The reporting covers all Outotec's legal entities (as listed in <a href="#">Financial Statements 2018, p. 77 (www.outotec.com/investors)</a>). The key impacts caused by Outotec include:</p> <ul style="list-style-type: none"> <li>• Shareholder value</li> <li>• Employment and wealth</li> <li>• Local development</li> <li>• Long-term commitment of stakeholders</li> </ul>
<b>Ethics, compliance and governance</b>	<ul style="list-style-type: none"> <li>• Anti-corruption</li> <li>• Anti-competitive behavior</li> <li>• Non-discrimination</li> <li>• Socio-economic compliance</li> </ul>	<p>The aspects cover Outotec's employees, suppliers and contractors as well as sales representatives and agents. Key impacts caused by Outotec or to which the company may be linked with are:</p> <ul style="list-style-type: none"> <li>• Relationships with business partners</li> <li>• Legal compliance</li> <li>• Reputation and shareholder value</li> <li>• Company culture</li> <li>• Employee relations</li> <li>• Gender equality</li> <li>• Financial performance</li> </ul>

**Customers and investors expect Outotec to show sustainability leadership, even when times are not so good.**

These topics are also reported in the Non-financial Statement published in the [Financial Statements 2018, www.outotec.com/investors](#)

**Read also**

- [About this report, p. 51](#)
- [Engaging with stakeholders, p. 16](#)

## Sustainability agenda 2020

### Our sustainability agenda and long-term goals are aligned with Outotec's strategy 2020.

Our agenda as such has not been changed although we conducted a new materiality analysis in 2018. The redefined material topics reflect very well the earlier most significant topics which continue as the building blocks of our sustainability agenda with slightly different focus: Sustainable technologies and innovations, Engaged experts, Responsible supply chain, Health and safety, and Ethics, compliance and governance. Based on stakeholder dialogue, Financial performance was added to the list of material topics. Our annual targets are linked to our 2020 goals. We also integrate the most relevant SDGs into our sustainability agenda.

We have analyzed Outotec's impacts on SDGs in an internal workshop, with eleven SDGs identified as most relevant overall, and two SDGs where we have indirect impact. Our commitment and impact analysis of the SDGs was approved by the Executive Board.

### DEVELOPMENT WORK DRIVEN BY 2020 GOALS

**Sustainable technologies and innovations** have a central role in our operations since they represent the key means of improving the resource efficiency of our customers' operations. Our long-term goal relates to providing customers with even more sustainable technologies and services, to help them reduce their ecological footprint, the pollution

and contamination of air, water and soil (SDG 3).

In line with the goals set by the UN General Assembly, we upgrade our customers' operations to make them more sustainable (SDG 9), while also improving energy efficiency (SDG 7). Through our technologies, we support actions to combat climate change every day (SDG 13). We also increase the efficiency of water use by reducing the amounts of fresh water needed in our processes, and by increasingly recycling and safely re-using water, thus decreasing the amounts of wastewater (SDG 6). With our solutions for renewable energy, we help to make cities more sustainable by enhancing sustainable urbanization (SDG 11). In addition, we have identified an indirect impact of our partnerships with our customers, suppliers, and other business partners (SDG 17) towards two SDGs in connection with our business operations. We cooperate with universities on R&D (SDG 4) and drive technological upgrades and innovations that will improve resource efficiency in production (SDG 8).

Outotec's business is dependent on **engaged experts**. We want to make Outotec the most desirable place to work in our industry, and to keep great talent with us. We aim to achieve 70% employee engagement by 2020.

Because the majority of Outotec's manufacturing is outsourced, **responsible supply chain** is highly important to us. By requiring sustainable practices along our supply chain, we also promote the wider adoption of responsible management

practices, thus enabling our clients to use natural resources sustainably (SDG 12).

**Health and safety** are the foundation for our work. Zero accidents is the ultimate high-level target for our development work, though this very ambitious target is seldom achieved by any company. Outotec's management believes that this level of commitment to a safe working environment is a necessity in the challenging project circumstances in which our employees, customers and suppliers work.

**Financial performance** has a great impact on our stakeholders and the company's success. Outotec aims to achieve continuous profitable growth and balance the cyclicity of the mining and metals industries by developing and growing the service business.

In **ethics, compliance and governance**, we aim to develop strong common values and a robust Code of Conduct, as well as a solid governance structure. An integral part of this goal is to ensure that all our employees and suppliers know and act according to our Code of Conduct. We have zero tolerance for corruption. We continuously train our own employees on anti-corruption topics and require compliance from our business partners (SDG 16). Outotec implements non-discriminatory company policies and practices globally (SDG 10).

**We have integrated the most relevant SDGs into our sustainability agenda.**

TARGETS FOR 2020	RELATED SDG
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**SUSTAINABLE TECHNOLOGIES AND INNOVATIONS**

Share of Environmental Goods and Services in order intake permanently over 90%



Customers generate 20% less CO<sub>2</sub> when using Outotec's metals-related technologies compared to annual industry baselines



50% reduction in fresh water intake per tonne of ore in non-ferrous metal concentrators compared to 2012



Double the energy produced through our waste-to-energy solutions compared to 2013



**ENGAGED EXPERTS**

Employee engagement index 70% in the employee survey



**RESPONSIBLE SUPPLY CHAIN**

100% of our key suppliers audited regularly with supplier development actions drawn up according to audit findings



**HEALTH AND SAFETY**

Zero accidents



**ETHICS, COMPLIANCE AND GOVERNANCE**

Strong common values and Code of Conduct; solid governance structure



**FINANCIAL PERFORMANCE**

Continuous profitable growth

Our 2020 sustainability goals are aligned with our strategy.




Our long-term financial targets are presented on [www.outotec.com/investors](http://www.outotec.com/investors). Our financial performance is reported in **Financial Statements 2018**, [www.outotec.com/investors](http://www.outotec.com/investors)






# Annual targets

Our annual targets are structured to support our 2020 goals and in the same way also reflect the SDGs. Financial performance is reported in [Financial Statements 2018](#).

○ Not achieved    ◐ Partly achieved    ● Achieved

Target for 2018	Performance in 2018	Target for 2019	GRI indicator & relevant SDG
<b>Sustainable technologies and innovations</b>			
<ul style="list-style-type: none"> <li>• EGS to account for over 90% of order intake.</li> <li>• 20% reduction in CO<sub>2</sub> emissions to be achieved using Outotec's metals-related technologies, compared to annual industry baselines.</li> <li>• Successful commercialization of new water treatment solutions and receiving at least two new orders based on this technology.</li> <li>• Waste-to-energy plants delivered by Outotec reduce the use of fossil fuels to exceed our annual targets from two previous years combined.</li> </ul>	<ul style="list-style-type: none"> <li>● EGS accounted for 90% of order intake.</li> <li>○ The reduction in CO<sub>2</sub> emissions was 15%.</li> <li>○ Commercialization of the new water treatment solutions continued. However, no new orders were achieved during 2018.</li> <li>○ The energy produced through waste-to-energy plants was less than the combined targets from the two previous years.</li> </ul>	<ul style="list-style-type: none"> <li>• EGS to account for over 90% of order intake.</li> <li>• 20% reduction in CO<sub>2</sub> emissions to be achieved using Outotec's metals-related technologies, compared to annual industry baselines.</li> <li>• Receiving at least two new orders for closed water circuit solutions.</li> <li>• Receiving at least two new orders for waste-to-energy plants.</li> </ul>	<p>OWN</p> 
<b>Engaged experts</b>			
<ul style="list-style-type: none"> <li>• Improvement of 4%-points in the employee engagement index compared to the 2017 employee survey results.</li> <li>• 2% increase in the number of female leaders in senior leadership positions compared to 2016.</li> </ul>	<ul style="list-style-type: none"> <li>○ Employee engagement improved by 1%-point.</li> <li>○ The number of female leaders in senior leadership position did not increase.</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement of 4%-points in the employee engagement index compared to the 2018 employee survey results.</li> <li>• 2% increase in the number of female leaders in senior leadership positions compared to 2017.</li> </ul>	<p>OWN GRI 405-1</p> 
<b>Responsible supply chain</b>			
<ul style="list-style-type: none"> <li>• Auditing 25% of key suppliers globally.</li> </ul>	<ul style="list-style-type: none"> <li>○ 15% of key suppliers were audited with supplier development actions planned or implemented according to the audit findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Auditing 30% of key suppliers globally.</li> </ul>	<p>GRI 414-1</p> 

○ Not achieved    ◐ Partly achieved    ● Achieved

Target for 2018	Performance in 2018	Target for 2019	GRI indicator & relevant SDG
<b>Health and safety</b>			
<ul style="list-style-type: none"> <li>• 5% reduction in lost time injury rate (LTIR).</li> </ul>	<ul style="list-style-type: none"> <li>○ The LTIR was 1.9, slightly higher than in 2017.</li> </ul>	<ul style="list-style-type: none"> <li>• To proactively identify and correct unsafe acts and conditions, the reporting of hazards at the following annual rates:               <ul style="list-style-type: none"> <li>- minimum 4 reports/person at sites, workshops &amp; R&amp;D locations; and</li> <li>- minimum 1 report/20 persons at offices.</li> </ul> </li> </ul>	GRI 403-9 
<b>Ethics, compliance and governance</b>			
<ul style="list-style-type: none"> <li>• 80% of Outotec's employees trained on Code of Conduct.</li> <li>• Global working conditions guidelines concerning blue-collar employees to be created and implemented.</li> </ul>	<ul style="list-style-type: none"> <li>● 94% of employees with access to a computer completed Code of Conduct training.</li> <li>◐ Working conditions guidelines were created, the implementation will take place in 2019.</li> </ul>	<ul style="list-style-type: none"> <li>• 90% of Outotec's employees trained on Code of Conduct.</li> </ul>	GRI 205-2 
<p>We also had a target for our own environmental performance although the topic was not considered material for Outotec.</p>			
<b>Environmental footprint of our own operations</b>			
<ul style="list-style-type: none"> <li>• Maintain the same lower level of CO<sub>2</sub> emissions from flights per EUR 1 million sales as recorded in 2016.</li> </ul>	<ul style="list-style-type: none"> <li>● The emissions from flights per EUR 1 million sales remained at the same level as recorded in 2016.</li> </ul>	<ul style="list-style-type: none"> <li>• 2% reduction in CO<sub>2</sub> emissions of Outotec's own locations, mainly from purchased electricity and non-renewable fuels.</li> </ul>	GRI 302-4 GRI 305-3 



## Our actions to address climate change

The key in our climate change strategy, made in 2016, is harnessing our technology for the transition to a low-carbon industry. Policies relating to greenhouse gas emissions in different parts of the world are still evolving and we are following these changes, interacting with policy-makers as well as acting upon them in business development.

### SCIENCE-BASED TARGETS

In 2018, we have committed ourselves to the science-based targets to reduce our carbon footprint and further enlarge our handprint. Our science-based targets, spanning until 2025, are part of and have been validated by the global Science Based Target Initiative, a collaboration between CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF).

Our target is to reduce absolute scope 1 and scope 2 GHG emissions 13% by 2025 from a 2017 base-year. Outotec also commits to reduce absolute scope 3 GHG emissions 10% by 2025 from a 2017 base-year. With these actions we aim to limit global GHG emissions to a level of decarbonization required to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures. For Outotec, this means a reduction of GHG emissions of 13% by the year 2025, translating to a yearly reduction of roughly 2%.

### REDUCTION OF ENERGY CONSUMPTION (GRI 302-4)

We have a certified ISO 50001 Energy Management system in five locations in Finland and four locations in Germany. To support the achievement of the CO<sub>2</sub> reduction targets in our own operations, we aim to reduce our global energy consumption by 1% annually until 2025.

In 2018, Outotec purchased 8,639 MWh of CO<sub>2</sub>-free electricity based on renewable hydropower in Finland and Germany, equaling 51% of our electricity consumption and 21% of total energy consumption. We are gradually moving to renewable energy in our major locations in Germany and Finland, excluding the Pori and Frankfurt research centers.

### COMBATING CLIMATE CHANGE WITH OUR PRODUCTS AND SERVICES (GRI 305-5)

The most significant environmental impact of our business activities materializes through our products and services that indirectly reduce various emissions, including the global carbon dioxide emissions. We measure this positive impact to climate change, our handprint, by the emissions avoided by the metallurgical industry using six Outotec technologies, compared to annual industry baselines. These technologies are ferrochrome process, copper flash smelting, alumina calcination, ceramic filters, coated titania anodes, and TankCell 300 flotation cells. The emission reductions are directly proportional to energy savings.

Our handprint in 2018 was 6.2 million tonnes CO<sub>2</sub>-e avoided in total.

In technology development, we focus on increasing resource efficiency – aiming to reduce energy and water consumption, emissions, effluents and waste. In 2018, 80% of our R&D projects were related to initiatives targeting sustainability improvements. Our efforts to mitigate the environmental impacts of our products and services are presented in [Sustainable technologies and innovations, page 19](#).

Digitalization is seen to play a major role in mitigating climate change. We are continuously investing in ICT to utilize the opportunities of digitalization. In 2018, our investments amounted to EUR 21 million, consisting mainly of IT programs and intellectual property rights.

### PARTNERING WITH POLICY MAKERS

- [Meeting the needs of the rising battery metals industry, p. 39](#)
- [Commitment to external initiatives, www.outotec.com/company/sustainability/commitment-to-external-initiatives/](http://www.outotec.com/company/sustainability/commitment-to-external-initiatives/)

**Our handprint in 2018 was 6.2 million tonnes CO<sub>2</sub>-e avoided in total.**

### Read also

- [The GHG emissions avoided by technology, p. 21](#)
- [Our targets related to products and services, p. 10](#)
- [Emissions & climate data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#environmental12/direct-ghg-emissions42](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#environmental12/direct-ghg-emissions42)
- [Financial implications due to climate change, p. 32](#)



## Co-creation for future plants

Businesses across industries are examining new ways to innovate. Product development is no longer carried out in isolation without interaction with stakeholders. By sharing knowledge and combining forces with customers, partners and the scientific community, technology companies can spark fresh ideas and co-create solutions that benefit all parties.

Involving the customer and other external parties in product development means widening the point of view. The customer has the best information about the needs and demands that must be met. A technology company such as Outotec has the expertise to engineer the most practical and efficient solution. A partner can introduce a fresh perspective about, for instance, end-of-life possibilities.

"It all comes down to sharing knowledge. If you keep knowledge to yourself, it has no value and benefits no one. By sharing information within the organization and with external partners, it can be refined and applied to practice. This is essential at Outotec; we are increasingly working in teams, in research projects as well as delivery projects and even customer meetings. We invite customers to attend test runs and, in turn, audit their processes to understand them better," says **Kari Knuutila**, Chief Technology Officer at Outotec.

Co-creation and mutual development projects are often partly publicly funded, with participating businesses investing some money as well. The EU is a particularly strong proponent of such projects. Outotec is currently involved in several raw

materials projects of the European Institute of Innovation & Technology (EIT), with participation from a variety of its customers, as well.

### COOPERATION BOOSTS COMPETITIVENESS

By working closely with customers from as early in the project as possible, a technology company can add significant value to the solution. Close cooperation naturally increases mutual trust, and the technology provider has an opportunity to get to know the customer's business needs in depth. This calls for commitment and dedication.

"Cooperative development is actually nothing new to Outotec, although it is trending in the world of technology and in other industries, as well. We always engage in close cooperation with customers, because all our solutions are customized to some extent to meet their specific needs and operating environment. It begins with the raw material: no two ores or concentrates are alike, and the characteristics of the feed material define the best processes to treat it," says **Juha Kemppainen**, Vice President, Hydrometallurgy at Outotec.

First the feed material sample is analyzed and tested in a laboratory, often with the attendance of customer's metallurgical and process experts. A suitable process solution is developed, and more extensive pilot tests are carried out, while continuously optimizing the process. All these stages are necessary to ensure that the process yields the best and most efficient results with the specific raw material.

### SCIENCE AND BUSINESS GO HAND IN HAND

In addition to customers, Outotec works closely with the scientific community to advance knowledge on metallurgy and ore processing. Long-standing relationships with e.g. Aalto University, University of Oulu, Lappeenranta University of Technology and Åbo Akademi in Finland and with Technische Universität Darmstadt in Germany have yielded new knowledge that benefits both parties.

"From these partnerships and cooperation projects, Outotec seeks above all high expertise – the best possible expertise, even. We work together with scientists throughout their careers, combining our experience in research cooperation and our process knowhow with their continuously growing wealth of knowledge," says Kari Knuutila. "The research institutions learn about the industry and its challenges and stay connected to the real-life applications of their research."

University cooperation has other advantages, as well. The students get practical knowledge of the industry and important personal connections, and Outotec gets skilled interns and employees. By engaging in cooperation, Outotec also wants to ensure that subjects in its sector remain in the curriculum and on the research agenda.

### TOWARDS SUSTAINABLE EFFICIENCY

Sustainability is ingrained in Outotec's operations, and the company wants to advance sustainable practices across the industry. It is also fertile ground for co-



creation: customers are increasingly interested in operating in a more sustainable way. Mining companies need a social license to operate from their surrounding communities, and attention to the environment and social aspects are integral in getting it.

"In this industry, productivity and sustainability can go hand in hand. Our customers want the best possible yield from their ore – as much metals or minerals as possible. This is sensible from a sustainability point of view, as well. When the processes are efficient, less valuable material is wasted. By optimizing processes, we can also reduce water and energy use and help our customers to meet their sustainability goals," says Knuutila.

"We at Outotec use the term 'handprint' to describe positive impacts on the surrounding society and environment. Customers are part of these surrounding societies and must integrate into them. Their goal is good corporate citizenship, and in this we can help them," Juha Kemppainen continues.

### MINE, YOURS OR OURS?

Co-creation is not without its challenges. Intellectual property rights, or IP rights, are perhaps the most significant one. When customers and technology companies work together to create a significant innovation,

who gets to use it and commercialize it? The customer may want exclusive rights, but it is in the technology company's interest to apply the innovation more extensively.

"It is often the case that there are more parties involved in the beginning, in an open innovation phase, as it were. When the development work proceeds, fewer partners are left. IP matters can usually be solved in one way or another – for instance, with a defined exclusive rights period or shared rights. They must, however, be considered and agreed on at an early stage to avoid problems later in the project," Kempainen says.

#### CO-CREATION TOMORROW

It is safe to say that joint development projects will become more and more popular in the future. Sharing expertise allows different parties to concentrate on their core areas and combine forces to complement their own deep knowledge. Juha Kempainen believes – and hopes – that the future will bring a more comprehensive viewpoint to co-creation in the mining and refining industry.

"I would like to see development projects that encompass the entire process chain, from mine through beneficiation and metallurgical processes to metal. Often only a part of this process gets optimized, separate from the surrounding processes, but it would be much more efficient to optimize the whole chain. Co-creation projects could also involve several technology companies and several customers working together to pool their knowledge and ideas. This may be where we're headed."

## Engaging with stakeholders

**We aim to enhance transparency by maintaining continuous dialogue with our key stakeholders.**

Outotec defined its key stakeholders in connection with the materiality analysis conducted in 2018. The material topics and key stakeholders are reviewed at approximately 2-3 years intervals by our Corporate Responsibility function and Sustainability Working Group.

#### IDENTIFYING AND SELECTING STAKEHOLDERS (GRI 102-42)

In the recent review of key stakeholders, the Sustainability Working Group, complemented by business unit representatives and external facilitators, discussed and evaluated the significance of stakeholder groups using a long list of stakeholders collected by the core team. Each stakeholder group was evaluated by

- 1) Outotec's impact on the specific stakeholder group, and
- 2) that stakeholder group's significance to the company's business performance.

Based on the mapping, the most significant stakeholder groups overall were Employees, Customers, Suppliers and contractors, Investors, analysts and financiers as well as Academia and students. Local communities arose as significant in terms of Outotec's impact on the stakeholder group, and Authorities, regulators and governments were defined as having a large impact on Outotec's business. Other stakeholder groups defined as key stakeholders were, Potential

future employees, Industry associations and NGOs, and Media because of our regular engagement with them.

We have not identified any stakeholder groups that Outotec would not engage with.

#### OUR KEY STAKEHOLDERS (GRI 102-40)

- Employees
- Customers
- Suppliers and contractors
- Investors, analysts and financiers
- Academia and students
- Authorities, regulators and governments
- Potential future employees
- Local communities
- Industry associations and NGOs
- Media

#### OUR APPROACH TO STAKEHOLDER ENGAGEMENT (GRI 102-43)

We collect feedback from our key stakeholders through regular customer, employee and investor surveys.

In 2018, we made a public web survey for all stakeholders about the topics that are most important and impact stakeholders' decision making regarding Outotec. We also interviewed representatives of employees, customers, suppliers, investors and academia. The material topics were selected based on the survey and interview results.

We have also discussed our sustainability reporting with some investors, and their feedback has been considered when planning the report content. We have also asked our employees for feedback about the report, future themes and topics of interest in sustainability communications, using our

internal social media.

To collect open feedback from our stakeholders we have a form on our website at [www.outotec.com/contacts/contact-information/feedback/](http://www.outotec.com/contacts/contact-information/feedback/) through which feedback can be submitted anonymously. In 2018, all feedback received through this form related to operational issues. Further, we have a compliance helpline available globally at [www.outotec.com/company/about-outotec/compliance-helpline/](http://www.outotec.com/company/about-outotec/compliance-helpline/).

**Stakeholder interviews gave valuable feedback on Outotec's sustainability work.**

#### CONCERNS RAISED BY STAKEHOLDERS (GRI 102-44)

In the recent materiality survey and related interviews, stakeholders had the opportunity to raise concerns or topics missing from Outotec's sustainability agenda. Topics raised by employees included long-term health impacts on local populations close to customers' sites, supply chain management, as well as a stronger focus on recycling technologies, social responsibility and

STAKEHOLDER EXPECTATIONS AND OUR ENGAGEMENT TOOLS

Expectations	Our engagement tools
<b>EMPLOYEES</b>	
<ul style="list-style-type: none"> <li>• Safe working environment</li> <li>• Company values and a culture that enables professional development</li> <li>• Long-term economic perspective</li> <li>• Compliance and transparency</li> <li>• Fair and competitive compensation</li> <li>• Proper communication and feedback channels</li> </ul>	<ul style="list-style-type: none"> <li>• Regular briefings and info sessions</li> <li>• Regular meetings with employee representatives</li> <li>• Global intranet, collaboration tools and social media</li> <li>• Performance development dialogues</li> <li>• Employee surveys</li> <li>• Compliance helpline and feedback channels</li> <li>• Young Professionals network</li> </ul>
<b>CUSTOMERS</b>	
<ul style="list-style-type: none"> <li>• Creating value for customers</li> <li>• Sustainable and safe products and services</li> <li>• Social license to operate</li> <li>• Quick reaction to requests</li> <li>• Reliable technology</li> <li>• Knowledgeable experts</li> <li>• Long-term commitment</li> </ul>	<ul style="list-style-type: none"> <li>• Regular meetings held by Outotec's Account Management, and as part of Sell and Deliver processes</li> <li>• Customer satisfaction surveys</li> <li>• Joint R&amp;D projects</li> <li>• Asset walks, training, user meetings, workshops</li> <li>• Seminars, conferences, trade shows</li> <li>• Newsletters, website, social media</li> </ul>
<b>SUPPLIERS AND CONTRACTORS</b>	
<ul style="list-style-type: none"> <li>• Fair treatment</li> <li>• Long-term partnership</li> <li>• Economic sustainability</li> <li>• Safe working conditions at sites</li> <li>• Proper communication</li> </ul>	<ul style="list-style-type: none"> <li>• Contacts through Outotec's Deliver process</li> <li>• Supplier Policy and Code of Conduct</li> <li>• Supplier assessments and audits</li> <li>• Training, joint continuous improvement of processes</li> <li>• Outotec Supplier Days</li> </ul>
<b>INVESTORS, ANALYSTS AND FINANCIERS</b>	
<ul style="list-style-type: none"> <li>• Total shareholder value</li> <li>• Long-term economic perspective</li> <li>• Compliance and transparency</li> <li>• Accurate, consistent and reliable information</li> <li>• Management's views</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly briefings and CEO's mid-quarter Q&amp;A sessions</li> <li>• Audited/assured reporting</li> <li>• Capital Markets Day, roadshows, one-on-one meetings, industry seminars</li> <li>• Annual General Meeting</li> <li>• Excursions to Outotec sites</li> <li>• Annual surveys</li> </ul>

Expectations	Our engagement tools
<b>ACADEMIA AND STUDENTS</b>	
<ul style="list-style-type: none"> <li>• Relevant technological and scientific challenges for research</li> <li>• Feedback and encouragement from the industry</li> <li>• Operational data</li> <li>• Partnerships</li> <li>• Thesis opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Joint programs</li> <li>• Seminars, lectures, visits</li> <li>• Thesis work and internships</li> <li>• Networking</li> <li>• Involvement in university courses (Sustainability Master Class)</li> </ul>
<b>AUTHORITIES, REGULATORS AND GOVERNMENTS</b>	
<ul style="list-style-type: none"> <li>• Compliance and transparency</li> <li>• Employment</li> <li>• Industry insights</li> </ul>	<ul style="list-style-type: none"> <li>• Memberships and chairmanships in EU's and national working groups</li> <li>• Counseling on expert matters</li> <li>• Seminars on sustainable mining and metals processing</li> </ul>
<b>POTENTIAL FUTURE EMPLOYEES</b>	
<ul style="list-style-type: none"> <li>• Information of the company's purpose, values, principles, learning and career opportunities and leadership style</li> <li>• Fair recruitment process</li> <li>• Solid financial performance</li> </ul>	<ul style="list-style-type: none"> <li>• Careers website and social media channels</li> <li>• Recruitment events</li> <li>• Student cooperation and internships</li> <li>• Hosting visitor groups</li> </ul>
<b>LOCAL COMMUNITIES</b>	
<ul style="list-style-type: none"> <li>• Transparency, engagement and proactivity</li> <li>• Employment opportunities</li> <li>• Environmental and social responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Joint social programs with customers</li> <li>• Support for local initiatives</li> <li>• Employee volunteering programs</li> </ul>
<b>INDUSTRY ASSOCIATIONS AND NGOS</b>	
<ul style="list-style-type: none"> <li>• Transparency and proactivity</li> <li>• Engagement in joint initiatives</li> <li>• Environmental and social responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Active membership in industry associations</li> <li>• Employee volunteering work</li> <li>• Dialogue on sustainability</li> </ul>
<b>MEDIA</b>	
<ul style="list-style-type: none"> <li>• Transparency, reliable information</li> <li>• Walk the talk</li> <li>• Management views and interesting stories</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with Outotec managers and experts</li> <li>• Quarterly media briefings, stories on website and social media</li> <li>• Excursions to Outotec sites</li> </ul>



working with local communities to achieve a wider impact.

Customer feedback included social responsibility topics, such as co-operation with schools and NGO's to further local miners' understanding of safety and business ethics.

Financiers would like to see Outotec being more active in communicating the sustainability benefits of the offered technologies to customers, as this information may affect their financing decisions. Investors raised concerns about risk management issues, for example about how Outotec will manage the supply chain when sourcing in low-cost countries, and some of them were expecting new business models to balance cyclicalities.

Other stakeholder groups expect, for example, Outotec to communicate its wider role in society, impact on global water systems, and action against plastic usage, to mention a few.

These concerns and feedback were discussed in the Executive Board. We are already working with some of the concerns, such as supply chain management, recycling of battery metals, and implementing a policy and programs regarding employee voluntary work with local communities. The feedback will also be considered when planning the next sustainability agenda.

### OUR POLICIES RELATING TO STAKEHOLDERS

- Global Procedure for Stakeholder Engagement
- HR policies
- [Disclosure Policy, www.outotec.com/company/investors/disclosure-policy/](http://www.outotec.com/company/investors/disclosure-policy/)
- Social media guidelines
- Donation and Employee Volunteering Policy
- [Code of Conduct, www.outotec.com/company/about-outotec/code-of-conduct/](http://www.outotec.com/company/about-outotec/code-of-conduct/)
- [Supplier Policy, www.outotec.com/company/about-outotec/suppliers/](http://www.outotec.com/company/about-outotec/suppliers/)

### EMPLOYEES

Competent and engaged employees are key to Outotec's success. We regularly measure employee engagement and monitor other people analytics such as attrition rate. In the recent employee survey conducted in November 2018, the employee engagement index further improved to 61%. 84% of the employees gave their feedback in the survey. Outotec's target is to achieve 70% employee engagement by 2020.

In 2018, we launched several development initiatives to simplify the organization, processes and ways of working to enhance performance enablement. The full impact of all initiatives might not be seen yet, but the positive trend is continuing also in the performance enablement index in our employee survey.

Special attention has been paid to employee communications. In CEO's quarterly internal briefings over Skype Broadcast platform employees may comment and ask questions, and a video recording of the discussion is available afterwards. To conduct facilitated discussions on strategic programs with employees, we continued strategy chats with a live video broadcast with selected top management representatives. Yammer is also increasingly used as in-house social media channel.

Two Outotec Round-Table events were held during 2018, bringing together some 20 personnel representatives from Europe and top management. The topics discussed included our strategy, simplification of organization, redefined values, rewarding

(performance development dialogue and compensation policy), travel safety, GDPR and data privacy issues as well as employee engagement survey results. Close co-operation with the German works council continued in 2018.

Many Outotec employees are also shareholders through the Employee Share Savings Plan launched in 2013 and offered to employees globally except for Mozambique, Morocco, Qatar and Saudi Arabia due to legal, taxation or administrative restraints. The Plan rewards employees for their long-term commitment to the company. 760 employees, equaling 21% of eligible personnel, participated in this program in 2018. 966 employees who participated in the Plan in 2015 and kept their shares until May 2018 received free shares. Outotec offered beneficiaries one free share (gross, with cash payments for taxes deducted) for each two shares bought with the 2015 savings.

### CUSTOMERS

Customer satisfaction is high on our agenda. We build up our understanding of our customers' needs and challenges by systematically collecting feedback. We have also invested in internal feedback channels and feedback management to improve our products, services and operations.

We measure global customer satisfaction with Net Promoter Score and Customer Satisfaction ratings. We started our global survey program in 2015, and in 2017 we integrated our feedback surveys to our CRM to enable managing the feedback with other

customer activities. The main drivers for Outotec NPS are equipment, service and delivery quality and expertise. Expertise has gained in frequency of mentions in the open recommendation comments, having the most positive sentiment.

In our feedback survey, we request customers to comment on the most important factors behind the scores they give. This focus on open comments helps us to tune into customers' true feelings and hear their voice, and to plan for improvement actions. We have started several development initiatives based on the analyses. In 2018, we collected feedback from over 700 individuals representing nearly 300 customers and received 3,367 customer comments to analyze for actions. We continue our ambition to expand the sample going forward.

We continuously cooperate with customers in technology and process development. In joint R&D or delivery projects, both Outotec and the customers can, for example, increase resource efficiency or improve their digital competences.

## **SUPPLIERS AND CONTRACTORS**

Our engagement with suppliers is described in [Responsible supply chain, page 26](#)

## **INVESTORS, ANALYSTS AND FINANCIERS**

Outotec's approach to investor relations and communicating with the financial markets is based on Finnish law, EU directives, and our own policies on corporate governance and disclosure, as well as stock exchange rules and regulations.

At the end of 2018, Outotec had 26,523 shareholders. Shares held in 11 nominee registers accounted for 38% of all Outotec shares, while private Finnish investors held 16%. Thirteen sell-side analysts and one credit analyst conducted research focusing on Outotec.

In addition to our quarterly investor briefings and annual financial statements briefings, the CEO's mid-quarter Q&A sessions continued to be an important channel for maintaining dialogue. These audio casts aim to further clarify information that has already been made public. In addition, we met frequently investors and analysts in one-on-one discussions, at industry seminars and road shows.

All our audio casts are recorded and available for on-demand viewing at <http://outotec.videosync.fi/archive/cmd>.

## **ACADEMIA, STUDENTS AND POTENTIAL FUTURE EMPLOYEES**

Partnerships and networks with universities and research institutions are an important part of Outotec's everyday business. In 2018, we cooperated with more than 30 universities and research institutions worldwide.

In Finland, our closest research partners in 2018 were Aalto University, VTT Technical Research Centre of Finland Ltd, Lappeenranta University of Technology, University of Oulu, the Geological Survey of Finland and the University of Helsinki. In Germany, where Outotec also has an in-house research center, we have had good collaboration with technical universities in Aachen, Erlangen, Darmstadt, Karlsruhe,

Hamburg and Freiberg as well as the Helmholtz and Fraunhofer Institutes. The scope of these partnerships varies, but they are primarily related to process technology, resource efficiency, digitalization and IoT development, circular economy, hybrid materials and water issues.

Besides project-related research cooperation, Outotec has permanent partnerships with many universities and other educational institutes. These partnerships involve contributing to educational steering committees, guest lecturing, software licensing, hosting student groups, and collaborating on Bachelor's, Master's and PhD theses.

## **Sustainability Master Class**

One example of educational cooperation was the Sustainability Master Class, which was for the second time jointly run by the University of Helsinki and Outotec. The aim of this program was to develop sustainable, hands-on solutions to real-life challenges defined in cooperation by experts from the University of Helsinki's Institute of Sustainability Science (HELSUS) and Outotec. The program focused on developing interdisciplinary approaches to sustainability challenges. 34 students and professionals with diverse backgrounds participated in the program.

In 2018, the program focused on risk management in natural resource intensive global business when operating in very different or challenging environments or transforming business models. The co-creation work was mentored by business and technology experts as well as the

University of Helsinki researchers. In the final pitch in April, the first prize was given to the solution that enhances sustainability among artisanal, small-scale miners, in conflict areas. The solution was seen to have a genuine positive impact on society and guide towards sustainability transformation. For the miners, it would increase their income, reduce the risk of injuries and ensure a minimum standard of working. At the same time, investors would be able to find a genuine solution for artisanal miners, increase the supply of responsible minerals, and lower reputational risks within the value chain. The solution is based on a network-driven approach, including NGO and industrial partners.

## **Sustainability prizes in China**

We also award sustainability prizes to encourage university students to apply their ideas for practical innovations. In Central South University (CSU) in China Outotec has awarded the ten best projects promoting sustainable design since 2013. The fifth sustainability prize ceremony was held in May 2018. The 20 finalists were selected from among 77 projects, which included also test and fieldwork as well as design and construction of pilot scale equipment. After a careful review, the jury consisting of CSU professors and Outotec representatives selected the top 10 projects. The winning projects ranged from waste processing, recycling and energy conservation to smart home applications. The top three innovative works were "A new technology for simultaneous desulfurization & denitrification

and resources recovery”, “Dust removal and desulfurization device for small household chimney” and “An application named Emotion for deaf-mutes”.

### **Giving students insights into working life**

We offer positions for interns, summer trainees and thesis workers. We also participate in several activities that give students an opportunity to put their academic knowledge to practical use, thereby providing them with an insight into working life.

We work with educational institutions of different levels with the aim of widening the students’ knowledge of mining and metallurgical industries and getting talented students interested in Outotec. Each year we participate in several career fairs and other student events.

### **AUTHORITIES, REGULATORS AND GOVERNMENTS**

Outotec is a core partner in the European Institute of Innovation and Technology’s (EIT) Raw materials Knowledge and Innovation Community. This platform aims to make raw materials into a major strength for Europe by boosting competitiveness and the attractiveness of the raw materials sector. Outotec participates in nearly 20 related projects, aiming to create new business by upscaling technologies, while also generating new educational programs and strengthening Europe’s infrastructural network. The volume of these projects in total is ca. one million euros yearly.

In November 2018, the European

Commission invited Finland to coordinate the research related to recycling in the battery industry. Outotec will lead the project together with Aalto University’s Department of Chemical and Metallurgical Engineering. The first task is to pilot new ways to collaborate in research and innovations. Further, the goal is to define a long-term vision, strategic research agenda and action plans for battery recycling in Europe.

Also, Outotec participates in further EU Horizon 2020 projects in the fields of Industrial Leadership, Societal Challenges and Excellent Science. We have ten Horizon projects ongoing with industrial actors and academic partners, with an overall volume of nearly two million euros yearly. This allows us to develop our technologies in close interaction with our customers, thus achieving a greater impact on real environmental problems.

Outotec participates in the technical secretariat of the EU’s Operational Environmental Footprint Sectoral Rules (OEFSR), piloting for copper.

#### **Read also**

- Our representation in industry associations and commitment to external initiatives, <http://www.outotec.com/company/sustainability/commitment-to-external-initiatives/>

### **LOCAL COMMUNITIES AND NGOS**

Outotec aims to support local projects that benefit communities where our major customers operate. These community projects are based on local needs and defined through dialogue with local communities. We strive to realize community projects in collaboration with our customers, using joint financing. We also aim to integrate voluntary work into community projects. All community projects must bring measurable benefits to the local community.

In 2018, we revised our Donations Policy to include guidelines for employees’ voluntary work with local communities. Volunteering program was piloted in Brazil where the local offices organized for example a toy collection action for donation to a local charity institution in Belo Horizonte and “Christmas Action” in Guarapari where community gifts were delivered.

Charitable financial donations were frozen for 2018, after Outotec’s Board of Directors proposed to the Annual General Meeting of shareholders in April that there would be no budget for such donations for 2018.

As the bulk of our operations involve engineering and business management, we have not conducted impact assessments in local communities. Neither do we have any development programs. Regarding project sites, these are normally done by our customers.

### **MEDIA**

We interact with media representatives both locally and globally to publicize our

sustainability work. Our CEO’s quarterly briefings provide basic information about Outotec’s performance. We also organize interviews where journalists can discuss our goals, new products and newsworthy events with our management representatives. We publish case stories on our website for the media and aim to organize press trips to Outotec’s R&D centers or reference plants at customers’ sites, to show concrete examples of our work to journalists.

Our experts additionally meet trade press representatives at exhibitions and conferences and share the latest product news with them.



**TOGETHER FOR THE BETTER**



# Sustainable technologies and innovation

Leading technologies are our core strength. Our comprehensive offering enables our customers to run environmentally sound, profitable and socially acceptable businesses.

Outotec's key strength is the capability to develop and deliver resource-efficient technologies and products. Our product portfolio covers hundreds of various plant concepts, processes, pieces of equipment and services, and we continuously develop our offering according to the principles of sustainable development. Although the processing of minerals and metals has negative environmental impacts, through advanced technology the negative impacts can be managed. For this reason, R&D has a central role in Outotec's business and developing sustainable technologies for our customers is at the core of our sustainability work.

**Read also**

- [Management approach \(GRI 103-1, 103-2, 103-3\), p. 53](#)

**IMPACTS OF OUR PRODUCTS AND SERVICES**

The most significant environmental impact of our business activities materializes through our products and services that indirectly reduce various emissions, including the global carbon dioxide emissions.

Our solutions utilize primary resources efficiently, reduce energy and water consumption, and produce less waste to landfill and emissions – while also cutting operating costs. We additionally offer

solutions for processing secondary resources and turning side streams into saleable products. Equipment upgrades, plant modernization projects, and our long-term operation and maintenance services all ensure that customers' plants will always run smoothly, safely, and efficiently, with minimum environmental impact.

Outotec's products and services – if defectively manufactured, installed or used – have the potential to cause health and safety problems for our employees, contractors, and customers as well as indirectly harm the environment and local communities surrounding our customers' plants. Indirectly, Outotec's products and services also have an impact on climate change.

To mitigate these risks, we offer training and other services to our customers to help them maintain safe and environmentally sound operation. Furthermore, we train and audit our suppliers to ensure good product quality.

Outotec continuously works to reduce the negative environmental impacts of its technologies through R&D and product development.

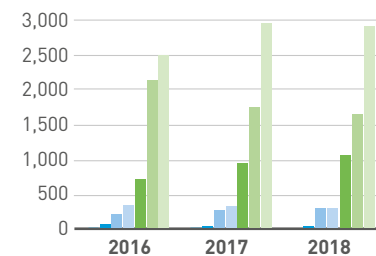
However, the possibility remains that information on indirect negative impacts occurring after the completion of any project delivery may not have been disclosed to Outotec by customers or local communities.

**OUR HANDPRINT, REDUCTION OF GHG EMISSIONS (GRI 305-5)**

By selling advanced technologies Outotec reduces the global CO<sub>2</sub> emissions through its customers' industrial processes. We

measure this positive impact to combat climate change, our handprint, by the emissions avoided by the metallurgical industry using Outotec metals-related technologies. Emission reductions are directly proportional to energy savings and depend on actual production rates by the industry. In 2018, we calculated the positive impact of six technologies. In 2018, our handprint was 6.2 million tonnes emissions avoided.

**EMISSIONS AVOIDED BY TECHNOLOGY, TONNES OF CO<sub>2</sub>e**



- Coated titanium anodes
- TankCell 300
- Ceramic filters
- Alumina calcination
- Copper flash smelting
- Ferrochrome process

**Read also**

- [Our targets regarding products and services, p. 11-12](#)
- [Climate actions, p. 14](#)
- [Financial performance and value creation, p. 30](#)

**OUR IMPACTS ON BIODIVERSITY (GRI 304-2)**

We have included information on our impacts on biodiversity in this report due to increased stakeholder interest. By describing our role and impacts we can better meet the information needs of investors, customers and local communities.

In metallurgical industry, emissions and eco-toxic substances can cause negative environmental impacts. If not appropriately manufactured, used, or maintained, Outotec's products also have the potential to harm the biodiversity surrounding our customers' plants.

Outotec's direct impacts on biodiversity could be traced to the equipment manufacturing sites and five assembly and service workshops globally. However, these workshops are in industrial parks (zoned for industrial use), in which the environmental permitting takes into consideration biodiversity impacts and endangered species already in the planning phase.

When Outotec opens new sites, they are built with tight control over their environmental impacts, and we check whether the construction requires an environmental permit. In case the construction could have an impact on biodiversity, an environmental impact assessment will be carried out (impacts on flora, fauna, endangered species, water management, pollution or habitat conversion). However, Outotec's impact to biodiversity is materialized mainly through the entire value chain.

Our customers' industrial sites, to which Outotec products and technologies are being

delivered, can be in vulnerable areas, or otherwise potentially have a heavy impact on biodiversity due to the nature of activities.

In cooperation with customers, we design the processes in such a way, that they have minimal effluents to water and emissions to the atmosphere, and ultimately require less raw materials to be mined. Outotec's technological know-how in this regard is mainly based on closed water loops, nutrient cycling, raw material efficiency, tailings management and emissions management systems. These have a positive impact on conserving natural habitats, reducing land use impacts, preventing pollution and reducing groundwater consumption.

**CALCULATING THE CARBON FOOTPRINT FOR THE ENTIRE LIFE CYCLE OF OUR PRODUCTS**

In the metals value chain, 90-100% of its climate impacts (i.e. carbon footprint) relate to the energy use of the sector. Throughout the years, we have worked intensively to reduce the energy consumption of our technologies. Nevertheless, different stakeholders have started asking for exact numbers in terms of what a products' carbon footprint is.

The carbon footprint estimation can be roughly divided into two parts:

- 1) How much carbon is emitted in the manufacture of our products (incl. equipment, processes or plants)
- 2) How much carbon is emitted during their use phase (or in the end-of-life phase).

The first step is to calculate how much

CO<sub>2</sub> is emitted during the manufacture of our products. We can already provide customers solid data about the environmental impacts of the manufacturing phase, and hence assist them in their own carbon footprint calculations. So far, we have made the estimations for thickeners and fine grinding mills and are currently preparing this data for further product systems.

To capture the global warming potential of the full life cycle, we start preparing Environmental Product Declarations, which include – in addition to the product manufacture – also the estimations for full life-cycle impacts, including the use phase.

Our long-term plan is not only to give the customers the data they need about environmental impacts (including in addition to global warming impacts also acidification, eutrophication impacts, and water footprints), but also to be able to use this data internally for finding the sources of competitive advantage or guide us in finding hotspots for further development.

**PRODUCT SAFETY (GRI 416-2)**

Outotec has a Product Compliance Management process in place to make sure that our products and services reliably meet all applicable safety standards during all phases of the product life-cycle. We follow negative impacts and incidents through our QEHS management and product compliance management systems, as well as through customer feedback collected after each major delivery and in customer surveys. In 2018, we continued implementing globally our new simplified product compliance management

procedures revised in 2017.

Compliance with all applicable legal requirements is the prime concern in Outotec's product compliance management work. We maintain an extensive database of product compliance procedures and documents including the development, sales and delivery of our products and services.

We provide relevant information to our customers about the impacts of our products and services, including their energy consumption, emissions, metal recovery rates, and water usage, as well as safety information provided according to industry standards. Outotec manuals cover the entire life cycles of the products delivered and contain information on transport, installation, operation, maintenance and decommissioning. In addition, we offer our customers maintenance services. We also routinely provide safety training for our customers regarding the use and maintenance of our products.

Outotec's customers can give feedback about our products and services in regular

customer surveys and through an external feedback channel and Compliance Helpline on our website. In 2018, no issues were raised regarding Outotec products and services through external feedback channels.

**R&D AND INNOVATIONS**

In technology development, we focus on increasing resource efficiency – aiming to reduce energy and water consumption, emissions, effluents and waste. In 2018, 80% of our R&D projects were related to initiatives targeting sustainability improvements.

The first two industrial references of Outotec TankCell® e630's were commissioned at the Buenavista del Cobre concentrator in Northern Mexico. The site has reported an increase of more than 3% in overall recovery with a higher-grade copper concentrate.

Outotec filed a patent application for a thermal leaching process to convert spodumene concentrate into battery grade lithium hydroxide. The lithium hydroxide

Efforts to mitigate the environmental impacts of our products and services	2018	2017
R&D expenditure, EUR million	57	56
R&D expenditure, % of sales	5	5
Share of R&D projects targeting sustainability improvements, %	80	79
Number of new patent applications filed	26	38
New national or regional patents granted	558	672
Number of patent families	761	763

process has been piloted at the Outotec Research Center in Pori for Critical Elements Corporation in Canada and Keliber Oy in Finland.

New Hybrid filter plates, which are 40% lighter, and thereby more competitive than conventional plates, were introduced to the spare and wear parts markets. The new plates also improve the filtration capacity, provide low residual moisture in the cake, and reduce operational costs.

Outotec has designed a skid-mounted, modular prefabricated sulfuric acid plant which significantly lowers the installation cost and time. In addition, the modular plant offers lower operation costs, increased availability and maintainability, as well as environmentally sound and safe operation. The innovative plant concept is based on Outotec's technology and expertise gained from 650 plants delivered globally.

**Read also**

- [Partnering with universities and research institutes, p. 19](#)



## Engaged experts

Outotec aims to employ the best experts in the industry to serve customers with leading technology, superior customer service and excellent execution. Developing our people and our culture is an essential part of Outotec strategy.

Competent and engaged employees are key to Outotec's success. We mitigate risks related to employee retention and competence gaps via various competence development programs, ongoing leadership and working culture development, fair and competitive compensation as well as talent management and internal job rotation.

We regularly measure employee engagement and monitor other people analytics such as attrition rate. In the recent employee survey conducted in November 2018, the employee engagement index further improved to 61%. 84% of the employees gave their feedback in the survey. Outotec's target is to achieve 70% employee engagement by 2020.

In 2018, we launched several development initiatives to simplify the organization, processes and ways of working to enhance performance enablement. The full impact of all initiatives might not be seen yet, but the positive trend is continuing also in the performance enablement index in our employee survey.

**Read also**

- [Management approach, p. 53](#)

Dialogue with our people is at the core of Outotec's culture development.

**EMPLOYMENT AND LABOR PRACTICES**

Outotec's responsibility as an employer is to provide decent working conditions, treat our people in a fair manner, and follow the principle of equal opportunities. Our Code of Conduct provides the basis for labor conditions, substantiated by HR policies and HR Handbook that enable fair employment globally. Our HR practices are always compliant with international labor standards and local legislation.

Blue collar workers account for 16% of our employees. Based on the risk assessment regarding human rights risks in our service and manufacturing sites, conducted in 2017, we created working conditions guidelines regarding blue collar employees during 2018. These guidelines are aligned with the UN Guiding Principles. The guidelines describe Outotec practices and principles regarding fair working conditions, compensation and recognition, employing migrant workers, employee communication and grievance mechanisms.

**GLOBAL MOBILITY**

International assignments are an important part of Outotec's business. In 2018, nearly 1,000 employees were working on project assignments abroad in 68 countries. Our

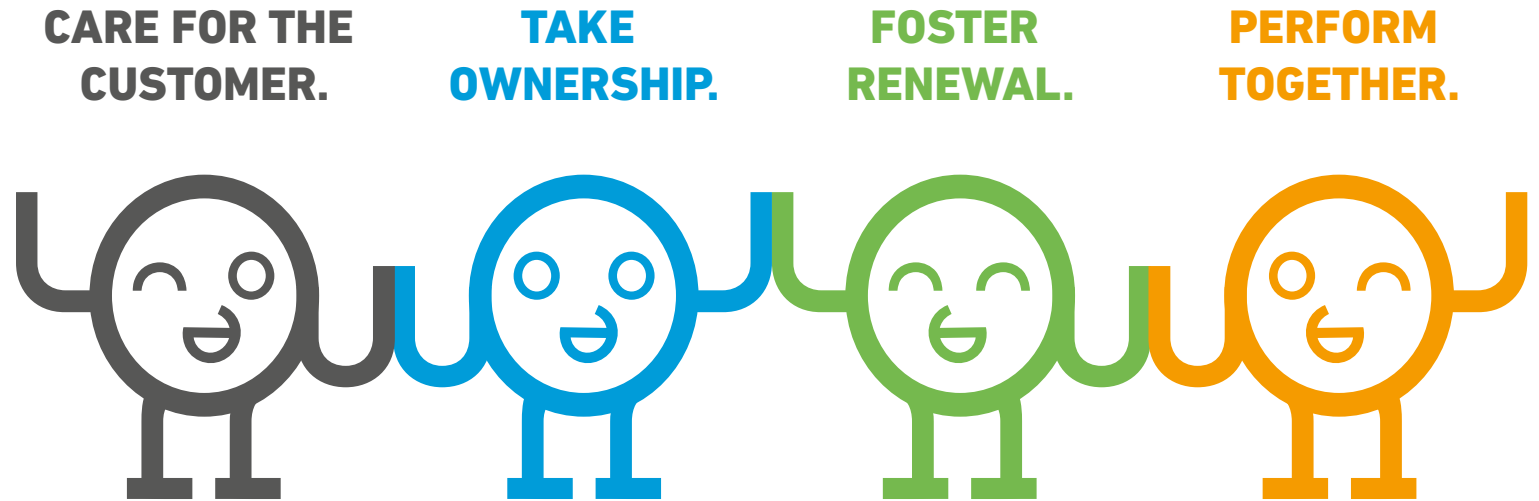
Global Mobility Policy provides the terms and conditions that apply to Outotec's temporary and permanent cross-border employee transfers globally. The policy provides the framework for transparent, fair and equal treatment for global mobility.

We aim to provide competitive compensation and benefits for employees, considering different working conditions, and ensure equal and fair terms and conditions for all the international assignments as well as secure compliance in employment regulations, taxation and social security.

**EQUAL OPPORTUNITIES AND DIVERSITY**

Outotec is a global employer. For example, in Finland we have people representing 34 nationalities and in Germany 27 nationalities working either as expatriates or on local agreements. In total, our employees represent 72 nationalities. We continuously monitor diversity and equality within Outotec.

As a company operating in a male-dominated industry, gender equality is an important topic for Outotec, and special emphasis is put on supporting career development of women. We have Equality plan in Finland and Sweden based on the local laws. In the 2018 employee survey, 79% of employees considered Outotec as a company with equal opportunities. 20% of our Executive Board members and employees are female. Our target for 2018 was to increase the share of women in senior leadership positions by 2% from 2017. Unfortunately, this target was not reached in 2018. Women's mentoring program was introduced in 2018 to support this target.



Most of the senior management in our major locations have been hired locally. The percentage varies from 76% to 100%. To enhance equal opportunities and transparency, all open positions are published internally to enable all employees to apply for positions. Employees also have an opportunity to promote their career in the employee profile and let our organization know about their expertise. We encourage our employees to be active in their own career development and promote new tools to support this target (e.g. Outotec Career and Competence Framework).

We have put a lot of emphasis on implementing global policies and processes

and clarifying roles and responsibilities to ensure smooth operations and equal treatment of our employees in global mobility cases, for instance.

**VALUES**

In 2018 we renewed our company values in a transparent co-creation process; all employees globally were invited to provide insight on our values and culture. During a 3-week virtual co-creation period, 676 participants gave 133 ideas, 226 comments and 1,163 likes. In the next phase, 80 senior leaders further worked with the themes in a workshop. Finally, based on all that input the

new values were crystallized and launched in November 2018. Building the Outotec culture based on the new values started in December 2018.

**Outotec's new values**

- Care for the customer
- Take ownership
- Foster renewal
- Perform together



### PROGRAMS FOR UPGRADING EMPLOYEE SKILLS (GRI 404-2)

In 2018 professional growth and competence development continued to be a key element of Outotec's people strategy. Our Career and Competence Framework was further developed and continuous dialogue about development as an important leadership responsibility was promoted. In 2018, 99% of employees had regular performance reviews including development discussions (GRI 404-3). The performance reviews of blue-collar workers have not been registered in the data system and not included in the percentage.

More than 90% of all employees participated in training activities in 2018. In addition, 6,950 persons, including both employees and supervised contractors, received health and safety training. Our global training programs are designed for key roles and general onboarding modules for all employees. We report only global programs that are administrated through our learning management system. In addition to global trainings, a lot of training is delivered locally in different countries.

Our largest competence development initiative in 2018 was the services certification program. Approximately 350 service professionals have completed the first or second level certifications including technology training since the start of the program in late 2017. 60 project managers started a project manager certification program in the second half of 2018, more than 300 sales employees attended a sales development program, a new development program was launched for junior

metallurgists, and several new e-learning modules were launched globally for all employees, e.g. revised Code of Conduct training. We also trained our employees on the new General Data Protection Regulation.

In addition, more than 90% of all managers at Outotec have participated in leadership programs during 2017-2018. All our employees are in the scope of talent management, and development and succession planning are key components of manager responsibilities.

To support both employees and managers in career and talent development, we launched two new e-learning courses, Manager Guide and Career Guide.

Depending on local resources, we provide transition assistance to support employees who have been terminated or are retiring. These may include training, counseling or severance pay.

#### Read also

- [Employee data, p. 46](#)
- [Diversity data, https://viz.tools.investis.com/outotec-csr/dct/live/index.html#diversity110/executive-board-members-by-age111](https://viz.tools.investis.com/outotec-csr/dct/live/index.html#diversity110/executive-board-members-by-age111)
- [Corporate Governance Statement 2018, www.outotec.com/cg](http://www.outotec.com/cg)
- [Full employee and training data, https://viz.tools.investis.com/outotec-csr/dct/live/index.html#employees44/employees-by-employment-type45](https://viz.tools.investis.com/outotec-csr/dct/live/index.html#employees44/employees-by-employment-type45)





# Responsible supply chain

Supply chain management affects our reputation, quality of products and services, as well as local employment and businesses. The main challenge for our supply chain management concerns the need to improve cost efficiency without compromising on product quality, safety and sustainability.

As approximately 90% of Outotec's manufacturing, based on monetary value, is sourced from external suppliers, responsible sourcing and supply chain management are highly important for Outotec. Our wide product range and a high number of different delivery locations make our supply chain development and management challenging. Standardization, harmonization and focusing on fewer suppliers are key drivers in establishing a sustainable supplier base.

In 2018, our revised Supplier Policy was published and taken into use. We took our project risk assessment process and tool into use and trained 133 persons to use it. The risk assessments have provided our management with important information about major risks and planned mitigation actions.

All our key suppliers were committed to Outotec's Supplier Policy in 2018. We define key suppliers as companies that are categorized as important suppliers in financial, strategic and operational dimension, or in terms of product quality and delivery time. All potential new direct suppliers are assessed through our Supplier Assessment and Approval Process before getting supplier status.

Outotec's compliance helpline and an external feedback channel on the company website are available for anyone to raise

concerns related to corruption, human rights or any unethical behavior in Outotec's business activities. In 2018, no issues were raised through these grievance mechanisms regarding our suppliers or supply practices.

**Read also**

- [Management approach, p. 54](#)

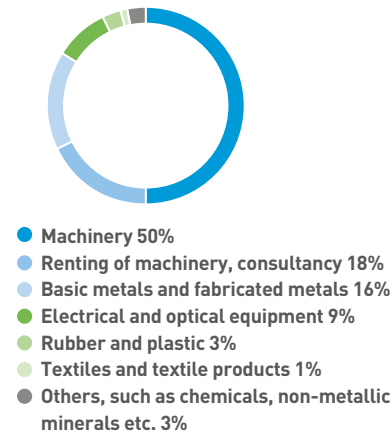
**OUR SUPPLIERS (GRI 102-9, 102-10)**

Outotec delivers large and complex solutions and services globally to a relatively small number of customers, and typically the supply chain differs in each project. Most of our direct suppliers are either manufacturing workshops or component/equipment manufacturers. The rest are logistics, engineering and construction companies, and other service providers. In addition, thousands of our direct suppliers' own suppliers form part of Outotec's supply chain. The allocation of more business to fewer suppliers enables better management and development partnerships, in turn enhancing delivery excellence and cost competitiveness.

In 2018, we had approximately 2,500 active direct suppliers, of which 228 were categorized as key suppliers. As product competitiveness is one of Outotec's strategic development areas, our work focused on the supply base management with a target of having fewer suppliers and increasing best-cost-country sourcing in China, India, Eastern Europe and Mexico.

Our total spend on customer-related purchasing in 2018 was EUR 570 million.

**SUPPLY SPEND BY CATEGORY**



**SUPPLIER ENVIRONMENTAL ASSESSMENT (GRI 308-1, 308-2)**

Material toxicity and chemicals have been ranked as the greatest environmental risks in the supply chain. If not appropriately manufactured, used, or maintained, Outotec's products have the potential to harm the environment. To mitigate product quality related risks, we provide training to our suppliers and audit them regularly.

Outotec screened 72 suppliers, equaling 11% of all new suppliers, using environmental criteria. Screening is a spot check on certain topics, and we select the companies for environmental screening from the high and medium risk categories based on information collected with supplier self-assessment questionnaire. It includes 12 questions related to environmental aspects, hazardous substances, and waste management. In case any risks are identified based on the received information, detailed environmental

assessment is included in the audit, which is either performed by phone interview or site visit. Audit result and findings are reported as an official audit report in our Supplier Data Management system. Audit findings are categorized to observations and deviations.

In our supplier audits, none of the audited suppliers were identified as having significant negative environmental impacts. We evaluated supplier approach to waste management and environmental controls. The audit teams reported that the suppliers are making strong efforts to minimize their negative environmental impact.

**THE CARBON FOOTPRINT OF OUR SUPPLY CHAIN (GRI 308-2)**

The sustainability of our supply chain also has an impact on climate change. The methodology of calculating supply chain emissions are based on Outotec's spending and carried out using a scope 3 screening tool developed by GHG Protocol and Quantis. To be able to use the scope 3 screening tool, Outotec's spend on supply was converted from EUR into USD. In 2018, the EUR to USD annual average exchange rate was 1.129 [source: <http://x-rates.com>].

The carbon footprint of our supply chain, at 520,683 tonnes of CO<sub>2</sub> equivalent, was considerably larger than the footprint of Outotec's own operations, which amounted to 23,015 tonnes of CO<sub>2</sub>e. The biggest sources of CO<sub>2</sub>e emissions in Outotec's supply chain were machinery, representing 50% of the total. In 2018, the carbon footprint of our supply chain decreased by 4.3%.

**CHILD LABOR (GRI 408-1) AND FORCED OR COMPULSORY LABOR (GRI 409-1)**

Outotec does not tolerate any child labor or forced or compulsory labor as stated in our Code of Conduct and Supplier Policy. According to our human rights self-assessment made in 2017, no notable risks related to the use of child labor, or forced or compulsory labor, have been identified in Outotec’s own manufacturing units.

The main sustainability-related risks in the supply chain, identified in our internal workshop consisting of our global supply team, include bribery and kickbacks, occupational safety, protecting information and reporting misconduct. Child labor is a recognized risk in any supply chain, and Outotec has taken steps to reduce the possibility that our approved suppliers utilize child or forced labor.

We have identified three countries in our supply chain, namely China, India and Mexico, with potential risks regarding child labor or hazardous work. In 2018, 5% of our suppliers were based in China, 2% in India, and 2% in Mexico. To mitigate these risks, our dedicated supply personnel in each of our Market Area offices assesses suppliers according to our approval process and make observations during audits and other visits.

**SUPPLIER SOCIAL ASSESSMENT (GRI 414-1)**

As the majority of Outotec’s manufacturing is sourced from external suppliers, there are potentially more human rights-related risks in the supply chain than in our own

operations. We have categorized our suppliers into three risk categories. Country risk is one criterion in determining the scope of the supplier assessment. To mitigate social sustainability related risks, suppliers are required to commit to Outotec’s Supplier Policy, which reflects the principles of the company’s Code of Conduct.

In 2018, we audited 15% of our key suppliers on quality, health and safety as well as human rights-related issues. Supplier development actions are drawn up according to audit findings. The long-term target is to audit all key suppliers with these criteria regularly with supplier development actions drawn up according to audit findings.

In supplier selection, Outotec screened 85 suppliers, equaling 11% of all new suppliers, using human rights, and labor practices criteria. Screening is a spot check on certain topics, and we select the companies from the high and medium risk categories based on information collected with a supplier self-assessment questionnaire. The questions relate to social program accreditation, respect for human rights of employees, prohibition of child labor, health surveillance, incident management and occupational safety.

In case any risks are identified based on the received information, a detailed environmental assessment is included in the audit conducted either by a phone interview or a site visit. The audit result and findings are reported as a formal audit report in our Supplier Data Management system. Audit findings are categorized to observations and deviations.

All the screened companies qualified as new suppliers, as none of the companies

were identified as having significant potential negative human rights or social impacts. Suppliers that we do not normally screen are for example, one-time indirect suppliers, such as consultants. Some of these non-screened suppliers have, however, signed our Supplier Policy.

**NEGATIVE SOCIAL IMPACTS IN THE SUPPLY CHAIN (GRI 414-2)**

In our supplier audits, 4 suppliers, equaling 12% of the audited suppliers, were identified as having potential negative health and safety impacts. However, none of those were considered significant and improvement measures were agreed with these suppliers. Audit findings were related to missing health and safety practices and equipment, and wrong storage of chemicals causing potential risk for employees. No relationships have been rejected because of health and safety findings in our supplier audits.

There were no incidents filed through formal grievance mechanisms related to our suppliers’ human rights impacts, impacts on society or labor practices.

**SPENDING ON LOCAL SUPPLIERS (GRI 204-1)**

Outotec’s supply chains often combine global project deliveries and purchases from local suppliers. Our most significant operations, based on the number of employees, are in Finland, Australia, Germany, South Africa, and Chile. We report ‘local supply’ as the percentage of our supply spend in these countries of the total procurement spend of

**Local sourcing covered 54% of our total supply spend.**

Outotec. The calculation method was changed in 2017 to fulfill the reporting requirements. In our large delivery projects, we prefer to use suppliers in the target country. Normally we buy steel structures and detail engineering, for example, in the target country. The amount of such supply in the country of the project site can be significant. This, in turn, creates local employment and benefits local businesses.

Our spending on suppliers that are local to our major operations (Finland, Australia, Germany, South Africa, and Chile) in 2018 amounted to EUR 266 million, equivalent to 54% of our total supply spend. The remaining supply spend was distributed among 43 countries.

The largest shares by country – each, except Finland and Germany, amounting to EUR 15–50 million – were spent in Australia, China, Finland, Germany, USA, Sweden, Switzerland, and South Africa. The remaining spend was distributed among 35 countries.

In terms of spend in 2018, our largest suppliers in alphabetical order were GIW Industries Inc, Samyoung M-TEK Co and Swiss Tower Mills Minerals Ltd.

**Read also**

- [Historical supply data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#supplier-data138/new-suppliers-screened-using-labor-practices-human-rights-impacts-on-society-criteria139](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#supplier-data138/new-suppliers-screened-using-labor-practices-human-rights-impacts-on-society-criteria139)



## Health and safety

Zero harm is the ultimate target for Outotec's work on occupational health and safety. Our main safety risks occur on roads in different driving cultures and when working at project sites and manufacturing units. We have a track record of good safety performance in large projects with several safety awards from customers.

Health and safety were defined as fundamentals for Outotec in the recent materiality analysis. Zero harm is the ultimate target for our development work on occupational health and safety. Outotec's management is committed to continuously enhance safety performance throughout the company's operations.

All employees and contractors working under Outotec's direct supervision have the responsibility to work safely and follow our globally harmonized procedures and work instructions. The company provides the necessary procedures, instructions, training and personal protective equipment. We check annually our procedures and work instructions for organizational and regulatory changes.

### Read also

- [Management approach, p. 54](#)

### OHS MANAGEMENT SYSTEM (GRI 403-1, 403-8)

In our health and safety work, we follow the OHSAS18001 standard and Outotec's operations globally are externally certified against it. Our OHS management system

covers all Outotec's 4,012 employees (100%), and 2,750 contractors (100%) working under our direct supervision, as well as all locations and project sites.

We ensure the quality of our OHS processes through internal and external audits and training. We follow key performance indicators set for safety, have regular management reviews to find root causes for hazards and incidents, do corrective actions and continuously improve our performance.

### HAZARD IDENTIFICATION, RISK ASSESSMENT, AND INCIDENT INVESTIGATION (GRI 403-2)

Our OHS management is based on risk assessments. We have assessed our operations globally for health and safety risks and made mitigation plans. In addition, each Outotec location continuously assesses risks for hazards and applies the so-called STOP protocol as the hierarchy of controls to eliminate hazards and minimize risks. Our employees and contractors have a 'Stop Work Authority' if they see that they cannot perform the required task safely.

Occupational health and safety related risks are considerable in minerals and metals processing plants due to chemicals, ecotoxic substances, dusts and fumes that are typical in process industries. Outotec's specialists follow customers' safety regulations when working on their sites. The greatest safety risks arise in countries with low awareness of safe working practices and underdeveloped occupational safety culture. In such countries,

our employees are instructed to additionally follow Outotec's safety principles. In addition, there are risks for traffic accidents in different driving cultures.

Increasingly Outotec's employees travel and work in countries where security and medical risks have lately increased. In 2018, approximately 650 Outotec employees or supervised workers traveled in countries with high medical risks and less than 10 persons in countries with high security risks.

Risks are managed in each location and project site based on risk categories. Regarding traveling, risks are managed based on country security risks, medical risks, and transportation risks. We prepare a risk matrix to define the risk level, and the responsibilities and mitigative actions are defined according to the risk level in question.

The company follows incidents, hazards and development initiatives through its QEHS management and product compliance management systems, as well as through customer feedback collected after each major delivery and in customer surveys.

Our hazard and incident reporting system for the identification and elimination of hazards and minimization of risks is externally audited to ensure the quality. All incidents, identified hazards, and unsafe conditions must be reported with 24 hours and they require proper investigation, root cause analysis and corrective and preventive actions. The local unit head or site manager is responsible for managing the hazards in its respective unit or project site. The statistics are regularly shared with employees. We also publish safety alerts of major incidents,

## Our hazard and incident reporting system is externally audited to ensure the quality.

lessons learned and positive observations in our intranet and internal discussion groups.

In 2018, one incident causing lost working days happened in Mozambique during maintenance of a crust breaker when a person's hand was retracted in a scrapper, leading to the amputation of several fingers. Another example of a high-consequence injury took place in Finland when a person hit his own finger with a nail gun. To prevent similar future injuries, nail guns are permanently adjusted to a single fire position.

### HEALTHCARE SERVICES (GRI 403-3)

We have a global health insurance for our employees covering business travel. In addition, in certain countries we have more comprehensive health insurance to complement national social security services.

Each Outotec location has an external partner for healthcare services who makes workplace assessments to address ergonomics, and exposure to chemicals for example, and proposes protective equipment to avoid work-related diseases. Outotec has not identified any major risk of specific occupational diseases.

Outotec has a medical and security services agreement with International SOS. This 24/7 service covers all Outotec

employees and provides guidance also for our service providers and supervised workers in emergencies occurring during business trips. Through the related Medical Alerts and Travel Security Online service, travelers can find information about endemic diseases and other health, safety and security issues, as well as country-specific security risk ratings. Before any trip, travelers should check risk levels and find out what actions may be needed to reduce security and health risks.

**WORKER PARTICIPATION, CONSULTATION AND COMMUNICATION ON OHS (GRI 403-4)**

Our entire workforce (100%) is duly represented in formal joint management-worker health and safety committees to monitor actions, collect feedback, and discuss health and safety issues in their respective location or project. The safety aspects regarding contractors and visitors are also discussed in these committees.

Outotec has a QEHS responsible person in each location with more than 10 employees. Units that have less than 10 people are represented in the health and safety committee of their closest larger unit. The EHS Manager as employer’s representative is leading the local committee, and Safety Officers as employees’ representatives follow the health and safety matters and report of his/her observations to the EHS Manager. The HS committees meet at least quarterly.

Health and safety topics are not covered in formal agreements with trade unions, because they are duly addressed by statutory regulations and laws that Outotec complies with.

**TRAINING (GRI 403-5), PROMOTION OF HEALTH (GRI 403-6) AND MITIGATION OF HEALTH AND SAFETY IMPACTS (GRI 403-7)**

We have a comprehensive, role-based training program for the use of OHS procedures and instructions, and the training hours are recorded in a training register. E-learning are reported through the Learning Management System. Classroom trainings are collected to local training registers using MS Excel sheets. The basic training for local safety issues is mandatory for all employees and contractors and it is renewed from 1-5 years’ intervals. Persons who participate in high-risk work get more specific and frequent training.

Employees and supervised contractors working on project sites are regularly trained in health and safety matters, the use of protective equipment, hazard identification, risk assessment and required control actions. Our e-learning course about travel safety is recommended to all employees and mandatory for all employees who travel for business.

Our local healthcare service partners conduct regular health checks to ensure that our employees are in good physical and mental condition. The focus is on preventive healthcare. In addition, Outotec supports employees’ sports and well-being activities, for example in Finland there are various company-supported sports clubs organized by the personnel association.

**WORK-RELATED INJURIES (GRI 403-9)**

Most work-related injuries happen during service trips or at our own manufacturing or assembly workshops. Incidents with hand tools, instruments, chemicals or machinery, as well as slips and road accidents cause most lost time injuries at Outotec.

We primarily measure our safety performance through the lost time injury rate (LTIR, lost time injuries per 1 million work hours), while also collecting data on near misses and hazards. In 2018, our LTIR was 1.9. including employees and supervised workers. We did not reach our target to reduce the LTIR by 5% in 2018.

The main types of work-related injuries at Outotec are hand tool or instrument injuries, trip or slip injuries, machine or vehicle related injuries, muscular stress, falls and road accidents.

One employee died in a traffic accident in Sub-Saharan Africa. This fatality was thoroughly investigated, and employees were reminded about travel safety and the mandatory e-learning for travelers. There will be a global campaign in 2019 for the safety of ground transportation.

**Read also**

- [Social data, p. 46](#)
- [Product safety, p. 22](#)

Lost time injuries per 1 million work hours, including employees and supervised workers	2018	2017
LTIR	1.9	1.7
Number of employees and supervised workers	6,950	6,680
Total working hours	14,400,000	13,300,000



## Financial performance and value creation

**Financial success is one of the fundamentals for being able to create value for stakeholders. Outotec's long-term financial targets involve profitability and continuous growth. Good financial management is of key importance to Outotec's success.**

In the recent review of material topics with stakeholders, financial performance was raised a topic having a major impact on stakeholders, a fundamental Outotec must take good care of. The company's financial performance has a direct impact on employees' wealth and commitment, stakeholder value, jobs available and tax income of local communities.

Our financial performance and risk management is comprehensively covered in and, whereas this report focuses on the value creation, our impacts, and financial implications due to climate change.

### Read also

- [Management approach, p. 55](#)
- [Financial Statements 2018,   
www.outotec.com/investors](#)
- [Corporate Governance Statement 2018,   
www.outotec.com/cg](#)

### VALUE CREATION

The key resources for value creation are the deep know-how of Outotec's 4,012 experts, 6,467 national technology patents, three research and development centers, as well as the Outotec brand. In addition, long customer and supplier relationships are essential resources for the company.

Outotec generates employment and wealth in local communities as an employer and a buyer of goods and services. The company also contributes to local communities through university cooperation and subcontracting R&D work. Outotec technologies often improve the conditions of the environment surrounding customers' plants.

In 2018, Outotec paid EUR 7 million in current income taxes. Outotec neither paid dividends nor contributions to charities in 2018 due to negative earnings per share in 2017. To enhance its ability to create value over the cycle, Outotec aims to maintain its leadership in sustainable technologies and grow its service business.

### DIRECT ECONOMIC VALUE GENERATED AND DISTRIBUTED (GRI 201-1)

We made significant progress in several areas in 2018. Our order intake increased 4%, sales increased 12%, and profitability continued to improve in the Minerals Processing segment. The profitability turned negative due the EUR 110 million provision for the ilmenite smelter project booked in the fourth quarter of 2018. Excluding this provision, our adjusted EBIT would have almost doubled from EUR 34 million in 2017 to EUR 64 million. Our cash flow strengthened and was EUR 70 million.

We simplified our organizational structure during the first half of the year to support our long-term strategic targets. Our plan is also to strongly develop our service business to balance the cyclical nature of the mining industry. Our service sales in 2018 were EUR 497 million and our target is to grow it annually by

over 10%. Our long-term service contracts, as well as modernizations prolonging the lifetime of older equipment, counteract the highly cyclical mining and metals industry.

At the end of 2018, Outotec's market capitalization was EUR 563 million. The total wealth created by Outotec in 2018 was EUR 263 million. Due to the negative result in 2017, no dividend was paid to shareholders in 2018.

As employees are Outotec's key asset, the most significant economic value distributed is wages and salaries, which amounted to EUR 313 million in 2018.

Long customer relationships and 2,500 active suppliers are also essential resources for Outotec, since some 90% of our manufacturing (based on monetary value) is sourced from external suppliers.

### SIGNIFICANT INDIRECT ECONOMIC IMPACTS (GRI 203-2)

Large mines and processing plant investments – built with Outotec technology – considerably boost the development of the host country and its economy. They may create hundreds or thousands of new jobs, while also leading to the establishment of new industrial plants and growth of businesses along the value chain from natural resource extraction and secondary resources to finished products. In such plants delivered by Outotec, the indirect economic impacts are considered significant.

Outotec has been active in developing the resource-based industries in many developing countries, such as Mongolia, Kazakhstan, and Zambia, to mention a few.

### SUPPORTING LOCAL BUSINESSES

As the majority of Outotec's manufacturing is sourced from external suppliers, we play an important role in supporting local businesses and generating employment and wealth in local communities.

In large projects, our indirect impact can be considered significant, as several hundred local engineers and other specialists, contractors and service providers work for us. A single large project can consist of over 10 million working hours at customer's site. Most of this work is done by local suppliers or subcontractors.

In 2018, we spend EUR 266 million on suppliers that are local to our major operations (Finland, Australia, Germany, South Africa, and Chile). This represents 54% of our total supply spend. The remaining supply spend was distributed among 43 countries.

### Read also

- [Our procurement practices, p. 26-27](#)

### TAX IMPACTS

In 2018, Outotec paid a total of EUR 6.2 million in corporate income taxes. The table below lists the corporate income tax rates for Outotec in the countries where we were subject to corporate income taxation in 2018.

In Finland, Outotec paid EUR 2.7 million in income taxes, and in other countries EUR 3.4 million. The effective tax rate was 11%. The effective tax rate in 2018 was negatively impacted by a EUR 7.6 million write-down

# Our value creation

## OUR RESOURCES

<p><b>Intellectual</b></p> <ul style="list-style-type: none"> <li>• Outotec brand and reputation</li> <li>• IPRs, 761 patent families</li> <li>• Tacit knowledge</li> <li>• 2 R&amp;D centers, 1 Dewatering technology center</li> </ul>
<p><b>Operational</b></p> <ul style="list-style-type: none"> <li>• Operations in 42 countries</li> <li>• 2 manufacturing units, 7 assembly or service workshops, 1 ceramic plate production unit, several warehouses</li> </ul>
<p><b>Natural</b></p> <ul style="list-style-type: none"> <li>• ISO 14001 global certification for environmental management</li> <li>• Materials used Steel 3,481 t; Wood packaging 348 t</li> <li>• Energy consumption: 155 TJ</li> <li>• Water withdrawal: 63,175 m<sup>3</sup></li> </ul>
<p><b>Human</b></p> <ul style="list-style-type: none"> <li>• 4,012 employees</li> <li>• Outotec culture</li> <li>• 2,750 supervised contractors</li> </ul>
<p><b>Social</b></p> <ul style="list-style-type: none"> <li>• Long customer relationships</li> <li>• 2,500 suppliers</li> <li>• Relationships with the academic community</li> </ul>
<p><b>Financial</b></p> <ul style="list-style-type: none"> <li>• Capitalization EUR 377 million, of which             <ul style="list-style-type: none"> <li>- EUR 227 million funded by equity and</li> <li>- EUR 150 million by a hybrid bond</li> </ul> </li> </ul>

## OUTOTEC OPERATIONS



## ADDED VALUE TO STAKEHOLDERS

<p><b>Customers</b></p> <ul style="list-style-type: none"> <li>• Sustainable products and services</li> <li>• Long-term support and partnership</li> <li>• Social license to operate</li> </ul>
<p><b>Planet Earth</b></p> <ul style="list-style-type: none"> <li>• Emissions avoided 6.2 million tonnes of CO<sub>2</sub>e, valued at EUR 96 million</li> <li>• Increased resource efficiency</li> </ul>
<p><b>Employees</b></p> <ul style="list-style-type: none"> <li>• Wages and salaries EUR 313 million</li> <li>• Wealth and professional growth</li> <li>• Safe workplace, LTIR 1.9</li> <li>• Respecting human rights</li> </ul>
<p><b>Suppliers</b></p> <ul style="list-style-type: none"> <li>• Long-term partnerships</li> <li>• Economic sustainability, EUR 570 million spent on suppliers</li> <li>• Responsible business practices</li> </ul>
<p><b>Academic community</b></p> <ul style="list-style-type: none"> <li>• Subcontracted R&amp;D work EUR 8 million</li> <li>• Thesis opportunities and internships for students</li> </ul>
<p><b>Local communities</b></p> <ul style="list-style-type: none"> <li>• Employment and wealth</li> <li>• EUR 266 million spent on local businesses</li> <li>• Current income taxes EUR 7 million</li> <li>• Community investments 0</li> </ul>
<p><b>Investors and financiers</b></p> <ul style="list-style-type: none"> <li>• Market capitalization EUR 563 million</li> <li>• Compliance and transparency</li> <li>• Net finance expenses EUR 7 million</li> <li>• Interest on hybrid bond EUR 11 million</li> <li>• Dividends 0</li> </ul>

Sales EUR 1,276 million ./ Operating costs EUR 1,014 million  
= Value generated EUR 263 million

0 retained in the company

of deferred tax assets relating to expiring tax losses. Without this one-time item, our effective tax rate would have been 21%.

Outotec also pays, collects and remits other taxes and tax-like payments, such as value added and sales taxes, payroll taxes and capital taxes. Our total tax contribution varies depending on the geographical distribution of

sales, which in turn is affected by our product mix and locations of customer projects. We have transparent communication with the tax authorities in every country where we operate.

As a globally operating company, Outotec engages in a variety of tax laws, regulations, practices and interpretations. The international tax environment is

challenging to navigate; however, we are committed to be a responsible, compliant tax payer in each country where we operate. We pursue transparency and fairness in our tax practices, and do not engage in aggressive tax planning.

Outotec delivers large projects, and often there is only one project ongoing in a country. Due to the confidential nature of the information we cannot disclose country specific financial information. Also, the destinations of our sales typically do not correspond with the places in which the work and sales activities are performed, value created, and where the income must be reported, and taxes paid. Providing country-specific tax information would not give a comprehensive picture of the fairness of the tax distribution in Outotec's case.

**Read also**

- [Financial Statements 2018, www.outotec.com/investors](http://www.outotec.com/investors)

**OTHER LOCAL IMPACTS**

Where Outotec has long-term service contracts with customers, maintenance and service personnel are normally hired locally and we train them for their specific tasks after the plant has been built.

Often Outotec technologies help to improve the environmental conditions of the communities surrounding customers' plants, which improves the living conditions of people, contributes to a healthier population and boosts agriculture and small businesses.

Outotec also contributes to local communities through university cooperation

**We are committed to be a responsible, compliant tax payer in each country where we operate.**

and subcontracting R&D work, which generates local jobs and enhances skills and knowledge development. Ongoing research and development activities run together with our external partners received EUR 2.5 million in public funding. We additionally subcontracted work packages out to universities and mainly small and medium sized enterprises for more than twice this sum, over EUR 7.7 million. We also cooperate with local universities to enhance the skills and knowledge of students and decision-makers and train future plant operators and service personnel.

**FINANCIAL IMPLICATIONS DUE TO CLIMATE CHANGE (GRI 201-2)**

The megatrends identified as impacting Outotec's business most are: Urbanization, Resource efficiency, Sustainability, Digitalization, and Volatility. Overall, these global megatrends appear to bring Outotec more opportunities than threats. In terms of climate change, Urbanization, Resource efficiency, Sustainability and Digitalization have the largest impact on our key stakeholders, particularly customers, employees, suppliers and investors. The financial impacts for Outotec are estimated mainly to be changes in revenue due to

Country	Corporate income tax, %
Australia	30
Austria	25
Bahrain	0
Brazil	34
Bulgaria	10
Canada	25.8
Chile	27
China	25
Finland	20
Germany	29.2
Ghana	25
Greece	29
India	30.9
Indonesia	25
Iran	25
Kazakhstan	20
Mexico	30
Mongolia	10-25
Morocco	10-31
Mozambique	32

Country	Corporate income tax, %
Namibia	32
Netherlands	20-25
New Caledonia	30
Norway	23
Panama	25
Peru	29.5
Philippines	30
Poland	19
Qatar	10
Russia	20
Saudi Arabia	20
Serbia	15
South Africa	28
Spain	25
Sri Lanka	28
Sweden	22
Turkey	22
United Arab Emirates	0
United Kingdom	19
United States	25
Zambia	35

changing regulation, customer needs and expectations of local communities.

### REGULATORY OPPORTUNITIES AND RISKS

Most of Outotec's opportunities and some risks caused by regulation changes relate to resource efficiency and sustainability. Eco-toxic substances from metallurgical operations can impact air quality, water, and soils and cause health problems. If customers do not fulfill the tightening environmental regulation or gain social acceptance, they may be forced to close their operations, which may reduce our possibilities to sell technology and services in the long run.

With declining ore grades and more complex ore bodies, together with stricter environmental regulation, our customers will need to replace inefficient processes with new sustainable solutions, which provides business opportunities and revenues for us.

As the concept of circular economy gains ground, we can sell more solutions for metals production from electronic waste, metallic scrap, battery paste or scrap, and mining and metallurgy related wastes. The transition to electric vehicles will bring more business opportunities for our technologies for battery metals and chemicals processing and recycling.

The regulation and demand for closed water cycles, tailings management and renewable energy will increase. Our tailings and water management solutions enable mining companies to solve their environmental challenges. We also offer waste-to-energy solutions that significantly

reduce landfill while producing clean energy.

Carbon taxes favor our energy efficient technologies that fulfill even stricter future standards. In emission trading, customers can get positive cash flow which they can use for new investments or buying services from us. Outotec's advanced technologies and inclusion in the Global 100 Index of most sustainable companies help customers to gain social acceptance and financing for their projects. If we fail to keep our portfolio competitive, we may lose market share, which may impact stakeholders' decisions on us.

### OTHER OPPORTUNITIES AND RISKS

Urbanization and digitalization offer mainly new business opportunities and revenues for Outotec. Our customers need greater production capacity and sustainable technologies to fulfill the needs of the fast-growing middle-class consumers.

Digitalization offers new means to combat climate change. Cost-efficient and interactive partnership models support performance-based earnings and new value creation models using our unique process technologies. Closer engagement with our customers, and the provision of timely data over entire product life cycles open opportunities for new products, systems and services. Advanced ICT systems offer business benefits and cost efficiency for Outotec.

If more agile players are entering the market, especially in high-value digital solutions, we may lose market share in our traditional areas.

### FINANCIAL IMPACT OF EMISSIONS AVOIDED

The financial impact of the annual emissions avoided by Outotec's customers using six Outotec technologies is 6.2 million tonnes CO<sub>2</sub>e in total. This amount of emissions equals the annual CO<sub>2</sub>e emissions of a city with one million inhabitants, such as for example Helsinki. The CO<sub>2</sub> European Emission Allowances Commodity Price ([https://markets.businessinsider.com/commodities/historical-prices/co2-emissionsrechte/euro/1.1.2018\\_31.12.2018](https://markets.businessinsider.com/commodities/historical-prices/co2-emissionsrechte/euro/1.1.2018_31.12.2018)) (accessed Feb 11, 2019) was EUR 15.46/tonne CO<sub>2</sub>. By using this price, the value of the emissions avoided in 2018 was approximately EUR 96 million. Using similar calculating method, the financial impact of our own emissions was EUR 177,000, and that of our supply chain EUR 8 million.

### OUR WAYS TO MITIGATE CLIMATE CHANGE RELATED RISKS

We continuously develop our technologies, new business concepts and modular products. In 2018, we spent EUR 57 million in R&D and product development to further improve the resource efficiency and competitiveness of our products. Some 80% of our R&D projects were related to initiatives targeting improved metals recovery, energy saving, waste minimization, emission reduction and/or safety improvement.

Digitalization is seen to play a major role in mitigating climate change. We are continuously investing in ICT to utilize the

opportunities of digitalization. In 2018, our investments amounted to EUR 21 million, consisting mainly of IT programs and intellectual property rights.



## Ethics, compliance and governance

We foster good governance and ethical business practices, value integrity in all contexts, and strive for protecting Outotec's good reputation.

In the recent materiality review with stakeholders, Ethics, compliance and governance was regarded as one of the fundamentals constituting the foundation for our sustainability.

Outotec endorses responsible business practices and complies with national and international laws and regulations. The company has zero tolerance against corruption, works against corruption in all its forms, and requires its suppliers and business partners to follow the same principles and fully comply with all applicable anti-corruption laws.

### Read also

- [Management approach \(GRI 103-1, 103-2, 103-3\)](#), p. 55
- [Equal opportunities and labor practices](#), p. 23

### ETHICS AND COMPLIANCE

Outotec respects the internationally proclaimed human rights in line with the company's commitment to the United Nations Guiding Principles on Business and Human Rights. The company has also joined the United Nations Global Compact Initiative and is committed to its Ten Principles, as well as the principles of the Universal Declaration of Human Rights. These commitments are reiterated in Outotec's Code of Conduct and

substantiated in the HR policies, QEHS Policy and Supplier Policy.

### MISSION, VALUES AND CODE OF CONDUCT (GRI 102-16)

In line with our mission, Sustainable use of Earth's natural resources, Outotec is committed to protecting the environment in all its activities. We strive to serve our customers using our wide range of leading minerals and metals processing technologies and life-cycle services. Our commitment to sustainability binds us to take a holistic view of our customers' business.

Outotec's values, as presented on p. 24, were redefined during 2018 using virtual co-creation; all employees were invited to share their thoughts and participate in shaping the values that guide Outotec people going forward.

These values and Code of Conduct ([www.outotec.com/company/about-outotec/code-of-conduct/](http://www.outotec.com/company/about-outotec/code-of-conduct/)) define our common way of working. Our Code of Conduct sets out the principles of business conduct and gives guidance to our employees and external stakeholders on ethics, compliance with laws and regulations, solid governance and management of sustainability and risks. The Code is approved by the Board of Directors, and all employees and business partners are expected to follow it.

Outotec's target is that employees participate in e-learning on the Code of Conduct or attend the related classroom training on a regular basis. During 2018, 94% of permanent employees with daily access to

a computer completed the Code of Conduct training. In addition, all Executive Board members and their direct reports have signed a specific declaration of compliance related to Outotec's compliance program and policies.

Outotec also requires its new sales agents and representatives, as well as the existing ones when their contract is renewed, to commit to Outotec's principles. The company also conducts compliance checks on new customers and project related third parties.

All projects of a certain size or complexity are subject to a specific risk assessment which includes various compliance and ethics queries and escalations for the identified risks. They may involve more detailed investigations internally, or through a third party, and may result in Outotec declining to bid for certain projects. In addition, unknown and potential risk customers, suppliers or agents are regularly being assessed for compliance risks using a dedicated external tool with escalation paths.

### ASSESSING HUMAN RIGHTS RISKS

Potential risks and human rights impacts in Outotec's business relate to project site work in high-risk countries. Outotec has assessed the human rights risks in its own operations, with the focus on service and manufacturing sites. As a result, no significant human rights risks were identified. Based on the assessment, working conditions guidelines regarding blue-collar workers have been created during 2018. These guidelines were aligned with the UN Guiding Principles.

### MECHANISMS FOR ADVICE AND CONCERNS ABOUT ETHICS (GRI 102-17)

Our SVP – Legal, Contract Management and Corporate Responsibility, who is a member of the Executive Board, has the overall accountability for corporate responsibility including mechanisms to seek advice about and report on unethical behavior. The Chief Compliance Officer reports unethical behavior and non-compliance cases – reported through Compliance Helpline or otherwise – and actions taken quarterly to the Audit and Risk Committee of the Board of Directors. There are no independent mechanisms for advice and concerns about ethics in use.

Outotec's Compliance Helpline on the company website is available for anyone to raise concerns related to corruption, human rights or any unethical behavior. All concerns raised are treated confidentially, and there is a clear no-retaliation policy. More severe compliance cases may be submitted to Outotec's Compliance Board, whose members are the Chief Compliance Officer, the General Counsel, the Chief Financial Officer and the Head of Human Resources. In 2018, there were in total 67 Compliance Helpline cases investigated and received from all channels (website, intranet, email, verbal etc.).

### OPERATIONS ASSESSED FOR RISKS RELATED TO CORRUPTION (GRI 205-1)

Outotec's strategic and operational risks are described at [www.outotec.com/investors](http://www.outotec.com/investors), and the company's risk management policies, responsibilities and processes are set out in



our [Corporate Governance Statement 2018 on pages 9–10, www.outotec.com/cg](#).

Our risk management is based on our Enterprise Risk Management Policy. Environmental, social and economic sustainability related risks are covered in the project risk assessment tool, which is used to assess all new projects worth at least one million euros. Appropriate follow-up actions are defined based on these findings. The assessments are project-specific, and for this reason the number and percentage of operations could not be reported. No significant risks related to corruption were identified and escalated from the project risk assessment.

In 2018, specific internal audits were conducted in Mexico and Russia, and audits concerning GDPR. Follow-up audits were done in Brazil and for the Sell process. Outotec also conducted specific compliance due diligence checks for identified high risk countries. Such investigations led to five project opportunities from three customers being declined due to compliance concerns.

### COMMUNICATION AND TRAINING ABOUT ANTI-CORRUPTION POLICIES AND PROCEDURES (GRI 205-2)

Outotec's internal and external audit processes consider any corruption suspicions and fraudulent acts that may occur. We train our employees in connection with audit activities at our market area operations regarding anti-corruption policies and procedures for preventing misconduct and crimes. Virtual training, processes and guidelines on anti-corruption are also

available to all employees.

### CONFIRMED INCIDENTS OF CORRUPTION AND ACTIONS TAKEN (GRI 205-3)

In 2018, six compliance investigations were conducted related to corruption. These cases have been closed with appropriate actions implemented and they did not lead to termination of any employment contracts. Outotec has not been the subject of any contract terminations or public legal cases against Outotec or its employees in 2018.

### INCIDENTS OF DISCRIMINATION AND CORRECTIVE ACTIONS TAKEN (GRI 406-1)

We monitor the number of filed, addressed and resolved grievances about labor practices. Outotec's compliance helpline and other feedback channels are available for all employees and external stakeholders for raising concerns.

In 2018, nine reported incidents of discrimination were filed through formal grievance mechanisms within Outotec. These incidents were reviewed locally, in cooperation with global Human Resources function and/or the Chief Compliance Officer and have been closed with remediation action plans implemented and results reviewed through our routine management review processes. These incidents have led to the termination of one employment contract.

### GOVERNANCE STRUCTURE (GRI 102-18)

The work, duties, composition, committees, and remuneration of the Board of

Directors are described in our Corporate Governance Statement 2018. There is no correlation between the compensation for Board members and Outotec's social or environmental performance. The Board of Directors' diversity principles are also detailed in Corporate Governance Statement. Based on these principles, the Board members must have the necessary knowledge and experience regarding the business, social, and cultural conditions in the most significant markets to Outotec's business; while they must also constitute a fair and balanced combination of professional experience, skills, gender, nationality, knowledge, and variety of opinions and backgrounds considering Outotec's current and future needs.

Outotec's long-term objective is to have a fair and balanced representation of both genders in the Board. When preparing for nominations to the Board of Directors, Outotec's Nomination Board aims to ensure that these diversity principles are followed, that the Board functions well as a whole, and that the competence profile of the Board of Directors supports Outotec's existing and future businesses and is consistent with our strategic goals.

#### Read also

- [Corporate Governance Statement 2018, www.outotec.com/cg](#)
- [Product compliance, p. 22](#)

### MANAGING SUSTAINABILITY

The Code of Conduct, Supplier Policy, HR policies, Donation and Employee Volunteering Policy, as well as Quality, Environment,

## We conduct specific compliance checks in high-risk countries.

Health and Safety Policy define the basic requirements for Outotec's environmental, social and economic sustainability. We continuously train our employees and suppliers on these principles.

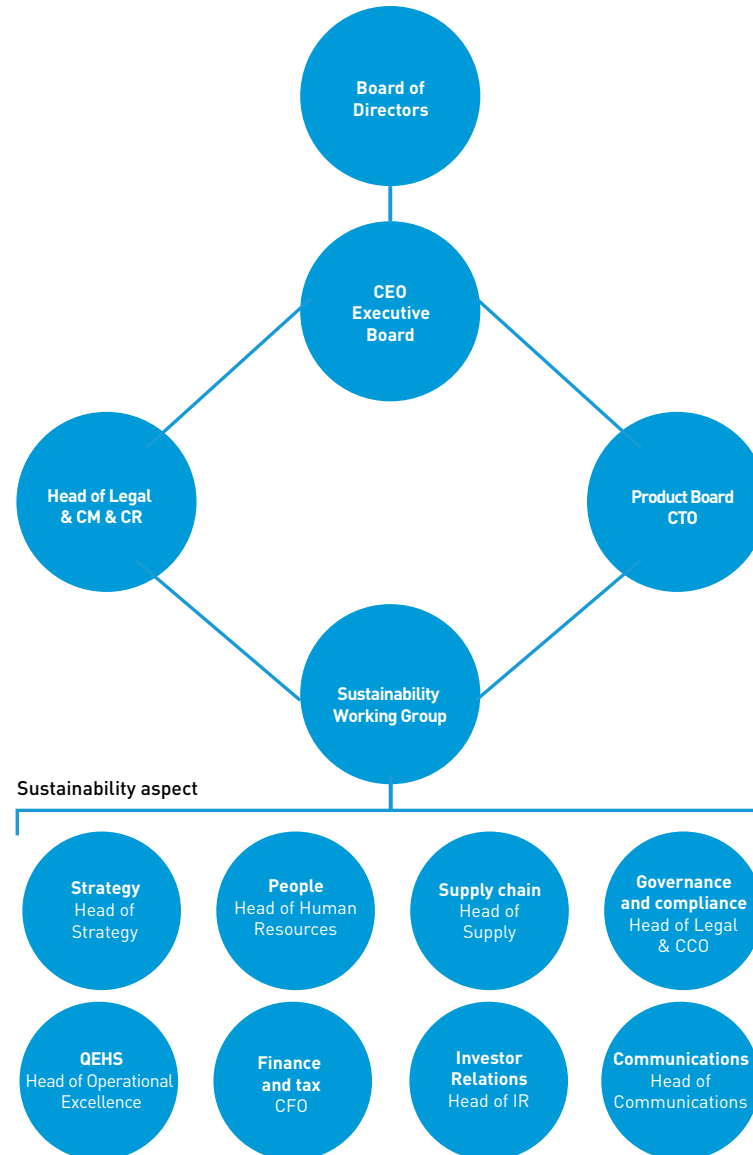
Outotec's Executive Board reviews and approves our Sustainability Agenda as well as sustainability strategy, targets and reporting. The Board of Directors approves our Statement on Non-financial Information, published as part of the Financial Statements, covering the environment, social and employees, anti-corruption and human rights related topics. Our SVP – Legal, Contract Management and Corporate Responsibility, who is a member of the Executive Board, has the overall accountability for corporate responsibility.

Our corporate level Product Board is responsible for the sustainability of our products and services. It oversees and steers Outotec's approach in product and technology development and the related innovation ecosystem and consists of the Executive Board members, Chief Technology Officer (chairman), and business unit representatives. Corporate Product board decides, among other things, the sustainability measures and development targets of Outotec's products. In addition, each business unit has its own Product Board to manage the sustainability of its products and services.

Sustainability is integrated into all relevant

organizational functions, such as Quality, Environment, Health and Safety; Supply; Human Resources & Communications; Legal & Contract Management and Finance & Control. We have a Sustainability Working Group, whose core team coordinates sustainability work and meets frequently whenever needed.

Sustainability-related personal targets are included in the annual bonus plans of the Executive Board members, QEHS managers, and environmental and sustainability managers. Inventors working with new, patentable solutions receive monetary rewards for their inventions. Furthermore, Outotec rewards all employees for making proposals that improve the sustainability of the company's internal processes.



## Customer view on sustainable mining

In a world that is rightly showing increasing interest in the sustainable use of natural resources, mining companies are examining their ways of operating. Many – the leading ones in particular – have long realized that sustainable mining is not one alternative among many: it is the only possible way forward. Outotec's customer Anglo American has placed responsible operations and ethical business at the top of the company's agenda.

**Tony O'Neill**, Group Technical Director at Anglo American, crystallizes the sustainability challenges and opportunities of the mining industry into one word: community. Mining companies need to engage with host communities as an intrinsic part of how they do business. They need to operate in collaboration in ways that contribute to societal wellbeing – by providing employment, supporting local services, ensuring the safety of people, and protecting the environment. This way, they can be welcome members of, indeed partners in the community, and leave a positive and lasting handprint.

"We have a role to play in changing the fabric of society in, for instance, countries with high poverty rates so that we help improve people's lives. This means that the managers of the future should be as much community leaders as engineers – a change that requires us to re-educate our people to cater to this need. But, we already have the will and the right mindset, and that is key to making a difference," O'Neill says.

### FUNDAMENTAL CHANGE THROUGH SUSTAINABILITY

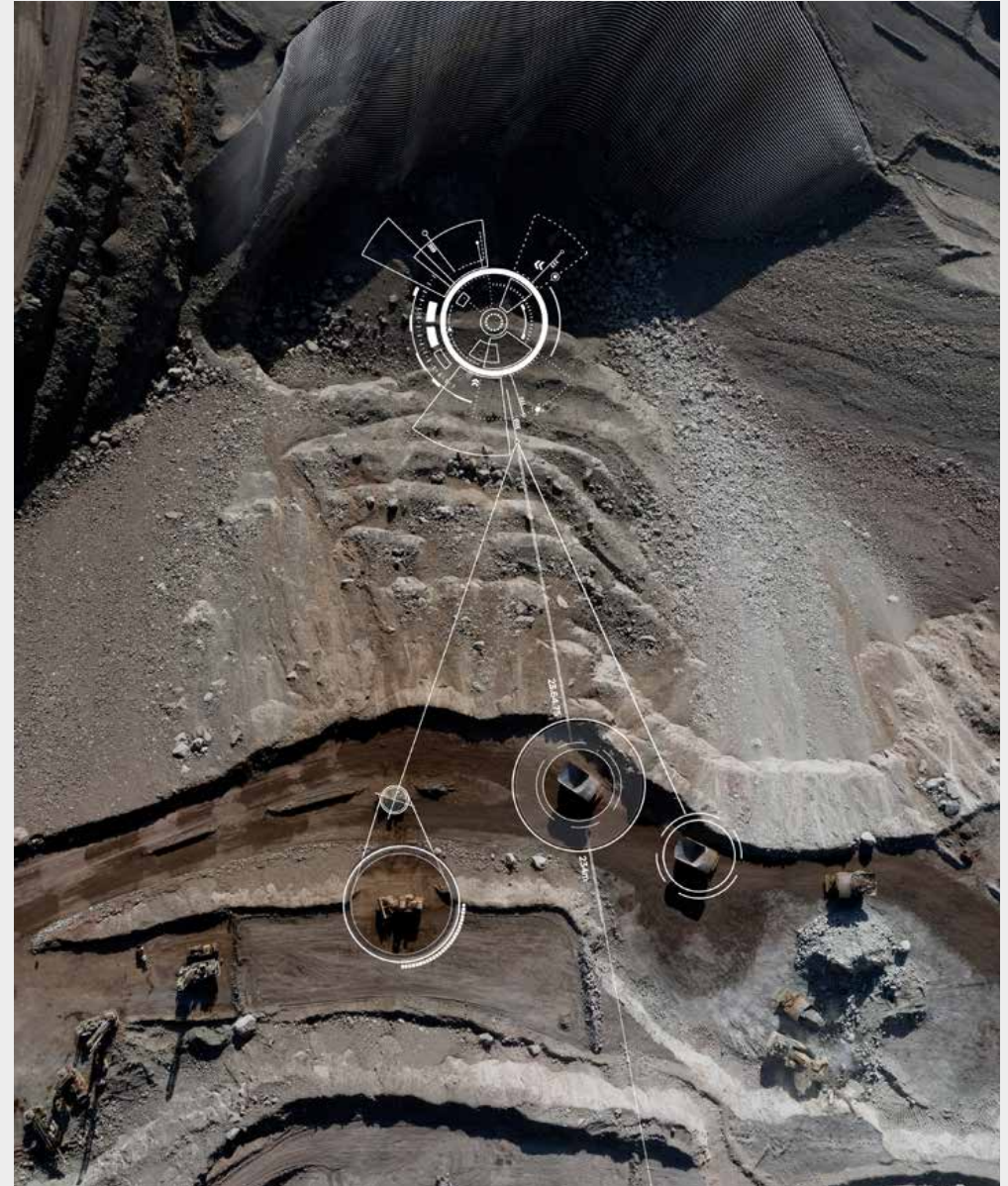
Anglo American has in place a comprehensive and ambitious approach to sustainability, and the company's Board of Directors gives its full support to this transformation program. Anglo American does not claim to have all the answers yet, but it works hard to continuously develop the sustainable management of energy, water and tailings, to name a few environmental examples.

"We have a long history of providing people with healthcare, for instance retro-viral HIV medication. We have traditionally had very strong local procurement, and we acquire goods and services from local businesses around mines, supporting local economies, whenever possible. Recently we began developing a project in Peru and were able to gain public approval in an environment that has historically been challenging. With active and respectful dialogue, we can find common ground."

### LEADING THE WAY TO A SUSTAINABLE FUTURE

Anglo American aspires to be a global leader in sustainable mining. The big question is, "Is the industry ready to follow?" O'Neill thinks the answer is "Yes". A mining company that does not operate sustainably does not have a future. The forerunners, on the other hand, will be able to seize the opportunity to also reset some of the cost curves. After all, profitability and sustainability do go together – and efficiency improves both.

"Open platform cooperation with technology companies such as Outotec is critical to the sustainable development of the industry. With the right technological innovations, the already existing push – and pull for responsible mining, and the passion of people in the industry, we can see significant changes as soon as five years from now. All we need to do is pick up the pace and go for it, together."





# Revolutionizing urban infrastructure

Diminishing natural resources and the disposal of industrial side streams pose a global challenge. This provides opportunities for finding new ways to utilize existing raw materials. Relying on sustainable innovation, Outotec has developed a circular economy concept together with Lappeenranta University of Technology to revolutionize urban infrastructure using existing industrial materials.

In the fall of 2016, representatives from Outotec and Lappeenranta University of Technology (LUT) were mulling over an idea. How to better tap into existing industrial side streams and utilize them for urban infrastructure? Brewing into a larger idea and involving the City of Lappeenranta and circular economy expert Apila Group, the idea turned into a successful application for EU funding.

The project would approach the manufacture

and character of existing industrial side streams to find new and recyclable urban construction products. Products that could replace materials such as cement, at least in part. Receiving an 80% funding from the Urban Innovative Actions initiative, the project kicked off in late 2017. The focus of the project is on South Karelia, where there is a significant base of key raw materials relevant for the project.

## SEEKING SUSTAINABILITY THROUGH SCALING

Spanning until October 2020, thus far the work has revolved around the gathering and characterization of local side streams. Research teams from Lappeenranta University of Technology have gathered and analyzed over 20 different industrial side stream samples, primarily from the pulp and mining industries. Apila Group has tested the potential of these samples for new and sustainable raw materials for urban

construction. Other parties involved in the project include Saimaa University of Applied Sciences, Imatra Regional Development Company, FIMAtec, Nordkalk, Metsä Group, UPM, Stora Enso, Totaldesign and Design Reform.

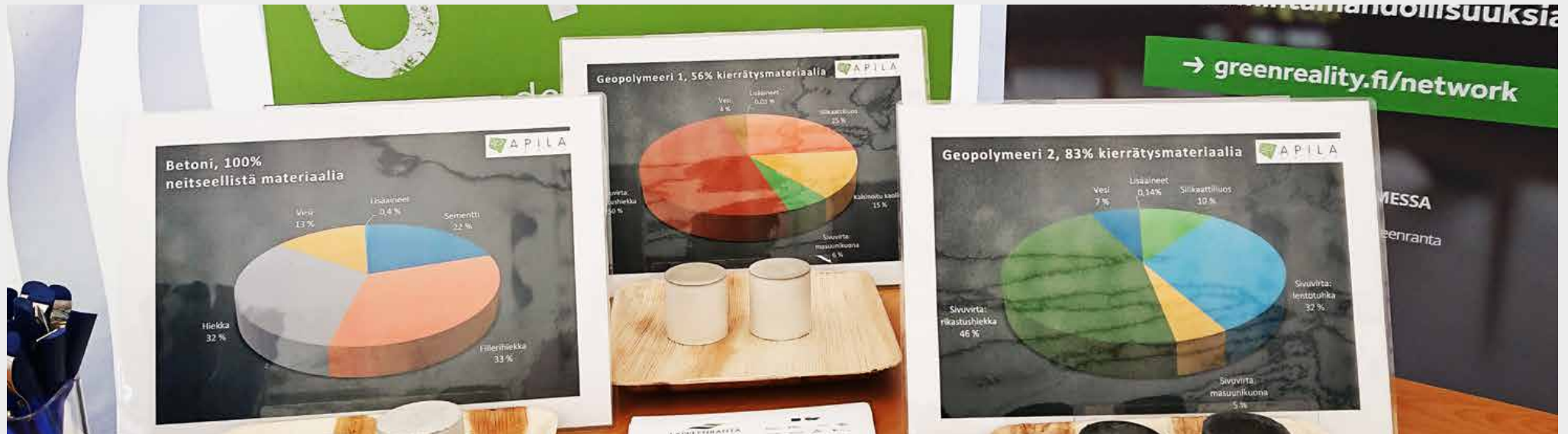
Promising recipes have already been developed from the gathered materials on Apila Group's side. A geopolymer-based solution was selected as the cementing material and the solution that will be incorporated into 3D printing. Next steps include adjusting the rheology of the materials for 3D printing purposes, to be scalable. The materials will also be tested for their suitability for arctic conditions.

"Everything we do on a small scale must be executable on a large scale," says **Mervi Matilainen**, CEO of Apila Group. "It also needs to adhere to sustainability and safety standards all the way. No short-sighted decisions are made at any point – the end results will be entirely sustainable and executable."

## UTILIZING EXISTING SIDE STREAMS FOR A LARGER REVOLUTION

Outotec has been involved in the process planning of the project, providing also equipment for the refining process. **Janne Kauppi**, Director of Minerals Processing at Outotec, says that from the perspective of sustainable development, the project is highly innovative. "Combining additive manufacturing with the characteristics of geopolymer products creates great potential for increasing construction speed, not to mention decreasing waste."

The collaboration between the different players involved in the project are in a crucial part, when it comes to supporting the green reality network and urban infrastructure of South Karelia. "People and collaboration are at the heart of this project, and they will determine its success," says Kauppi from Outotec. "So far, this has been an extremely gratifying revolution."



## Meeting the needs of the rising battery metals industry

With the world's natural resources diminishing, industrial players are looking at new ways to utilize existing raw materials and find recyclable solutions. Outotec's long experience in hydrometallurgy as well as high-temperature- and pyro-metallurgy have resulted in several promising projects relevant for the growing battery industry.

In 2018, the European Commission appointed Finland as the country to co-ordinate research on recycling in the battery industry. Outotec and Aalto University will be two key players in the strategic planning of building this research area in Europe. Business Finland is also strongly involved in the project.

**Ilkka Kojo**, Director of Sustainability at Outotec, is tasked with leading the battery recycling sub-group of the implementation working group (IWG). Battery metals and their recycling is a relatively new and highly important research area for Europe. "This is a significant project, and co-operation and co-creation between different players in this research area is an important factor driving our work," Kojo says.

According to Kojo, the production of primary materials is a high priority for Outotec, especially when combined with the recycling of secondary materials which integrates well into primary processes.

The implementation working group in recycling is tasked with scoping the research and identifying the key players, competence areas and ongoing research projects in battery recycling, both in Finland and Europe. **Mari Lundström**, Assistant Professor of Hydrometallurgy at Aalto University, has established the BATCircle consortium (Finland-based Circular Ecosystem of Battery Metals), which investigates new technologies and business opportunities for improved metal recovery from primary raw materials as well as from recycled batteries.

The focus is on all the steps of the battery metals' life time, from mine to metallurgical



production and further to battery chemicals production and recycling.

"Finland has significant production levels of relevant battery raw materials and mineral resources that are exceptionally rich in metals," says Lundström. "Finland is in an excellent position to be in the front line of industrial and research solutions when battery recycling hits the markets on a large scale."

### CIRCULAR ECONOMY SOLUTIONS FOR THE BATTERY INDUSTRY

Another significant project for Outotec in battery metals production is the lithium hydroxide program with mining company Keliber. The joint project between Outotec and its long-term collaborator partner Keliber is to develop, test and design the production of high-purity lithium

hydroxide that is to be used in the production of batteries.

Outotec has been involved in the Keliber project feasibility study, in planning and executing the pilot, and finally with Keliber incorporating the results of the feasibility study into an actionable lithium hydroxide production plant.

The pilot program has involved a unique and alternative hydrometallurgical treatment of the spodumene concentrate containing the lithium. Outotec's new alkaline leach process involves an economically viable new direct processing route from spodumene to lithium hydroxide. Unlike the competing hydrometallurgical methods, this method is sulphate-free. As a result, the process residue is environmentally-friendly, readily neutralized and reusable.

"The residual from our soda pressure leach treatment is highly pure and usable, creating a

significant circular economy aspect," says **Pertti Lamberg**, CEO of Keliber. "Our clients get high-quality lithium chemical and the by-product is utilized sensibly."

The tests were completed at the end of 2018, and the results will be obtained during the first quarter of 2019. Based on the results, an evaluation of the feasibility of taking battery grade lithium hydroxide into production will be made.

"Open platform cooperation with technology companies such as Outotec is critical to the sustainable development of the industry. With the right technological innovations, the already existing push – and pull for responsible mining, and the passion of people in the industry, we can see significant changes as soon as five years from now. All we need to do is pick up the pace and go for it, together."



## Data collection

### ECONOMIC DATA

The economic data in this report is based on data collected through our enterprise resource planning and management reporting systems. The figures used in Outotec's consolidated Financial Statements 2018 have been prepared according to the International Financial Reporting Standard. In addition, some data has been collected manually from Microsoft Excel spreadsheets.

#### Read also

- [Financial performance and value creation, p. 30](#)
- [Financial Statements 2018, www.outotec.com/investors](http://www.outotec.com/investors)

### ENVIRONMENTAL DATA

Environmental data has been collected through our Environment and Health and Safety reporting platform. Each location's data is compiled on Microsoft Excel spreadsheets and fed into our Lotus Notes database. The data is then analyzed and combined into a single file to facilitate calculations.

The environmental data is available for Outotec's largest business units. Our smallest offices with typically fewer than 10 persons were not able to report environmental data, because they are in large office premises together with other companies. They pay a monthly lump sum to office space providers, and therefore it is not possible to determine their specific electricity, heat, or water consumption.

Our principle in collecting the environmental data is operational control, and

leased assets are included in the reported figures.

Performance data on environmental aspects has been collected from our major business units for electricity use, district heating and cooling, owned and leased company cars, water use, material use, recycled waste, and landfilled waste. The report also includes information on the combustion of fuels in company-owned combustion sources (scope 1 emissions), and figures on hazardous wastes, which were mainly generated in our research centers, manufacturing workshops, and ceramic plate production plant.

Scope 3 emissions regarding business flights is received from our partner CWT Travel. The partner changed their reporting system in 2018, and for this reason the data for 2017 has been restated.

In 2017, Outotec purchased a new database for industrial data used in handprint calculation. According to the new data, the baselines for targets related to the emissions avoided had changed.

Environmental data from Outotec's project site operations was excluded from the data collection. All the local subsidiaries from which the data was collected are fully owned by Outotec, and for this reason, no allocations to subsidiaries regarding the environmental indicators were made.

#### Read also

- [Environmental impact of our own operations, p. 41](#)

### SOCIAL DATA

Data on our employees was collected applying a global master data system based on SAP Human Capital Management. The system includes accurate data on Outotec employees globally, covering all business units and providing basic information on all employees. Data on performance development dialogues (PDD) is compiled from the PDD tool based on Success Factor system.

Our Learning Management System provides information on Outotec's own global training programs and e-learning modules concerning vocational training and Code of Conduct training. However, it is not possible to categorize training hours by gender, region or employment category in the current system. Local training data is collected with Microsoft Excel sheets from HR personnel in the market area offices. The training of blue-collar workers normally takes place in classroom and those hours are not reported in the Learning Management System.

Training hours on health and safety are compiled from the Health and Safety reporting system and they cover both Outotec employees and supervised contractors on project sites.

Outotec's global health and safety reporting system is used for data collection and to map out and monitor progress towards common health and safety targets in all Outotec operations. Data about employees traveling in high-risk countries was collected from the Travel Tracker system used as part of our Global ISOS service.

Supply chain data is collected using the Global Supplier Database and from the

SIEVO spend management software. The methodology of calculating supply chain emissions are based on Outotec's spending and carried out using a scope 3 screening tool developed by GHG Protocol and Quantis. To be able to use the scope 3 screening tool, Outotec's spend on supply was converted from EUR into USD. In 2018, the EUR to USD annual average exchange rate was 1.129 [source: <http://x-rates.com>].

To collect data on human rights and compliance, a questionnaire in the form of Microsoft Excel sheets was sent to the persons responsible for human resources in each location. Compliance data was also collected from the feedback received through Compliance Helpline and other feedback channels.

#### Read also

- [Social data, p. 46](#)
- [Health and Safety, p. 28](#)
- [Responsible supply chain, p. 26](#)
- [All historical data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#invdct\\_navigation](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#invdct_navigation)

## Environmental impact of our own operations

Although the environmental impact of our own operations is relatively modest in comparison to our value chain, as the work is mainly done in offices, we strive to operate with minimum inputs of energy and materials. We closely monitor our consumption of electricity, heating and water. Sustainability, pollution prevention and sound environmental management are required in all our operations.

The bulk of our operations involve engineering and business management in subsidiaries and branch offices located in 42 countries. Only a few of them require an environmental permit, and the risks related to these operations are managed by certified environmental management systems. Approximately 90% of Outotec's manufacturing is outsourced, and we report the carbon emissions of our supply chain separately. Our reporting of environmental data covers Outotec's premises and employees, as well as supervised workers at our project sites.

In 2018, we had research centers in Finland, Germany; a pilot plant and R&D unit in Australia; a Dewatering Technology Center, two manufacturing workshops and a ceramic plate production plant in Finland; assembly shops in Brazil, Canada, China, and the USA; spare parts and service workshops in Qatar, United Arab Emirates, Mozambique and South Africa; and several warehouses. None of these sites are in or adjacent to protected areas or areas of high biodiversity value (GRI 304-1). Outotec closed its service workshop in the United Arab Emirates at the end of

2018. This workshop is included in the 2018 environmental data.

The management's commitment to the continuous improvement of our environmental performance is reflected in both ambitious target-setting and results. We evaluate the environmental aspects of our offices, research centers and manufacturing workshops, and set annual targets based on this evaluation. Outotec operates according to globally harmonized business processes. The company is globally certified to ISO 9001 (quality), ISO 14001 (environment) and OHSAS 18001 (safety) standards. In addition, the locations in Finland and Germany are certified to ISO 50001 (energy). Our performance is followed-up regularly through internal and external audits.

Environmental criteria are considered whenever we select new office premises. Outotec's two largest offices, in Espoo, Finland, and Oberursel, Germany, fulfill LEED® Gold requirements regarding the construction. Leadership in Energy and Environmental Design (LEED) is a globally recognized green building certification program.

At our research centers, we record monthly our consumption of electricity and natural gas and other fuels used for test purposes.

Our waste management system provides for the collection, sorting, storage and disposal of waste on our own premises. Outotec employees are instructed to separate different types of waste for sorted collection. Where hazardous wastes such as radioactive, flammable, explosive, toxic, corrosive or bio-

hazardous materials need to be handled, specialized contractors are commissioned to dispose of these materials safely and in line with local legal requirements and customers' requirements at construction sites.

### MATERIALS USED (GRI 301-1)

Materials used, tonnes	2018	2017
Paper	30	41
Steel	3,481	3,624
Ceramics	37	49
Cardboard packaging	25	17
Plastic packaging	2	3
Wood packaging	348	186
<b>Renewable materials</b>	<b>403</b>	<b>245</b>
<b>Non-renewable materials</b>	<b>3,520</b>	<b>3,676</b>

We report the materials used globally by Outotec operations, excluding the materials used by our equipment suppliers and construction site operations.

The consumption of renewable materials (wood, paper and cardboards as packaging materials) has increased mainly due to the increased use of wood packaging in the Lappeenranta manufacturing shop. However, digitalization has enabled a decrease in the use of paper throughout the company. The use of non-renewable materials such as steel, ceramics and plastic packaging, decreased in 2018. Steel is the single most used material and we mainly use it in our Brits and Lappeenranta manufacturing and

maintenance workshops.

Our Finnish workshops in Lappeenranta, Turula and Turku report the amount of packaging they use annually to Finnish Packaging Recycling Ltd (RINKI). Data from other locations is reported and consolidated annually.

### ENERGY CONSUMPTION WITHIN THE ORGANIZATION (GRI 302-1)

Our total electricity and fuel consumption from non-renewable sources slightly declined from 2017. We did not directly consume any renewable fuels, or sell any electricity, heating, cooling or steam in 2018. However, we purchased 8,639 MWh electricity based on renewable hydropower in Finland and Germany. This corresponds to 51% of our electricity consumption and 21% of total energy consumption.

Figures for energy consumption are collected globally from our operations based on the energy-related invoicing in each location. The conversion factors between energy units are taken from Statistics Finland ([www.stat.fi/tup/khkinv/khkaasut\\_polttoaineluokitus.html](http://www.stat.fi/tup/khkinv/khkaasut_polttoaineluokitus.html)).

### ENERGY INTENSITY (GRI 302-3)

Our energy intensity calculations include fuel, electricity, heating, cooling and steam consumed within Outotec.

Energy consumption, TJ	2018	2017
<b>Direct energy consumption:</b>	<b>51.1</b>	50.4
Propane gas	8.4	11.4
Light fuel oil and gasoline	27.4	24.2
Coal, coke, semi coke	0	0.03
Natural gas	15.2	14.8
<b>Indirect energy consumption:</b>	<b>103.8</b>	109.4
Electricity (incl. cooling)*	60.6	62.9
District heating	42.1	45.4
Steam	1.1	1.0
<b>Total energy consumption</b>	<b>154.9</b>	159.8

\*) Converted to TJ from 16,837 MWh

Energy, TJ / EUR 1 million sales	2018	2017
<b>Energy intensity</b>	<b>0.12</b>	0.14

The denominator for the energy intensity calculations is our annual sales:

Denominator	2018	2017
<b>Sales, EUR million</b>	<b>1,276</b>	1,139

## REDUCTION OF ENERGY CONSUMPTION (GRI 302-4)

To support the achievement of Outotec's CO<sub>2</sub> reduction targets, Outotec has a global annual energy reduction target of 1% until 2025.

Outotec implemented an Energy Management system based on ISO 50001 in five locations in Finland in 2017 and in four locations in Germany in 2016. All these locations have been certified by TÜV Rheinland Cert GmbH in the respective years. In Finland, we renewed our official energy saving agreement which consists of short-term (4% savings until 2020) and long-term (7.5% savings until 2025) targets with year 2016 as the base year.

In 2018, we defined energy targets for the third time in Germany: 2% reduction in electricity use by the end of 2019. 105% of the reduction targets were met already in May 2018. For 2019, we expect an additional reduction of energy consumption by optimizing the building usage. The principles will be enlarged globally to other Outotec locations in the coming years, and a full certification will be considered case-by-case.

The consumption figures include different types of fuels, purchased electricity, and district heating. The conversion factors between energy units were taken from Statistics Finland ([https://www.stat.fi/tup/khkinv/khkaasut\\_polttoaineluokitus.html](https://www.stat.fi/tup/khkinv/khkaasut_polttoaineluokitus.html)).

Energy consumption in Finnish units, TJ	2018	2017	2016
<b>Pori research center and Turula works</b>			
Energy consumption	36.0	35.7	38.3
Energy saved due to efficiency improvements, TJ compared to base year	0.5	1.0	base year
<b>Lappeenranta works</b>			
Energy consumption	15.4	17.2	18.8
Energy saved due to efficiency improvements, TJ compared to base year	1.4	0.7	base year
<b>Turku works</b>			
Energy consumption	9.4	11.3	13.2
Energy saved due to efficiency improvements, TJ compared to base year	3.6	1.2	base year
<b>Total</b>			
Energy consumption	60.8	64.2	70.3
<b>Saving compared to 2016, %</b>	<b>7.8</b>	4.2	base year

## INTERACTIONS WITH WATER AS A SHARED RESOURCE (GRI 303-1)

Even though our direct impact on water quality and availability is relatively low and mainly constrained to municipal water supply, Outotec's wider value chain can have a significant impact on water availability and water-related environmental impacts.

The mining industry uses large amounts of water for minerals processing, which is why water scarcity or excess water constitute risks for Outotec's customers. For example, water cycles interconnect with the general hydrologic water cycle, due to which rain, surface run-off, evaporation, infiltration and seepage can have an unpredictable and often seasonal impact on the site's water volumes and qualities.

Tailings areas and water ponds are of special interest, since they cover large areas and contaminated water can interact with the environment. Also, mining operations can change sites' topographical and hydrological conditions in the long run. Minerology and therefore water chemistry also differ by site and by time.

To tackle these problems, Outotec offers technologies to reduce water consumption, increase water cyclability as well as monitor and predict water balances. In some of the cases, we apply life-cycle assessment to estimate the potential impacts and benefits.

We manage and monitor closely our own water consumption and report it annually. We also interact with other stakeholders in increasing sustainability in global water supplies.

## WATER WITHDRAWAL BY SOURCE (GRI 303-3)

We purchase water locally from municipal water suppliers and channel wastewater into municipal waste water systems. The water volumes are calculated mostly based on invoices, except for certain locations in Africa that use water from drill wells. Because our workshops are mainly assembly shops, no process water is discharged. Our research center in Pori uses measured amounts of river water for cooling purposes in test facilities. After use, this water is channeled back to the river. Outotec stores no rainwater; neither do we use wastewater from other organizations.

Water consumption, m <sup>3</sup> /year	2018	2017
Municipal water	56,271	48,556
Surface water	2,458	5,521
Ground water	4,447	23
Total water consumption	63,175	54,100

The reported municipal water consumption has increased in the South-East Asia and Australia region (+270%). The locations in this region account for 94% of the fresh water use increase due to a better record keeping system. In addition, one site in Sub-Saharan Africa had an increase in water consumption, since the workshop started to take on larger equipment, which required new wash bays.

## DIRECT GHG EMISSIONS (SCOPE 1) (GRI 305-1)

Scope 1 greenhouse gas (GHG) emissions are calculated based on the consumption of non-renewable fuels in our locations globally, plus the carbon dioxide equivalent (CO<sub>2</sub>e) emissions released by company cars, excluding vehicles used in site operations at customers' plants. The conversion factors for the fuel specific CO<sub>2</sub>e emissions are taken from Statistics Finland ([www.stat.fi/tup/khkinv/khkaasut\\_polttoaineluokitus.html](http://www.stat.fi/tup/khkinv/khkaasut_polttoaineluokitus.html)).

For the company cars, the CO<sub>2</sub>e emissions are calculated based on the reports of the leasing companies in Finland (annual kilometers, CO<sub>2</sub> emissions/km/car type). For other locations, the CO<sub>2</sub>e emissions were calculated by using the reported fuel consumptions, kilometers and average CO<sub>2</sub>e emissions. The GHG emission calculations only relate to CO<sub>2</sub>, as we do not release emissions of other greenhouse gases. The gas included in the calculations is CO<sub>2</sub> from fossil fuel sources, excluding bio-based CO<sub>2</sub> emissions.

Direct GHG emissions, tonnes of CO <sub>2</sub> e	2018	2017
Scope 1 emissions (own fuel combustion, company cars)	4,346	4,287
Company car emissions in Finland, g CO <sub>2</sub> e/km	103	110

## ENERGY INDIRECT GHG EMISSIONS (SCOPE 2) (GRI 305-2)

Indirect GHG emissions, tonnes of CO <sub>2</sub> e	2018	2017
Scope 2 emissions (purchased electricity, district heating and steam)	7,123	7,883

In line with the Greenhouse Gas Protocol, we used the Corporate Accounting and Reporting Standard to calculate Scope 1 and Scope 2 emissions. The emissions are indicated in CO<sub>2</sub> equivalents, which also cover other greenhouse gases. The country specific emission factors were retrieved from RE\_DISS for the European countries ([www.aib-net.org/documents/103816/176792/AIB\\_2017\\_Residual\\_Mix\\_Results\\_v11.pdf/8eb82c2b-0fe9-5786-6b21-03e8b6830a94](http://www.aib-net.org/documents/103816/176792/AIB_2017_Residual_Mix_Results_v11.pdf/8eb82c2b-0fe9-5786-6b21-03e8b6830a94)), for the other countries from GaBi databases (<http://www.gabi-software.com/international/databases/gabi-databases/>) or for those not found in these, we used the Protocol's calculation tool 'GHG emissions from purchased electricity'. In calculations for Finland and Germany we used market based and 'Residual mix CO<sub>2</sub>e emission' factors ([www.aib-net.org/documents/103816/176792/AIB\\_2017\\_Residual\\_Mix\\_Results\\_v11.pdf/8eb82c2b-0fe9-5786-6b21-03e8b6830a94](http://www.aib-net.org/documents/103816/176792/AIB_2017_Residual_Mix_Results_v11.pdf/8eb82c2b-0fe9-5786-6b21-03e8b6830a94)). In terms of consolidation, the figures include operations in which Outotec has full financial control, i.e. our own operations and offices, with site operations at customers' premises excluded.

In 2018, Outotec purchased 8,639 MWh of CO<sub>2</sub>-free electricity from renewable energy sources in Finland and Germany, equating

51% of our electricity consumption and 21% of total energy consumption. We are gradually moving to renewable energy in our major locations in Germany and Finland, excluding the Pori and Frankfurt research centers.

Market-based Scope 2 emissions decreased by 10 %, mainly due to the increased share of renewable energy, but also due to reduced electricity consumption.

In 2018, Outotec set new GHG emission targets for the combined Scope 1 and Scope 2 emissions which are in line with the science-based targets requirements. The science-based targets framework is based on climate science, according to which a global carbon budget is estimated to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures. In Outotec's choice of methodology, the carbon budget is equated to global GDP and our share of emissions is determined by our gross profit, that is our share of the global economy. In practice, for Outotec this means a reduction of GHG emissions of 13% by the year 2025, translating to a yearly reduction of roughly 2%.

**OTHER INDIRECT GHG EMISSIONS (SCOPE 3) (GRI 305-3)**

We include business travel and commuting in Scope 3 GHG emissions. The data about business travels are received from our globally centralized travel agency that covers all major locations. According to our Travel Policy, the preferred travel agency is to be used for all travel purchases, and no purchases from local travel agencies are

allowed. Thus, we have estimated that the coverage of the travel agency report is higher than 98% but no extrapolation was made to cover the unknown share. The commuting related emissions are estimated based on average numbers realized in Espoo and extrapolated to cover the all employees.

Scope 3 GHG emissions, tonnes of CO <sub>2</sub> e	2018	2017
Air transactions	10,090	10,170*
Rail transactions	54	57*
Commuting	1,402	1,420
<b>Total Scope 3 emissions</b>	<b>11,546</b>	<b>11,647*</b>

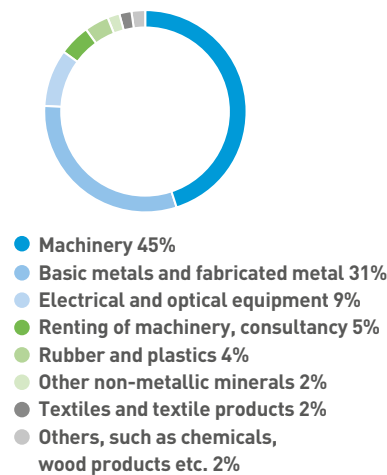
\*) restated due to change in calculation method by the service provider

Approximately 90% of Outotec's manufacturing is outsourced. We report the carbon footprint of our supply chain separately, and in 2018 it amounted to 520,683 tonnes of CO<sub>2</sub>e. The largest source of CO<sub>2</sub>e emissions was the category of machinery, representing 50% of the total. The calculations are based on Outotec's spending and carried out using the Scope 3 screening tool developed by Quantis and GHG Protocol (<https://quantis-suite.com/Scope-3-Evaluator/>). In 2018, the supply categorization and data management system were improved to better capture the nature of our supply spend. This also had an impact on the calculation of our supply chain's emissions, which is why we recalculated the 2016 and 2017 emissions according to the new supply reporting methods to guarantee comparability over the years.

Supply chain	2018	2017	2016
GHG emissions, tonnes of CO <sub>2</sub> e	520,680	544,100*	479,840*

\*) restated figures

**CO<sub>2</sub> EMISSIONS BY SUPPLY CATEGORY**



Our travel-related emissions remained approximately the same as in 2017. The traveled kilometers increased slightly. However, the related emissions remained nearly unchanged because our personnel increasingly traveled in economy class, which has a lower emission factor. The CO<sub>2</sub>e emissions for flight and rail travel are reported directly by our travel agent Carlson Wagonlit Travel. A restatement for the year 2017 flight emissions needed to be done, since CWT's new analytics tool has a higher accuracy on the calculated kilometers. The greenhouse gas factors used for emissions estimation have also been improved in CWT's new tool.

We use teleconferences and Skype for Business for internal meetings. Video conferencing systems are also available in our major locations. After the Office365 collaboration and information sharing tools were taken into use in 2015, traveling to internal meetings has reduced.

Outotec strives to use responsible air carriers and hotels. Lufthansa and Finnair, for instance, use relatively new fleets, which generally produce lower emissions. In agreements with hotels, Outotec prefers hotels with favorable social responsibility policies.

Total GHG emissions, tonnes of CO <sub>2</sub> e	2018	2017
Total GHG emissions	23,015	23,759*

\*) restated due to change in calculation method by the service provider

**GHG EMISSIONS INTENSITY (GRI 305-4)**

Tonnes of CO <sub>2</sub> e / EUR 1 million sales	2018	2017
Scope 1+2	9.0	10.7
Relative total GHG emissions	18.0	20.8
Relative flight emissions	7.9	8.9*

\*) restated due to change in calculation method by the service provider

Our relative flight emissions per one-million-euro sales decreased by 17.5% from 2016.

The overall positive impact of Outotec's business travel can be best illustrated by comparing our total annual GHG emissions in 2018, which were 23,015 tonnes CO<sub>2</sub>e, with the emissions avoided by using six of our metals-related technologies, which amounted to 6,181,892 tonnes of CO<sub>2</sub>e.

#### NITROGEN OXIDES, SULFUR OXIDES, AND OTHER SIGNIFICANT AIR EMISSIONS (GRI 305-7)

Volatile organic compounds (VOCs), tonnes	2018	2017
VOC emissions from paint shops	5.8	8.8

We report only VOC emissions, as nitrogen and sulfur oxides as well as other air emissions are not relevant in our operations. We estimate the VOC emissions based on the paint consumption in our manufacturing, assembly and service operations. The VOC emissions have been relative steady during the years. We have used 300 g VOCs per one-liter paint as the emission factor in our calculations.

#### TOTAL WEIGHT OF WASTE BY TYPE AND DISPOSAL METHOD (GRI 306-2)

Waste, tonnes	2018	2017
Waste recycled	415	599
Landfill waste and incinerated waste	429	609
Hazardous waste	24	41
Total waste	867	1,249
Paper recycled	57	83

Waste handling is not centrally managed at Outotec. We have instructed our locations to sort waste according to local regulations and the guidelines provided by facility owners. Waste amounts declined significantly because of lower sales volumes and the reduced number of employees.

#### SIGNIFICANT SPILLS (GRI 306-3)

No significant spills were reported in Outotec operations and project sites in 2018.

A small amount of hazardous waste is produced in the final surface treatment of filter presses in our Lappeenranta works. In addition, oily waste from lubricants used in the Turula works is classified as hazardous. Our research centers produce small amounts of different kinds of hazardous chemicals. These hazardous wastes are sent to local hazardous waste treatment facilities.

#### Read also

- [Historical environmental data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#environmental12/waste13](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#environmental12/waste13)



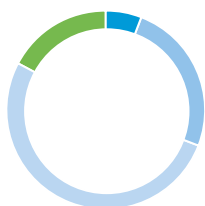
## Social data

### EMPLOYEES (GRI 102-8)

Outotec had 4,012 employees at year end 2018, which was 134 employees fewer than the previous year-end. Temporary personnel accounted for about 6% of the total payroll. Some of the temporary employees are self-employed, typically retired Outotec experts who work shorter periods in our customer projects. During annual vacation seasons, we hire students as trainees.

The average age of employees was 42.2 years.

### EMPLOYEES BY CATEGORY



- Senior management 6%
- Middle management 25%
- Specialists 53%
- Blue-collar workers 16%

Employees by employment contract and gender		2018	2017
Male	permanent	3,028	3,176
	temporary	182	175
	Male all	3,210	3,351
Female	permanent	751	745
	temporary	51	50
	Female all	802	795
All employees	permanent	3,779	3,921
	temporary	233	225
<b>Total number of employees at year end</b>		<b>4,012</b>	<b>4,146</b>
<b>Employees on average</b>		<b>4,095</b>	<b>4,149</b>

Employees by region		2018	2017
EMEA	permanent	2,537	2,662
	temporary	153	151
	EMEA all	2,690	2,813
Americas	permanent	704	723
	temporary	33	35
	Americas all	727	758
APAC	permanent	538	536
	temporary	47	39
	APAC all	585	575

Part-timers by region in 2018		Part-time	Full-time
EMEA	female	28	510
	male	22	2,130
	EMEA all	50	2,640
Americas	female	0	147
	male	3	587
	Americas all	3	734
APAC	female	13	104
	male	12	456
	APAC all	25	560
<b>Total</b>		<b>78</b>	<b>3,934</b>

## DATA

### NEW EMPLOYEE HIRES AND EMPLOYEE TURNOVER (GRI 401-1)

New employee hires	2018		2017	
	#	%	#	%
<b>By gender</b>				
Female	162	4	123	3
Male	504	13	599	13
<b>By age group</b>				
<30	238	6	227	5
31-50	349	9	392	9
>51	76	2	63	2
<b>By region</b>				
EMEA	404	10	401	9
Americas	169	4	200	5
APAC	93	2	81	2
<b>Total</b>	<b>666</b>	<b>17</b>	<b>682</b>	<b>16</b>

Employee turnover rate	2018		2017	
	#	%	#	%
<b>By gender</b>				
Female	122	3	96	2
Male	506	13	439	11
<b>By age group</b>				
<30	70	2	92	2
31-50	400	10	311	8
>51	158	4	131	3
<b>By region</b>				
EMEA	431	11	312	8
Americas	116	3	162	4
APAC	81	2	61	1
<b>Total turnover rate</b>	<b>628</b>	<b>16</b>	<b>535</b>	<b>13</b>

### COMPENSATION (GRI 102-38)

The total compensation paid out to employees in 2018 amounted to EUR 313 million. Outotec's compensation policy is described on [www.outotec.com/cg](http://www.outotec.com/cg). We define countries with over 200 employees as significant operations. In 2018, those countries were Finland, Australia, Germany, South Africa and Chile.

Compensation	2018	2017
Wages and salaries paid, EUR million	313	326
Ratio of annual total compensation of CEO to mean compensation of employees	15.1	11.3*
Finland	15.0	11.8
Australia	3.7	3.6
Germany	2.3	2.4
South Africa	4.0	3.5
Chile	4.6	4.1
Percentage increase in annual total compensation ratio, %	33	10
Change in annual total compensation of CEO, %	26.5	14.5
Change in annual mean compensation of employees, %	-4.8	0.2

n = 3,039, coverage 76%

\*) Restated due to an error in calculation

The ratio of annual total compensation of CEO to mean compensation of employees was 15.1, which was 3.8 %-points higher than in 2017. The annual total compensation ratio is calculated for all employees globally. Employees' compensation declined since

no bonuses were paid in 2018 for the 2017 result, in addition to bonuses already paid in the previous year for the first quarter result of 2017. The calculations do not include blue-collar workers, because their information is not included in our SAP Master data system.

63 key employees were part of the company's share-based incentive program in 2018. In addition, 760 employees equaling 21% of eligible personnel participated in our employee share savings plan. This plan was not offered to employees in Mozambique, Morocco, Qatar and Saudi Arabia due to legal restrictions. In May 2018, Outotec paid out a total of 166,571 shares and cash payments to cover estimated taxes to 966 employees who participated in the employee share savings plan in 2015.

Outotec runs several pension plans in various countries. These plans are mainly classified as legally defined contribution pension plans. Other post-employment benefits include medical arrangements for retired employees in Germany.

### COLLECTIVE BARGAINING AGREEMENTS (GRI 102-41)

60% of our employees are covered by collective bargaining agreements. This information was collected with a separate questionnaire sent out to all our locations. Binding collective agreements are followed in each country where they are applicable to Outotec employees.

## BENEFITS PROVIDED TO FULL-TIME EMPLOYEES (GRI 401-2)

Benefits by country, % P = permanent, TEMP = temporary	Finland		Australia		Germany		South Africa		Chile	
	P	TEMP	P	TEMP	P	TEMP	P	TEMP	P	TEMP
Life insurance	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No
Health care	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Disability/invalidity coverage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Parental leave	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Retirement provision	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Stock ownership	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No
n=	1,242	76	327	40	360	5	271	7	210	3

## MINIMUM NOTICE PERIODS FOR SIGNIFICANT OPERATIONAL CHANGES (GRI 402-1)

The provisions for consultation and negotiations with employees are included in the collective bargaining agreements in some of the countries where Outotec has operations. In Finland, the collective bargaining agreements include provisions for consultation and negotiations lasting from two to six weeks, in Australia four weeks, in Sweden four weeks, in Chile 30 days, and in Brazil 12 weeks. The minimum notice periods that must be observed in advance of significant operational changes depend on locations and national legislation, and therefore differ significantly. In Finland, the

notice periods range from two weeks to six months, and in other countries, the notice periods range from two weeks to one year.

### Read also

- [Historical data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#invdct\\_navigation](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#invdct_navigation)

## OCCUPATIONAL HEALTH AND SAFETY WORK-RELATED INJURIES (GRI 403-9)

Lost time injuries per 1 million work hours, including employees and supervised workers	2018	2017
LTIR	1.9	1.7
Number of employees and supervised workers	6,950	6,680
Total working hours	14,400,000	13,300,000

Work-related injuries, own employees (rate per 1,000,000 work hours)	2018, #	2018, rate	2017, #	2017, rate
Fatalities	1	0.1	0	0.0
High-consequence injuries (LTI)	21	2.6	19	2.4
Recordable injuries	37	4.5	43	5.5
Number of hours worked	8,200,000		7,800,000	
Number of employees	4,012		4,146	

Work-related injuries, supervised workers (rate per 1,000,000 work hours)	2018, #	2018, rate	2017, #	2017, rate
Fatalities	0	0.0	0	0.0
High-consequence injuries (LTI)	7	1.1	4	0.7
Recordable injuries	7	1.1	8	1.5
Number of hours worked	6,300,000		5,500,000	
Number of supervised contractors	2,750		2,410	

## AVERAGE HOURS OF TRAINING (GRI 404-1)

Our reporting of vocational, compliance and Code of Conduct training hours covers Outotec's employees. Human rights issues are covered in the Code of Conduct e-learning and classroom trainings. Only the training provided by Outotec is included in this report. Data on training pursued by individual Outotec employees externally is not reported as data is not stored into our systems.

Our learning management system including vocational, compliance and Code of Conduct training does not provide information of the training hours by gender and employee category. It collects the information on Outotec's own global training programs and e-learning modules. Local training data is reported by HR persons in the market area offices.

The health and safety training hours cover employees and supervised workers on project sites. Training hours on health and safety are compiled from the health and safety reporting system.

### Read also

- [Historical training data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#training132/health-and-safety-training-employees-and-contractors-number133](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#training132/health-and-safety-training-employees-and-contractors-number133)

Training hours	2018	2017
<b>Health and safety training</b>		
Number of employees and contractors	6,950	6,680
Hours	133,000	109,000
Average hours of health and safety training per person	19	16
<b>Vocational, compliance and code of Conduct training</b>		
Number of employees	4,012	4,146
Hours	30,288	61,847
Average hours of vocational, compliance and Code of Conduct training per employee	8	15
<b>Average hours of training per employee</b>	<b>27</b>	<b>31</b>

## PERCENTAGE OF EMPLOYEES RECEIVING REGULAR PERFORMANCE REVIEWS (GRI 404-3)

Performance reviews, %	2018	2017
<b>by gender</b>		
Female	99	99
Male	99	99
<b>by employee category</b>		
Senior management	98	100
Middle management	99	100
Specialists	99	100
Blue-collar workers	N/A*	N/A*

n = 2018: 3,165, 2017: 3,290, coverage 79%

\*) Performance reviews of blue-collar workers and casuals have not been registered in the data system, and they are not included in the above numbers.

## DIVERSITY AND EQUAL OPPORTUNITY (GRI 405-1)

Employees by age group, %	2018	2017
<b>Executive Board</b>		
< 30 years	0	0
31-50 years	40	44
> 51 years	60	56
<b>Senior management</b>		
< 30 years	0	0
31-50 years	58	55
> 51 years	43	45
<b>Middle management</b>		
< 30 years	1	1
31-50 years	66	65
> 51 years	33	34
<b>Specialists</b>		
< 30 years	17	13
31-50 years	62	67
> 51 years	20	19
<b>Blue-collar workers</b>		
< 30 years	23	20
31-50 years	61	65
> 51 years	15	15
<b>Board of Directors</b>		
< 30 years	0	0
31-50 years	0	0
> 51 years	100	100

Coverage 100%

## DATA

Share of women by employee category, %	2018	2017
Board of Directors	38	29
Executive Board	20	22
Senior management	13	13
Middle management	15	13
Specialists	28	28
Blue-collar workers	3	3
<b>All employees</b>	<b>20</b>	<b>19</b>

The share of men in the mining and metallurgical industry has traditionally been high, which partly explains the current low share of women.

We have not identified any minority or vulnerable groups amongst our employees, and thus the topic is not relevant to Outotec and not reported.

### PROPORTION OF SENIOR MANAGEMENT HIRED FROM THE LOCAL COMMUNITY (GRI 202-2)

When Outotec starts a new operation in a new country, an expatriate employee is typically assigned to integrate the new operation into Outotec. Our goal is nevertheless that senior management should be hired locally. We define local as a person having the nationality of the country of the location in question. Our significant locations are defined as countries with over 200 employees.

% of locals in senior management by significant locations of operation	2018	2017
Australia	84	84
Chile	83	67
Finland	96	96
Germany	76	76
South Africa	100	100

### RATIO OF BASIC SALARY AND REMUNERATION OF WOMEN TO MEN (GRI 405-2)

Ratio of basic salary of women to men by employee category (Male = 1)	Female Australia	Female Chile	Female Finland	Female Germany	Female South-Africa
<b>2018</b>					
Senior management	0.75	*	0.92	1.07	*
Middle management	0.80	0.88	0.97	0.94	0.75
Specialists	0.83	0.93	1.00	1.02	0.78
Blue-collar workers	N/A	N/A	N/A	N/A	N/A
<b>2017</b>					
Senior management	0.74	*	0.94	0.86	*
Middle management	0.76	1.00	0.96	0.86	0.70
Specialists	0.81	0.86	1.00	0.95	0.76
Blue-collar workers	N/A	N/A	N/A	N/A	N/A

\*) No females in senior management

Outotec uses KornFerry's job evaluation system when determining the demand of each job. The average ratio is based on the ratio of each job evaluation grade which are then grouped together to more broader report categories. In 2018, the overall average of the ratio of basic salary of women to men in significant locations of operations is 0.94 (2017: 0.92). Data is not available about blue-collar workers and 1,971 white collar (2017: 2,158) employees are included to the calculation.

Our significant locations are defined as countries with over 200 employees.

### Read also

- [Historical diversity data, https://viz.tools.investis.com/outotec-csr/dct/review/index.html#diversity107/executive-board-members-by-age108](https://viz.tools.investis.com/outotec-csr/dct/review/index.html#diversity107/executive-board-members-by-age108)

## About this report

Our reporting meets the requirements of the EU Directive on disclosure of non-financial and diversity information, and the changes made in the Finnish Accounting Act. The required non-financial information is disclosed in the Review by the Board of Directors in Outotec Financial Statements 2018, whereas this Sustainability Report is prepared to meet the expectations of a wider audience and the requirements of several sustainability indices.

We report our performance on economic, environmental and social sustainability annually in accordance with the Global Reporting Initiative (GRI 102-52). Outotec Sustainability Report 2018 is prepared in accordance with the GRI Standards: Core option (GRI 102-54) and covers the calendar year 2018 (GRI 102-50). Some information relating to developments from January to March 2018 has also been included in the report. The General Disclosures as specified in the GRI Standards are presented in a wider scope than required by the Core option. Topic-specific Standards are reported with respect to the material topics defined in 2018. We also report the environmental impact of Outotec's own operations and some other indicators that are not material to Outotec but are published to meet stakeholders' expectations using the GRI indicators. A comparison of the contents of the report and the GRI Standards is given in the [GRI and Global Compact Index \(GRI 102-55\), p. 56](#).

The report is published in English at [www.outotec.com](http://www.outotec.com). Outotec has reported its sustainability performance annually since 2010. The previous report for 2017 was published in March 2018 (GRI 102-51).

### GLOBAL COMPACT AND UN SUSTAINABLE DEVELOPMENT GOALS REPORTING

This report also describes how Outotec has progressed on the ten principles of the UN Global Compact initiative regarding human rights, labor rights, environment and anti-corruption principles, and the UN Sustainable Development Goals. The GRI index also shows the indicators used by Outotec to evaluate the progress in these areas.

### REPORT COVERAGE (GRI 102-45)

We report on our global operations including Outotec's premises and employees in full, and partly include information on our contractors working under our supervision on project sites, our products and services, the use of Outotec's technologies by customers, and our supply chain. The legal companies, in which Outotec has 100% ownership and are listed in the [Financial Statements 2018 on page p. 77, www.outotec.com/investors](#), are covered by this report. The information compiled for the report is collected from our local offices, and some local environmental impacts are described in addition to global data.

We continuously aim to improve our internal processes as well as the completeness of data disclosure through developing our data collection systems and more accurate explanation of omissions when the data is not available. We also aim to describe both positive and negative aspects of our performance.

In the online report, we use graphics to show trends in our performance and increase clarity. We have also included the data from all the previous reports in the tables and graphs to

improve comparability.

### REPORT CONTENT AND BOUNDARIES (GRI 102-46)

Outotec's business is based on the company mission, 'sustainable use of Earth's natural resources', which drives us to work towards overcoming the world's environmental challenges and provides the wider context for our sustainability work. We have also defined our approach to global and local social and economic objectives and committed ourselves to the relevant UN Sustainable Development Goals.

The materiality principle was applied in the materiality assessment ([Most significant topics, p. 8](#)) conducted in 2018 so that we considered the interests and expectations of stakeholders, Outotec values, policies, strategy, and targets, the externally assured measurements of our positive indirect environmental impacts, the regulation regarding social license to operate (assumed to be tightening) as well as the main topics and future challenges of the minerals and metals processing sector.

In November 2018, the core team of our Sustainability Working Group reviewed the material topics against GRI Standards and defined the boundaries for each material topic and related indicators that form the contents of this report.

### MATERIAL TOPICS (GRI 102-47)

Based on the materiality assessment, Sustainable technologies and innovations, Engaged experts, Responsible supply chain,

Health and safety, Financial performance, as well as Ethics, compliance and governance are the most material topics for Outotec.

Health and safety, Financial performance as well as Ethics, compliance and governance were considered as fundamentals that the company must take good care of. Sustainable technologies and innovations, Engaged experts, and Responsible supply chain, together with the environmental impact of our own operations, create Outotec's total impact on the Earth and climate change. All these topics are reviewed in this report. Management approaches for all the topics are presented on [Management approach, p. 52](#).

### STAKEHOLDERS

As part of the recent materiality assessment, we identified our key stakeholders, namely Employees, Customers, Suppliers and contractors, Investors, analysts and financiers, Academia and students, Authorities, regulators and governments, Potential future employees, Local communities, and Industry associations and NGOs, as the main users of this report.

### RESTATEMENTS (GRI 102-48)

Our policy for restatements in case of significant changes in our company structure, or changes in the general validity of the data, is that the data is recalculated for previous years if the changes have led to discrepancies of more than 10%.



#### In 2018, we made the following restatements:

- The supply categorization and data management system were improved to better capture the nature of our supply spend. This also had an impact on the calculation of our supply chain's emissions, which is why we recalculated the 2016 and 2017 emissions according to the new supply reporting methods to guarantee comparability over the years.
- Percentage of the reduction in emissions avoided was restated for 2017 because of more accurate calculation.
- Our service provider changed the calculation method for business travel related emissions in 2018, for this reason the 2017 figures for Scope 3 emissions were restated to ensure comparability.

#### CHANGES IN REPORTING (GRI 102-49)

Except for some adjustments in the material topics and topic boundaries made in connection with the materiality analysis in 2018, there have been no major changes in the reporting scope. During 2018, Outotec withdrew its businesses from Iran and closed its service workshop in the United Arab Emirates, which, however, does not impact the reporting scope.

#### CONTACT PERSONS FOR QUESTIONS REGARDING THIS REPORT (GRI 102-53)

- [Contact information, p. 64](#)

#### ASSURANCE (GRI 102-56)

This report has been verified by an independent third-party assurance provider selected by the Sustainability Working Group. The scope, conclusions, observations and recommendations are presented in the assurance report. A member of Outotec's Executive Board has commissioned the assurance, and the Executive Board has approved the report.

- [Assurance statement, p. 62](#)

## Management approach

Outotec Management System defines governance, management principles, operational model, roles, responsibilities and authorities within Outotec. The documentation, based on European Foundation for Quality Management (EFQM) management system and processes framework criteria, defines the compatibility and fulfilment of Outotec systems against such standards as ISO 9001 for Quality Management and ISO 14001 for Environmental Management. Outotec's Code of Conduct, approved by the Board of Directors, sets the company's business conduct for all employees.

Outotec's main impact to the environment is created by our products and services. Our management approach to environmental sustainability is described below in 'Sustainable technologies and innovations'. To a lesser degree, our environmental footprint arises from our own operations. Outotec continuously aims to reduce the impacts of its operations and has annual targets related to CO<sub>2</sub> emissions, energy consumption and waste production. The company also monitors its emissions related to flights. Only a few of Outotec's operations require an environmental permit, and the risks related to these operations are managed by certified environmental management systems.

The Code of Conduct, Supplier Policy, HR policies and Donation and Employee Volunteering Policy, as well as Quality, Environment, Health and Safety (QEHS) Policy, define the basic requirements for Outotec's environmental, social and economic sustainability. The management approaches

for the material topics and aspects GRI 103-1, 103-2, 103-3, are presented in this section according to GRI 2016 Standard. The management approach for Health and Safety, GRI 403, is presented using GRI 2018 Standard.

Sustainable technologies and innovations	
<b>Management approach</b>	Developing sustainable offering for our customers is at the core of our sustainability work. We continuously develop our offering according to the principles of sustainable development. Through advanced technology the negative impacts of processing minerals and metals can be managed. For this reason, R&D has a central role in Outotec's business. Our Product Compliance Management process ensures that our products meet all applicable safety standards during the product lifecycle. We maintain an extensive database of procedures and documents including the development, sales and delivery of our products and services. We use a gated process as a precautionary principle or approach (GRI 102-11), in which the first phase of product development includes criteria related to risks and especially opportunities to mitigate climate change.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Energy (302-4)</li> <li>• Emissions (305-5)</li> <li>• Environmental compliance (307-1)</li> <li>• Local communities (413-1, 413-2)</li> <li>• Customer health and safety (416-2)</li> <li>• Environmental Goods and Services in order intake (own indicator)</li> <li>• CO<sub>2</sub> emissions avoided using Outotec's metals-related technologies (own indicator)</li> <li>• Percentage of reduction of fresh water/tonne of ore by non-ferrous metals concentrators using Outotec technology (own indicator)</li> <li>• Increase of energy produced using Outotec waste-to-energy solutions (own indicator)</li> </ul>
<b>Topic boundaries</b>	Our customers' employees and operations.
<b>Goals and targets</b>	We measure the positive impact of our products and services on the environment (carbon handprint), by the amount of CO <sub>2</sub> emissions avoided using Outotec technologies. The targets are presented in <a href="#">Our agenda, p. 10</a> .
<b>Responsibilities</b>	Our business process Manage and Develop Products and Technologies guides all the activities from idea and product development to productization as well as technical and commercial product management. Outotec's business lines are responsible for their products and services and following the company's business processes.
<b>Commitments, policies and standards</b>	<ul style="list-style-type: none"> <li>• Outotec Technology Policy</li> <li>• Outotec IPR Policy</li> <li>• ISO 12100 and IEC 62061 for the safety of machinery</li> <li>• All safety-related industrial standards applicable where they are utilized</li> <li>• Procedures for detecting hazards such as explosion, fire, and lightning, and related IEC 61882 HAZOP studies</li> <li>• SIL Allocation Assessments (mandatory at Outotec)</li> <li>• The SafExpert risk assessment tool, which ensures that equipment designed by Outotec fulfills all relevant safety standards.</li> </ul>
<b>Evaluation of the management approach</b>	We follow negative impacts and incidents through our QEHS management and Product Compliance Management systems, as well as through customer feedback collected after each major delivery and in customer surveys. The Corporate Product Board follows the development work to ensure that our offering is being developed in line with our mission 'sustainable use of Earth's natural resources'.

Engaged experts	
<b>Management approach</b>	Competent and engaged employees are key to Outotec's success and one of the most material topics. Outotec aims to employ the best people in the industry and follows the principle of equal opportunity. All employees are entitled to good leadership and professional growth. Outotec respects and is committed to the principles of the Universal Declaration of Human Rights and the Ten Principles of the UN Global Compact on human rights, labor, environment and anti-corruption, wherever we operate. We see as our basic responsibility to provide decent working conditions and to treat our people in a fair manner. Our Code of Conduct provides the basis for our labor conditions, substantiated by HR policies and HR Handbook that enable fair employment globally. Our HR practices are always compliant with international labor standards and local legislation.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Employment (401-1, 401-2)</li> <li>• Labor/management relations (402-1)</li> <li>• Training and education (404-1, 404-2, 404-3)</li> <li>• Diversity and equal opportunity (405-1, 405-2)</li> <li>• Employee engagement (own indicator)</li> </ul>
<b>Topic boundaries</b>	Our employees and operations at our own premises and project sites.
<b>Goals and targets</b>	Key target is to achieve 70% employee engagement index by 2020.
<b>Responsibilities</b>	SVP, HR and Communications is responsible for the human resources and the HR and Communications function globally and reports to the CEO.
<b>Commitments and policies</b>	<ul style="list-style-type: none"> <li>• The Universal Declaration of Human Rights</li> <li>• The UN Global Compact</li> <li>• Code of Conduct <a href="http://www.outotec.com/company/about-outotec/code-of-conduct/">www.outotec.com/company/about-outotec/code-of-conduct/</a></li> <li>• HR Handbook</li> <li>• Competence Development Policy</li> <li>• Recruitment and Onboarding Policy</li> <li>• Compensation Policy</li> <li>• Global Mobility Policy</li> <li>• Job Description and Job Title Policy</li> <li>• Grading Policy</li> </ul>
<b>Evaluation of the management approach</b>	The Human Capital Committee of the Board of Directors follows regularly that all employee related topics, such as ethics and values, resourcing, competence and performance management, and compensation arrangements support the strategic aims of Outotec. It also evaluates our performance regarding diversity.

Responsible supply chain	
<b>Management approach</b>	As the majority of Outotec's manufacturing is sourced from external suppliers, responsible supply chain management is highly important for Outotec. Our Supply Policy steers supply activities throughout the company, defines ways to enhance supply quality, and provides guidelines for everyone involved in supply-related activities. A parallel Supplier Policy imposes strict requirements on Outotec's suppliers. It sets out our principles on ethical conduct, compliance with laws and regulations, respecting human rights, environmental impacts, health and safety, labor, intellectual property and improper benefits. Outotec does not tolerate any child labor or forced or compulsory labor as stated in our Code of Conduct and Supplier Policy. Suppliers are expected to ensure compliance with Outotec policy, identify any deviations, manage corrective actions, ensure the transparency of these actions, and communicate with us systematically on such issues.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Supply chain (102-9, 102-10)</li> <li>• Procurement practices (204-1)</li> <li>• Supplier environmental assessment (308-1, 308-2)</li> <li>• Child labor (408-1)</li> <li>• Forced or compulsory labor (409-1)</li> <li>• Supplier social assessment (414-1, 414-2)</li> </ul>
<b>Topic boundaries</b>	Our direct suppliers and supervised contractors.
<b>Goals and targets</b>	Standardization, harmonization and focusing on fewer suppliers are key drivers in establishing a sustainable supplier base. We measure our performance by the percentage of new suppliers screened and key suppliers audited using labor practices, environmental and human rights criteria.
<b>Responsibilities</b>	SVP – Operational Excellence is acting Head of Supply. Our Global Supply function manages our supplier base and global sourcing. Operational Supply personnel are involved in day-to-day supplier management during the delivery phase of customer projects. Outotec's Supplier Relationship Managers work with our most important global or local suppliers. They facilitate collaboration between Outotec and the suppliers across and above individual projects. This procedure enhances visibility, alignment and the management of supplier-related risks, while also improving overall collaboration between Outotec and individual suppliers.
<b>Commitments and policies</b>	<ul style="list-style-type: none"> <li>• Outotec Supplier Policy, <a href="http://www.outotec.com/company/about-outotec/suppliers/">www.outotec.com/company/about-outotec/suppliers/</a></li> <li>• Outotec Supply Policy</li> <li>• Code of Conduct, <a href="http://www.outotec.com/company/about-outotec/code-of-conduct/">www.outotec.com/company/about-outotec/code-of-conduct/</a></li> </ul>
<b>Evaluation of the management approach</b>	The Executive Board reviews regularly the effectiveness of the supply chain management and the work is evaluated also in internal and external audits. Outotec audits its key suppliers on quality, health and safety as well as human rights-related issues regularly. Compliance Helpline and an external feedback channel are available for anyone to raise concerns related to corruption, human rights or any unethical behavior in Outotec's business activities.
Health and safety	
<b>403 (GRI 2018) Management approach</b>	According to Outotec's QEHS Policy, safety is a priority in the company's operations. Outotec's management is committed to continuously enhance safety performance throughout the company's operations. We have globally harmonized procedures and work instructions. Our OHS management system covers 100% of Outotec's employees, contractors working under our direct supervision, locations and project sites. The OHS management is based on risk assessments. The main health and safety risks for Outotec employees occur on roads in different driving cultures and when working at project sites and manufacturing units.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Occupational health and safety (403-1, 403-2, 403-3, 403-4, 403-5, 403-6, 403-7, 403-8, 403-9)</li> </ul>
<b>Topic boundaries</b>	Outotec's employees and premises, supervised contractors as well as project sites. Regarding health services, our reporting covers Outotec employees only, as these services are typically covered by the employing company. Local Safety Committees are set up in Outotec's permanent locations and largest project sites, and they cover Outotec employees and premises, contractors and visitors.
<b>Goals and targets</b>	Zero harm in occupational health and safety.
<b>Responsibilities</b>	The head of each permanent location has the responsibility of the persons working there. Each location has a Safety Committee consisting of employees' representative and company representative, and local Safety Committees report to head of location, who reports to global business owners. If there are less than 10 people working in a location, they are represented in the closest larger location's Safety Committee. Our site managers are responsible for the management of safety at project sites.
<b>Commitments and policies</b>	<ul style="list-style-type: none"> <li>• Operations globally certified against OHSAS18001 standard</li> <li>• Outotec QEHS Policy</li> </ul>
<b>Evaluation of the management approach</b>	The global HSE Steering Group follows the state of OHS and sets targets and the roadmap for the future. The Executive Board reviews regularly the safety performance, and we ensure the quality of our OHS processes through internal and external audits and training. In 2018, external audits were successfully conducted by TÜV Rheinland Cert GmbH at our locations in Finland (Espoo), in Canada (Burlington), USA (Coeur d'Alaine, Jessup) and in Germany (Oberursel, Frankfurt, Cologne), as well as a construction site in Bahrain. The certificates can be found on <a href="http://www.outotec.com/company/about-outotec/qehs/">http://www.outotec.com/company/about-outotec/qehs/</a> .

Financial performance	
<b>Management approach</b>	In the recent materiality assessment, financial performance was raised a topic having a major impact on employees' wealth and commitment, stakeholder value, jobs available and tax income of local communities. Our financial performance and risk management are covered in <a href="#">Financial Statements 2018</a> and Corporate Governance Statement 2018, whereas this report focuses on the value creation, our impacts, and financial implications due to climate change. Outotec management annually evaluates the global megatrends that impact our business. Sustainability related risks are addressed in routine risk management processes. Our approach to economic sustainability is demonstrated by our long-term financial targets. We base our decisions on sound business reasons and commercial rationale. Outotec follows all applicable accounting and financial reporting rules. Accurate and objective records and reports support our business decisions and help us meet our responsibilities towards stakeholders. Project risk management and project control are the key processes for providing information for financial control and reporting. Outotec is committed to being a responsible, compliant tax payer in each country where it operates. We strive for transparency in our operations and fairness in our tax practices, and we do not engage in aggressive tax planning. Our tax management has a proactive approach.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Key impacts, risks and opportunities (102-15)</li> <li>• Economic performance (201-1, 201-2)</li> <li>• Indirect economic impacts (203-2)</li> </ul>
<b>Topic boundaries</b>	Outotec's legal entities with 100% ownership (Financial Statements 2018, p. 77, <a href="http://www.outotec.com/investors">www.outotec.com/investors</a> )
<b>Goals and targets</b>	<p>Outotec's long-term financial targets focus on continuous profitable growth:</p> <ul style="list-style-type: none"> <li>• Sales growth faster than the market</li> <li>• Annual average service sales growth over 10% (previously 5-15%)</li> <li>• Profitability (adjusted EBIT) 10% of sales by 2020</li> <li>• Gearing at maximum 50%</li> </ul>
<b>Responsibilities</b>	The general governance principles and Outotec's self-regulatory framework provide the basis for Outotec's operations. Finance & Control function headed by the Chief Financial Officer coordinates the financial management and control, maintains common instructions for financial reporting and controls centrally the reporting platforms. The application and interpretation of accounting standards for group-wide purposes is done by Finance & Control and those principles are documented in the Outotec Accounting Policy and reporting manual, guiding the work of all units globally.
<b>Commitments and policies</b>	<ul style="list-style-type: none"> <li>• UN Sustainable Development Goals</li> <li>• Outotec Corporate Governance Policy</li> <li>• Code of Conduct, <a href="http://www.outotec.com/company/about-outotec/code-of-conduct/">www.outotec.com/company/about-outotec/code-of-conduct/</a></li> <li>• Outotec Disclosure Policy, <a href="http://www.outotec.com/company/investors/disclosure-policy/">www.outotec.com/company/investors/disclosure-policy/</a></li> <li>• Outotec Risk Management policies</li> <li>• Outotec Accounting Policy</li> <li>• Outotec Supply Policy</li> <li>• Outotec Export Control Policy</li> <li>• Outotec Tax Policy</li> </ul>
<b>Evaluation of the management approach</b>	The Board of Directors and its Audit and Risk Committee follow Outotec's internal control and risk management systems and efficiency of the control measures. Outotec's monthly financial reviews forms the key mechanism when measuring the effectiveness of operations and the development of the company versus the set financial targets. Special emphasis is put on related contractual risks, project provisions and financial performance.

Ethics, compliance and governance	
<b>Management approach</b>	In the materiality assessment, Ethics, compliance and governance were regarded as fundamentals for Outotec. Outotec's management is based on the principles of good governance and transparency, as well as group-wide policies and globally harmonized business processes. We follow the Finnish Corporate Governance Code issued by the Securities Market Association for listed companies. Our management system documentation is compatible with and audited against such standards as ISO 9001 for Quality Management, ISO 14001 for Environmental Management, and OHSAS 18001 for Safety Management. In addition, the locations in Finland and Germany are certified to ISO 50001 for Energy Management. Outotec endorses ethical business practices and complies with all relevant national and international laws and regulations, which sets the minimum level in the way we operate. The company works against corruption in all its forms. Outotec has zero tolerance against child labor, forced or compulsory labor, harassment or discrimination, anti-competitive behavior or other illegal or unethical business practices. Suppliers and business partners, sales agents and representatives are required to follow the same principles and fully comply with all applicable laws. All Executive Board members and their direct reports have signed specific declarations of compliance and Outotec policies.
<b>Reported topics and indicators</b>	<ul style="list-style-type: none"> <li>• Anti-corruption (205-1, 205-2, 205-3)</li> <li>• Anti-competitive behavior (206-1)</li> <li>• Non-discrimination (406-1)</li> <li>• Freedom of association and collective bargaining (407-1)</li> <li>• Socio-economic compliance (419-1)</li> </ul>
<b>Topic boundaries</b>	Outotec's employees, sales representatives and sales agents, suppliers and contractors.
<b>Goals and targets</b>	Outotec's target is to have employees participate in e-learning on the Code of Conduct or attend related classroom training on a regular basis.
<b>Responsibilities</b>	The Chief Executive Officer is responsible for implementing the Code of Conduct with the support of the Executive Board and the Chief Compliance Officer. Our Board of Directors monitors and reviews implementation of the Code periodically. Outotec's Legal, Contract Management & Corporate Responsibility function is responsible for the compliance program and related policies. The Chief Compliance Officer reports the issues raised through grievance mechanisms to the Board of Directors.
<b>Commitments and policies</b>	<ul style="list-style-type: none"> <li>• Universal Declaration of Human Rights</li> <li>• UN Guiding Principles on Business and Human Rights</li> <li>• UN Global Compact</li> <li>• UN Sustainable Development Goals</li> <li>• Outotec Corporate Governance Policy</li> <li>• <a href="http://www.outotec.com/company/about-outotec/code-of-conduct/">Outotec Code of Conduct, http://www.outotec.com/company/about-outotec/code-of-conduct/</a></li> <li>• Outotec QEHS Policy</li> <li>• <a href="http://www.outotec.com/company/about-outotec/suppliers/">Outotec Supplier Policy, http://www.outotec.com/company/about-outotec/suppliers/</a></li> <li>• Outotec Anti-Corruption Policy</li> <li>• Outotec Anti-Money Laundering Policy</li> <li>• Outotec Agent Policy</li> <li>• Outotec Enterprise Risk Management Policy</li> <li>• Outotec Operational Risk Management Policy</li> <li>• Outotec Data Protection Policy</li> <li>• Outotec Donation and Employee Volunteering Policy</li> </ul>
<b>Evaluation of the management approach</b>	The Audit and Risk Committee of the Board of Directors reviews regularly the compliance of the company and concerns raised through Outotec's compliance helpline and internal and external feedback channels. The Chief Compliance Officer reports directly to the Audit and Risk Committee of the Board in issues raised through grievance mechanisms. Our performance is also followed-up regularly through internal and external audits.

## GRI, GLOBAL COMPACT, AND SDG CONTENT INDEX

Based on our own assessment, Outotec has self-declared this report to be prepared in accordance with the GRI Standards: Core option. Compliance has additionally been checked by a third party, Ecobio Ltd.

In this table, we have applied General Disclosures, Management Approach and topic specific GRI Standards and Disclosures published in 2016, except for the Occupational Health and Safety (GRI 403) and Water and Effluents (GRI 303) for which we have applied GRI Standard published in 2018. Indicators in General Disclosures and Management Approach comply with the European Directive on non-financial and diversity reporting. The table also indicates our progress on the United Nations' Global Compact principles and Sustainable Development Goals (SDG). Some indicators are reported and shown in the index although they are not material to Outotec but reported to meet stakeholders' expectations.

GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
101	Foundation				
<b>102</b>	<b>GENERAL DISCLOSURES</b>				
<b>102</b>	<b>Organizational profile</b>				
102-1	Name of the organization	<a href="#">This is Outotec, p. 5</a>			
102-2	Activities, brands, products, and services	<a href="#">This is Outotec, p. 5</a>	There were no banned products in 2018.		
102-3	Location of headquarters	Espoo, Finland			
102-4	Location of operations	<a href="#">This is Outotec, p. 5</a>			
102-5	Ownership and legal form	<a href="#">This is Outotec, p. 5</a>			
102-6	Markets served	<a href="#">This is Outotec, p. 5</a>			
102-7	Scale of the organization	<a href="#">This is Outotec, p. 5</a> <a href="#">Financial performance , p. 30</a> <a href="#">Financial Statements 2018, www.outotec.com/investors</a>			
102-8	Information on employees and other workers	<a href="#">Social data, p. 46</a>		6	
102-9	Supply chain	<a href="#">Responsible supply chain, p. 26</a>			
102-10	Significant changes to the organization and its supply chain	<a href="#">This is Outotec, p. 5</a>			
102-11	Precautionary principle of approach	<a href="#">Management approach, p. 52</a>			
102-12	External initiatives	<a href="#">www.outotec.com/sustainability</a>			
102-13	Memberships of associations	<a href="#">www.outotec.com/sustainability</a>			
	<b>Strategy</b>				
102-14	Statement from senior decision-maker	<a href="#">CEO's message, p. 3</a>			
102-15	Key impacts, risks, and opportunities	<a href="#">Financial performance, p. 30</a>			
	<b>Ethics and integrity</b>				
102-16	Values, principles, standards, and norms of behavior	<a href="#">Ethics, compliance and governance, p. 34</a>		10	
102-17	Mechanisms for advice and concerns about ethics	<a href="#">Ethics, compliance and governance, p. 34</a>			
	<b>Governance</b>				
102-18	Governance structure	<a href="#">Ethics, compliance and governance, p. 35</a>			
102-19	Delegating authority	<a href="#">Corporate Governance Statement 2018, www.outotec.com/cg</a>			
102-22	Composition of the highest governance body and its committees	<a href="#">Corporate Governance Statement 2018, www.outotec.com/cg</a>			
102-23	Chair of the highest governance body	<a href="#">Corporate Governance Statement 2018, www.outotec.com/cg</a>			
102-24	Nominating and selecting the highest governance body	<a href="#">Corporate Governance Statement 2018, www.outotec.com/cg</a>			

GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
102-32	Highest governance body's role in sustainability reporting	Ethics, compliance and governance, p. 35			
102-35	Remuneration policies	Corporate Governance Statement 2018, <a href="http://www.outotec.com/cg">www.outotec.com/cg</a>			
102-38	Annual total compensation ratio	Social data, p. 47	Blue-collar workers are not included in the calculation.		
102-39	Percentage increase in annual total compensation ratio	Social data, p. 47	Blue-collar workers are not included in the calculation.		
<b>Stakeholder engagement</b>					
102-40	List of stakeholder groups	Engaging with stakeholders, p. 16			
102-41	Collective bargaining agreements	Social data, p. 47		3	
102-42	Identifying and selecting stakeholders	Engaging with stakeholders, p. 16			
102-43	Approach to stakeholder engagement	Engaging with stakeholders, p. 16			
102-44	Key topics and concerns raised	Engaging with stakeholders, p. 16			17
<b>Reporting practice</b>					
102-45	Entities included in the consolidated financial statements	Financial Statements 2018, p.77, <a href="http://www.outotec.com/investors">www.outotec.com/investors</a>			
102-46	Defining report content and topic boundaries	About this report, p. 51 Most significant topics, p. 8			
102-47	List of material topics	Most significant topics, p. 8			
102-48	Restatements of information	About this report, p. 51			
102-49	Changes in reporting	About this report, p. 51			
102-50	Reporting period	Calendar year 2018			
102-51	Date of most recent report	March 2018			
102-52	Reporting cycle	Annually			
102-53	Contact point for questions regarding the report	Contacts, p. 64			
102-54	Claims of reporting in accordance with the GRI Standards	About this report, p. 51			
102-55	GRI content index	GRI, Global Compact and SDG content index, p. 56			
102-56	External assurance	Assurance statement, p. 62			
<b>103 MANAGEMENT APPROACH</b>					
103-1	Explanation of the material topic and its boundary	Management approach, p. 52			
103-2	The management approach and its components	Management approach, p. 52			
103-3	Evaluation of the management approach	Management approach, p. 52			
<b>TOPIC-SPECIFIC DISCLOSURES</b>					
<b>Sustainable technologies and innovations</b>					
<b>302 Energy</b>					
302-4	Reduction of energy consumption	Environmental impact of own operations, p. 41 Sustainable technologies and innovations, p. 21		8, 9	13
<b>305 Emissions</b>					
305-5	Reduction of GHG emissions	Climate actions, p. 14 Sustainable technologies and innovations, p. 21			9, 13



GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
<b>307</b>	<b>Environmental compliance</b>				
307-1	Non-compliance with environmental laws and regulations	No identified non-compliance with environmental laws, regulations or voluntary codes. Outotec has not paid any fines in the environmental area.			
<b>413</b>	<b>Local communities</b>				
413-2	Operations with significant actual and potential negative impacts on local communities	No identified significant negative impacts of our operations, products or suppliers on local communities. No issues concerning the rights of indigenous people.		1	11
<b>416</b>	<b>Customer health and safety</b>				
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	No identified significant negative impacts of our products on customers' health and safety. No fines imposed for non-compliance with laws and regulations or voluntary codes regarding the use of Outotec products.			
OWN	Environmental Goods and Services in order intake	<a href="#">Sustainable technologies and innovations, p. 21</a> <a href="#">Sustainability agenda 2020, p. 10</a>			9
OWN	CO <sub>2</sub> emissions avoided using Outotec's metals-related technologies	<a href="#">Climate actions, p. 14</a> <a href="#">Sustainable technologies and innovations, p. 21</a> <a href="#">Sustainability agenda 2020, p. 10</a>			13
OWN	Percentage of reduction of fresh water/tonne of ore by non-ferrous metals concentrators using Outotec technology	<a href="#">Sustainability agenda 2020, p. 10</a>			6
OWN	Increase of energy produced using Outotec waste-to-energy solutions	<a href="#">Sustainability agenda 2020, p. 10</a>			7
<b>Responsible supply chain</b>					
<b>204</b>	<b>Procurement practices</b>				
204-1	Proportion of spending on local suppliers	<a href="#">Responsible supply chain, p. 27</a>			12
<b>308</b>	<b>Supplier environmental assessment</b>				
308-1	New suppliers that were screened using environmental criteria	<a href="#">Responsible supply chain, p. 26</a>		8	
308-2	Negative environmental impacts in the supply chain and actions taken	<a href="#">Responsible supply chain, p. 26</a>		8	
<b>408</b>	<b>Child labor</b>				
408-1	Operations and suppliers at significant risk for incidents of child labor	<a href="#">Responsible supply chain, p. 27</a>		5	
<b>409</b>	<b>Forced or compulsory labor</b>				
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	<a href="#">Responsible supply chain, p. 27</a>		4	

GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
<b>414</b>	<b>Supplier social assessment</b>				
414-1	New suppliers that were screened using social criteria	<a href="#">Responsible supply chain, p. 27</a>		2	12
414-2	Negative social impacts in the supply chain and actions taken	<a href="#">Responsible supply chain, p. 27</a>		2	
	<b>Engaged experts</b>				
<b>401</b>	<b>Employment</b>				
401-1	New employee hires and employee turnover	<a href="#">Social data, p. 47</a>			
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	<a href="#">Social data, p. 47</a>			
<b>402</b>	<b>Labor/management relations</b>				
402-1	Minimum notice periods regarding operational changes	<a href="#">Social data, p. 48</a>		3	
<b>404</b>	<b>Training and education</b>				
404-1	Average hours of training per year per employee	<a href="#">Social data, p. 49</a>	Our learning management system does not provide data by gender and employee category.	6	
404-2	Programs for upgrading employee skills and transition assistance programs	<a href="#">Engaged experts, p. 23</a>		1	4
404-3	Percentage of employees receiving regular performance and career development reviews	<a href="#">Social data, p. 49</a>		6	
<b>405</b>	<b>Diversity and equal opportunity</b>				
405-1	Diversity of governance bodies and employees	<a href="#">Social data, p. 46</a>	Data of minority groups is not relevant and thus not collected.		5
405-2	Ratio of basic salary and remuneration of women to men	<a href="#">Social data, p. 50</a>	Data was not available about blue-collar workers.		
OWN	Employee engagement index	<a href="#">Engaged experts, p. 23</a>			
	<b>Health and safety</b>				
<b>403</b>	<b>Occupational health and safety (2018 Standard)</b>				
403-1	Occupational health and safety management system	<a href="#">Health and safety, p. 28</a> <a href="#">Management approach, p. 52</a>			
403-2	Hazard identification, risk assessment, and incident investigation	<a href="#">Health and safety, p. 28</a>			
403-3	Occupational health services	<a href="#">Health and safety, p. 28</a>			
403-4	Worker participation, consultation, and communication on occupational health and safety	<a href="#">Health and safety, p. 29</a>			
403-5	Worker training on occupational health and safety	<a href="#">Social data, p. 46</a> <a href="#">Health and safety, p. 29</a>			
403-6	Promotion of worker health	<a href="#">Health and safety, p. 29</a>			
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationship	<a href="#">Health and safety, p. 29</a>			
403-8	Workers covered by an occupational health and safety management system	<a href="#">Health and safety, p. 28</a>		1	
403-9	Work-related injuries	<a href="#">Health and safety, p. 29</a> <a href="#">Social data, p. 48</a>			3

GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
<b>Ethics, compliance, governance</b>					
<b>205</b>	<b>Anti-corruption</b>				
205-1	Operations assessed for risks related to corruption	<a href="#">Ethics, compliance and governance, p. 34</a>	Number and percentage of operations not reported because we assess projects only.	10	
205-2	Communication and training about anti-corruption policies and procedures	<a href="#">Ethics, compliance and governance, p. 35</a> <a href="#">Social data, p. 49</a>	Anti-corruption communication not separately reported, it is part of Code of Conduct trainings. Our learning management systems does not provide information of the training hours by gender and employee category.	10	8
205-3	Confirmed incidents of corruption and actions taken	<a href="#">Ethics, compliance and governance, p. 35</a>		10	
<b>206</b>	<b>Anti-competitive behavior</b>				
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices		Outotec was not subject to any legal actions for anti-competitive behavior, anti-trust cases or monopoly practices.		
<b>406</b>	<b>Non-discrimination</b>				
406-1	Incidents of discrimination and corrective actions taken	<a href="#">Ethics, compliance and governance, p. 35</a>	Data of minority groups is not relevant for Outotec and thus not collected.	6	
<b>419</b>	<b>Socio-economic compliance</b>				
419-1	Non-compliance with laws and regulations in the social and economic area		Outotec did not have to pay any fines or fulfill any non-monetary sanctions for non-compliance with anti-corruption laws. We have not identified any non-compliance with laws and/or regulations or voluntary codes, neither has the company paid any fines in the social or economic area.	8	
<b>Financial performance</b>					
<b>201</b>	<b>Economic performance</b>				
201-1	Direct economic value generated and distributed	<a href="#">Financial performance, p. 30</a>	Country-specific tax information not fully reported as it would not give a comprehensive picture of the fairness of the tax distribution.		
201-2	Financial implications and other risks and opportunities due to climate change	<a href="#">Financial performance, p. 32</a>		7	
<b>202</b>	<b>Market presence</b>				
202-2	Proportion of senior management hired from the local community	<a href="#">Social data, p. 50</a>			
<b>203</b>	<b>Indirect economic impacts</b>				
203-2	Significant indirect economic impacts	<a href="#">Financial performance, p. 30</a>			

GRI Standard	Description	Disclosure or link to related page	Comment/Omissions	Global Compact Principle	SDG
<b>Environmental footprint of Outotec's own operations</b>					
<b>301</b>	<b>Materials</b>				
301-1	Materials used by weight or volume	Environmental impact of own operations, p. 41		7, 8	
<b>302</b>	<b>Energy</b>				
302-1	Energy consumption within the organization	Environmental impact of own operations, p. 41		7, 8	
302-3	Energy intensity	Environmental impact of own operations, p. 41		8	
302-4	Reduction of energy consumption	Environmental impact of own operations, p. 42		8, 9	13
<b>303</b>	<b>Water and effluents (2018 Standard)</b>				
303-1	Interactions with water as a shared resource	Environmental impact of own operations, p. 43		7, 8	
303-3	Water withdrawal by source	Environmental impact of own operations, p. 43			
<b>304</b>	<b>Biodiversity</b>				
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Sustainable technologies and innovations, p. 21			
304-2	Significant impacts of activities, products, and services on biodiversity	Sustainable technologies and innovations, p. 21			13
<b>305</b>	<b>Emissions</b>				
305-1	Direct (Scope 1) GHG emissions	Environmental impact of own operations, p. 43		7, 8	
305-2	Energy indirect (Scope 2) GHG emissions	Environmental impact of own operations, p. 43		7, 8	
305-3	Other indirect (Scope 3) GHG emissions	Environmental impact of own operations, p. 44		7, 8	
305-4	GHG emissions intensity	Environmental impact of own operations, p. 44		8	
305-7	Nitrogen oxides, sulfur oxides, and other significant air emissions	Environmental impact of own operations, p. 45	Only VOCs are reported as the other emissions are not relevant in our operations.	8	
<b>306</b>	<b>Effluents and waste</b>				
306-2	Waste by type and disposal method	Environmental impact of own operations, p. 45		8	
306-3	Significant spills	Environmental impact of own operations, p. 45		8	

# Independent Assurance Report – Outotec Sustainability Report 2018

## TO THE MANAGEMENT OF OUTOTEC OYJ

Ecobio Oy (hereafter Ecobio) has been commissioned by Outotec Oyj (hereafter Outotec) to perform a limited third-party assurance engagement regarding the content of Outotec's Sustainability Report for 2018.

## OUTOTEC'S RESPONSIBILITY

Outotec was responsible for the collection, preparation and presentation of the information in the Sustainability Report (hereafter Sustainability Information) according to GRI Sustainability Reporting Standards (GRI Standards) set up by the Global Reporting Initiative (GRI). Ecobio, as an independent assessor was not involved in the data gathering and preparation of the Sustainability Information, apart from the Independent Assurance. The Management of Outotec has approved the information provided in the Sustainability Report.

## PRACTITIONER'S RESPONSIBILITY

Ecobio's responsibility was to present a conclusion on the Sustainability Information subject to the assurance performed by Ecobio.

The scope of work included assurance of completeness and correctness of information presented by Outotec in the Sustainability Report 2018. The assurance engagement was limited to the non-financial performance data disclosed in the Sustainability Report for the reporting period of January 1st 2018 to December 31st 2018.

The Sustainability Information assured

covered the Standard Disclosures in accordance with the core-level option, including the reported Environmental and Social Performance Indicators. In addition, the level of the consistency of the Economic Performance Indicators reported was checked against the GRI Standards.

Ecobio disclaims any liability or responsibility for any third-party decision based upon this assurance report.

## METHODOLOGY

Ecobio based the assurance process on the following guidelines and standards: the GRI Sustainability Reporting Standards, the International Standard on Assurance Engagements (ISAE) 3000 (Revised) Assurance Engagements Other than Audits or Reviews of Historical Financial Information, and Outotec's internal reporting guidelines. The assurance process was performed utilizing Ecobio's internally developed GRI assurance tool, covering the principles, standard disclosures and indicators of the GRI Standards. The Standard Disclosures were assessed based on a sampling plan composed by Ecobio.

Concerning limited assurance engagement, the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained. This assurance engagement was conducted from January 2019 to March 2019. The assurance process included:

- Interviewing employees responsible for data collection and reporting at Outotec's group level.

- Evaluating procedures for gathering, analyzing, and aggregating quantitative data for the Sustainability Report 2018 as well as performing cross-checks on a sample basis concerning the reported sustainability data.
- Checking the internal guidelines of the data collection.
- Checking the sufficiency of the documentation of the data gathering process.
- Checking the consistency of the Sustainability Report 2018 compared to the GRI Standards.

## CONCLUSIONS

Based on the work described in this report, nothing has come to our attention that would cause us to believe that the information presented in Outotec's Sustainability Report 2018 is not fairly stated, in all material respects, or that it would not comply with the Reporting Criteria stated before.

## OBSERVATIONS AND RECOMMENDATIONS

Based on our limited assurance engagement we provide the following observations and recommendations related to GRI Sustainability Reporting principles. These observations and recommendations do not affect the conclusions presented earlier.

In general, Outotec has prepared the Sustainability Report 2018 in accordance with GRI Reporting Principles. The report is a balanced, consistent and comprehensive representation of the company operations and performs well in terms of quality

requirements set for reporting. In addition, the management approach has been developed in a structural manner enabling better understanding of managing the material topics.

## Report content

- The report presents the sustainability context of the company operations. It could be further developed by presenting the company performance in reference to broader sustainability goals and context, e.g., by elaborating the long-term perspective in terms of strategy, risks and goals.
- Annual reviewing of megatrends improves the understanding of the impacts and the review process could also be elaborated in the report.
- Outotec has identified its key stakeholders, their interests and expectations, and material topics, and has prepared the report taking them into account.
- The challenges could be presented in relation to their context so that the reader would understand the level of consideration and the magnitude of importance of the future challenges in the materiality assessment. The materiality assessment could also be improved by linking the assessment to relevant laws, regulations and agreements as well as to company values and policies.

## Report quality

- Generally, Outotec provides explanations



of the data measurement techniques used and basis for calculations. To improve the accuracy, the report could describe the data assumptions and the techniques used to produce the data estimates in more detail and could rethink the places where the information of data assumptions can be found.

- The report presents the information in an understandable manner and including prior years' information. However, the comparability of annual reports could be improved by ensuring that at least the performance of the previous year is compared to the one of the current year reported. Providing information over a longer period of time could also be added to give the reader a better understanding of the trend.

#### **PRACTITIONER'S INDEPENDENCE AND QUALIFICATIONS**

Ecobio is an independent consulting company that specializes in environmental, health and safety management with 30 years of history. Ecobio provides corporate sustainability and environmental consultancy services, combined with training, modelling, research and planning, for companies in the infrastructure, industry and service sectors. Ecobio's assurers are skilled and experienced within non-financial assurance and have good knowledge of industry-related sustainability issues.

As an independent consultancy, Ecobio has no financial dependencies on Outotec beyond the scope of this engagement. Ecobio

has conducted this assurance independently and objectively, and there has been no conflict of interest.

Helsinki, 6th of March 2019  
Ecobio Oy



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# Outotec

Outotec develops leading technologies and services for the sustainable use of Earth's natural resources. Our 4,000 top experts are driven by each customer's unique challenges across the world. Outotec's comprehensive offering creates the best value for our customers in the mining, metal, energy, and chemical industries. Outotec shares are listed on NASDAQ Helsinki. [www.outotec.com](http://www.outotec.com)