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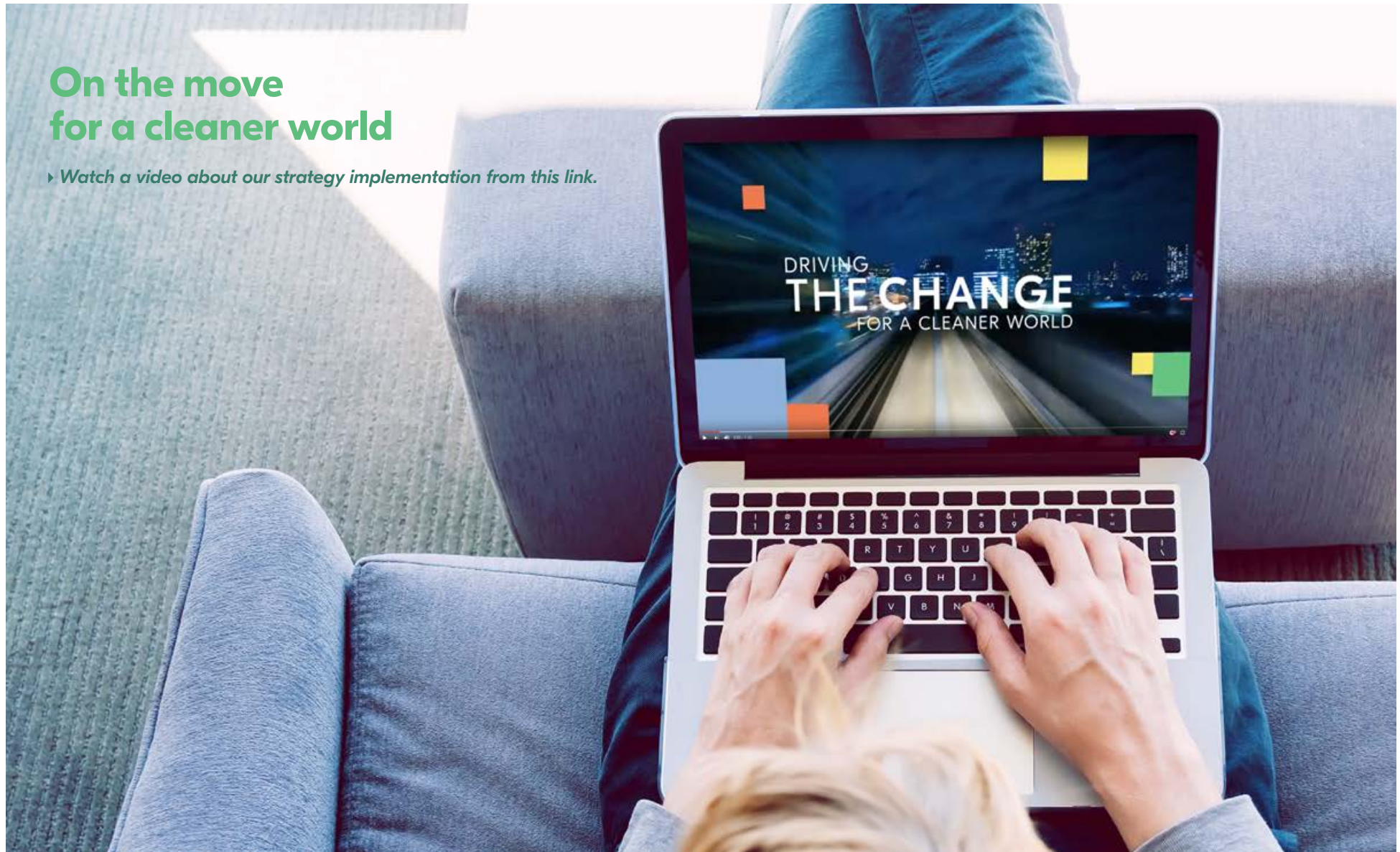
fortum



# Sustainability 2016

## On the move for a cleaner world

► Watch a video about our strategy implementation from this link.





# Sustainability 2016

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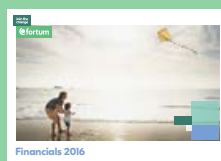
## Fortum's 2016 reporting entity



Online Annual Review



CEO Letter



Financials



Governance



Remuneration



Tax Footprint



Sustainability

## Sustainability management



The entire energy sector is undergoing a transformation. Four megatrends are shaping this change: Climate change and resource efficiency, Urbanisation, Digitalisation and new technologies, and Active customers. These megatrends have a major impact on how energy is produced, sold and used.

Our role is to accelerate this change by reshaping the energy system, improving resource efficiency and providing smart solutions. This way we deliver excellent shareholder value. Our values – accountability, creativity, respect and honesty – form the foundation for all our activities.

Sustainability is an integral part of Fortum's strategy. Business and responsibility are tightly linked, underlining the role of sustainable solutions as a competitive advantage. In our operations, we give balanced consideration to economic, social and environmental responsibility.

- *Fortum's vision, mission and strategy*
- *Fortum's values*

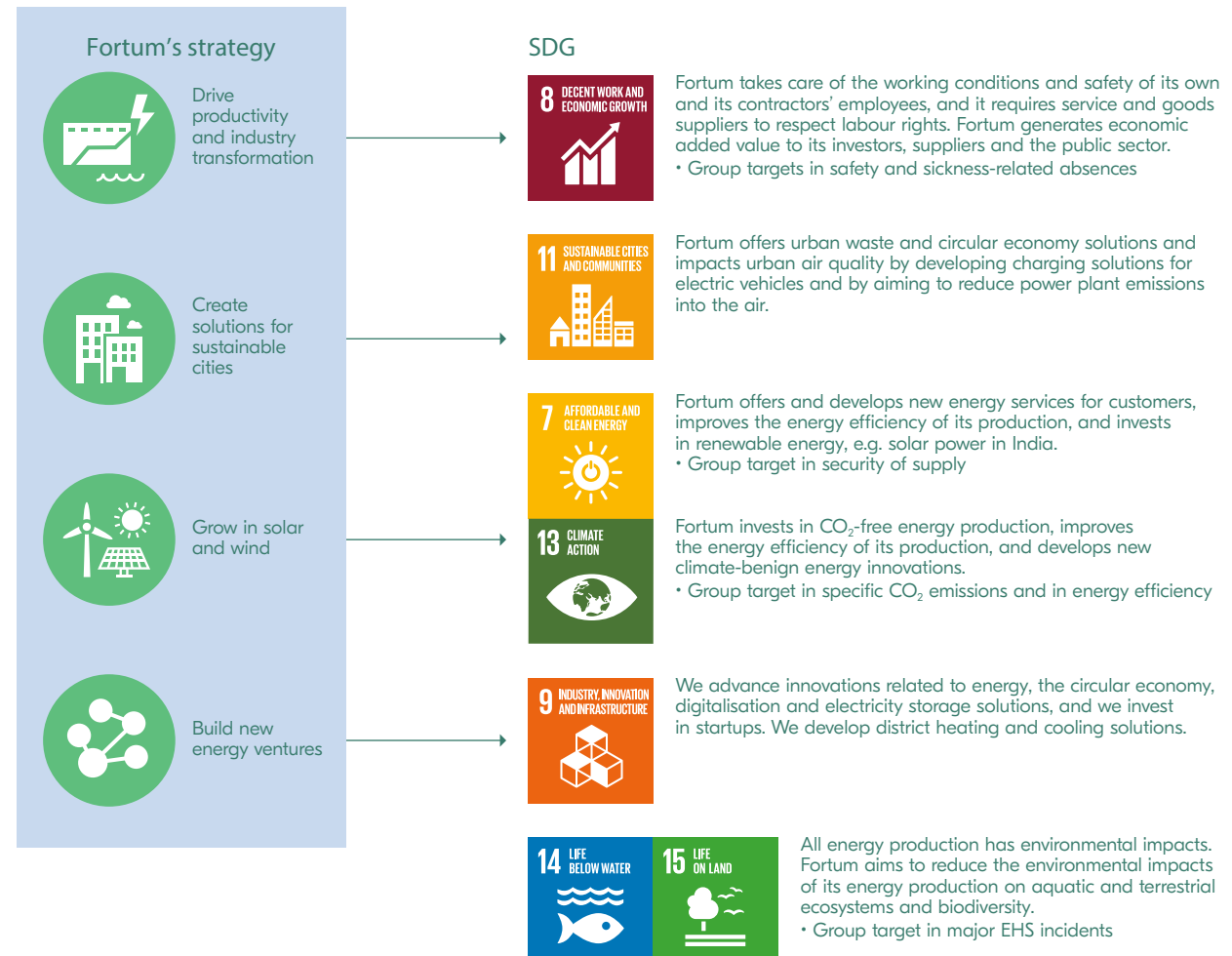
Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
Our contribution to the SDGs	Key sustainability topics	Governance and management	Policies and commitments	Business ethics and compliance	Stakeholders
					Sustainability indexes

## Our contribution to the Sustainable Development Goals

The ► *Sustainable Development Goals (SDGs)* adopted by the United Nations in 2015 define international sustainable development focus areas and goals to 2030. We want to do our part to promote the achievement of the goals in our value chain. The Sustainable Development Goals offer business opportunities as well and the opportunity to create value for our stakeholder groups.

As a producer of energy and circular economy solutions, Fortum impacts most of the Sustainable Development Goals and their specific targets. The SDGs which we impact most are presented in the picture. In line with our strategy, we are driving the change towards a cleaner world.

### Our contribution to the Sustainable Development Goals (SDGs)



Fortum supports the Sustainable Development Goals.

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
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## Examples of measures we implemented in 2016 that promote the achievement of the Sustainable Development Goals

Sustainable Development Goal (SDG)	Measure
7. Ensure access to affordable, reliable, sustainable and modern energy for all	<ul style="list-style-type: none"> <li>▶ <b>We invested in renewable energy production:</b> wind, solar and hydropower</li> <li>We started construction of two solar power plants with a total capacity of 170 MW in India</li> <li>We invested in wind power in Sweden, Norway and Russia</li> </ul>
13. Take urgent action to combat climate change and its impacts	<ul style="list-style-type: none"> <li>We invested in energy efficiency, e.g. at a CHP plant in Russia, at the Loviisa nuclear power plant in Finland and at hydropower plants in Sweden and Finland</li> <li>We reduced specific CO<sub>2</sub> emissions in Espoo, Finland, with flexible heat production: we utilise wood-based fuels, waste heat, and, in the future, also geothermal heat</li> <li>We increased the use of horse bedding-manure mixture as a fuel</li> <li>▶ <b>Our energy efficiency investments</b> totalled 245 GWh</li> <li>We organised an innovation competition to develop solar energy solutions from the customer perspective</li> </ul>
8. Promote inclusive and sustainable economic growth, employment, and decent work for all	<ul style="list-style-type: none"> <li>▶ <b>We audited 13 suppliers</b> on work conditions and other issues</li> <li>We renewed the process for the supplier pre-selection</li> <li>We determined the divisions' level of compliance with safety instructions and took corrective measures</li> <li>We updated the safety handbook and compiled online training on work safety</li> </ul>
9. Build resilient infrastructure, promote sustainable industrialisation and foster innovation	<ul style="list-style-type: none"> <li>We initiated development of a ▶ <b>virtual power plant</b> for balancing electricity demand</li> <li>We launched a ▶ <b>pilot project for the Nordic countries' biggest electricity storage</b></li> <li>We commissioned new district cooling in Tartu, Estonia</li> <li>We invested in Exeger, a company developing solar power technology</li> <li>We invested in the biorefining technology supplier Chempolis</li> <li>We engaged in collaboration with universities in our operating countries, and Fortum Foundation awarded EUR 675 000 in grants</li> <li>We used EUR 52 million in research and development</li> </ul>
11. Make cities and human settlements inclusive, safe, resilient and sustainable	<ul style="list-style-type: none"> <li>We acquired Ekokem Corporation in Finland and started offering sustainable city solutions, like waste and circular economy services to customers</li> <li>We developed charging solutions for electric vehicles in the Nordic countries: We acquired Info24 in Sweden, a developer of EV charging systems, we developed charging systems in collaboration with some 50 partners already, we participated in construction of the ▶ <b>world's largest charging station</b> and an electricity-storing charging station in Norway</li> <li>We started collaboration in the Helsinki metropolitan area Smart &amp; Clean fund</li> <li>We participate in the ▶ <b>Smart Energy City research programme</b> in Stockholm</li> <li>We supplied emissions-reducing combustion solutions to Estonian, Swedish, Romanian and Polish customers</li> </ul>
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	<ul style="list-style-type: none"> <li>We implemented environmental measures valued at EUR 3.2 million for our hydropower</li> <li>We started construction of equipment to trap and transport fish over the dam at the Montta hydropower plant in Finland</li> </ul>
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	<ul style="list-style-type: none"> <li>A record number of salmon migrated up to the River Klarälven in Sweden, thanks to the trap and transport of fish</li> <li>We installed scrubbers at the Argayash power plant in Russia to reduce flue-gas emissions</li> <li>We studied the sustainability criteria of wood-based biomass, and in 2017 we will examine the opportunity to apply for Chain of Custody certification for the Fortum's wood-based biomass purchases</li> </ul>

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices	
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## Key sustainability topics



We have defined our most important sustainability focus areas in the areas of economic, social and environmental responsibility.

Our focus areas are based on Fortum's and our stakeholders' views of the significance of the impacts on the company and its ability to create value for its stakeholders and on the environment. Our understanding of stakeholder views is based on the results of the extensive stakeholder survey, One Fortum survey, conducted annually as well as on information gained through other stakeholder collaboration.

In 2015, a total of 2,133 stakeholder representatives, more than 60% of them representing personnel, participated in our latest

separate sustainability survey. In the 2015 sustainability survey for stakeholders, decision makers, organisations, employees and the general public put special emphasis on the significance of security of supply of heat and electricity, management of sustainability-related risks, and sustainable ways of operating. Our personnel emphasised the safety of operations. The general public considered the use of renewable energy sources as important.

### Sustainability targets affect every Fortum employee

Sustainability targets affect every Fortum employee and are part of Fortum's short-term incentive scheme. In addition to the Group-

level targets, divisions have their own targets. Fortum's Board of Directors annually decides on the sustainability targets to be included in the incentive scheme. In 2016 the incentive scheme included the injury frequency for Fortum employees and for contractors and the number of serious occupational accidents. The injury frequency for Fortum employees and for contractors will be included in the 2017 incentive scheme. The weight of the sustainability target in the incentive scheme is 10% (2016: 10%).

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## Group sustainability targets and performance in 2016

	Target for the year 2016	Status at the end of 2016	Status at the end of 2015
Reputation index, based on One Fortum Survey	72.0	72.5	71.75
Customer satisfaction index (CSI), based on One Fortum Survey	CSI divisional scores at level "good" (70–74)	67–79	68–79
<b>Environmental responsibility</b>			
<b>Specific CO<sub>2</sub> emissions</b>			
Total energy production, g/kWh, 5-year average	< 200	188	191
<b>Energy efficiency</b>			
Energy efficiency improvement by year 2020, base line year 2012, GWh/a	> 1,400*	1,372	1,127**
Major EHS incidents <sup>1)</sup>	≤ 23	22	18
<b>Social responsibility</b>			
<b>Security of supply</b>			
CHP plant energy availability, %	> 95	97.4	96.4
<b>Occupational safety</b>			
Total recordable injury frequency (TRIF) <sup>2)</sup> , own personnel	≤ 2.5	1.9	1.6
Lost workday injury frequency (LWIF) <sup>3)</sup> , own personnel	≤ 1.0	1.0	1.1
Lost workday injury frequency (LWIF) <sup>3)</sup> , contractors	≤ 3.0	3.0	2.7
Number of serious occupational accidents <sup>4)</sup>	≤ 8	13	14**
Sickness related absences, %	≤ 2.4	2.3***	2.4

1) Fires, leaks, explosions, INES events exceeding level 0, dam safety incidents, environmental non-compliances. INES = International Nuclear Event Scale

2) TRIF = Total recordable injury frequency, injuries per million working hours

3) LWIF = Lost workday injury frequency, injuries per million working hours

4) Fatality or an accident leading to permanent disability or a sick-leave of more than 30 days

\* By the year 2020

\*\* The figure revised for reporting in 2015

\*\*\* The figure has become more defined from the one presented in the interim report and the operating and financial review (2.4%).

## Successes and development needs:

- Our reputation amongst the most important stakeholder groups in the One Fortum survey improved in 2016 and exceeded the target. The target for customer satisfaction was achieved in all business areas, except in electricity sales to business customers.
- We achieved our target in specific carbon dioxide emissions. In 2016, specific emissions from total energy production were 184 gCO<sub>2</sub>/kWh.
- The replacement of the Loviisa nuclear power plant's two high-pressure turbines and the Suomenoja power plant's new district heat storage improved the energy efficiency of our production in Finland. Refurbishment of the Chelyabinsk CHP-3 unit's gas turbine improved energy efficiency in Russia. Through the projects implemented, an annual energy savings of about 245 GWh was achieved.
- We strive to be a safe workplace for own and our contractors' employees. In 2016, we achieved the lost workday injury frequency target for our own and our contractors' employees, but there were still too many serious accidents. There were no injuries leading to a fatality during the year.
- In 2016 we signed an agreement for an external service provider to conduct supplier audits; the first audit performed by an external actor was carried out in December. In 2016 we focused on auditing fuel suppliers in particular. We audited a total of 13 suppliers in seven countries.



Our targets for 2017

Our sustainability targets are based on continuous operational improvement. In our target-setting for 2017 we have taken into consideration the potential occupational safety impacts of Fortum’s growth strategy and business acquisitions. It is likely that, until Fortum’s occupational safety practices have been integrated in the new functions, the acquisitions will temporarily weaken Fortum’s current good level of occupational safety.

There are still too many serious injuries occurring in our operations. Starting in 2017 the focus of our monitoring is on accidents that have serious consequences, rather than on the length of the sick-leave. These include accidents leading to a fatality or permanent disability and accidents that could have caused serious consequences.

A new indicator we will track in 2017 is the quality of the investigations of occupational accidents, serious EHS incidents, and near misses. The goal is that the investigation of each incident is done in accordance with guidelines, and more than 90% of the corrective actions are implemented on schedule (target level 1.0). By 2020 the goal is for 100% of the corrective actions to be implemented on schedule, the investigations to use experts from across division boundaries and the lessons learned from the incidents to be actively shared (target level 1.5).

Group sustainability targets in 2017

	Target 2017	Target 2020
Reputation index, based on One Fortum Survey	70.7	Not defined
Customer satisfaction index (CSI), based on One Fortum Survey	CSI divisional scores at level "good" (70–74)	CSI divisional scores at level "good" (70–74)
Environmental responsibility		
Specific CO <sub>2</sub> emissions		
Total energy production, g/kWh, 5-year average	< 200	< 200
Energy efficiency		
Energy efficiency improvement by year 2020, base line year 2012, GWh/a	Target only for year 2020	> 1,400
Major EHS incidents <sup>1)</sup>	≤ 21	≤ 15
Social responsibility		
Security of supply		
CHP plant energy availability, %	> 95	> 95
Occupational safety		
Total recordable injury frequency (TRIF) <sup>2)</sup> , own personnel	≤ 2.5	≤ 2.0
Lost workday injury frequency (LWIF) <sup>3)</sup> , own personnel	≤ 1.0	≤ 1.0
Lost workday injury frequency (LWIF) <sup>3)</sup> , contractors	≤ 3.5	≤ 2.0
Number of severe occupational accidents <sup>4)</sup>	≤ 5	0
Quality of occupational accidents, major EHS incident and near misses investigation process	Level 1.0	Level 1.5
Sickness related absences, %	≤ 2.3	≤ 2.3

1) Fires, leaks, explosions, INES events exceeding level 0, dam safety incidents, environmental non-compliances. INES = International Nuclear Event Scale

2) TRIF = Total recordable injury frequency, injuries per million working hours

3) LWIF = Lost workday injury frequency, injuries per million working hours

4) Accidents leading to a fatality or permanent disability and accidents that could have caused serious consequences

## Governance and management

Sustainability management at Fortum is strategy-driven and is based on the company's values, the ► **Code of Conduct**, the ► **Supplier Code of Conduct** and the policies and their specifying instructions defined at the Group level. We comply with laws and regulations. All of our operations are guided by good governance, effective risk management, adequate controls and the internal audit principles supporting them.

Fortum's goal is a high level of environmental and safety management in all business activities. Calculated in terms of sales, 99.9% of Fortum's electricity and heat production operations at the end of 2016 were ISO 14001 and OHSAS 18001 certified. The divisions and sites develop their operations with internal and external audits required by environmental, occupational safety and quality management systems.

### Responsibilities

Sustainability is an integral part of Fortum's strategy and the highest decision-making authority in these issues is with the Board of Directors, which has joint responsibility in matters related to sustainability. For this reason, Fortum has not designated a Sustainability Committee for decision-making on economic, environmental and social issues. The Audit and Risk Committee, members of the Fortum Executive Management, and other senior executives support the Board of Directors in the decision-making in these matters, when necessary.

The Fortum Executive Management decides on the sustainability approach and Group-level sustainability targets that guide annual planning. The targets are ultimately approved by Fortum's Board of Directors. Fortum Executive Management monitors the achievement of the targets in its monthly meetings and in quarterly performance reviews. The achievement of the targets is regularly reported also to Fortum's Board of Directors.

Fortum's line management is responsible for sustainability management, and realisation of the safety targets is part of Fortum's incentive system. Fortum's Corporate Sustainability unit is responsible for coordination and development of sustainability at the Group level and for maintaining an adequate situation awareness regarding sustainability.

### Sustainability management by topic

Sustainability management in the areas of economic responsibility, environmental responsibility and social responsibility is described in more detail in the ► **Appendix 1**. Additionally, more detailed information about the management of different aspects and impacts is presented by topic in this Sustainability Report.

- **Corporate Governance Statement 2016**
- **Remuneration Statement 2016**



# Policies and commitments

Fortum is a member of the UN Global Compact initiative and the UN Caring for Climate initiative. Fortum supports and respects the international initiatives and commitments, and national and international guidelines listed in the table, and they guide our operations in the areas of economic, environmental and social responsibility.

In December 2016, Fortum's sustainability policy was updated to be in line with our new strategy. Group-level EHS instructions and minimum requirements set requirements for all the operations for which we have operative responsibility. In 2016 we updated these requirements and published a revised version of the Corporate Safety and Security handbook together with an e-learning.

We report on the training related to the updated instructions in the sections **► Business ethics and compliance**, **► Occupational and operational safety** and **► Supply chain management**.

The company's Group-level policies are approved by Fortum's Board of Directors. The Group-level instructions are approved by either the President and CEO or the Fortum Executive Management.

Fortum's main internal policies and instructions guiding sustainability are listed in the **► Appendix 2**.

## International and national initiatives, commitments and guidelines

	Economic responsibility	Environmental responsibility	Social responsibility: Labour practices and decent work	Social responsibility: Human rights	Social responsibility: Society	Social responsibility: Product responsibility
The UN Universal Declaration of Human Rights			x	x		
International Covenant on Economic, Social and Cultural Rights	x		x	x		
International Covenant on Civil and Political Rights			x	x		
The UN Convention on the Rights of the Child			x	x		x
The core conventions of the International Labour Organisation			x	x		
The UN Global Compact initiative	x	x	x	x	x	
The UN Caring for Climate initiative		x				
The UN Guiding Principles on Business and Human Rights			x	x	x	
The OECD Guidelines for Multinational Enterprises	x	x	x	x	x	x
The International Chamber of Commerce's anti-bribery and anti-corruption guidelines	x				x	
The Bettercoal initiative's Code on responsible coal mining	x	x	x	x	x	
Responsible advertising and marketing guidelines						x
Environmental marketing guidelines						x

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
Our contribution to the SDGs	Key sustainability topics	Governance and management	Policies and commitments	Business ethics and compliance	Stakeholders
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## Business ethics and compliance

We believe there is a clear connection between high standards of ethical business practices and excellent financial results. As an industry leader, we obey the law, we embrace the spirit of integrity, and we uphold ethical business conduct wherever we operate.

### Code of Conduct sets the basic requirements

The Fortum Code of Conduct and Fortum Supplier Code of Conduct define how we treat others, engage in business, safeguard our corporate assets, and how we expect our suppliers and business partners to operate.

Fortum's Board of Directors is responsible for the company's mission and values and has approved the Fortum Code of Conduct. The online training on the Code of Conduct is part of the induction programme for new employees. The Supplier Code of Conduct is based on the 10 principles of the UN Global Compact and has been approved by the Head of Procurement in collaboration with the purchasing steering group.

About 95% of Fortum's total purchasing volume, excluding purchases by Ekokem and DUON, is purchased from suppliers with a purchasing volume of EUR 50,000 or more. Geographically they target mainly suppliers in Finland, Sweden, Russia and Poland. The Supplier Code of Conduct is part of purchase agreements exceeding EUR 50,000.

In line with the Code of Conduct, Fortum has zero tolerance for corruption and fraud and does not award donations to political parties or political activities, religious organisations, authorities, municipalities or local administrations.

### Compliance risks

The compliance risks related to our business operations include the potential risk of bribery or corruption, fraud and embezzlement, non-compliance with legislation or company rules, conflicts of interest, improper use of company assets, and working under the influence of alcohol or drugs.

Compliance risk management is an integrated part of business operations, and key compliance risks, including action plans, are identified, assessed and reported annually. This applies also to the management of risks related to sustainability. During 2016, Fortum has launched a Total Compliance programme which covers key areas of regulatory compliance and business ethics.

### Training

As part of the Total Compliance programme, an training plan is developed annually.

In 2016, training on compliance with regulations was provided in Russia and India. The new Fortum employees acquired through an acquisition in Poland received Fortum's Code of Conduct training related to business ethics.

Training on the new Market Abuse Regulation and insider regulations was provided for certain management teams. Training on internal controls was also arranged for division-level management teams. Training on competition law issues was provided for the functions responsible for sales and for the individuals joining Fortum through acquisitions.

The pre-selection process for Fortum's goods and service suppliers was renewed in spring 2016. Related training was provided for procurement personnel in all countries, except Poland and Russia. The training will be arranged in Poland during spring 2017. The pre-selection process will be taken into use in Ekokem's procurements during autumn 2017.

### Reporting misconduct

In addition to internal reporting channels, Fortum has an external ▶ **"Raise a concern" channel**. The same mechanism is used for reporting any suspected misconduct relating to the environment, labour practices or human rights violations, and it is available to all stakeholders. In Russia, Fortum has a separate compliance organisation in place and employees there are encouraged to use

the channels provided by the compliance organisation. They may, however, also use the "Raise a concern" channel should they so wish.

Suspected misconduct and measures related to ethical business practices and compliance with regulations are regularly reported to the Fortum Executive Management and to the Board's Audit and Risk Committee.

### Suspected cases of misconduct

A total of 149 reports of suspected misconduct were made. Of these cases, 72 led to an investigation; at the end of the year, there were four ongoing investigations. About one third of the investigated cases were related to non-compliance either with laws and regulations or with company rules which constituted majority of the cases. In these cases, corrective action was taken by reviewing and developing existing processes and instructions and by providing training for employees.

Fortum has zero tolerance towards alcohol and drug use. About a fifth of the cases were related to alcohol abuse by either Fortum's or contractors' employees during working hours.

As a result of the investigations, four employment contracts were terminated either by immediate dismissal or by mutual agreement, and four written warnings were given. There were 13 cases of misconduct reported to the police. There was no cause for action to be taken in 16 of the cases investigated.

Three cases of suspected corruption or bribery related to Fortum's operations were investigated in 2016. Misconduct was not detected in the investigations.

Fortum also requires its goods and service suppliers as well as its business partners to comply with a zero tolerance policy towards corruption and bribery. As part of supply chain management, we requested a report from the goods and service suppliers we had knowledge of possible cases of misconduct. We requested the reports to include information about e.g. the corrective measures



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices	
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taken related to the supplier's own operations. The reports were considered sufficient and didn't lead to the termination of a contract. Other misconduct led to the termination of a contract with one goods and service supplier.

We deal with potential cases of corruption in a professional manner, in accordance with the defined compliance investigation process, in line with applicable laws and with respect to the rights and personal integrity of all parties involved.

### Restricting competition

There were three ongoing investigation cases in Russia in 2016, one of which was completed during the year. The court found no violation of competition law.

During the year Fortum was not subject to any significant monetary fines for competition law violations.

### Other significant fines

There were no other significant fines.

- Fortum Code of Conduct
- Fortum Supplier Code of Conduct
- Environmental grievances
- Labour practices and human rights grievances
- Incidents of discrimination
- Fines related to environmental non-compliances



# Stakeholders

Our way of operating responsibly includes continuously identifying the views of our stakeholders and finding a balance between the different expectations our stakeholders have. Dialogue, feedback and good collaboration are the key ways to promote a mutual understanding with our stakeholders.

## Stakeholder collaboration

Collaboration with different stakeholder groups helps Fortum to assess and meet the expectations that stakeholder groups have towards the company. We engage in an active dialogue with the different stakeholders associated with our operations. We conduct annual stakeholder surveys. We monitor and assess the public dialogue in the countries where we operate, and we have increased the dialogue with our stakeholders also through social media channels. Feedback from customers drives the development of our products and services. Additionally, our activities in national and international organisations help to deepen our understanding of global sustainability issues and their connections to our business.

Management of stakeholder collaboration at Fortum is assigned particularly to communications, corporate relations, human resources, the sustainability unit, the functions responsible for electricity and heat sales and energy production, as well as many of our experts. Responsibilities for managing stakeholder collaboration are primarily determined by stakeholder group or interaction theme. Key interaction areas, e.g. public affairs, and corporate communications, have annual plans that guide the activities.

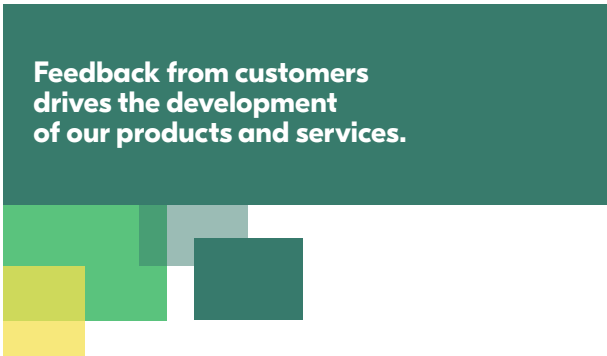
Fortum has an informal Advisory Council consisting of representatives of Fortum’s stakeholder groups as invited by the Board of Directors. The Advisory Council aims to increase the dialogue and the exchange of views between the company and its stakeholders.

## Information through surveys

In collaboration with third parties, we annually conduct surveys regarding stakeholder collaboration. The aim of these surveys is

to help Fortum assess and respond to the important stakeholder groups’ expectations of the company. The surveys also measure the success of our stakeholder collaboration. Additionally, the surveys provide information about emerging sustainability trends and risks we should acknowledge. We use the survey results in business planning and development and in identifying material aspects in corporate responsibility.

The One Fortum survey and its results in terms of customer satisfaction and reputation are presented in the section **► Customer satisfaction and reputation**. As part of the One Fortum survey, we regularly survey what our stakeholders consider to be the **► most important areas of sustainability**.



## Our stakeholder surveys

Survey	Target groups	Target countries	Frequency
One Fortum Survey	Customers General public Public administration Capital markets NGOs Opinion leaders Personnel Media	Finland, Sweden, Norway, Poland, Baltic countries, Russia, India	Customer satisfaction is measured semi-annually Reputation is measured annually
Media tracking	Media	All operating countries	Daily
Brand tracking	General public and customers	Finland, Sweden, Norway, Poland, Baltic countries	Continuously in Finland and Sweden, annually in other countries
Fortum Sound personnel survey	Own personnel	All operating countries	Every second year

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
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Our contribution to the SDGs

Key sustainability topics

Governance and management

Policies and commitments

Business ethics and compliance

Stakeholders

Sustainability indexes

## Stakeholder expectations and responses to them

Stakeholders	Stakeholder expectations	Fortum's actions
Lenders and shareholders	<ul style="list-style-type: none"> <li>Long-term value creation</li> <li>High-yield share</li> <li>Responsible operations</li> </ul>	<ul style="list-style-type: none"> <li>We updated our growth strategy in 2016 and its realisation is ongoing</li> <li>We are committed to achieving our financial targets</li> <li>Our goal is to pay a stable, sustainable and over time increasing dividend of 50-80% of earnings per share excluding one-off items</li> <li>We take economic, social and environmental responsibility into consideration in our business</li> </ul>
Customers	<ul style="list-style-type: none"> <li>Competitively priced products</li> <li>Useful additional services and advice</li> <li>Reliability</li> </ul>	<ul style="list-style-type: none"> <li>With efficient operations and high-quality products, we ensure that we are competitive and our customers feel they get their money's worth</li> <li>We develop new products and services in collaboration with customers so that we can serve them better in the evolving markets: In 2016 <b>▶ 'Customer in the centre' programme</b></li> <li>We deliver what we promise to our customers, and we offer constantly better customer service through different channels</li> </ul>
Personnel	<ul style="list-style-type: none"> <li>Equal treatment and open interaction</li> <li>Job security and incentivising compensation</li> <li>Opportunities for professional development</li> <li>Occupational safety and work wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>We operate in line with Fortum's Code of Conduct and values</li> <li>Our employee compensation is based on standardised principles: <b>▶ We renewed our compensation scheme</b> in 2016</li> <li>We promote job rotation, career development and supervisory skills</li> <li>We improve <b>▶ occupational safety</b> and <b>▶ work wellbeing</b>: In 2016 we launched the Energise Your Day work wellbeing programme</li> </ul>
Service and goods suppliers	<ul style="list-style-type: none"> <li>Good financial position and the ability to take care of the agreed obligations</li> <li>Fair and equal treatment of suppliers</li> <li>Long-term business relations and development of business and products/services</li> <li>Responsible operations</li> </ul>	<ul style="list-style-type: none"> <li>We comply with Fortum's Code of Conduct, and with agreements, legislation and practices that are consistent with good procurement principles</li> <li>We renewed the <b>▶ supplier pre-selection process</b> in 2016</li> <li>We manage supplier relationships in a systematic manner</li> <li>We train contractors in work safety</li> </ul>
Authorities and decision makers	<ul style="list-style-type: none"> <li>Compliance</li> <li>Integration of sustainability with strategy and business, risk management</li> <li>Transparency and reliable reporting</li> <li>Maintaining dialogue</li> </ul>	<ul style="list-style-type: none"> <li>We comply with laws, regulations and permits</li> <li>We develop our business and the management of environmental and safety risks: Sustainability policy and <b>▶ EHS instructions were renewed</b> in 2016</li> <li>We report ESG factors as part of the company's value creation, and we publish our tax footprint: Fortum's 2015 Annual Report was awarded as the winner in the Taxpaying category and as the best in sustainability reporting in Finland according to investors</li> <li>We communicate openly and we actively engage in a dialogue with authorities and decision makers about key issues in the energy sector: In 2016, we actively participated in the renewal work of EU's emissions trading directive both at the EU level and nationally</li> </ul>
Media	<ul style="list-style-type: none"> <li>Relevant, reliable and transparent communication</li> </ul>	<ul style="list-style-type: none"> <li>In line with our <b>▶ Disclosure policy</b>, we communicate proactively and openly</li> <li>We communicate about issues of topical and media interest through multiple channels</li> <li>We meet regularly with media representatives</li> <li>We are easily accessible through the media desk and through social media</li> <li>We continuously improve our crisis communication preparedness</li> </ul>
Energy sector organisations	<ul style="list-style-type: none"> <li>Advocating on behalf of shared interests</li> <li>Dialogue and expertise</li> </ul>	<ul style="list-style-type: none"> <li>We advocate our shareholders' and the sector's shared interests and actively participate in organisational activities in our sector: in 2016 a favourable solution for the energy sector was achieved in Sweden in nuclear and hydropower taxation</li> <li>We publish position papers and views on energy-sector development, and we actively communicate them through multiple channels: In 2016, we published two <b>▶ Fortum Energy Reviews</b></li> </ul>
Non-governmental organisations	<ul style="list-style-type: none"> <li>Responsibility of operations and risk management</li> <li>Promoting renewable energy production</li> <li>Reliable and open reporting</li> </ul>	<ul style="list-style-type: none"> <li>We develop environmental and safety risk management</li> <li>We invest in renewable energy: In 2016, a total of EUR 223 million</li> <li>We collaborate with Finnish and Swedish nature conservation associations regarding our environmentally benign electricity products</li> <li>We communicate actively and we report openly</li> </ul>
Local communities	<ul style="list-style-type: none"> <li>Operational safety</li> <li>Developing employment, infrastructure and recreational use</li> <li>Reducing emissions, noise and other inconveniences</li> </ul>	<ul style="list-style-type: none"> <li>We invest in infrastructure and operational safety</li> <li>We collaborate with local communities in all our operating countries: <b>▶ Examples of our activities in 2016</b></li> <li>We aim to reduce emissions and local environmental impacts</li> </ul>

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices	
Our contribution to the SDGs	Key sustainability topics	Governance and management	Policies and commitments	Business ethics and compliance	Stakeholders	Sustainability indexes



## Most important concerns of stakeholders in 2016

### Coal use

With the Paris Agreement on climate change, the use of coal has become a topic of active discussion. Several countries (including Finland) have announced their discontinuation of coal use for energy production in the upcoming decades. Implementation of this, however, is challenging, and a total ban may lead to claims for compensation. The energy sector considers a ban on use as negative for competition and for the sector's business operations, and it sees emissions trading as the primary mechanism for steering energy choice.

An increasing number of investors are paying attention also to the carbon risk of their investment targets and have initiated actions to reduce it by, e.g., announcing that they will divest their holding in companies in which sales of coal-based production exceed the investor-defined limit. Discontinuing the use of coal has long been on the agenda of environmental and non-governmental organisations. 4% of Fortum's electricity production and 17% of its heat production was based on coal in 2016.

### Biomass fuel use

Increasing the use of biomass fuels plays a central role in achieving the EU's climate and energy targets. The sustainability of biomass fuels has been actively discussed in the energy sector in recent years. In November 2016 the EU Commission published its proposal on legislation that would extend the current regulations on liquid biofuels to cover also solid biomass.

Fortum's position, whereby common, binding sustainability criteria are needed for all biomass fuels, aligns with the Commission's view.

Environmental organisations have expressed their concern related to increasing the use of biomass fuels. The organisations have put particular emphasis on the threat of forest biodiversity degradation and the diminishing carbon sinks.

### Taxes

The country-specific reporting of taxes has become an important topic in international and national public and political discussions. The aim of public, country-specific tax reporting is to impact primarily so-called aggressive tax planning. Fortum has published its tax footprint since 2012. Our tax report has received both praise and criticism. Our tax report has been criticised for not containing information about all the companies in line with the principle of materiality we apply and for including also other taxes beyond income taxes. Fortum's taxation has been discussed publically also in terms of Fortum's various tax processes.

It is important for us that our tax reporting creates an understandable, comprehensive picture of Fortum as a tax payer. This requires the reporting of material income taxes and also the reporting of other non-income taxes as well as the publishing of taxation-related principles. For the sake of transparency, information about various tax processes of significance must also be disclosed. We engage in dialogue with non-governmental organisations and continuously develop reporting to improve understandability.



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
Our contribution to the SDGs	Key sustainability topics	Governance and management	Policies and commitments	Business ethics and compliance	Stakeholders
					<u>Sustainability indexes</u>

## Sustainability indexes



Fortum was ranked as the top company in the utilities sector in the annual CDP (formerly Carbon Disclosure Project) Nordic rating 2016. Fortum scored A- (scale from D to A, A being the highest score). CDP represents 827 institutional investors.



Fortum is included in the STOXX Global ESG Leaders indices which list global leaders in terms of environmental, social and governance (ESG) criteria. The family of indices is made up of three specialised indexes for the categories mentioned and one broad index which sums up the specialized indexes.



Fortum is included in the ECPI® Indices. These indices are used for benchmarking, thematic investments, risk management purposes and to create index-tracking investment strategies or ETF's (Exchange-traded funds). ECPI is a leading rating and index company dedicated to ESG Research (Environmental, Social and Governance) since 1997.



German oekom research AG has awarded Fortum a Prime Status (B-) rating. Prime Status means that Fortum is among the best companies in its sector and fulfils industry-specific best-in-class requirements. Oekom research AG annually assesses about 3,000 companies.



Fortum has been included in the NASDAQ OMX and GES Investment Service's OMX GES Sustainability Finland index. It provides investors with reliable and objective information about company performance in sustainability. GES Investment Services compares leading companies listed on NASDAQ OMX Helsinki and their responsibility in environmental, social and governance issues. The 40 top-ranking companies in the assessment are included in the index.



Fortum has been integrated into the Euronext Vigeo Eurozone 120 index as of December 2016. This index distinguishes the 120 companies in the Eurozone region achieving the most advanced environmental, social and governance performances. The assessment is based on a review of up to 330 indicators.

## Economic responsibility



For Fortum, economic responsibility means competitiveness, performance excellence and market-driven production that create long-term value for our stakeholders and enable sustainable growth. Satisfied customers are key to our success and active consumers will have a crucial role in the future energy system.

Fortum has indirect responsibility for its supply chain. We conduct business with viable companies that act responsibly and comply with the Fortum Code of Conduct and the Supplier Code of Conduct.

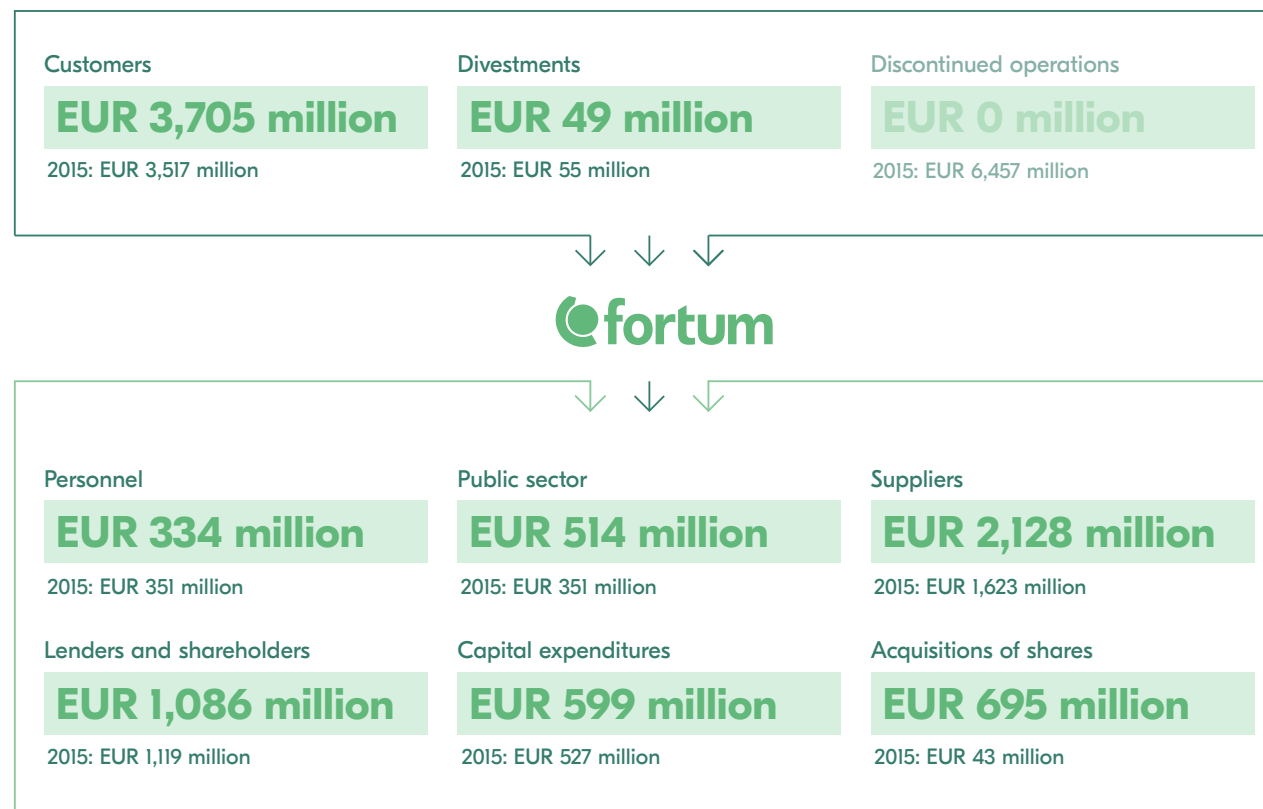
## Economic impacts

Fortum is a significant economic actor in Finland, Sweden, Russia, Poland and the Baltic countries. We continuously monitor the impact and well-being generated by our operations to our stakeholders. The key stakeholders include lenders and shareholders, customers, personnel, suppliers of goods and services, and the public sector.

The most significant direct monetary flows of Fortum's operations come from sales revenue from customers, procurements from suppliers of goods and services, compensation to lenders and dividend to shareholders, growth and maintenance investments, employee wages and salaries, and taxes paid.

Our operations also have indirect economic impacts. The Finnish State owns 50.8% of Fortum's shares, and we contribute to a functioning society by, among other things, paying taxes and dividends. These secure society's basic functions and build well-being. Investments and the procurement of goods and services provide employment both locally and outside our operating areas. New investment proposals are assessed against sustainability criteria. In terms of suppliers of goods and services, we also assess the global impacts, paying particular attention to suppliers of goods and services operating in risk countries. The wages and taxes paid have a positive impact on local communities.

### Distribution of added value



The discontinued operations include the total net cash flow from the divestment of the Swedish electricity distribution business in 2015, including the proceeds from the divestment.



### Monetary flows by stakeholder group in 2014–2016 (GRI G4-EC1)

EUR million		2016	2015	2014
<b>Generation of added value</b>				
Income from customers	Income from customers on the basis of products and services sold and financial income.	3,705	3,517	4,309
Divestments	Income from divestment of shares, business activities or plants	49	55	499
Purchases from suppliers	Payments to suppliers of raw materials, goods and services	-2,128	-1,623	-2,105
Fortum produced added value		1,627	1,950	2,703
<b>Distribution of added value</b>				
Employees compensations	Wages, salaries and remunerations and other indirect employee costs	-334	-351	-369
Lenders and shareholders compensations	Dividends paid to lenders, interest, realised foreign exchange gains and losses and other financial expenses	-1,086	-1,119	-951
Public sector	Income and production taxes paid, support for society and donations	-514	-351	-455
Distributed to stakeholders, total		-1,934	-1,821	-1,776
<b>Surplus/deficit cash</b>		<b>-307</b>	<b>128</b>	<b>928</b>
Capital expenditures		-599	-527	-622
Acquisitions of shares		-695	-43	-69
Discontinued operations <sup>1)</sup>			6,457	2,911
<b>Surplus/deficit including investments and discontinued operations</b>		<b>-1,601</b>	<b>6,015</b>	<b>3,148</b>

1) Includes the electricity distribution business divested in 2014 and 2015.

In 2016, the difference between added value generated and distributed to stakeholders was negative, EUR -307 (2015: 128) million.

The distribution of the economic added value generated by our operations to the most significant operating areas is reported in the following parts of the annual reporting:

- ▶ **Sales by market area based on customer location:**  
*Financial Statements, Note 5*
- ▶ **Employee costs by country**
- ▶ **Tax footprint**

We have included investments in our own assessment of economic impacts, as their annual volume and impact on the society is significant. In 2016 we invested EUR 262 (2015: 223) million in CO<sub>2</sub> free energy production. Capital expenditure by country and

by production type is presented in the Financial Statements, Note 19.2 Capital Expenditure.

Provisions related to nuclear power are covered in the Financial statements, Note 30 Nuclear related assets and liabilities. Financial implications and other risks and opportunities due to climate change, as well as emissions trading are reported in the section ▶ **Climate change mitigation**. Our pension arrangements conform to the local regulations and practices in each operating country; the arrangements are discussed in the Financial Statements, Note 32 Pension obligations.

In 2016 we received financial support from the public sector in the form of investments, R&D and other significant grants totalling EUR 4 (2015: 6) million. The figure excludes free emission allowances and electricity certificates as well as electricity and heat price related subsidies.



## Customer satisfaction and reputation

For Fortum, customer satisfaction and reputation are a top priority in implementing the company's strategy and in growing the business. We have set Group-wide targets for customer satisfaction and for our reputation.

### Customer in the centre

The Group-wide Customer in the centre development programme was launched in 2015 with the aim of promoting a customer-centric culture in our company. The programme continued in 2016. Our new strategy, published in February and further defined in autumn, also put customers in sharper focus. In conjunction with the publication of the strategy, we launched five must-win battle (MWB) development programmes, one of which is "Put the customer in the centre". The programme contains specific projects to improve the customer experience and our offering, e.g., by utilising the opportunities brought by digitalisation. In our development efforts, we are engaging in increasingly closer collaboration with our customers.

### One Fortum survey provides information about all stakeholder groups

We use the extensive One Fortum survey to annually measure customer and stakeholder satisfaction as well as changes in the company's reputation and the factors that impact it. The survey covers customers, public administrations, capital markets, non-

governmental organisations and opinion makers as well as Fortum's personnel. In Finland and Sweden, we also survey the views of the general public and media.

We conducted the survey in 2016 in Finland, Sweden, Norway, Poland, the Baltic countries, Russia and India. Over 4,000 customers and nearly 3,300 other stakeholders were interviewed for the One Fortum survey. In addition, we added a new component to our research side: in autumn we conducted a follow-up survey among customers so that we can indentify our customers' changing needs even faster. We also monitor other publically available research sources, but we define Group targets and our identified development areas on the basis of the One Fortum survey results.

### Customer satisfaction

In the annual survey conducted in spring 2016, our customer satisfaction remained very stable in virtually all customer segments. The autumn follow-up survey brought slightly more changes, as satisfaction among electricity sales customers in Sweden, particularly in the consumer side, was clearly slipping. However, at the same time, we succeeded in increasing the satisfaction among district heat business customers in several countries – and in Finland and Lithuania we achieved our best-ever result. Our customer satisfaction is at a good level in most countries and customer segments.

Our Group-level target for all business areas is to achieve a customer satisfaction rating of "good", i.e. 70–74, in the One

Fortum survey. Customer satisfaction in 2016 was at a good level in all business areas, except electricity sales to business customers. The results of the One Fortum survey clearly indicate that these days customers are looking for advice and additional services related to their energy use.

### Other public customer satisfaction results

The international and independent EPSI Rating annually surveys the level of satisfaction of electricity retail company customers in Finland, Sweden and Norway. Our customer satisfaction dropped in all three countries, particularly in Sweden.

In 2016 a customer satisfaction survey using the same format was conducted for the first time in Ekokem in all operating countries. Ekokem's overall rating in the survey was 4.1 on a scale of one to five; this result is considered as good.

### Customer satisfaction <sup>1)</sup> in 2014–2016 (GRI G4-PR5)

	2016	2015	2014
Finland	73	75	74
Sweden	53	64	63
Norway	73	76	70

1) EPSI research method in Finland and Norway; Svenskt Kvalitetsindex in Sweden

Economic  
impactsCustomer satisfaction  
and reputationSupply chain  
management**Reputation**

Our reputation is strongest among public administration, opinion makers and nongovernmental organisations. Among the latter group, our reputation index grew significantly compared to the previous year. The biggest drop occurred in the capital markets stakeholder group, where our reputation index fell to the same level as the rating given by media. Our reputation continues to be weakest among the general public. Based on the survey results, we should continue our efforts to improve social responsibility and customer centricity.

The Group-level target for our reputation in 2016 was a rating of 72.0 in the One Fortum survey, measured as the average rating given by public administration, opinion makers, nongovernmental organisations, and personnel. In 2016, we achieved a rating of 72.5 among these stakeholder groups. The target set for 2017 (70.7) includes the above-mentioned stakeholder groups as well as the opinions of representatives of media, capital markets and the general public. The reference value is the reputation index (69.7) given by these stakeholder groups for 2016. Rankings given by customers are not included in the reputation index calculation, because we treat customer satisfaction as a separate entity.

**Brand**

In addition to our reputation, we also monitor brand development, i.e. what impression the general public has about our brand. The survey includes the measurement of e.g., recognition, preference and brand attributes. Fortum is very well recognised in Finland, but less so in our other operating countries; we are working to boost our recognition. At the same time, our aim is to change our brand image and to enhance our attractiveness among various stakeholder groups.

## ► Stakeholders



## Supply chain management

Fortum is a significant purchaser of goods and services. We actively strive to reduce the environmental impacts caused by our operations and to improve economic and social wellbeing. We also manage risks related to our supply chain. The aim is that open and efficient collaboration creates value for both parties.

### Fuel purchases and investments in a significant role

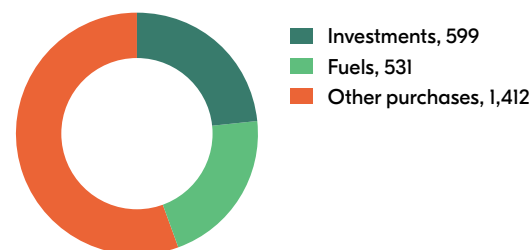
Fortum's purchasing volume in 2016 was EUR 2.5 (2015: 2.2) billion. Fuel purchases, investments, and electricity purchased by the Electricity Sales business area from the Nordic wholesale electricity market for retail sales accounted for the majority of Fortum's purchases.

Fortum's fuel purchases in 2016 totalled EUR 531 (2015: 567) million. We purchase fuels from international and local suppliers. Our fossil fuel purchases totalled about EUR 454 (2015: 482) million, biomass fuels about EUR 39 (2015: 46) million, and nuclear fuel about EUR 38 (2015: 39) million.

Of our purchases, EUR 599 (2015: 527) million targeted various investments. The biggest investments, EUR 214 million, were made in Russia. A large share of the investments are contracted out in full with materials, installation and other service as well as contractor work included in the total purchase.

The rest of our purchases, EUR 1.4 (2015: 1.1) billion, consist of other goods and services. The figure includes electricity purchased by the Electricity Sales business area from the Nordic wholesale electricity market for retail sales. The other goods and services purchases were related to operation and maintenance as well as to other functions, such as IT solutions, marketing and travel.

Purchases, EUR million



### Half of purchases from Europe

About half, i.e. 52%, of the purchasing volume was purchased from suppliers operating in Europe, mostly in Finland, Sweden and Poland. This does not include electricity purchases from the Nordic wholesale market. 46% of Fortum's purchases were from risk countries. The majority of these purchases were from Russia.

Violations related to work conditions and human rights are more likely in risk countries than in non-risk countries. Fortum's risk-country classification is based on the ILO's Decent Work Agenda, the UN's Human Development index and Transparency International's Corruption Perceptions index.

In 2016 we had about 15,000 (2015: 9,700) suppliers of goods and services. The increase in the number of suppliers was impacted by Fortum's acquisition of Ekokem and DUON. About 1,600 of the suppliers were in risk countries. Excluding the Russia Division's local suppliers, there were about 270 suppliers in risk countries.

Purchases <sup>1)</sup> excluding investments in 2014–2016

EUR million	2016	2015	2014
Nordic countries	1,106	935	1,017
Russia	505	546	670
Poland	279	138	141
Estonia	26	26	29
Other countries	27	32	123
<b>Total</b>	<b>1,943</b>	<b>1,677</b>	<b>1,980</b>

1) Includes purchases of fuel, power and other materials and services.

### Sustainable fuel purchasing

The most significant environmental impacts of our supply chain are related mainly to fuels, particularly to coal and biomasses. There are significant environmental aspects associated with open-pit coal mining, including natural resource efficiency, emissions to air, water and soil, and impacts on biodiversity. Significant occupational health and safety risks can be related to working in underground mines. The sustainability aspects of biomass sourcing are related primarily to biodiversity, but risks particularly outside the EU can also include, for instance, illegal logging or human rights violations.

In fuel purchasing, special attention is paid to the origin of the fuel and to responsible production. In 2016 we had 170 suppliers in our fuel supply chain, 6% of them operated in risk countries.

Economic  
impactsCustomer satisfaction  
and reputationSupply chain  
managementOrigin of fuels used at Fortum in 2016 <sup>1)</sup>

Fuel	Country of origin
Biomass	Finland, Russia, the Baltic countries, Poland
Coal	Russia, Kazakhstan, Poland
Natural gas	Russia, Poland
Uranium	Russia
Oil	Russia
Peat	Finland, Estonia

1) The biggest countries of origin in 2016

## Natural gas

The natural gas used in Russia, the Baltic countries and Finland originated from several suppliers in Russia. The natural gas used in Poland was purchased mainly from Poland.

## Coal

The coal used in Finland originated from Russia. The coal used in Poland originated mainly from Poland. The power plants in Russia used coal originating from Russia and Kazakhstan.

In Finland, we have a legal obligation to have an amount of fuels in reserve equivalent to three months of average electricity production. There are no similar legal obligations in other countries, but we do maintain sufficient reserves for uninterrupted energy production in all countries where we operate.

Fortum is a member of the Bettercoal initiative, and uses the Bettercoal Code and tools in assessing the sustainability of the coal supply chain.

## Biomass

The biomass we used consisted mainly of forest residue chips, chips from roundwood and industrial wood residues that originated from Finland, Russia, the Baltic countries and Poland. About 60% of the forest biomass used by Fortum in 2016 originated from certified, sustainably managed forests or from the sphere of the FSC Controlled Wood system. The share was over 80% in Finland.

Our goal in 2016 was to define minimum requirements related to legality and traceability for wood-based biomass and to set a target for increasing the share of certified forest biomass. As the work advanced, we decided to combine these two goals, and in 2017 we will examine the opportunity to apply for Chain of Custody certification for the Fortum's wood-based biomass purchases.

The bio-oil plant integrated with Fortum's Joensuu power plant has a sustainability system approved by The Finnish Energy Authority. The system is used to prove compliance with nationally legislated sustainability criteria for bio-oil.

## Uranium

The fuel assemblies used at the Loviisa power plant in Finland are completely of Russian origin. The fuel supplier acquires the uranium used in the fuel assemblies from Russian mines in accordance with Fortum's agreement. In 2016, the uranium originated from the Krasnokamensk, Khiagda and Dalur mines.

Both ARMZ Uranium Holding Co., a uranium producer, and TVEL, which is responsible for refining and manufacturing uranium, have environmental and occupational safety systems in place in all their plants. All three uranium mines have ISO 14001 environmental certification. The Khiagda mine has also an OHSAS 18001 certified occupational health and safety management system. The zirconium material manufacturing plant and the plant responsible for manufacturing uranium oxide pellets and fuel assemblies have ISO 14001 environmental management system certification and OHSAS 18001 occupational health and safety management system certifications.

We regularly assess the quality, environmental, and occupational health and safety management systems of our nuclear fuel suppliers and the manufacturing of nuclear fuel assemblies. In summer 2016 Fortum's representatives assessed the operations of Fortum's Russian fuel supplier's uranium enrichment plant. The plant was in good condition technically, and its quality, environmental, occupational health and safety management systems were certified.

## ► Fuel consumption 2016

## Sustainable supply chain

We expect our business partners to act responsibly and to comply with the Fortum Code of Conduct and the Supplier Code of Conduct. Fortum's key tools in supply chain management are country and counterparty risk assessments, pre-selection of suppliers and supplier audits.

## Codes of conduct cover basic requirements

The Fortum Code of Conduct forms the foundation for ethical business conduct and defines how we treat others, engage in business, and safeguard our corporate assets.

The Supplier Code of Conduct includes the sustainability requirements for suppliers of services and goods. The Supplier Code of Conduct is based on the principles of the United Nations Global Compact initiative and is divided into four sections: business practices, human rights, labour standards, and the environment. The country and counterparty risk assessment follows the same basic structure with regards to sustainability, and addresses issues like the implementation of the guiding principles of human rights.

The Supplier Code of Conduct is used in all our countries of operation and is included in all purchase agreements exceeding EUR 50,000. The Supplier Code of Conduct was updated at the end of 2014; by publication date of this report, the training related to the updated Supplier Code of Conduct had been held in all our operating countries, except Norway and Russia.



Economic impacts

Customer satisfaction and reputation

Supply chain management

Pre-selection of suppliers

We assess the level of operations of our business partners through pre-selection and supplier audits. The pre-selection process was renewed during the spring 2016. The related training has been arranged in all our operating countries, except Poland and Russia. In Poland the training will be held in spring 2017. The pre-selection process will be taken into use in Ekokem’s procurements during autumn 2017.

The pre-selection is made whenever the purchase volume exceeds EUR 50,000. During the first phase of the pre-selection, the credit check is made, and the supplier is sent a short written questionnaire. The questionnaire surveys the supplier’s possible operations in risk countries, certified management systems, and the occupational safety level of the contractors. We pay special attention also to anti-corruption practices.

If potential risks in the supplier’s operations are identified through the questionnaire, a more extensive self-assessment questionnaire may be sent or a supplier audit is conducted. The extensive self-assessment questionnaire is always sent to fuel suppliers and the suppliers of Fortum India.

The Russia Division uses its own supplier pre-selection process. Pre-selection is done in accordance with Russian procurement law, and bidding is open to all companies. In the Russian operations, we set supplier requirements for business principles and ethics.

Supplier audits support assessments

In supplier audits, we assess the supplier’s compliance with the requirements in Fortum’s Supplier Code of Conduct. Audits are always done on-site, and they include production inspections,

employee interviews, and reviews of documents. If non-compliances are found, the supplier makes a plan for corrective actions and we monitor the implementation of them.

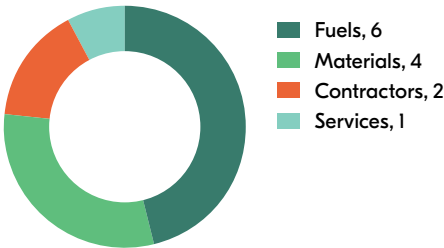
In 2016 we signed an agreement for an external service provider to conduct supplier audits; the first audit performed by an external actor was carried out in December. By collaborating with an international auditing company, we aim to utilise the expertise of the local auditors and, if necessary, increase the number of audits. Fortum’s personnel will also continue to conduct supplier audits, especially in Fortum’s own operating countries.

During the year we audited a total of 13 (2015: 9) suppliers in China, India, Russia, Poland, Latvia, Lithuania and Finland. Our goal in 2017 is to audit 20 suppliers.

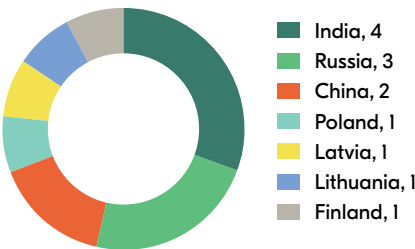
In 2016, most of the non-compliances identified in the audits were related to occupational safety, overtime hours, remuneration, and management of the suppliers’ own subcontractors. The audits conducted did not reveal non-compliances related to freedom of association, discrimination, or child or forced labour, but we issued a recommendation to a Chinese supplier to strengthen its practices to prevent the potential use of child labour and to ensure the non-discrimination of employees in the recruiting process. Recommendations given in environmental issues are related to the establishment of environmental systems and the defining of environmental targets.

Fortum uses the Bettercoal Code and tools in assessing the sustainability of the coal supply chain. Bettercoal audits are always conducted by a third, accredited party. In 2016, one of Fortum’s Polish coal supplier was audited. One of Fortum’s Russian coal suppliers was audited in 2015.

Suppliers audited in 2016 by supplier type



Suppliers audited in 2016 by country



## Environmental responsibility



Fortum's aim is to provide our customers with environmentally benign products and services. We strive to continuously reduce the environmental impacts of our operations by using best available practices and technologies. We emphasise a circular economy, resource and energy efficiency, the use of waste and biomass, and climate change mitigation in environmental responsibility.

Our company's know-how in carbon dioxide-free hydro and nuclear power production and in energy-efficient combined heat and power production, investments in solar and wind power, as well as solutions for sustainable cities play a key role in environmental responsibility.

### Environmental impacts

Some of the environmental impacts of energy production are global or wide-reaching, some are regional or local. In terms of Fortum's operations, the key environmental aspects include:

- Climate change
- Use of renewable energy sources
- Circular economy
- Flue-gas emissions
- Hydropower's environmental impacts and biodiversity
- Fuel procurement

### Climate change mitigation

We can reduce our greenhouse gas emissions by increasing carbon dioxide-free energy production and the use of renewable energy sources, and improving energy efficiency of production. 62% of the total electricity we produced in 2016 was carbon dioxide-free. We made several investment decisions that will significantly grow our wind and solar power production in the years ahead.

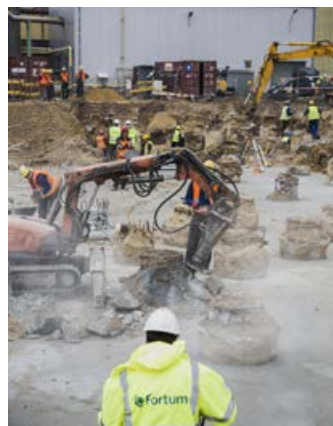
### Circular economy boosts resource efficiency

We recycle significant amounts of waste and energy production by-products generated in our operations. Additionally, our circular economy services separate from municipal waste streams substances that can be utilised as materials and for energy production.

The continuous improvement of resource and energy efficiency is important in terms of the sufficiency of natural resources and climate change mitigation. In improving the energy efficiency of our own production, we have gained expertise that we have put to use in providing energy efficiency services to other energy companies.

### Advanced combustion technology

Fuel use generates sulphur dioxide, nitrogen oxide and particle emissions that degrade air quality and cause acidification of soil and water systems. These emissions can be effectively reduced with various flue-gas cleaning technologies. Special expertise in combustion technology is one of Fortum's strengths, and we have supplied our own power plants and many other energy companies with combustion technology solutions to reduce nitrogen oxide.



### New combined heat and power plant in Zabrze, Poland

2016 marked the beginning of an intensive construction phase for Fortum's new combined heat and power (CHP) plant in Zabrze, Poland. The plant is planned to start commercial operations by the end of 2018, providing district heating to some 70,000 households in Zabrze and Bytom. The new plant has a capacity of max 75 MW electricity and 145 MW heat and will replace two coal-fired units from the 1950s.

The plant will be primarily fuelled by refuse-derived fuel (RDF) and coal, but it can also use a mixture of fuels and, with a small additional investment, biomass. The amount of RDF can be up to 40% of the total fuel usage. The investment is expected to significantly improve the efficiency of operations and to reduce carbon dioxide and other emissions, such as nitrogen and sulphur oxide emissions. The new power plant complies with high environmental standards and with principles of best available techniques.

New technical solutions significantly reduce the workers' exposure to harmful conditions and decrease the probability of accidents at work for own personnel and contractors. More than 300 contractors' employees work at the construction site every day. About 2,000 workers have received safety training. Thanks to the high safety standards and excellent cooperation between Fortum and the contractors, there has been only one minor accident over the course of 420,000 working hours.

## Environmental key figures

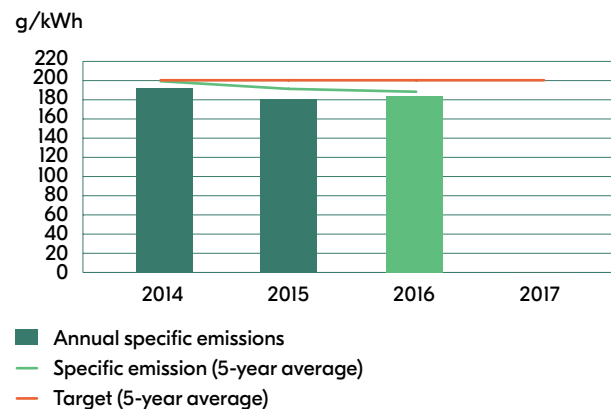
The table and graphs present our key targets and figures for environmental responsibility.

## Key figures for environmental responsibility

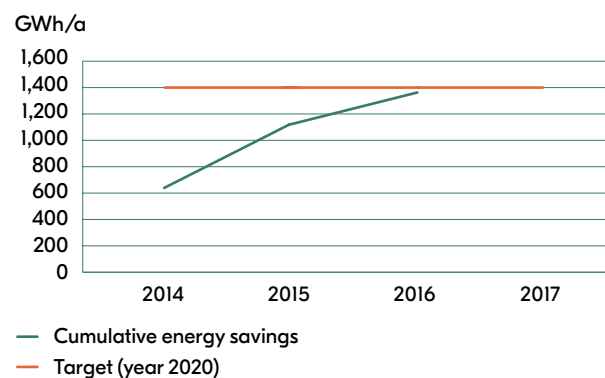
	2016	2015	2014
Carbon dioxide emissions (Scope 1), million tonnes	18.6	19.2	20.3
Sulphur dioxide emissions, tonnes	22,500	19,900	20,400
Nitrogen oxide emissions, tonnes	26,000	26,800	28,700
Particle emissions, tonnes	16,800	17,800	21,300
Specific CO <sub>2</sub> emissions of power generation, g/kWh	173	166	177
Specific CO <sub>2</sub> emissions of power generation in the EU, g/kWh	28	21	39
Specific CO <sub>2</sub> emissions of total energy production, g/kWh	184	181	189
5-year average, g/kWh	188	191	198
Share of CO <sub>2</sub> -free energy in power generation, %	62	64	64
Share of renewable energy in power generation, %	30	34	32
Share of renewable energy in heat production, %	7	8	6
Energy efficiency improvement, GWh/a	245	479*	559*
Utilisation of gypsum originated from energy production, %	100	100	100
Utilisation of ash originated from energy production, %	37	33	34
Waste reused as material, t	66,000		
Water withdrawal, million m <sup>3</sup>	2,322	2,138	2,186
of which cooling water, million m <sup>3</sup>	2,228	2,060	2,094
Major EHS incidents, pcs	22	18	27
of which environmental permit violations, pcs	11	14	15
ISO14001-certified operations in power and heat production, % of sales	99.9	99.9	99.9

\* Figures revised for reporting in 2015.

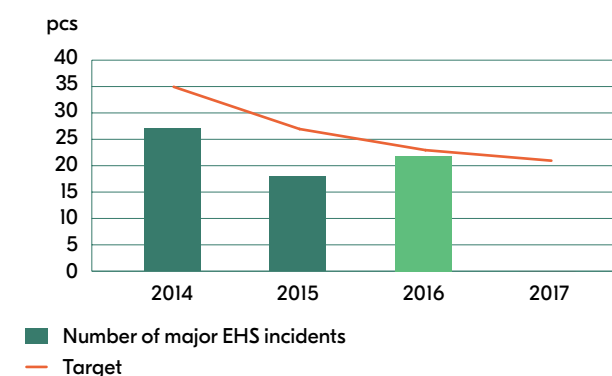
## Specific carbon dioxide emissions of Fortum's total energy production in 2014–2016



## Annual energy savings achieved in 2014–2016



## Number of major EHS incidents in 2014–2016





## Sustainable energy production

Our energy production is based primarily on carbon dioxide-free hydro and nuclear power and on energy-efficient combined heat and power production. In line with our strategy, we are targeting a gigawatt-scale solar and wind portfolio.

Fortum's power generation in 2016 was 73.1 (2015: 75.9) TWh and heat production 27.8 (2015: 32.2) TWh. 62% (2015: 64%) of our power generation was carbon dioxide-free and 30% (2015: 34%) was produced from renewable energy sources. About 7% (2015: 8%) of our heat production was produced from renewable, carbon-free energy sources.

Power generation and heat production by energy source are presented in the accompanying tables. The tables have been consolidated in accordance with the boundaries applied in financial reporting. The figures for power generation include also production shares in the hydro, wind and nuclear power plants of associated companies.

### New, energy-efficient production capacity

In Russia, the second new CHP unit at the Chelyabinsk GRES power plant was completed in March 2016. Fuelled by natural gas,

its electricity production capacity is 248 MW and heat production capacity 174 MW. The first power plant unit of the same size was completed in late 2015.

In Russia, the modernisations of the Nyagan GRES power plant's second unit increased production capacity by about 30 MW in autumn 2016. Similar modernisations of the first unit were completed in autumn 2015.

Construction of the new multi-fuel CHP plant in Zabrze, Poland continued, and the plant is scheduled for completion in 2018. In Russia and Poland, investments will improve the efficiency of electricity and heat production and reduce carbon dioxide and other emissions into the environment with relation to produced energy.

Refurbishments of hydropower plants in Sweden and Finland introduced 9.5 MW of new, renewable electricity production capacity. Two high-pressure turbines at the Loviisa nuclear power plant were replaced during the 2016 annual outage and, together with smaller improvements made, increased the electricity capacity by 12 MW.

The 13-MW district cooling project was started in Tartu, Estonia.

### Power generation by energy source in 2014–2016 (GRI G4-EN3)

TWh	2016	2015	2014
Hydropower	20.7	25.0	22.3
Nuclear power	24.1	22.7	23.8
Natural gas	24.3	24.1	22.5
Coal	2.8	2.9	3.6
Biomass fuels	0.8	0.8	0.9
Waste-derived fuel	0.2	0.1	0.0
Other <sup>1)</sup>	0.2	0.3	0.3
<b>Total</b>	<b>73.1</b>	<b>75.9</b>	<b>73.4</b>

1) Wind, solar, peat, other

### Heat production by energy source in 2014–2016 (GRI G4-EN3)

TWh	2016	2015	2014
Natural gas	19.7	24.2	26.7
Coal	4.7	5.0	5.1
Biomass fuels	1.9	2.0	2.0
Waste-derived fuel	0.8	0.4	0.3
Heat pumps, electricity	0.3	0.3	0.1
Peat	0.4	0.3	0.3
Fuel oil	0.0	0.1	0.1
<b>Total</b>	<b>27.8</b>	<b>32.2</b>	<b>34.6</b>



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

### Energy production from waste

Fortum acquired the Nordic circular economy company Ekokem Corporation in August 2016. The circular economy business is specialised in waste and material treatment, recycling and combustion, final disposal solutions, soil remediation and environmental construction services.

Fortum's new circular economy business operates hazardous waste treatment and combustion facilities in Finland, Sweden and Denmark. The waste-to-electricity capacity in Riihimäki, Finland, is 18 MW and heat production capacity 90 MW, in Kumla, Sweden, 9 MW and 35 MW, respectively, and in Nyborg, Denmark, 16 MW and 19 MW.

### More solar energy

Fortum currently has 15 MW of solar capacity in India. Two solar energy projects were launched in India in 2016: the 70-MW Bhadla solar power plant in Rajasthan and the 100-MW Pavagada solar power plant in Karnataka. The projects are expected to be completed in 2017. In addition to the large-scale solar energy plants in India, Fortum offers its customers solar energy kits in the Nordic countries.

### Solar power is proceeding in India

Fortum is targeting a gigawatt-scale wind and solar power portfolio. India is the first country we have decided to enter in solar power, as the country offers one of the best solar resources and sound government support for the development of the solar sector. Fortum's ongoing projects will generate about 370 GWh annually and in total will reduce carbon dioxide emissions by 350,000 tonnes.

The 70-MW project in Bhadla, Rajasthan, is being executed by Tata Power Solar, which was selected following Fortum's supplier pre-selection process. Both a desk review of Tata's practises as well as an audit of its ongoing construction site were carried out to see how Tata would comply with Fortum's requirements. After the work was awarded, both Tata Power Solar's and Fortum's top management participated in person at the project's kick-off meeting in India to emphasise the importance of safety and good working conditions for Fortum.

This project has set an example for good working and living conditions in India: proper employee facilities with kitchen and hygiene stations are provided to the construction employees as well as drinking water and shelters from the sun and heat during employee breaks. The site's EHS procedures are very robust with good access control and training, visual materials and safety talks, as well as supervision and observations with safety walks.

### More wind power

Fortum invested actively in wind power in 2016. At the Blaiken wind farm, 22.5 MW of capacity was commissioned, and Fortum's share of ownership was 3.4 MW.

#### ► Energy production (on our website)

### Decided investments in wind power

Wind farm	Country	Capacity, MW	Share of ownership, %	Commissioned
Blaiken	Sweden	247.5	15	2012-2016
Solberg	Sweden	75	50	2018 expected
Nygårdsfjellet	Norway	32	100	2006, 2011
Ånstadblåheia	Norway	ca. 50	100	2018 expected
Sørfjord	Norway	ca. 90	100	2019 expected
Ulyanovsk	Russia	35	100	2017 expected



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Climate change mitigation

Our vision – **For a cleaner world** – defines our ambition to move towards a low-emission energy system and optimal resource efficiency. Our main tools in climate change mitigation are increasing renewable energy production, improving energy efficiency and providing smart energy solutions for our customers.

### Climate change is a threat and an opportunity

We believe that our know-how in carbon dioxide-free hydro, nuclear, wind and solar energy, and in energy-efficient CHP production will prove to be a competitive advantage for the company. We expect the concern about climate change to increase the demand for low-carbon and energy-efficient energy products and solutions. Our developing circular economy services also meet this demand, as the use of non-recyclable waste in energy production replaces fossil fuel and reduces the formation of greenhouse gases at landfills.

Our operations are exposed to physical risks caused by climate change, including changes in weather patterns that could alter energy demand and, for instance, hydropower production volumes. Higher precipitation and temperatures may affect hydropower production, dam safety, and bioenergy supply and availability. In addition to climate change mitigation, we are also adapting our operations to the changing climate and taking it into consideration, for example, in production planning and in evaluating growth projects.

### Towards low-emissions production

In Europe, we produce carbon dioxide-free electricity with hydro, nuclear and wind power and at combined heat and power (CHP) plants that utilise biomass, bio liquids and waste-derived fuels. In the EU area, 96% (2015: 97%) of our electricity production was carbon-free in 2016. The rest of the electricity was produced mainly with coal. We produce solar power in India.

Our electricity production in Russia is based entirely on fossil fuels, mainly on natural gas. Our new plant units in Russia are

based on gas turbine technology, which represents the best available technology in natural gas combustion. 62% (2015: 64%) of our total electricity production was carbon dioxide-free.

The following projects, among others, directly or indirectly reducing carbon dioxide emissions were completed in 2016:

- Refurbishment of Chelyabinsk CHP-3 unit's gas turbine in Russia
  - Replacement of two high-pressure turbines at Loviisa nuclear power plant in Finland
  - Refurbishments of hydropower plants in Sweden and Finland
  - Optimisation of energy production and a new thermal energy storage at Suomenoja power plant in Finland
  - Replacement of the heavy fuel oil with wood pellets at the Kivenlahti heat plant in Espoo, Finland
  - Implementation of new district cooling in Tartu, Estonia
- We have calculated that these projects will reduce annual carbon dioxide emissions by about 48,000 tonnes.

► **Sustainable energy production** section describes the power plants under construction and the decided new power plant projects.

### Climate-benign products and services

We offer our customers a range of energy products and services to help them improve their energy efficiency and reduce their carbon footprint:

- CO<sub>2</sub>-free electricity products
- Real-time monitoring and optimisation of electricity consumption
- Solar panel kits
- Electric vehicle charging systems

We are expanding our offering also by investing in startups that are developing new technologies. For example, in 2016 we invested in Chempolis, a company developing biorefining technology in Finland, and Exeger, a company developing innovative solar cell solutions in Sweden.

► **Fortum HorsePower** is a service concept in which Fortum delivers bedding to horse stables and picks up the bedding-manure

mixture for combustion. In 2016, bedding-manure mixture was collected from about 80 horse stables in southern Finland. Fortum combusts the bedding-manure mixture at the Järvenpää CHP plant, and it was delivered also to other energy companies.

The Joensuu bio-oil plant produced bio-oil, of which majority was used in a heat plant at Joensuu power plant area and at the Verno heat plant in Espoo, Finland.

### Emissions trading

Over 88% of carbon dioxide emissions from our energy production in Finland, Poland and the Baltic countries is within the sphere of the EU's emissions trading scheme. We had a total of 45 (2015: 48) plants in four member countries within the EU's emissions trading scheme in 2016. Fortum was granted free emission allowances corresponding to 1.0 (2015: 1.3) million tonnes in 2016. Our carbon dioxide emissions within the EU's emissions trading scheme were 2.7 (2015: 2.1) million tonnes. So, in terms of the emissions allowances, we had a deficit and had to purchase the shortfall of emissions allowances from the markets.

Fortum's view is that emissions trading is the most cost-efficient way to achieve emissions targets. In our view, the Emissions Trading Scheme (ETS) as a mechanism has functioned as planned, and it should be the key means for realising the EU climate targets also in the future. A revision of the EU's emissions trading directive for 2021-2030 was reviewed by the Parliament and the Commission in 2016, and the directive is expected to be approved during 2017.

We also want to promote the establishment of a global carbon pricing and carbon market. Fortum has signed the Carbon Price Communiqué, an international business statement for setting a price on carbon emissions. We also participate in several international business initiatives promoting the role of business in climate change mitigation. These include the UN Global Compact's Caring for Climate initiative and the World Bank's Carbon Pricing Leadership Coalition initiative. In Finland, Fortum is a member of the Climate Leadership Council.

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Carbon funds

Fortum is a participant in the international Prototype Carbon Fund (PCF) climate fund. In 2016, we received a total of about 10,000 CER emission reduction units from this fund. So far, we have received a total of 1,250,000 emission reduction units, and we estimate that we will still receive about 145,000 units during the PCF's operating period.

### ► Fortum's position on the development of the EU climate policy

## Greenhouse gas emissions

Our greenhouse gas emissions in 2016 totalled 23.6 (2015: 24.1) million tonnes. Scope 1 emissions were 18.8 million tonnes, Scope 2 emissions 0.1 million tonnes, and Scope 3 emissions 4.7 million tonnes.

Greenhouse gas emissions are reported on a pro forma basis and the figures of the comparison years have not been adjusted because of partially insufficient data. We have estimated that, taking the divestment of the Tobolsk power plant into consideration, greenhouse gas emissions from continuing operations increased in 2016 by about 2.5 million tonnes as a result of the commissioning of the Chelyabinsk GRES power plant's new units, the Meri-Pori power plant's increased condensation power production, and the acquisition of Ekokem.

## Direct greenhouse gas emissions – Scope 1

The majority of our greenhouse gas emissions was generated from the use of fossil fuels in electricity and heat production. A small amount of emissions is generated from the use of company vehicles and leaks related to the natural gas distribution.

Our direct greenhouse emissions were 18.8 (2015: 19.3) million CO<sub>2</sub>-equivalent tonnes. The share of carbon dioxide from our direct greenhouse gas emissions was 99%. The share of direct greenhouse gas emissions from our total greenhouse gas emissions was 79%.

Of the direct carbon dioxide emissions, 83% (2015: 89%) originated from the Russian operations and 10% (2015: 7%) from Finland. Fortum's direct biogenic carbon dioxide emissions were 1.3 (2015: 1.3) million tonnes.

The calculation of greenhouse gas emissions covers carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), fluorinated hydrocarbons (HFCs) and SF<sub>6</sub>. Carbon dioxide emissions as well as methane and nitrous oxide emissions have been calculated on the basis of plant-specific fuel data. The amounts of HFC compounds and SF<sub>6</sub> are reported on the basis of the amounts of gas added to the equipment. Specific emission factors of gases are based on IPCC publications.

## Indirect greenhouse gas emissions – Scope 2

Greenhouse gas emissions from the production of electricity purchased for our own use were 95,500 (2015: 85,400) tonnes of carbon dioxide-equivalent. Carbon dioxide emissions accounted for 99.5% of this. The share of Scope 2 greenhouse gas emissions of our total greenhouse gas emissions was 0.4%.

57% of Scope 2 emissions have been estimated on the basis of information received from electricity suppliers. The rest has been

estimated on the basis of country-specific breakdowns of electricity production because electricity supplier-specific greenhouse gas emissions data was not received from Russia in particular.

## Other indirect greenhouse gas emissions – Scope 3

The majority of our Scope 3 emissions are caused by the production and transportation of fuels, the purchases of goods and services, and investments. The transportation of customer waste also creates greenhouse gas emissions. Other activities (e.g. employee travel and waste management) account for less than 1%.

Our Scope 3 greenhouse gas emissions in 2016 were an estimated 4.7 (2015: 4.7) million tonnes. The share of Scope 3 emissions was 20.1% of our total greenhouse gas emissions. We estimate that all our Scope 3 greenhouse gases come from fossil energy sources.

We report Scope 3 greenhouse gas emissions in accordance with the requirements of the Corporate Value Chain (Scope 3) Accounting and Reporting standard. The volumes describing

## Direct greenhouse gas emissions in 2014–2016 (GRI G4-EN15)

Mt CO <sub>2</sub> -eq	2016	2015	2014
CO <sub>2</sub>	18.6	19.2	20.3
CH <sub>4</sub>	0.01	0.01	0.01
N <sub>2</sub> O	0.17	0.14	0.15
HFCs	0.00	0.00	0.00
<b>Total</b>	<b>18.8</b>	<b>19.3</b>	<b>20.5</b>

## Direct carbon dioxide emissions by country in 2014–2016 (GRI G4-EN15)

million t	2016	2015	2014
Finland	2.0	1.3	2.2
Russia	15.5	17.0	16.7
Poland	0.8	0.8	0.8
Other countries	0.3	0.1	0.6
<b>Total</b>	<b>18.6</b>	<b>19.2</b>	<b>20.3</b>

## Indirect greenhouse gas emissions (Scope 2) in 2014–2016 (GRI G4-EN16)

t CO <sub>2</sub> -eq	2016	2015	2014
CO <sub>2</sub>	95,000	85,003	135,505
CH <sub>4</sub>	76	52	57
N <sub>2</sub> O	375	344	389
<b>Total</b>	<b>95,500</b>	<b>85,400</b>	<b>136,000</b>

## Indirect greenhouse gas emissions (Scope 3) in 2014–2016 (GRI G4-EN17)

t CO <sub>2</sub> -eq	2016	2015	2014
Fuel procurement	4,347,900	4,557,000	4,800,000
Purchased goods and services	233,700	83,000	112,000
Capital goods	142,700	50,000	51,000
Other activities	17,500	18,000	21,000
<b>Total</b>	<b>4,741,800</b>	<b>4,708,000</b>	<b>4,984,000</b>



## Sustainable energy production

## Climate change mitigation

## Improving energy efficiency

## Circular economy

## Biodiversity

## Emissions into air

## Water use

## Waste and by-products

## Environmental non-compliances and incidents

the scope of the various activities have been obtained from our monitoring and reporting system.

About 20% (2015: 37%) of the purchases were excluded from the purchasing categories defined by Fortum's Procurement function, due to insufficient reporting. The emissions for these are estimated with the average emissions factor of the specified purchasing categories. The specific emission factors used in calculating the greenhouse gas emissions are based on different literature sources.

### Specific carbon dioxide emissions

Our specific carbon dioxide emissions (Scope 1) from total energy production were 184 (2015: 181) g/kWh. The five-year average, including 2016, was 188 (2015: 191) g/kWh, which is below the target of 200 g/kWh.

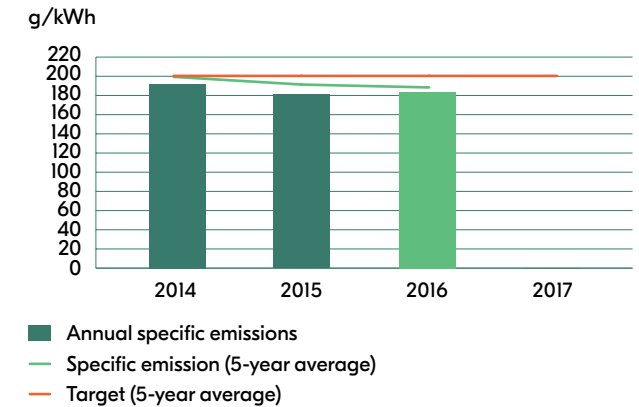
Our specific carbon dioxide emissions (Scope 1) from power production in the EU were 28 (2015: 21) g/kWh. The specific carbon dioxide emissions from our power production, measured as gCO<sub>2</sub>/kWh, are low compared to other European power producers. Our specific emissions in 2015 were about 7% of the 311 g/kWh average specific emissions of major European utilities.

Including our Russian power production, our specific emissions in 2016 were 173 (2015: 166) g/kWh. Our specific emissions in 2015 were about 54% of the average level of European utilities. European reference data for 2016 is not yet available.

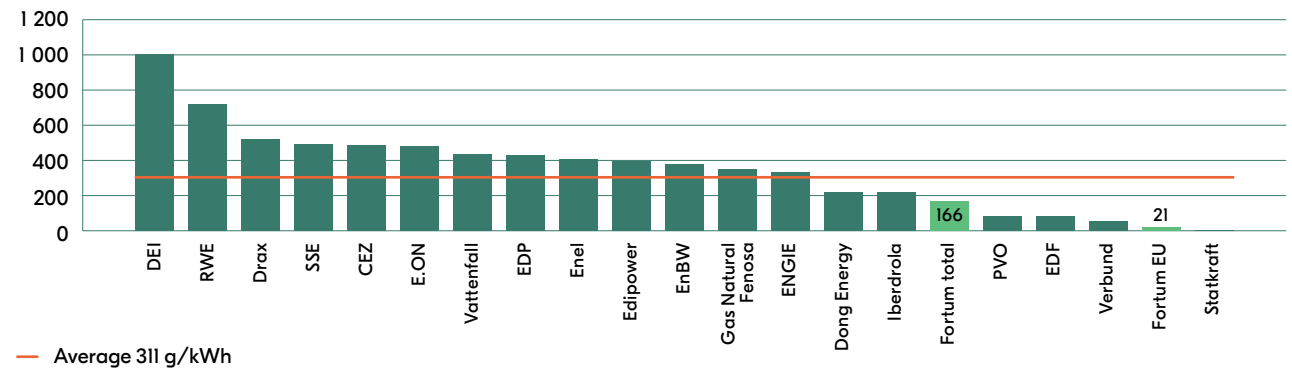
The boundary for electricity production's specific carbon dioxide emissions differs from other environmental reporting. Fortum's production shares in associated companies are also included. This production is based on hydro, wind and nuclear power and doesn't cause direct carbon dioxide emissions.

In the calculation of electricity production's specific emissions, CHP plant emissions have been allocated for electricity and heat using the efficiency method presented in the Greenhouse Gas Protocol guidelines, with heat production efficiency of 90% and electricity production efficiency of 40%.

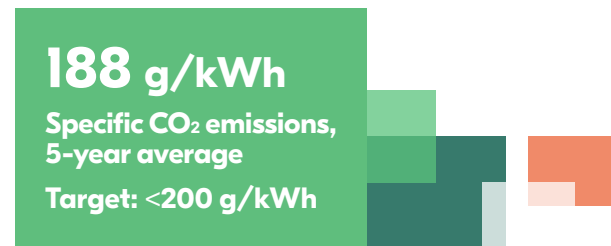
### Specific carbon dioxide emissions of Fortum's total energy production in 2014–2016 (GRI G4-EN18)



### Specific CO<sub>2</sub> emissions of major utilities in Europe, g CO<sub>2</sub>/kWh electricity, 2015



Note: All figures, except Fortum total, include only European generation. In 2016 most of E.ON's generation was transferred to Uniper. Fortum's specific emissions of the power generation in 2016 in the EU were 28 g/kWh and in total 173 g/kWh. Source: PWC, November 2016, Climate Change and Electricity, Fortum



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

# Improving energy efficiency

Energy efficiency is a key factor in energy production – from both an economic and environmental perspective. Improving energy efficiency at power plants refers to measures we implement to increase the efficiency of production processes or reduce the energy consumption of plants or equipment. This enables us to produce more electricity or heat for our customers without increasing fuel consumption.

The energy efficiency of power plants can be increased through investments and technical improvements, preventive maintenance, and by training personnel in the optimal operation of the plant and in monitoring the plant's operating economy. Improving power plant availability also increases energy efficiency, as unplanned plant start-ups are reduced.

## Energy-efficiency investments

In fuel-based energy production, we aim to utilise the fuel's energy as efficiently as possible. Our most important means to improve the energy efficiency of fuel use is to increase combined heat and power (CHP) production. In CHP production, up to 90% of the energy content of the fuels can be utilised. Separate electricity production's efficiency is about 60% at best.

In March 2016, we commissioned a second natural gas-powered CHP unit at our Chelyabinsk GRES power plant in Russia.

Also several new projects have been implemented at the Loviisa nuclear power plant after 2012 to increase the efficiency of the plant units. The most recent and most significant was the replacement of two high-pressure turbines. With these replacements and other smaller improvements, the Loviisa power plant can produce about 98 GWh more electrical energy in an average year.

In addition, other projects to improve energy efficiency were completed in 2016, among them:

- Refurbishment of Chelyabinsk CHP-3 unit's gas turbine in Russia, 50 GWh
- Refurbishments of hydropower plants in Sweden and Finland, 30 GWh
- Optimisation of energy production and a new thermal energy storage at Suomenoja power plant in Finland, 40 GWh

The energy-efficiency improvement projects are calculated to yield an annual energy savings of about 245 GWh.

## Target within reach

Fortum is participating in the European electricity sector's **Energy Wisdom** programme. We report to the programme on significant projects that improve energy efficiency and reduce greenhouse gases. Fortum's target is to achieve an annual energy savings of more than 1,400 GWh by 2020 compared to 2012. By the end of 2016, about 1,372 GWh or 98% of the target set for 2020, had been reached.

In 2015, we reported 1,240 GWh for achieved energy savings. The corrected energy savings in 2015 was 1,127 GWh, because some of the energy efficiency projects planned for years 2014 and 2015 in Russia were postponed for implementation at a later date.

## Energy-efficiency services for homes

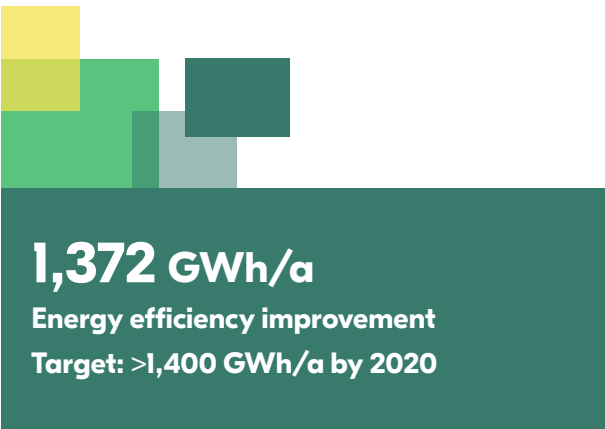
Fortum has introduced energy-efficiency services for private customers in Finland and Sweden. Fortum's customers can, for instance, control and optimise the heating of their homes based on electricity price and demand or they can monitor energy consumption with an in-home display.

## Energy efficiency services for businesses

Fortum's operation and maintenance services have been improving the energy efficiency of our customers' power plants already for decades. Our energy-efficiency services and expertise also bring our customers financial benefits and save the environment. We made advancements to the service in 2016, such as instead of an individual power plant, we can examine the development of a broader area, such as power and heat plants of a city or a company, and the profitability and environmental impacts of investments related to them.

► *Energy-efficiency services for homes*

► *Energy-efficiency services for businesses*



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Energy intensity

In 2016, our fuel consumption in electricity and heat production was 111 (2015: 116) TWh, or 398 (2015: 417) PJ. Additionally, we acquired 460 (2015: 398) GWh of electricity from external electricity suppliers. With these energy resources, we produced 35,970 GWh of electricity, 27,185 GWh of heat, 20 GWh of cooling, and 5 GWh of bio-oil. The total energy consumption, calculated as the difference between the procured energy resources and net production, was 47,900 GWh, or 172 (2015: 178) PJ.

In combustion-based energy production, we aim to utilise the fuel as efficiently as possible. In 2016, our average fuel use efficiency was 64% (2015: 64%). The efficiency has been calculated by dividing the electricity and heat energy produced with the fuel by the energy content of the fuel used in the production.

The energy intensity of our own production was 1.40 (2015: 1.33). The intensity figure has been calculated by dividing the amount of used energy resources by the total net production of energy products, including hydropower, wind power and solar power.

## Fuel consumption

The most significant fuel was natural gas, which accounted for 62% (2015: 65%) of the total fuel consumption. The next highest fuel use was uranium 23% (2015: 22%) and coal 10% (2015: 9%).

Russia's share of our total fuel use was about 66%. Russia accounted for 98% of our use of natural gas and 51% of our use of coal.

Biomass and bioliquids accounted for 2.6% (2015: 2.7%) of our total fuel consumption and waste-derived fuels accounted for 1.5% (2015: 0.6%). The share of waste-derived fuels grew due to the acquisition of Ekokem. In the implementation of our new strategy, we will maximise the added value from waste and biomass.

The energy-specific fuel consumption has been calculated based on the usage volumes and fuel-specific caloric values measured at the power plants. Uranium consumption has been calculated as the thermal heat generation in the reactors.

### ► Our fuels

## Fuel use in 2014–2016, energy (GRI G4-EN3)

petajoules	2016	2015	2014
Natural gas	247.6	272.0	276.1
Nuclear fuel	91.1	90.5	81.6
Coal	40.6	38.8	46.8
Waste-derived fuel, fossil	3.6	1.0	0.8
Peat	1.8	1.4	1.6
Other fossil	0.6	0.8	0.6
<b>Non-renewable fuels total</b>	<b>385.4</b>	<b>404.4</b>	<b>407.5</b>
Biomass fuels	10.2	11.4	12.5
Waste-derived fuel, renewable	2.5	1.7	1.5
<b>Renewable fuels total</b>	<b>12.7</b>	<b>13.1</b>	<b>14.0</b>
<b>Fuels total</b>	<b>398.1</b>	<b>417.5</b>	<b>422.0</b>

## Fuel use in 2014–2016, mass/volume (GRI G4-EN1)

	2016	2015	2014
<b>Non-renewable fuels</b>			
Natural gas, million m <sup>3</sup>	6,710	8,023	8,148
Coal, 1,000 t	2,208	2,062	2,539
Waste-derived fuel, fossil, 1,000 t	344	97	87
Peat, 1,000 t	178	135	161
Fuel oil, 1,000 t	21	20	13
Nuclear fuel, t	20	22	23
<b>Renewable fuels</b>			
Biomass fuels, 1,000 t	1,041	1,126	1,264
Waste-derived fuel, renewable, 1,000 t	225	198	177

## Fuel use by country in 2016 (GRI G4-EN1)

	Finland	Russia	Poland	Estonia	Other countries	Total
Natural gas, million m <sup>3</sup>	99	6,588	4	6	12	6,710
Coal, 1,000 t	474	1,364	370			2,208
Biomass fuels, 1,000 t	277		139	439	186	1,041
Waste-derived fuel, 1,000 t	213				356	569
Peat, 1,000 t	106			72		178
Fuel oil, 1,000 t	10	7			4	21
Nuclear fuel, t	20					20

## Circular economy

Climate change, urbanisation, population growth, and limited natural resources are examples of megatrends shaping the world. These megatrends are pushing us to maximise the efficient use of resources, such as waste and biomass. Fortum has long experience in the recycling and reuse of waste

### Received and processed waste from our customers in 2016



and by-products from power and heat production. As a part of our new strategy, we have expanded our business portfolio to include also circular economy services for our customers. For us, the circular economy means that materials are recycled as much as possible and hazardous substances are removed from circulation.

In August 2016, we acquired the Nordic circular economy company Ekokem Corporation, which provides environmental management and material efficiency services. In December 2016, we also acquired the Swedish waste management company Turebergs Recycling AB, which has long experience in the treatment and recycling of incinerated bottom ash from waste-to-energy plants.

### Waste management services

Efficient and reliable waste management is important in a society based on sustainability. Fortum’s aim is to promote the transition towards a more extensive circular economy. We offer waste management services for customers in Finland, Sweden, Denmark and Lithuania.

In 2016, we received a total of 396,300 tonnes of non-hazardous waste and 239,000 tonnes of hazardous waste from our customers. As much of the waste stream as possible is recycled, recovered or reused. Waste that is unsuitable for recycling or reuse as a material is incinerated in waste-to-energy plants.

For additional information about our energy production, see the section [Sustainable energy production](#).

### Recovery of materials

Various types of waste can be reused as raw materials. In 2016, of the waste and by-products received from our customers, we recovered as materials about 65,900 tonnes; ash accounted for 28,000 tonnes of that amount and processed new raw materials and products 17,700 tonnes. In addition, Fortum recycled about 244,800 tonnes of materials originating from its own energy production plants.

### Received and processed waste from our customers in 2016 <sup>1)</sup>

	Finland	Sweden	Denmark	Lithuania	Total
<b>Received waste and by-products (t)</b>					
Non-hazardous waste	123,200	16,100		257,000	396,300
Hazardous waste	54,700	38,400	145,900		239,000
Contaminated soil	52,800	46,500			99,400
<b>Recovery and disposal (t)</b>					
Recovery of materials	46,800	7,700	8,900	2,500	65,900
Energy recovery (amount of waste)	213,200	35,200	63,800	257,000	569,200
Final disposal	92,900	10,100	7,000	81,100	191,200

1) Ekokem operations in Finland, Sweden and Denmark are included in all figures from 1 September 2016.



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## The Circular Economy Village

In June 2016, the Circular Economy Village was inaugurated in Riihimäki, Finland. The Circular Economy Village is a refinery complex developed by Ekokem, which Fortum acquired in 2016.

In the village, municipal waste is processed through the Eco Refinery, an automated sorting plant, the Plastic Refinery, the first in Finland to produce recycled plastic, and the Bio Refinery, which produces biogas and is owned by our partner Gasum. The concept of the Circular Economy Village is unique, both nationally and internationally.

Once fully operational, the Eco Refinery of the Circular Economy Village will annually receive around 100,000 tonnes of municipal waste, from which the refinery will separate biowaste (about 30% of the waste), plastic (4%), metal (3%) and recovered fuel suitable for industrial use (50%). The remaining amount is reject, which is not suitable for recovery.

The biowaste will be turned into biogas and fertilisers, and the plastic and metal into recycled raw material for industry. The reject will be used to generate electricity and district heat in our waste-to-energy plants in Riihimäki.

The Circular Economy Village is a pioneer in future waste management. The principle is that waste should be utilized as a raw material when it is economically viable. The strict targets of the Circular Economy Package adopted by the European Commission will not be achieved without recycling solutions like these.

We are continuously developing activities that increase the proportion of waste materials kept in circulation:

- We refine new plastic out of waste plastic received from customers. In October 2016, we launched CIRCO, our recycled plastic product family.
- We pick up and process our customers' waste oils to be refined and reused as industrial lubricants
- We recycle scrap metals generated in the maintenance activities of our power plants and other facilities. We also recover and separate metals from customers' municipal waste and slag.
- We process ash, sand, sludge, dredging masses and slurries from energy production and other industries for reuse in various types of environmental construction and earthwork.



## Hazardous waste treatment

We take hazardous waste out of circulation in a sustainable manner by offering solutions to treat hazardous waste while also producing clean energy and ensuring a safe final disposal. High-temperature incineration ensures the best available solution for the destruction of unwanted substances.

We have three high-temperature incineration plants in the Nordics. These plants for hazardous waste are located in Riihimäki, Finland; Kumla, Sweden; and Nyborg, Denmark. At these facilities, we incinerated 114,200 tonnes of hazardous waste and 198,000 of non-hazardous waste in 2016, producing electricity and district heating for the surrounding areas.

## Contaminated soil

In 2016, we received about 99,400 tonnes of contaminated soil from our customers. We directed metal, rocks, concrete and wood, sieved from the soil for reuse as raw materials. Soil that is suitable for construction is used at our own construction sites and industrial waste reception centres. In addition, we treated about 161,000 tonnes of contaminated soil at customer sites.

► Sustainable energy production

► Waste and by-products (of own energy production plants)

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Biodiversity

The degradation of biodiversity is one of the biggest environmental problems globally. We need to know our impacts and dependencies on biodiversity and ecosystem services to be able to assess the related risks and opportunities.

### Our impacts on biodiversity

Fortum's impacts on biodiversity are primarily related to its hydropower production operations in Finland and Sweden. Hydropower construction and the related water regulation alter the conditions in water systems and thus impact the diversity of the aquatic habitat and, in particular, the fish population. Emissions from fossil fuel-based energy production may decrease local biodiversity, especially in Russia. In addition, our fuel procurement may have a negative impact on biodiversity. However, our production of CO<sub>2</sub>-free energy replaces fossil fuel-based energy production and thus mitigates climate change, which is globally one of the greatest threats to biodiversity.

### Fortum's biodiversity engagement

Fortum's Biodiversity guidelines set the principles for taking biodiversity into consideration and for managing the biodiversity impacts of the company's operations. Since 2014, we have participated in the activities of the Finnish Business & Society's (FiBS) Business and Biodiversity programme.

Sustainable use of biomass fuels has been actively debated in recent years. Fortum's position is that EU-wide, harmonised and binding sustainability criteria for all bioenergy is needed. The EU Commission's proposal to extend the existing sustainability criteria for bioliquids to cover also solid biomass and biogas is in line with Fortum's position. The proposal is included in the EU Commission's legislative "Smart and Clean Energy Package" published on 30 November 2016.

Fortum is a member of the Bettercoal initiative and uses the Bettercoal Code and tools in assessing the sustainability of the coal supply chain. Biodiversity aspects related to coal mining are covered in Bettercoal assessments.

We aim to minimise our negative impact on biodiversity, and we assess the impacts of our new projects. We offset and reduce the impacts of hydropower production on biodiversity by stocking and over-dam transferring fish and through voluntary environmental projects. In Sweden, we carry out biodiversity-related projects with the financing from our eco-labelled (Bra Miljöval) electricity.

### Habitat restoration and other projects

Most of our habitat restorations and other projects improving biodiversity are related to hydropower production. The listing and additional information of hydropower-related projects supporting biodiversity is available on [► our website](#).

### Restoring river stretches by tearing down dams

In Sweden, we have mapped out the old dams that have low value for hydropower production, but have environmental impacts on riverine ecosystems. The aim is to restore habitats and river continuum in places with benefits for biodiversity. In 2016, two such projects were initiated. Our application to tear down the Acksjön dam in a tributary of the River Klarälven is pending in environmental court. Our application for the Kolsjön dam removal is under preparation.

### Enhancing natural reproduction of migratory fish populations

In Finland, a migratory fish project continued in 2016 in cooperation with local stakeholders at River Oulujoki. Fortum has hydropower production on the River Oulujoki. We transported

salmon spawners to the reproduction areas at tributaries, we supported the salmon and sea trout population with releases of young fish, and we followed up the migratory fish population. We also started construction of a permanent structure for trapping fish by the Montta hydropower plant in order to transport them to the reproduction areas upstream.

### Restoring a wetland

In the River Dalälven area in Sweden, we took part in financing the restoration of a rich wetland, Ambrick, which is partly on Fortum's property. The area is 23 hectares. The area was opened up by clearing small trees and bushes, and the restoration will continue in 2017. The area hosts different kinds of endangered species of plants, like orchids, and birds, like curlew.

### Biomass fuels actions

Existing forest certification schemes will continue to play a strong role in verifying sustainability of woody biomass. We annually collect data on the volume of certified wood-based biomass fuel used in our power plants in Finland, Sweden, Poland and the Baltics. Certified wood-based biomass fuel originates from sustainably managed forests in which special attention is paid to biodiversity. In 2017, Fortum will assess the possibility to obtain a Chain of Custody certificate for its wood-based biomass fuel purchasing.

- *Environmental impacts of hydropower production*
- *Bra Miljöval eco-labelled energy projects (in Swedish)*

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Emissions into air

Fortum’s activities cause various emissions into air. Greenhouse gases that accelerate global climate change are generated primarily from the use of fossil fuels and the combustion of waste of a fossil origin. Possible gas leaks during the transport of liquid natural gas and the piping of natural gas also impact climate change.

Flue-gas emissions causing local environmental and health effects are generated from all incineration. Nitrogen oxides are generated from the nitrogen contained in the fuel and in the combustion air. Sulphur dioxide, in turn, is generated from the sulphur that is an impurity in, e.g., coal, peat and oil. Particle emissions are fine-grained ash generated primarily in the combustion of solid fuels and waste. Depending on the origin of the fuel and waste, the particles contain various heavy metals.

### World-class air pollution control

It is possible to decrease nitrogen oxide, sulphur dioxide and particle emissions through fuel selections and various flue-gas cleaning technologies. Fortum has world-class know-how in combustion technology, and we have delivered combustion technology solutions to reduce nitrogen oxide emissions to many other power utilities. During 2016 we supplied burner projects to Estonian, Swedish, Romanian and Polish customers.

Our Meri-Pori and Suomenoja power plants are equipped with a desulphurisation plant. The scrubber and bag filter that we are constructing for the new Zabrze CHP plant in Poland will reduce emissions into air.

Our plants incinerating hazardous waste are located in Riihimäki Finland, Kumla Sweden, and Nyborg Denmark, and are equipped with efficient flue-gas cleaning systems. Harmful

emissions to air are minimised with various filters and scrubbers selected on the basis of the waste to be incinerated.

### Stricter standards

The EU has set very strict limits for flue-gas emissions; meeting the requirements necessitates the use of best available technology (BAT). Our nitrogen oxide, sulphur dioxide and particle emissions have, in fact, decreased significantly in our European production over the past decades. Emissions limits became even stricter when the Industrial Emissions Directive came into force in 2016.

All Fortum power plants operate in compliance with the terms of their environmental permits, and the plants meet the new emissions requirements, for the most part. Investments in flue-gas cleaning processes and systems will be made in upcoming years at the Suomenoja power plant in Finland and the Rejtana heat plant in Poland.

At Russian power plants, emissions are limited in accordance with Russian legislation. The new legislation currently being drafted in Russia will bring stricter emissions standards in the future.

### Flue-gas emissions

Our sulphur dioxide (SO<sub>2</sub>) emissions were 22,500 (2015: 19,900) t, nitrogen oxide (NO<sub>x</sub>) emissions 26,000 (2015: 26,800) t and particle emissions 16,800 (17,800) t. 81% (2015: 77%) of sulphur dioxide, 82% (2015: 84%) of nitrogen oxide and 98% (2015: 98%) of particle emissions originated from Russian power plants. In 2016, the most significant source of particle emissions, 9,100 (2015: 12,700) t, was the Argayash power plant in Russia. Particle emissions decreased,

because three boilers at the Argayash power plant were equipped with a scrubber to reduce flue-gas emissions.

The reporting of sulphur dioxide, nitrogen oxide and particle emissions from our European power plants is based on continuous measurement. Other flue-gas emissions data is based on discontinuous measurements or are calculated using fuel consumption data and specific emission factors. Specific emission factors are based on measurements taken at regular intervals, on information from the equipment supplier, or on regulatory norms.

We are reporting heavy metals more extensively for 2016, due to the new waste incineration business. Carbon dioxide emissions are reported in the section ▶ *Greenhouse gas emissions*

### Flue-gas emissions in 2014–2016 (GRI G4-EN21)

	2016	2015	2014
SO <sub>2</sub> , t	22,500	19,900	20,400
NO <sub>x</sub> , t	26,000	26,800	28,700
Particles, t	16,800	17,800	21,300
HCl, t	1,180		
Lead, kg	4,140		
Mercury, kg	151	105	126
Cadmium, kg	116		
Dioxins, mg	504		

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

# Water use

Fortum uses large volumes of water at various types of power plants and in district heat networks. In most cases, our power plants do not consume water, but the water is discharged back to the same water system from where it was withdrawn. The properties of the water may change in the process, but the volume of the water generally remains unchanged. In some cases, water is transferred to another recipient, e.g. through evaporation into the air from cooling towers, leaks into the ground from district heat piping, or through the discharge of wastewater to a municipal sewage system.

Hydropower production is a special case of water use. Water flowing in a river is conducted through a turbine to generate electricity. No water is consumed nor are the properties of the water altered in the process. However, the water system is often regulated for hydropower production, and the regulation changes the water flow and level patterns compared to their natural state. Fortum does not report water flows in rivers as water use related to hydropower production.

## Cooling water

Condensing power production requires large volumes of cooling water. Cooling water accounts over 90% of Fortum's total water withdrawal annually.

Fortum's condensing power plants in Finland, the Loviisa nuclear power plant and the Meri-Pori power plant, are located in coastal areas and use direct seawater cooling. No water is consumed in the process and the water withdrawn is discharged back into the sea. The only change is an approximately 10 °C increase in the temperature of the cooling water.

Condensing power is occasionally produced also at our CHP plants. In most cases, the cooling water is withdrawn from a local

water system. In Russia and Poland, cooling towers are used, so some of the cooling water evaporates into the atmosphere.

## District heating network

Fortum is a major supplier of district heating in Finland, Russia, Poland and the Baltic countries. Fortum has a total of about 2,800 kilometres of district heat pipes in these countries. Water is used as the heat transfer media in the district heat networks. Some water is lost through leaks that occur in the pipes, so occasionally water must be added to the district heating network.

## Process water and other water uses

A thermal power plant needs water in the water-steam cycle when electricity is generated with a steam turbine. Because of leaks in the pipes, occasionally water must be added to the water-steam cycle. Water is also needed in some auxiliary processes, for example in flue-gas desulphurisation with wet scrubber technology, and in liquid radioactive waste handling and storage at nuclear power plants.

## Water withdrawal

The majority of Fortum's power and heat production capacity is located in Finland, Sweden, Russia and Poland. Our thermal power plants and hydropower plants are not located in a water critical area in any of our operating countries. The Baltic Sea and local fresh water systems are the most important water sources for our plants. Municipal tap water is used mainly at CHP plants in major cities. In some cases, water is acquired from a near-by industrial facility of another company.

Water is used to clean solar panels at our Indian solar power plants. Even though the water volumes are relatively small, alternative water sources and purification methods are being explored in India.

We withdrew a total of 2,322 (2015: 2,138) million m<sup>3</sup> of water in 2016. Seawater accounted for about 66% of this amount.

Of the water we withdrew, we used the majority, 2,228 (2015: 2,060) million m<sup>3</sup>, as cooling water. The Loviisa nuclear power plant withdrew from and discharged to the sea 1,339 million m<sup>3</sup> of cooling water.

## Water withdrawal in 2014–2016 (GRI G4-EN8)

million m <sup>3</sup>	2016	2015	2014
Seawater	1,533	1,487	1,573
Fresh surface water	787	643	602
Tap water	2	4	6
Other source	0.4	5	6
<b>Total</b>	<b>2,322</b>	<b>2,138</b>	<b>2,186</b>

## Water use in 2014–2016 (GRI G4-EN8)

million m <sup>3</sup>	2016	2015	2014
Cooling water	2,228	2,060	2,094
Process and auxiliary water	82	73*	77*
Make-up water for district heat networks	12	14	15
Water recycling	13	12	14

\* Figures revised for reporting in 2015.



Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents



The reported water withdrawal and water use volumes are based on measurements and on calculations of water consumption.

### Wastewater

Wastewater generated at our power plants is either treated at the power plants’ own wastewater treatment plant and discharged into a water system or it is piped to a municipal wastewater system for further processing. In Russia, the wet method is used to pump ash from power plants into ash ponds. Part of the water from the ponds is recycled back to the power plant and part is released into a water system after sedimentation.

Wastewater contains solids and nutrients, like nitrogen, phosphor, and heavy metals. Wastewater effluents can impact local water quality as well as the nutrient and oxygen balance of the water system.

Our plants generated a total of 46 (2015: 34) million m³ of wastewater, of which 97% was released into the environment after being treated and 3% was piped to municipal wastewater treatment plants.

### Wastewater emissions by recipient in 2014–2016 (GRI G4-EN22)

million m³	2016	2015	2014
Sea	22.2	9.3	9.0
Fresh water system	22.8	22.9	22.4
Municipal sewage	1.3	1.3	1.2
Other recipient	0.1	0.5	0.5
Total	46.4	34.0	33.1

About 0.9 (2015: 1.2) tonnes of oil was released into water systems with wastewater. In addition, 0.63 tonnes of oil was released into rivers from hydropower plants. Hydropower plant reporting was further defined in 2016.

The thermal load discharged into water systems with cooling water was 17 (2015: 17) TWh. The Loviisa nuclear power plant’s share of this was 16 TWh. Temperature measurements indicate that the cooling water has increased the temperature of surface water by 1–2 °C within a 1-2 kilometre radius from the discharge point. The reported wastewater is based on measurements and calculations.

### NURES products for purifying radioactive waters

Initially developed for the needs of the Loviisa nuclear power plant, the NURES products are a unique solution for purifying radioactive waters. A selective ion exchange material purifies liquid waste more efficiently than any other alternative on the market. In 2016, we continued NURES deliveries to our customers around the world, including Finland, Japan, North America and Great Britain.

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Waste and by-products

Ash is a by-product of the use of fuels, and gypsum and other desulphurisation products are by-products of flue-gas desulphurisation. Ash and desulphurisation products account for a more than 90% share, on average, of the by-products and waste from our energy production.

Power plant maintenance generates scrap metal and other conventional industrial waste and, to a smaller extent, waste oil and other hazardous waste. We aim to recycle by-products and waste, whenever possible. The waste management service providers we use are properly licensed and reliable waste management companies.

In addition to conventional industrial waste, the Loviisa nuclear power plant also generates radioactive waste, which we treat in accordance with the requirements of Finnish nuclear energy legislation. The volume of radioactive waste generated is small, but special solutions are needed in their treatment and final disposal.

The total volume of by-products and waste generated at Fortum's power and heat plants in 2016 was about 735,000 (2015: 601,000) tonnes. Of this volume, 37% was recycled or reused.

### Ash and gypsum

Ash is created in the combustion of all solid fuels. Over half of the ash from our plants operating in Europe is utilised as a raw material, e.g. for the construction industry, road construction and soil improvement, and as backfill. Ash from the power plants in Russia is stored in ash basins, because there is no demand for wet ash sludge in Russia.

Coal-fired power plants generate either a wet or semi-dry desulphurisation by-product. Gypsum created as a by-product in the wet desulphurisation process at the Meri-Pori power plant in Finland is suitable for use as raw material for the construction industry, and in 2016 all the gypsum was utilised. The desulphurisation product created at the Suomenoja power plant is not suitable for utilisation.

In 2016, about 695,000 (2015: 570,000) tonnes of ash, 8,500 (2015: 2,300) tonnes of gypsum, and 12,700 (2015: 8,800) tonnes

of other desulphurisation product were generated. The growth in volumes of ash and gypsum was a result of increased coal use in Finland and Russia. About 52% of the ash was generated at Russian plants, 19% in Finland and 12% in Poland. The ash recycling rate was 37% (2015: 33%) and the gypsum recycling rate 100% (2015: 100%).

Any remaining by-products that cannot be utilised are transported to the appropriate final disposal areas for landfilling. In 2016, about 453,000 (2015: 390,000) tonnes of by-products were transported for landfilling, or in Russia for ash basins.

The reported volumes of ash and gypsum from our European power plants are based on the weighing of the truckloads. Ash volumes at our Russian power plants are calculated on the basis of the ash content of the coal.

### Radioactive waste

At the Loviisa nuclear power plant, low-level radioactive maintenance waste and intermediate-level radioactive waste are stored in Loviisa's final repository. In 2016, 13.9 (2015: 10.5) tonnes of low-level radioactive waste went into final disposal. Intermediate-level radioactive liquid is generated mainly from spent ion exchange resins and wastewater from the controlled area. Liquid waste is processed to solid form before final disposal. In 2016, a new solidification plant for liquid radioactive waste started operation.

High-level spent nuclear fuel is stored in interim storage at the Loviisa power plant site. In 2016, 19.6 (2015: 21.8) tonnes of spent nuclear fuel was removed from Loviisa power plant's reactors.

### Ash and gypsum handling in 2014–2016 (GRI G4-EN23)

tonnes	2016	2015	2014
Ash utilisation	255,000	189,000	226,000
Ash disposal	440,000	381,000	434,000
Gypsum utilisation	8,500	2,300	9,800
Gypsum disposal	0	0	0

2.5 (2015: 2.7) g/MWh of spent fuel was generated per produced energy unit. Fortum and Teollisuuden Voima have established Posiva Oy to handle the technical implementation of the final disposal of the spent fuel, and final disposal is scheduled to begin at Olkiluoto in Eurajoki in the first half of the 2020s.

### Other waste

Other, conventional waste generated during the operation and maintenance of power and heat plants is sorted, and waste that can be recycled, such as metal, is sent for further processing. Hazardous waste is delivered to licensed hazardous waste treatment facilities.

Our operations in power and heat plants generated a total of 31,900 (2015: 27,200) tonnes of other waste, approximately 2,700 (2015: 1,700) tonnes of which was hazardous waste. In addition, about 20 tonnes of contaminated soil was removed. The reported volumes of other waste are based mainly on the information provided by the waste management companies.

### Waste reception, recycling and reuse

Fortum's new circular economy business receives, processes and reuses customer waste for material recycling and energy production in Finland, Sweden and Denmark. Waste recycling services are reviewed in more detail in the section ▶ *Circular economy*.

#### ▶ Loviisa power plant's waste management

#### ▶ Final disposal of spent nuclear fuel

### Waste handling in power and heat plants in 2014–2016 (GRI G4-EN23)

tonnes	2016	2015	2014
Recycling and recovery	8,300	8,000	7,700
Landfill	20,900	17,400	17,500
Hazardous waste recovery	400	90	100
Hazardous waste disposal	2,300	1,700	2,400
Total	31,900	27,200	27,700

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices			
Sustainable energy production	Climate change mitigation	Improving energy efficiency	Circular economy	Biodiversity	Emissions into air	Water use	Waste and by-products	Environmental non-compliances and incidents

## Environmental non-compliances and incidents

At the Group level, we monitor the number of major EHS incidents, which, in part, reflects the quality of environmental management. In 2016, there were 22 (2015: 18) major EHS incidents. 12 of these were significant environmental incidents, including spills of over 100 litres into the environment, significant environmental permit violations, and other environmental non-compliances having a significant impact on environment.

### Spills and other significant environmental non-compliances

In 2016, there was one (2015: 2) spill of more than 100 litres into the environment. The spill occurred in autumn 2016. The incident involved a spill of hydraulic oil into the River Klarälven at a hydropower plant in Sweden. The incident did not have significant environmental impacts.

### Significant environmental permit violations

There were 11 (2015: 14) environmental permit violations in 2016, and 9 of them occurred in Russia. Eight permit violations at the Russian power plants involved exceeding the wastewater emission limits. One permit violation involved exceeding the annual licence of heavy oil at the Tyumen power plant in Russia. At the waste combustion plant in Denmark, there was one wastewater discharge limit violation and one environmental permit violation related to the storage of waste.

### Environmental enquiries and grievances

Power plants receive environmental enquiries and other contacts every year, and they are mainly handled locally. The aim is to communicate in advance about upcoming measures with possible environmental impacts e.g. through local media and at public events.

Fortum's website also has a grievance channel that our stakeholders can use to report problems possibly caused by our operations. No new environment-related grievances were reported to us through this channel in 2016.



### Fines

In 2016, Fortum paid fines totalling RUB 1.782 million (EUR 24,120) for permit violations involving exceeding the wastewater emission limits and RUB 136,000 (EUR 1,840) for permit violations involving heavy oil use in Russia.

- Business ethics and compliance
- Occupational and operational safety

22

Major EHS incidents

Target: ≤23



## Social responsibility



Fortum impacts the daily lives of millions of people through its businesses. Fortum's social responsibility emphasises operational and occupational safety, employee wellbeing, the secure supply of electricity and heat, creating sustainable solutions for cities, as well as ethical business operations and compliance with regulations. We engage in an active dialogue with different stakeholder groups and we strive to find a balance between their various expectations.



## Social impacts

We strive to be a safe workplace for our employees. We promote operational and occupational safety and wellbeing in the work community, which are prerequisites for efficient and interruption-free production. Our innovations and the secure supply of power and heat support the development of society and increase wellbeing. We want to offer sustainable city solutions that promote a circular economy.

Ethical business practices and respecting internationally recognised human rights are the foundation of Fortum's Code of Conduct. Fortum's sustainability approach also includes being a good corporate citizen and taking care of the surrounding communities. We want to support responsible operations in Fortum's supply chain and in society.

## Key figures for social responsibility

Our key figures for social responsibility are presented in the table and graphs.

### ► Business ethics and compliance

## Key figures for social responsibility

	2016	2015	2014
CHP plant energy availability, %	97.4	96.4	94.7
Average number of employees	7,994	8,009	8,821
Number of employees, 31 December	8,108	7,835	8,592
Departure turnover, %	13.0	8.6	8.1
Female employees, %	29	29	28
Females in management, %	25	33	33
Health care expenditure, EUR/person <sup>1)</sup>	460	509	542
Sickness absence rate, %	2.3*	2.4	2.4
Total recordable injury frequency (TRIF) <sup>2)</sup> , Fortum's personnel	1.9	1.6	2.0
Lost workday injury frequency (LWIF) <sup>3)</sup> , Fortum's personnel	1.0	1.1	1.0
Lost workday injury frequency (LWIF) <sup>3)</sup> , contractors	3.0	2.7	3.2
Serious <sup>4)</sup> occupational accidents	13	14**	16
Fatalities	0	0	3
OHSAS 18001-certified operations in power and heat production, % of sales	99.9	99.9	75
Supplier audits, number	13	9	14
Support for society, EUR million	3.6	3.6	3.3

1) Only in Finland, before the share reimbursed by Kela (The Social Insurance Institution of Finland)

2) TRIF = Total recordable injury frequency per million working hours

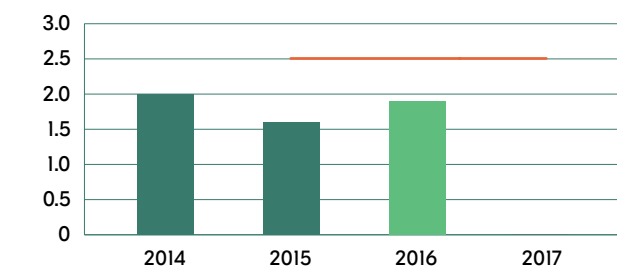
3) LWIF = Lost workday injury frequency per million working hours

4) Fatality or an accident leading to permanent disability or at least 30 days of absence

\* The figure has become more defined from the one presented in the interim report and the operating and financial review (2.4%).

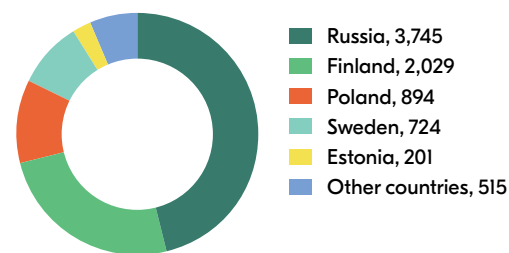
\*\* The figure revised for reporting 2015.

## Total recordable injury frequency (TRIF), Fortum's personnel

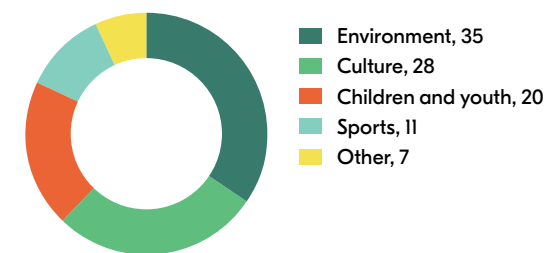


■ TRIF  
— Target

## Personnel by country, 31 December 2016



## Fortum's support to society in 2016 by target, %



## Security of supply

An uninterrupted and reliable energy supply is critical for society to function. With planned preventive maintenance and condition monitoring, we ensure that our power plants operate reliably to produce the electricity and heat customers need.

### Power plant availability

We measure the availability of our CHP and hydropower plants with an energy availability indicator. Energy availability is calculated by dividing the power plant's actual production in the period under review by the theoretical maximum production. Planned maintenance outages are not included in the calculation. If the outage at a CHP plant is longer than planned, it is considered an interruption, which decreases the energy availability. The energy availability of our CHP plants in 2016 was, on average, 97.4% (2015: 96.4%); the target was 95%.

For hydropower plants, outages due to a failure and unplanned or prolonged outages decrease the availability factor only if they lead to spillage. The energy availability of our hydropower plants was 98.7% (2015: 99.2%).

The load factor describing the availability of the Loviisa nuclear power plant is among the highest in the world for VVER-440 type nuclear power plants. The Loviisa nuclear power plant's load factor in 2016 was 91.1% (2015: 92.9%).

### Interruptions in gas and heat distribution

In spring 2016 Fortum acquired DUON, a company specialising in electricity and gas distribution. Through this acquisition, we own about 480 km of gas distribution networks and 20 regasification stations in Poland.

Fortum also has about 2,800 km of district heating networks in Finland, Russia, Poland and the Baltic countries. The aim is to keep interruptions in gas and district heat distribution as short as possible by carrying out planned and preventive refurbishment and maintenance activities.



## Employees

We are a significant employer in the regions where we have operations. We strive to be a responsible employer that invests in the development and wellbeing of personnel.

In 2016, an average of 7,994 (2015: 8,009) employees worked at Fortum. The highest number of employees was in Russia, 3,814 (2015: 4,180) on average. The average and the year-end total personnel figures include 332 employees who joined Fortum in 2016 mainly through corporate acquisitions, but are not included in the other figures and tables presented in this report. These individuals include the civil contractors working in the Polish DUON Group and the entire personnel of the Swedish Info24 company.

The number of Fortum's permanent employees on 31 December 2016 was 7,473 (2015: 7,522), i.e. 96.1% (2015: 96.0%) of the personnel. Of these, 7,362 (2015: 7,395) were full-time employees and 111 (2015: 127) were part-time employees.

During the year 476 (2015: 375) new employees joined Fortum, and 968 (2015: 650) employment relationships were terminated, 805 of which by the employer. The number of employment relationships terminated due to production and financial reasons was 120. Departure turnover in 2016 was 13.0% (2015: 8.6%). Voluntary departure turnover was 5.6%.

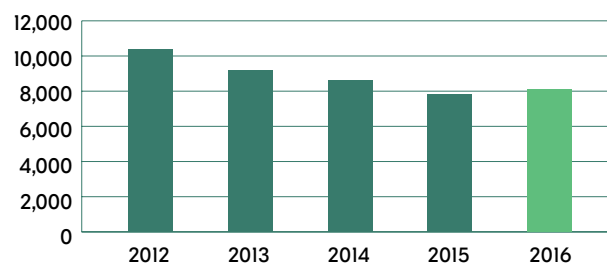
With the acquisition of Ekokem and DUON, 755 new employees joined Fortum. Fortum signed a partnership agreement on the operation and maintenance of power plants and district heating networks with Maintpartner in Finland and Poland. Under the agreement, 341 individuals transferred as existing employees from Fortum to Maintpartner. Other acquisitions and outsourcings decreased the number of personnel by a total of 248 (2015: 184) people.

Contractor employees worked at Fortum sites for a total of approximately 1,113,000 (2015: 1,327,000) days during the year. The figure is based on contractors' hourly logs and on estimates made on the basis of job costs and average hourly rates. The figure has been calculated on the basis of an 8-hour work day.

### Personnel statistics from 2016, by country of operation

	Finland	Sweden	Russia	Poland	Estonia	Other countries	Total
Personnel at year-end	2,029	724	3,745	894	201	515	8,108
male	1,429	420	2,770	561	110	378	5,668
female	600	304	975	333	91	137	2,440
Personnel, average	2,139	613	3,814	879	207	342	7,994
Personnel expenses, 1,000 euros	167,467	56,385	63,959	16,991	6,069	23,065	333,935
Personnel expenses per person, 1,000 euros	78.3	92.0	16.8	19.3	29.4	67.4	41.8

### Number of employees, 31 December



### Workforce by employment contract and employment type, broken down by region and gender (GRI G4-I0)

	Finland		Sweden		Russia		Poland		Other countries		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
<b>Employment contract</b>												
Permanent	1,404	563	385	283	2,703	915	345	188	473	214	5,310	2,163
Fixed-term	25	39	25	20	67	57	15	36	12	7	144	159
<b>Employment type (permanently employed)</b>												
Full-time	1,392	531	374	263	2,696	911	343	187	469	196	5,274	2,088
Part-time	12	30	11	22	7	4	2	1	4	18	36	75

Security of supply

Employees

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Corporate citizenship

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## Total number and rate of new employee hires and employee turnover (GRI G4-LAI)

New employee hires	Finland		Sweden		Russia		Poland		Other countries	
	M	F	M	F	M	F	M	F	M	F
age group	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.
below 30	17	1	9	1	81	19	5	7	9	2
30–50	44	12	15	5	111	48	6	5	26	7
over 50	6	1	4	1	24	8	0	0	2	0
New recruits, %	4.8	2.5	7.3	2.5	8.0	8.2	3.2	6.4	7.8	4.2

Employees leaving	Finland		Sweden		Russia		Poland		Other countries	
	M	F	M	F	M	F	M	F	M	F
age group	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.
below 30	15	3	4	3	31	11	4	7	2	5
30–50	128	29	22	17	98	51	75	13	11	13
over 50	110	19	13	2	140	34	85	9	9	5
Departure turnover, %	18.0	9.1	10.1	7.8	10.0	10.5	47.5*	15.4	4.7	10.7

\* Departure turnover was affected by the outsourcing of district heating network maintenance.

Employees leaving, employee's initiative	Finland		Sweden		Russia		Poland		Other countries	
	M	F	M	F	M	F	M	F	M	F
age group	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.
below 30	4	3	2	3	24	10	2	9	2	3
30–50	28	18	20	17	56	25	14	10	9	11
over 50	4	3	3	1	97	27	1	1	8	2
Voluntary departure turnover, %	2.6	4.3	6.5	7.4	6.5	6.8	4.9	10.6	4.0	7.5

## Service years of the permanent employees in 2014–2016, %

Years	2016	2015	2014
0–5	33	32	32
6–10	21	23	20
11–15	10	9	10
16–20	10	9	10
21–26	9	10	11
27–30	8	9	9
31+	8	8	9

## Diversity and equal opportunity

We promote equal treatment and opportunities in the recruiting, remuneration, development and career advancement of personnel, regardless of the employee's race, religion, political views, gender, age, nationality, language, sexual orientation, marital status or disabilities.

The average age of our permanent employees was 44.2 (2015: 44.5) years. The share of employees over 50 years old was 32%. Females accounted for 29% (2015: 29%) of our total personnel. Females accounted for 25% (2015: 33%) of the Group- and division-level management. The Board of Directors comprised eight members, three of them, including the Chairman, were women.

Any form of harassment is forbidden and addressed immediately. In Finland, Sweden, and India there are separate guidelines in place for workplace harassment and discrimination. There were no incidents of discrimination reported in 2016.



## Personnel age distribution of permanent employees by age group, gender and personnel group (GRI G4-LA12)

age group	Finland				Sweden				Russia				Poland				Other countries			
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female	
	b	w	b	w	b	w	b	w	b	w	b	w	b	w	b	w	b	w	b	w
under 30	38	68	2	33	4	35	1	28	286	92	16	89	0	41	0	74	26	15	1	17
30–50	174	646	7	339	23	173	1	167	871	685	147	400	63	95	0	76	124	125	7	123
over 50	120	358	2	180	24	126	1	85	497	272	138	125	58	88	2	36	120	63	11	55

b = blue-collar, w = white-collar

## Group and division-level management, by age and gender, persons (GRI G4-LA12)

age group	Men	Women
under 30	0	0
30–50	28	6
over 50	20	10

## Equal remuneration

Salary levels at Fortum are compliant with established industry practices in each country, local legislation and labour market agreements. Remuneration is based on the achievement of strategic business targets and the successful implementation of changes. The total remuneration level is based on competence requirements, job performance, and the local market practices with respect to the needs of the different business models.

In 2016 the short-term incentive scheme was renewed with the aim of emphasising in a new way the impacts the operation's and team's or individual's performance have on the variable salary component. In the renewed incentive scheme, the short-term changing salary component depends on the individual's job, and the amount of the final incentive pay depends on the job-based salary level and the combined result of the business unit's and the individual's goals. For the above-mentioned reasons, a male/female comparison of the short-term incentive pay is not expedient.

However, the global human resources data system and the harmonised job grade classification system enables

the examination and reporting of pay equality for the base salary in all our operating countries. Besides the centralised HR data management system, a separate, local, data system is also used in Russia, and therefore the data on Russia's pay equality is reported separately. With the corporate acquisitions made in 2016, the companies merged with Fortum – and for which the job grade classification and the integration of the personnel system has just started – are not included in the figures.

Our reporting covers all personnel groups except blue-collar workers. A male/female comparison in this group is not done because of the small group sizes. In countries where the number of personnel is small, we have reported these countries collectively

under “Other countries” so that the data are not identifiable. The figures presented are not comparable with last year's figures because the method of calculation has been changed.

In our operating countries, total number of personnel included in the comparison was 2,431, of which 861 (35%) were female. The base salaries of female employees in 2016 were, on average, 17% less than the male base salaries in all personnel groups. Taking the job grade levels into consideration reduces the gap between female and male salaries. Additionally, the years of service of the individuals also contribute to the differences.

In Russia, the difference between female and male salaries was -15% for comparable job grade levels (1,662 individuals).

## Basic salary and service years of women compared to men (GRI G4-LA13) <sup>1)</sup>

Country	Difference between basic salaries			Difference between service years
	All roles, %	Roles until middle management and specialists, %	Jobs with tactical or strategical role, %	Average service years, %
Finland	-13	-9	-3	-9
Sweden	-20	-16	0	10
Poland	-7	-4	8	-30
Other countries <sup>2)</sup>	-4	10	-16	0
Total <sup>2)</sup>	-17	-9	-4	-12

1) Includes only white-collars, does not include Ekokem, DUON, and Info24

2) Excluding Russia

## Security of supply

## Employees

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## Corporate citizenship

## Human rights

## Product responsibility

### Employee-employer relations

Fortum’s business operations are developed and strengthened in good collaboration with employees. We believe that the successful management of business is built on relationships of trust between management and employees and on the free flow of information. Fortum respects employees’ freedom of association and the right to collective bargaining.

In our operating countries, freedom of association and collective bargaining are guaranteed by law. The exception to this is India, which has not ratified the International Labour Organisation’s (ILO) Convention on the right to freedom of association and collective bargaining. In India, we comply with the same practices as in other countries of operation, and we do not limit or prohibit the right to freedom of association.

We apply local collective bargaining agreements in compliance with the scope of each respective agreement in all our operating countries. Collective bargaining agreements cover about 85% of Fortum’s employees in our main operating countries.

Share of personnel within collective bargaining agreements, by operating country:

- Sweden and Russia: 100%
- Finland: 100% (except top management)
- Estonia: 26%

In Latvia, the collective bargaining agreements cover less than 10% of the personnel. There are no collective bargaining agreements in Lithuania and Poland. Employment contracts are based on local legislation and on the company’s human resources policy.

### Fortum European Council

Fortum European Council (FEC) convenes, as a rule, once a year. FEC is a Europe-level cooperation function in which personnel and employer representatives meet to discuss matters related to Fortum. In 2016, the Fortum European Council (FEC) held a meeting in June in Finland, and personnel representatives from Finland, Sweden, Poland, and Estonia participated. The Council’s themed workshops focused on, among other topics, Fortum’s new

strategy, the future outlook for the energy industry, occupational safety, management of work-related stress and wellbeing. In addition to Fortum European Council meetings, local level meetings are held several times a year in different countries based on need.

### Restructuring situations

In situations of organisational restructuring, we negotiate with personnel representatives in compliance with each country’s local legislation and contractual procedures. In situations involving personnel reductions, we want to primarily support the re-employment of the personnel.

In restructuring situations, the length of the obligatory negotiation period depends on the scale of upcoming changes and varies in Fortum’s different operating countries. The shortest period for obligatory negotiations is three weeks (Finland) and the longest is 90 days (India). There is no statutory obligatory negotiation period in Sweden, Norway and Lithuania.

The minimum notice period is based on local legislation, collective agreements or employment contracts, which are in harmony with the local legislation and agreements.

In situations involving personnel reductions, we offer outplacement services and, case by case, investigate the possibilities to arrange vocational training in cooperation with local unemployment authorities or service providers. Retraining for employees who continue working is arranged based on organisational and individual needs.

In situations involving personnel reductions, the content of the support package that we offer is decided based on local needs. The financial compensation of the package is usually based on the years of employment at Fortum.

### Employee wellbeing

The energy sector is in transition and this reflects also on Fortum’s business. We want to support our personnel in the change also by paying special attention to work wellbeing. Personnel wellbeing is a prerequisite for successful and efficient business operations.

### ForCARE work wellbeing model

The goal of the work wellbeing model, ForCARE, is to promote the health and occupational safety of our employees by developing the work and work environment and by promoting the functionality of the work community.

The ForCare wellbeing themes in 2016 were “recovery and sleep” and “activeness and energy”. The themes were on the agenda at team meetings, and lectures, wellbeing events and activity contests related to these themes were held.

We began using the HeiaHeia online and mobile app in nearly all our operating countries at the beginning of 2016. HeiaHeia offers a wealth of wellness content to motivate users to live a healthier lifestyle, to record physical and wellness activities, to encourage colleagues, and to participate in team-spirit initiatives.

Targeted work wellbeing projects were carried out in the Power Solutions unit, among others. These projects, too, utilised digital health and wellbeing technology, including Firstbeat wellbeing analyses, activity wristbands and the HeiaHeia app.

### Energise Your Day got under way

As part of ForCare activities, the Energise Your Day wellbeing programme was launched in autumn 2016. It aims to support and encourage all Fortum employees to maintain and improve their overall wellbeing. Energise Your Day offers ideas and tools for self-management, stress management, recovery, nutrition and physical activity. The programme effectively and flexibly utilises modern coaching methods and tools.

The Energise Your Day programme started with a wellbeing survey. Based on the results of the survey, everyone is offered wellbeing services, such as lectures and coaching clinics. Additionally, occupational healthcare offers employees survey-based, targeted support and services based on individual needs.

The Energise Your Day work wellbeing programme is being piloted in Finland and will later be expanded to our other operating countries.

Security of supply

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Early-support model

We promote wellbeing at the workplace also through what is called an early-support model. We increase open communication between employees and supervisors by discussing and mapping the reasons for absences. Managerial knowhow in working capacity management is strengthened through Manage Working Capacity MASTER training.

Occupational safety committee and workplace wellbeing

Workplace wellbeing and occupational safety are organised in our operating countries in line with local legislative requirements.

The occupational safety committees represent all personnel groups, and they regularly address issues related to work safety and workplace wellbeing.

All our employees are within the sphere of occupational health care. We emphasise the significance of preventive activities in promoting wellbeing in the company. The occupational health care costs per person in Finland, before the share reimbursed by Kela (The Social Insurance Institution of Finland), were EUR 460 (2015: 509).

Fortum conducts regular examinations of its personnel in accordance with local laws. Employees who in their work are exposed to e.g. noise, dust, radiation or who perform shift work are within the sphere of the examinations. Occupational health care also participates in various discussions and assessments in the work community. The occupational health care professionals support supervisors by providing information on preventive actions as well as alternatives when the ability to work decreases. Occupational health care also offers methods and tools for these situations.

Sick-leave absences, occupational diseases and average age of retirement

At Fortum the rate of absence due to sickness was 2.3% (2015: 2.4%), which is lower than the average in the energy sector. This figure has become more defined from the one presented in the interim report and the operating and financial review (2.4%).

For males, the rate of absence due to sickness was 2.1% (2015: 2.2%) and for females 3.0% (2015: 3.0%). The sickness absence rate is calculated based on the reported working hours of the permanent employees.

In 2016 the rate of absence due to sickness (2.4%) was adopted as a new Group-level indicator to measure employee wellbeing. The management of sick-leave absences and particularly the early-support for managers in the management of illness-related absences and other working capacity challenges were among our focus areas in 2016. The goal for 2017 is to keep the sickness absence rate at the previous year's level.

There were 8 (2015: 8) cases of suspected occupational diseases in Finland; five were related to noise and three were related to asbestos. Four of the suspected noise-related cases were determined to be non-occupational and investigations are still underway for one case. All three suspected asbestos-related cases were determined to be occupational diseases and compensated as such. All the cases of suspected occupational diseases involved males.

An indication of the good management level of working capacity and work wellbeing at Fortum is the average retirement

age, which was 62 (2015: 62) years. In 2016, the average effective retirement age in the earnings-related pension scheme in Finland was 61.1 years (Source: Finnish Centre for Pensions).

Sickness absence rate of permanent employees in 2014–2016 (GRI G4-LA6), %

	2016		2015		2014	
	Male	Female	Male	Female	Male	Female
Finland	2.4	3.5	2.3	3.5	2.3	3.7
Sweden	2.6	6.3	3.1	5.3	2.0	4.1
Russia	1.8	1.6	1.7	2.0	2.0	2.0
Poland	2.6	3.8	4.1	6.5	3.6	4.7
Other countries	2.2	3.5	1.8	3.2	2.0	2.2

Employee development

Fortum encourages its employees to continuously develop their knowledge, skills and competencies. To support this, we have focused on developing leadership and organisational culture through a coaching approach. The coaching approach increases participative management, which encourages employee accountability in their work. One of the key elements in the coaching approach is the giving and receiving of feedback.

Leadership coaching and induction

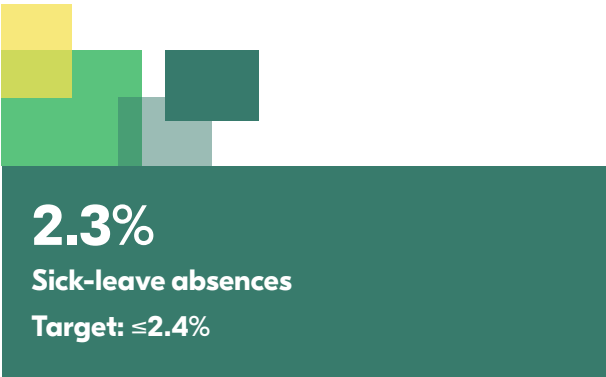
There were three programmes under way in 2016 to develop the leadership and organisational culture of managers:

- Leadership Impact coaching
- MASTER Growing Leader training
- Fortum Navigator development programme

A total of 113 managers took part in these programmes in 2016.

New employees go through an induction programme, part of which is Fortum Passport, the online on-boarding programme. In 2016 there were 100 (2015: 131) employees who learned about Fortum's operations through the Fortum Passport programme.

The sustainability online training targeting all personnel was updated in 2016. The online training is also part of the Fortum Passport programme.



## Security of supply

## Employees

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### Training hours and costs

In 2016 the total number of training hours was 39,129 (2015: 50,466). Courses and licenses are, for the time being, registered in Finland, Sweden, and Poland. Training costs in 2016 totalled approximately EUR 3.1 (2015: 3.5) million.

### Training hours 2016 (GRI G4-LA9) <sup>1)</sup>

	Total number of training hours for employees	Average training hours per employee	Total number of training hours for females	Average training hours per female	Total number of training hours for males	Average training hours per male
Finland	35,655	22	6,345	13	29,310	25
Blue-collar	7,287	30	59	15	7,228	30
White-collar	28,368	20	6,286	13	22,082	24
Other countries <sup>2)</sup>	3,475	4	428	1	3,047	5
Blue-collar	1,960	15	8	4	1,952	25
White-collar	1,515	2	420	1	1,095	2
Grand Total	39,129	15	6,772	7	32,357	18

1) Excluding Ekokem, DUON, Info24

2) Other countries: Sweden, Poland

### Level of education of the permanent employees in 2014–2016, %

Level of education	2016	2015	2014
Doctorate	1	1	1
University	43	41	41
Lower university	7	6	6
College	24	27	26
Vocational	17	21	22
Compulsory	3	4	4
Not indicated	5	0	0

### Performance and development discussions support the achievement of targets and professional growth

Employee development is supported through the annual performance and development discussions; all employees are within the scope of the annual discussions. The main target of the performance and development discussion is to ensure that the employee has clear targets that align with the business as well as the competencies supporting the achievement of the targets and professional growth.

The achievement of the targets forms the basis for payment of incentives. All employees who have a minimum of three months of employment in Fortum are within the scope of Fortum's incentive plan.

### Fortum Sound personnel survey

The Fortum Sound personnel survey is conducted every other year. The response rate to the survey conducted in October 2016 climbed to 87% (2014: 84%). The results indicate that 70% of the employees feel a commitment to the company (2014: 70%).

Based on the survey results, the personnel feel that overall wellbeing is at a good level and sustainability is an integral part of Fortum's operations. Also the level of leadership was considered good, although the results in this area varied greatly by unit.

The most important development targets emerging from the survey were communications, customer insight, agility and innovation. These areas were a focus in 2016 through the launch of the so-called must-win battle development programmes to increase customer-centricity, speed and agility. Additionally, the Fortum Dialogue events between management and employees were continued.



## Safety and security

For Fortum, excellence in safety is the foundation of our business and safe performance is a sign of professionalism.

### Occupational and operational safety

We strive to be a safe workplace for our employees and for the contractors and service providers who work for us. We believe that all work injuries are preventable when competence and the right attitude prevails, when potential risks are addressed and when measures are taken to safeguard against them. Good operational safety is an absolute prerequisite for safe and efficient operations in terms of the employees and the environment.

We have set Group-level targets for the following key indicators:

- Injury frequency (TRIF\* and LWIF\*\*) for own employees and (LWIF) for contractors
- Number of serious\*\*\* accidents, as of 1 January 2017 number of severe\*\*\*\* accidents
- Major environmental, health and safety (EHS) incidents
- Quality of occupational accidents, major EHS incidents and near misses investigation process

The safety targets apply to all Fortum employees and are part of the Group's **▶ short-term incentive plan**.

### Safety of own employees at a good level

Fortum's safety performance in 2016 was impacted by the completion of the Russian investment programme with good safety performance and the integration of Ekokem Corporation (as of 1 September 2016) and Grupa DUON S.A. (as of 1 April 2016). In particular, Ekokem Corporation's higher LWIF levels compared to Fortum's impacted the overall statistics.

Our good safety performance with our own employees continued. The lost workday injury frequency (LWIF) per million working hours was 1.0 (2015: 1.1). The total recordable injury frequency (TRIF), however, worsened to 1.9 (2015: 1.6).

The lost workday injury frequency (LWIF) for contractors is going to be our main challenge in 2017. The lost workday injury frequency (LWIF) per million working hours for contractors in 2016 was 3.0 (2015: 2.7). We successfully achieved our target (3.0), but we recognise that the LWIF of many contractors working for us

is higher than our target level. Robust safety management actions are needed from us in 2017 to reach the set target. A contractor safety performance assessment is also part of our supplier pre-selection process.

In 2016, as in 2015, there were no accidents leading to a fatality in Fortum's operations.

Unfortunately, there were still too many serious accidents to our own and our contractors' employees, and we did not achieve our target for serious accidents (2016: ≤8). In total, there were

### Key safety figures in 2014–2016 (GRI G4-LA6)

	Target 2020	Target 2017	Target 2016	2016	2015	2014
Lost workday injury frequency (LWIF) <sup>1)</sup> , own personnel	≤ 1.0	≤ 1.0	≤ 1.0	1.0	1.1	1.0
Lost workday injuries, own personnel				14	15	15
Lost workday injury frequency (LWIF) <sup>1)</sup> , contractors	≤ 2.0	≤ 3.5	≤ 3.0	3.0	2.7	3.2
Lost workday injuries, contractors				27	29*	35
Total recordable injury frequency (TRIF) <sup>2)</sup> , own personnel	≤ 2.0	≤ 2.5	≤ 2.5	1.9	1.6	2.0
Serious <sup>3)</sup> occupational accidents			≤ 8	13	14**	16
Severe <sup>4)</sup> occupational accidents	0	≤ 5		5		
Fatalities, own personnel	0	0	0	0	0	0
Fatalities, contractors	0	0	0	0	0	3
Major EHS incidents	≤ 15	≤ 21	≤ 23	22	18	27

1) LWIF = Lost workday injury frequency per million working hours

2) TRIF = Total recordable injury frequency per million working hours

3) Fatality or an accident leading to permanent disability or a sick-leave of more than 30 days

4) Fatality or an accident leading to permanent disability or an accident that could have caused serious consequences

\* Including contractor injuries of the divested Distribution business

\*\* The figure revised for reporting 2015.

\* TRIF: Total recordable injury frequency, injuries per million working hours

\*\* LWIF: Lost workday injury frequency, injuries per million working hours, absence of one or more working days or shift excluding the day the accident happened

\*\*\* Serious accident: fatality or an accident leading to permanent disability or a sick-leave of more than 30 days

\*\*\*\* Severe accident: fatality or an accident leading to permanent disability or accident that could have caused serious consequences

13 (2015: 14) serious work-related accidents. Falls and injuries in connection with the use of tools were the main causes of the serious accidents. We have investigated all the injuries and launched measures to prevent similar injuries.

As of 1 January 2017, Fortum has changed the definition of the severity of the work-related accidents and is now focusing on accidents leading to serious consequences or potential serious consequences rather than the length of the sick-leave. We believe that this change will assist us in focusing and removing the root causes behind severe accidents and in allocating our resources more effectively. In 2016, there were five severe accidents for both own and contractors' employees. The Group target for 2017 is ≤5 severe accidents. Our target is to reduce severe accident to zero by 2020.

In reporting accidents, we comply with the principles of the United States Occupational Safety & Health Administration (OSHA) and ILO's Practices on Recording and Notification of Occupational

Accidents and Diseases to the extent that they conform with the legislation in Fortum's countries of operation.

### Operational safety

We track major environmental, health and safety (EHS) incidents as a Group target, which covers fires, leaks >100 litres into the environment, explosions, nuclear and dam safety incidents, and environmental non-compliances. There were 22 (2015: 18) EHS incidents in 2016; the target was ≤23. The incidents did not cause significant harm to operations, people or the environment. The majority (8) of the incidents were wastewater permit violations in Russia.

### Common guidelines steer our operations

Fortum has Group-level EHS instructions and minimum requirements that set requirements for all the operations for which we have operative responsibility.

In 2016 we continued to update these requirements and, as part of the implementation, we assessed the divisions' performance in complying with the revised requirements in their operations. The shortcomings were recorded and the corrective measures were mostly implemented by all divisions during 2016. The remaining actions will be completed during 2017. The progress of this assessment of implementation is reported quarterly to the Fortum Executive Management.

A revised version of the Corporate Safety and Security handbook together with an e-learning module was published in eight languages. Completion of the e-learning is compulsory for all personnel. The training for the Fortum Executive Management took place in January 2017.

In 2017 Fortum will introduce two key control points for the EHS process: the assessment of compliance with Fortum's EHS minimum requirements and the quality of occupational accidents, major EHS incidents and near misses investigation process. A revised corporate incident management system, launched in December 2016, will help to ensure the effective root cause assessment, reporting and sharing of learnings.

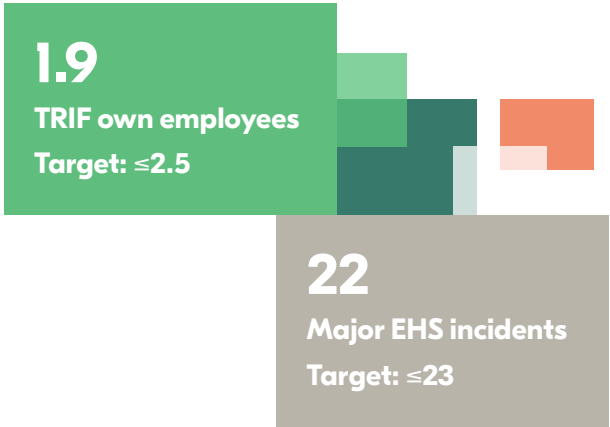
### We will continue our efforts to improve safety

Our goal is to continuously improve the safety of our operations. Our target for contactor safety in 2017 is LWIF ≤ 3.5 (2016: ≤3.0). Setting a higher numeric target than in the previous year might seem controversial, but achieving the 2017 targets set by Fortum's Board of Directors is very challenging in a situation in which acquisitions are resulting in new companies being integrated with Fortum. Achieving the targets requires EHS processes to be integrated and significant safety improvements.

Excellent occupational safety continues to be a promise we want to keep also in the coming years. We are committed to achieving the contractor safety level (LWIF ≤2.0) by 2020.

### Occupational accidents, accident frequencies and absence days due to occupational accidents in 2016 by region and gender (GRI G4-LA6)

	Finland	Sweden	Russia	Poland	Others
<b>Own personnel</b>					
Occupational accidents causing absence, men	9	0	2	2	1
Occupational accidents causing absence, women	0	0	0	0	0
LWIF, men	3.5	0	0.4	2.2	1.4
LWIF, women	0	0	0	0	0
Absence from work due to occupational accidents for men, days	254	0	61	22	2
Absence from work due to occupational accidents for women, days	0	0	0	0	0
<b>Contractors</b>					
Occupational accidents causing absence, men	17	3	4	1	2
Occupational accidents causing absence, women	0	0	0	0	0
LWIF, men	11.7	3.6	0.8	0.8	6.3
LWIF, women	0	0	0	0	0
Absence from work due to occupational accidents for men, days	316	38	250	14	273
Absence from work due to occupational accidents for women, days	0	0	0	0	0



### Corporate security

Through corporate security, we strive to ensure the uninterrupted continuity of business and the safety of people, information, our assets and processes in normal and exceptional situations. Uninterrupted energy production and distribution is important both for Fortum’s business operations and for an energy-dependent society.

#### Securing personnel and business safety

Our Corporate Security unit is responsible at the Group level for security and for providing guidelines and support to the business units. Compliance with the minimum safety requirements improves our operational ability to withstand and recover from disruptions and thus reduces unplanned maintenance outages and improves productivity.

Fortum’s new strategy was published in February 2016. In 2016 we analysed the company’s security risks related to potential new business areas, services and products. We assessed risks related

to people, business and information in all geographical areas where Fortum has potential operations and business travel. Risks impacting the company and business operations may be related to political situations, terrorism, crime, conflicts and business partners.

Corporate security is improved also by gaining a deeper understanding of the security situation so that we can anticipate and prevent risks before they materialise.

#### Cyber security

Security with the information we handle and with our IT systems ensures that we can meet society’s and our customers’ expectations. The aim of cyber security is to ensure the production and distribution of power and heat and the functioning of new digital services, like Internet of Things applications.

In IT security, we aim to ensure the accessibility, integrity and confidentiality of critical information. We also take seriously and are uncompromising in our compliance with the regulations related to the protection of personal data.

We actively engage in collaboration with authorities and other stakeholders to understand and prevent new and growing cyber threats. We launch campaigns to increase employee awareness of security risks. We promote ways of operating that take employee information security into consideration by providing guidelines and, e.g., online training.

#### Contingency planning

The main disaster and emergency situations we prepare for are related to our critical operations, such as power plant and dam safety and securing other operations.

For dam and nuclear safety, emergency preparedness obligations in Finland and Sweden are based on regulatory provisions; likewise, there are terrorism-related preparedness obligations in Russia. Otherwise, emergency preparedness obligations prescribed by authorities are of a general nature. Based on its own risk assessments, Fortum independently defines the crisis and exceptional situations it prepares for and drafts action plans for.

Fortum’s crisis and emergency management instructions are prepared for Group, division and site levels. The testing and updating of the crisis management and continuity plans are the responsibility of each division and line organisation. Crises impacting Group operations more broadly are managed at the Group level. Crisis communication instructions have been prepared for e.g. power and heat outages and for the Loviisa nuclear power plant. Corporate Security is responsible for crisis management development, e.g., for organising rehearsals and supporting planning. Group Communications is responsible for crisis communication.

In 2016, the annual emergency exercise related to a nuclear power accident was held at the Loviisa power plant. Additionally, in September 2016, a major accident drill was carried out at Ekokem’s Riihimäki plant in compliance with the requirements of the Seveso II directive.

## Corporate citizenship

Social responsibility is a cornerstone of Fortum's operations. Our operations impact the local communities where our power plants are located, and we engage in many kinds of collaboration with local stakeholders.

We support activities promoting the common good in society, for example the work of organisations and communities in our operating countries. Our sponsorship programme focuses on the future – on children, young people, the environment and society. Fortum also does significant collaboration with different research and development projects, particularly with Nordic universities.

We actively participate in **national and international organisations**. Public affairs and collaboration with authorities are a priority in the energy sector.

### Local impacts and collaboration with local communities

We are an important employer and significant tax payer in our operating areas. In addition, our investments improve the local infrastructure. Of our energy production forms, hydropower has the most significant **impacts on local communities** and local forms of land use. Hydropower construction and use may alter the fluctuation range and rhythm in the discharge and water level in waterways as well as the fish fauna. These changes impact fishing, recreational use, and boating. We mitigate and compensate the adversities caused by hydropower production through numerous measures, such as stocking fish and building boat launch ramps.

We communicate openly, honestly and proactively, and we engage in a dialogue with the stakeholder groups located in the vicinity of our power plants. We carry out collaboration projects with local communities. We conduct environmental impact assessments (EIA) for our projects in accordance with legislative requirements. The hearing of stakeholders is part of the EIA process. In addition, relevant stakeholders are heard in all permit procedures.

Examples of our activities with local communities in 2016:

- Customer panels and meetings were organised in Finland, Sweden, Estonia, Latvia and Poland. Meeting with customers is one way to get direct feedback and development ideas. We want to accommodate customer needs even better in the future.
- Open-house events were arranged at power plants in different countries of operation; thousands of locals attended the events. For example, in Jelgava, Latvia, an open-house event is organised annually during the Jelgava City Festival, and the power plant offers recreational activities to local families. The Ekokem production plant's open-house event offered the opportunity to tour the new **Circular Economy Village**.
- Fortum continued publishing the Naapurina ydinvoimala (Nuclear power plant as a neighbour) magazine in Loviisa and maintained an active dialogue with local residents and representatives of the city of Loviisa.
- **Projects** aiming to mitigate the adverse environmental impacts of hydropower were under way in Finland and Sweden in collaboration with municipalities, research facilities, fishermen, universities and environmental organisations. For example, every year Fortum partners with other actors to improve the environmental conditions and recreational use of the River Oulujoki through River Oulujoki restoration and multi-use framework agreement projects.
- The fourth National Clean River Championships was held for students in Sweden. More than 2,300 young people raised money for recreational activities by collecting 31 tons of trash along the banks of four rivers (Dalälven, Klarälven, Ljusnan and Gullspångälven) where Fortum has hydropower plants.
- District cooling production was started in Tartu, Estonia, after active collaboration with the City of Tartu and other stakeholder groups. Fortum is participating in the SmartEnCity project, which aims to develop smart solutions for transport, energy conservation and ICT to improve the quality of life for citizens.

- Fortum continued supporting local communities with several projects in the vicinity of the Kapeli and Amrit solar power plants in India. Among other things, Fortum has improved water service as well as lighting and cooling with fans for health care centre and schools. A new classroom was built in a school near the Amrit power plant.
- Fortum supports the communities in power plant areas through various donations. Support in 2016 went to e.g. workshops and scholarships for talented children raised in difficult conditions in Poland, a day-care centre for special needs children in Latvia, as well as a sports school for children, a hockey team, and cultural and residential events in Russia.
- In Finland we installed free-to-use, lockable cell phone charging stations in public areas, like libraries, hospitals and shopping centres.

### Support for society

In 2016, our support for activities promoting the common good totalled about EUR 3.6 (2015: 3.6) million. The share of grants awarded by the Fortum Foundation was about EUR 675,000 (2015: 706,000) of the support. Fortum Foundation supports research, education and development in the natural, technical and economical sciences within the energy industry.

In 2017, Ekokem will award EUR 150,000 in grants for environmental and waste management sector research. The purpose of the fund is to promote and support innovative research and expertise to benefit the environmental management sector, especially with regard to waste management, material recycling, the utilisation of waste, the treatment of hazardous waste, and the restoration of soil and waters in the Nordic countries.

The goal of the collaboration with universities and colleges is to develop Fortum's business, promote energy-sector research and development, and foster Fortum's recruiting and training opportunities.



Security of supply

Employees

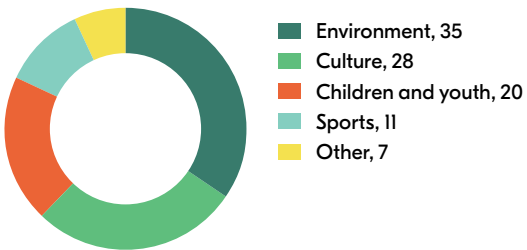
Safety and security

Corporate citizenship

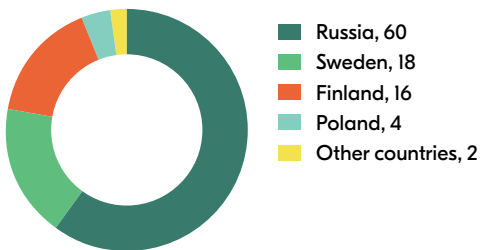
Human rights

Product responsibility

Fortum's support to society in 2016 by target, %



Fortum's support to society in 2016 by country, %



Examples of our collaboration with universities and colleges in different operating countries:

- In Finland, we are funding a solar economy professorship (75% funding for a five-year period, i.e. until 2017) at Lappeenranta University of Technology.
- In Sweden, the research with the University of Karlstad on improving the downstream migration of fish was concluded. Additionally, there is a multi-year project under way that aims to offer sustainability-related training to more than 4,000 educators. Fortum's collaboration partners in the project are Pedagog Värmland, Karlstad municipality, engineering and consulting company ÅF and Chalmers University of Technology.
- In Poland, Fortum is collaborating with the Wrocław University of Technology on district cooling solutions and with the Czestochowa University of Technology's Faculty of Environmental Engineering and Biotechnology. Fortum also has a collaboration agreement with the Silesia and the Krakow University of Technology.
- In Russia, we are participating in the AboutEnergy training programme, which supports educators in providing training related to energy conservation. For university students, we also offer internships and information visits at our power plants.

- In Estonia and Lithuania, Fortum is a member of the Baltic Innovative Research and Technology Infrastructure (BIRTI), which coordinates collaboration between universities, scientific institutes and entrepreneurs.
- In Latvia, we are cooperating with Riga Technical University, the Latvia University of Agriculture, and the Jelgava Technical School, and, in Lithuania, with the Klaipeda Technical School, Klaipeda University and Kaunas University of Technology. We arrange internships and information visits for students, and we support energy sector-related conferences and seminars.

Sponsorship projects

In 2016, we continued sponsoring the coaching of children and youth in football, volleyball, basketball, and track and field. Through the Fortum Tutor programme, we offer tutors to support coaches in their daily work as well as financial support for teams to train new coaches. Fortum Tutor operates in Finland and in the Baltic cities where Fortum has power plants.

The Fortum Honorary Energy Donor mobile app has been in use in Poland and Russia. It encourages people to engage in physical activity. The distance covered during a physical activity can be converted into energy, for which Fortum makes a financial donation to selected charities.

# Human rights

Fortum supports and respects internationally recognised human rights, which are included in the key human rights agreements. Our own operations have a direct or indirect impact on the realisation of the human rights of our own personnel, those working in the supply chain, and members of local communities.

## Management of human rights issues

Our goal is to operate in accordance with the UN Guiding Principles on Business and Human Rights, and to apply these principles in our own operations as well as in country and partner risk assessments and supplier audits. Fortum’s approach to the management of human rights issues is described in more detail in the [► Appendix 1: Sustainability management by topic, Human rights](#).

Fortum’s Corporate Sustainability unit is responsible for coordinating and developing sustainability, including human rights issues, at the Group level.

## Personnel training in human rights issues

The online course for Fortum’s Code of Conduct includes training in human rights-related issues. The course is part of the induction programme for new employees. Fortum employees conducting supplier audits receive internal training, during which they review the requirements of the Supplier Code of Conduct, the sub-areas to be audited, and the tools to be used to verify compliance

with the requirements. Those who have completed the internal training are advised to complete auditor training also on the Social Accountability (SA8000) standard. Internal trainings were not organised in 2016 but three Fortum employees participated in SA8000 auditor course during the year.

## Assessment of human rights impacts

A sustainability assessment is carried out for our investment projects and takes into consideration the environmental, occupational health and safety, and social impacts of the project. The sustainability assessment includes a human rights evaluation, especially in new operating areas. A human rights assessment is also part of the systematic assessment of country and counterparty risks when planning a project.

The process has two parts: a light and a deep assessment. A light assessment is done for all new countries in where our business unit is planning the sales of operation and maintenance services, for example, and it is based on publically available sources. In 2016, 28 of these assessments were made. Deep assessments were not done during the year.

Fortum’s supplier audits cover the most important human rights aspects related to purchases. The supplier audits conducted in 2016 and their results are described in more detail in the section

[► Sustainable supply chain](#).

## Identified impacts on human rights, corrective measures and grievances

All forms of child and forced labour are strictly prohibited and in violation of Fortum’s Code of Conduct. Of our operating countries, India has not ratified the International Labour Organisation’s (ILO) Convention on the minimum age and the worst forms of child labour. Our functions in India require job applicants to be of adult age. We have not identified risks related to the use of forced labour in our own operations. Support of employees’ right to freedom of association and collective bargaining are discussed in the section

[► Employee-employer relations](#).

Internal reporting channels used for reporting any suspected misconduct relating to the labour practices or human rights violations are instructed in Fortum’s Code of Conduct. In addition to internal reporting channels, Fortum has an external “Raise a concern” channel which is available to all stakeholders.

In 2016, there were no grievances related to human rights, labour rights or discrimination filed through formal grievance channels, nor were there any grievances carried over from the previous year.

# Product responsibility

Fortum is a clean energy company that provides customers with electricity, heating and cooling as well as smart solutions to improve resource efficiency. Our ambition is to engage our customers and society to drive the change towards a low-emission energy system and optimal resource efficiency.

We are one of the leading electricity sales companies in the Nordic countries, and we sell electricity to private and business customers in Sweden, Finland and Norway. Fortum is one of the world’s biggest producers and sellers of heat. We sell heat to companies, the public sector and private customers in Finland, Poland, all the Baltic countries, and especially in Russia. Additionally, we sell district cooling in Finland and in Estonia, where the first customers started using district cooling in 2016. In Poland, we sell electricity, natural gas, and liquefied natural gas. Fortum Charge & Drive is the Nordic countries’ largest electric vehicle charging network, which operates in Norway, Iceland, Sweden and Finland.

With the acquisition of Ekokem, Fortum became one of the leading Nordic circular economy companies offering environmental management and material efficiency services. The range of services includes recycling, reutilisation and final disposal solutions, as well as soil remediation and environmental construction services. Operations are in Finland, Sweden and Denmark.



## Innovative charging facility for electric vehicles in Oslo, Norway

Fortum Charge & Drive opened an innovative electric car charging facility at the Vulkan parking garage in central Oslo in December 2016. It has over 100 charging stations available for customers.

The battery reserve installed in the garage balances power loads in order to avoid putting strain on the power grid during times of high usage. The solution makes it possible for parking garages to set up large EV charging facilities without having to make expensive and time-consuming upgrades to the power grid. The installation is prepared for “vehicle to grid,” meaning that power can be transferred both to and from the batteries of the charging cars. The charging facility will be further developed in the first half of 2017 to enable a choice in charging speed – from 3.6 to 22 kW – and to pre-book a charging slot.

The new charging facility was built in cooperation with the property owner and the city of Oslo. The facility is helping Oslo to reach its ambitious climate goals, which include cutting greenhouse gas emissions by 50% by 2020 and 95% by 2030, compared to 1990 levels.

Fortum Charge & Drive is a pioneer in electric vehicle charging. In total, the network consists of 1,200 affiliated smart chargers. The Charge & Drive cloud-based business system is already used by about 50 partners in the Nordic countries and nearly 40,000 end customers.

### Guarantee-of-origin-labelled and renewable electricity

Fortum is one of the Nordic countries' leading sellers of carbon dioxide-free and guarantee-of-origin-labelled electricity and can offer more and more customers an electricity agreement that comes with electricity produced with renewable energy. All the electricity we sold to private customers in Finland and Sweden in 2016 was renewable and carbon dioxide-free hydro-, wind or solar power. The origin of the electricity was guaranteed with European Guarantees of Origin. Some of the production was guaranteed also with the pan-European EKOenergy label granted by environmental organisations and in Sweden with the Bra Miljöval label.

### Services to customers

In recent years Fortum has introduced many new solutions that improve energy efficiency for customers and reduce environmental impacts. We want to offer growing urban areas sustainable solutions that support a circular economy. Smart solutions give customers better opportunities to control their electricity consumption and costs. Fortum is continuously developing its products and services to meet the needs of customers. The new solutions are related to, e.g., energy efficiency and demand response, electric vehicles, solar power, and open district heating.

We offer power plant owners and industrial customers a variety of expert services for operation and maintenance. Additionally,

we offer products and consulting services related to hydropower, nuclear safety and nuclear waste handling.

### Marketing communications and customer data protection

Our goal is to present products and services truthfully in all our marketing and communication materials. We do not present misleading statements and we strictly follow responsible marketing communication guidelines. In statements regarding environmental issues, we follow the regulations for environmental marketing. No violations of regulatory or voluntary principles were observed in Fortum's marketing communications in 2016.

Data protection legislation has been amended in recent years. New personal data protection legislation in Russia took effect in 2015, and in 2016 the EU published the Data Protection Regulation, which will take effect in May 2018.

Fortum assumes responsibility for customer data protection. We have launched a project to ensure that we fulfil the requirements of the regulation by the deadline. Any changes needed in the handling of customer data, among other things, will be implemented during 2017.

- ▶ Customer satisfaction and reputation
- ▶ Products and services



## Reporting principles

## Reported GRI indicators

## Assurance report

# Reporting principles

We report on sustainability in this Sustainability Report and in the Online Annual Review. Additionally, we describe sustainability-related governance practices in the Corporate Governance Statement and strategy and the CEO's view in the CEO Letter. Tax footprint 2016 is also a part of our reporting entity.

In our sustainability reporting, we comply with integrated reporting principles, and we apply the Global Reporting Initiative (GRI) G4 Guidelines' specific standard disclosure indicators we have identified as material. We apply the requirements of the Electric Utilities Sector Disclosures where we have deemed the information to be material to our stakeholders.

We gain information about our stakeholders' views through the One Fortum survey, the stakeholder sustainability survey and other stakeholder collaboration. Our selection of material aspects is based on Fortum's own and our stakeholders' views regarding the materiality of the impacts.

We report sustainability information annually in Finnish and English. In our annual reporting we describe Fortum's operations in 2016 as well as some information from January–February 2017. The previous reporting was published in February 2016, and our next reporting will be published in February/March 2018. In addition to the annual reporting, we report on our sustainability activities in Fortum's interim reports.

## Reporting scope and boundaries

Reporting related to operations and management covers all functions under Fortum's control, including subsidiaries in all countries of operation. Possible deviations to this principle are reported in conjunction with information applying different boundaries. A list of Fortum's subsidiaries is in Notes to the **Financial Statements**, Note 42 Subsidiaries by segment.

Information from previous years is mainly presented as pro forma information, i.e. on the basis of the organisation and the functions of each year; the impacts of ownership changes

in production facilities, for example, have not been updated afterwards in the previous figures.

The company AB Fortum Värme samägt med Stockholms stad (Fortum Värme) is classified in the Financial Statements as a joint venture and is consolidated with the equity method as of 1.1.2014. Fortum Värme is not included in Fortum's sustainability targets and indicators nor in the descriptions of management practices. Fortum Värme's sustainability information is available in Fortum Värme's sustainability report.

Fortum completed the divestment of its Distribution business on 1 June 2015. In this report, the information for 2016 and, as a general rule, also for 2015 does not include the Distribution business. The Distribution business is included in the figures for 2014.

Fortum completed the acquisition of Ekokem Corporation on 31 August 2016. Ekokem is included in Fortum's sustainability reporting starting from 1 September 2016. Fortum acquired 100% of the shares in the electricity and gas sales company Grupa DUON S.A. on 8 April 2016. DUON is included in Fortum's sustainability reporting starting from 1 April 2016.

Exceptions to the accounting practice are presented in conjunction with each figure.

## Capacity changes

Fortum commissioned unit 2 (248 MW electricity and 174 MW heat) of its Chelyabinsk GRES combined heat and power (CHP) plant in Russia in March 2016. With the acquisition of Ekokem Corporation, 43 MW of electricity production capacity and 144 MW heat production capacity was transferred to Fortum's ownership. The acquisition of Grupa DUON S.A. bought Fortum 12 MW of heat production capacity. The new capacity constructed during the year and the new plants commissioned are included in the reporting starting from their commissioning.

Fortum divested the Tobolsk 665-MW CHP plant on 5 February 2016. The divested capacities are included in the reporting until the divestment date.

Greenhouse gas emissions are reported on a pro forma basis and the figures of the comparison years have not been adjusted in terms of new or commissioned or divested capacity because of partially insufficient data.

## Measurement and calculation principles

Data for economic performance indicators is collected from the audited Financial Statements and from financial accounting and consolidation systems.

The environmental information of the report covers the plants for which Fortum is the legal holder of the environmental permit. In such cases, the plant information is reported in its entirety. The only exception is the calculation of specific CO<sub>2</sub> emissions from the Meri-Pori power plant, where the calculation covers only Fortum's share of production and emissions as specified in the operation agreement between Fortum and Teollisuuden Voima Oy. In the specific emissions calculation, the production shares of minority holdings are also included in the total production.

Fortum utilises a Group-wide database with instructions for collecting site-level environmental data. Sites are responsible for data input, emissions calculations and the accuracy of the information provided. The Corporate Sustainability unit compiles the data at the Group level and is responsible for the disclosed sustainability information.

Fortum's CO<sub>2</sub> emissions subject to the EU Emissions Trading Scheme are annually verified at the site-level by external verifiers. Direct and indirect greenhouse gas emissions have been reported in accordance with the Greenhouse Gas (GHG) Protocol on the basis of the Greenhouse Gas Analysis performed by an external consultant.

The average and the year-end total personnel figures presented in this report include 332 employees who joined Fortum in 2016 mainly through corporate acquisitions, but are not included in the other personnel figures and tables presented in the report. These individuals include the civil contractors working in the Polish DUON Group and the entire personnel of the Swedish Info24 company.



Reporting principles

## Reported GRI indicators

## Assurance report

Fortum's human resources (HR) management system is used in all Fortum's operating countries and is the main system for employee-related personal and job data. In Russia, the employee data system covers mainly superiors. In addition, Russian operations have their own, local data system. Other social responsibility data, such as occupational health-related data, originates from various data systems.

Designated individuals collect the information and deliver it to the Corporate Sustainability unit primarily in the format recommended by GRI (Global Reporting Initiative).

**Assurance**

Deloitte & Touche Oy has provided limited assurance for the 1 January 2016 to 31 December 2016 reporting period for emissions calculations (Scope 1-3) based on the GHG protocol according to the requirements published by CDP (Verification of Climate Data).

**Global Compact and Caring for climate reporting**

Fortum has been a member of the United Nations Global Compact initiative since 2010. In our sustainability report, in conjunction with the description of environmental responsibility, social responsibility and business ethics, we describe the realisation of the Ten Principles of the Global Compact initiative in our operations in 2016. We use the GRI G4 indicators to measure compliance with the principles of human rights, labour standards, the environment and anti-corruption.

Fortum joined the UN Caring for Climate initiative in 2013. Fortum meets the reporting requirements of the Caring for Climate initiative by annually participating in the assessment in the CDP's climate change survey and by publishing its response on the CDP website.



## Reporting principles

## Reported GRI indicators

## Assurance report

# Reported GRI indicators

In our sustainability report 2016 we apply the Global Reporting Initiative (GRI) G4 Guidelines' specific standard disclosure indicators presented in the table.

CODE	DESCRIPTION	SECTION
<b>DISCLOSURES OF MANAGEMENT APPROACH</b>		
G4-DMA	Management approach	<ul style="list-style-type: none"> <li>▶ <i>Sustainability management / Governance and management</i></li> <li>▶ <i>Appendix 1, Sustainability management by topic</i></li> </ul>
<b>ECONOMIC RESPONSIBILITY</b>		
G4-DMA	Management approach to economic responsibility	<ul style="list-style-type: none"> <li>▶ <i>Appendix 1, Sustainability management by topic</i></li> </ul>
<b>Economic performance</b>		
G4-EC1	Direct economic value generated and distributed	<ul style="list-style-type: none"> <li>▶ <i>Economic responsibility / Economic impacts</i></li> </ul>
G4-EC2	Financial implications and other risks and opportunities due to climate change	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Climate change mitigation</i></li> <li>▶ <i>Financials / Operating and financial review / Risk management</i></li> </ul>
G4-EC3	Coverage of the organisation's benefit plan obligations	<ul style="list-style-type: none"> <li>▶ <i>Financials / Notes to the consolidated financial statements / 32 Pension obligations</i></li> </ul>
G4-EC4	Financial assistance received from government	<ul style="list-style-type: none"> <li>▶ <i>Economic responsibility / Economic impacts</i></li> </ul>
<b>Plant decommissioning</b>		
G4-DMA	Management approach	<ul style="list-style-type: none"> <li>▶ <i>Financials / Notes to the consolidated financial statements / 30 Nuclear related assets and liabilities</i></li> </ul>
<b>System efficiency</b>		
EU11	Average generation efficiency of thermal plants	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Energy intensity</i></li> </ul>
<b>ENVIRONMENTAL RESPONSIBILITY</b>		
G4-DMA	Management approach to environmental responsibility	<ul style="list-style-type: none"> <li>▶ <i>Appendix 1, Sustainability management by topic</i></li> </ul>
<b>Materials</b>		
G4-EN1	Use of materials	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Fuel consumption</i></li> </ul>
G4-EN2	Recycled materials used	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Fuel consumption</i></li> <li>▶ <i>Environmental responsibility / Circular economy</i></li> </ul>

CODE	DESCRIPTION	SECTION
<b>Energy</b>		
G4-EN3	Energy consumption within the organisation	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Fuel consumption (consumption)</i></li> <li>▶ <i>Environmental responsibility / Sustainable energy production (production)</i></li> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Energy intensity</i></li> </ul>
G4-EN5	Energy intensity	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency / Energy intensity</i></li> </ul>
G4-EN6	Reduction of energy consumption	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Improving energy efficiency</i></li> </ul>
<b>Water</b>		
G4-EN8	Total water withdrawal by source	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Water use</i></li> </ul>
<b>Biodiversity</b>		
G4-EN13	Habitats protected or restored	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Biodiversity</i></li> </ul>
<b>Emissions</b>		
G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1)	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Climate change mitigation / Greenhouse gas emissions</i></li> </ul>
G4-EN16	Indirect greenhouse gas (GHG) emissions (Scope 2)	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Climate change mitigation / Greenhouse gas emissions</i></li> </ul>
G4-EN17	Other indirect greenhouse gas (GHG) emissions (Scope 3)	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Climate change mitigation / Greenhouse gas emissions</i></li> </ul>
G4-EN18	Greenhouse gas (GHG) emissions intensity	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Climate change mitigation / Greenhouse gas emissions</i></li> </ul>
G4-EN21	NOx and SO <sub>2</sub> and other significant air emissions	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Emissions into air</i></li> </ul>
<b>Effluents and waste</b>		
G4-EN22	Total water discharge by quality and destination	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Water use</i></li> </ul>
G4-EN23	Total weight of waste by type and disposal method	<ul style="list-style-type: none"> <li>▶ <i>Environmental responsibility / Waste and by-products</i></li> </ul>

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
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## Reporting principles

## Reported GRI indicators

## Assurance report

CODE	DESCRIPTION	SECTION
G4-EN24	Total number and volume of significant spills	► <i>Environmental responsibility / Environmental non-compliances and incidents</i>
Compliance		
G4-EN29	Significant fines and non-monetary sanctions for noncompliance with environmental laws and regulations	► <i>Environmental responsibility / Environmental non-compliances and incidents</i>
Supplier environmental assessment		
G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken	► <i>Economic responsibility / Supply chain management / Sustainable supply chain</i>
Environmental grievance mechanisms		
G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	► <i>Environmental responsibility / Environmental non-compliances and incidents</i> ► <i>Sustainability management / Business ethics and compliance</i>
SOCIAL RESPONSIBILITY: LABOUR PRACTICES AND DECENT WORK		
G4-DMA	Management approach to social responsibility, labour practices and decent work	► <i>Appendix 1, Sustainability management by topic</i>
G4-10	Workforce	► <i>Social responsibility / Employees</i>
G4-11	Coverage of collective bargaining agreements	► <i>Social responsibility / Employees / Employee-employer relations</i>
Employment		
G4-LA1	New employee hires and employee turnover	► <i>Social responsibility / Employees</i>
Occupational health and safety		
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work related fatalities	► <i>Social responsibility / Safety and security / Occupational and operational safety</i> ► <i>Social responsibility / Employees / Employee wellbeing</i>
Training and education		
G4-LA9	Average hours of training per employee	► <i>Social responsibility / Employees / Employee development</i>
G4-LA10	Programmes for skills management and lifelong learning	► <i>Social responsibility / Employees / Employee development</i>
G4-LA11	Percentage of employees receiving regular performance and career reviews	► <i>Social responsibility / Employees / Employee development</i>
Diversity and equal opportunity		
G4-LA12	Composition of governance bodies and breakdown of employees	► <i>Social responsibility / Employees / Diversity and equal opportunity</i> ► <i>Corporate governance statement / Governing bodies of Fortum / Board of directors</i>

CODE	DESCRIPTION	SECTION
Equal remuneration for women and men		
G4-LA13	Ratio of basic salary and remuneration of women to men	► <i>Social responsibility / Employees / Diversity and equal opportunity</i>
Supplier assessment for labour practices		
G4-LA15	Significant actual and potential negative impacts for labour practices in the supply chain and actions taken	► <i>Economic responsibility / Supply chain management / Sustainable supply chain</i>
Labour practices grievance mechanisms		
G4-LA16	Number of grievances about labour practices filed, addressed, and resolved through formal grievance mechanisms	► <i>Social responsibility / Human rights</i> ► <i>Sustainability management / Business ethics and compliance</i>
SOCIAL RESPONSIBILITY: HUMAN RIGHTS		
G4-DMA	Management approach to social responsibility, human rights	► <i>Appendix 1, Sustainability management by topic</i>
Investments		
G4-HR1	Human rights screening or clauses included in significant investment agreements	► <i>Social responsibility / Human rights</i>
G4-HR2	Employee training on human rights policies or procedures	► <i>Social responsibility / Human rights</i>
Non-discrimination		
G4-HR3	Incidents of discrimination and corrective actions taken	► <i>Social responsibility / Employees / Diversity and equal opportunity</i>
Freedom of association and collective bargaining		
G4-HR4	Supporting the right to freedom of association and collective bargaining in risk areas	► <i>Social responsibility / Employees / Employee-employer relations</i>
Child labour		
G4-HR5	Measures taken to eliminate child labour in risk areas and in operations of significant suppliers	► <i>Social responsibility / Human rights</i> ► <i>Economic responsibility / Supply chain management / Sustainable supply chain</i>
Forced or compulsory labour		
G4-HR6	Measures taken to eliminate forced and compulsory labour in risk areas and in operations of significant suppliers	► <i>Social responsibility / Human rights</i> ► <i>Economic responsibility / Supply chain management / Sustainable supply chain</i>
Assessment		
G4-HR9	Operations that have been subject to human rights reviews or impact assessments	► <i>Social responsibility / Human rights</i>
Supplier human rights assessment		
G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken	► <i>Economic responsibility / Supply chain management / Sustainable supply chain</i>
Human rights grievance mechanisms		
G4-HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	► <i>Social responsibility / Human rights</i> ► <i>Sustainability management / Business ethics and compliance</i>

Sustainability management	Economic responsibility	Environmental responsibility	Social responsibility	Reporting principles and assurance	Appendices
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## Reporting principles

## Reported GRI indicators

## Assurance report

CODE	DESCRIPTION	SECTION
<b>SOCIAL RESPONSIBILITY: SOCIETY</b>		
G4-DMA	Management approach to social responsibility, society	► <i>Appendix 1, Sustainability management by topic</i>
Local communities		
G4-SO2	Operations with significant actual and potential negative impacts on local communities	► <i>Social responsibility / Corporate citizenship</i>
Anti-corruption		
G4-SO3	Operations assessed for risks related to corruption and the significant risks identified	► <i>Sustainability management / Business ethics and compliance</i>
G4-SO4	Communication and training on anti-corruption policies and procedures	► <i>Sustainability management / Business ethics and compliance</i>
G4-SO5	Confirmed incidents of corruption and actions taken	► <i>Sustainability management / Business ethics and compliance</i>
Public policy		
G4-SO6	Total value of political contributions	► <i>Sustainability management / Business ethics and compliance</i>
Anti-competitive behaviour		
G4-SO7	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices and their outcomes	► <i>Sustainability management / Business ethics and compliance</i>
Compliance		
G4-SO8	Significant fines and non-monetary sanctions for non-compliance with laws and regulations	► <i>Sustainability management / Business ethics and compliance</i>
Disaster/Emergency planning and response		
G4-DMA	Management approach	► <i>Social responsibility / Safety and security / Security</i>

CODE	DESCRIPTION	SECTION
<b>SOCIAL RESPONSIBILITY: PRODUCT RESPONSIBILITY</b>		
G4-DMA	Management approach to social responsibility, product responsibility	► <i>Appendix 1, Sustainability management by topic</i>
Product and service labelling		
G4-PR5	Results of surveys measuring customer satisfaction	► <i>Economic responsibility / Customer satisfaction and reputation</i>
Marketing communications		
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications	► <i>Social responsibility / Product responsibility</i>
Access		
EU30	Average plant availability factor	► <i>Social responsibility / Security of supply</i>

# Independent limited assurance report on Fortum's Greenhouse Gas Emissions 2016

## To the Management of Fortum Corporation

We have been engaged by Fortum Corporation (hereafter: Fortum) to provide a limited assurance on Fortum's Greenhouse Gas Emissions (hereafter: GHG Emissions) broken down by scope 1, 2 and 3 for the reporting period of January 1, 2016 to December 31, 2016 (hereafter: GHG Emissions Disclosures). The information subject to the assurance engagement is presented in the section "Greenhouse gas emissions" of Fortum's sustainability reporting 2016 (hereafter: GHG Reporting).

## Management's responsibility

Management is responsible for the preparation of the GHG Reporting in accordance with the reporting criteria as set out in Fortum's reporting principles and the Greenhouse Gas Protocol (hereafter: GHG Protocol). This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of the GHG Reporting that are free from material misstatement, whether due to fraud or error, selecting and applying appropriate criteria and making estimates that are reasonable in the circumstances.

## Assurance provider's responsibility

Our responsibility is to express a limited assurance conclusion on the reported GHG Emissions Disclosures within Fortum's GHG Reporting based on our engagement. Our assurance report is made in accordance with the terms of our engagement with Fortum. We do not accept or assume responsibility to anyone other than Fortum for our work, for this assurance report, or for the conclusions we have reached.

We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3410 to provide a limited assurance on performance data. This Standard requires that we comply with ethical requirements and plan and

perform the assurance engagement to obtain a limited assurance whether any matters come to our attention that cause us to believe that the GHG Emissions Disclosures have not been presented, in all material respects, in accordance with the reporting criteria.

We did not perform any assurance procedures on the prospective information, such as targets, expectations and ambitions, disclosed in the GHG Reporting. Consequently, we draw no conclusion on the prospective information.

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

Our procedures on this engagement included:

- A review of management systems, reporting and data compilation processes
- Selected interviews of persons conducting scope 1, 2 and 3 analysis and data owners
- Review of assumptions and emission factors used in calculations
- Analytical testing of consolidated data
- Testing of source data on spot check basis

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

## Our independence, quality control and competences

We complied with Deloitte's independence policies which address and, in certain cases, exceed the requirements of the International Federation of Accountants Code of Ethics for Professional

Accountants in their role as independent assurance providers and in particular preclude us from taking financial, commercial, governance and ownership positions which might affect, or be perceived to affect, our independence and impartiality and from any involvement in the preparation of the report. We have maintained our independence and objectivity throughout the year and there were no events or prohibited services provided which could impair our independence and objectivity.

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

## Conclusion

On the basis of the procedures we have performed, nothing has come to our attention that causes us to believe that the information subject to the assurance engagement is not prepared, in all material respects, in accordance with the GHG Protocol or that the GHG Emissions Disclosures are not reliable, in all material respects, with regard to the reporting criteria.

Our assurance statement should be read in conjunction with the inherent limitations of accuracy and completeness of the GHG Reporting.

Helsinki 27 February 2017

Deloitte & Touche Oy

Jukka Vattulainen  
Authorized Public Accountant

Lasse Ingström  
Authorized Public Accountant



## Appendix I Sustainability management by topic

Sustainability management in the areas of economic responsibility, environmental responsibility and social responsibility is described in more detail in the accompanying tables. Additionally, more detailed information about the management of different aspects and impacts is presented by topic in this report.

### Management of economic responsibility

	Description
Targets and approach	<p>For Fortum economic responsibility means competitiveness, performance excellence and market-driven production that creates long-term value for our stakeholders and enables sustainable growth. Satisfied customers are key to our success and active consumers will have a crucial role in the future energy system. Fortum has indirect responsibility for its supply chain. We conduct business with viable companies that act responsibly.</p> <p>Each new research and development project is assessed against the criteria of carbon dioxide emissions reduction and resource efficiency. Likewise, new investment proposals are assessed against sustainability criteria as part of Fortum's investment assessment and approval process. In our investments we seek economically profitable alternatives that provide the opportunity to increase capacity and reduce emissions.</p> <p>We measure financial performance with the return on capital employed (target: at least 10%) and capital structure (target: comparable net debt/EBITDA around 2.5).</p> <p>The realisation of financial targets in 2016 is reported in the Financial performance and position section of the <a href="#">► Financials</a>.</p>
Policies	<p>The financial management system is based on Group-level policies and their specifying instructions, and on good governance, effective risk management, sufficient controls and the internal audit principles supporting them. Other key elements steering financial management are presented in the section <a href="#">► Policies and commitments</a> and the <a href="#">► Appendix 2</a>.</p>
Responsibilities	<p>The CFO and the Group's Financial unit, division management, and ultimately the CEO and the Board of Directors, are responsible for issues related to finances and financial statements and for broader financial responsibility issues.</p> <p>Our sustainability responsibilities are presented in the section <a href="#">► Governance and management</a>.</p>
Monitoring and follow-up	<p>The Board decides on the company's financial targets as a part of the annual business planning process. Realisation of the targets is monitored on monthly basis both at the division level and by Fortum Executive Management. Fortum's management monitors the realisation of financial targets quarterly as part of the business performance assessment, and key indicators are regularly reported to Fortum's Board of Directors. Financial key indicators related to investments are monitored in divisions' investment forums and by Fortum Executive Management.</p> <p>We report regularly on the direct and indirect financial impacts on our most important stakeholder groups. Fortum also uses the applicable Global Reporting Initiative (GRI) indicators to measure economic responsibility.</p>

### Management of environmental responsibility

	Description
Targets and approach	<p>Fortum's aim is to provide our customers with environmentally benign products and services. We strive to continuously reduce the environmental impacts of our operations by using best available practices and technologies. We emphasise a circular economy, resource and energy efficiency, the use of waste and biomass, and climate change mitigation in our environmental responsibility.</p> <p>Our company's know-how in carbon dioxide-free hydro and nuclear power production and in energy-efficient combined heat and power production, investments in solar and wind power, as well as solutions for sustainable cities play a key role in environmental responsibility.</p> <p>We measure the realisation of the environmental responsibility with the following indicators, for which we have set <a href="#">► Group-level targets</a> (targets for 2016 and 2017):</p> <ul style="list-style-type: none"> <li>• Specific CO<sub>2</sub> emissions</li> <li>• Energy efficiency</li> <li>• Major EHS incidents</li> </ul> <p>Additionally, we have a Group-level target for the number of supplier audits.</p>
Policies	<p>Environmental management is based on Fortum's sustainability policy. Other key elements steering environmental management are presented in the section <a href="#">► Policies and commitments</a> and the <a href="#">► Appendix 2</a>.</p> <p>We assess environmental risks as part of the Group's risk assessment process <a href="#">► Financials/Operating and financial review/Risk management</a>.</p>
Responsibilities	<p>Our sustainability responsibilities are presented in the section <a href="#">► Governance and management</a>.</p>
Monitoring and follow-up	<p>EHS non-compliances are reported monthly and specific carbon dioxide emissions are reported quarterly and energy efficiency improvements annually to the Fortum Executive Management. The Group's key indicators are reported regularly to Fortum's Board of Directors and are published in Fortum's Interim Reports.</p> <p>The divisions and sites follow and develop their operations with audits required by environmental management systems. Internal and external auditors regularly audit our ISO 14001 standard-compliant management system. The CO<sub>2</sub> emissions of plants within the sphere of the EU's emissions trading scheme are audited annually on a per plant basis by an external verifier accredited by the emissions trading authority. The verification addresses the reliability, credibility and accuracy of the monitoring system and the reported data and information relating to emissions. The plants must annually submit to the authorities a verified emissions report of the previous calendar year's carbon dioxide emissions.</p> <p>We assess the level of operations of our business partners through supplier pre-selection and audits.</p> <p>For coal, we use the Bettercoal Code and tools in assessing the sustainability of the supply chain. The Bettercoal audits are always conducted by third parties.</p> <p>We map our stakeholders' views annually with the One Fortum survey and with separate sustainability surveys.</p>

## Management of social responsibility: labour practices and decent work

	Description
Targets and approach	<p>We aspire to be a desired and safe workplace for our employees and for contractors and service providers working for us. We believe that all accidents can be avoided. Our social responsibility targets are related to employee well-being and competence development, occupational and operational safety, responsible business practices and responsible operations in our supply chain, and good corporate citizenship.</p> <p>We measure the realisation of the social responsibility with the following indicators, for which we have set ► <b>Group-level targets</b> (targets for 2016 and 2017):</p> <ul style="list-style-type: none"> <li>• Total recordable injury frequency (TRIF), own personnel</li> <li>• Lost Workday Injury Frequency (LWIF), own personnel and contractors</li> <li>• Number of serious occupational accidents, as of January 2017 severe accidents</li> <li>• Quality of occupational accidents, serious EHS incidents, and near misses investigation process, as of January 2017</li> <li>• Percentage of sickness-related absences</li> </ul> <p>Additionally, we have a Group-level target for the number of supplier audits.</p>
Policies	<p>Safety management is based on Fortum's sustainability policy. Other key elements steering labour practices and safety management are presented in the section ► <b>Policies and commitments</b> and the ► <b>Appendix 2</b>.</p> <p>We assess safety risks as part of the Group's risk assessment process. Everyday safety management is guided with about 20 Group-level Environment, Health and Safety (EHS) instructions and EHS training events. The Group-level instructions are supported by local-level instructions, which address in more detail the material safety issues and local special requirements. They include, e.g., nuclear power plant safety and dam safety. The instructions cover Fortum employees and contractor employees.</p> <p>Personnel management is based on Fortum's human resources policy and the supporting Group-level HR processes: strategic planning, recruiting, personnel development, performance management, remuneration, and employment and workforce administration.</p>
Responsibilities	Our sustainability responsibilities are presented in the section ► <b>Governance and management</b> .
Monitoring and follow-up	<p>Fortum employee and contractor injury frequencies and the number of serious occupational accidents are reported monthly to Fortum Executive Management. The Group's key indicators are reported regularly to Fortum's Board of Directors and are published in Fortum's Interim Reports. The divisions and sites follow and develop their operations with audits required by safety and quality management systems. Internal and external auditors regularly audit our OHSAS 18001 standard-compliant management system.</p> <p>Work wellbeing, indicated as a percentage of sickness absence rate is reported to the Fortum Executive Management every quarter. Work wellbeing is also monitored through other Group-level indicators, such as the ratio between actual retirement age and the statutory start of the retirement pension. Monitoring work wellbeing is also part of the Fortum Sound employee survey. The survey's wellbeing index measures employee views on e.e. the openness of the dialogue in the work community, personal accountability, and how challenging work tasks are.</p> <p>We assess the level of operations of our business partners through supplier pre-selection and audits. The results of the supplier surveys and audits assessing the realisation of labour rights and practices are recorded along with corrective measures into the supplier database, which is accessible to all Fortum employees. Fortum has set a Group target for the number of audits, and the audits that are conducted are reported in our interim reports.</p> <p>For coal, we use the Bettercoal Code and tools in assessing the sustainability of the supply chain. The Bettercoal audits are always conducted by third parties.</p> <p>We map our stakeholders' views annually with the One Fortum survey and with separate sustainability surveys.</p>

## Management of social responsibility: Human rights

	Description
Targets and approach	<p>Our goal is to operate in accordance with the UN Guiding Principles on Business and Human Rights, and to apply these principles in our own operations as well as in country and partner risk assessments and supplier audits.</p> <p>Our social responsibility includes operating as a good corporate citizen and taking care of our own employees and the surrounding communities. We advance the wellbeing and safety of the work community, respect for individuals, and mutual trust and responsible operations in our supply chain and more broadly in society.</p> <p>We have set a Group-level target for the number of ▶ <a href="#">supplier audits</a>.</p>
Policies	Key elements steering human rights management are presented in the section ▶ <a href="#">Policies and commitments</a> and the ▶ <a href="#">Appendix 2</a> .
Responsibilities	Our sustainability responsibilities are presented in the section ▶ <a href="#">Governance and management</a> .
Monitoring and follow-up	<p>We assess the level of operations of our business partners through supplier pre-selection and audits. The results of the supplier surveys and audits assessing the realisation of labour rights and practices are recorded along with corrective measures into the supplier database, which is accessible to all Fortum employees. Fortum has set a Group target for the number of audits, and the audits that are conducted are reported in our interim reports. For coal, we use the Bettercoal Code and tools in assessing the sustainability of the supply chain. The Bettercoal audits are always conducted by third parties.</p> <p>The divisions and sites follow and develop their operations with internal and external audits required by occupational safety and quality management systems.</p> <p>Country-specific reports that address also human rights are presented to Fortum's Board of Directors and Fortum Executive Management when needed.</p> <p>We map our stakeholders' views annually with the One Fortum survey and with separate sustainability surveys.</p>

## Management of social responsibility: Society

	Description
Targets and approach	<p>We believe that an excellent financial result and ethical business are intertwined. We follow good business practices and ethical principles in all our operations. We compete fairly and ethically and work within the framework of applicable competition laws and Group competition instructions. We avoid all situations where our own personal interests may conflict with the interests of the Fortum Group. Notably, we never accept or give a bribe or other improper payment for any reason.</p> <p>Our customer relations are based on honesty and trust. We treat our suppliers and subcontractors fairly and equally. We select them based on their merit and we expect them to consistently comply with our requirements and with Fortum's Supplier Code of Conduct.</p>
Policies	Key elements steering social and compliance management are presented in the section ▶ <a href="#">Policies and commitments</a> and the ▶ <a href="#">Appendix 2</a> .
Responsibilities	Our sustainability responsibilities are presented in the section ▶ <a href="#">Governance and management</a> .
Monitoring and follow-up	<p>Suspected misconduct and measures related to ethical business practices and compliance with regulations are regularly reported to the Fortum Executive Management and to the Board's Audit and Risk Committee.</p> <p>Fortum has ▶ <a href="#">a channel</a> available to all stakeholder groups for the reporting of misconduct.</p>

## Management of social responsibility: Product responsibility

	Description
Targets and approach	<p>Our goal is to present products and services truthfully in all our marketing and communication materials. We do not present misleading statements and we strictly follow responsible marketing communication guidelines. In statements regarding environmental issues, we follow the regulations for environmental marketing. We assume responsibility for customer data protection and comply with the valid regulations related to the handling of customer data.</p> <p>We have set ▶ <a href="#">Group-level targets</a> (targets for 2016 and 2017):</p> <ul style="list-style-type: none"> <li>• Customer satisfaction</li> <li>• Reputation</li> </ul>
Policies	Key elements steering product responsibility management are presented in the section ▶ <a href="#">Policies and commitments</a> and the ▶ <a href="#">Appendix 2</a> .
Responsibilities	Our sustainability responsibilities are presented in the section ▶ <a href="#">Governance and management</a> .
Monitoring and follow-up	<p>The availability of power plants are reported monthly to Fortum Executive Management. The Group's key indicators are reported regularly also to Fortum's Board of Directors and are published in Fortum's interim reports.</p> <p>Customer satisfaction is monitored annually with the One Fortum survey. The results of the survey are presented to Fortum's management and they are used to develop the business. Customer satisfaction and Fortum's reputation are part of the Group-level sustainability target setting, and they are reported annually to the Board of Directors.</p>

## Appendix 2 Fortum's main internal policies and instructions guiding sustainability

## Glossary and contact information

	Economic responsibility	Environmental responsibility	Social responsibility: Labour practices and decent work	Social responsibility: Human rights	Social responsibility: Society	Social responsibility: Product responsibility
Values	x	x	x	x	x	x
Code of Conduct	x	x	x	x	x	x
Supplier Code of Conduct	x	x	x	x	x	x
Group Risk policy	x	x	x	x	x	x
Sustainability policy (including environmental, and health and safety policies)	x	x	x	x	x	x
Minimum requirements for EHS management		x	x	x	x	
Biodiversity guideline		x			x	
Guidelines on sustainability assessment		x	x	x	x	
Human resources policy			x	x	x	
Accounting manual	x				x	
Fortum investment manual	x				x	
Group instructions for anti-bribery	x				x	
Group instructions for safeguarding assets	x				x	
Group instructions for conflicts of interest	x				x	
Group instruction on Competition Law	x				x	
Security guidelines		x	x	x	x	
Fortum concept for sponsoring and donations					x	

► *Glossary, abbreviations and units on our website*

► *Sustainability contact information on our website*