



GRI Disclosures 2018

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Corporate responsibility at Kemira

Corporate responsibility is our contribution to sustainable development and it is at the core of what we do. Our corporate responsibility program aims to support the execution of our strategy and long-term value creation.

CORPORATE RESPONSIBILITY PRIORITIES

Our corporate responsibility priorities are based on the most material impact of our business model, on the increasing expectations of our customers, investors and other stakeholders, and on our commitment to the Kemira Code of Conduct and internationally defined sustainability principles.

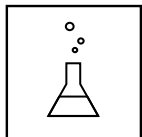
Kemira measures progress in the priority areas through Group level KPIs and targets which are approved by the Management Board and reviewed by the Board of Directors.

We have three priority areas which cover the six most material topics and their impact.

OUR PRIORITIES	MATERIAL TOPICS
Sustainable products and solutions 	Product sustainability in end-use: Products improving our customers' sustainability, product design for use-phase resource efficiency Product stewardship: Chemical safety management throughout the lifecycle of our products
Responsible operations and supply chain 	Responsible management of our operations to ensure safety of our people, and to protect our assets and environment. Key topics are Workplace safety and Climate change Supplier management for risk and compliance management
People and integrity 	People: Engagement and competence development of our employees Integrity: Responsible business practices in our own operations and with our business partners



KPI'S, TARGETS AND PERFORMANCE 2018

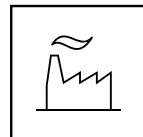
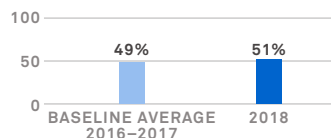


Sustainable products and solutions

Product sustainability

IN PROGRESS

Share of revenue from products used for use-phase resource efficiency. At least 50% of Kemira's revenue generated through products improving customers' resource efficiency.

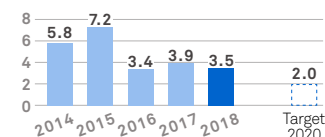


Responsible operations and supply chain

Workplace safety

IN PROGRESS

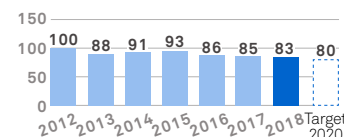
Achieve zero injuries on long term; TRIF* 2.0 by the end of 2020



Climate change

IN PROGRESS

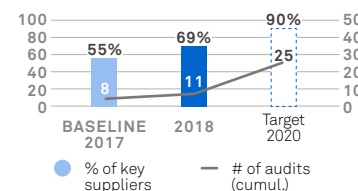
Kemira Carbon Index ≤ 80 by the end of 2020 (2012 = 100).



Supplier management

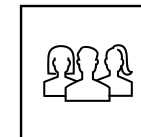
IN PROGRESS

% of direct key suppliers screened through sustainability assessments and audits (cumulative %). The target includes 5 sustainability audits for highest risk** suppliers every year, and cumulatively 25 by 2020.



* TRIF = Number of Total Recordable Injury Frequency per million hours, Kemira + contractor, year-to-date

** Suppliers with lowest sustainability assessment score

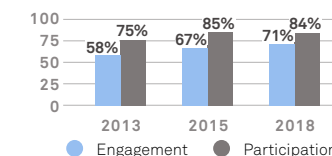


People and integrity

Employee engagement index based on Voices@Kemira biennial survey

AHEAD OF TARGET

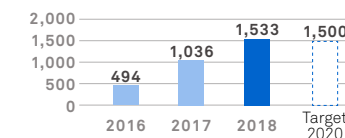
The index at or above the external industry norm. The participation rate in Voices@Kemira 75% or above.



Leadership development activities provided, average

AHEAD OF TARGET

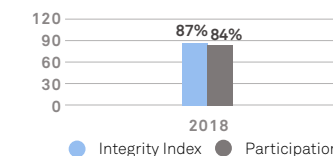
Two leadership development activities per people manager position during 2016-2020, the cumulative target is 1,500 by 2020.



Integrity index

IN PROGRESS

KPI to measure compliance with the Kemira Code of Conduct. The target is to maintain the Integrity Index level above the industry benchmark.



RECOGNITIONS 2018

CDP

Kemira received a B score in CDP's 2018 rankings. This puts Kemira in the top quartile of the chemicals sector companies requested to disclose to CDP, reflecting the company's continued commitment to transparency, increasing energy efficiency and sourcing renewable energy for our operations. This 2018 result shows that Kemira is on the right track, balancing sustainability with profitability. The score aligns well with Kemira's focus on products that help customers do more with less – less raw materials, water and energy.

This most recent CDP disclosure round saw an increase of 11% in companies participating, taking the total to over 7,000 companies of which 97 were from the chemicals sector. This steady growth in CDP disclosure – now representing over 50% of global market capitalization – provides Kemira with a true benchmark of our performance.



ECOVADIS

Kemira has been awarded the Gold Recognition Level for the CSR (Corporate Social Responsibility) performance for the fourth consecutive year by EcoVadis, a collaborative platform providing sustainability ratings and performance improvement tools for global supply chains. With a score of 75/100 points, Kemira is among the top 5% of the performers evaluated by EcoVadis. The EcoVadis methodology framework assesses companies' policies and actions as well as their published reporting related to the environment, labor and human rights, ethics and sustainable procurement.

The EcoVadis methodology is based on the international sustainability standards of the Global Reporting Initiative, United Nations Global Compact (UNGC), and ISO 26000. EcoVadis reporting gives confidence to our customers and allows us to position Kemira across a broad range of sustainability themes: Environment, Fair labor & human rights, Ethics, and Sustainable procurement.



Our management approach

Our corporate responsibility work is guided by our commitments to the Code of Conduct and internationally defined sustainability principles, stakeholder expectations, and by strategy, corporate policies and integrated management system.

MATERIALITY

COMMITMENTS

The Kemira Code of Conduct is the foundation for our business conduct at Kemira. Our values are embedded in our corporate culture and connect each of us around the world. Our Code sets a framework around our values and reflects our commitments towards our key stakeholders. We also expect our suppliers and other business partners to maintain the same high standards in their own operations, as defined in our Code of Conduct for Suppliers, Distributors and Agents (CoC-SDA).

The United Nations Global Compact is signed by Kemira Oyj as our commitment to respect and promote human rights, implement decent work practices, reduce our environmental impact, and combat corruption.

Responsible Care® is a voluntary commitment by the global chemical industry to drive continuous improvement and achieve excellence in environmental, health and safety and security performance. Through Responsible Care, global chemical manufacturers commit to pursue an ethic of

safe chemicals management and performance excellence worldwide. This helps to enhance public confidence and trust in the industry's dedication to safely manage chemicals throughout their lifecycle while ensuring that chemistry can continue to contribute to a healthier environment, improved living standards and a better quality of life for all. Kemira is committed to operate according to the principles of Responsible Care®.

STAKEHOLDER EXPECTATIONS

Our key stakeholders include our customers, shareholders, lenders, employees and suppliers. Other relevant stakeholder groups include the local communities where Kemira operates, regulatory bodies, trade associations, decision-makers and opinion leaders.

- A significant share of our investors practice Socially Responsible Investing (SRI). Among the 20 largest institutional shareholders which own 58% (60%) of Kemira shares, 15 (16) investors have signed the Principles of Responsible Investment (PRI). These PRI signatories represent 19% (18%) of the ownership of Kemira shares.

- Many of our customers are sustainability leaders in their respective industrial sectors. Kemira plays a role in their value chains, and we are expected to demonstrate the same strong commitment to sustainable business as our customers.
- Our employees see sustainable business conduct as an important factor behind their engagement with Kemira, according to our employee surveys.

Our approach to stakeholder engagement includes activities ranging from information sharing to active dialogue and collaboration on issues of mutual interest. We regularly review our stakeholders' expectations and potential concerns.

Stakeholder engagement (GRI 102-40, 42, 43, 44)

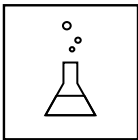
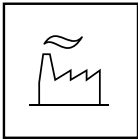
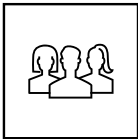
LIST OF STAKEHOLDER GROUPS	IDENTIFYING AND SELECTING STAKEHOLDERS	APPROACH TO STAKEHOLDER ENGAGEMENT	KEY TOPICS AND CONCERNS RAISED	KEMIRA'S RESPONSE
Customers	<ul style="list-style-type: none"> Our customers are Kemira's main source of value creation Our customers' expectations and needs drive our product portfolio and offerings 	<ul style="list-style-type: none"> Direct customer contacts Customer webinars (6), events (20), newsletters (22) Customer satisfaction measure Net Promoter Score has risen to 33 (30 in 2017) and is currently on a "good" level. Key drivers in customer satisfaction are the technical service, speed and proactivity, as well as our ability to offer new solutions 	<ul style="list-style-type: none"> Sustainable product offerings and chemical safety Capability to proactively understand customer needs and to offer new products and solutions Business ethics Our sustainability management and performance throughout the value chain 	<ul style="list-style-type: none"> R&D portfolio management Sustainability checks in New Product Development Product lifecycle management for all aspects of product safety Improve understanding of customer needs beyond current offerings Sustainability performance data submitted on request
Shareholders and lenders	<ul style="list-style-type: none"> Share of our value creation through dividends and interest payments Expectations for return on investment, good corporate governance practices and sustainability performance 	<ul style="list-style-type: none"> Regular events like roadshows, conference calls and one-to-one meetings. In 2018, we had 20 (23) roadshow days, and 280 (331) institutions were met in 150 (200) meetings 	<ul style="list-style-type: none"> Overall management approach to sustainability issues, including climate change impact mitigation Potential business risks and opportunities related to sustainability of products, operations, ethics and compliance 	<ul style="list-style-type: none"> Transparent and regular reporting and disclosure Participation in CDP Climate Change program Responding to rating company and investor questionnaires
Employees	<ul style="list-style-type: none"> Share of our value creation through compensation and benefits Employees' engagement, well-being and competencies influence our operational performance and value creation 	<ul style="list-style-type: none"> Performance management and development process Regular Town hall meetings globally Co-operation with employee representatives eg. Kemira European Forum Engagement surveys Ethics and Compliance hotline 	<ul style="list-style-type: none"> Understanding Kemira's strategy and future direction New ways of working Ways of developing competences for the future 	<ul style="list-style-type: none"> Strategy refresh communication and action planning Performance and development discussions Leadership development Systematic competence development
Suppliers	<ul style="list-style-type: none"> Share of our value creation through payments for goods and services Suppliers' sustainability performance may impact our operational efficiency and business risks 	<ul style="list-style-type: none"> Working closely with core suppliers to help them meet our sustainability performance expectations, and take corrective actions if needed 	<ul style="list-style-type: none"> Safety Business ethics and compliance 	<ul style="list-style-type: none"> Suppliers are asked to commit to Kemira Code of Conduct for Suppliers, Distributors and Agents Supplier sustainability assessments and audits
Local communities	<ul style="list-style-type: none"> Share of our value creation in the form of tax payments and employment. The safety and environmental performance of our operations may impact the acceptance of our local presence 	<ul style="list-style-type: none"> Dialogue and collaboration with local communities at major sites to ensure we understand and address their concerns Collaboration with schools and universities 	<ul style="list-style-type: none"> Exposure to safety and environmental risk Employment opportunities 	<ul style="list-style-type: none"> Environmental impact and process safety risk assessments Regular and open dialogue with local communities, e.g. open door days
Regulatory bodies, trade associations, decision-makers and opinion leaders	<ul style="list-style-type: none"> These stakeholders have the capability to influence or make political decisions on legislation with impact on our operations and business 	<ul style="list-style-type: none"> Memberships in industrial trade associations Subject-specific dialogue with regulatory bodies on national and EU level 	<ul style="list-style-type: none"> Resource efficiency Chemicals safety 	<ul style="list-style-type: none"> Position paper on relevant topics such EU review on urban waste water treatment Actively participating in dialogue on EU directive proposal on single-use plastic Participation in CEFIC and its member organization Chemical Industry Federation in Finland

GOVERNANCE

The Management Board approves our corporate responsibility priorities, key performance indicators (KPIs) and targets. The Board of Directors is duly informed about these targets, and our related performance, and they also approve the sections of the Annual Report which cover sustainability information, i.e. Business overview, GRI disclosures and non-financial information statement in the Board Review. Climate-related risks and opportunities are part of the overall governance.

Responsibilities for individual corporate responsibility targets are shared between the members of the Management Board.

The Director, Corporate Responsibility, is responsible for ensuring that relevant management processes relating to material corporate responsibility topics are being developed and implemented as part of our integrated management system. The Corporate Responsibility Management Team has members from different functions and acts as a collaboration forum to ensure the implementation and follow-up of our corporate responsibility program as part of the daily business operations.

CORPORATE RESPONSIBILITY PRIORITIES	ACCOUNTABILITY OF MATERIAL TOPICS ON THE MANAGEMENT BOARD LEVEL	RESPONSIBILITY BY POSITION
Sustainable products and solutions 	<ul style="list-style-type: none"> Product sustainability Product stewardship 	<ul style="list-style-type: none"> Chief Technology Officer EVP, Operational Excellence
Responsible operations and supply chain 	<ul style="list-style-type: none"> Workplace safety Climate change <ul style="list-style-type: none"> Emissions from our own energy production, Scope 1 Emissions based on purchased energy, Scope 2 Supplier management 	<ul style="list-style-type: none"> EVP, Operational Excellence Segment Presidents EVP, Operational Excellence EVP, Operational Excellence
People and Integrity 	<ul style="list-style-type: none"> Leadership and employee engagement Responsible business practices and compliance with Code of Conduct 	<ul style="list-style-type: none"> EVP, Human Resources Group General Counsel

INTEGRATED MANAGEMENT SYSTEM

Globally, we aim to bring together all of our operations under the Kemira Integrated Management System. The Kemira management system defines the way our organization is working through the set of policies, standards, procedures and processes. It also defines the requirements and accountabilities at each level of the organization.

Conformance to Integrated Management System and compliance to legal requirements are ensured by regularly monitoring the performance indicators and by conducting internal and external audits and management reviews. The management reviews are performed in all levels of the organization from the manufacturing to regional management and the Management Board.

Kemira has a principle that all operations under our Integrated Management System meet the international standards ISO 9001:2015 for Quality and ISO 14001:2015 for Environment and OHSAS 18001:2007 for Occupational Health and Safety. Our Energy Management System is certified to ISO 50001:2001.

Our Integrated Management System is externally audited through a three-year audit scheme. In 2018, we had 54 (60) internal and external management systems audits, including manufacturing sites, major office locations and R&D centers.

Integrated management system



Number of manufacturing sites certified in 2018

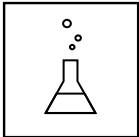
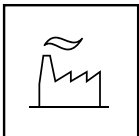
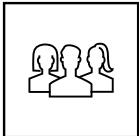
	EMEA	AMERICAS	APAC	Total %*
ISO 9001	32	15	6	53 (85)
ISO 14001	31	14	6	51 (82)
OHSAS 18001**	31	15	6	52 (84)

*Number of sites included in the scope was 62 in 2018. Two manufacturing sites were taken into operation in late 2018, and will be part of scope in 2019.

**One site had its HSE management system certified under ISO 45001:2018, the new and updated version of the OHSAS 18001.

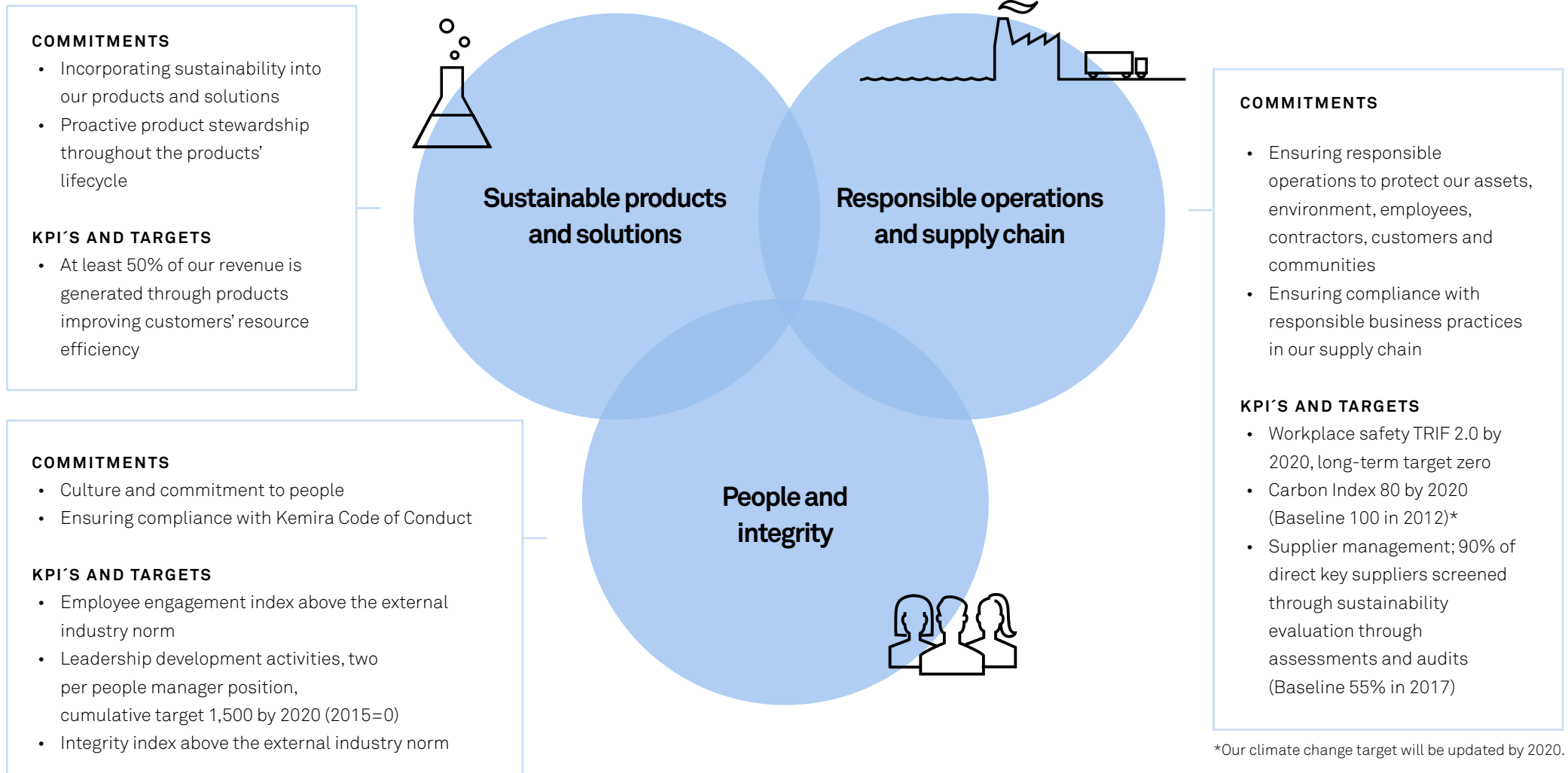
KEY POLICIES RELATING TO CORPORATE RESPONSIBILITY TOPICS

Our Code of Conduct and respective policies cover all areas of Kemira's operations and define the framework for our Integrated Management System. Kemira issues and maintains policies to document and communicate Kemira's expectations concerning important internal processes and activities. Our policies create a framework for consistent practices and enforce compliance in our daily operations. All Kemira policies can be found in the document management system, and there is training available if so required for effective implementation. The policy owner ensures that an adequate monitoring system is implemented to monitor the level of compliance with the policy.

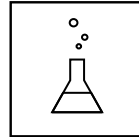
CORPORATE RESPONSIBILITY TOPICS	KEY POLICIES	POLICY OWNERS
Sustainable products and solutions 	Product stewardship policy	Head of Product Stewardship and regulatory affairs
	Trade compliance policy	Head of Product Stewardship and regulatory affairs
	Intellectual Property Rights policy	Chief Technology Officer
Responsible operations and Supply chain 	EHSQ policy (including Energy policy)	Head of Environment, Health, Safety and Quality
	Sourcing and procurement policy	EVP, Operational Excellence
	Logistics and transportation policy	Head of Global Supply Chain Management
People and integrity 	Recruitment policy	EVP, Human Resources
	Global competition law compliance policy	Group General Counsel
	Gifts, entertainment and anti-bribery policy	Group General Counsel

OUR FIVE YEAR CORPORATE RESPONSIBILITY APPROACH

The management of corporate responsibility priorities contribute to Kemira's strategy implementation.



PRODUCT SUSTAINABILITY IN END-USE



MANAGEMENT APPROACH

At Kemira, we use our chemistry to add sustainability into our customers' manufacturing processes and products. Through our chemistry, we play our part to enable the world to move towards more bio-based, recyclable and reusable materials.

Products and solutions addressing the sustainability requirements of our customers are a crucial part of Kemira's long-term strategy and core business. The use of our products and solutions benefits customers by improving the resource efficiency and quality of their products. Our business model is business-to-business, and we sell products that are used in industrial scale processes mainly as processing aids.

In 2018, we introduced a KPI to measure the share of revenue from products used to improve use-phase resource efficiency. This KPI provides a crucial linkage to our purpose and strategy.

Products included in the KPI are aimed at material, energy and water efficiency at the customer use phase and are linked to the following types of main applications:

Pulp & Paper

- Runnability of a paper and board machine
- Pulp processing
- Process water management
- Material and fiber efficiency

Industry & Water

- Raw water and wastewater treatment
- Sludge dewatering and sludge to energy (biogas)
- Digital solutions for process optimization
- Oil and gas material flow improvement
- Oil and gas yield improvement

The product categories falling into the scope of the KPI are mainly coagulants, polymers and process chemicals.

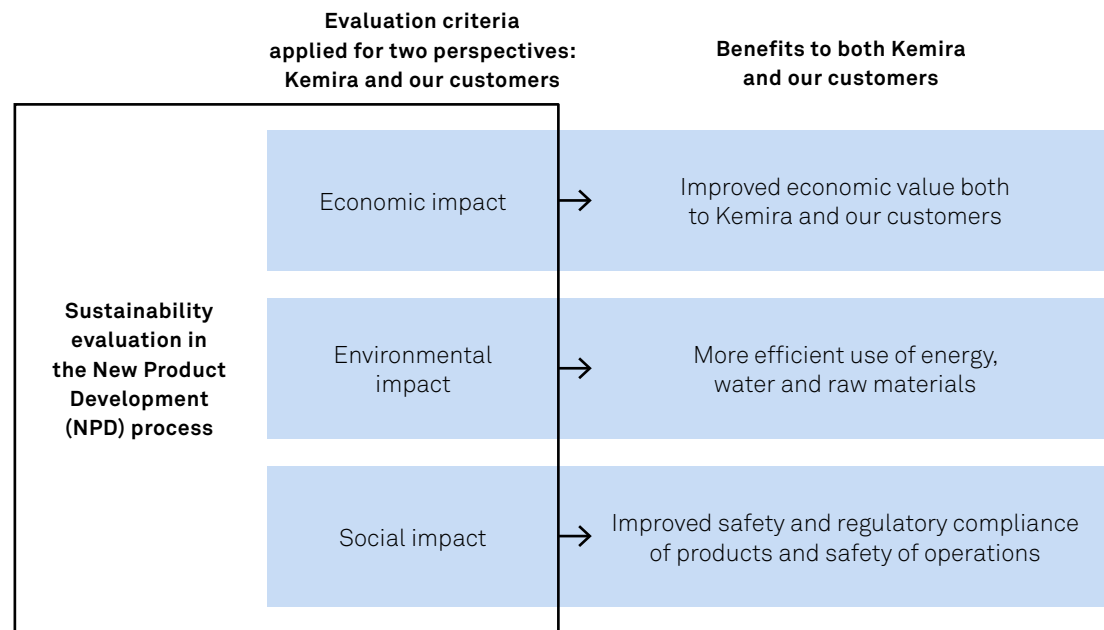


Kemira's New Product Development (NPD) process follows a stage-gate model. The process starts with idea generation, and continues with five stages and decision gates until commercialization and the final closing of the project. Successful projects must demonstrate both improved sustainability and business benefits at each decision gate to justify the project's continuation, and ultimately the product launch. Our sustainability evaluations examine the economic, environmental and social impact of any new product, both in Kemira's operations and in our customers' operations. The NPD process also aims to identify and evaluate more sustainable and bio-based alternatives for raw materials, in terms of sources, and use in whole life cycle and safety.

RESULTS AND KEY ACTIVITIES IN 2018

- Product sustainability KPI as approved by the Management Board in June 2018: Share of revenue from products used for use-phase resource efficiency, with a target: At least 50% of our revenue is generated through products improving customers' resource efficiency. Baseline average 2016-2017 was 49%, and result 2018 51%.
- We started 19 new and finalized 11 NPD projects in 2018. Out of these 19 new projects 15 are planned to increase resource efficiency. Commercialization of 10 projects started in 2018 and nine of them are designed to improve customers' resource efficiency.

Sustainability evaluation throughout the New Product Development process



PRODUCT STEWARDSHIP

MANAGEMENT APPROACH

Kemira's Product Stewardship Policy defines the minimum requirements for our operations to ensure that our products can be safely used by our stakeholders, and that chemical risks and their impact are incorporated in decision-making relating to our business. Chemical hazard assessments are not only prepared for products but also for raw materials, process aids and intermediates; and are incorporated in change management process during their full lifecycle. Product stewardship is the key pillar in the Responsible Care program. Product Stewardship involves the proactive management of the health, safety and environmental aspects of a product throughout its lifecycle. Our customers have their own health, safety and environmental requirements for their input materials, and they typically follow several voluntary certification schemes, including eco-labeling schemes, which set further expectations on our product offerings. Public discussion and concerns relating to specific chemicals and their hazards also affect our approach to product stewardship and chemical management. Product stewardship provides a platform that helps us to identify risks at an early stage and manage those risks along the value chain to fulfill the expectations of different stakeholders.

Product regulatory compliance

The manufacturing and sale of chemicals are widely regulated around the world. Continuous follow-up of the regulatory development activities is the prerequisite for business compliance and plays a key role in ensuring product safety for customers, value chain and stakeholders.



Product lifecycle management

All of our products, handled raw materials and intermediates need to comply with all applicable chemical regulatory requirements in the countries where we manufacture and / or sell chemicals. Assessments examining regulatory compliance, human health impact, safety issues and environmental protection aspects all form part of our Product Lifecycle Management process from conception and development to manufacturing and sales, and finally to product elimination. All data related to chemical products and substances including raw materials is managed in Enterprise Resource Planning system and is linked to Product Lifecycle Management tool / process.

Priority substance management

We actively track our portfolio for priority substances that are subject to future regulatory restrictions or associated with particular concerns, and prepare management plans for these substances. Our priority substance management plan aims to define the specific risks associated with each substance, examine options for managing these specific risks, and formulate action plans for the preferred options. These options to mitigate risks may include e.g. substitution, phase-out or limiting exposure.

Commitment to animal welfare and sustainable palm oil supply

Kemira is committed to reducing, refining and replacing animal testing wherever possible. Kemira does not itself perform any animal experimentation in-house. All animal testing commissioned by Kemira is done to the highest of animal welfare standards following national and



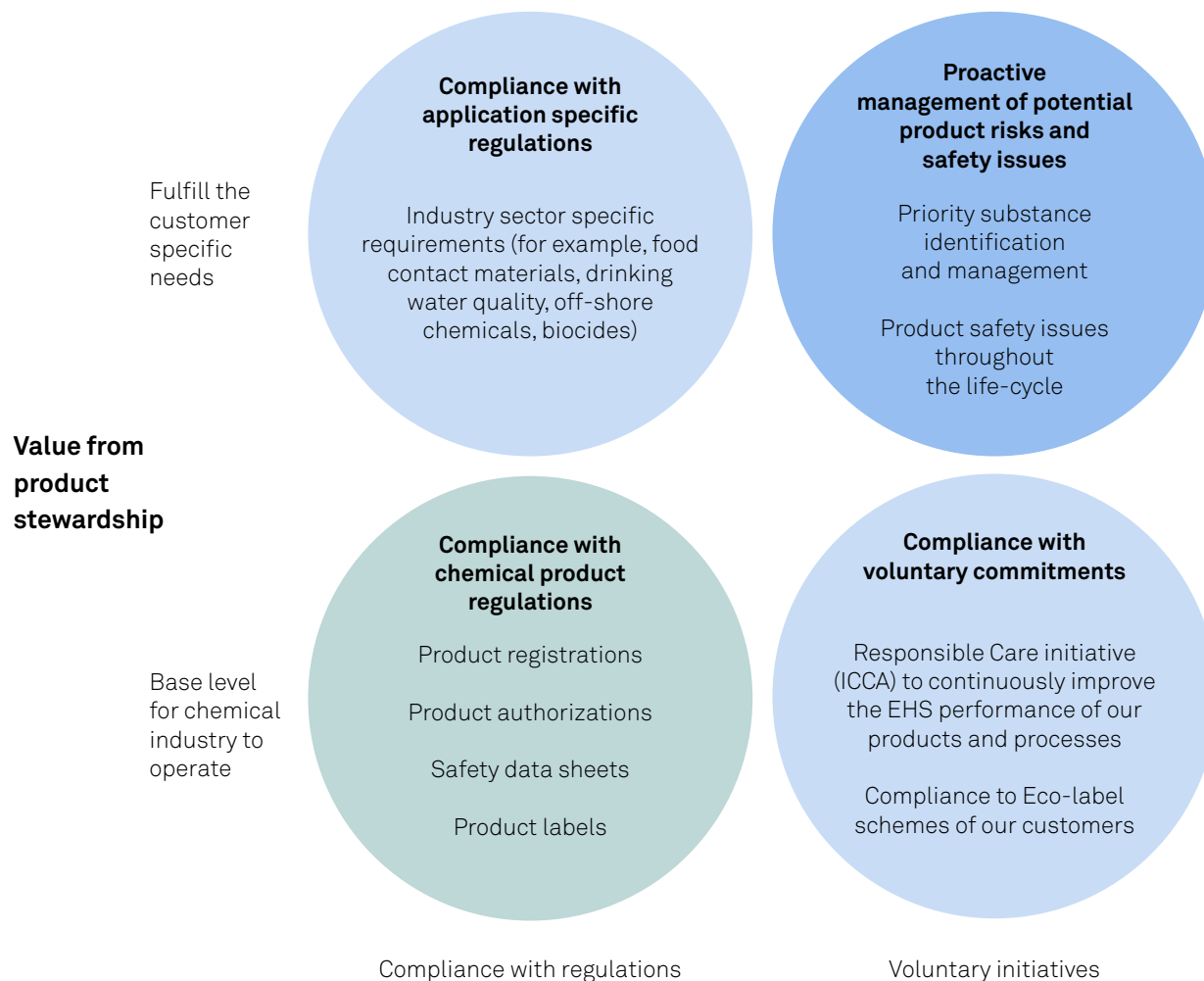
international legislation on the protection of animals and only if specifically required by legislation or for product safety purposes.

When using palm oil derivatives, Kemira screens and relies on suppliers who have shown commitment to the Roundtable on Sustainable Palm Oil (RSPO) supply chain standard for sustainable palm oil. However, RSPO certified palm oil currently has limited availability and Kemira is also forced to use palm oil derivatives without certification.

RESULTS AND KEY ACTIVITIES IN 2018

- Kemira has successfully registered all substances that fulfilled the criteria to be EU REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) registered. Kemira has registered substances that it manufactures in or imports into the EEA (European Economic Area). Active monitoring is also in place to ensure that in the future any new substances manufactured or imported by Kemira are also REACH registered before they are placed on the EEA market.
- Kemira registered three PEC (Priority Existing Chemicals) substances based on our business needs in Korean REACH (K-REACH) first phase by the deadline in June 2018.
- Kemira complied with the U.S. EPA requirement for chemical manufacturers and processors to report active chemicals under the Toxic Substances Control Act (TSCA) Inventory Reset Rule.
- The upgraded Product Lifecycle Management (PLM) system was implemented to integrate product master data, documents and basic product management as a central information hub to facilitate communication and collaboration throughout the product lifecycle.

Product stewardship management approach



Chemical risk and impact evaluation

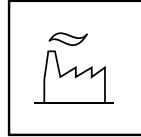
WORKPLACE SAFETY

MANAGEMENT APPROACH

High-performing Environmental, Health, Safety and Quality (EHSQ) management is fundamental to our business. Our daily EHSQ work is guided by regulations and statutory requirements, by our EHSQ policy, by respective standards and operating practices. Our operations are managed to also meet the expectations of our stakeholders in our operating environment. The way to reach these goals are based on proactive hazards management, implementation of identified improvement initiatives, and engaging with our employees and business partners to enforce preventive EHSQ behaviors in our operations.

All aspects of safety management are fundamental to our operations: process safety, chemical safety, workplace safety, transportation and loading / unloading safety. Incidents in our operations can have consequences for our people as well as to those third parties that are working for us at Kemira sites or at a location where Kemira is present.

Our long-term target for safety is “Zero harm for people” and to be in the “World Class” in workplace safety. We measure our safety performance with Total Recordable Injury Frequency (TRIF) covering Kemira employees and contractors. Our short term target is $TRIF \leq 2.0$ by 2020.



RESULTS AND KEY ACTIVITIES IN 2018

In 2018, our safety performance was TRIF= 3.5 (3.9), a result that was an improvement over 2017.

We have now achieved a TRIF level from which further development is highly dependent on the safety behavior of people.

- During 2018, we continued our work towards improving health and safety culture to prevent incidents and mitigating health and safety hazards.
- The Behavior Based Safety program (BBS) was initiated in 2016 and continued in 2018. The program covers all manufacturing sites in APAC, EMEA and SA. NA will have their refreshment program in 2019. The overall aim of this program is to improve safety performance by focusing on the behavior of people. Generally in industry, behavioral human factors are involved in more than 90% of incidents. Our safety development now needs a strong focus on behavior based safety, and people's hearts and minds to successfully work. Only in this way we can reach our target of 2.0 by 2020. The BBS program has now been active for more than a year in most of the EMEA manufacturing sites and we can see a clear decline in incidents in comparison to 2017.

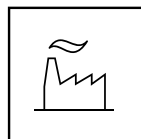
- We implemented a comprehensive "Stop, Think, Act" safety campaign focusing on high-risk activities which have led to incidents in the chemical industry and also at Kemira. The campaign themes covered eleven critical topics in both the industrial and office environment, for example, machine safety, slip-trip-fall, working at heights, spill prevention, office safety and driving safety.
- We started the implementation of the "Life Saving Rules" campaign, based on six life critical standards, to enforce high-hazards work safety. These standards have been separated from the Permit to Work Standard, to deliver more visibility to these life critical activities.
- In 2018, all Kemira employees had safety as a bonus KPI, with one lagging indicator noting the total recordable incident frequency (TRIF) and one leading indicator noting hazardous conditions and activities reporting.

For more information, see GRI 403-2 on page 49.

CLIMATE CHANGE

MANAGEMENT APPROACH

Kemira is committed to climate protection and in 2014 introduced a target to reduce the carbon emissions generated directly and indirectly from our manufacturing. Our key performance indicator for climate change impact mitigation is expressed as the Kemira Carbon Index and the target is to reduce it by 20 percentage points by the end of 2020, compared to the baseline year of 2012.



The key measures to reduce our carbon emissions include:

- Purchasing electricity and steam, which are generated using renewable, carbon-free and low-carbon-intensive energy sources
- Shifting our use of fuels towards less carbon-intensive energy sources
- Improving energy efficiency at our manufacturing sites

RESULTS AND KEY ACTIVITIES 2018

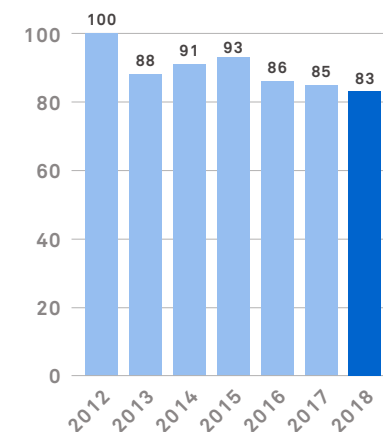
- Kemira Carbon Index: In 2018, the Kemira Carbon Index decreased to 83 (baseline year 2012: 100). We achieved a slight decrease in the Carbon Index compared to 2017, due to increased use of carbon neutral energy sources and the continuous implementation of energy efficiency projects
- Sodium chlorate manufacturing sites in Finland and the United States are the largest consumers of electricity. Finland counted for 46% (43% in 2017) and United States 33% (34%) of Kemira's total purchased electricity during 2018. Due to the increasing carbon pricing mechanisms,

such as the EU emission allowance system, there is greater volatility and price pressure on electricity. The electricity price risk is mitigated through strategic ownership of energy-generating companies, and by hedging a portion of our energy and electricity spend. In Finland, Kemira owns shares in the Finnish energy companies Pohjolan Voima Oyj (PVO) and Teollisuuden Voima Oyj (TVO), and the rest of the electricity is purchased from Spot-market. In other countries, energy is purchased from local suppliers, taking into account the favorability of the energy source.

- In 2018, we conducted an assessment of Kemira's carbon and energy price risk in selected operations covering five largest manufacturing sites located in Finland, Sweden and United States. Carbon risk impact is mainly due to pass-through emission cost in EU.
- The share of carbon-free sources counted for approximately 60% of total fuel and energy purchased in 2018 mainly due to the high share of electricity from nuclear, hydropower and wind power in Finland.
- During 2018, Kemira received Guarantee of Origin certificates for 90,706 MWh (80,360 MWh 2017) of electricity purchased from hydropower suppliers in Finland. All the certificates granted to Kemira were canceled i.e. made non-tradable, with their benefits exclusively redeemed by Kemira.
- The continuous E3plus energy efficiency improvement program contributed to the carbon index improvement. Substantial energy savings (19,2 GWh/a) were achieved, major part in the EMEA sites. Energy efficiency improves carbon index with relatively small gradual steps.

KEMIRA CARBON INDEX

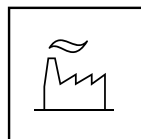
Based on Scope 1 and Scope 2 emissions



The Kemira Carbon Index measures our CO₂ performance both on a consolidated basis and for individual manufacturing sites. It includes 14 large manufacturing sites covering approximately 90% of energy consumption (14 in 2017). The index covers the CO₂ emissions of fuel consumption for direct energy production at our sites ("Scope 1" emissions), as well as emissions from purchased steam and electricity ("Scope 2"), but it excludes direct emissions from chemical processing and transportation (upstream/downstream). The index is independent of the impacts of any changes in production volumes, but may be affected by the product mix.

SUPPLIER MANAGEMENT

DESCRIPTION OF OUR SUPPLY CHAIN



Our Sourcing function is globally responsible for strategic spend management, while our Supply chain management function provides supply chain related services on a regional level to our business segments.

- Our Sourcing activities cover the identification and selection of suppliers, the consequent negotiations and contract management, and the management of supplier relationships. Our supplier selection criteria are based on cost competitiveness, short-term operational excellence, long-term business stability as well as sustainability performance.
- Our Supply chain management activities cover all supply chain related services to our business segments once the supplier relationship has been established by our Sourcing function. Supply chain management services include Customer service, Logistics, Supply chain planning, and Procurement. The Supply chain management function has regional units that each provide all the services needed within their respective regions.
- The total spend of the sourcing categories Direct materials and Indirect goods and services, amounted to about EUR 2.0 billion in 2018. The Direct materials cover all raw materials, packaging and energy while Indirect goods and services include all non-raw material related spending, for example, on equipment, services, and logistics.

- We have approximately 13,700 suppliers consisting of 1,700 Direct material suppliers and 12,000 Indirect suppliers. Despite the large number of suppliers, approximately 10% of all suppliers account for around 80% of the total spend. Geographically, approximately half of our suppliers reside in Europe.

MANAGEMENT APPROACH

Supplier management and Supplier risk and compliance management are cornerstones of our sustainable sourcing roadmap that ensure responsibility in our supply chain. Our Supplier Management focus is on improving economic performance, anticipating risk and initiating approaches with suppliers that are responsible and innovative. It is described in three main processes: Supplier Segmentation, Supplier Performance Evaluations (SPE) and Vendor Value Program.

- Our suppliers are segmented into four categories: strategic, critical, volume and base suppliers, and prioritized based on multi-factor risk criteria to help us better manage our suppliers and plan actions for necessary risk mitigation.
- The SPE program collects and provides regular feedback to our suppliers both on their operational and sustainability

performance. The majority of our strategic, critical and volume suppliers are part of regular supplier reviews.

- Our Vendor Value Program is aimed at developing capabilities that will enable us to identify, partner with, and manage those suppliers, along the various value chains associated with Kemira's product lines.

Our **Supplier risk and compliance** management defines the requirements for suppliers to do business with Kemira, as well as provides tools and processes for mitigating the sustainability risk with our suppliers (sustainability assessments and audits).

Code of Conduct for Suppliers, Distributors and Agents (CoC-SDA)

- All of our suppliers must follow our Code of Conduct for Suppliers, Distributors and Agents (CoC-SDA) in relation to all of their dealings with Kemira. Our Code of Conduct is communicated to all suppliers through the ordering process as part of Kemira terms and conditions.
- Supplier adherence to these principles is controlled in different stages of our Sourcing processes starting from the new supplier screening / new vendor creation

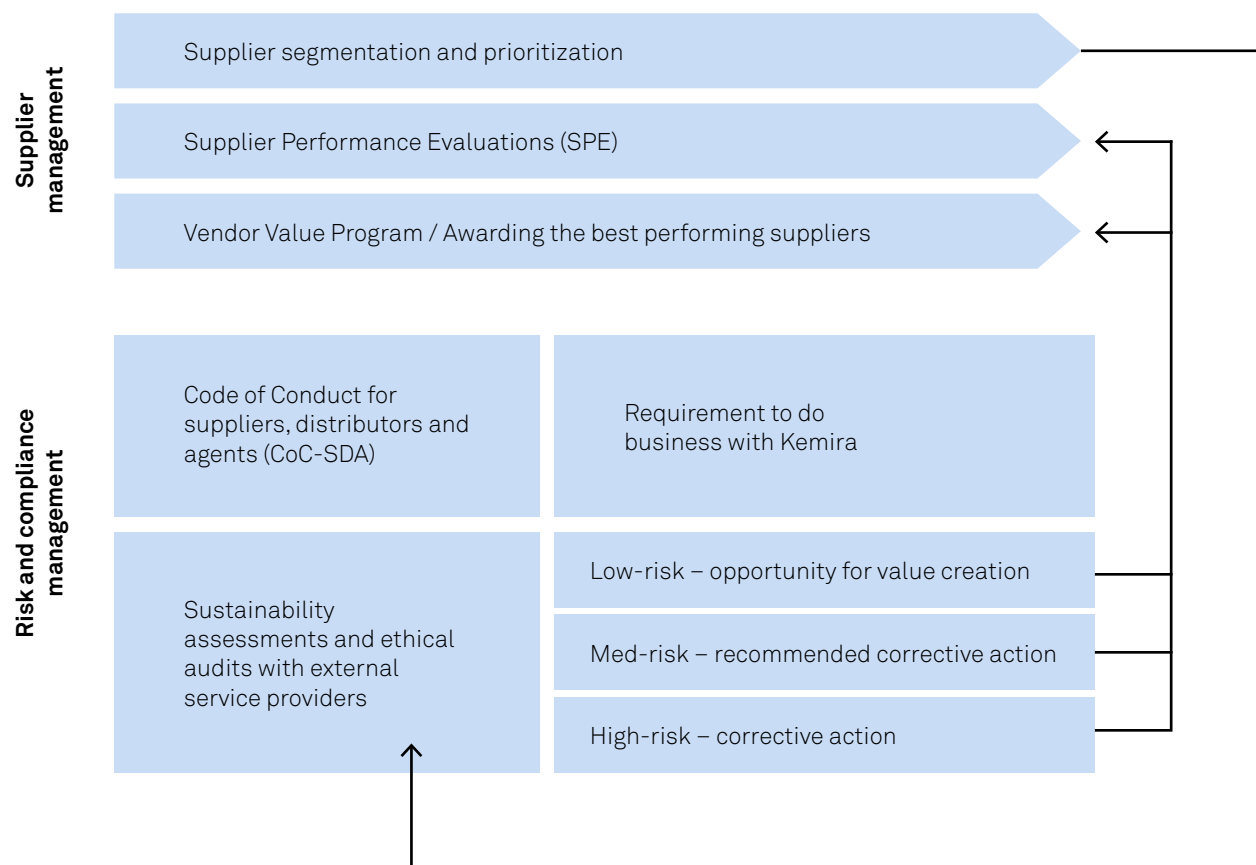
STRUCTURE OF KEMIRA'S SUPPLIER BASE	DIRECT MATERIALS	INDIRECT GOODS AND SERVICES
Number of suppliers, approximately	1,700	12,000
EMEA	800 (47%)	6,700 (56%)
Americas	600 (35%)	3,800 (32%)
APAC	300 (18%)	1,500 (13%)
Number of suppliers that form 80% of the category spend	~200 (~13%)	~1,400 (~12%)

process, to contracting where the commitment to our CoC-SDA is integrated in the contract templates. Finally, we have continuous monitoring in place for those contracts exceeding certain spend thresholds to make sure we are reasonably covered (GRI 308-1: Supplier Environmental assessment; GRI 414-1: Supplier social assessment).

Supplier sustainability assessments and audits

- We use Supplier Assessments and Audits to evaluate and understand better how well our suppliers are acting in a way that is consistent with our principles and values i.e. CoC-SDA.
- The assessment platform is provided by an external third party company which is specialized in standardized supplier sustainability evaluation based on the international sustainability standards of the Global Reporting Initiative, United Nations Global Compact, and ISO 26000.
- Supplier Ethical audits are conducted by an external auditor as an on-site audit. Audits' protocol covers Labor standards, Health and Safety, Environment, and Business Ethics criteria. The auditors summarize their findings in a detailed report which also contains a corrective action plan which is then reviewed and followed-up with the supplier as needed, and depending on the case.
- The assessment and audit results also feed into our SPE program and depending on the results, have different consequences. If audits or assessments indicate a high risk and room for improvement, this is also discussed with the supplier when we provide feedback on the general SPE result.

Supplier and supplier risk and compliance management



RESULTS AND KEY ACTIVITIES IN 2018

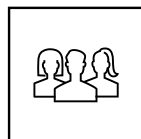
- Sustainability assessments: We continued enrolling new suppliers into our Sustainability program. A total of 167 (135) suppliers have now gone through the assessment and have recorded an average score of 54, which is higher than industry average on assessed average on the platform. Results with low scores were reviewed together with suppliers and improvement plans were made accordingly. In most cases, low scores were due to lack of supporting documentation provided by the vendor to the assessment company. Around 68% of the reassessed suppliers were able to improve their score.
- In 2018, we conducted 3 Ethical audits (one follow-up and 2 new audits) with no business stopping results. Some of the common corrective actions were related to Management Systems (training, policy or documentation), Health and Safety (e.g. fire safety, building certificates), Wages and Working hours (minimum wage, holiday pay, working hours) and Business Ethics (policy, training). Some of the completed improvement actions were related to Human Rights (e.g. Policy), Management Systems (licenses), Health and Safety (fire safety, emergency lights and exists) and Wages and Working hours (minimum wages and time records).
- In 2018, as part of our Vendor Value Program, the second round of the Supplier Awards were given to the best performers based on excellence in operative performance, contractual commitment, and in value propositions.
- Quality audits: Large spend suppliers also undergo quality audits, which include management systems, workplace health and safety standards, production quality and supply security. In 2018, 25 quality audits were conducted.



ENGAGEMENT AND LEADERSHIP

MANAGEMENT APPROACH

Our values and the principles of our Code of Conduct are the foundation for creating a strong company culture and commitment to people. We aim to offer employees the right mix of opportunities and challenges in a global and diverse working environment. Our result-oriented and collaborative culture empowers employees to solve the challenges of tomorrow. Together, we can have a major impact on our future. Our offering to employees includes talent management, leadership development, performance management and competence development, reward and recognition, and safety and well-being.



Talent management and leadership development

Our Talent Management process is well established, providing a structured way to identify and develop employees with potential for leadership positions globally. We continued to build a strong leadership bench to meet our business needs in relation to executing our strategy and driving our long-term growth. We rolled out a new program for identified non-executive leadership talents to fast-track their development and increase their exposure to senior leaders. We are working to ensure that strong development plans are in place for talents and for key position successors. Leadership development plans included on-the-job learning, learning from others, as well as formal training. Our leadership development target 2016–2020 is 1,500 activities, that is on average at least two leadership development activities per people manager. By the end of 2018, we were at 1,533 activities and ahead of the target.

to learning and development for customer-facing teams globally. This will be implemented further in 2019–2020. Digital competencies were developed by cross-functional teams and in the adoption of robotics process automation in Kemira.

RESULTS AND KEY ACTIVITIES IN 2018

Employee engagement survey

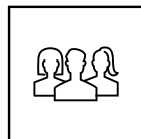
Our Voices@Kemira 2018, biennial employee engagement survey, was conducted in April 2018. Employee Engagement was 71% vs. target 69%, 2%-p. above, and 4%-p. higher than in the previous survey in 2015. Strategy and Change was agreed to be the company wide area for action planning and extensive communications have been completed as part of the refreshed strategy communication. Integrity is high at 87% versus the external norm 77%, which is 10%-p. above the external norm. Employee engagement trends have improved from 58% in 2013 and 67% in 2015 to a record high of 71% in 2018. During 2019, we will roll out more agile methods of getting employee feedback and employee engagement action planning. This will impact how we use external benchmark in the future.

Performance management and competence development

Kemira's performance management process aligns our strategic targets with each employee's personal targets, performance evaluation, competencies and development plans. This process is now well-established within Kemira as part of our leadership culture, and it forms the backbone of our management system. Our employees are encouraged to take an active role in their own learning and development which includes keeping their competencies up to date in relation to their work and their career aspirations at Kemira. As planned in our corporate development project, we designed an agile competence development model for Sales, Marketing and Customer Service, as a systematic approach

INTEGRITY

MANAGEMENT APPROACH



Our values and Code of Conduct

Our management approach to integrity and responsible business practices is based on our corporate values and our Code of Conduct. These principles demonstrate our commitment to conduct our business in compliance with all applicable laws and regulations, and according to ethical standards.

Our Code of Conduct sets the minimum standards of expected behavior for our employees and business partners. Our internal policies and procedures provide more detailed guidance to steer our daily work and decision-making. Kemira's Code of Conduct was reviewed, updated and approved by the Board of Directors in 2017, followed by an extensive global training and communication campaign during 2017 and 2018. Every employee is expected to comply with Kemira's Code of Conduct. All people managers and leaders are responsible for implementing the Code within their teams. Since 2013, we have required all of our employees to regularly complete the Code of Conduct training, which is currently available in 21 languages. We also train selected employee groups on more specific compliance matters, such as anti-bribery, competition compliance and insider information.

We expect our business partners to follow our Code of Conduct for Suppliers, Distributors and Agents (CoC-SDA) in their business activities. Both of these Code of Conduct

documents, as well as our corporate values can be found at www.kemira.com.

Our Ethics and Compliance Program

Our Ethics and Compliance Program aims to enhance compliance management at Kemira on a continuous basis. The program addresses all of the following measures taken to manage ethics and compliance risks:

- **Prevention:** measures that help us proactively prevent ethics and compliance risks from materializing
- **Detection:** measures that help us detect where ethics and compliance risks have materialized or may arise
- **Responding:** measures that help us investigate and respond to potential ethics and compliance breaches

Organizational structure for ethics and compliance

- Our **Ethics and Compliance** function is responsible for overseeing the effective implementation of Kemira's Ethics and Compliance program. The status of the program is also reported directly to the Audit Committee on a regular basis.
- **The Compliance Committee** oversees the management of compliance allegations to ensure fair and sufficient investigation, remediation and disciplinary action across our organization. The committee consists of Group General Counsel, EVP Human Resources, Head of Internal Audit, and Director, Ethics and Compliance.
- Our **Local Ethics and Compliance Officer Network** consists of employees across the organization based in different regions, who support our regional ethics and compliance communication, activities and overall awareness as part of their work.



Mechanisms for seeking ethics advice and reporting concerns

We promote a culture that encourages our employees to speak freely. We actively encourage our employees to contact their managers, local HR, Legal or Ethics and Compliance function to express their concerns and ask questions.

All of our employees also have access to an externally hosted Ethics and Compliance hotline, which is a 24/7 service enabling them to report potential violations of our Code of Conduct or other ethical concerns. All employees can anonymously submit such reports in their own languages, by phone or through a web form, which can be accessed through Kemira's intranet, wherever such channels are not restricted by local legislation. Information about the availability of the Ethics and Compliance hotline is shared to all employees on Kemira's intranet. We provide regular training and communications to our employees on all of our available channels to report concerns and to assure the anonymity of the report. The hotline system and the process of handling the reports are managed by the Ethics and Compliance function.

The email address [responsibility\(at\)kemira.com](mailto:responsibility(at)kemira.com) can be used by third parties to report cases of potential misconduct relating to Kemira or our business partners. This information is available on our website and in the Kemira Code of Conduct for Suppliers, Distributors and Agents.

All allegations of potential violations of our Code of Conduct made in good faith will receive a fair and comprehensive

investigation utilizing internal and / or external assistance. Any reporting of potential Code violations are treated as strictly confidential and anonymous to the fullest extent possible.

RESULTS AND KEY ACTIVITIES IN 2018

- An extensive training and communication campaign about the Code of Conduct continued globally through 2018.
- A new online training course was launched to support ongoing training activities.
- The CoC-SDA was reviewed and a new version of it is in the process of being updated and approved.
- Privacy program focused on the EU's General Data Protection Regulation (GDPR). Data processing activities

were extensively reviewed and documented, and a privacy impact assessment process was implemented. Privacy notices, data processing agreements and global privacy policy were created. A mandatory online training course on GDPR was assigned to over 300 Kemira employees who work in a role which involves processing of personal data, and general awareness-building was continued by providing easy-to-understand information packages on GDPR and privacy compliance to all Kemira employees.

- 11 concerns or allegations of potential Code of Conduct violations were reported via the Ethics and Compliance hotline, or via other channels, such as direct reporting to the Ethics and Compliance function, local HR or to the Internal Audit. A total of 5 cases were closed with merit.

CONCERNS OF ALLEGATIONS OF POTENTIAL CODE OF CONDUCT VIOLATIONS REPORTED IN 2018	NUMBER OF CASES	CASES CLOSED WITH MERIT	CASES CLOSED WITHOUT MERIT	OPEN CASES AS OF DEC 31, 2018
Cases reported via hotline	2	1	1	0
Cases reported via other channels	9	4	3	2
Total number of cases	11	5	4	2

CASES CLOSED WITH MERIT BY ISSUE CATEGORY	NUMBER OF CASES
Corruption and bribery	0
Anti-competitive behaviour	0
Employee relations and fair treatment	3
Harrassment	0
Transactions and company records	2
GRAND TOTAL	5

Our performance indicators

ECONOMIC

ECONOMIC PERFORMANCE

GRI 201-1: Direct economic value generated and distributed

Kemira generates economic value from expertise, products and sustainable solutions, enabling our customers to improve their water, energy and raw material efficiency. Kemira distributes the generated economic value to various stakeholders. This includes suppliers and service providers through payments for raw materials and services, employees through compensation and benefits, capital providers through dividends and interest payments, public sector through taxes, and society through local community projects, sponsorship and donations. Taxes have a significant impact on our businesses, financing and growth opportunities. Kemira's approach to tax is to support responsible business performance in a sustainable way. A separate tax footprint report is available at www.kemira.com > Company > Investors.

The economic value retained is reinvested in the company for capital investments, R&D and technology development. The economic value retained increased to EUR 123 million (118 in 2017).

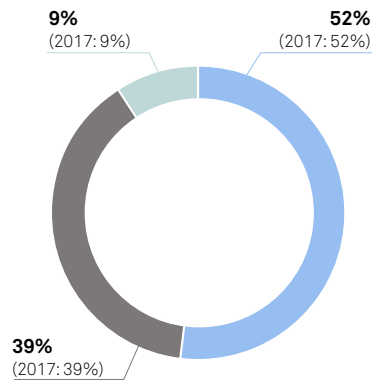
Economic value, cash flow based

STAKEHOLDER	ECONOMIC VALUE, EUR MILLION	2018	2017	2016	2015	2014
Direct economic value generated: Revenues						
Customers	Income from customers on the basis of products and services sold, and financial income	2,614	2,453	2,386	2,350	2,100
Direct economic value distributed						
Suppliers	Payments to suppliers of raw materials, goods and services	2,001	1,831	1,701	1,709	1,684
Employees	Employee wages and benefits	352	362	364	356	283
Investors & lenders	Dividends, interests paid and financial expenses	114	117	114	113	112
Government & Public sector	Corporate income taxes	24	25	23	12	33
Economic value retained		123	118	184	160	-12

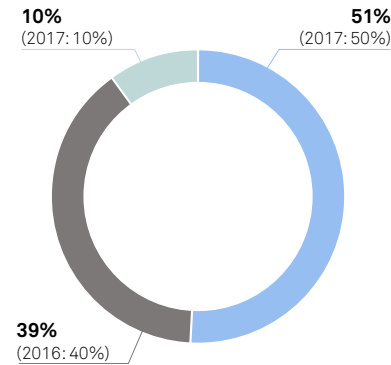
Community investments were EUR 0,1 million in 2018 through sponsoring and local community participation

Economic value distributed by region

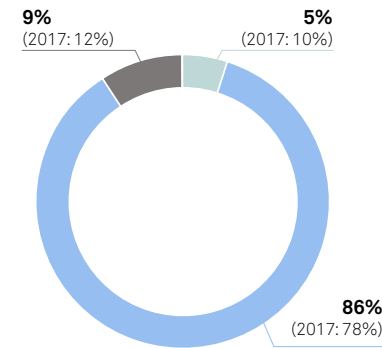
REVENUE BY CUSTOMER LOCATION %



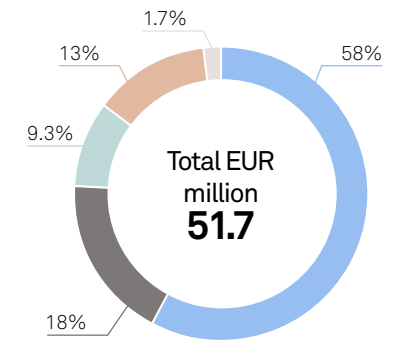
PAYMENTS TO SUPPLIERS OF RAW MATERIALS, GOODS AND SERVICES by region %



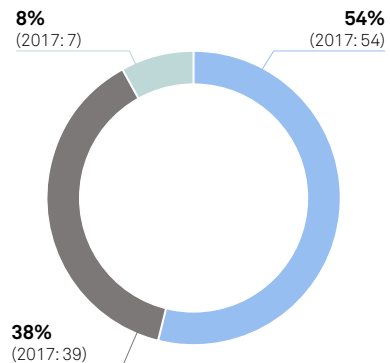
CORPORATE INCOME TAXES by region %



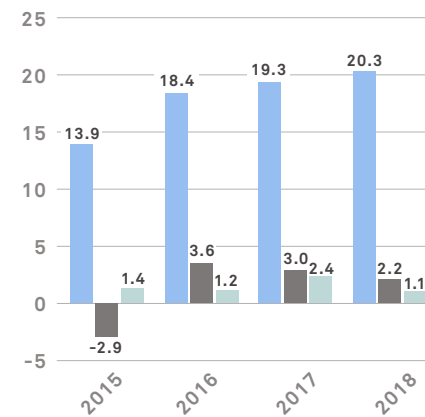
ESTIMATED TAXES BORNE 2018 EUR million and %



EMPLOYEE WAGES AND BENEFITS by region %



CORPORATE INCOME TAXES EUR million



- Corporate income taxes (excluding deferred taxes)
- Customs duties
- Property taxes
- Waste, energy and excise taxes
- Cost of indirect taxes

- EMEA
- Americas
- APAC

- EMEA
- Americas
- APAC

In 2015, Americas was refunded the overpaid taxes of 2014.

ANTI-CORRUPTION

GRI 205-1: Operations assessed for risks related to corruption

Kemira conducted a global ethics and compliance risk assessment in 2016, covering key business operations and functions in all regions. Anti-corruption was one of the key focus areas in the assessment and the results of the assessments were utilized in Kemira's ethics and compliance and internal audit plans for 2017 and 2018. No significant risks related to corruption were identified through ethics and compliance risk assessment or internal audits in 2018.

GRI 205-2: Communication and training about anti-corruption policies and procedures

Kemira's principles for anti-corruption are included in the Kemira Code of Conduct and in the Kemira Group Gifts, Entertainment and Anti-bribery Policy. Both documents are available to all employees on Kemira's intranet, and the Code of Conduct is also publicly available at www.kemira.com.

Kemira's Code of Conduct has been approved by the Board of Directors, and as part of our mandatory and regular Code of Conduct training our anti-corruption principles are communicated to all of our employee groups and regions on a regular basis. All members of Kemira's Board of Directors have been trained on our anti-corruption principles.

Kemira provides mandatory anti-bribery training to its white collar employees, who need to have a comprehensive understanding of Kemira's anti-corruption principles. The table below demonstrates the scope of the training, with a breakdown by employee category and regions.

We expect our suppliers and other business partners to conduct their business with integrity and commit to Kemira's Code of Conduct for Suppliers, Agents and Distributors (CoC-SDA) in their business activities with Kemira. The CoC-SDA states that Kemira expects its business partners to adhere to local legislation and avoid corruption in all its forms. We

aim to communicate the CoC-SDA to all of our suppliers, agents and distributors. All of our suppliers (engaged with a SAP Purchased Order) receive a written reference to Kemira's CoC-SDA as part of the Kemira general terms of purchase on the back the Purchase Order. Our anti-corruption policy has been communicated to all of them through the CoC-SDA.

		NUMBER OF PERMANENT EMPLOYEES, NOT ABSENT	NUMBER OF EMPLOYEES RECEIVED TRAINING ON ANTI-CORRUPTION	% OF EMPLOYEES RECEIVED TRAINING ON ANTI-CORRUPTION
Americas	White collars	875	842	96
	Blue collars	676	0	0
APAC	White collars	443	410	93
	Blue collars	329	0	0
EMEA	White collars	1,577	1,506	95
	Blue collars	931	0	0
TOTAL		4,831	2,758	57

GRI 205-2: Total number and percentage of suppliers that the organizations anti-corruption policy has been communicated to

REGION	TOTAL NUMBER OF SUPPLIERS*	TOTAL NUMBER SUPPLIERS* THAT OUR ANTI-CORRUPTION PRINCIPLES HAVE BEEN COMMUNICATED TO	PERCENTAGE OF SUPPLIERS* THAT OUR ANTI-CORRUPTION PRINCIPLES HAVE BEEN COMMUNICATED TO
EMEA	7,500	7,500	100%
Americas	4,400	4,400	100%
APAC	1,800	1,800	100%
TOTAL	13,700	13,700	100%

*The numbers include suppliers engaged with a SAP Purchase Order. In addition to SAP transactions, some small purchases are processed via the travel claim process.

GRI 205-3: Confirmed incidents of corruption and actions taken

There were no confirmed incidents of corruption or public legal cases regarding corruption in 2018.

ANTI-COMPETITIVE BEHAVIOR

GRI 206-1: Legal actions for anti-competitive behavior, anti-trust, and monopoly practices

In 2018, Kemira had the following pending or completed legal actions initiated under national or international laws designed for regulating anti-competitive behavior, anti-trust, or monopoly practices:

Kemira continued to defend itself against a legal action filed by CDC PROJECT 13 SA against Kemira Chemicals Oy (former Finnish Chemicals Oy) in Amsterdam, the Netherlands, related to an alleged historical infringement of competition law in the sodium chlorate business by Finnish Chemicals Oy between 1994 and 2000. Kemira acquired Finnish Chemicals in 2005.

In the United States, three class action lawsuits (only two active) and ten individual suits have been filed during 2015–2018, based on alleged violations of anti-trust laws relating to the sale of certain water treatment chemicals. In those lawsuits, Kemira has been named as a defendant among other defendants. The ten individual legal suits are opt-out suits, whereby the plaintiffs opted out of the direct liquid aluminate sulfate class actions. According to Kemira's assessment, all of these class actions and individual lawsuits against Kemira lack merit.



ENVIRONMENTAL

MATERIALS

GRI 301-1: Materials used by weight or volume

GRI 301-2: Recycled input materials used

The renewable materials used include mainly starches, tall oil, and fatty acid derivatives.

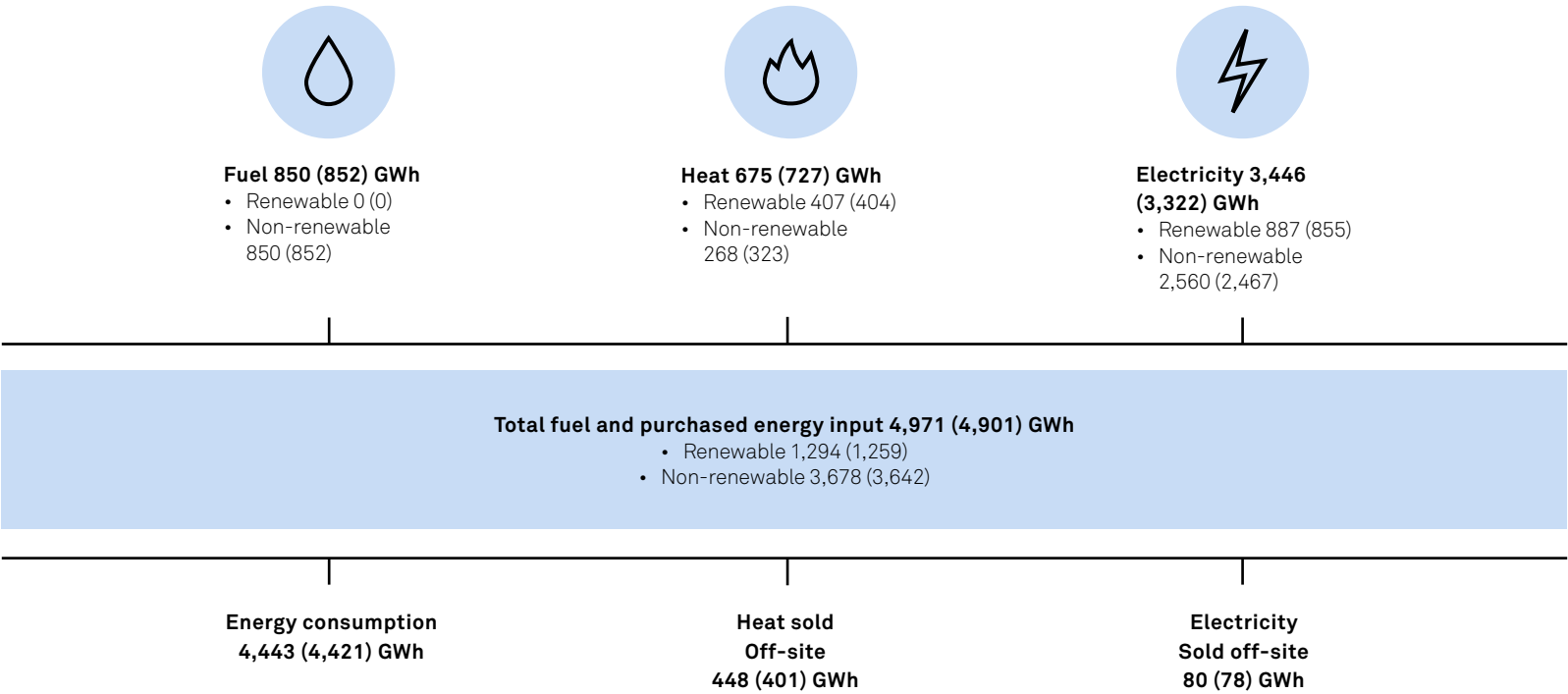
The recycled input materials are industrial by-products and recycled materials from external partners. These materials include mainly inorganic materials such as scrap iron, ferrous sulphate and spent pickling liquor bath. Industrial by-products are mainly from smelters, as well as steel and metal manufacturing. Inorganic byproducts and recycled materials are mainly used in the production of inorganic coagulants, which are used in water treatment, and in which category recycled input material may account for up to 70–80% of all raw materials used. In 2018, approximately 21% (23% in 2017) of raw materials across all Kemira business segments were recycled input materials. In 2018 and 2017, the use of recycled input materials reduced due to the fire at a major supplier in Finland, causing significant drop in ferrous sulphate supplies.

MATERIALS, million tonnes	GRI disclosure	2018	2017*	2016	2015	2014
TOTAL MATERIALS USED	301-1	3,329	3,510	3,536	3,293	3,276
Non-renewable materials	301-1	3,268	3,448	3,458	3,220	3,217
Renewable materials	301-1	0,061	0,062	0,078	0,072	0,059
Share of renewable materials, %	301-1	1.8%	1.8%	2.2%	2.2%	1.8%
RECYCLED INPUT MATERIALS USED	301-2	0,710	0,799	0,945	0,904	0,897
Industrial by-products and recycled material from external partners						
Share of recycled materials, %	301-2	21.3%	22.8%	26.7%	27.5%	27.4%

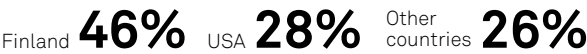
*Data corrected due to more accurate information available

CLIMATE CHANGE: ENERGY AND GREENHOUSE GAS EMISSIONS

Energy balance



ENERGY CONSUMPTION BY GEOGRAPHY IN 2018



GRI 302-1: Energy consumption within the organization

GRI 302-3: Energy intensity

GRI 302-4: Reduction of energy consumption

Energy consumption and management

Energy costs amount to approximately 10% of our total sourcing spend. By continually improving energy efficiency at manufacturing sites, we are consistently reducing our energy usage and equivalent costs.

In 2018, our operations in Finland accounted for 46% of our total energy consumption. The USA accounted for 28%, and other countries 26%.

Approximately 90% of our total energy consumption is used by 14 large manufacturing sites. A substantial portion of our energy management activities is focused on these most energy-intensive sites, which include seven sodium chlorate manufacturing plants in Finland, USA, Uruguay and Brazil.

Electricity is our most important energy source, accounting for 69% of the total energy input. Sodium chlorate plants purchase 90% of the electricity. Therefore, the management of volatile electricity prices play an important role in capacity utilization planning. The global high demand for pulp increased the need for sodium chlorates as pulp bleaching agents, and contributed to the maintaining of our high level of investments in chlorate production.

ENERGY BALANCE, GWh	GRI disclosure	2018	2017	2016	2015	2014
TOTAL FUEL AND PURCHASED ENERGY INPUT		4,971	4,901*	4,731*	4,144*	4,124*
Consumed fuel as energy source		850	852*	897	582*	542
Non-renewable	302-1a	850	852*	897	582*	542
Renewable	302-1b	0	0	0	0*	0
Purchased electricity	302-1c	3,446	3,322	3,135*	2,935	2,828*
Non-renewable		2,560	2,467	2,573*	2,301	2,288*
Renewable		887	855	562*	634	541*
Purchased heat and steam	302-1c	675	727	699	627	754*
Non-renewable		268	323	311	262	150*
Renewable		407	404	430	365	603*
TOTAL FUEL AND PURCHASED ENERGY INPUT BY SOURCE	302-1a, b	4,971	4,901*	4,731*	4,144*	4,124*
Non-renewable		3,678	3,642*	3,781*	3,137*	2,980*
Renewable		1,294	1,259	950*	1,007*	1,144*
TOTAL ENERGY SOLD		528	479*	492*	465*	438*
Heat ¹ sold off-site	302-1d	448	401	414	390	366
Electricity sold off-site	302-1d	80	78**	78**	76**	72**
TOTAL ENERGY CONSUMPTION²	302-1e	4,443	4,421*	4,239*	3,679*	3,686*
CHANGE IN TOTAL ENERGY CONSUMPTION³	302-4	22	183*	560*	-7*	-400*
Production volume, 1,000 tonnes		5,310	5,164***	5,028	4,845*	4,587
ENERGY INTENSITY, GWh per 1,000 tonnes of production⁴	302-3	0.8	0.9*	0.9	0.8	0.8

* Minor updates to data were provided by sites during 2018 data collection.

** Values were adjusted due to information obtained from one site that did not previously identify electricity sold off-site.

*** Value was adjusted due to one site that over-reported its production data.

1. Sum of steam, district heat, condensate, and other heat delivered off-site.
2. The amount of fuel consumed plus purchased electricity and heat minus heat and electricity sold. The primary reason for the increase is the increased production volume.
3. Comparison of total energy consumption to the previous year.
4. Kemira has calculated the energy intensity by dividing total energy consumption with the annual production volume. Energy intensity is strongly dependent on the types of production mix.

Energy Efficiency Enhancement program – E3plus

During 2018, we continued upgrading our E3plus (Energy Efficiency Enhancement) program established in 2010. The E3plus program aims to reduce the overall specific energy consumption, measured as kWh per tonne of product, at each of our manufacturing sites.

The key focus areas of the E3plus program are:

- Continuing the global alignment of energy efficiency management across all Kemira sites
- Focused and thorough E3 Energy Reviews to identify improvement projects and support their implementation at our manufacturing sites
- Technical and economic evaluation of investment projects to improve energy efficiency
- Further development of the Kemira energy efficiency management system, improving energy management, and obtaining and maintaining ISO 50001 certification in selected major energy consuming sites.

During 2017-2018, we empowered our global energy management team (EMT), whose members represent the top management of our manufacturing sites, as well as our global energy sourcing management. The EMT coordinates, steers and supports energy management activities across all regions.

Kemira has joined the voluntary national Energy Efficiency Agreement in Finland ("Energiatohokkuussopimus"), which is a part of EU's response to the Paris Climate Agreement, for the period 2017-2025 (EU-level program). Until now, over 20 implemented energy savings projects have been reported to the National Energy Authority ("Energiavirasto").

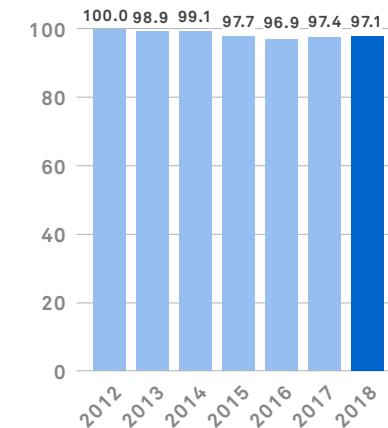
Our energy efficiency measures and activities have a special focus on sites, which have the highest energy consumption. Site-specific energy efficiency targets are defined for the largest energy consuming sites, based on energy consumption baseline data, the findings of E3 Energy Reviews, and the availability of resources.

In 2018, we continued to focus on large-scale manufacturing processes, with investments made in more energy efficient equipment and production lines. The continuous modernization of the process equipment used in our most energy-intensive sodium chlorate plants, especially those in Joutseno (Finland), Äetsä (Finland), Fray Bentos (Uruguay) and Ortigueira (Brazil), has enabled us to achieve and sustain a desired energy efficiency level. Furthermore, Kemira Oyj's Energy Management System in Europe and the manufacturing sites in Helsingborg (Sweden), and Äetsä and Joutseno (Finland), San Giorgio (Italy) and Fredrikstad (Norway), have been certified to ISO 50001.

Energy savings were additionally achieved during 2018 through the implementation of 25 projects (23 in 2017) across Kemira's operations. The resulting energy savings totaled 19,175 MWh (16,296 MWh in 2017) with cost savings of EUR 0.6 million (EUR 0.6 million in 2017). The cumulative cost savings that were achieved through the implementation of 505 such initiatives completed globally since 2010, now total EUR 10.4 million.

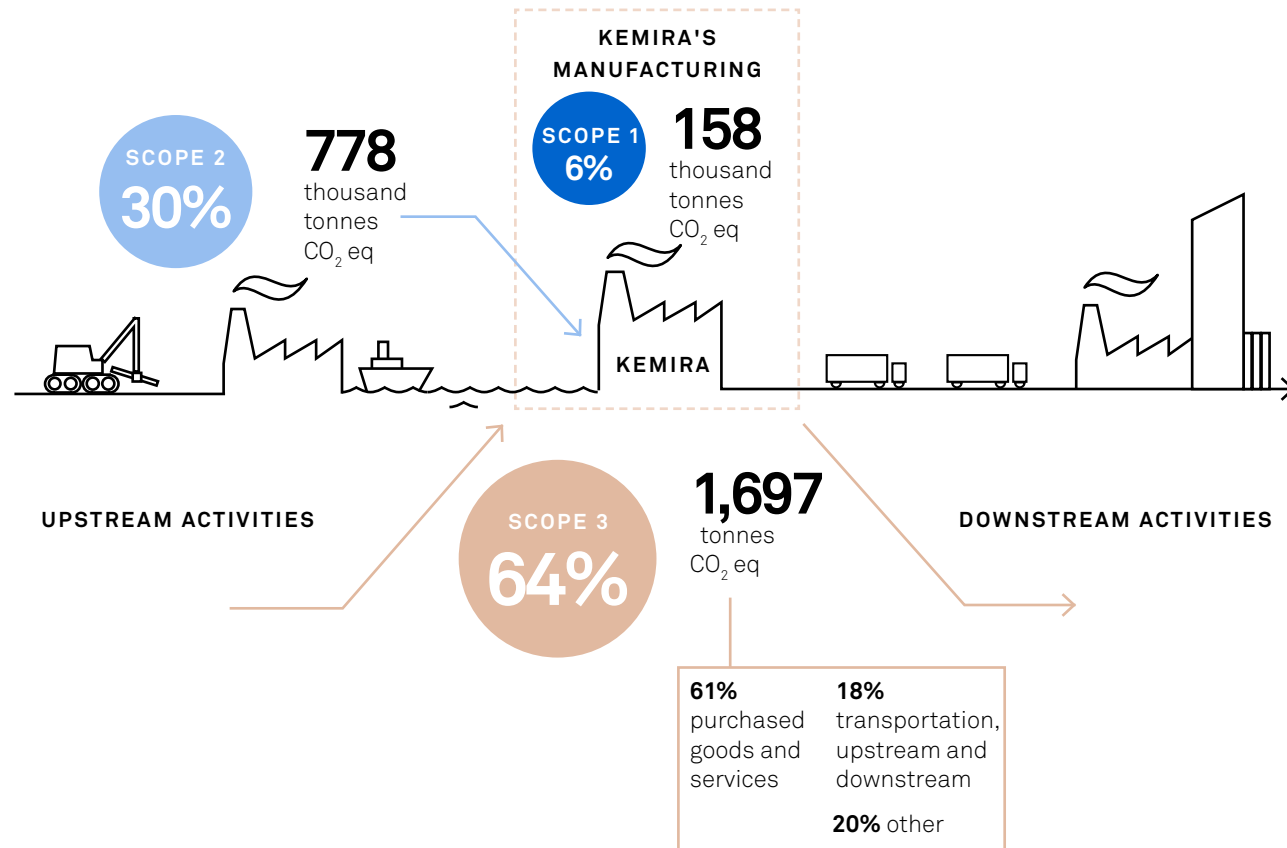
Our Energy Efficiency Index enables us to monitor the trend of energy efficiency improvement on a consolidated basis.

KEMIRA ENERGY EFFICIENCY INDEX



The Kemira Energy Efficiency Index measures the ratio of energy use and production normalized to a 2012 benchmark for our 14 large manufacturing sites covering approximately 90% of energy consumption (14 in 2017). The index is not affected by changes in production volumes but may be affected by the product mix.

Greenhouse gas emissions



- **Scope 1 (direct), market-based**

Emissions from fuels to produce energy in sites owned and controlled by Kemira

- **Scope 2 (indirect), market-based**

Emissions from purchased electricity, heat and steam consumed at Kemira's manufacturing sites

- **Scope 3 (indirect)**

Emissions from purchased raw materials, fuel and energy related activities, upstream transportation, downstream transportation and distribution and other downstream activities

EMISSIONS BY GEOGRAPHY IN 2018

Scope 1 and Scope 2, market-based

Finland **41%** USA **41%** Other countries **17%**

Kemira's GHG emissions are primarily carbon dioxide (CO₂), and negligible emissions of methane (CH₄) and nitrous oxide (N₂O). Kemira estimates GHG emissions using factors in terms of CO₂ equivalent (CO₂eq.) and does not specifically estimate and report mass emissions of CH₄ and N₂O since CO₂ comprises over 99% of CO₂eq. emissions.

The majority of the electricity used at our Kemira manufacturing sites is obtained from external providers. Many Kemira facilities consume steam and heat generated on-site.

Direct (Scope 1) GHG emissions from Kemira's manufacturing sites are from the following sources:

- Generation of electricity, heating, cooling and steam: these Scope 1 emissions result from the combustion of fuels in stationary sources, such as boilers and internal combustion engines. Kemira's manufacturing sites generally use low-carbon intensive fuels such as natural gas, propane, and diesel fuel
- Emissions from physical or chemical processing of raw materials and chemicals such as sodium carbonate

Indirect (Scope 2) GHG emissions include, but are not limited to, the CO₂ emissions from the generation of purchased or acquired electricity, heating, cooling, and steam consumed by an organization. Furthermore, many sites purchase or acquire electricity, heating, cooling, and steam resources from either the local municipal authority or from a separate manufacturing facility located within the same industrial complex.

Other indirect (Scope 3) GHG emissions are a consequence of Kemira's business activities, but occur from sources not owned or controlled by our company.

Development of GHG emissions in relation to production volumes

Scope 1 emissions in 2018 were consistent with 2017 emissions despite an increase in production compared to 2017. Kemira maintained emissions at the 2017 levels through the use of less carbon-intensive fuels where possible.

Scope 2 emissions also remained consistent with 2017 levels due to continued improvements in energy efficiency and a higher share of purchased energy with lower GHG emissions levels (renewable sources) compared to 2017.

Scope 3 emissions in 2018 were consistent with previous year's emissions within the level of accuracy associated with the calculation methodology. Purchased goods and services (including capital goods) cover 61% (50%), and transportation and distribution emissions (upstream and downstream) 18% (32%) of our Scope 3 emissions. Waste generated and transported by our plants increased to 5% (4%) of overall Scope 3 emissions.

The overall GHG emissions intensity is consistent with historical levels despite continued increases in production (3% increase in production compared to 2017, and a 16% increase in production compared to 2014).



GRI 305-1: Direct (Scope 1) GHG emissions
 GRI 305-2: Energy indirect (Scope 2) GHG emissions
 GRI 305-3: Other indirect (Scope 3) GHG emissions
 GRI 305-4: GHG emissions intensity
 GRI 305-5: Deduction of GHG emissions

GREENHOUSE GAS (GHG) EMISSIONS, CO ₂ eq 1,000 tonnes		GRI disclosure	2018	2017	2016	2015	2014
TOTAL GHG EMISSIONS¹			2,633	2,872*	2,684*	2,665*	2,517*
Direct (Scope 1) GHG emissions ^{2a}		305-1	158	153*	162*	169	144
Change			5	-9	-7	25	7
Biogenic Direct (Scope 1) GHG emissions ^{2b}		305-1c	0	0	N/A	N/A	N/A
Change			0	N/A	N/A	N/A	N/A
Energy indirect (Scope 2) emissions: market-based ^{3a}		305-2	778	799*	792*	786*	792*
Change			-21	8*	6*	-6*	-109*
Energy indirect (Scope 2) emissions: location-based ^{3b}			1,044	1,048*	999	994*	N/A
Change			-4	49*	5*	N/A	N/A
Other indirect emissions: Scope ³		305-3a	1,697	1,920	1,730*	1,710	1,581
Change			-233	230*	20*	129*	-28*
Other indirect emissions: Scope 3 Biogenic emissions ^{4b}		305-3c	0	0	N/A	N/A	N/A
Change			0	N/A	N/A	N/A	N/A
CHANGE IN TOTAL GHG EMISSIONS		305-5	-262	186*	19*	149*	-134*
Production volume, 1,000 tonnes			5,310	5,164**	5,028	4,845*	4,587
GHG EMISSIONS INTENSITY, tCO₂ per tonnes of production⁵		305-4	0,5	0.6**	0.5	0.6	0.6*

* Minor updates to data were provided by sites during 2018 data collection.

** Value was adjusted due to one site that over-reported its production data.

1. Scope1 + Scope 2 market-based + Scope 3.

2a. GHG emissions from sources that are owned or controlled by Kemira (Scope 1 of the WRI/WBCSD GHG Protocol). GHG emissions are calculated as CO₂eq which includes CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃.

2b. GRI Standard specifies reporting of biogenic emissions reported starting in 2017.

3a. GHG emissions from the generation of purchased electricity, steam and heat that is consumed by Kemira (revised Scope 2 of the WRI/WBCSD GHG Protocol). Market-based emissions are used for target setting and following progress. Location-based emissions are also shown, but these are not used for other indicators. GHG emissions are calculated as

CO₂eq which includes CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃. The sources for the emission factors used are the IEA, the UK government's Department for Environment, Food and Rural Affairs (DEFRA), Motiva Ltd. and energy utility companies.

3b. Location based Scope 2 emissions were calculated first time in 2015.

4a. GHG emissions from Kemira's value chain (Scope 3 of WRI/ WBCSD GHG Protocol). Minor changes have occurred for previous years as more updated data was available for this report.

4b. GRI Standard has introduced requirement of disclosure of biogenic emissions, which Kemira started to report in 2017.

5. Kemira has calculated the GHG emissions intensity as the ratio of total GHG emissions per production volume. Direct GHG emissions (Scope 1), indirect GHG emissions from energy consumption (Scope 2 market-based) and other indirect GHG emissions (Scope 3) are included.

GRI-305-3: Other indirect (Scope 3)

GHG emissions

During 2018 we have reviewed the assumptions for categories 1. Purchased goods and services; 4. Upstream transportation and distribution; and 9. Downstream transportation and distribution. Based on more accurate data on transportation and distribution, we were able to calculate the category 4 and 9 emissions more accurately.

OTHER INDIRECT (SCOPE 3) GHG EMISSIONS BY CATEGORIES, CO ₂ eq 1,000 tonnes	GRI disclosure	2018	2017	2016	2015	2014
TOTAL SCOPE 3 EMISSIONS	305-3d	1,697	1,920	1,730	1,710	1,580
1. Purchased goods and services		1,040	960	840	870	760
2. Capital goods*		*	*	*	*	*
3. Fuel and energy related activities		240	240	230	230	240
4. Upstream transportation and distribution		110***	240	220	200	200
5. Waste generated in operations		80	80	40	20	20
6. Business travel		5**	5	10	10	10
7. Employee commuting		10**	10	10	10	10
8. Upstream leased assets (leased offices)		10**	10	10	10	10
9. Downstream transportation and distribution		200***	370	370	350	330
11. Use of sold products		*	0	0	0	0
12. End-of-life treatment of sold products		2	2	2	0	0

* Emissions of Category 2: Capital goods are included in Category 1: Purchased goods and services.

** Categories 6-8 were not calculated in 2018 because making less than 2% in earlier years. 2018 was approximately at the same level as historical years.

*** The average distance for water transportation decreased in 2018 compared to 2017.

Scope 3 was restated in 2015 due to more accurate information available. Major changes occurred for years 2012–2014 as a more detailed calculation was carried out. Category 12 End-of-life treatment of sold products changed significantly. Category 12 covers all products sold. If a product is not known to have a new lifecycle, it is classified as waste. Category 11 emissions were estimated to be zero or close to zero, as Kemira does not sell combustible fuels, products that form GHG emissions during use, or products that contain GHG.

The calculation is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard and a supporting guidance document Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain. Scope 3 emissions have been calculated since 2012. GHG emission are calculated as CO₂eq. The sources for the emission factors used include the guidance document for the Chemical Sector, the DEFRA, the IEA, Ecoinvent, CEFIC and ECTA. Data covers all of Kemira's production sites according to Kemira consolidation rules. The margin of error for Scope 3 calculations is +/- 20%.

NOTE: Category 10 Processing of sold products is not calculated because it cannot be reasonably tracked; Category 13 Downstream leased assets is not relevant to chemical sector; Category 14 Franchises is not relevant to chemical sector; Category 15 Investments: No information available."

GRI 305-6: Emissions of ozone-depleting substances (ODS)

GRI 305-7: Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions

Nitrogen oxides (NOx) emissions increased by approximately 13% compared to 2017 and decreased by approximately 11% since 2014. Sulfur oxides (SOx) emissions has decreased by approximately 9% from 2017 and approximately 19% since 2014.

RELEASES INTO AIR, tonnes	GRI disclosure	2018	2017	2016	2015	2014
Nitrogen oxides (NOx) ¹	305-7a.i	182	161	160	194	206
Sulfur oxides (SOx) ²	305-7a.ii	70	77	84	83	86
Volatile organic compounds (VOC) ³	305-7a.iv	649	574*	783	430	661
Other air emissions ^{4,5}	305-7a.vii	349	99	173	55*	82*
Particulates (PM)	305-7a.vi	16	18	11	14	16
Persistent organic pollutants (POP) ⁵	305-7a.iii	0	0	N/A	N/A	N/A
Hazardous air pollutants (HAP) ⁵	305-7a.v	10	13	N/A	N/A	N/A
Ozone-depleting substances ⁶	305-6	0	0	0	0	0

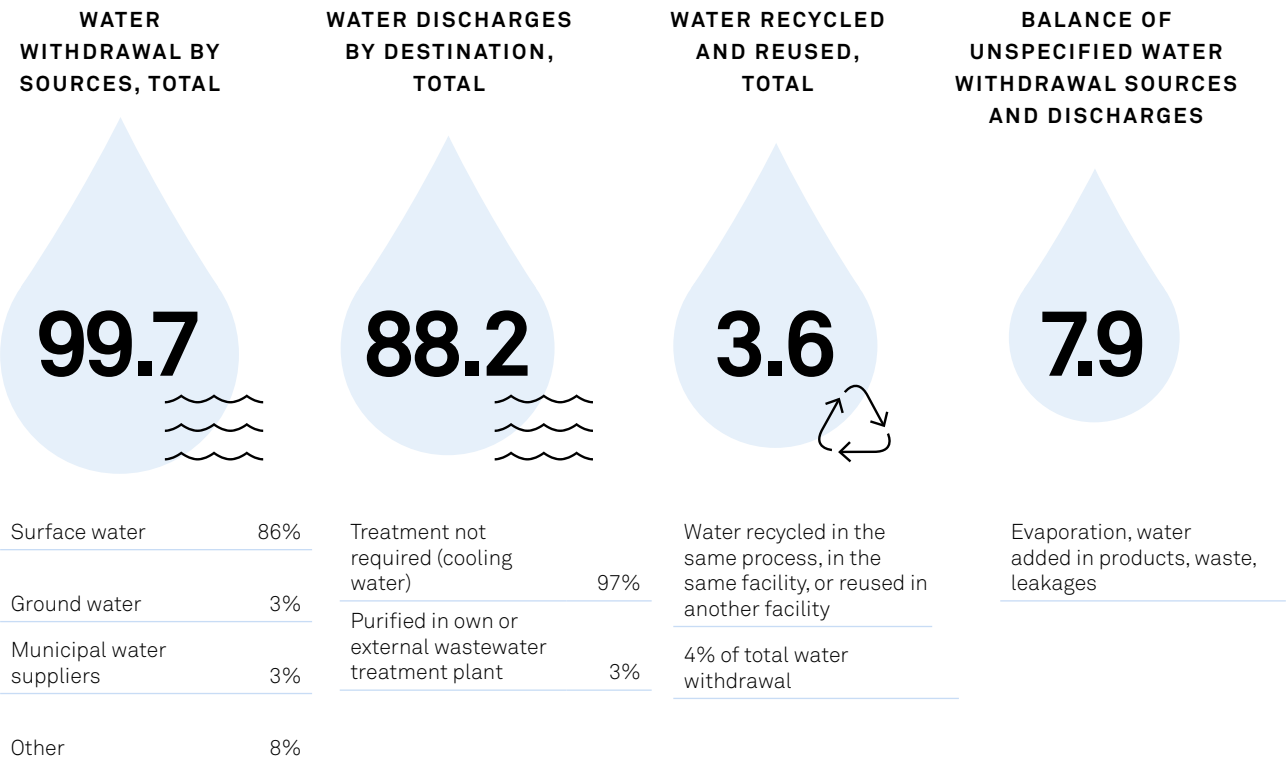
* Minor updates to data were provided by sites during 2018 data collection. The figures presented are based on data collected directly from Kemira's sites.

1. NO_x consist of nitric oxide and nitrogen dioxide.
2. SO_x consists of sulfur dioxide and sulfur trioxide.
3. VOC is a sum of volatile organic compounds as defined in EU Directive 1999/13/EC. VOC increases are primarily associated with the site that is the largest emitter of VOC in Kemira. The site's production rate increased in 2016, and the site improved the accuracy of the emissions calculation methodology for VOC.
4. Other standard categories of air emissions identified in relevant regulations. New reporting requirement starting in 2017. Includes former reporting requirement of Volatile Inorganic Compounds (VIC), which was reported as the sum of ammonia, hydrogen chloride and six other simple inorganic compounds through 2016. GRI Standard no longer requires reporting of VIC.
5. New reporting requirement starting in 2017. Changes in emissions between Other air emissions, POP, and HAP may be attributable to how emissions are regulated in a specific location. For example, acrylonitrile is specifically regulated under the term "HAP" in the United States and would be reported as such. However, acrylonitrile may not be regulated using the term HAP in another country and may be reported under Other air emissions.
6. A value of zero represents emissions equal to or greater than 0 and less than 0.5 tonnes. Emissions are primarily from one manufacturing site.

WATER

GRI 303-1: Water withdrawal by source
GRI 303-3: Water recycled and reused
GRI 306-1: Water discharge by quality and destination

Overview of water flows, million m³



Water management approach

Through our EHSQ Policy, we strive to minimize water consumption and minimize the negative impact of water discharge activities on the quality of receiving water bodies. Kemira's manufacturing processes require water primarily for use as cooling water and process water. Cooling water is approximately 90% of the total water withdrawal.

Where possible, water is recycled and / or reused at our sites to reduce water consumption. We are continuously evaluating opportunities to decrease water consumption through process optimization projects, for example, in all of our upgrade and new production line projects.

Wastewater and cooling water discharges at the manufacturing sites are subject to regulatory and permitting requirements. Wastewater is treated in accordance with local legislation and regulations. Wastewater generated from Kemira's manufacturing processes are primarily treated in external wastewater treatment plants prior to discharge to a waterbody. Cooling water does not usually require treatment.

Water risk assessment

In 2018, there were no significant fines or non-conformities with regards to environmental laws or regulations or claims from external wastewater treatment plant authorities against Kemira.

Kemira conducted a water risk assessment for the first time in 2014, to define the potential impact both to our operations due to water scarcity, and to local water resources due to

our operations. The assessment was carried out at 54 sites globally using the Global Water Tool, developed by the World Business Council for Sustainable Development (WBCSD) to identify a site's location in extremely water scarce areas. The GEMI Local Water Tool was used to identify site-specific water risks. The 2014 results indicated that Kemira's operations pose a low risk to local water resources, while water scarcity may pose a potential business discontinuity risk to Kemira operations at one manufacturing site.

In 2017, Kemira conducted a second assessment, using the World Resources Institute's Aqueduct Water Risk Atlas, a global mapping tool to identify water risks. The mapping covered 63 manufacturing sites. The results indicated that our withdrawals do not significantly affect water sources for the following reasons:

- About 92% of total water withdrawal was used as cooling water and none of Kemira's discharges are known to have, or are likely to have, a significant impact on the water body and associated habitats and users
- Based on the location of the manufacturing sites, the overall water risk was rated "Low" for 2% of the sites, "Low to medium" for 70%, "Medium to High" for 24% and "High" for <5% of the 63 manufacturing sites
- The manufacturing sites covering 99% of total water withdrawal are located in areas with "Low" or "Low to medium" overall water risk

Water withdrawal and discharges trends

The total water withdrawal increased by approximately 2% from 2017 and decreased by approximately 4% compared to 2014. The water withdrawal intensity (m3 per tonnes of production) decreased by approximately 1% from 2017 and by approximately 17% compared to 2014.

Chemical oxygen demand (COD) discharges decreased by approximately 10% from 2017. Biological oxygen demand (BOD) increased slightly from 2017 and Nitrogen (N) and Phosphorus (P) discharges remained at the same levels as in 2017. The discharge of suspended solids increased to five tonnes from four tonnes in 2017. The discharge of other (e.g., heavy metals, chlorides) pollutants increased by approximately 12% from 2017.

OVERVIEW OF WATER FLOWS, million m ³	GRI disclosure	2018	2017	2016	2015	2014
WATER WITHDRAWAL BY SOURCES, TOTAL	303-1	99.7	97.7	102	98	104
Sources of process water		10.2	8.1	8.5	8.4	7.5
Surface water		2.3	3.9	4.2	4.2	3.7
Ground water		1.2	1.0	1.1	1.3	1.1
Rainwater		0.1	0.0	0.1	0.0	0.0
Waste water from another organization		0.0	0.0	0.0	0.0	0.0
Municipal water suppliers		2.6	2.4	2.4	2.4	2.2
Other		4.0	0.7	0.8	0.5	0.5
Sources of cooling water		89.6	89.6	93.5	89.4	96.7
Surface water		83.3	83.7	88.0	83.6	93.3
Ground water		2.0	2.0	1.6	2.3	0.3
Rainwater		0.0	0.0	0.0	0.0	0.0
Waste water from another organization		0.0	0.0	0.0	0.0	0.0
Municipal water suppliers		0.2	0.2	0.1	0.2	0.2
Other		4.0	3.7	3.7	3.3	2.9
WATER RECYCLED AND REUSED, TOTAL	303-3a; 306-1a	3.6**	3.2**	3.3**	3.5**	3.0**
Water recycled back in the same process		0.1**	0.2**	0.1**	0.4**	0.1**
Water recycled in a different process, but within the same facility		3.3	3.0	3.1	3.1	0.0
Water reused in another facility	306-1a.iii	0.1	0.1	0.1	0.1	2.9
Share of total water recycled and reused, % ¹	303-3b	4%	3%	3%	4%	3%
WATER DICHARGES BY DESTINATION, TOTAL	306-1a.i	88.2***	88.2***	92.2***	86.0***	95.7***
External treatment of wastewater ³		1.8	1.6	1.5	1.5	1.6
Own treatment of wastewater ³		0.6	0.6	0.5	0.5	0.5
Discharged with no treatment required (e.g. cooling water)		85.9	86.0	90.2	83.9	93.5
Unspecified water losses²		7.9	6.3	6.6	8.3	5.5
Production volumes, 1,000 tonnes		5,310	5,164 ^	5,028	4,845*	4,587
WATER WITHDRAWAL INTENSITY, m³ per tonnes of production		18.8	18.9*	20.3	20.2	22.7

The calculations have been made according to GRI Standards. The figures presented are based on data collected from Kemira's sites.

Source of water used for purposes besides process and cooling are not included in the water balance since they comprise less than 1% of total water withdrawal.

*Minor updates to data were provided by sites during 2018 data collection.

** The definition for this category was redefined to exclude the water included in the product at certain sites

*** The values for this category were reclassified to this category for one site

^ Value was adjusted due to one site that over-reported its production data.

1. Water recycled and reused is calculated as a percentage of the total water withdrawal as specified in Disclosure 303-1.
2. Balance = Unspecified water losses such as water evaporated. Calculated as Water withdrawal minus Water reused and recycled minus Water discharged. Kemira aims to have a minimum 90% accuracy on the water balance. First reported in 2014 when data for discharge of cooling water became available.
3. Further description of volume by destination (e.g., river, sea) is not provided since the values are typically less than 3% of total.

TOTAL WATER DISCHARGES BY QUALITY, tonnes	GRI disclosure	2018	2017	2016	2015	2014
Chemical Oxygen Demand (COD)	306-1a.ii	34	38	34	16	15
Biological Oxygen Demand (BOD)	306-1a.ii	1	0	0	1	2
Nitrogen (N)	306-1a.ii	3	3	3	2	2
Phosphorus (P)	306-1a.ii	1	1	1	1	1
Suspended solids	306-1a.ii	5	4	1	2	5
Other (e.g., heavy metals, chlorides) ¹	306-1a.ii	326	291	308	9	1
Total Organic Carbon (TOC) ²	306-1a.ii	1	1	N/A	N/A	N/A

The calculations have been made according to GRI Standards. Data limited to wastewater discharges from own treatment. Kemira reports discharge quality data only from sites required by environmental laws and regulations or other requirements to monitor these parameters.

1. In 2016, these releases consisted of chlorides at some sites. The increase in tonnes in the "Other" category is related to primarily to one site experiencing a significant increase in discharge volume compared to 2015 and to the availability of more accurate analytical data.

2. First reported in 2017.

WASTE

GRI 306-2: Waste by type and disposal method

Through our EHSQ Policy, Kemira strives to minimize the amount of industrial and municipal waste generated through consistent material flow management processes and improvements to the efficiency of manufacturing processes. Waste in Kemira is disposed, recycled and / or reused in compliance with statutory requirements.

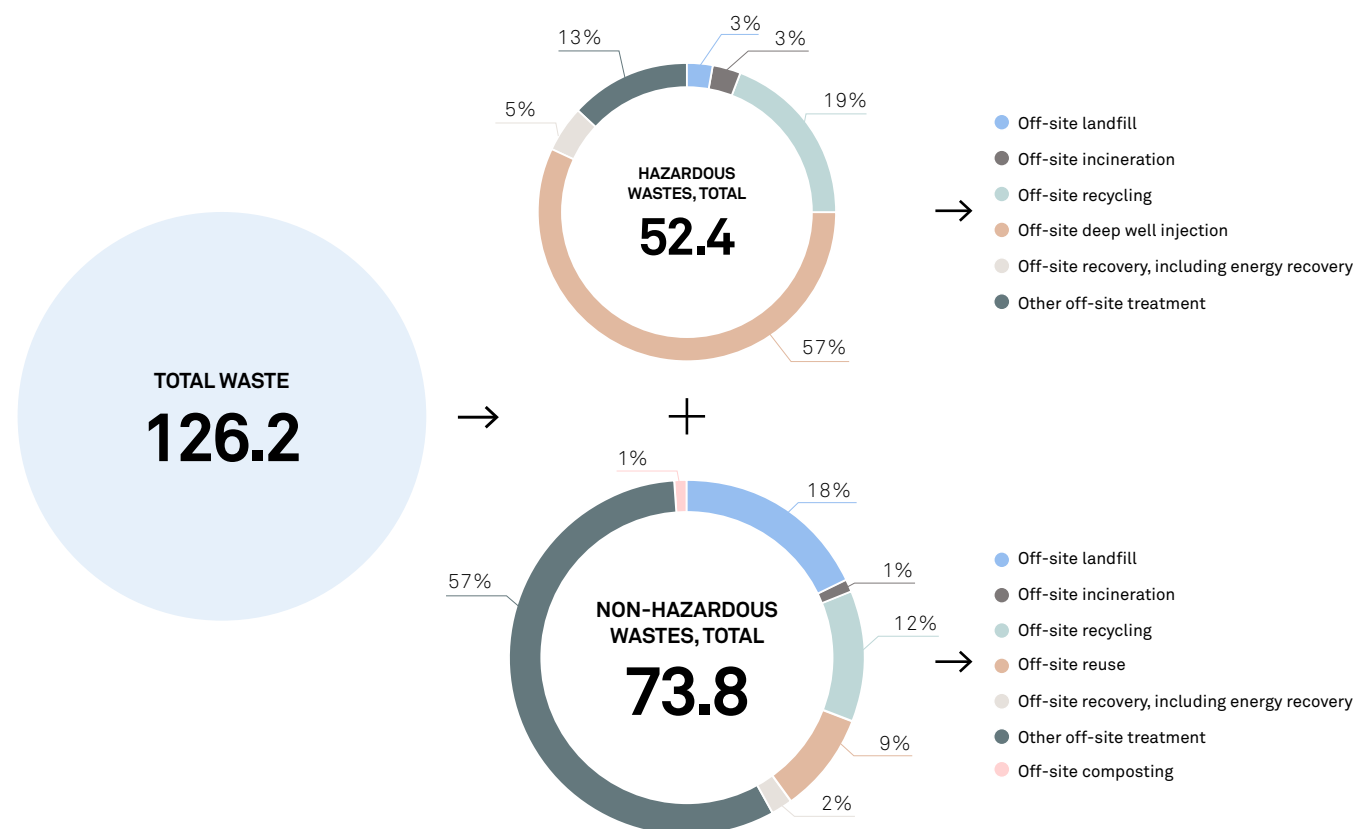
Hazardous waste

Ten manufacturing sites generate approximately 89% of the hazardous waste. In 2018, one site alone accounted for 57% of total hazardous waste generated, due to disposal of stormwater potentially impacted by acrylamide. Disposal of stormwater at the site as hazardous waste is in accordance with local legislation and regulations. The significant share of certain sites to generate hazardous waste has been recognized and analysis for different solutions to decrease the generation of hazardous waste is under process. The total amount of hazardous waste increased by approximately 10% from 2017 primarily due to increase in generation of stormwater at the site described above and also due to increased production and improved data collection and reporting.

Non-hazardous waste

Total amount of non-hazardous waste increased by approximately 19% from 2017. This is primarily due to an increase in generation of non-hazardous waste at one site (waste solution and sludge with a large share of water) that accounted for approximately 46% of total non-hazardous waste generated in Kemira, as well as improved data collection and reporting.

Total waste by type and disposal method, 1,000 tonnes



GRI 306-2: Waste by type and disposal method

WASTE, 1,000 tonnes	GRI disclosure	2018	2017	2016	2015	2014
HAZARDOUS WASTES, total	306-2a	52.4	47.8	49.3*	75.2*	41.7
Off-site landfill		1.8	1.9	1.1	1.3	1.2
Off-site incineration		1.3	6.4*	5.1*	2.6	2.2
Off-site recycling		10.2	6.3	7.4*	9.6	6.6
Off-site reuse		0.0				
Off-site deep well injection ^{1,2}		29.9	26.3	28.2	54.8	28.1
Off-site recovery, including energy recovery		2.5	0.0	0.0	0.0	0.0
Other off-site treatment ²		6.7	6.8	7.5	6.9	3.6
On-site incineration		0.0	0.0*	0.0*	0.0	0.0*
On-site landfill		0.0	0.0	0.0	0.0	0.0
NON-HAZARDOUS WASTES, total	306-2b	73.8	62.2	31.3*	35.4	27.6*
Off-site landfill		13.6	19.2	12.6*	10.9*	11.6
Off-site incineration		0.4	1.4*	1.6	1.3	1.2*
Off-site recycling		9.1	4.5	7.4*	14.9	11.8
Off-site reuse		6.7				
Off-site recovery, including energy recovery		1.1	0.0	N/A	N/A	N/A
Other off-site treatment		42.4	36.6	9.7	8.2	3.1
Off-site composting ¹		0.5	0.5	N/A	N/A	N/A
On-site incineration		0.0	0.0	0.0	0.0	0.0*
On-site landfill		0.0	0.0	0.0*	0.0*	0.0
TOTAL WASTE DISPOSAL		126.2	110.0	80.6*	110.6	69.4

*Minor updates to data were provided by sites during 2018 data collection

1. New disposal method reported starting in 2017.
2. Kemira has updated these values to account for the impact of the new disposal methods introduced in 2017. For example, "Other off-site treatment" included deep well injection during 2013-2016. The values in this table will differ from previous reports.

GRI 306-3: Significant spills

A global Spill Prevention Standard was approved in March 2017. Kemira has internal KPIs with annual targets for Loss of Primary Containment (LOPC) and Environmental Incidents in 2018. Kemira follows an Incident Reporting Standard that defines incident types and establishes the minimum requirements for incident reporting and classification of all EHSQ incidents. This standard applies to all Kemira employees, contractors, temporary and supplemental staff at all Kemira and / or customer locations.

Kemira's definition of a Major Incident includes an environmental incident resulting in one or more of the following:

- A spill or leak of more than 1,000 kg of a hazardous chemical (those chemicals identified as hazardous or dangerous by federal, provincial, state or local regulations, or by internationally recognized protocols such as, United Nations dangerous goods classification or assigned a reportable quantity if spilled) outside of secondary containment or to the atmosphere
- Requirement for immediate reporting of an environmental release / spill to a regulatory agency
- Substantial negative publicity that would be a Kemira Crisis Category of Local Level or Group Regional and Global Level

In 2018 there were nine Major Incidents according to Kemira's Incident Reporting Standard that involved environmental releases, compared to 12 in 2017.

- Transportation incidents (including related loading and unloading activities) accounted for two significant spills.

One occurred at our manufacturing site and one at a customers site. The total volume of the transportation incidents was approximately 3 tonnes.

- Manufacturing incidents accounted for seven significant spills. Six occurred at our manufacturing sites and one at an offsite storage location. The total volume of the significant spills at manufacturing plants were approximately 18 tonnes.

The significant spills did not have a permanent or significant impact on the environment beyond the remediated material. These spills were not reported in Kemira's Financial Statements.

GRI 306-4: Transport of hazardous waste

In 2018, approximately 52,000 tonnes of hazardous waste were transported by, or on behalf of Kemira, to external suppliers not owned by Kemira. Hazardous waste was not imported or treated by Kemira in 2018.

Our Fray Bentos, Uruguay site does not have a treatment or disposal option within the country for some of its hazardous wastes. Therefore, it must be shipped to the EU for disposal. In 2018, there were 34 tonnes of hazardous waste exported from the Fray Bentos facility. In addition, 2 tonnes of hazardous waste from the Oulu site, 0.5 tonnes each from the Europoort site and the Helsingborg site were exported to the UK to be disposed. In total, less than 1% of the hazardous waste generated in 2018 (less than 1% in 2017) by Kemira was shipped internationally.

ENVIRONMENTAL COMPLIANCE

GRI 307-1: Non-compliance with environmental laws and regulations

Kemira's integrated EHSQ management system includes an Auditing Standard to verify conformance with Kemira policies and standards, ISO/OHSAS standards, and EHSQ legal compliance. Kemira regularly conducts EHSQ compliance audits at manufacturing sites, research and development laboratories, and offices. Audits are performed by Kemira's independent internal auditing team and external consultants. Kemira's robust integrated EHSQ management system requires all sites to report non-compliances to the group's Global EHSQ Team using our incident reporting program (Synergi Life).

The following summarizes the significant fines or non-compliances with environmental laws or regulations at Kemira manufacturing sites in 2018:

- One inorganic coagulant facility in the United States received an administrative penalty for non-compliance with local industrial stormwater regulations and requirements. The authority agreed the site implemented sufficient corrective actions to return to compliance and the case was closed after payment of approximately EUR 3,300.
- One inorganic coagulant facility in the United States was cited for failure to submit the required notifications to the local authority following two incidents at the facility. The local authority issued a monetary sanction of approximately EUR 16,000. However, Kemira was able to provide evidence that the required notifications were provided within the required time and the notice of violation and monetary sanction were rescinded.

- One inorganic coagulant facility in Canada received a warning letter from the local authority for failure to submit a timely report regarding an air emissions release caused by a contractor working at the site. The site responded to the requests contained in the warning letter within the specified time period. No further action was taken by the local authority.
- One polymer facility in the United States self-disclosed a potential regulatory compliance matter to the environmental authority in December 2018. Details regarding the disclosure were not finalized as of the date of this report.

The procedures to monitor legal requirements vary in Kemira, depending on the countries of operation and site operations. In 2018, Kemira started to implement new, more effective online tools at some of the sites, to improve the Global EHSQ Team's ability to monitor the compliance status at the sites. Use of the effective online tools will be extended in 2019.

- Kemira maintained environmental protection costs at approximately 0.8% of revenue (0.9% 2017) despite an approximately 3% increase in production volume compared to 2017.

SOCIAL

INFORMATION ON EMPLOYEES

GRI 102-8: Information on employees and other workers

At the end of 2018, Kemira employed 4,915 people (4,732). The employee distribution by region shows that 52% (54%) of Kemira's total workforce were employed in EMEA, and 32% (32%) in the Americas. The number of employees have increased by 183 (compared to a decrease of 86 during 2017). The increase is mainly due to new sites and capacity expansions in manufacturing operations. Workers who are legally recognized as selfemployed, or individuals other than the ones in Kemira's payroll are not counted on these numbers.

Kemira is using external service providers (contractors) which work at Kemira locations. These services cover, for example cleaning, snow blowing, engineering & technology projects, and maintenance work. We do not record the number of people but follow the contractor hours as this information is included in the workplace safety indicator TRIF. In 2018, there was approximately 2.1 million hours which equals to about 1,100 FTE (Full Time Equivalents) when assuming 7.5 hours per day and 250 working days per year.

GRI 102-8: Total number of employees

	2018	2017	2016	2015	2014
TOTAL NUMBER OF EMPLOYEES*	4,915	4,732	4,818	4,685	4,248
Females, %	26%	26%	26%	26%	26%
Males, %	74%	74%	74%	74%	74%
White collar, %	60%	62%	61%	62%	58%
Blue collar; %	40%	38%	39%	38%	42%

* At year end

GRI 102-8a: Total number of employees by employment contract (permanent and temporary), by gender

	2018	2017	2016	2015	2014	%,2018	%,2017	%,2016	%,2015	%,2014
TOTAL NUMBER OF EMPLOYEES	4,915	4,732	4,818	4,685	4,248					
Total permanent	4,789	4,615	4,715	4,559	4,133	97.4 %	97.5%	97.9%	97.3%	97.3%
Total fixed-term	126	117	103	126	115	2.6 %	2.5%	2.1%	2.7%	2.7%
FEMALES TOTAL	1,255	1,223	1,259	1,220	1,110					
Permanent	1,205	1,175	1,227	1,171	1,064	96.0 %	96.1%	97.5%	96.0%	95.9%
Fixed term	50	48	32	49	46	4.0 %	3.9%	2.5%	4.0%	4.1%
MALES TOTAL	3,660	3,509	3,559	3,465	3,138					
Permanent	3,584	3,440	3,488	3,388	3,069	97.9 %	98.0%	98.0%	97.8%	97.8%
Fixed term	76	69	71	77	69	2.1 %	2.0%	2.0%	2.2%	2.2%

GRI 102-41: Collective bargaining agreements

The percentage of employees covered by collective bargaining agreements by 'significant locations of operation' varies widely between regions. The coverage is the lowest in North America (USA 5%, Canada 15%), which is characteristic of the region, whereas in South America (Brazil, Uruguay) all employees are covered.

In the APAC region, collective bargaining agreements occur in the chemical industry only in a few countries, Indonesia, Korea and Thailand, where almost all employees are covered by collective bargaining agreements. In many European countries, all employees are covered by collective bargaining agreements, especially in Northern Europe (Finland, Sweden) and Southern Europe (Spain, France, Italy). In Central and Eastern Europe, the percentage varies (e.g. UK 32%, Germany 39%, Netherlands 61%), and in some countries there are no collective bargaining agreements.

The definition used for 'significant locations of operation' refers to countries where we have 10 or more employees. In Kemira's case, there are 26 countries with 10 or more employees and which altogether represents 98% of all employees.

GRI 102-8b. Total number of employees by employment contract (permanent and temporary), by region

	2018	2017	%, 2018	%, 2017
TOTAL NUMBER OF EMPLOYEES	4,915	4,732		
Americas	1,559	1,514	31.7%	32.0%
Asia Pacific	777	647	15.8%	13.7%
EMEA	2,579	2,571	52.5%	54.3%
Permanent total	4,789	4,615		
Americas	1,559	1,514	32.6%	32.8%
Asia Pacific	777	647	16.2%	14.0%
EMEA	2,453	2,454	51.2%	53.2%
Temporary total	126	117		
Americas	-	-	0.0%	0.0%
Asia Pacific	-	-	0.0%	0.0%
EMEA	126	117	100.0%	100.0%

GRI 102-8c. Total number of employees by employment type (full-time and part-time), by gender

	2018	2017	2016	2015*	2014*	%, 2018	%, 2017	%, 2016	%, 2015*	%, 2014*
TOTAL EMPLOYEES	4,915	4,732	4,818	4,559	4,133					
Total full-time	4,842	4,660	4,747	4,481	4,099	98.5 %	98.5%	98.5%	98.3%	99.2%
Total part-time	73	72	71	78	34	1.5 %	1.5%	1.5%	1.7%	0.8%
FEMALES TOTAL	1,255	1,223	1,259	1,171	1,064					
Full-time	1,202	1,168	1,208	1,106	1,037	95.8 %	95.5%	95.9%	94.4%	97.5%
Part-time	53	55	51	65	27	4.2 %	4.5%	4.1%	5.6%	2.5%
MALES TOTAL	3,660	3,509	3,559	3,388	3,069					
Full-time	3,640	3,492	3,539	3,375	3,062	99.5 %	99.5%	99.4%	99.6%	99.8%
Part-time	20	17	20	13	7	0.5 %	0.5%	0.6%	0.4%	0.2%

*2014-2015 numbers for permanent employees

EMPLOYMENT

GRI 401-1: New employee hires and employee turnover

The total number of new hires in 2018 was 804 (597), out of which 28% (31%) were female and 72% (69%) male. The new hires include summer trainee and other temporary positions. Kemira's new hiring reflects changes in diversity from the previous year. The total turnover rate was 10.1% in 2018 compared to 12% in 2017. The total turnover is based on permanent workforce.

The turnover rate in EMEA was 9.0% (11%), which was the lowest of the regions. The highest turnover rate was in Americas 12.3% (13.5%) and the APAC region had turnover of 9.3% (12.8%). The turnover rate was highest at the age group <30 years 16.2% (19.3%) and females 11.8% (15%), both rates lower than 2017.

GRI 401-1 a. Total number and rate of new employee hires during the reporting period, by age group, gender and region

	Number of new hires					% of total new hires				
	2018	2017	2016	2015	2014	%, 2018	%, 2017	%, 2016	%, 2015	%, 2014
TOTAL NEW HIRES	804	597	695	673	710				100.0%	100.0%
NEW HIRES BY AGE GROUP										
<30	319	286	284	293	291	40 %	48%	41%	43.5%	41.0%
30-50	420	260	358	312	348	52 %	44%	52%	46.4%	49.0%
>50	65	51	53	68	71	8 %	9%	8%	10.1%	10.0%
NEW HIRES BY GENDER	804									
Females	222	188	218	208	236	28 %	31%	31%	30.9%	33.2%
Males	582	409	477	465	474	72 %	69%	69%	69.1%	66.8%
NEW HIRES BY REGION	804									
APAC	203	79	173	60	60	25 %	13%	25%	8.9%	8.5%
EMEA	365	352	364	373	418	45 %	59%	52%	55.4%	58.9%
Americas	236	166	158	240	232	29 %	28%	23%	35.7%	32.7%

GRI 401-1 b. Total number and rate of employee turnover during the reporting period, by age group, gender and region

	Turnover					Turnover, %				
	2018	2017	2016	2015	2014	%, 2018	%, 2017	%, 2016	%, 2015	%, 2014
TOTAL TURNOVER	497	570	441	490	736	10.1 %	12.0%	9.2%	10.5%	17.3%
TURNOVER BY AGE GROUP										
<30	96	109	72	78	96	16.2 %	19.3%	12.4%	13.6%	18.6%
30-50	253	258	228	263	428	8.9 %	9.9%	8.2%	9.8%	17.6%
>50	148	203	141	149	212	10.0 %	13.0%	9.6%	10.4%	16.3%
TURNOVER BY GENDER	497									
Female	148	193	136	144	242	11.8 %	15.8%	10.8%	11.8%	21.8%
Male	349	377	305	346	494	9.5 %	10.7%	8.6%	10.0%	15.7%
TURNOVER BY REGION	497									
APAC	72	83	53	56	44	9.3 %	12.8%	8.1%	10.4%	12.5%
EMEA	233	282	214	225	464	9.0 %	11.0%	8.2%	8.8%	19.2%
Americas	192	205	174	209	228	12.3 %	13.5%	11.2%	13.2%	15.4%

LABOR/MANAGEMENT RELATIONS

GRI 401-2: Benefits provided to full-time employees that are not provided to temporary or part-time employees

The benefit programs at Kemira differ depending on regional and country specific practices, and the programs have been stable across recent years without major changes to the practices. In most countries, the same benefits are offered to full-time and part-time employees, and for temporary employees hired directly by Kemira, if the temporary contract exceeds a certain length.

Benefit practices are country specific and typically do not vary between locations and operations. Some exceptions apply, e.g. some countries offer additional insurance and / or retirement benefits for permanent full-time employees. In North America, the eligibility for benefits is dependent on hours worked, in the USA employees are eligible if they work a minimum of 20 hours per week.

GRI 402-1: Minimum notice periods regarding operational changes

As stated in our Code of Conduct, all sites are obliged to follow local legislation, regulations and other agreements regarding labor practices, including notice periods. Minimum notice periods are defined in laws or in collective agreements, and are followed in each country accordingly. The time period for the consultation process relating to operational changes varies by country and region, starting from 14 days for smaller changes to up to six months in some countries and for major changes, varying between one to two months in most countries.

OCCUPATIONAL HEALTH AND SAFETY

GRI 403-2: Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities

Kemira reports the occupational safety performance indicator as Total Recordable Injuries (TRI) which includes permanent injuries and fatalities, lost time incidents, restricted work cases and medical treatment cases covering Kemira employees and contractors working at Kemira sites. TRI Frequency (TRIF) is measured as Total Recordable Injuries per million working hours.

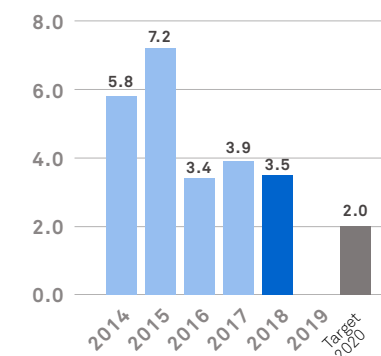
Our health and safety performance in 2018 improved compared to 2017. TRIF fell in 2018 to a level consistent with 2016 performance.

Total number of TRIs was 44 (49) and TRIF ended up to 3.5 (3.9). The ratio of incidents for Kemira employees and for contractors working at Kemira sites remained at the 2017 level. Long-term trend remains positive and we continue to strive toward our 2020 goal of TRIF 2.0.

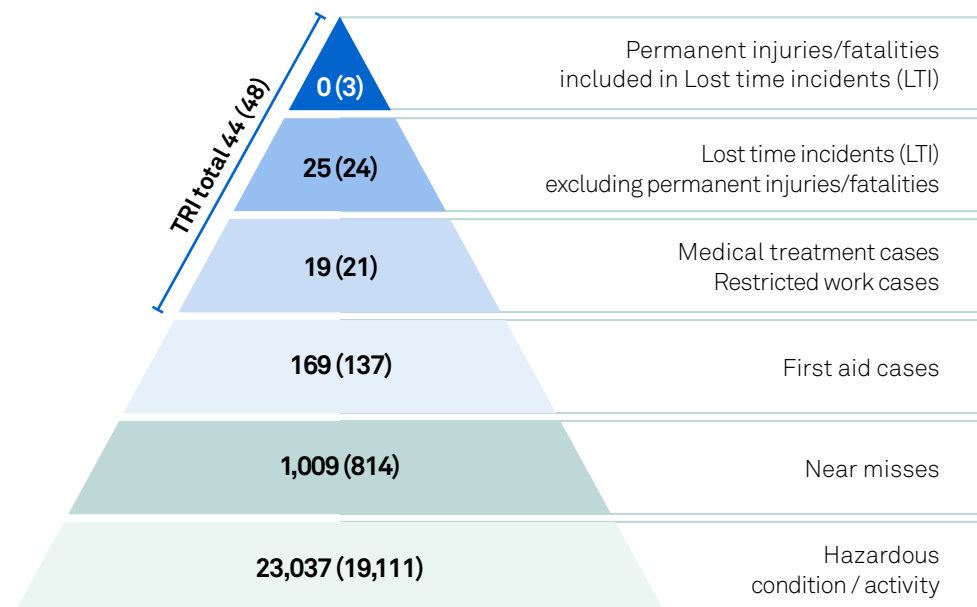
No fatalities have been associated with Kemira employees since 2005. In 2018 we had no permanent injuries and the overall injury severity decreased from 2017. The noticeable decline in severity and permanent injuries are responses to ongoing management commitment, progressive safety messaging and an overall improvement in safety culture.

To improve our health and safety culture, the Behavior Based Safety (BBS) Program has been one of our top priorities since 2016. The program focuses on employee safety engagement at all levels. In 2018, we continued to implement the program to cover all APAC, EMEA and SA manufacturing sites. Peer to peer communication, quality of observations and positive feedback had a renewed emphasis at established sites. The BBS program has generated numerous field observations of behaviors (both positive and negative) that are being used to prevent hazardous conditions and potential injuries.

OUR SAFETY PERFORMANCE (TRIF)



Personal injuries pyramid 2018 (2017)



We have continued to improve our internal communication of health and safety incidents, reviews and proactive campaigns during 2018.

- We conducted the Safety Campaign – “Stop. Think. Act.” with 11 separate topics, including safety critical issues such as cut prevention, working at heights and traffic safety. These “Stop. Think. Act.” topics were translated into 18 languages and were promoted with posters, online advertisements, internal articles, weekly EHSQ Bulletins and Monthly Regional EHSQ communication calls
- We made a concerted effort to promote the Life Critical Standards which cover high hazard (non-standard) work topics that put employees at the greatest risk of serious injury or death. This effort included developing new global standards that both clarified and expanded the minimum requirements to perform these activities. In 2019, we will continue this effort with the implementation of the Life Saving Rules Campaign which will be based on the international best practices in the oil industry and will focus on work activities such as confined space, working at height, work authorization, energy isolation, line of fire and hot work
- A project to improve and standardize training at each manufacturing site for both Kemira employees and contractors was initiated. We focused on eLearning based training, and these efforts will continue through 2019, with full implementation in 2020

In order to further increase safety awareness and to improve recognition and elimination of hazards in the work environment, a key performance indicator of Hazardous Conditions / Activities was continued in 2018. This is a

leading safety indicator reflecting environmental or behavior related hazards at the workplace. The number of reported Hazardous Conditions / Activities was 23,037 in 2018 which equals to 5 per Kemira employee, which surpassed Kemira’s internal goal. This type of proactive identification of Hazardous Conditions / Activities not only allows us to

avoid incidents but also improves our operations and work methods.

The safety performance indicators of Hazardous Conditions / Activities and TRIF have been included as corporate bonus targets for every employee since 2017.

Total Recordable Injuries

TRI	2018	2017	2016	2015	2014
TOTAL TRI	44	48	46	77	61
Kemira employees	30	31	32	56	44
Contractors working at Kemira site	14	17	14	21	17
REGIONAL TRI					
APAC	4	1	2	1	0
EMEA	22	31	22	53	35
Americas	18	16	22	23	26
TRI Frequency	2018	2017	2016	2015	2014
GLOBAL TRIF	3.5	3.9	3.4	7.2	5.8
Regional TRIF					
APAC	2.0	0.6	0.9	0.6	0
EMEA	4.1	6.0	3.4	10.6	6.1
Americas	4.6	5.1	4.8	5.7	6.4

Lost Time Incidents

LTI	2018	2017	2016	2015	2014
TOTAL LTI	25	27	20	30	24
Kemira employees	15				
Contractors working at Kemira site	10				
REGIONAL LTI					
APAC	0	1	2	1	0
EMEA	16	23	12	22	19
Americas	9	3	6	7	5
LTI Frequency	2018	2017	2016	2015	2014
GLOBAL LTIF	2.0	2.2	1.5	2.7	2.7
REGIONAL LTIF					
APAC	0	0.6	1	0.6	0
EMEA	3	4.6	2.1	5.4	4.4
Americas	2.3	1.0	0.8	2	1.8

TRAINING AND EDUCATION

GRI 404-1: Average hours of training per year per employee

Kemira aims to capture all training, education and employee development related hours in the learning management system (LMS) that is feasible, and have continued to advance in achieving this goal. So far, leadership development activities, regional and global competence development and vocational training programs and many local programs are recorded in the LMS. However, some remaining training and development activities are still recorded locally.

Training hours registered in the system for larger countries in 2018 are Finland 8,856 (7,847) hrs, UK 6,037 (4,482) hrs, Sweden 5,476 (5,719) hrs, USA 4,919 (4,973) hrs, Netherlands 3,833 (4,075) hrs, China 10,569 (6,770) hrs and Poland 6,186 (4,185) hrs. Globally registered average hours per employee for blue collar employees are lower than for white collar employees, indicating some difference in recording hours in the global system.

GRI 404-2: Programs for upgrading employee skills and transition assistance programs

Kemira provides each employee with access to the relevant competence development programs and structured learning opportunities to support upgrading of employee skills through on-the-job learning programs (including generic and job-specific competence development), buddy / coaching / mentoring programs, and traditional methods like classroom and eLearning.

The scope includes:

- Leadership development (internal and external) programs
- Professional & technical competence development programs
- Statutory or compliance related programs

These programs are available based on the position, skills/competence level and career aspirations. With the exception of leadership development programs and other external cost based programs (pre-approval required), employees can typically enroll and complete the self-paced learning programs available through our LMS (Learning Management System). We had a strong leadership development portfolio offering and consistent participation in 2018.

Examples of other global and regional programs offered during 2018 are listed below:

- Code of Conduct, anti-corruption, human rights and business Code of Conduct, anti-corruption, human rights and business and other compliance programs delivered mainly through eLearning
- GDPR fundamentals, principles and rights and obligations
- Information security awareness programs and ICS security training
- Extensive EHSQ related programs including EHSQ hazardous Condition/Activity Training, Chemical handling, Communicating on chemical hazards, Crisis management, PPE, Manual handling, and Energy Management system

- Innovation training
- Professional and technical competence development programs including commercial sales programs
- Manufacturing and product lifecycle management programs
- Digital competencies developed as part of the Kemira digital hub and basics of robotics process automation program

Kemira also provides transition assistance programs where relevant, with bigger changes to facilitate the continued employability and management of career endings resulting from retirements or termination of employment. These have included:

- Up-skills training for those intending to continue working with Kemira
- Severance pay
- Career planning and outplacement / job placement services

GRI 404-3: Percentage of employees receiving regular performance and career development reviews

Our global performance and development discussion (PDD) process covers all permanent employees, both white collar and blue collar, who are not absent for an extended time period because of leave, for example. Temporary employees' inclusion in the PDD process is evaluated case-by-case, depending on the length of the contract.

GRI 404-3a. Percentage of total employees by gender and by employee category who received a regular performance and career development review during the reporting period

Performance and Development Discussion (PDD)	Number of employees covered by PDD					PDD Coverage,%				
	2018	2017	2016	2015	2014	%, 2018	%, 2017	%, 2016	%, 2015	%, 2014
TOTAL PERMANENT EMPLOYEES NOT ABSENT*	4,597	4,626	4,590	4,440	4,019					
PDD'S BY GENDER										
Employees covered in Global PDD process	4,093	4,139	4,009	4,147	3,803	89%	89%	87%	93%	95%
Females covered in Global PDD process	1,099	1,119	1,116	1,030	977	95%	97%	93%	96%	95%
Males covered in Global PDD process	2,994	3,020	2,893	3,117	2,826	87%	87%	85%	93%	94%
PDD'S BY EMPLOYEE CATEGORY										
White collars covered in Global PDD process	2,731	2,778	2,702	2,730	2,317	97%	98%	98%	97%	98%
Blue collars covered in Global PDD process	1,362	1,275	1,307	1,417	1,486	76%	71%	72%		89%

* All permanent employees, who are not absent for an extended time period, because of leave, for example, are covered by global performance and development discussion process.

DIVERSITY AND EQUAL OPPORTUNITY

GRI 405-1: Diversity of governance bodies and employees

During 2018, the share of females in the Board of Directors remained the same (50%). The percentage share of females (26%) in the total number of employees has remained constant over the years 2016 – 2018. The number of females in executive positions (Directors and above) has increased to 29% vs. 27% in 2017.

GRI 405-1 a. Percentage of individuals within the organization's governance bodies in each of the following diversity categories: Gender, age group, other indicators of diversity where relevant

Performance and Development Discussion (PDD)	Total					%				
	2018	2017	2016	2015	2014	%, 2018	%, 2017	%, 2016	%, 2015	%, 2014
MANAGEMENT BOARD										
Total	8	8	10	10	9					
Female	1	1	2	2	2		13%	20%	20%	22%
Male	7	7	8	8	7		88%	80%	80%	78%
By age group										
<30	0	0		0	0		0%	0%	0%	0%
30-50	1	1	2	5	6		13%	20%	50%	67%
>50	7	7	8	5	3		88%	80%	50%	33%
BOARD OF DIRECTORS										
Total	6	6	7	6	6					
Female	3	3	3	2	2		50%	43%	33%	33%
Male	3	3	4	4	4		50%	57%	67%	67%
By age group										
<30	0	0		0	0		0%	0%	0%	0%
30-50	1	1	1	0	0		17%	14%	0%	0%
>50	5	5	6	6	6		83%	86%	100%	100%

a. Percentage of individuals within the organization's governance bodies in each of the following diversity categories:

i. Gender;

ii. Age group: under 30 years old, 30-50 years old, over 50 years old;

iii. Other indicators of diversity where relevant (such as minority or vulnerable groups).

As stated in our Code of Conduct, we respect the diversity, talent and abilities of others. We at Kemira define 'diversity' as all the unique characteristics that make up each of us: personality, lifestyle, work experience, ethnicity, religion, gender, sexual orientation, age, national origin, ability and other characteristics. We focus our efforts to attract, develop and retain a workforce that is diverse, and to ensure an inclusive work environment that embraces the strength of our differences. We do not discriminate or treat employees or job applicants unfairly in matters that involve recruiting, hiring, training, promoting, compensation or any other term or condition of employment.

**GRI 405-1b. Percentage of employees per employee category in each of the following diversity categories:
Gender, age group, other indicators of diversity where relevant**

	Total					%				
	2018	2017	2016	2015	2014	%, 2018	%, 2017	%, 2016	%, 2015	%, 2014
TOTAL EMPLOYEES	4,915	4,732	4,818	4,685	4,248	100 %	100%	100%	100%	100%
<30	594	566	579	575	515	12 %	12%	12%	12%	12%
30-50	2,848	2,607	2,772	2,672	2,435	58 %	55%	58%	57%	57%
>50	1,473	1,559	1,467	1,438	1,298	30 %	33%	30%	31%	31%
Female in total	1,255	1,223	1,259	1,220	1,110	26 %	26%	26%	26%	26%
<30	179	190	179	188	172	14 %	16%	14%	15%	15%
30-50	827	764	823	773	705	66 %	62%	65%	63%	64%
>50	249	269	257	259	233	20 %	22%	20%	21%	21%
Male in total	3,660	3,509	3,559	3,465	3,138	74 %	74%	74%	74%	74%
<30	415	376	400	387	343	11 %	11%	11%	11%	11%
30-50	2,021	1,843	1,949	1,899	1,730	55 %	53%	55%	55%	55%
>50	1,224	1,290	1,210	1,179	1,065	33 %	37%	34%	34%	34%

b. Percentage of employees per employee category in each of the following diversity categories:

i. Gender;

ii. Age group: under 30 years old, 30-50 years old, over 50 years old;

iii. Other indicators of diversity where relevant (such as minority or vulnerable groups).

GRI 405-2: Ratio of basic salary and remuneration of women to men

Kemira operates a global job structure that is applied to all white collar employees. The job structure describes job families and the respective job roles with required qualifications and main responsibilities. The job structure links to job grades, which define the salary range and the incentive opportunity for a specific job role. The job grades and salary data information allows Kemira to evaluate, analyze and implement equal remuneration. Factors impacting salary increases includes employee performance and the position of an employee's salary within the salary range, as well as country-specific statutory increases and merit increase opportunities. Incentive payouts are based on measured achievement for pre-defined targets on the company, unit and individual levels.

NON-DISCRIMINATION

GRI 406-1: Incidents of discrimination and corrective actions taken

During 2018, eleven incidents were reported to the Ethics & Compliance function alleging potential discrimination or harassment. Five of the cases were investigated and closed without merit. Four of the cases were closed with merit and the cases were remediated during 2018. Two cases were under investigation at the end of 2018.

Disclosure 405-2a. Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation.

Country	Women to men ratio 2018	Women to men ratio 2017	Women to men ratio 2016	White Collar Headcount 2018
Austria	87%	95 %	n/a	49
Brazil	85%	79 %	n/a	133
Canada	88%	88 %	88 %	118
China	93%	93 %	94 %	270
Finland	92%	91 %	91 %	607
Germany	96%	97 %	98 %	90
Italy	90%	90 %	n/a	76
Netherlands	89%	93 %	96 %	79
Poland	97%	92 %	92 %	316
Spain	84%	83 %	n/a	52
Sweden	97%	96 %	99 %	134
United Kingdom	92%	93 %	96 %	92
United States	92%	89 %	88 %	593
Total for largest countries	92%	90 %	n/a	2,609

FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING

GRI 407-1: Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk

Kemira respects the freedom of association and collective bargaining as stated in our Code of Conduct, and through our signatory of the United Nations Global Compact.

We expect our suppliers to respect these same principles and commit to the Kemira Code of Conduct for Suppliers, Distributors and Agents (CoC-SDA). All of our Suppliers (engaged with a SAP Purchased Order) receive a written reference to CoC-SDA as part of the Kemira general terms of purchase on the back of the Purchase Order.

To increase Kemira employees' awareness of their rights regarding freedom of association and collective bargaining, we provide regular training on our Code of Conduct.

In 2018, Kemira did not identify any violations of freedom of association or collective bargaining in our own operations, and no evidence has been found to indicate that suppliers would be restricting their employees' opportunities to exercise freedom of association and collective bargaining based on sustainability assessments of our key suppliers, representing approximately 25% of our total spend since 2014.

For additional information, see the Integrity section for details of our Code of Conduct training and Ethics and Compliance hotline. Details of the numbers of employees covered by collective bargaining agreements are given under GRI 102-41.

HUMAN RIGHTS ASSESSMENT

GRI 412-1: Operations that have been subject to human rights reviews or impact assessments

The Human Rights Impact Assessment was conducted in 2014 to identify any risks of a human rights impact throughout our operations and value chain, and any potential gaps in our management approach to human rights as evaluated against the Operational Principles of the United Nations Guiding Principles of Business and Human Rights. The findings indicated a potential risk impact arising from our business with hazardous chemicals, upstream and downstream business relationships, and emerging market expansion. The Human Rights issues most relevant to Kemira relate to employment practices and the health and safety aspects of our products, workplace and operations.

During 2018, we have continued to integrate human rights aspects into our management system. The focus has been on increasing overall awareness and due diligence on human rights throughout the Kemira organization. All employees are provided regular and compulsory training on the Code of Conduct, including an awareness of human rights. The group of employees (white collar) who are responsible for ensuring that human rights are respected in our business relationships and in our own operations were provided the basic training on human rights in 2015 and since then all new hires must participate in this training as part of their induction program.

Key activities in 2018

- A new global onboarding program was launched for new hires (white collars) which is automatically assigned to

them on the date of hire. The program includes online courses on Code of Conduct and Human Rights and Business.

- All relevant sales team members are trained on third party due diligence for potential new business partners and a new process is introduced to further develop our third party risk management.
- Workplace safety – we further developed our safety culture through the Behavior Based Safety Culture program, target setting, training and communications measure. For more information, see indicator GRI 403-2 for workplace safety.
- Product safety – product lifecycle management. For more information, see indicator GRI 416-1 for product stewardship.
- Supplier audits – For more information, see Chapter 2 supplier assessment and audits.

By the end of 2018, 96% of the targeted employees had completed the basic training. Target group was 2,734 in the end of 2018.

PUBLIC POLICY

GRI 415-1: Political contributions

The Kemira Code of Conduct, Kemira Group Sponsorship and Donation policy and the Kemira Group Gifts, Entertainment and Anti-bribery Policy, prohibit any financial support to politicians, political parties or political organizations. No financial or any in-kind political contributions paid by Kemira have come to Kemira's attention during 2018.

CUSTOMER HEALTH AND SAFETY

GRI 416-1: Assessment of the health and safety impact of product and service categories

According to Kemira's product stewardship policy, we are acting:

- to comply with all applicable chemical regulatory requirements in the countries where we either manufacture and / or sell chemicals covering raw materials, intermediates, processing aids and products
- to make hazard assessments covering regulatory compliance, human health, and safety, as well as environmental protection aspects, as part of the Product Lifecycle Management processes throughout products' lifecycle from development to termination
- to maintain data related to chemical products and substances including raw materials is managed in ERP and is linked to Product Lifecycle Management tool / process
- to proactively identify and manage chemical risks and concerns to build management action plans for the identified unacceptable risks to human health, safety or environment; covering all substances from raw materials to products
- to share information with our stakeholders about the health and safety aspects of products and to ensure that our customers can safely use our products

Kemira complies with all laws and regulations relating to chemicals and trade. Kemira does not sell any banned products. We continuously screen substances that are covered by any regulatory restrictions, or subject to substitution requirements imposed by non-regulatory

stakeholders. We proactively work to mitigate health, safety, environmental and image-related risks (GRI 102-2: Activities, brands, products, and services).

We regularly review substances with threat-for-use restrictions or authorization at different phases of regulatory processes in all jurisdictions where Kemira operates. We have some substances listed in the EU REACH regulation list for Substances of Very High Concern (SVHC). At the end of 2018, 83% (19 out of 23) of the identified 23 SHVC substances had a management plan approved by the Operational Excellence board.

GRI 416-2: Incidents of non-compliance concerning the health and safety impact of products and services

We are not aware of any fine, penalty or warning for non-compliance with regulations and voluntary codes regarding our products or services in 2018.

MARKETING AND LABELING

GRI 417-1: Requirements for product and service information and labeling

Kemira's product portfolio consists of seven major product lines and approximately 2,000 different products. All of these products are duly documented and labeled according to legal requirements, including the identification of their hazardous components and information on their safe use. Kemira provides Safety Data Sheets (SDS) for all products, independent of the product safety classification, even if in most jurisdictions Safety Data Sheets are mandatory only for hazardous products. Our IT system for Product Lifecycle

Management enables us to prepare SDS's and labels in alignment with the latest regulatory data requirements and in the official languages of the countries where our products are manufactured, stored or sold. In EU member states, the information requirements are stated under REACH regulations with regard to substance properties, exposure, use and risk management measures, and the chemical safety assessment. Registered uses will also be communicated via the updated extended SDS's for downstream users. In addition to the information provided on product labels and Safety Data Sheets, more detailed information about products and their raw material ingredients can be provided on request.

In 2018, the Kemira Product Stewardship & Regulatory Affairs team responded to 6863 (7,720 in 2017) requests concerning product safety and/or regulatory. The response time for those requests is one of our internal key performance indicators (KPIs).

GRI 417-2: Incidents of non-compliance concerning product and service information and labeling

Our customer complaints management process handles complaints by recording the complaint, investigation, root cause and corrective action determination and implementation and communication with the customer. During the process complaints are classified with a complaint reason from a predefined list. The process and system in use are able to exclude those complaints that Kemira has met the agreed requirements with the customer. All complaints are actively monitored, evaluated and corrected as required by the quality management system in use at Kemira.

Non-compliance related to product and service information usually makes reference to insufficient information on the label.

During 2018, a total of 112 customer claims were recorded relating to labeling, of which 59 cases were in the EMEA region, 32 in the Americas, and 21 in the APAC region. Corrective actions planned for 15 cases were underway at year end.

Concerning regulations on product and service information and labelling, there were no reported incidents of non-compliance within Kemira's operations which would have resulted in any fine, penalty or warning.

SOCIOECONOMIC COMPLIANCE

GRI 419-1: Non-compliance with laws and regulations in the social and economic area

We are not aware of any fine, penalty or warning for non-compliance with product related laws and / or regulations in 2018.

GRI 417-1: Product and service information provided

TOPIC	PRODUCT AND SERVICE INFORMATION PROVIDED BY KEMIRA
The sourcing of components of the product or service	Only if requested by customers
Content, particularly with regard to substances that might produce an environmental or social impact	As required by law, always in Safety Data Sheets (SDS) and on the labels. Additional information about chemicals in our products for voluntary certification / compliance schemes such as eco-labeling is also provided to customers upon request and when applicable
Safe use of the product or service	Safe use of a product or service is communicated in the SDS's and on the labels. Registered uses will be communicated via the extended SDSs. Additional information about the use, dosage and application is provided to customers when applicable
Disposal of the product and environmental / social impact	When legally required, disposal of a product and environmental / social impact are communicated in the SDS's and on the labels

Reporting practice

REPORTING SCOPE AND CONTENT

GRI 102-10: Significant changes to the organization and its supply chain

At the end of the year 2018, Kemira had 64 (63 in 2017) manufacturing sites of which 63 were included in the environmental reporting scope, and 62 in the auditing scope of our integrated management system. During the year, one site was closed in Spain (Torrelavega) and during the Q4 2018 two new sites were added (Long Thanh in Vietnam and Yanzhou Tao in China). Beyond that, there were no significant changes in the company structure, size or ownership.

GRI 102-46: Defining report content and topic boundaries

When defining the relative importance of material topics for reporting purpose we have taken into account our economic, environmental and social impact, stakeholder expectations, our purpose and strategy, and our commitments to the Code of Conduct, United Nations Global Compact, and Responsible Care program. According to the GRI 101 Foundation standard, the principles for defining the report content were applied when assessing material topics and boundaries.

The most significant economic, environmental and social impacts

Economic impact: We generate revenue by selling chemical products for industrial uses in the pulp and paper, oil and gas, mining, and water treatment industries. We have a direct economic impact on suppliers and service providers through the payments we make for raw materials and services, to

employees through compensation and benefits, to capital providers through dividends and interest payments, to the public sector through taxes, and to society through local community projects, sponsorships and donations. Unethical business behavior could impact Kemira's reputation and thus financial position.

Environmental impact: We have a positive environmental impact through our products and solutions which enable our customers to improve their water, energy and raw material efficiency. Our main environmental risks relate to carbon emissions from our own manufacturing and in the value chain due to our purchasing activities, upstream and downstream transportation, and to potential incidents through accidental release of chemicals or process safety deficiencies.

Social impact: Our main social impact, and related risks, concerns safety in the workplace, safe use of our products along the value chain and any possible non-compliance with responsible business practices in our own operations or those of our business partners.

Prioritization process of material topics

Identification: Material topics relevant to Kemira have been identified based on their relative magnitude of impact and respective concerns raised by our stakeholders. The most recent materiality assessment was made in 2016-2017. Representatives of our key stakeholder groups were interviewed to identify their expectations towards Kemira, a benchmark study on material disclosure topics was carried out and major sustainability related development trends were analyzed.

Prioritization: The identified topics were prioritized with reference to the relative importance to stakeholders, and to the relevance to Kemira's business and strategy, as well as the significance of specific topics related to the global chemical sector. Based on the prioritization, we have selected 20 GRI disclosure topics out of 33 topics as defined by the GRI (2016) standards. In addition to these GRI topics, we also disclose information and performance data on sustainable products and product stewardship, which is material for but not covered by the GRI standards.

Validation: Data compilation practices for the identified material topics were reviewed and defined. Group level KPI's and targets are defined for the most material topics which are reported as Corporate responsibility priorities.

Review: Group level KPI's and targets for corporate responsibility priorities are approved and annually reviewed by the Management Board and by the Board of Directors.

GRI 102-47: List of material topics

The economic, environmental and social impact of our business activities take place both directly through our own operations and indirectly through our upstream and downstream operations.

The prioritized material disclosure topics are shown in the table Material topics reflecting Kemira's economic, environmental and social impact (p. 60). These material topics, the respective topic boundaries and data compilation practices are reported in the table 'Material topics and their boundaries'.

Material topics reflecting Kemira's economic, environmental and social impact (GRI disclosures topics and own topics)

INDIRECT IMPACT			DIRECT IMPACT	INDIRECT IMPACT	
	Production of input materials and energy	Upstream services	Kemira's own operations	Downstream services	Use of Kemira products
ECONOMIC IMPACT	<ul style="list-style-type: none">• Anti-corruption• Anti-competitive behavior	<ul style="list-style-type: none">• Anti-corruption• Anti-competitive behavior	<ul style="list-style-type: none">• Sustainable products and solutions (own topic)• Economic performance*• Anti-corruption• Anti-competitive behavior	<ul style="list-style-type: none">• Anti-corruption• Anti-competitive behavior	
ENVIRONMENTAL IMPACT	<ul style="list-style-type: none">• Emissions (Scope 3)• Supplier performance for their environmental impacts	<ul style="list-style-type: none">• Emissions (Scope 2 & 3)• Supplier performance for their environmental impacts	<ul style="list-style-type: none">• Materials• Energy• Water• Emissions (Scope 1)• Effluents and waste• Environmental compliance	<ul style="list-style-type: none">• Emissions (Scope 3)• Supplier performance for their environmental impacts	<ul style="list-style-type: none">• Emissions (Scope 3)• Sustainable products and solutions (own topic)
SOCIAL IMPACT	<ul style="list-style-type: none">• Supplier performance for their social impacts and ethical business behavior	<ul style="list-style-type: none">• Supplier performance for their social impacts and ethical business behavior	<ul style="list-style-type: none">• Employment*, and Labor/Management relations*• Occupational health and safety• Training and education• Diversity and equal opportunity• Non-discrimination• Freedom of association and collective bargaining• Human rights assessment• Public policy• Customer health and safety• Marketing & labeling• Socioeconomic compliance	<ul style="list-style-type: none">• Supplier performance for their social impacts and ethical business behavior	

* Not material but reported because considered useful based on continuity

GRI 102-48: Restatements of information

A few restatements of environmental data have been done due to correction or reclassification of data from some manufacturing sites (electricity sold off-site, water recycled, waste discharged) or review of assumptions of scope 3 calculations (raw materials, upstream and downstream transportations).

GRI 102-49: Changes in reporting

There were no significant changes in the reporting.

REPORT PROFILE

GRI 102-50: Reporting period

The reporting period is from 1 January to 31 December 2018.

GRI 102-51: Date of most recent report

Kemira's previous Annual Report including non-financial information (GRI disclosures) was published on 26 February 2018.

GRI 102-52: Reporting cycle

Kemira's Annual Report is published yearly, by calendar year. The Annual Report consists of Business overview, GRI disclosures, Corporate Governance statement and Financial statements.

GRI 102-53: Contact point for questions regarding the report

The contact point for questions is Kemira Communications and Corporate Responsibility. Contact details are available at www.kemira.com.

GRI 102-54: Claims of reporting in accordance with the GRI standards

- The report is prepared in accordance with the GRI standards (2016): core option.
- Communication on Progress (COP) of the United Nations Global Compact at Global Compact Active level by using the GRI-standards reporting principles.

MANAGEMENT APPROACH

GRI 103: Management approach

The management of corporate responsibility is focused on three priority areas: Sustainable products and solutions, Responsible operations and supply chain, and People and integrity which cover also the 20 prioritized GRI disclosure topics and one additional topic not included in the GRI topic-specific standards.

GRI 103-1: Explanation of the material topic and its boundary

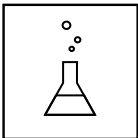
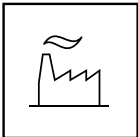
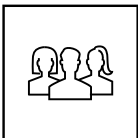
Material topics covered by the management approach are explained in the table at this page, and the boundaries in the table Material topics and their boundaries (pages 63-64).

GRI 103-2: The management approach and its components

See Chapter 2 for detailed description.

GRI 103-3: Evaluation of the management approach

See Chapter 2, Results and key activities for 2018 for detailed description.

CORPORATE RESPONSIBILITY PRIORITIES	MANAGEMENT APPROACH (GRI 103-1)	MATERIAL GRI DISCLOSURE TOPICS COVERED BY THE MANAGEMENT APPROACH
	Sustainable products and solutions	Sustainable products and solutions (Kemira's own material topic, reported based on the GRI 103 Management approach); Materials
	Chemical safety management throughout the products' lifecycle	Customer health and safety; Marketing and labeling; Socioeconomic (product) compliance.
	Responsible management of our own operations,	Energy; Water; Emissions; Effluents and waste; Environmental compliance; Occupational health and safety
	Responsible performance and good governance throughout our supply chains	Supplier environmental assessment; Supplier social assessment.
	People and Integrity	Diversity and Equal Opportunity; Non-discrimination, Training and Education.
	Engagement and competence development of our employees	Anti-corruption; Anti-competitive behavior; Diversity and equal opportunity; non-discrimination; Freedom of association and collective bargaining; human rights assessment; Public policy.
	Responsible business practices in our own operations or with our business partners	

Material topics and their boundaries

GRI 102-47; GRI 103-1 MATERIAL TOPICS	GRI 103-1 TOPIC BOUNDARIES	KEMIRA DATA COLLECTION PRACTICES
Sustainable products and solutions (own material topic)	Kemira operations ¹⁾	Product applications are manually linked to product categories. Product sales data is extracted from Kemira's ERP system
Economic Standard Series		
Economic performance*	Kemira operations ¹⁾	Data is extracted from Kemira's ERP system
Anti-corruption	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.
Anti-competitive behavior	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.
Environmental Standard Series		
Materials	Kemira operations as covered by our ERP ²⁾	Data is extracted from Kemira's ERP system.
Energy	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated on the Group level.
Water	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated on the Group level.
Emissions	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated on the Group level. Scope 3 emissions data is collected from Kemira's ERP system and the relevant organizational units. Default data and assumptions are as in the WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain.
Effluents and waste	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated on the Group level.
Environmental compliance	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated on the Group level.
Supplier environmental assessment	Kemira suppliers	Harmony Contract Management Tool used to track suppliers' signing of Code of Conduct for SDA.

Material topics and their boundaries

Social Standard Series		
Employment*	Kemira operations ¹⁾	HR data management system.
Labor/Management relations*	Kemira operations ¹⁾	HR data management system.
Occupational health and safety	Kemira operations ¹⁾	Synergy data management system. Data covers also contractors working at Kemira sites.
Training and education	Kemira operations ¹⁾	HR data management system.
Diversity and equal opportunities	Kemira operations ¹⁾	HR data management system.
Non-discrimination	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.
Freedom of association and collective bargaining	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.
Human rights assessment	Kemira operations ¹⁾	
Supplier social assessment	Kemira suppliers	Harmony Contract Management Tool used to track suppliers' signing of Code of Conduct for SDA.
Public policy	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.
Customer health and safety	Kemira operations as covered by our ERP ²⁾	Data is extracted from Kemira's ERP system and from R&D New Product Development process documentation, and from Kemira's legal archives.
Marketing and labelling	Kemira operations as covered by our ERP ²⁾	Data is extracted from Kemira's ERP system and from PSRA ⁴⁾ documentation, and from Kemira's legal archives.
Socioeconomic compliance	Kemira operations ¹⁾	Data is collected from each region, from Kemira's legal archive, and through notifications from Kemira's Compliance and Ethics Hotline.

*) Not material GRI topic but reported because considered useful based on continuity.

1) Kemira's operations = All operations covered by Kemira's consolidation rules

2) Kemira's operations covered by ERP = All operations covered by both Kemira's consolidation rules and the company's Enterprise Resource Planning (ERP)

3) Kemira's manufacturing sites = All manufacturing sites covered by Kemira's consolidation rules.

4) PSRA Product Safety and Regulatory Affairs

ASSURANCE REPORT

GRI 102-56: External assurance

The corporate responsibility information presented in the sections GRI disclosures and Business overview are externally assured by an independent third party. Information on the organization's policy and current practice with regard to external assurance can be found in the Assurance statement.

INDEPENDENT LIMITED ASSURANCE REPORT

To the Board of Directors of Kemira Oyj

We have been engaged by the management of Kemira Oyj (hereafter Kemira) to provide a limited assurance on Kemira's corporate responsibility information for the reporting period of January 1, 2018 to December 31, 2018. The information subject to the assurance engagement is the Kemira GRI Disclosures section in the Annual Report 2018 and corporate responsibility information disclosed in the Kemira Business Overview section on pages 6 and 15-18 in the Annual Report 2018 (hereafter: Responsibility Information).

Management's responsibility

The management of Kemira is responsible for the preparation of the Responsibility Information in accordance with the Reporting criteria as set out in the GRI Disclosures section and the Sustainability Reporting Standards (Core) of the Global Reporting Initiative. This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of the Sustainability Information that are free from material misstatement, whether due to fraud or error, selecting and applying appropriate criteria and making estimates that are reasonable in the circumstances.

Assurance provider's responsibility

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

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

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

There are inherent limitations on accuracy and completeness of the data related to the Responsibility Information that are to be taken into account when reading our assurance report. A limited assurance engagement involves performing procedures to obtain evidence about the Responsibility Information. The procedures performed depend on the practitioner's judgment, but their nature is different from, and their extent is less than, a reasonable assurance engagement. The procedures do not include detailed testing of source data or the operating effectiveness of processes and internal controls. Consequently, the procedures do not enable us to obtain the assurance necessary to become aware of all significant matters that might be identified in a reasonable assurance engagement.

Our procedures on this engagement included:

- Conducting interviews with senior management responsible for corporate responsibility at Kemira to gain an understanding of Kemira's targets for corporate responsibility as part of the business strategy and operations;
- Reviewing internal and external documentation to verify to what extent these documents and data support the information included in the Responsibility Information and evaluating whether the information presented in the Responsibility Information is in line with our overall knowledge of corporate responsibility at Kemira;
- Conducting interviews with employees responsible for the collection and reporting of the Responsibility Information and reviewing of the processes and systems for data gathering, including the aggregation of the data for the Responsibility Information;

- Performing analytical review procedures and testing data on a sample basis to assess the reasonability of the presented responsibility information;
- Performing site visits to Krems in Austria and Tarragona in Spain to review compliance to reporting policies, to assess the reliability of the responsibility data reporting process as well as to test the data collected for responsibility reporting purposes on a sample basis;
- Assessing that the Responsibility Information has been prepared in accordance with the Sustainability Reporting Standards (Core) of the Global Reporting Initiative.

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

Our independence, quality control and competences

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

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

Conclusion

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

Helsinki 7.2.2019

Deloitte Oy

Jukka Vattulainen
Authorized Public Accountant

Lasse Ingström
Authorized Public Accountant

GRI CONTENT INDEX

GRI 102-55

Abbreviations

BR = Business Report
GRI = GRI report
GS = Corporate Governance Statement
FS = Financial Statements

Reporting claims

- The report is prepared in accordance with the GRI-standards (2016): core option
- Communication on Progress (COP) of the United Nations Global Compact

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S)	UNITED NATIONS GLOBAL COMPACT
GRI 101: Foundation 2016 General Disclosures	Organizational profile		
	102-1 Name of the organization	Kemira Oyj	
	102-2 Activities, brands, products, and services	BO 16-23	
	102-3 Location of headquarters	BO 2	
	102-4 Location of operations	BO 2	
	102-5 Ownership and legal form	BO 2	
	102-6 Markets served	BO 16-23	
	102-7 Scale of the organization	BO 2	
	102-8 Information on employees and other workers	BO 2, GRI 45-46	
	102-9 Supply chain	GRI 18-20	Principle 8
	102-10 Significant changes to the organization and its supply chain	GRI 59	
	102-11 Precautionary Principle or approach	BO 13-15, GRI 12	
	102-12 External initiatives	GRI 5-6	
	102-13 Membership of associations	GRI 6 (CEFIC)	
	Strategy		
	102-14 Statement from senior decision-maker	BO 4-5	Commitment to Global Compact
	102-15 Key impacts, risks, and opportunities	BO 7, 13-15, GRI 60	
GRI 102: General Disclosures 2016	Ethics and integrity		
	102-16 Values, principles, standards, and norms of behavior	BO 6-7, GRI 22-23	Principle 6, 8
	102-17 Mechanisms for advice and concerns about ethics	GRI 22-23	Principle 1, 6, 8

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S)	UNITED NATIONS GLOBAL COMPACT
GRI 102: General Disclosures 2016	Governance		
	102-18 Governance structure	GRI 7	
	102-19 Delegating authority	GRI 7	
	Stakeholder engagement		
	102-40 List of stakeholder groups	GRI 6	
	102-41 Collective bargaining agreements	GRI 46	Principle 3
	102-42 Identifying and selecting stakeholders	GRI 6	
	102-43 Approach to stakeholder engagement	GRI 6	
	102-44 Key topics and concerns raised	GRI 6	
	Reporting practice		
	102-45 Entities included in the consolidated financial statements	FS NOTE 6.2	
	102-46 Defining report content and topic Boundaries	GRI 59	
	102-47 List of material topics	GRI 59-60	
	102-48 Restatements of information	GRI 61	
	102-49 Changes in reporting	GRI 61	
	102-50 Reporting period	GRI 61	
	102-51 Date of most recent report	GRI 61	
	102-52 Reporting cycle	GRI 61	
	102-53 Contact point for questions regarding the report	GRI 61	
	102-54 Claims of reporting in accordance with the GRI Standards	GRI 61	
	102-55 GRI content index	GRI 67	
	102-56 External assurance	GRI 65-66	
Material Topics			
SUSTAINABLE PRODUCTS AND SOLUTIONS	Own material topic		
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	GRI 62-64	
	103-2 The management approach and its components	GRI 5-14, 62	
	103-3 Evaluation of the management approach	GRI 11-14, 62	
Own KPI	Product sustainability	GRI 11-12	

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S)	UNITED NATIONS GLOBAL COMPACT
Material Topics GRI 200 Economic Standard Series			
ECONOMIC PERFORMANCE	Not material but reported		
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	GRI 62-64	
	103-2 The management approach and its components	GRI 24-25	
	103-3 Evaluation of the management approach	GRI 24-25	
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	GRI 24-25	
	201-3 Defined benefit plan obligations and other retirement plans	FS NOTE 4.5	
	201-4 Financial assistance received from government	FS NOTE 2.2	
GRI STANDARD	DISCLOSURE	PAGE NUMBER(S)	UNITED NATIONS GLOBAL COMPACT
ANTI-CORRUPTION			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	GRI 62-64	
	103-2 The management approach and its components	GRI 5-10, 22-23	
	103-3 Evaluation of the management approach	GRI 22-23	
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