

Sustainability Report 2021



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Our Management Approach

Introduction

GRI 103-2: The management approach and its components

GRI 103-3: Evaluation of the management approach

Sustainability is now a strategic choice at Kemira. Our sustainability work takes into consideration all aspects of sustainability; environmental, social and economical. Our work is guided by the United Nations Sustainable Development Goals (SDGs) and thus contribute to the global sustainability agenda. Our commitments to the Code of Conduct, internationally defined sustainability principles, and stakeholder expectations, as seen in our strategy, corporate policies and integrated management system, shows that sustainability is at the center of our business.

INTERNATIONAL SUSTAINABILITY PRINCIPLES, COMMITMENTS AND RATINGS

The United Nations Global Compact has been signed by Kemira Oyj as our commitment to its 10 principles, to respect and promote human rights, implement decent work practices, reduce our environmental impact and combat corruption. Furthermore Kemira works by the **United Nations Guiding Principles** which require companies to conduct due diligence to protect and respect human rights.

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®.

External rating surveys. Our stakeholders are interested in our sustainability performance and thus Kemira is actively reporting to external rating offices. The most important reporting platforms in 2021 have been CDP Climate Change and CDP Water Security and EcoVadis and from investor platforms ISS ESG, Sustainalytics and MSCI. In the majority of the surveys, Kemira is an average or above average performer compared to chemical industry peers.

Materiality

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 ESG Investing (Environmental, Social, and Governance). These ESG investor signatories represent 33% 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. The latest materiality assessment was performed in 2021.

STAKEHOLDER ENGAGEMENT

GRI 102-40 List of stakeholder groups

GRI 102-42 Identifying and selecting stakeholders

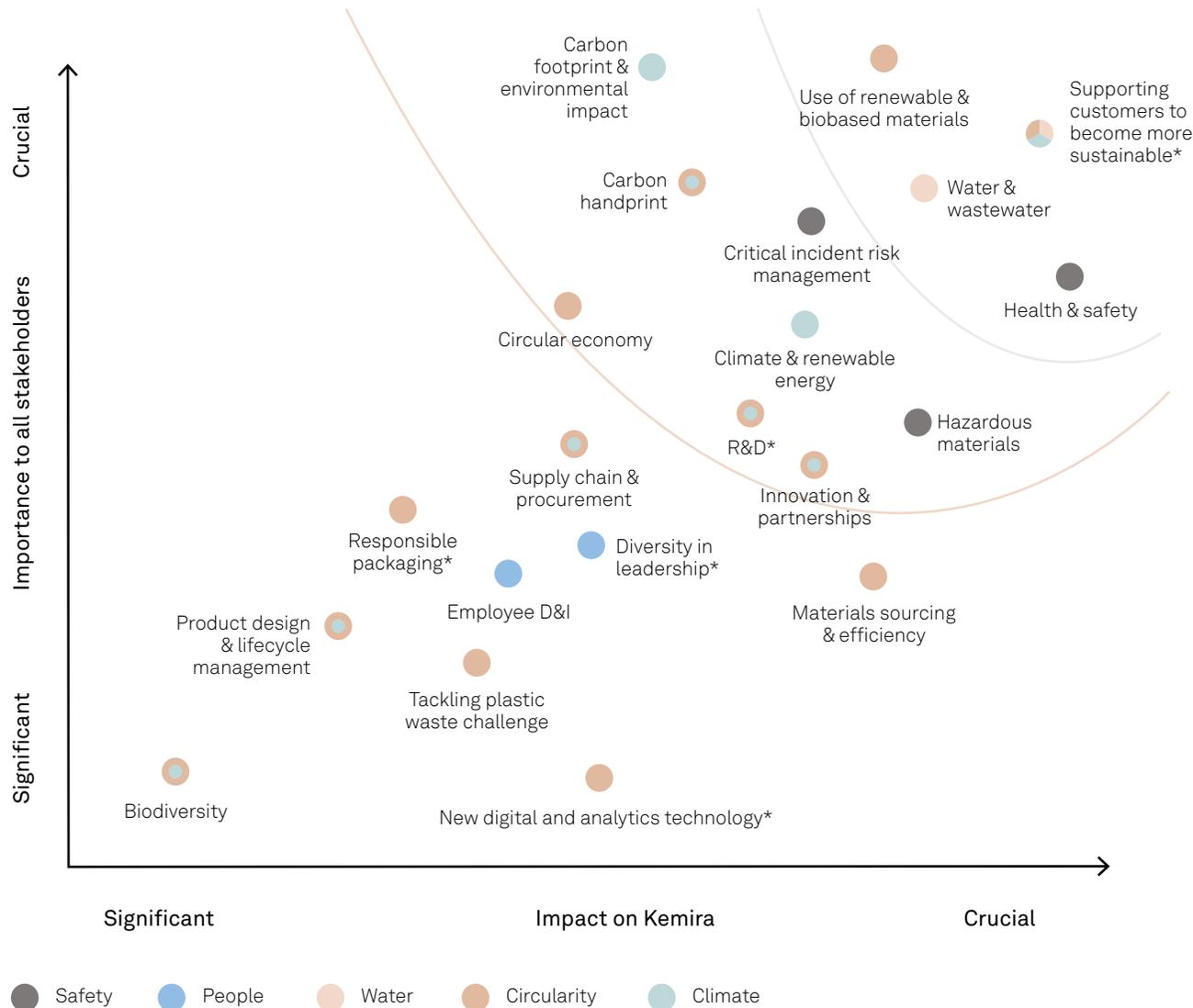
GRI 102-43 Approach to stakeholder engagement

GRI 102-44 Key topics and concerns raised

List of stakeholder groups	Identifying and selecting stakeholders	Approach to stakeholder engagement	Key topics and concerns raised	Kemira's response
	(Why is this stakeholder important to us as a company?)	(How do we normally engage with this stakeholder?)	(What are their key concerns? 3 year horizon)	(What are our key mechanisms that help us address these concerns?)
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, events and newsletters Customer satisfaction measure Key drivers in customer satisfaction are the technical service, speed and proactivity, as well as our ability to offer new and sustainable solutions 	<ul style="list-style-type: none"> Communication to customers about sustainability of products and Kemira's supply chain Transparency and reporting of sustainability efforts: performance and targets (incl. data collection and management), traceability of products Offer support to customers to become more sustainable, innovative products and services, partnerships Reliable production flow Value beyond the tangible products eg. services 	<ul style="list-style-type: none"> R&D project portfolio management Sustainability development in Product Development (e.g. circularity, which means an increase in recycled and renewable solutions in product portfolio) 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"> Regulatory financial communications: financial reporting and stock exchange communication Regular events like roadshows, conference calls and one-to-one meetings 	<ul style="list-style-type: none"> Overall management approach to sustainability issues - sustainability strategy and concrete measures and efforts supporting the agenda (such as science-based targets, transparency, transforming business portfolio) Sustainable profitability and long-term returns Governance (diversity & inclusion) Controversy management 	<ul style="list-style-type: none"> Transparent and regular reporting and disclosure according to the GRI standard Participation in CDP Climate Change and CDP Water Security programs Responding to rating company and investor questionnaires

List of stakeholder groups	Identifying and selecting stakeholders	Approach to stakeholder engagement	Key topics and concerns raised	Kemira's response
Employees	<ul style="list-style-type: none"> Our employees' engagement, safety and well-being, integrity and competencies impact our value creation, operational and sustainability performance 	<ul style="list-style-type: none"> Performance management and development process Regular Town hall meetings globally Co-operation with employee representatives Continuous listening and employee feedback Ethics and Compliance hotline and trainings Local wellbeing programs in all regions 	<ul style="list-style-type: none"> Understanding Kemira's sustainability strategy and future direction Clearer and concrete proof of actions in the sustainability agenda, especially in mitigating climate change and carbon dioxide (CO2) reductions (targets, progress, KPIs) Ways of developing and maintaining competences for the future and mitigating cost increases (inflation, energy scarcity) Product innovations Company and management diversity Health & safety (incl. well-being; mental health) 	<ul style="list-style-type: none"> Strategy and purpose communication and action planning Performance and development discussions Future leadership principles implementation Systematic competence development Team engagements on sustainability Rewarding and recognition
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 key suppliers to help them meet our sustainability performance expectations, and take corrective actions if needed 	<ul style="list-style-type: none"> Safety remains important Environmental impacts needs to be managed properly Labor & human rights issues Ethics in value chain Sustainable products and services 	<ul style="list-style-type: none"> Suppliers are asked to commit to Kemira Code of Conduct for Business Partners Supplier sustainability assessments and audits Sourcing sustainable raw materials
Local communities	<ul style="list-style-type: none"> Share of our value creation in the form of tax payments and employment Safety and environmental performance 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 risks Employment opportunities 	<ul style="list-style-type: none"> Environmental aspects and impacts and EHSQ 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 an 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 Climate change mitigation 	<ul style="list-style-type: none"> Actively participating in dialogue on EU directive proposals on sustainability and the chemical industry Participation in CEFIC Participation in the Chemical Industry Federation of Finland

MATERIALITY MATRIX BASED ON KEMIRA'S 5 SUSTAINABILITY PILLARS



* Emerging topics in the assessment are defined as topics that are considered emerging in industry reports, but peers and customers had not yet taken those into consideration

MATERIALITY MATRIX

In 2021 Kemira performed a materiality assessment to verify and update most important material sustainability topics. The previous update to the assessment was done in 2019. The assessment process was built on identification, evaluation, prioritization and eventually integration of most material sustainability topics. The process started with identification of most relevant environmental, social and economical topics that were compiled to a list. Utilizing the list, stakeholder feedback was collected through questionnaires and in-depth interviews with pre-identified key internal and external stakeholders, involving investors, customers and Kemira employees and top management. Based on the results from the assessment process, 21 most important sustainability topics were identified.

The result of the analysis is visualized in a materiality matrix. The topics have been evaluated on a scale from significant to crucial, which highlights that only important topics have been taken into consideration. The topics were then linked to the Kemira sustainability pillars (safety, people, circularity, water, climate), to showcase how the topics link to the existing focus areas.

The results of the analysis reflect well Kemira's business operations as well as strategic ambitions in advancing sustainability. Water, renewable raw materials, health and safety, climate and circular economy are all subjects, that are identified as having importance by external stakeholders as well as by Kemira. These are also subjects where Kemira can have an impact and towards which Kemira has already developed long term targets. The results from this assessment will be further analyzed in 2022 and used to further develop Kemira's sustainability focus areas.

Sustainability governance

SUSTAINABILITY PRIORITIES

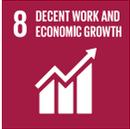
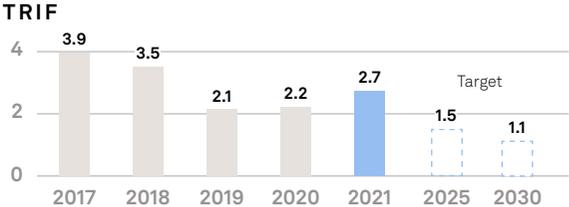
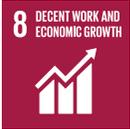
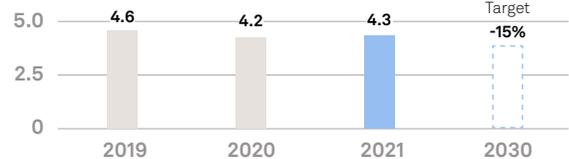
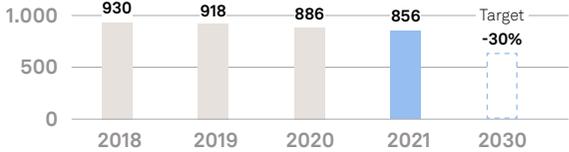
Sustainability is an integral part of our strategy and how we manage our own operations and create value for our customers. We also expect our partners to commit to sustainable operations. We want to use our chemistry expertise to find solutions and contribute to a sustainable and prosperous society. Our sustainability 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.

The global shared ambition to build a sustainable world is articulated in the UN Sustainable Development Goals (SDGs). These offer us a common framework through which to evaluate how Kemira currently contributes to these goals and how we can further develop to make even bigger impact in the future. We have chosen four SDGs to focus on. SDG number 8; Decent Work and Economic Growth, represents our focus on social and economical sustainability. Three of the SDGs describe our focus on important environmental sustainability topics, these are SDG number 6; Clean Water and Sanitation, SDG number 12; Responsible Consumption and Production and SDG number 13; Climate Action.

We have chosen to prioritize five themes to best match our businesses and customer segments. These are also the five themes where we can make the biggest difference: either by reducing our impacts or maximizing our contributions to achieving the UN SDGs. These five themes are: Safety, People, Circularity, Water and Climate.

Our priorities	Top material topics identified in the materiality assessment	Management Board champion
SAFETY	<ul style="list-style-type: none"> Critical incident risk management Hazardous materials Health & safety 	<ul style="list-style-type: none"> EVP, Operational Excellence & Sustainability
PEOPLE	<ul style="list-style-type: none"> Health & safety Diversity in leadership Employee D&I 	<ul style="list-style-type: none"> EVP, Human Resources Group General Counsel
WATER	<ul style="list-style-type: none"> Supporting customers in sustainability Water & wastewater R&D Innovation and partnerships 	<ul style="list-style-type: none"> Segment Presidents EVP, Operational Excellence & Sustainability Chief Technology Officer
CIRCULARITY	<ul style="list-style-type: none"> Supporting customers in sustainability Circular economy Use of renewable & bio-based raw materials Carbon handprint R&D Innovation & partnerships 	<ul style="list-style-type: none"> Segment Presidents EVP, Operational Excellence & Sustainability Chief Technology Officer
CLIMATE	<ul style="list-style-type: none"> Supporting customers in sustainability Carbon footprint & environmental impact Climate and renewable energy Carbon handprint R&D Innovation & partnerships 	<ul style="list-style-type: none"> Segment Presidents EVP, Operational Excellence & Sustainability Chief Technology Officer

FOCUS AREAS AND PERFORMANCE INDICATORS

SDG	Focus area	KPIs and targets	Performance
	SAFETY We prove that a safe business is a sustainable business. Safety of people, products and processes is the foundation of everything we do.	KPI: TRIF = total recordable injury frequency per million hours, Kemira + contractors. Target: TRIF* 1.5 by 2025 and 1.1 by 2030.	TRIF 
	PEOPLE Our employees drive our sustainability transformation. A diverse and inclusive culture enables us all to bring our best selves to work every day.	KPI: Diversity & Inclusion index compared to top 10% cross-industry norm. Target: Reach top 10% cross-industry norm for diversity & inclusion by 2025.	DIVERSITY AND INCLUSION 
	WATER We believe in clean water and sanitation for all. Our actions set the example for world class water management.	KPI: Freshwater use intensity. Target: Continuously improve freshwater use intensity. We have developed a new improved target for upcoming years. More information in Water chapter.	WATER USE INTENSITY 
	CIRCULARITY We set sustainability at the center of every design. Our sustainable chemistry and digital solutions accelerate the circular- and bio-economies.	KPI: Disposed production waste intensity. Target: Reduce disposed production waste intensity by 15% by 2030. Baseline is 2019 at 4.6 metric tonnes of waste per thousand metric tonnes of production and target is 3.9 by 2030. KPI: Biobased products revenue Target: Revenue from biobased products >500 million EUR by 2030.	WASTE INTENSITY REFERENCE YEAR 2019 
	CLIMATE We reduce our climate impact throughout our value chain. Clean energy and processes will support our ambition to be carbon neutral by 2045.	KPI: Scopes 1 & 2 emissions. Target: -30% from 2018 Scope 1 and Scope 2 emissions by 2030. 2018 baseline 930 kt CO ₂ e Ambition: to become carbon neutral in scope 1 & 2 emissions by 2045.	GHG EMISSIONS* REFERENCE YEAR 2018 

* Figures in thousand of tonnes

SUSTAINABILITY GOVERNANCE

Kemira measures progress in the sustainability priority areas through group-level key performance indicators (KPI) and targets that are approved by the Board of Directors. Responsibility for individual corporate sustainability targets is shared between the members of the Management Board.

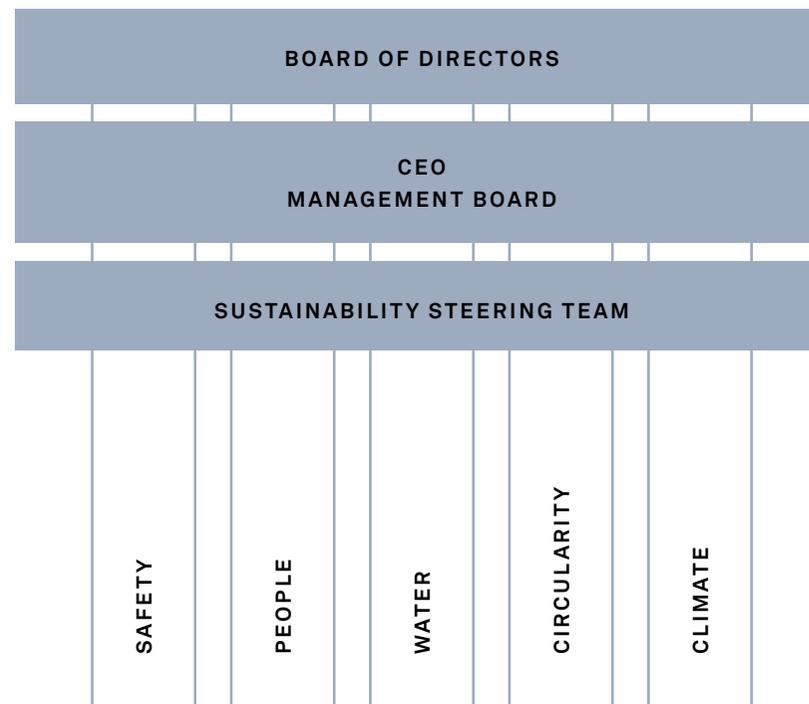
The Director of Sustainability is responsible for ensuring that relevant management processes relating to material corporate sustainability topics are being developed and implemented as part of our strategy and integrated management system. The Sustainability Steering Team has members from all relevant functions and business segments. It acts as a collaboration forum to drive sustainability from the strategic level to increased action. It ensures the development, implementation and follow-up of sustainability as part of daily business operations.

POLICIES

Key policies	Policy owner	Link to priorities
Code of Conduct	Group General Counsel	People, Safety
Product stewardship policy	Head of Product Stewardship and Regulatory Affairs	Safety
Trade compliance policy	Head of Product Stewardship and Regulatory Affairs	Safety
Intellectual Property Rights policy	Chief Technology Officer	Water, Circularity and Climate
Sustainability and EHSQ policy (including Energy policy)*	EVP, Operational Excellence & Sustainability	Safety, People, Water, Circularity and Climate
Sourcing and procurement policy	EVP, Operational Excellence & Sustainability	Safety, Water, Circularity and Climate
Logistics and transportation policy	Head of Global Supply Chain Management	Safety and Climate
Recruitment policy Compensation policy	EVP, Human Resources	People
Global competition law compliance policy	Group General Counsel	People
Gifts, entertainment and anti-bribery policy	Group General Counsel	People

*EHSQ policy has been upgraded and combined more comprehensively with Sustainability subjects in 2021.

NEW SUSTAINABILITY GOVERNANCE TO GO FROM STRATEGY TO INCREASED ACTION



Integrated management system

Globally, we aim to bring together all of our operations under the Kemira Integrated Management System. The Kemira Integrated 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 regulatory requirements are ensured by regularly monitoring the performance indicators and by conducting internal and external audits and management reviews. In 2021 all internal and external audits were completed fully and in timely manner.

The management reviews are performed at all levels of the organization from 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, ISO 14001:2015 for Environment, and ISO 45001:2018 for Occupational Health and Safety. All 3 R&D sites (Atlanta, Espoo and Shanghai) are ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018 certified. Kemira's Energy Management System is certified according to ISO 50001:2018 for selected EMEA sites. Our Integrated Management System is externally audited through a three-year audit cycle. In 2021, we had sixty-nine (69) internal and external audits (Management Systems, Process Safety, Energy, Transportation, EHS Legal Compliance, Sustainability), including manufacturing sites, major office locations and R&D centers. Despite Covid-19 challenges, all planned audits were conducted, mainly using virtual tools.

INTEGRATED MANAGEMENT SYSTEM



NUMBER OF LOCATIONS (MANUFACTURING SITES, MAIN OFFICES AND R&D) CERTIFIED IN 2021:

	EMEA	AMERICAS	APAC	Total*
ISO 9001:2015	37	18	9	64 (86%)
ISO 14001:2015	37	17	9	63 (85%)
ISO 45001:2018	37	18	9	64 (86%)
ISO 50001:2018**	6			

*Kemira has 63 manufacturing sites in total, 3 main offices and 3 R&D centers.

**ISO 50 001 certification is only for selected EMEA sites.

KEMIRA'S MANAGEMENT APPROACH TO NON-FINANCIAL MATTERS

	Environmental and climate-related matters	Social and employment-related matters	Respect for human rights	Anti-corruption and bribery
International frameworks covering all topics		United Nations Sustainable Development Goals (SDGs) United Nations Global Compact United Nations Guiding Principles on Business and Human Rights Responsible Care ®		
Code of conduct		Code of Conduct Code of Conduct for Business Partners		
Policies and standards		Sustainability and EHSQ policy EHSQ standards and processes Logistics and transportation policy and processes Sourcing and procurement policy		
	<ul style="list-style-type: none"> Product stewardship policy 	<ul style="list-style-type: none"> Product stewardship policy Trade compliance policy Recruitment and compensation policy People and HR processes 	<ul style="list-style-type: none"> Recruitment and compensation policy Statement for slavery and human trafficking Statement on conflict minerals Investigation procedure Audit Committee charter 	<ul style="list-style-type: none"> Global competition law compliance policy Gifts, entertainment and anti-bribery policy Trade compliance policy Investigation procedure Audit Committee Charter
Hazards and Risks	<ul style="list-style-type: none"> Indirect GHG emissions (scope 2&3), water withdrawal, disposed waste and spills and chemical releases. Non-compliance with legislation and regulations may result in fines, creating reputational and business risks. Reputational or financial risk if products are not proven to be safe or guidance for safe use is not communicated or if employment and engagement poorly managed. Ability to meet new environmental expectations with products and services. People related health and safety hazards and work related incidents, illnesses and well-being. Competences related to chemical risks (physical and chemical), own work processes. 		<ul style="list-style-type: none"> Potential violations of human and labor rights and unethical business practices can impact Kemira's reputation and thus financial position. Main human rights risks relate to production and raw material sourcing of suppliers and supply chain partners, health and safety at own sites and the impacts of utilizing fossil fuels. 	<ul style="list-style-type: none"> Risk that Kemira internal organization engages in bribery or other forms of corruption. Risk that third parties acting on behalf of Kemira engage in bribery or other forms of corruption. A third party is anyone with whom Kemira interacts and who sells, resells or assists Kemira in selling Kemira's products to customers.
Risk / hazard management	<ul style="list-style-type: none"> Risk are effectively managed through existing integrated management system and continuous risk identification and mitigation processes. Environmental, health and safety and quality activities are documented and managed in line with ISO 9001, 14 001 and 45001 standards including certification of majority of the activities. Incident and crises management –systems. Compliance with the chemical regulations is ensured by complying with PSRA processes incl. priority substance management. Performance and development process (PDD) conducted and documented for all employees. Continuous listening and employee feedback with MyVoices Pulse surveys in place. Kemira's New Product Development (NPD) and product lifecycle management processes are followed. Ethics and compliance Hotline for raising a concern or reporting potential misconduct. Supplier sustainability assessment and audits globally. Mandatory Code of Conduct and Human Rights for Business trainings and anti-corruption training. Supplier segmentation & prioritization by value/criticality/risk. Behavior based safety program. Reporting system in place for violations of Code of Conduct. Human Rights impact assessment carried out, latest in 2021. 			<ul style="list-style-type: none"> Continuous communication and training of Kemira's policies. Due diligence in reviewing and selecting third parties who act on behalf Kemira. Requirement that third parties commit to Kemira's Business Partner Code of Conduct. Screening of all business partners to identify denied and blocked persons Ethics & Compliance Hotline and email for reporting suspected breaches of law or Kemira's Code of Conduct internally or externally. Reported allegations are subject to confidential and impartial internal investigation.

	Environmental and climate-related matters	Social and employment-related matters	Respect for human rights	Anti-corruption and bribery
Due diligence processes	<ul style="list-style-type: none"> Compliance verification against existing Kemira, legal and other EHSQ requirements and talent development are managed through Global internal and external auditing and annual Global reporting processes. Audits and identified nonconformities are registered, assessed and managed in a global system ensuring also the Global visibility and compliance assurance. Compliance with the chemical regulations followed / audited by external authorities. Kemira's New Product Development (NPD) process and individual NPD projects as well as short-term technical assistance request (TAR) process are managed by global internal and external auditing. Audits and identified non-conformities are registered and managed in a global system. In human rights issues, reporting to Audit Committee of Board of Directors. Suppliers are required to accept Kemira's Code of Conduct to business partners. Kemira also constantly monitors, assesses and audits its supplier base by performing periodic checks either through routine processes or annual internal audits by competent sourcing members. Based on conducted assessments prioritized supplier are invited to take more detailed assessment or audit. 			<ul style="list-style-type: none"> We review and vet all new agents and distributors who will act as third parties for Kemira. The review and vetting are based on a risk level assessment which determines which diligence activities are required when selecting and onboarding a new third party. After the due diligence activities, new third parties are subject to approval according to a risk level-based approval matrix. Kemira's Ethics & Compliance Committee coordinates investigations of internally or externally reported alleged violations of antibribery and anticorruption laws. The Committee may escalate a matter to the President & CEO, and the Committee reports to the Audit Committee of the Board of Directors.
Outcomes of policies and due diligence processes	<ul style="list-style-type: none"> Operations meet legal requirements. Company is ready to meet global existing and foreseen challenges. New products with smaller environmental footprint, better safety profile and providing customers with resource efficiency improving properties. Sustainability long term targets to 2025–2030 relating to water, waste, emissions, energy, diversity and inclusion and growing the renewable raw materials based products portfolio. Health and safety program to reach zero harm to people. Reduced risks on human health and environment. Competences Development Program for key target groups and statutory and role-based on-the-job learning for employees on professional and leadership development. Human Rights issues identified and mitigated in own operations and value chain. Meeting on group level the EU Taxonomy minimum safeguards of most recognized human rights guidelines and guiding principles. Sourcing & Procurement policy, processes and procedures mitigate and prevent supplier's violations related to any type of non-legal practices, they also ensure that suppliers are operating at or above the levels required by Kemira from the economical, environmental, social and human rights point of view. 			<ul style="list-style-type: none"> There have been no confirmed cases of bribery or corruption involving Kemira or its third parties. Kemira is compliant with anti-bribery and anti-corruption laws applicable to it.

Product design for sustainability

Kemira's New Product Development (NPD) process follows a stage-gate model. 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 and solution developed, both in Kemira's and in our customers' operations.

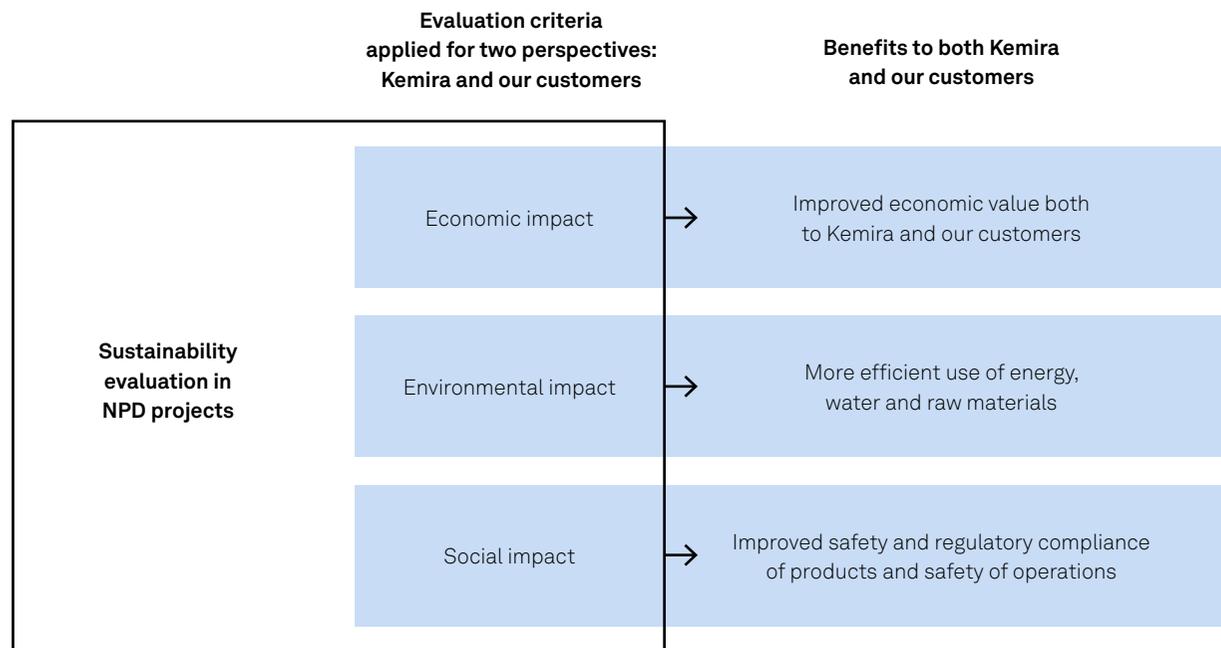
In R&D we consider and avoid the use of hazardous substances when selecting raw materials for product development. In cooperation with PSRA, R&D also makes plans to replace raw materials with concerns or risks in product recipes. These actions improve the safety in transportation, storing and usage and in disposal of materials from our manufacturing processes.

NPD projects also aim to identify and evaluate more sustainable and renewable alternatives for raw materials, in terms of sources, and use in the whole product life cycle.

Product stewardship

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. 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

SUSTAINABILITY EVALUATION THROUGHOUT THE NEW PRODUCT DEVELOPMENT PROJECTS



set further expectations on our product offerings. 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 and involves the proactive management of the health, safety and environmental aspects of a product throughout its lifecycle. Product stewardship provides a platform that helps us to identify concerns relating to specific chemicals and their hazards at an early stage and manage those risks along the value chain to fulfill the expectations of different stakeholders.

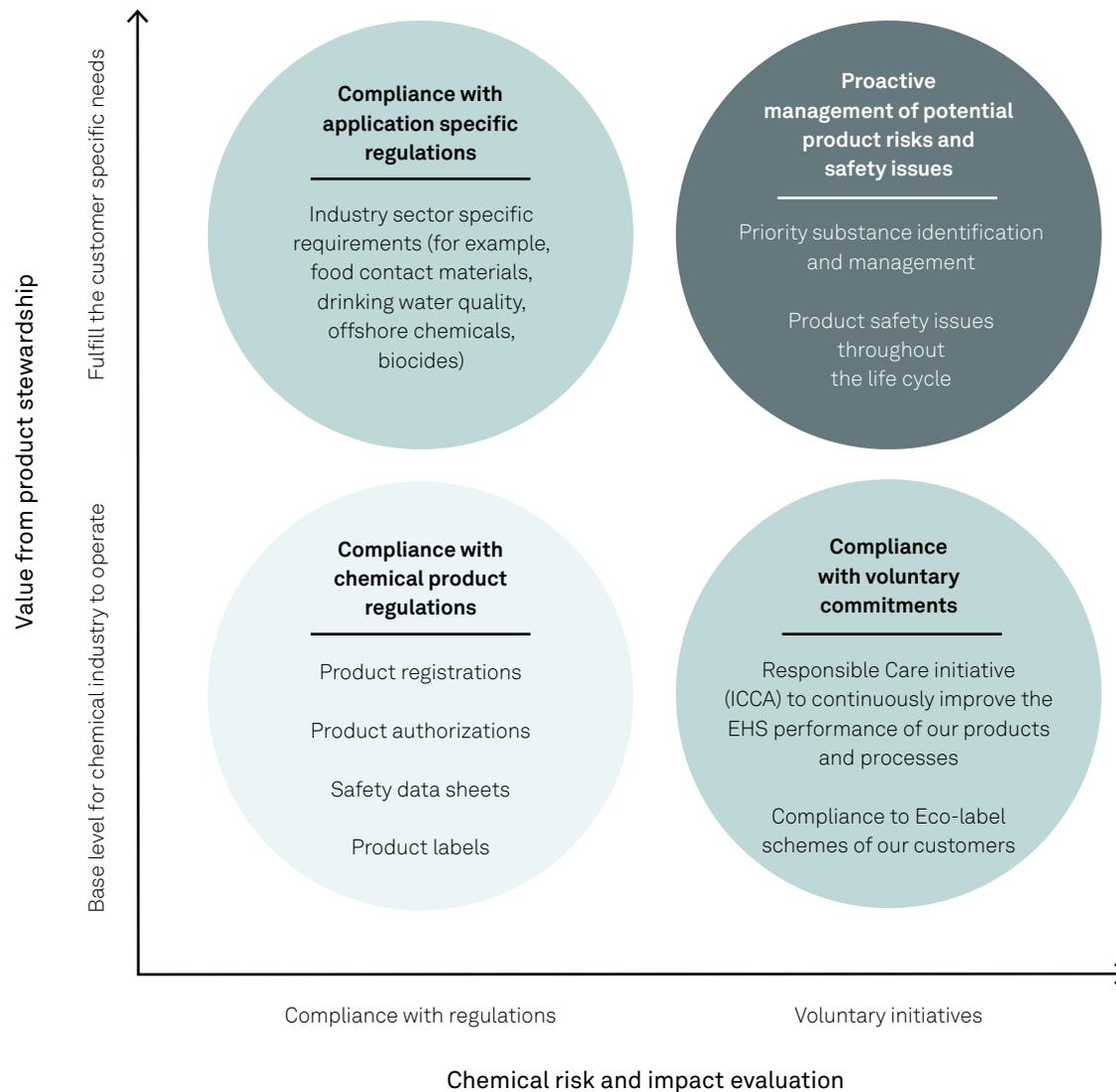
PRODUCT REGULATORY COMPLIANCE

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.

PRODUCT STEWARDSHIP MANAGEMENT APPROACH



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, for example, 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.

Kemira is a member of 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.

Workplace safety

High-performing Environmental, Health, Safety and Quality (EHSQ) management is crucial to our business. We are committed to ensuring safe and responsible working conditions for everyone working for and with Kemira. Our approach is to manufacture and deliver our products and services safely, and to protect communities nearby. We are building an interdependent safety culture which is heading us towards zero harm in all of our activities. Our goal is to continuously improve our ways of working and to ensure safety improvements in our working environments. All this work is guided by regulations and external requirements, our updated Sustainability and EHSQ policy, respective standards and operating practices.

Safety is the foundation for all of our operations, and includes all aspects; people safety, environmental safety, process safety, chemical safety, transportation safety and asset integrity. With competent employees and contractors we take effective measures to eliminate hazards, reduce risks and prevent incidents. We communicate openly and honestly, and promote participation and involvement of employees and key stakeholders.

We are well aware that incidents in our operations may have negative consequences for our people, environment and third parties working for us at Kemira sites, or locations where Kemira is present if we fail to manage risks linked to our operations.

Supplier management

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 2.127 billion in 2021. 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.

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.

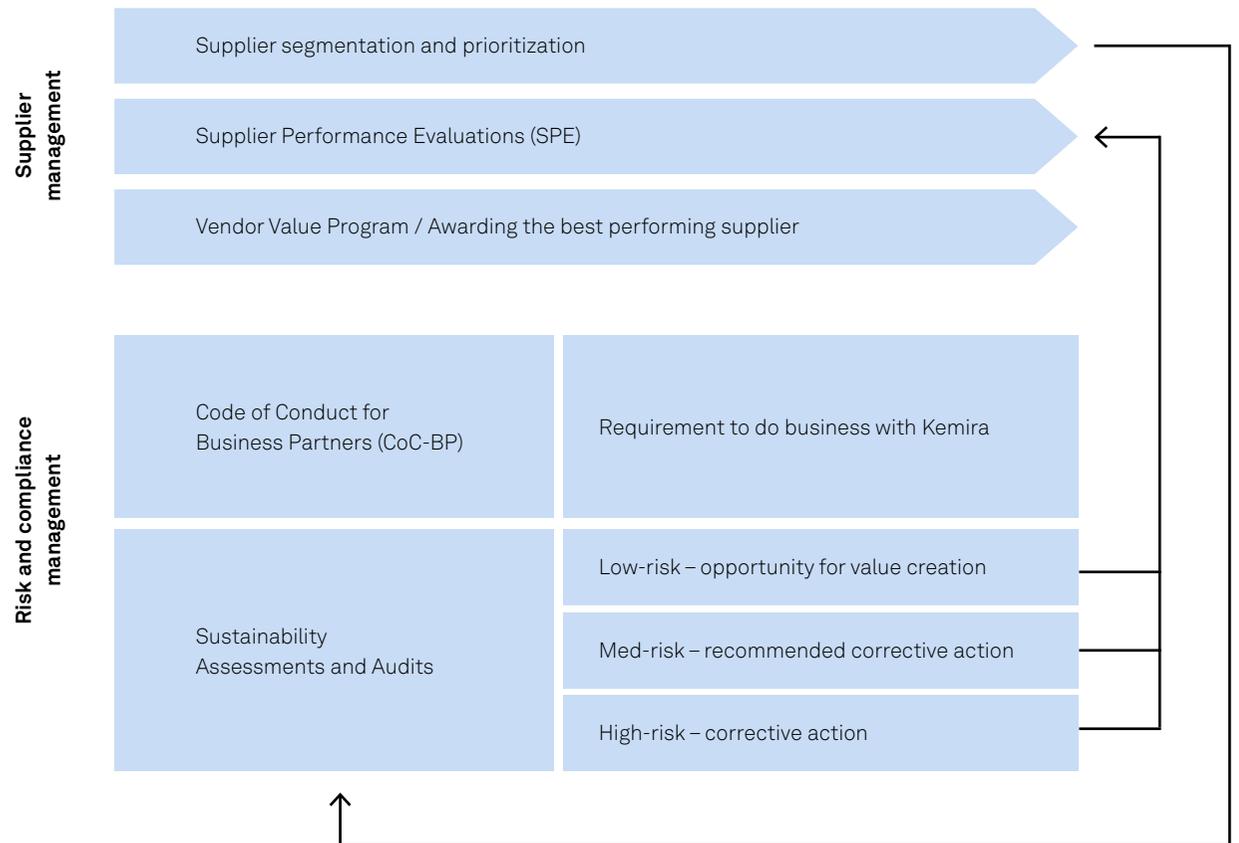
Our suppliers are segmented into four categories: strategic, critical, volume and base suppliers, and prioritized based on multi-factor risk criteria to help us better manage our suppliers and plan actions for necessary risk mitigation.

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 define 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).

SUPPLIER RISK AND COMPLIANCE MANAGEMENT



CODE OF CONDUCT FOR BUSINESS PARTNERS (COC-BP)

All of our suppliers must follow our Code of Conduct for Business Partners (CoC-BP) in relation to all of their dealings with Kemira. Our CoC-BP 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 process, to contracting where the commitment to our CoC-BP 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).

SUSTAINABILITY ASSESSMENTS AND AUDITS OF SUPPLIERS

We continued enrolling new suppliers into our Sustainability program by assessing them through EcoVadis, conducting Corporate Social Responsibility audits and Quality audits. EcoVadis assessment: In 2021, 57 new suppliers were assessed and a total of 348 suppliers have now gone through the assessment and have recorded an average score of 55, 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 61% of the 271 reassessed suppliers were able to improve their score.

Corporate Social Responsibility audits of direct material suppliers: In 2021, we conducted one Corporate Social Responsibility audit with no business stopping results. Audit results are being reviewed together with supplier and improvement plans created and followed up accordingly as part of our supplier management practices.

Quality audits of suppliers: Direct material large spend suppliers also undergo quality audits, which include management systems, workplace health and safety standards, production quality and supply security. In 2021, 14 quality audits were conducted.

Supplier assessments and audits are part of sourcing processes and Sourcing function target setting and are monitored on monthly basis. In 2021, we were not able to conduct targeted number of audits mainly due to Covid-19 and related restrictions.

SUPPLIER SUSTAINABILITY ASSESSMENTS AND AUDITS

	2021	2020
EcoVadis assessment	348	291
Corporate Social Responsibility audit	1	1
Quality audit	14	12

STRUCTURE OF KEMIRA'S SUPPLIER BASE

	Direct materials	Indirect goods and services
Number of suppliers, approximately	1,650	12,350
EMEA	800	6,950
Americas	550	3,800
APAC	300	1,600
Percentage of suppliers that form 80% of the category spend	10%	7%

Integrity

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 Conducts set 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 campaign during 2017–2018 and thereafter continuing yearly trainings and communications. 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 Business Partners (CoC-BP) 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 consistent 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.

INTEGRITY INDEX

Integrity Index has been measured based on employee perception of integrity using the internal MyVoice Pulse survey. We use the question 'Speak My Mind' phrased as 'I can report unethical behavior or practices without fear of retaliation at Kemira' as a single-item index.

In 2021 the Integrity Index was 78 points, 8 points above manufacturing industry benchmark (80 in 2020) and the participation rate in the survey 80% (81% in 2020).

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, as well as no retaliation. The hotline system and the process of handling the reports are managed by the Ethics and Compliance function.

There is an email address that 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 Kemira's Code of Conduct for Business Partners.

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 is treated as strictly confidential and anonymous to the fullest extent and without fear of retaliation.

CONCERNS OF ALLEGATIONS OF POTENTIAL CODE OF CONDUCT VIOLATION REPORTED IN 2021

	Number of cases	Cases closed with merit	Cases closed without merit	Open cases as at dec 31, 2021
Cases reported via hotline	1	1	0	0
Cases reported via other channels	18	7	7	4
Total number of cases	19	8	7	4

CASES CLOSED WITH MERIT BY ISSUE CATEGORY

	Number of cases
Corruption and bribery	0
Code of Conduct (incl. Conflict of Interest / Safety)	10
Employee relations fair treatment	1
Harassment	8
Transactions and company records	0
Grand Total	19

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

During 2021, 19 incidents were reported to the Ethics & Compliance function alleging potential violations to the Code of Conduct. All cases were investigated (4 of them are still under investigation), 8 of the cases were closed with merit and remediated during 2021. No incident was concluded as being a case of discrimination.

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 resource-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 decreased to EUR 125 million in 2021 (283 in 2020).

ECONOMIC VALUE, CASH FLOW BASED

Stakeholder	Economic Value, EUR million	2021	2020	2019
Direct economic value generated: Revenues				
Customers	Income from customers on the basis of products and services sold, and financial income	2589	2443	2687
Direct economic value distributed				
Suppliers	Payments to suppliers of raw materials, goods and services	1922	1630	1861
Employees	Employee wages and benefits	371	373	366
Investors & Lenders	Dividends, interests paid and financial expenses	127	121	122
Government & Public sector	Corporate income taxes	44	36	39
Economic value retained		125	283	299

Anti-corruption

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

In 2020 Kemira conducted a global ethics and compliance risk assessment, covering key business operations and functions in all regions. Anti-corruption was one of the key focus areas in the assessment. In 2021 the assessment results have been utilized in Kemira's ethics and compliance and internal audits. No significant risks related to corruption have been identified through ethics and compliance activities or internal audits in 2021.

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-corruption 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.

ANTI-CORRUPTION TRAINING PERFORMANCE

		Number of permanent employees, not absent	Number of permanent employees, received training on anticorruption	% of employees received training on anti-corruption
Americas	White collars	835	818	98%
	Blue collars	650	0	
APAC	White collars	465	457	98%
	Blue collars	455	0	
EMEA	White collars	1,577	1,544	98%
	Blue collars	898	0	
Total		4,880.00	2,819.00	58%

We expect our suppliers and other business partners to conduct their business with integrity and commit to Kemira's Code of Conduct for Business Partners in their business activities with Kemira. According to the CoC-BP, Kemira expects our Business Partners to ensure that they, and third parties acting on their behalf, do not offer, give or accept improper or corrupt payments, and that they will not engage in any form of bribery. We aim to communicate the CoC-BP to all of our suppliers, agents and distributors. All of our suppliers (engaged with an SAP Purchase Order) receive a written reference to Kemira's CoC-BP as part of the Kemira general terms of purchase on the back of the Purchase Order.

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

Region	Total number of suppliers*	Total number of suppliers* that our anti-corruption principles have been communicated to	% of suppliers* that our anti-corruption principles have been communicated to
Americas	4,350	4,350	100%
APAC	1,900	1,900	100%
EMEA	7,750	7,750	100%
Total	14,000	14,000	100%

*The numbers include suppliers engaged with an 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 2021.

Anti-competitive behavior

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

On July 8, 2021, Kemira announced that Kemira Chemicals Oy, a fully owned subsidiary of Kemira Oyj, had reached a settlement with CDC Project 13 SA and CDC Holding SA (together “CDC”) in the damage claim litigation in Amsterdam, the Netherlands. The settlement concerned claims assigned to CDC based on which CDC claimed compensation for alleged damages relating to the alleged old infringement of competition law in the sodium chlorite business during 1994–2000 by Finnish Chemicals Oy. Kemira Oyj acquired Finnish Chemicals Oy (now Kemira Chemicals Oy) in 2005. Kemira Chemicals Oy agreed to pay compensation and costs to CDC in the amount of EUR 22.75 million.

In 2021 Kemira had no other pending or completed legal actions initiated under national or international laws designed for regulating anti-competitive behavior, anti-trust, or monopoly practices.

Environmental Performance

Products and solutions

Kemira is offering sustainable chemical solutions for water intensive industries and is providing best suited products, services and expertise to improve our customers' end product quality, process and resource efficiency. Kemira's products can help in reducing the need of energy and water, cut the amount of waste and emissions and optimize raw material use in customers' processes. Besides increasing resource efficiency, our aim is to develop products and solutions that improve recycleability and biodegradability, to help customers accelerate circularity and meet their sustainability targets.

To better understand the impact, we calculate how large part of our product revenue is improving resource efficiency in customers' applications. Our KPI is described as the share of revenue from products sold for use-phase resource efficiency. The calculation is performed by identifying and mapping Kemira's product groups that improve resource efficiency in different customer applications, and calculating the revenue of these products and comparing that to the entire revenue. The target is to ensure that at least 50% of our revenue is generated through products improving customers' resource efficiency. We have been able to improve from baseline 49% in 2016 to 54% in 2021.

Year	2021	2020	2019	2018	2017	2016
Share of revenue from products sold improving customer resource efficiency	54%	52%	53%	51%	50%	49%

Kemira New Product Development (NPD) process, described in section Product Design for Sustainability, is also a big contributor in development of the sustainable products and solutions portfolio. During 2021, we started 12 new product development projects, all of them aiming to improve customers' resource efficiency. At the same time, Kemira started commercialization of two new product development projects both targeting to improve resource efficiency at customer processes. In addition, in 2021 Kemira initiated patenting of 36 inventions (2020: 37), and at the end of 2021, Kemira had 382 (2020: 367) patent families, including 1,972 (2020: 1,726) granted patents, and 996 (2020: 964) pending applications.

Transition to renewable resources is one core element in Kemira's product portfolio strategy. This is advanced through our biobased focus and biobased products revenue target by 2030. Replacing fossil raw materials with more sustainable ones is advanced in many ways. The mass balance concept, which enables quick expansion towards bio-based and sustainable products, having significantly lower carbon footprints compared to traditional products, is one of our approaches. This means that renewable raw materials can be utilized in existing production infrastructures creating identical product quality and performance in making conventional products. In 2021 Kemira has selected ISCC PLUS* certification system for the mass-balance accreditation, because it is the globally widely recognized system and is also adopted by our suppliers and specific customers. Kemira produces certified biobased products in ISCC accredited manufacturing facilities in Italy and the UK, and globally supplies them to customers in water-intensive industries.

* ISCC PLUS is a sustainability certification program for bio-based and circular (recycled) raw materials for all markets and sectors without existing regulation.

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.

Materials	GRI Disclosure	2021	2020	2019
Total raw materials used, million tonnes	301-1	2.51	2.21	2.29
Renewable raw materials, %	301-1	3.6	3.6	2.3
Renewable raw materials as a share of carbon-containing raw materials, %	301-1	21.3	15.8	13.0
Recycled raw materials, %	301-2	37.7*	28.0	27.1
Carbon-containing raw materials, %		17.0	23.1	17.4

*Recycled materials % for the year of 2021 is higher than previous years due to that more volume of spent pickling liquor bath is being reported

Energy

GRI 302-1: Energy consumption within the organization

GRI 302-2: Energy consumption outside of the organization

GRI 302-3: Energy intensity

GRI 302-4: Reduction of energy consumption

ENERGY CONSUMPTION AND MANAGEMENT

Energy costs amount to approximately 9% (11% in 2020) of our total sourcing spend. By continually improving energy efficiency at manufacturing sites, we are consistently reducing our energy usage, emissions and associated costs.

In 2021, our operations in Finland accounted for 42% of our total energy consumption. The USA accounted for 30%, and other countries accounted for the remaining 28%.

A substantial portion of our energy management activities is focused on the 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 71% of the total energy input. Sodium chlorate plants purchase 90% of the electricity, which is the main raw material in the chlorate manufacturing electrolysis process.

Kemira has its most significant energy consuming European sites certified (Äetsä, Joutseno and Helsingborg) according to the ISO 50001:2018 standard. Additionally the sites in San Giorgio and Fredrikstad are certified.

As an energy-intensive company, we strive to reduce our climate and environmental impact in energy purchases. Our most important measures in mitigating our climate impact can be found in the climate target section.

ENERGY BALANCE, GWh

	GRI Disclosure	2021	2020	2019
Total fuel and purchased energy input		4,932	4,692	4,859
Consumed fuel as energy source		831	743	756
Non-renewable	302-1a	831	743	756
Renewable	302-1b	0	0	0
Purchased electricity	302-1c	3,517	3,301	3,454
Non-renewable		2,502	2,477	2,575
Renewable		1,014	825	879
Purchased heat and steam	302-1c	584	648	649
Non-renewable		310	283	281
Renewable		274	364	368
Total fuel and purchased energy input by source	302-1a, b	4,932	4,692	4,859
Non-renewable		3,644	3,503	3,612
Renewable		1,288	1,189	1,247
Total energy sold/delivered off-site		535	471	495
Heat ¹ sold off-site/delivered off-site	302-1d	453	390	414
Electricity sold off-site/delivered off-site	302-1d	82	81	81
Total energy consumption²	302-1e	4,397	4,221	4,364
Change in total energy consumption³	302-4	176	-142	-68
Production volume, 1,000 tonnes		5,517	4,946	5,108
Energy intensity, GWh per 1,000 tonnes of production⁴	302-3	0.80	0.85	0.85

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.

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 2021 we continued implementing 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 50001:2018 certification in 5 selected sites

Our global Energy Management Team (EMT) coordinates, steers and supports energy management activities across all regions. Members of the EMT represent the top management of our manufacturing sites, as well as our global energy sourcing management.

Kemira participates in the voluntary national Energy Efficiency Agreement in Finland ("Energiatehokkuussopimus") for the period 2017–2025. This Agreement is a part of Finland's national ratification of the EU's response to the Paris Climate Agreement. The total savings reported to the National Energy Authority in Finland ("Energiavirasto") since 2017 are 67 GWh/a equivalent to approximately 2.2 MEur/year.

Our energy efficiency measures and activities focus on sites which have the highest energy consumption. There are 15 sites that consume approximately 90% of the energy in Kemira, and contribute approximately 85% of the company Scope 1 and Scope 2 emissions. 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.

During 2021 energy savings were additionally achieved through the implementation of 41 (26 in 2020) projects across Kemira's operations, saving a total of 28,228 (23,557 in 2020) MWh/a of energy, equivalent to EUR 1.2 (1.0 in 2020) million savings. The cumulative cost savings of more than 550 projects implemented since the start of the E3plus program in 2010, now totals EUR 13.2 million (12.1 in 2020).

ENERGY CONSUMPTION OUTSIDE OF THE ORGANIZATION

Some of our sodium chlorate manufacturing sites provide energy in the form of byproduct fuel (hydrogen) to third-party organizations that use the fuel for manufacturing processes and energy generation activities. The downstream hydrogen consumption by the organizations outside of Kemira offsets the use of carbon-containing fuels for their industrial and energy generating activities, and therefore, offers potential for CO₂e emissions reductions for those organizations. Since the use of the hydrogen by the organizations does not result in CO₂e emissions, Kemira reports 0 for its Scope 3, Category 11 emissions. A summary of the energy consumed outside of Kemira is provided below.

HYDROGEN CONSUMPTION OUTSIDE OF KEMIRA, GWh

	2021	2020	2019
Hydrogen consumption outside of Kemira, GWh	189	249	253

KEMIRA ENERGY EFFICIENCY INDEX

The Kemira Energy Efficiency Index measures the ratio of energy use to production volumes normalized to a 2012 benchmark for our 15 large manufacturing sites covering approximately 90% of energy consumption. The index is not affected by changes in production volumes but may be affected by the product mix.

KEMIRA ENERGY EFFICIENCY INDEX PERFORMANCE

2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
96.7	97.2	96.5	97.1	97.4	96.9	97.7	99.1	98.9	100

Greenhouse gas (GHG) emissions

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: Reduction of GHG emissions

DIRECT AND INDIRECT EMISSIONS SOURCES

Kemira's GHG emissions are primarily CO₂, and negligible emissions of methane (CH₄) and nitrous oxide (N₂O). Kemira estimates GHG emissions using factors in terms of CO₂e and does not specifically estimate and report mass emissions of CH₄ and N₂O since CO₂ comprises over 99% of CO₂e 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 steam, heat and electricity: these Scope 1 emissions result from the combustion of fuels such as natural gas, propane, and diesel fuel in boilers and internal combustion engines, as well as mobile sources such as forklifts
 - Our sodium chlorate sites use byproduct hydrogen gas in their boilers to offset the use of carbon-containing fuels
- Emissions from physical or chemical processing of carbon-containing feedstock, raw materials and chemicals such as sodium and calcium carbonate
- Emissions from our transportation fleet in North America

Indirect (Scope 2) GHG emissions consist of the CO₂e from the generation of purchased or acquired electricity, heating, cooling, and steam consumed by an organization. Our sites purchase or acquire electricity, heating, cooling, and steam resources from either the local municipal authority or private company, 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.

GREENHOUSE GAS EMISSIONS (1,000 TONNES CO₂eq) FROM MANUFACTURING SITES

	GRI Disclosure	2021	2020	2019
Total GHG emissions¹		5,197	5,321*	5,993*
Direct (Scope 1) GHG emissions ^{2a}	305-1	160	136	134
Biogenic Direct (Scope 1) GHG emissions ^{2b}	305-1c	0	0	0
Energy indirect (Scope 2) emissions: market-based ³	305-2	696	749	783
Energy indirect (Scope 2) emissions: location-based		808	845	896*
Other indirect emissions: Scope 3 ⁴	305-3a	4,341	4,436*	5,076*
Other indirect emissions: Scope 3 Biogenic emissions	305-3c	0	0	0
Change in total GHG emissions	305-5	-124	-672	-274
Production volume, 1,000 tonnes		5,517	4,946	5,108
GHG emissions intensity, tCO₂e per tonnes of production⁵	305-4	0.94	1.08*	1.17*

* Updates to data were provided by sites during 2021 data collection.

1. Scope 1 + 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 CO₂e which includes CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃.

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

3. 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. 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.

4. GHG emissions from Kemira's value chain (Scope 3 of WRI/WBCSD GHG Protocol). Scope 3 emissions have changed due to an improvement in the calculation method for purchased goods and services. Kemira has implemented a volume-based approach for Categories 1 and 2 where factors are available.

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.

Kemira operates a transportation fleet in North America to deliver products to customers and raw materials to our manufacturing sites. The GHG emissions associated with the fleet are not included in the table above or in our climate target for our manufacturing sites. Beginning in

2019, Kemira obtained reliable fuel consumption data from our suppliers to estimate Scope 1 emissions related to our North America transportation fleet. The table below summarizes the emissions estimated since 2019. Kemira will continue to report these Scope 1 emissions in addition to the Scope 1 emissions from our manufacturing operations.

GREENHOUSE GAS EMISSIONS (1,000 TONNES CO₂eq) FROM NORTH AMERICA TRANSPORTATION FLEET

	2021	2020	2019
Greenhouse gas emissions (1,000 tonnes CO ₂ e)	11.5	18.1	11.4

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

Purchased goods and services (including capital goods) cover 80% (80%), and transportation and distribution emissions (upstream and downstream) 10% (10%) of our Scope 3 emissions. Fuel and energy related activities are 5% (5%) of overall Scope 3 emissions.

In 2021, Kemira revised its methodology to estimate emissions from purchased goods and services. Prior to 2021, Kemira used a spend-based approach to estimate emissions from purchased goods and services. In 2021, Kemira used a volume-based approach for those goods and services with published emission factors. Spend-based emission factors were used for goods and services without volume-based emission factors. This hybrid approach is considered to be more representative of our emissions profiles because the influence of raw material costs fluctuations is eliminated and Scope 3 emissions are associated with the actual amounts of goods and services used in our production processes. Furthermore, this approach aligns with our ongoing collaboration with our value chain partners to obtain product-specific carbon footprints and life cycle assessments that are based on material consumption. This change in methodology also was applied to 2018 through 2020. Although the overall magnitude of Scope 3 emissions has increased, the change in the methodology for purchased goods and services results in more directly measurable actual opportunities to reduce emissions.

Kemira has continued improvements to our transportation and distribution data collection and emissions methodologies, and has increased our collaboration with our business partners to improve the accuracy of the Scope 3 emissions estimates.

OTHER INDIRECT (SCOPE 3) GHG EMISSIONS BY CATEGORIES (1,000 TONNES CO₂eq)

	GRI Disclosure	2021	2020	2019
Total Scope 3 emissions	305-3d	4,341	4,436 ^{^^}	5,076 ^{^^}
1. Purchased goods and services		3,550	3,620 ^{^^}	4,170 ^{^^}
2. Capital goods*		*	*	*
3. Fuel and energy related activities		270	200 [^]	230
4. Upstream transportation and distribution		310	260 [^]	290
5. Waste generated in operations		25	100	90
6. Business travel		5 ^{**}	5 ^{**}	5 ^{**}
7. Employee commuting		10 ^{**}	10 ^{**}	10 ^{**}
8. Upstream leased assets (leased offices)		10 ^{**}	10 ^{**}	10 ^{**}
9. Downstream transportation and distribution		160	230	270
11. Use of sold products		0	0	0
12. End-of-life treatment of sold products		1	1	1

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

** Categories 6–8 historically contribute less than 2% each year. 2018 - 2020 were assumed to be at the same level as historical years despite actual emissions likely to be lower due to changes in work practices related to COVID-19.

[^] Calculation methodology for this category has been updated to include the GLEC framework methodology for downstream and internal movements paid by Kemira. Other logistics scenarios are calculated using the prior methodology.

^{^^} Calculation methodology for Categories 1 and 2 changed as described above, which results in changes to the total emissions.

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. Category 12 covers all products sold. If a product is not known to have a new lifecycle, it is classified as waste.

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 emissions are calculated as CO₂e. 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.

CLIMATE TARGET

In 2019, Kemira set a target to reduce combined Scope 1 and Scope 2 market-based GHG emissions from our manufacturing sites by 30% by 2030 compared to a 2018 baseline of 930 thousand tons CO₂e. In aligning Kemira's climate target with the expectations of our stakeholders, our ambition is to be carbon neutral by 2045 for combined Scope 1 and Scope 2 market-based GHG emissions. This target shows that Kemira supports the ambition of the UNFCCC Paris Agreement and that we recognize our contribution to the collaboration needed across sectors and stakeholders to ensure the implementation of solutions.

Kemira's Scope 1 and Scope 2 market-based GHG emissions in 2021 were 856 thousand tons CO₂e. Assuming a linear decrease from the 2018 baseline of 930 thousand tons CO₂e to the targeted emission rate of 650 thousand tons CO₂e 2030, Scope 1 and Scope 2 market-based emissions in 2021 would be approximately 860 thousand tons CO₂e (-0.5% difference actual 2021 emissions and the projected 2021 emissions). Kemira's emissions in 2021 are at the level expected to meet the 2030 climate target. Kemira has ongoing near-term projects which are expected to further reduce our emissions.

During 2021 our climate action has focused on several different ways of implementing concrete reduction measures but also building up competences to mitigate emissions more effectively. For Scope 1, our initial focus has been projects to find zero-carbon replacements for natural gas use at our largest consuming sites. For Scope 2 the main focus has been on energy efficiency measures. For more information see Energy Efficiency Enhancement Program - E3plus section. We have continued to implement our low/zero-carbon sourced electricity strategy for cleaner energy utilization. As a result of this we made a wind power related 5MW power purchase agreement in the beginning of 2021. In scope 3 we have continued to improve our competences in supply chain emission calculations by implementing the GLEC framework. We have also developed and made available an updated set of product carbon footprints (PCFs) in the EMEA region to provide our customers with up-to-date product climate impact information. We will continue the work in other regions. In 2022, we will increase our engagement with our suppliers through lifecycle assessments and PCF questionnaires to improve the quality of our Scope 3 emissions estimates and to identify opportunities to further reduce our emissions.

Other emissions to air

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

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

Kemira almost exclusively uses hydrogen and natural gas for its on-site steam and heat requirements. Mobile equipment such as fork trucks use fuels such as natural gas, propane, and low-sulfur diesel fuel. Therefore, Kemira's releases into air of NOx, carbon monoxide, and SOx from combustion processes are not a material topic for Kemira. Kemira's emissions of dust, acid gases, and volatile organic compounds (VOC) are associated with its material handling and manufacturing processes. These releases also are not a material topic for Kemira. Kemira continues to calculate these releases to review materiality on a periodic basis.

Water

GRI 303-1: Interactions with water as a shared resource

GRI 303-2: Management of water discharge-related impacts

Through our Sustainability and EHSQ Policy and our water management program, 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.

We are continuously evaluating opportunities to decrease water withdrawal, consumption, discharge, and associated impacts through water recycling and reuse, and process redesign and optimization projects in our upgraded and new production line projects. Where possible, water is recycled and/or reused at our sites to reduce water withdrawal, consumption, and discharge.

Wastewater and cooling water discharges at the manufacturing sites are subject to chemical sector regulations and local discharge requirements (permitting and effluent quality), including the profile of the receiving waterbody.

Wastewater generated from Kemira's manufacturing processes are primarily treated in third-party wastewater treatment plants prior to discharge to a waterbody. Cooling water does not usually require treatment prior to discharge.

Kemira uses EcoVadis platform to assess sustainability of its suppliers. Water management is included as one criteria in EcoVadis platform. In EcoVadis, suppliers are requested to meet certain standards and continuously improve in the area of environment including environmental compliance, waste, air emissions, climate change, water and groundwater, wastewater, energy, nuisance (noise and odour), land use & biodiversity, soil and hazardous chemicals. Scope and results of 2021 EcoVadis assessment are presented in chapter Sustainability Assessments and Audits of Suppliers earlier in this report.

WATER RISK ASSESSMENT

In 2021, 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.

In late 2021, Kemira updated its water risk assessment. At site level, identification, assessment and responding to water risks is included in the sites' EHSQ Risk Assessment process. Site specific EHSQ Risk Assessments are audited on regular basis internally by Kemira's Global EHSQ function and externally by accredited ISO 14001 auditors. Environmental impacts and risks including water related impacts and risks have also been initially assessed as part of the Environmental Impact Assessments performed as part of the environmental permitting process of the sites. Permit compliance is supervised and controlled by the local environmental authorities by regular inspections and regular environmental reporting to the authorities. Environmental permits are revised and updated as required by local legislation and regulators. At global level, water related risks are included in the Global level Environmental Aspects and Impacts Assessment and EHSQ Risk Assessment which are updated and reviewed minimum every three years. Water-related risks are further assessed by Global EHSQ function annually using WRI's Aqueduct tool and WWF Risk Filter (operational risk at manufacturing sites located in areas of water stress). Kemira has 9 sites (14 % of the sites) located within water stressed areas (areas of "High" or "Extremely High" water stress - that is, areas in which more than 40% of available water is used by industry, household and agriculture).

Water-related risks with potential to have significant (>1 M€) financial or strategic impact in site's business (3 to 6 years into the future) have been identified at some manufacturing sites. Site specific water risk assessments including more detailed assessment of the risk potential will be performed in Spring 2022 at the these sites and results will be reported in Kemira's 2022 CDP Water Security disclosure.

WATER WITHDRAWAL, CONSUMPTION AND DISCHARGE TRENDS

GRI 303-3: Water withdrawal

GRI 303-4: Water discharge

GRI 303-5: Water consumption

Total water withdrawal increased 4% compared to 2020 and 2019. The total water consumption remained at the approximately same level as in 2020 and 2019. The water withdrawal intensity (m³ per tonnes of production) remained at the same level as in 2020 and 2019. Most of the water withdrawal is used for cooling water purposes (92%). The total water discharges increased 4 % compared to 2020 and 2019. Most of the water discharge is cooling water and other water that requires no treatment (97%). Water withdrawal and discharges increased mostly due to need for more cooling water in hot summer in Europe in 2021 and also due to increase in production.

Freshwater use intensity has decreased by approximately 10% from 2020 and the baseline year 2019 due to process improvements and a decrease in the proportion of water intensive products. Fresh water use intensity is defined as m³ water withdrawn minus use of cooling water, rainwater and produced water per ton of production.

Kemira has new water target to improve our water management to Leadership level based on CDP Water Security scoring methodology by 2025. Kemira answered to CDP's Water Security full questionnaire for the first time in 2021 and achieved score B (Management level).

WATER WITHDRAWAL AND FRESHWATER USE (MEGALITERS)

	2021	2020	2019
Process water withdrawal, total	7,001	7,147	7,204
Surface water withdrawal - Process	644	664	678
Groundwater withdrawal - Process	273	285	269
Seawater withdrawal - Process	0	0	0
Produced water - Process	75	67	44
Third party water withdrawal - Process	5,987	6,042	6,139
Rain water - Process	22	90	75
Cooling water withdrawal, total	83,454	79,974	79,767
Surface water withdrawal -Cooling	61,006	60,294	59,759
Groundwater withdrawal - Cooling	2,193	1,935	1,984
Seawater withdrawal - Cooling	19,113	16,667	16,893
Produced water - Cooling	85	77	0
Third party water withdrawal - Cooling	1,058	1,001	1,131
Rainwater - Cooling	0	0	0
Other water, total	420	348	415
Surface water withdrawal - Other	12	12	13
Groundwater withdrawal - Other	108	68	113
Seawater withdrawal - Other	0	0	0
Produced water - Other	0	0	0
Third party water withdrawal - Other	291	204	227
Rainwater - Other	9	65	63
Water withdrawal intensity, m3 per tonne of production	16	18	17
Freshwater use, m3	7,315	7,275	7,438
Freshwater use intensity, m3 per tonne of production	1.3	1.5	1.5
Production volumes, thousands of tonnes	5,517	4,946	5,108

Fresh water use intensity is defined as m3 water withdrawn minus use of cooling water, rainwater and produced water per ton of production, i.e. surface water (process and other), groundwater (process and other) and third-party withdrawal (process and other) is included in the calculation of water use.

Other water includes water used in ancillary operations such as water used as potable water, sanitary water and cleaning and washing of premises used for ancillary operations such as outdoor areas outside of production, workshops, offices and toilets.

The values presented in Kemira's 2020 report for fresh water intensity in 2020 and 2019 have changed from 1.9 m3 to 1.5 m3 due to correction of systematic error in freshwater reporting at one site and other minor changes in historical data.

Wastewater generated from Kemira's manufacturing processes are primarily treated in third-party wastewater treatment plants. 82% of Kemira's wastewater that is required to be treated is treated in third-party wastewater treatment plants with no data available on direct effluent to water bodies. 18% of treated water is treated in own treatment plants. Kemira's most significant direct emissions to waterbodies include COD and suspended solid discharges that are primarily related to the biological wastewater treatment plant at one manufacturing site and overall discharges are minor at Kemira. Therefore, wastewater discharges by quality (including COD and suspended solids) are not a material topic for Kemira for GRI reporting purposes. However, Kemira continues to review GRI requirements and materiality on a periodic basis.

OVERVIEW OF WATER FLOWS (MEGALITERS)

		GRI Disclosure	2021	2021	2020	2020	2019
			All areas	Areas with water stress	All areas	Areas with water stress	
Water withdrawal by sources, Total		303-3	90,875	515	87,470	528	87,386
Surface water			61,693	0	61,125	0	60,587
Ground water			2,573	228	2,288	166	2,366
Seawater			19,113	0	16,667	0	16,893
Produced water			160	85	144	77	44
Total third-party water			7,336	201	7,247	285	7,497
Third-party water by source							
	Surface water		N/A	139	N/A	149	N/A
	Groundwater		N/A	62	N/A	136	N/A
	Seawater		N/A	0	N/A	0	N/A
Water discharges by destination, Total		303-4	84,360	294	80,869	142	80,853
Surface water			62,869	N/A	61,880	N/A	61,593
Ground water			0	N/A	0	N/A	0
Seawater			19,296	N/A	16,869	N/A	17,014
Total third-party water			2,194	N/A	2,121	N/A	2,245
Third-party water sent for use to other organizations			3	N/A	2	N/A	278
Water discharge by treatment							
	No treatment (mainly cooling water)		81,688	N/A	78,286	N/A	78,115
	Own treatment		478	N/A	463	N/A	492
Water consumption		303-5	6,515	386	6,601	321	6,534

Kemira has changed reporting of water withdrawal and water discharges compared to 2020 and earlier sustainability reports by exclusion of water intake and outlet at sites where site is connected to closed cooling water circuit in industrial parks with off-site cooling towers managed by other company.

In addition, limited updates were done to historic figures compared to the total volumes by sites during 2021 data collection. Figures reported in 2020 and earlier are presented in Kemira's 2020 and earlier sustainability reports. Water discharges in areas with water stress increased from 2020 to 2021 due to increased production at one site and wastewater treatment of other companies' wastewater in water treatment plant operated by Kemira. A breakdown of volumes by freshwater (<1,000 mg/L Total Dissolved Solids) and seawater (>1,000 mg/L Total Dissolved Solids) is not provided since only one site uses seawater as cooling water and discharges the cooling water back to seawater after cooling.

Produced water as defined in GRI 303 is generated mostly in Kemira's two tall oil plants in which water is extracted from raw material in process. Water as steam condensate also is categorized as produced water.

Water consumption consists of the water withdrawn and incorporated into products, evaporated, consumed by humans, or otherwise unusable by others such that it is not released back to surface water, groundwater, seawater, or a third-party

Water storage is not a significant water-related impact at our manufacturing sites and therefore, is not reported in our disclosure.

Waste

GRI 306-1: Waste generation and significant waste-related impacts

GRI 306-2: Management of significant waste-related impacts

Through our Sustainability and EHSQ Policy and waste management program, 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 or recovered in compliance with statutory requirements.

Kemira's GRI inventory of direct wastes include seven waste categories. Most significant waste categories include chemical waste and wastewater. Some wastewater streams are defined as waste in local environmental permits and reported as waste to local environmental authorities and therefore also reported as waste as part of Kemira's sustainability reporting. Kemira is continuously working internally and together with its waste handling companies to decrease amount of waste directed to disposal by process optimization and finding recovery options for waste streams that are directed to disposal with focus on waste that is disposed on landfills and incinerated with no energy recovery. Wastewater classified as waste is mostly recovered by combination of wastewater treatment and incineration with energy recovery. Kemira has no own waste disposal, e.g. own active landfills. All waste is collected by third party waste handling companies that have permits to receive and manage waste. All waste is managed by third party companies in compliance with local regulations. This is ensured as part of sourcing of waste management services.

Significant waste generated upstream in Kemira's value chain include waste generated by raw material suppliers. Kemira uses EcoVadis platform to assess sustainability of its suppliers. Waste management is included as one criteria in EcoVadis platform. Scope and results of 2021 EcoVadis assessment are presented in chapter Sustainability Assessments and Audits of Supplier earlier in this report.

Waste generated downstream in Kemira's value chain include mostly products disposed of by Kemira's customers and packaging waste. Kemira operates in B2B business environment.

Kemira's products are most often a small fraction of customers' products and some of Kemira's products are disposed or recovered as waste with customer waste. In I&W sector, Kemira's water treatment products are disposed or recovered after use depending on the client's application. In P&P sector, Kemira's products are mostly used in paper and cardboard products. Paper and cardboard waste is generally mostly recovered, either recycled or incinerated with energy recovery. Approximately 90% of Kemira's products transportation to customers is bulk transportation with in practice no packaging waste generated. Approximately 5% of products are transported to customers in Intermediate Bulk Containers (IBCs) that are mostly recycled. Approximately 5% of products are transported to customers in other packaging such as drums, bags and other packaging that are assumed to be mostly recovered, either recycled or incinerated with energy recovery, but no data on recovery and disposal method is available.

GRI 306-3 Waste generated

GRI 306-4 Waste diverted from disposal

GRI 306-5 Waste directed to disposal

Waste data is collected by seven composition categories including chemical waste (filter cake, disposed products and other chemical waste), sludge, metallic waste, mineral waste from construction and demolition and other mineral waste, soils, wastewater and other waste. In recovery and disposal method definitions, Kemira follows local environmental permits.

Total waste generated in Kemira in 2021 was 117.0 thousand tonnes that is 22% less than in 2020 (150.2 thousand tonnes) and 23% less than in 2019 (152.3 thousand tonnes).

HAZARDOUS WASTE

Approximately 22% of Kemira's waste is hazardous waste. Volume of hazardous waste reduced significantly by approximately 45% compared to 2020 and by approximately 55% compared to 2019. The main reason for reduction is cease of operation in December 2020 at a site that accounted for 47% of total hazardous waste generated in 2020 due to disposal of stormwater potentially impacted by acrylamide. Disposal of stormwater at the site as hazardous waste

was done in accordance with local legislation and regulations. Approximately 32% of Kemira's hazardous waste is diverted from disposal and approximately 68% is directed to disposal.

NON-HAZARDOUS WASTE

Approximately 78% of Kemira's waste is non-hazardous waste. The total amount of non-hazardous waste decreased by approximately 11% from 2020. This is primarily due to less non-production related demolition and soil waste. Approximately 35% of Kemira's non-hazardous waste is diverted from disposal and approximately 65% is directed to disposal.

WASTE COMPOSITION (THOUSAND TONNES)

	GRI Disclosure	Waste generated	Waste diverted from disposal	Waste directed to disposal
Weight of waste, Total	306-3	117.0	40.5	76.5
Chemical waste		33.6	8.8	24.9
Filter cake		19.6	5.2	14.4
Disposed products		0.8	0.2	0.6
Other chemical waste		13.2	3.3	9.9
Sludges		5.7	4.0	1.6
Metallic waste		0.4	0.4	0.0
Mineral waste from construction and demolition		1.6	1.6	0.0
Soils		5.9	1.1	4.7
Wastewater		62.4	21.8	40.6
Other waste		7.4	2.7	4.6

Wastes reported for the first time in accordance with GRI 306: Waste 2020 in 2021 and therefore waste composition not available for reference years 2020 and 2019.

WASTE DIVERTED FROM DISPOSAL BY RECOVERY OPERATION (THOUSAND TONNES)

	GRI Disclosure	2021	2020	2019
Weight of waste diverted from disposal, Total	306-4c	40.5	44.1	58.7
Hazardous waste	306-4b	8.3	4.7	11.3
Preparation for reuse		0.0	0.0	0.0
Recycling		7.2	3.9	10.4
Other recovery operations		1.0	0.7	0.9
Non-hazardous waste	306-4d	32.3	39.4	47.4
Preparation for reuse		0.2	6.2	5.9
Recycling		27.7	7.1	5.6
Other recovery operations		4.3	26.1	36.0

WASTE DIRECTED TO DISPOSAL BY DISPOSAL OPERATION (THOUSAND TONNES)

	GRI Disclosure	2021	2020	2019
Weight of waste directed to disposal, Total	306-5c	76.5	106.1	93.6
Hazardous waste	306-4b	17.5	42.9	45.8
Incineration (with energy recovery)		4.9	9.3	2.4
Incineration (without energy recovery)		0.8	1.4	1.0
Landfilling		1.6	1.8	1.4
Other disposal operations		10.3	30.5	40.9
Non-hazardous waste	306-4d	59.0	63.2	47.8
Incineration (with energy recovery)		41.4	35.9	28.7
Incineration (without energy recovery)		0.2	0.2	0.2
Landfilling		13.4	23.1	14.1
Other disposal operations		4.1	3.8	4.9

Limited updates compared to the total volumes were provided by sites during 2021 data collection. Figures reported in 2020 and earlier are presented in Kemira's 2020 and earlier sustainability reports.

Waste disposal method was determined based on information in environmental permits and provided by waste disposal contractors.

All waste presented in tables above is either diverted from disposal or directed to disposal off-site. There was no onsite disposal in Kemira in 2021.

PRODUCTION WASTE, WASTE TARGET AND RECOVERY RATE

Most of Kemira's waste is production waste. Other waste categories are non-production waste and disposed products that are defined as follows:

- Non-production waste:
 - Expired or outdated raw materials
 - Contaminated soil or debris from a spill
 - Construction and demolition waste, including waste (reusable and non-reusable associated with plant or site closures
 - Biomass from gardening and pruning activities
 - Laboratory/warehouse cleanouts
 - Non-routine tank/railcar cleaning wastes
- Disposed products:
 - Kemira's products that have been disposed or recovered by third-party disposal company

WASTE CATEGORIES (THOUSAND TONNES)

	2021	2020	2019
Production waste	103.1 (88%)	128.8 (86%)	142.2 (93%)
Non-production waste	13.1 (11%)	19.7 (13%)	9.0 (8%)
Disposed Products	0.8 (1%)	1.7 (1%)	1.1 (1%)

Kemira's target is to reduce disposed production waste intensity by 15% by 2030. In the target we measure disposed production waste. It includes both hazardous and non-hazardous waste. It excludes waste that is recovered, e.g. via recycling, reuse and incineration with energy recovery. It is expressed as an intensity, metric tons of waste per thousand metric tons of production. Baseline is 2019 at 4.6 and target is 3.9 by 2030. The intensity in 2021 was 4.3, that is slightly more compared to 4.2 in 2020. The increase is due to first year of full production at one site with significant disposed waste generation. Calculation of the target is presented in the table below.

Kemira is following recovery rate of production waste. Recovery rate of the production waste was decreased slightly from 2020 due to decrease of the most significant recovered waste fraction at one site. One waste stream at this site (sulfuric water recovered at adjacent paper mill) comprised 34% of all Kemira's total production waste and 43% of production related non-hazardous waste. The stream is classified as waste in the site's environmental permit and

therefore reported as waste in accordance with GRI standards. Calculation of recovery rate of production waste is presented in the table below.

PRODUCTION WASTE BY TYPE AND DISPOSAL METHOD (THOUSAND TONNES), WASTE TARGET AND RECOVERY RATE

	2021	2020	2019
Hazardous waste	20.7	42.1	48.4
Preparation for reuse	0.0	0.0	0.0
Recycling	6.9	3.8	8.6
Other recovery operations	1.0	0.7	0.9
Incineration (with energy recovery)	4.8	8.9	2.0
Incineration (without energy recovery)	0.7	1.3	0.8
Landfilling	1.5	0.8	0.9
Other disposal operations	5.8	26.6 ³	35.1 ³
Non-hazardous waste	82.4	86.7	93.8
Preparation for reuse	0.2	6.2	5.9
Recycling	26.4	3.9	5.2
Other recovery operations	2.8	26.0	36.0
Incineration (with energy recovery)	37.4	35.9	28.7
Incineration (without energy recovery)	0.1	0.1	0.2
Landfilling	11.5	10.7	12.9
Other disposal operations	3.9	3.8	4.9
Grand Total	103.1	128.8	142.2
Total disposed production waste ³	23.6	20.9	23.5
Recovery rate of production waste, % ^{2,3}	77	80	79
Disposed production waste intensity (Kemira waste target) tonnes per tonnes of production ^{1,3}	4.3	4.2	4.6
Production volumes, thousands of tons	5,517	4,946	5,108

1. Incineration (without energy recovery), Landfilling and Other disposal operations are included in calculation of the waste target (disposed production waste intensity). Incineration (with energy recovery) is considered as recovery operation in the target calculation and is therefore not included in the calculation.

2. Preparation for reuse, Recycling, Other recovery operations and Incineration (with energy recovery) are considered as recovery operations in calculation of recovery rate of production waste.

3. The target calculation and recovery rate calculation excludes disposed waste at Fortier site that was closed in late 2020. Exclusions are 22.4 kt in 2020 and 31.3 kt in 2019. At the time of setting the target it was known that the site will be closed and therefore decided to be excluded from the target.

SIGNIFICANT SPILLS

Kemira's definition of a significant spill includes a spill 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

In 2021 there were 2 significant spills compared to 4 in 2020.

- Manufacturing incidents accounted for 2 significant spills. All occurred at our manufacturing sites. The total volume of the significant spills at manufacturing plants were approximately 8 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.

TRANSPORT OF HAZARDOUS WASTE

In 2021, approximately 23,000 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 2021.

One of our sites in South America 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 2021, there were approximately 17 tonnes of hazardous waste exported from South America to Europe for disposal and 6 tonnes of hazardous waste between EU countries. In total, less than 1% of the hazardous waste generated in 2021 (less than 1% in 2020) by Kemira was shipped internationally.

Biodiversity

GRI 304-1: Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas

GRI 304-2: Significant impacts of activities, products, and services on biodiversity

GRI 304-3: Habitats protected or restored

GRI 304-4: IUCN Red List species and national conservation list species with habitats in areas affected by operations

In 2021, Kemira collected relevant information for a biodiversity assessment from all our manufacturing sites (62). In addition, the Integrated Biodiversity Assessment Tool (IBAT) was used to review Kemira's manufacturing sites locations in relation to protected areas and areas of biodiversity importance.

We identified that the majority of Kemira's manufacturing sites (53) are not located in, or adjacent to, protected areas or areas of biodiversity importance. Kemira has two manufacturing sites located within important biodiversity areas and one site containing a portion of an important biodiversity area. In addition, seven manufacturing sites are adjacent to protected areas or important biodiversity areas. The sites in, containing portions, or adjacent to, protected areas and key biodiversity areas are presented in the table on the next page.

Kemira's manufacturing sites are located in industrial zones and have environmental permits. Based on the environmental impact assessments conducted as part of environmental permitting of the sites, Kemira's manufacturing sites do not have direct significant impacts on biodiversity that adversely affect the integrity of a geographic area or change its ecological features and functions, and are not considered to have impact on the IUCN Red List of Threatened Species. We continue to assess possible indirect impacts of our operations on biodiversity throughout the value chain.

Kemira monitors impacts of its manufacturing sites on biodiversity in accordance with monitoring programs assigned by local environmental authorities. In addition, Kemira partnered with the local county government in Baltimore, Maryland USA on a shoreline stabilization program along Bear Creek. One of the primary purposes of the program is to reduce and control nutrient runoff into the creek. The program aims to stabilize 460 m of eroding shoreline and create about 0.47 ha of new marsh vegetation and habitat. Final construction of the project was completed in July 2021. Kemira's funding for the project will include ongoing maintenance of the property for up to 12 years.

THE MANUFACTURING SITES IN RELATION TO PROTECTED AREAS OR AREAS OF HIGH BIODIVERSITY VALUE

Geographic location	Type of operation	Position in relation to the protected area or area of high biodiversity value	Size of operational site, ha	Biodiversity value of the protected area or area of high biodiversity value
Fray Bentos, Uruguay	Manufacturing	In the area ¹	7.00	Important Bird and Biodiversity Area - Terrestrial, Freshwater
Vancouver, Canada	Manufacturing	In the area	0.49	Important Bird and Biodiversity Area - Terrestrial, Marine
Pori, Finland	Manufacturing	1) Contains portions ² 2) Adjacent ³	54.90	1) Important Bird and Biodiversity Area - Terrestrial, Marine 2) Special Protection Area (Birds Directive) - Marine
Krems, Austria	Manufacturing	Adjacent	2.18	1) Important Bird and Biodiversity Area - Terrestrial 2) Special Protection Area (Birds Directive) - Terrestrial
Ostroleka, Poland	Manufacturing	Adjacent	0.41	1) Important Bird and Biodiversity Area - Terrestrial 2) Special Protection Area (Birds Directive) - Terrestrial
Police, Poland	Manufacturing	Adjacent	2.97	Site of Community Importance (Habitats Directive) - Terrestrial
Teesport, UK	Manufacturing	Adjacent	8.09	1) Special Protection Area (Birds Directive) - Marine 2) Site Of Special Scientific Interest (Gb) - Marine
Washougal, USA	Manufacturing	Adjacent	4.45	National Wildlife Refuge - Terrestrial
Wroclaw, Poland	Manufacturing	Adjacent	4.66	Site of Community Importance (Habitats Directive) - Terrestrial

1) "In the area" means the whole area of the manufacturing site is within the protected area or area of high biodiversity value.

2) "Contains portions" means some part of the protected area or area of high biodiversity value lies in the area of the manufacturing site.

3) "Adjacent" is defined by Kemira as a maximum distance of 300 meters from the manufacturing site. The definition is subject to modification in accordance with the updated GRI guidelines.

Environmental compliance

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

Kemira's integrated EHSQ management system is a set of standards, procedures, and practices to achieve environmental goals through continual planning, implementation, evaluation, and review of environmental performance. One of the primary environmental goals of Kemira's EHSQ management system is compliance with legal requirements. Kemira has identified its legal compliance obligations and implements an Auditing Standard to verify conformance. Kemira regularly conducts EHSQ compliance audits at manufacturing sites, research and development laboratories, and offices. Management system audits are performed on a periodic cycle (typically every 3 years) by Kemira's independent internal auditing team and external bodies. The audits focus on certain elements within the management system based on the risks and opportunities impacting the site, business segment, or Kemira as a whole at the time of the audit. To supplement this audit sampling approach, verification of legal compliance is provided annually as part of the data collection and reporting processes. Kemira's robust integrated EHSQ management system requires all sites to report non-compliance to the group's Global EHSQ Team using our incident reporting program (Synergi Life).

Kemira did not receive significant fines or non-monetary sanctions for non-compliance with environmental laws and/or regulations in 2021.

A non-governmental organization (NGO) filed a complaint against a local environmental authority and a Kemira site in the United States alleging violations of a permit issued under the Clean Water Act. Kemira expressly denied all allegations in the NGO's complaint. Kemira entered into a settlement agreement with the NGO to resolve the dispute without further litigation. As part of the settlement agreement, the NGO dismissed its complaint and waived claims against Kemira. The settlement agreement included a payment of USD 130,000, in which a party to the NGO received USD 70,000 to be used directly for projects benefiting water quality or aquatic habitat in the local river basin. The balance covered attorney's fees and costs for the NGO.

Social Performance

Information on employees

GRI 102-8: Information on employees and other workers

Total number of employees

	2021	2020	2019
Total number of employees*	4,926	4,921	5,062
Female, %	26%	26%	26%
Male, %	74%	74%	74%
White collar, %	59%	59%	59%
Blue collar, %	41%	41%	41%

* At year end. Workers who are legally recognized as self-employed, or individuals other than the ones in Kemira's payroll are not counted on these numbers.

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

	2021	2020	2019
Total number of employees	4,926	4,921	5,062
Total permanent	4,846	4,819	4,940
Total fixed-term*	80	102	122
Female total	1,291	1,280	1,295
Permanent	1,257	1,228	1,237
Fixed term*	34	52	58
Male total	3,635	3,641	3,767
Permanent	3,589	3,591	3,703
Fixed term*	46	50	64

*Fixed term meaning temporary employment contract

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

	2021	2020	%, 2021	%, 2020
Total number of employees	4,926	4,921		
Americas	1,487	1,467	30.2%	29.8%
APAC	923	924	18.7%	18.8%
EMEA	2,516	2,530	51.1%	51.4%
Permanent total	4,846	4,819	98.4%	97.9%
Americas	1,486	1,462	30.7%	30.3%
APAC	923	924	19.0%	19.2%
EMEA	2,437	2,433	50.3%	50.5%

A temporary (fixed-term) employment contract is a type of employment used mainly in EMEA, atypical for Americas and APAC. In 2021 there were 80 employees (1,6%) with temporary contract (102; 2.1% in 2020).

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

	2021	2020	2019
Total employees	4,926	4,921	5,062
Total full-time	4,845	4,832	4,980
Total part-time	81	89	82
Female total	1,291	1,280	1,295
Full-time	1,230	1,215	1,240
Part-time	61	65	55
Male total	3,635	3,641	3,767
Full-time	3,615	3,617	3,740
Part-time	20	24	27

GRI 102-41: Collective bargaining agreements

The collective bargaining agreements are measured for 'significant locations of operations' referring to countries with 10 or more employees. In Kemira's case there are 25 such countries and altogether these countries represent 99% of all employees.

In 2021, 2366 (48%) of Kemira employees globally were covered by collective bargaining agreements (2120; 44% in 2020).

Employment

GRI 401-1: New employee hires and employee turnover

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 new hires		
	2021	2020	2019	2021	2020	2019
Total new hires	526	411	751			
New hires by age group	-	-	-	-	-	-
<30	220	184	289	42%	45%	38%
30–50	247	177	396	47%	43%	53%
>50	59	50	66	11%	12%	9%
New hires by gender	526	411	751	-	-	-
Females	146	131	208	28%	32%	28%
Males	380	280	543	72%	68%	72%
New hires by region	526	411	751	-	-	-
APAC	56	28	233	11%	7%	31%
EMEA	275	255	335	52%	62%	45%
Americas	195	128	183	37%	31%	24%

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

	Number of new hires			Turnover, %		
	2021	2020	2019	2021	2020	2019
Total turnover	403	429	489	8.2%	8.7%	9.7%
Turnover by age group	-	-	-	-	-	-
<30	58	50	83	12.4%	10.0%	14.6%
30–50	200	193	253	6.8%	6.6%	8.5%
>50	145	186	153	9.4%	12.5%	10.2%
Turnover by gender	403	429	489	-	-	-
Females	90	95	123	7.0%	7.4%	9.5%
Males	313	334	366	8.6%	9.2%	9.7%
Turnover by region	403	429	489	-	-	-
APAC	56	53	63	6.1%	5.7%	6.7%
EMEA	173	145	254	6.9%	5.7%	10.0%
Americas	174	231	172	11.7%	15.7%	11.0%

The total turnover is based on permanent workforce.

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, for example some countries offer additional insurance and/or retirement benefits for permanent full-time employees.

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: Hazard identification, risk assessment, and incident investigation

GRI 403-4: Worker participation, consultation, and communication on occupational health and safety

GRI 403-5: Worker training on occupational health and safety

GRI 403-9 Work-related injuries

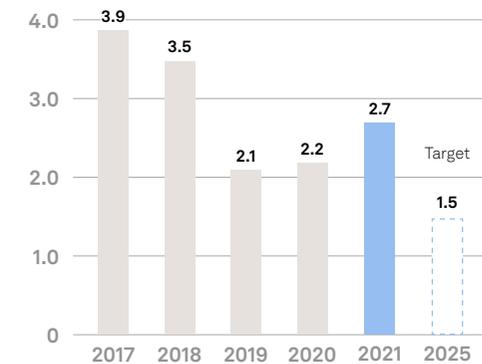
Kemira reports its occupational safety performance indicator as Total Recordable Injuries (TRI) which includes permanent injuries and fatalities, lost time incidents, restricted work cases and medical treatment cases covering Kemira employees and contractors working at Kemira sites. TRI Frequency (TRIF)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

Kemira uses external service providers (contractors) which work at Kemira locations. These services cover for example maintenance, repair, turnaround, major renovation or specialty work at a Kemira site. We follow the contractor hours as this information is included in the workplace safety indicator TRIF. Third party transportation companies, whether onsite or offsite, are excluded. In 2021, there were approximately 2.2 million hours which equals to about 1,180 FTE (Full Time Equivalents) when assuming 7.5 hours per day and 250 working days per year.

There was a setback in our health and safety performance in 2021 compared with the performance in 2019 and 2020. Total number of TRIs in 2021 (2020) was 36 (31) and TRIF was 2.7

(2.2). The overall ratio of contractors' TRIs to total number of TRIs remained quite consistent with the 2020 level. During the first 4 months we saw an increasing trend with contractor incidents. In response, a Contractor Safety Management project was launched and consequently achieved 5 consecutive contractor injury free months. It is expected that all planned project actions will be implemented by the end 2022. Although above our 2021 TRIF target of 1.9, safety performance has stabilized and compares to equivalent industrial safety performance levels. To achieve a world class target (<2.0) Kemira will further enhance our focus on safety awareness, people behavior and contractor management. We look forward to meeting our 2022 target of TRIF 1.9 and beyond.

OUR SAFETY PERFORMANCE (TRIF)



TRIF: Total Recordable Injury Frequency per million hours

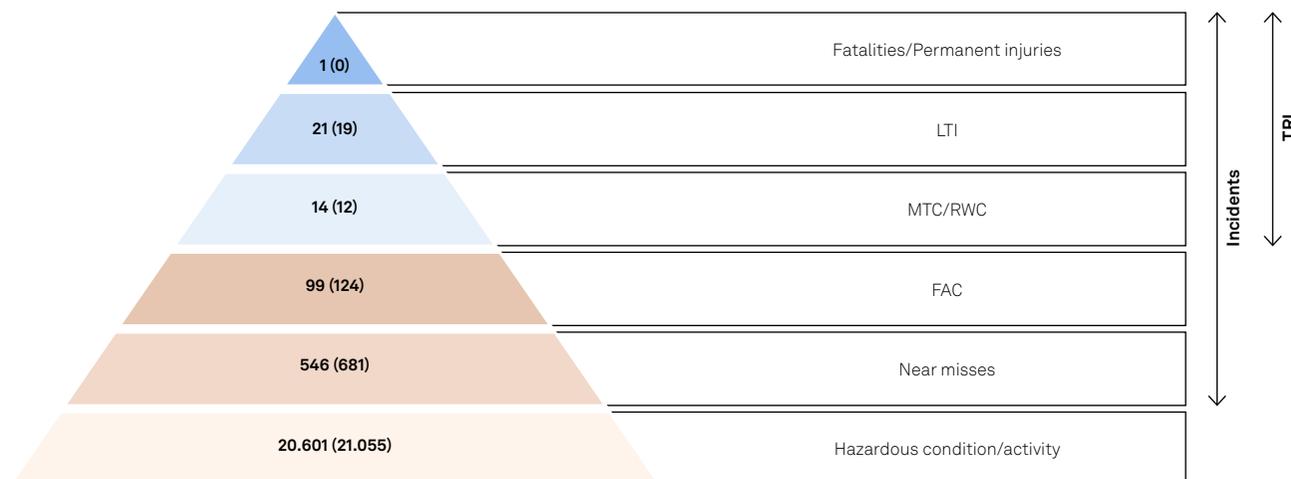
No fatalities have occurred with Kemira employees or contractors since 2005. We saw a slight increase in the number of Lost Time Incidents (LTIs). Unfortunately, we had one permanent finger incident with one of our contractors. He was carrying out maintenance activities with an air actuated spring return valve. While he was trying to lock out the energy stored in the spring the valve accidentally hit his finger causing partial finger loss. The contractor was working according to their own work process in a Kemira workshop. The incident was reported to authorities by the contractor's employer and Kemira.

Kemira continued to put effort in protecting our employees, contractors, drivers and their families from the COVID-19 pandemic. We have followed a Careful Return approach globally and we have systematically transitioned from global COVID-19 management to regional and local COVID-19 management. We will continue this work into next year, ensuring the health of our employees and business continuity.

We continued our Behavior Based Safety (BBS) program in 2021. In 2021, Kemira employees performed over 337,000 individual BBS observations included in 15,118 surveys. This level of engagement and proactive identification of at-risk behaviors is a good achievement in the middle of a pandemic. We had a plan to refresh our BBS program, however this was delayed because of extensive remote work. Nevertheless, we were able to start a project for further digitized tools for supporting and improving Sustainability & EHSQ Management. This also includes the refreshment of our existing Behavior Based Safety (BBS) program. We strongly believe the BBS is the key to improve our ways of working and to achieve our future challenging safety targets.

Incident classification	Definition
Permanent injury	A work-related injury leads to damage that will indefinitely restrict the employment or other normal activities of an individual
Lost Time Incidents (LTI)	A work-related injury or illness, suffered by a Kemira employee or contractor resulting in at least one full day of time away from work (this does not to include the day of the injury), as determined by a physician or other licensed health care professional
Medical Treatment Case (MTC)	Any work-related injury or illness that requires professional medical treatment or a prescription medication. Medical Treatment means beyond first aid level medical attention
Restricted Work Case (RWC)	A work-related injury or illness that requires the employee to have restricted work, or transfer to another job for at least one full day, as determined by a physician or other licensed health care professional
Total Recordable Injury (TRI)	TRI is the sum of Fatalities, LTI, RWC, and MTC
First Aid Case (FAC)	First aid refers to a work related minor injury or illness which can be treated by a first responder or equivalent and does not require a professional physician or paramedic medical attention
Near Miss	An undesired event in the work environment that under different circumstances could have resulted in harm to people
Hazardous Condition/Activity	Leading safety indicator reflecting environmental or behavior related hazards at the workplace

PERSONAL INJURIES PYRAMID 2021 (2020)



Kemira employs a large number of Commercial Sales Representatives, which may perform a variety of activities at customer locations. Depending on the product line and customer requirements our Commercial Sales Representatives can perform tasks such as equipment upkeep, process sampling and inventory management at the customer facility. In 2021, Kemira continued implementation of health and safety requirements. Commercial Sales Representatives have now completed more than 1,700 job hazard assessments in a mobile application. Also internal Standard Operating Procedures and other risk assessment are further developed.

In 2021, Kemira continued systematically reporting process safety incidents (RPSI) based on the ICCA definition. Additionally, we expanded our formal root cause analysis and investigation process to include major RPSI in all regions. The work on generic PHA's initiated in 2019 to improve the process safety for our coagulant business was completed. Our PSM standard was updated according to a 3-year revision cycle, and as part of this work a few key Process Safety Procedures (PSI, PHA, LOPA, PSSR) were renewed. Training of the new procedures was conducted with a focus on Process Hazard Analysis (PHA). Kemira's Global PHA templates were updated to new requirements in our global process risk assessment software, and refresher trainings conducted.

As part of our competence development program an EHSQ Learning path for Manufacturing was launched via Kemira internal learning system, MyKem covering EHSQ Culture, Risk Management and Root Cause Analysis. The goal of the trainings was to strengthen our core values and get

a common understanding of our main risk management vocabulary and available tools and methods to use.

As a part of continuous improvements, we continued the work on updating our site's EHSQ Assessments with migration to the unified format in alignment with ISO 45001 requirements, which will support our digitalization of risk assessments, ensuring we cover the same risks across all of our sites.

The number of Near Misses (546) which under different circumstances could have resulted in harm to people was a bit lower level compared with previous year (681). It is still believed that number of Near Misses decreased due to intensive remote activity, however their number is expected to increase when all Near Miss cases are reviewed, classified and closed. Based on 2020 a 10 % increase is expected in the final 2021 Near Miss total.

Hazardous Conditions/Activities reporting is a leading safety indicator reflecting environmental or behavior related hazards at the workplace. The number of reported Hazardous Conditions/Activities remained at a good level. The outcome was 20,601 in 2021 which equals to 4.2 per Kemira employee. The proactive identification of Hazardous Conditions/Activities not only allows us to avoid incidents but also improves our operations and work methods.

Transportation safety overall has improved compared to last year. Our transportation incident KPI rate is currently <(1.6) Kemira Global Target. Proactive communication to the sites, ongoing transportation safety audits, and support from Regional Transport Safety have contributed to better

performance. New safety programs (e.g. Global Load Securement Standard, & Chemical Storage of Samples) have been established to assist in improving performance. Ongoing initiatives, including continued support for the sites, new procedures e.g. Proposed Global Sample Shipping Procedure targeting transportation related activities is currently under way to achieve our goals for 2022.

TOTAL RECORDABLE INJURIES

	2021	2020	2019
Total TRI	36	31*	30
Kemira employees	28	21	21
Contractors working at Kemira site	8	10	9
Regional TRI			
APAC	3	1	2
EMEA	21	15	19
Americas	12	14	9
TRI Frequency			
Global TRIF	2.7	2.2	2.1
Kemira employees	2.5	1.9	1.9
Contractors working at Kemira site	3.6	3.3	2.9
Regional TRIF			
APAC	1.0	0.3	0.6
EMEA	4.0	2.6	3.5
Americas	3.3	3.4	2.3

*Global Functions 1 TRI

LOST TIME INCIDENTS

	2021	2020	2019
Total LTI	22	19	15
Kemira employees	17	14	11
Contractors working at Kemira site	5	5	4
Regional LTI			
APAC	0	0	1
EMEA	16	12	11
Americas	6	7	3
LTI Frequency			
Global LTI	1.6	1.4	1.1
Regional LTI			
APAC	0.0	0.0	0.3
EMEA	3.0	2.1	2
Americas	1.6	1.7	0.8

Training and education

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

Kemira continued in 2021 to advance towards its aims to capture all training, education and employee development related hours in the learning management system (LMS). 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.

LEARNING HOURS REGISTERED IN THE SYSTEM FOR LARGER COUNTRIES IN 2021 ARE

Country	2021	2020
Finland	6,427	8,268
UK	4,719	5,831
Sweden	4,327	5,014
USA	7,444	8,775
Netherlands	4,565	4,039
China	31,578	22,899
Poland	3,838	5,050

There were variations in some of the biggest countries. The increase in learning hours recorded in China is due to multi-skilling for blue collars and well-being initiatives for all employees. This was balanced by stable learning hours globally and a notable decrease in Finland, UK and Poland.

The globally registered average hours of learning for employees do not differ significantly by gender and have improved in favor of blue collar employees in 2021.

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 digital learning.

The scope includes:

- Future competency programs, sustainability and data & analytics, EHSQ / safety culture
- Leadership development (internal and external) programs
- Professional & technical competence development programs up-skilling and re-skilling
- Statutory or compliance related programs

All of 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).

Examples of global and regional programs offered during 2021 are listed below:

- Code of Conduct, Anti-corruption, Speak Up, Information Security Awareness and other compliance programs delivered mainly through eLearning
- Data & analytics and digitalization: Introduction to Data & Analytics at Kemira, Kemira as a Data-Driven Company, Case Studies of Digital Products and Services
- Sustainability: Introduction to Sustainability at Kemira, Kemira as a Sustainability-Focused Company
- Learning Solutions for Commercial and Manufacturing roles as part of professional competence development included Value Selling, Negotiation, Insight, Innovation & Creativity, Adaptability, Strategic Thinking, Account Development and Ownership delivered as co-created self-paced eLearning and virtually

- EHSQ related programs including EHSQ Policy and Vision, EHSQ Life Saving Rules and standards and competence development with EHSQ Culture, Risk Management and Root Cause Analysis
- Project Management Fundamentals and Agile & Scrum Fundamentals
- Leadership training programs incl. awareness training for all people managers and HR community on the new Leadership Principles
- Talent Development Journey Programs for identified talents

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 out-placement/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. During 2020–2021 the PDD process has been fully digitalized for blue collars in 30/37 countries. This has enabled better employee experience and follow-up of the PDD.

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			%		
	2021	2020	2019	2021	2020	2019
Total permanent employees not absent*	4,827	4,757	4,771			
Employees covered in Global PDD process	4,567	4,383	4,593	95%	92%	96%
Female	1,189	1,129	1,142	98%	97%	98%
Male	3,378	3,254	3,464	93%	91%	96%
White collars	2,771	2,701	2,748	98%	99%	98%
Blue	1,796	1,682	1,845	90%	83%	94%

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

Diversity and equal opportunity

In Kemira we aspire to build a team and culture that fosters diversity and inclusion. We believe that diversity is one of the greatest contributors to our success. A truly diverse and inclusive culture builds our value as an employer of choice and as the first choice for our customers.

In 2021, we set ourselves a diversity and inclusion target measured as the employee perception of diversity & inclusion. Our target is to reach top 10% cross industry norm for diversity & inclusion by 2025. To move us closer to our target, in 2021 we assessed the current state of diversity & inclusion and based on the assessment planned a diversity & inclusion roadmap for the upcoming years.

GRI 405-1: Diversity of governance bodies and employees

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.

The number of females in executive positions was 31% in 2021, (Directors and above) and has remained on the same level as in 2020 (31%).

GRI 405-1a: 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

	Total			%		
	2021	2020	2019	2021	2020	2019
Management Board						
Total	8	8	8	-	-	-
Female	1	1	1	13%	13%	13%
Male	7	7	7	88%	88%	88%
By age group						
<30	0	0	0	0%	0%	0%
30–50	1	1	1	13%	13%	13%
>50	7	7	7	88%	88%	88%
Board of Directors						
Total	7	7	6	-	-	-
Female	1	3	3	14%	43%	50%
Male	6	4	3	86%	57%	50%
By age group						
<30	0	0	0	0%	0%	0%
30–50	1	1	1	14%	14%	17%
>50	6	6	5	86%	86%	83%

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			%		
	2021	2020	2019	2021	2020	2019
Total employees	4,926	4,921	5,062	100%	100%	100%
<30	466	501	569	9%	10%	11%
30–50	2,924	2,930	2,989	59%	60%	59%
>50	1,536	1,490	1,504	31%	30%	30%
Female	1,291	1,280	1,295	26%	26%	26%
<30	144	158	171	11%	12%	13%
30–50	870	851	858	67%	66%	66%
>50	277	271	266	21%	21%	21%
Male	3,635	3,641	3,767	74%	74%	74%
<30	322	343	398	9%	9%	11%
30–50	2,054	2,079	2,131	57%	57%	57%
>50	1,259	1,219	1,238	35%	33%	33%

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 allow Kemira to evaluate, analyze and implement equal remuneration. The main factors impacting the base salary level are the country of employment and location, and the job grade of the position. Other factors impacting include the experience, tenure and performance of the employee 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. The Disclosure 405-2a describes the ratio of basic salary when considering country of employment and location and the job grade of the position. Other remuneration elements are not recorded globally and thus not reported.

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 pay ratio 2021	Women to men pay ratio 2020	Women to men pay ratio 2019	White collar headcount 2021
Austria	87%	87%	89%	49
Brazil	94%	91%	92%	130
Canada	89%	89%	90%	122
China	90%	90%	89%	290
Finland	91%	92%	90%	581
Germany	96%	97%	97%	79
Italy	92%	93%	93%	66
Netherlands	88%	88%	91%	87
Poland	98%	96%	97%	318
Spain	93%	91%	85%	52
Sweden	100%	95%	99%	140
United Kingdom	95%	94%	92%	89
United States	93%	92%	92%	545
Total for largest countries	93%	92%	92%	2,548

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 commitment to the United Nations Global Compact. We expect our suppliers to respect these same principles and commit to the Code of Conduct for Business Partners. All of our Suppliers (engaged with an SAP Purchase Order) receive a written reference to CoC-BP 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 2021 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 45% of our total spend.

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

A group level Human Rights Impact Assessment was updated in 2021 to identify human rights impacts throughout Kemira operations and value chain. The assessment methodology was based on the United Nations Guiding Principles on Business and Human Rights and the OECD Due Diligence Guidance.

According to the assessment, Kemira meets on group level the EU Taxonomy minimum safeguards of most recognized human rights guidelines and guiding principles.

Based on the assessment, Kemira has increased its knowledge and actions towards human rights since the previous assessment (2014). The findings indicate that Kemira main positive impact is on themes relating to health and wellbeing, freedom of association and speech, and driving the global sustainability transition through climate and water impacts. The potentially negative risks relate to production and raw material sourcing of suppliers and supply chain partners, health and safety at own sites and the impacts of utilizing fossil fuels. In early 2022, Kemira will assess these findings and evaluate existing mitigating measures, assess recommendations and implement the needed improvement actions.

In the previous years, focus has been on increasing overall awareness of human rights related themes throughout the organization and improving the management approach and due diligence. Main means to increase awareness relate to regular and compulsory training on the Code of Conduct for all employees and since 2015 a basic training on human rights for white collar employees responsible for business relationships. Since 2015 all new hires have participated in this training as part of their induction program. Human rights are evaluated in scope of supplier ethical audits conducted by external audits (follow the SMETA protocol).

Key activities in 2021

- Continued the global 90-day onboarding program for new hires (white collars) that automatically assigns online courses on Code of Conduct and Human Rights and Business. By the end of 2021, 66% of white collar new hires have completed the basic training on Human rights and Business as part of their onboarding program
- 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
- Product safety – product lifecycle management. For more information, see section Product Stewardship
- Supplier assessments and audits – For more information, see supplier Management section
- Diversity and inclusion roadmap buildup during 2021 to reach sustainability targets

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 2021.

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).

GRI 416-1a: Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.

At the end of 2021, 100% (21 out of 21) of the identified 21 SVHC (Substances of Very High Concern) 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 noncompliance with regulations and voluntary codes regarding our products or services in 2021.

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 1340 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 SDSs 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 SDSs 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 2021, the Kemira Product Stewardship & Regulatory Affairs team responded to 6,721 (6,947 in 2020) 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 customers. During the process complaints are classified with a complaint reason from a predefined list. The process and system in use can exclude those complaints that Kemira has met the agreed requirements with the customers. 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 refers to insufficient information on the label.

During 2021, a total of 45 customer complaints were recorded relating to labeling or product information, of which 29 cases were in the EMEA region, 8 in the Americas, and 8 in the APAC region. All cases have been investigated and needed corrective actions have been implemented.

During 2021, no incidents of non-compliance with regulations resulting in any fine, penalty or warning were reported within Kemira's operations.

Socioeconomic compliance

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

We are not aware of any significant fine or non-monetary sanction for noncompliance with laws or regulations in the social and economic area in 2021.

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 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 SDSs 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 impacts	When legally required, disposal of a product and environmental/social impact are communicated in the SDSs 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 2021, Kemira had 63 (63 in 2020) manufacturing sites of which 63 were included in the environmental reporting scope, and 63 in the auditing scope of our integrated management system. There were no significant changes in the company structure, size or ownership. Kemira offices and other non-manufacturing sites are not included in the environmental reporting, as they do not represent a material share of our environmental related processes.

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, SDGs 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 and solutions 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 purchased goods 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, sponsorship 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 resource efficiency by reducing the use of water, the generation of waste, the need of energy or the use of raw materials in their processes. 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 impacts, and related risks, concern safety in the workplace, safe use of our products along the value chain and human rights issues like non-compliance with responsible business practices in our own operations or those of our upstream business partners.

	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 and Scope 3) • Supplier performance for their environmental impacts 	<ul style="list-style-type: none"> • Materials • Energy • Water and Effluents • Emissions (Scope 1) • 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 & labelling • Socioeconomic compliance 	<ul style="list-style-type: none"> • Supplier performance for their social impacts and ethical business behavior 	

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 done in 2021. Representatives of our key stakeholder groups were interviewed to identify their expectations of 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 GRI disclosure topics. In addition to these GRI topics we also disclose information and performance data on sustainable products and product stewardship, which is material but not covered by the GRI standards.

VALIDATION

Data compilation practices for the identified material topics were reviewed and defined. Group level KPIs and targets are defined for the most material topics which are reported as Corporate sustainability priorities.

REVIEW

GRI 102-47: List of material topics

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

GRI 102-48: Restatements of information

Materials data (GRI 301) updated so that it includes both purchased and received materials. Scope 3 data (GRI 305) reviewed and calculation method for purchased goods and services (category 1) changed from spend-based to volume-based.

Material topics	Topic boundaries	Kemira data collection practices
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		
Sustainable products and solutions (non GRI topic)*	Kemira operations ¹⁾	Product applications are manually linked to product categories. Product sales data is extracted from Kemira's ERP system
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 at the Group level
Greenhouse gas emissions	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at 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.
Other emissions to air	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at the Group level
Water and Effluents	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at the Group level
Waste	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at the Group level
Biodiversity	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at the Group level.
Environmental compliance	Kemira manufacturing sites ³⁾	Data is collected from each production site and consolidated at the Group level
Supplier environmental assessment	Kemira suppliers	Contract Management Tool used to track suppliers' signing of Code of Conduct for BP. Assessment data is stored on both external and internal service platform
Social Standard Series		
Employment*	Kemira operations ¹⁾	HR data management system

GRI 102-49: Changes in reporting

This year GRI 304: Biodiversity was included as a material topic and reported. Also GRI 306: Waste reporting was updated with latest standard from 2020. Furthermore GRI 403: Occupational Health and Safety was reported according to 2018 standard.

Report profile

GRI 102-50: Reporting period

The reporting period is from January 1 to December 31, 2021.

GRI 102-51: Date of most recent report

Kemira's most recent Annual Review including non-financial information (GRI disclosures) was published on February 19, 2021.

GRI 102-52: Reporting cycle

Kemira's Annual Review is published yearly, by calendar year. The Annual Review consists of Business Overview, Sustainability report, 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 Sustainability. 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. However, the updated versions of GRI 303: Water and Effluents (2018), GRI 306: Waste (2020) and GRI 403: Occupational Health and Safety (2018) were applied
- Communication on Progress (COP) of the United Nations Global Compact at Global Compact Active level by using the GRI-standards reporting principles

Material topics	Topic boundaries	Kemira data collection practices
Labor-Management relations*	Kemira operations ¹⁾	Data is collected from each region and combined with the 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⁾	A Human Rights Impact Assessment was conducted in 2014
Supplier social assessment	Kemira suppliers	Contract Management Tool used to track suppliers' signing of Code of Conduct for BP. Assessment data is stored on both external and internal service platform
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⁾	Kemira operations as covered 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 Stewardship and Regulatory Affairs.

Assurance Report

GRI 102-56: External assurance

The corporate sustainability information presented in the Annual Report 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 accountant's assurance report

To the Management of Kemira Oyj.

SCOPE

We have been engaged by Kemira Oyj (hereafter Kemira) to perform a 'limited assurance engagement', as defined by International Standards on Assurance Engagements, hereafter referred to as the engagement, to report on Kemira's Annual Review 2021's pages 21–38 and Sustainability Report 2021 (the "Subject Matter") for the period 1.1.–31.12.2021.

CRITERIA APPLIED BY KEMIRA

In preparing the Subject Matter, Kemira applied the Global Reporting Initiative Sustainability Reporting Standards and Kemira's own internal reporting principles (Criteria). As a result, the subject matter information may not be suitable for another purpose.

KEMIRA'S RESPONSIBILITIES

Kemira's management is responsible for selecting the Criteria, and for presenting the Subject Matter in accordance with that Criteria, in all material respects. This responsibility includes establishing and maintaining internal controls, maintaining adequate records and making estimates that are relevant to the preparation of the subject matter, such that it is free from material misstatement, whether due to fraud or error.

EY'S RESPONSIBILITIES

Our responsibility is to express a conclusion on the presentation of the Subject Matter based on the evidence we have obtained.

We conducted our engagement in accordance with the International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information ('ISAE 3000'), and the terms of reference for this engagement as agreed with Kemira on 26.8.2021. Those standards require that we plan and perform our engagement to obtain limited assurance about whether, in all material respects, the Subject Matter is presented in accordance with the Criteria, and to issue a report. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risk of material misstatement, whether due to fraud or error.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

OUR INDEPENDENCE AND QUALITY CONTROL

We have maintained our independence and confirm that we have met the requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, and have the required competencies and experience to conduct this assurance engagement.

EY also applies International Standard on Quality Control 1, Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements, 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.

DESCRIPTION OF PROCEDURES PERFORMED

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance

Although we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

A limited assurance engagement consists of making enquiries, primarily of persons responsible for preparing the Annual Review 2021's pages 21–38 and Sustainability Report 2021 and related information, and applying analytical and other appropriate procedures.

Our procedures included:

- a. An update of our knowledge and understanding of Kemira's material sustainability reporting topics, organization and activities,
- b. An assessment of suitability and application of the reporting principles regarding the stakeholders' needs for information,
- c. Interviews with senior management to understand Kemira's corporate responsibility leadership,
- d. Interviews with personnel responsible for gathering and consolidation of the corporate responsibility information to understand the systems, processes and controls related to gathering and consolidating the information,
- e. Assessing corporate responsibility data from internal and external sources and checking the data to reporting information on a sample basis to check the accuracy of the data,

- f. Performing recalculation of reported information and evaluating the correctness of underlying data and narrative disclosures,
- g. Virtual visits to Fray Bentos and Tao sites where we assessed reporting practices.

We also performed such other procedures as we considered necessary in the circumstances.

CONCLUSION

Based on our procedures and the evidence obtained, we are not aware of any material modifications that should be made to Annual Review 2021's pages 21–38 and Sustainability Report 2021 for the period 1.1–31.12.2021, in order for it to be in accordance with the Criteria.

RESTRICTED USE

This report is intended solely for the information and use of Kemira and is not intended to be and should not be used by anyone other than Kemira.

Ernst & Young Oy

14.2.2022

Helsinki

Mikko Ryttilahti
Partner, Authorized Public Accountant

Jani Alenius
Leader of Climate Change and
Sustainability Services, EY Finland

GRI Content Index

Abbreviations:

AR = Annual Review

SR = Sustainability report

CG = Corporate Governance

FS = Financial Statements

GRI 102-55

GRI Standard	Disclosure	Page number(s)	Document	United Nations Global Compact
GRI 101: Foundation 2016 General disclosures				
GRI 102: General disclosures 2016	Organizational profile			
	102-1 Name of the organization	p. 6	AR	
	102-2 Activities, brands, products, and services	p. 6	AR	
	102-3 Location of headquarters	p. 6	AR	
	102-4 Location of operations	p. 6	AR	
	102-5 Ownership and legal form		FS	
	102-6 Markets served	p. 6	AR	
	102-7 Scale of the organization	p. 6	AR	
	102-8 Information on employees and other workers	p. 6	AR	
	102-9 Supply chain	p. 15	SR	Principle 8
	102-10 Significant changes to the organization and its supply chain	p. 52	SR	
	102-11 Precautionary Principle or approach	n/a		
	102-12 External initiatives	p. 6	SR	
	102-13 Membership of associations	n/a		
Strategy				
	102-14 Statement from senior decision-maker	p. 4–5	AR	Commitment to Global Compact
	102-15 Key impacts, risks, and opportunities	p. 16–20	FS	
Ethics and integrity				
	102-16 Values, principles, standards, and norms of behavior	p. 18	SR	Principle 6, 8
	102-17 Mechanisms for advice and concerns about ethics	p. 18	SR	Principle 1, 6, 8

GRI Standard	Disclosure	Page number(s)	Document	United Nations Global Compact
	Governance			
	102-18 Governance structure	p. 9	SR	
	102-19 Delegating authority	p. 9	SR	
	Stakeholder engagement			
	102-40 List of stakeholder groups	p. 4–5	SR	
	102-41 Collective bargaining agreements	p. 49	SR	Principle 3
	102-42 Identifying and selecting stakeholders	p. 4–5	SR	
	102-43 Approach to stakeholder engagement	p. 4–5	SR	
	102-44 Key topics and concerns raised	p. 4–5	SR	
	Reporting practice			
	102-45 Entities included in the consolidated financial statements	p. 28–29	FS	
	102-46 Defining report content and topic Boundaries	p. 52, 54–55	SR	
	102-47 List of material topics	p. 54–55	SR	
	102-48 Restatements of information	p. 55	SR	
	102-49 Changes in reporting	p. 55	SR	
	102-50 Reporting period	p. 55	SR	
	102-51 Date of most recent report	p. 55	SR	
	102-52 Reporting cycle	p. 55	SR	
	102-53 Contact point for questions regarding the report	p. 55	SR	
	102-54 Claims of reporting in accordance with the GRI Standards	p. 55	SR	
	102-55 GRI content index	p. 58–67	SR	
	102-56 External assurance	p. 56–57	SR	

GRI Standard	Disclosure	Page number(s)	Document	United Nations Global Compact
Material Topics				
Sustainable products and solutions	Own material topic			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 13	SR	
	103-3 Evaluation of the management approach	p. 13	SR	
Own KPI	Product sustainability	p. 23	SR	
GRI 200 Economic Standard Series				
ECONOMIC PERFORMANCE				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 20	SR	
	103-3 Evaluation of the management approach	p. 20	SR	
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	p. 20	SR	
	201-3 Defined benefit plan obligations and other retirement plans	p. 18–19	CG	
	201-4 Financial assistance received from government	n/a		
ANTI-CORRUPTION				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 21	SR	
	103-3 Evaluation of the management approach	p. 21	SR	
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	p. 21	SR	Principle 10
	205-2 Communication and training about anti-corruption policies and procedures	p. 21–22	SR	Principle 10
	205-3 Confirmed incidents of corruption and actions taken	p. 22	SR	Principle 10

GRI Standard	Disclosure	Page number(s)	Document	United Nations Global Compact
ANTI-COMPETITIVE BEHAVIOR				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 22	SR	
	103-3 Evaluation of the management approach	p. 22	SR	
GRI 206: Anti-competitive Behavior 2016	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	p. 22	SR	
GRI 300 Environmental Standards Series				
MATERIALS				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 24	SR	
	103-3 Evaluation of the management approach	p. 24	SR	
GRI 301: Materials 2016	301-1 Materials used by weight or volume	p. 24	SR	
	301-2 Recycled input materials used	p. 24	SR	Principle 7, 8
ENERGY				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 24–26	SR	
	103-3 Evaluation of the management approach	p. 24–26	SR	
GRI 302: Energy 2016	302-1 Energy consumption within the organization	p. 24–26	SR	Principle 7, 8
	302-3 Energy intensity	p. 24–26	SR	Principle 8
	302-4 Reduction of energy consumption	p. 24–26	SR	Principle 8, 9
WATER				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 29–32	SR	

GRI Standard	Disclosure	Page number(s)	Document	United Nations Global Compact
	103-3 Evaluation of the management approach	p. 29–32	SR	
GRI 303: Water 2018	303-1 Interactions with water as a shared resource	p. 29–32	SR	Principle 7,8
	303-2 Management of water discharge-related impacts	p. 29–32	SR	
	303-3 Water withdrawal	p. 29–32	SR	Principle 7,8
	303-4 Water discharge	p. 29–32	SR	Principle 7,8
	303-3 Water consumption	p. 29–32	SR	Principle 8
BIODIVERSITY				
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	p. 54–55	SR	
	103-2 The management approach and its components	p. 36–37	SR	
	103-3 Evaluation of the management approach	p. 36–37	SR	
GRI 304 Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	p. 36–37	SR	
	304-2 Significant impacts of activities, products, and services on biodiversity	p. 36–37	SR	
	304-3 Habitats protected or restored	p. 36–37	SR	
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	p. 36–37	SR	
EMISSIONS				
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