

# Business Overview 2017

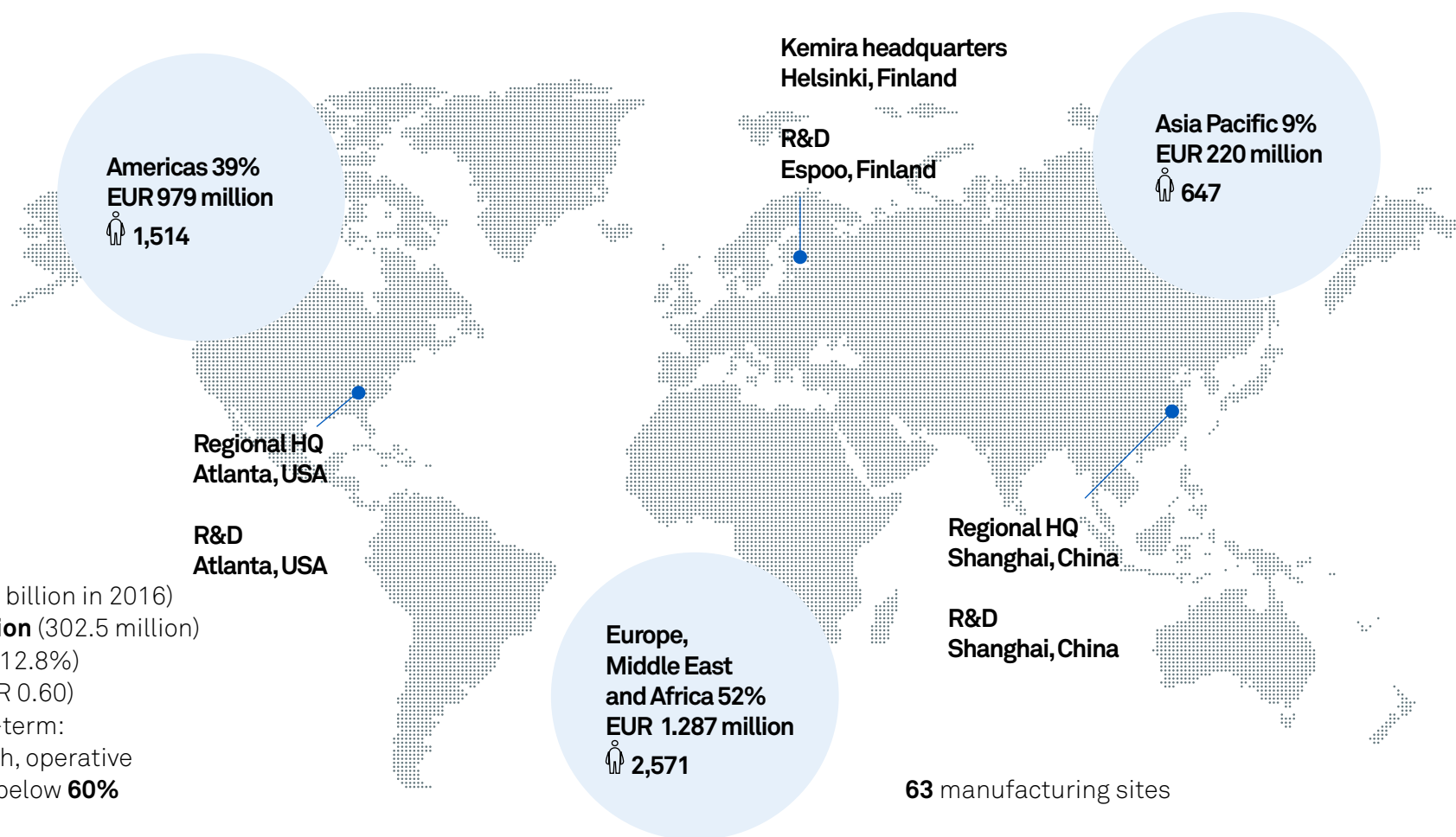


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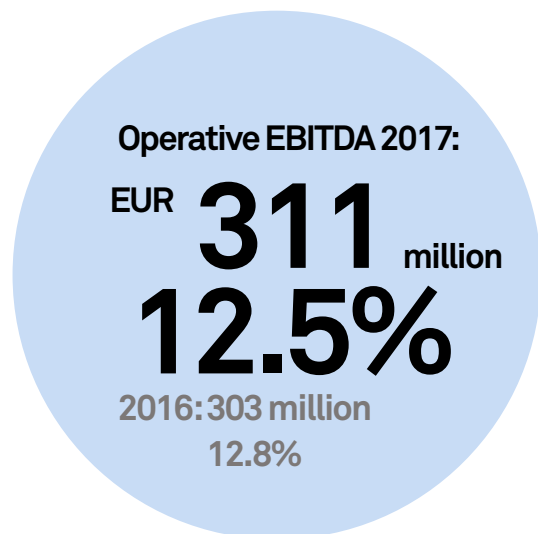
## The first choice in chemistry for water intensive industries

**Kemira** is a global chemicals company serving customers in water intensive industries. We provide expertise, application know-how and chemicals that improve our customers' product quality, process and resource efficiency. Our focus is on pulp & paper, oil & gas and water treatment. Kemira shares are listed in the Nasdaq Helsinki Ltd.

Revenue **EUR 2.5 billion** (EUR 2.4 billion in 2016)  
 Operative EBITDA **EUR 311.3 million** (302.5 million)  
 Operative EBITDA margin **12.5%** (12.8%)  
 Earnings per share **EUR 0.52** (EUR 0.60)  
 Financial targets on mid- to long-term:  
 Above-the-market revenue growth, operative EBITDA margin **14–16%**, gearing below **60%**



## Performance 2017



### Occupational health and safety

Target 2020: 2.0

2017: **3.9**  
2016: 3.4



### Innovation sales of total revenue

Target 2017: 10%

2017: **10%**  
2016: 9%



### Climate change: Kemira Carbon Index

Target 2020: 80

2017: **85**  
2016: 86



### Leadership development

Two (2) leadership development activities per people manager position during 2016–2020

Target 2020: 1,500

2017: **1,036**  
2016: 494



## Business model

### Inputs

#### Equity:

EUR 1,173 million

#### Interest-bearing liabilities:

EUR 861 million

#### Cash:

EUR 166 million

**Legal entities in 40 countries,  
63 manufacturing sites**

#### Key relationships:

customers, suppliers, distributors & agents, industrial partners for secondary raw materials

**4,732 professionals worldwide**

**244 R&D experts in 3 centers**

**1,525 patents**

#### Total materials purchased:

- 3.5 million tonnes, 23% recycled
- Total energy purchased 4,875 GWh

### Business Activities

#### Sustainable products and solutions:

- Unique strategy based on expertise, application knowhow and chemicals for customers in water intensive industries.
- Enabling our customers to improve their water, energy and raw material efficiency
- Product stewardship: Ensuring safety of our products

#### Responsible operations and supply chain

- Lowering costs & environmental impacts of our operations
- Workplace safety
- Sustainability in sourcing and supply chain management

#### People and integrity

- Compliance to Kemira Code of Conduct
- Employee engagement
- Leadership development

### Outputs

#### Sustainable products and solutions, market position

- Polyacrylamide polymers #2
- Coagulants #1
- Sizing #1
- Chlorate & peroxides #2

#### Revenue received from customers

- EUR 2,486 million

#### Services

- Technical expertise, incl application support and total chemistry management
- Process control & monitoring

#### Emissions and waste

- Scope 1 + Scope 2 market-based (CO<sub>2</sub> eq.) = 953,000 tonnes
- Total waste disposal 110,000 tonnes

### Outcomes

#### Customers

- Product quality, product yield optimization, and minimizing environmental impacts
- Process and energy efficiency
- Water quality and regulatory compliance
- Customer Net Promoter Score 30 (2016: 28; industry average 26). Target 2020: 40.

#### Society

- Purified water, suitable for reuse
- Sustainable use of biobased materials: recycled fibers
- Less water and energy used in industrial processes
- More efficient extraction and use of non-renewable resources: oil, minerals and water
- Income taxes paid: EUR 24.7 million

#### Shareholders & lenders

- EUR 113 million paid in dividends and interests in 2017

# Growth investments and efficiency measures starting to bear fruit

The year 2017 was marked by revenue growth driven mainly by the uptake in the oil and gas markets, investments in new capacity, and operational efficiency measures that started to bear fruit.

Markets remained volatile with currencies being a headwind on revenue and higher raw material prices putting pressure on profitability. Despite these turbulent circumstances we were able to deliver solid financial performance and achieved our outlook for 2017.

## Continued growth in 2017

Our full-year revenue amounted close to EUR 2.5 billion with organic growth of 6% which is a good achievement. We improved our operative EBITDA to EUR 311 million according to our outlook given in February 2017, and achieved an operative EBITDA margin of 12.5%. Our oil & gas business was the main driver for our revenue growth as especially demand for polymers used in North American shale oil & gas industry increased significantly. We also had solid volume growth in our pulp & paper and water treatment businesses.

In 2017, we consolidated our organization into two segments: Pulp & Paper and Industry & Water. Our operational excellence program BOOST advanced both in Europe and North America, and we opened new production lines in Nanjing, China, and in Joutseno, Finland, to serve the growing pulp and paper industry. To accelerate our profitable growth in the Asia-Pacific (APAC) region, we signed an agreement to form a new joint venture in China which will secure the supply of a key raw material for AKD wax, and strengthen further our position in the pulp & paper sizing chemicals market. We also announced an investment of EUR 30 million in polymer technology for Chemical Enhanced Oil Recovery (CEOR) on the basis of an anticipated uptake in customer demand. Looking forward, we continue the execution of our strategy with the goal of delivering revenue growth above-the-market with an operative EBITDA margin of 14–16%.



## Building blocks for the future

Kemira is well positioned in terms of megatrends that drive our strategy – we add value to our customers through expertise and chemicals that improve their product quality, process and resource efficiency. Long-term drivers for Kemira's strategy and growth are related to recycling and

**“Kemira has a strong foundation and good building blocks in place for the future.”**

**JARI ROSENDAL**  
PRESIDENT AND CEO

the use of renewable materials, a growing middle-class and standards of living, e-commerce, regulation, and scarcity of resources. Increasing recycling requires chemistry to produce strong but light packaging materials. Urbanization, along with a growing middle-class and increased standards of living, impacts the use of water, energy, as well as board, tissue and paper, and there is a growing need to create more with less raw materials. Regulation is driving the water treatment requirements of our customers and we want to be their partner in creating more efficient, digital and sustainable water treatment solutions.

The increasing demand for low-carbon energy, through for example from sludge treatment to biogas, is an opportunity for Kemira. The need to better utilize the existing oil and gas

reserves is offering new opportunity as Kemira's polymers can be used to prolong life of oil wells. E-commerce increases the need for packaging materials and Kemira is well-positioned in offering chemistry for lighter, stronger and more sustainable packages. Digitalization creates growth opportunities for us but also decreases the need for paper used in printing and writing. Our operating environment is also impacted by the continued raw material pricing volatility and this we need to mitigate in our operations.

Overall, the market is going in a direction that provides us with a continued opportunity to bring value to the market and to the end-customers, the everyday consumers. Through the bioeconomy, we have opportunities to diversify our raw material base, but also to offer chemicals and expertise which enable creating sustainable solutions for tomorrow in the value chains of our customer industries.

To summarize our strategy going forward: Kemira is aiming for profitable growth, while at the same time having a strict focus on improving and optimizing efficiency, and keeping prudent operating cost discipline. We aim to capture our future growth opportunities through several initiatives: new capacity expansions for pulp & paper chemicals, new Total Chemistry Management (TCM) contracts, using digital solutions in water treatment (Advanced Water Treatment), innovation developed in close cooperation with our customers and initiatives around oil sands and Chemical Enhanced Oil Recovery. We are especially seeking growth in the APAC region. I see that Kemira has a strong foundation and good building blocks in place for the future.

## Corporate responsibility supporting our long-term value creation

Corporate responsibility is our contribution to sustainable development and it is at the core of what we do, e.g. our products are used to purify the equivalent of 320 million people's annual water usage. Our corporate responsibility work is guided by the increasing expectations of our customers, investors and other stakeholders, as well as by our own strategy and Code of Conduct, and internationally defined principles.

In 2017, we reviewed our corporate responsibility program to reflect the most important topics raised by our stakeholders and which relate to our overall value proposition and long-term risk profile. We focus the active management of corporate responsibility on three priorities which are: offering sustainable products and solutions, ensuring responsible operations and supply chain, and engaging people and fostering integrity.

We create sustainable value by innovating and improving product performance, by reducing the environmental footprint of our value chain, and by improving safety throughout product lifecycles. We reached the innovation sales target 10% by the end of 2017 (2016: 9%) and we launched 11 new products in 2017 (2016: 14). At the end of 2017, Kemira had 389 (348) patent families, 1,525 (1,236) granted patents, and 1017 (860) pending applications.

Despite our long-term efforts to enhance our health and safety culture, the safety performance did not improve

## “Safety performance is included in everyone's bonus scorecards in Kemira.”

JARI ROSENDAL  
PRESIDENT AND CEO

in 2017, due to weaknesses in risk management and the implementation of some critical standards for safe working practices. The frequency of total recordable injuries (TRIF) per million work hours covering our employees and contractors working at Kemira sites increased to 3.9 (2016: 3.4). As a mitigation measure, we now focus our efforts on providing better support to the sites to implement safe working practices. Safety performance is also included in everyone's bonus scorecards in Kemira.

Our main environmental impact relates to the carbon emissions from our manufacturing. In 2017, we continued to invest in more energy efficient equipment and production lines through our E3Plus energy efficiency program. Our target is to reduce the Kemira Carbon Index by 20 percentage points by the end of 2020, compared to the baseline year 2012 (100). In 2017, the Kemira Carbon Index was 85 (2016: 86). We achieved a slight decrease in the carbon index compared to 2016 despite an approximately 7% production

volume increase through the use of carbon neutral energy sources and the implementation of energy efficiency projects.

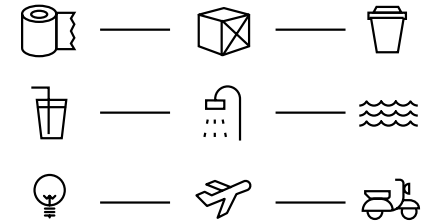
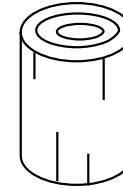
### Number one globally

Kemira continues to be number one globally combined in bleaching, process and functional chemicals for the pulp and paper industry – and the market leader in chemical water treatment in Europe and North America. Kemira will turn 98 this year. During these near 100 years, we have gained extensive knowledge and technology and this allows us to serve our customers in pulp, paper, oil, gas and water treatment in the best possible way. Our goal is to be the most customer oriented company in the industry and we want to be the first choice in chemistry for our customers.

**JARI ROSENDAL,**  
**PRESIDENT AND CEO**

## OUR PURPOSE

**We enable our customers to improve their water, energy and raw material efficiency**



### GLOBAL TRENDS

-  **Recycling** and use of renewables leads to a need for more chemicals to e.g. make the board and paper strong again
-  **E-commerce** drives the need for packaging material
-  **Growing middle class** increases standards of living and urbanization leads to higher usage of water, energy, tissue, board and paper
-  **Regulation** increases the amount of water treatment
-  **Scarcity of resources** accelerates the need to produce more with less



### OUR CUSTOMERS

**Pulp & Paper**  
**Water treatment**  
**Oil & Gas**



### OUR OFFERING

We provide expertise, application knowhow and chemicals that improve our customers' product quality, process and resource efficiency.

### OUR VALUES

**We drive performance and innovation. We are dedicated to customer success.**  
**We care for people and the environment. We succeed together.**

### WHERE WATER MEETS CHEMISTRY™

#### OUR VISION

**Our vision is to be the first choice in chemistry for water intensive industries**

#### OUR STRATEGY

We aim to grow profitably through new product innovations and capacity expansions serving growing demand, as well as through selective acquisitions. Our target is to grow above-the-market with an operative EBITDA margin of 14–16%.





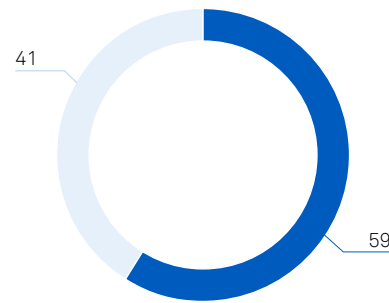
## Kemira – where water meets chemistry

**KEMIRA IS** a global chemicals company, with revenue of around EUR 2.5 billion, serving customers in water-intensive industries. During 2017, we merged our previous Municipal & Industrial and Oil & Mining segments into one new segment, Industry & Water, to simplify the way of working and gain efficiencies.

In Pulp & Paper, we have unique expertise in applying chemicals and in helping pulp and paper producers to innovate and constantly improve their operational efficiency and environmental impacts. Kemira is the only company in the industry with a major global presence in pulp, packaging and paper chemicals. Thanks to an increased focus on this business, combined with strategic investments and selective acquisitions, we have been able to grow and become the global market leader.

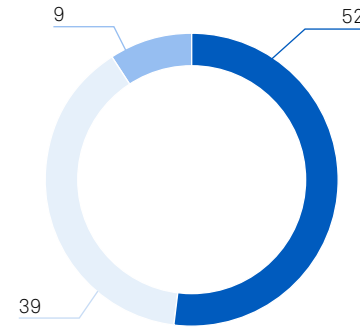
Industry & Water supports municipalities and water-intensive industries in the efficient and sustainable utilization of resources. In water treatment, we help in optimizing every stage of the water cycle. In oil and gas applications, our chemistries enable improved yield from existing reserves and reduced water and energy use.

**Segment split %**



- Pulp & Paper  
#1 globally
- Industry & Water  
#1 chemical water treatment in North America and Europe  
#1 in friction reducers used in shale in North America

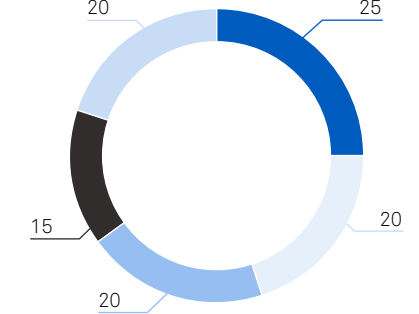
**Geographies %**



- Europe  
1. Finland, 2. Sweden, 3. Germany
- Americas  
1. USA, 2. Canada, 3. Brazil
- APAC  
1. China, 2. South-Korea 3. Indonesia

**Products %**

Revenue by product category rounded to the nearest 5%



- Bleaching and pulping
- Coagulants
- Polymers
- Sizing and strength
- Other: e.g. defoamers, dispersants, and biocides

**8,000**  
Sold-to customers

**16,000**  
Ship-to customers

# Revenue and operative EBITDA are on positive trend

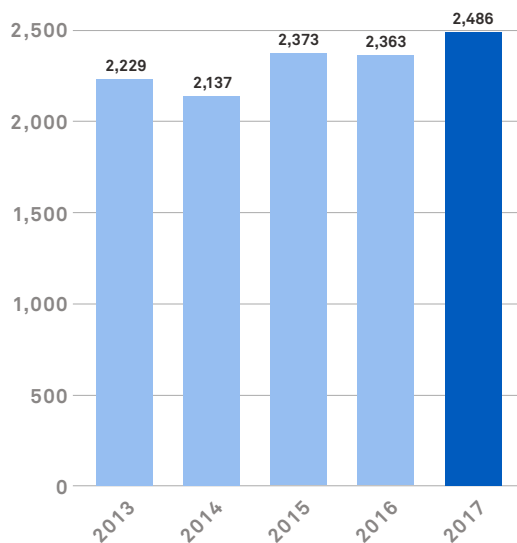
**KEMIRA HAS** grown its revenue organically and with selective acquisitions to EUR 2.5 billion from EUR 2.2 billion since 2013.

During the previous five-year time period, the acquisition of AkzoNobel's paper chemicals in 2015 was the largest acquisition. In 2013, we completed multiple divestments from formic acid to food and pharmaceutical businesses, and since then the focus has been on serving water-intensive industries, namely pulp & paper, oil & gas and water treatment. The transactions have enabled Kemira to become one of the leading chemical companies in those chosen categories. In 2017, the Group's revenue growth was +5% driven by strong demand in the North American oil & gas business which grew 56%. Our water treatment business continued to grow and pulp & paper revenue grew by 1% due to volume growth.

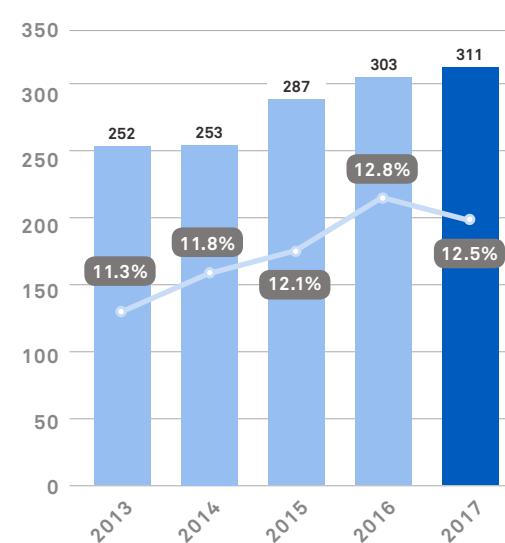
Operative EBITDA has increased during 2015–2017 due to acquisition of AkzoNobel paper chemicals business, investments into new production capacity and operational efficiencies. In 2017, operative EBITDA increased by 3% to EUR 311 million. Kemira's guidance for 2018 expects

operative EBITDA to increase from the prior year. Our mid- to long-term profitability target is an operative EBITDA margin of 14–16% and actions to reach the target are shown on page 16.

**Revenue**  
EUR million



**Operative EBITDA**  
EUR million



## Kemira operates in growing markets

Both our segments, Pulp & Paper and Industry & Water, operate in growing markets with an expected annual market growth rate of 3% until 2022. In 2017, organic growth in Pulp & Paper was 2% and in Industry & Water 12%, driven by sales volume growth. Kemira is targeting to achieve mid- to long-term above-the-market growth.

The market growth is driven by multiple global trends, for example:

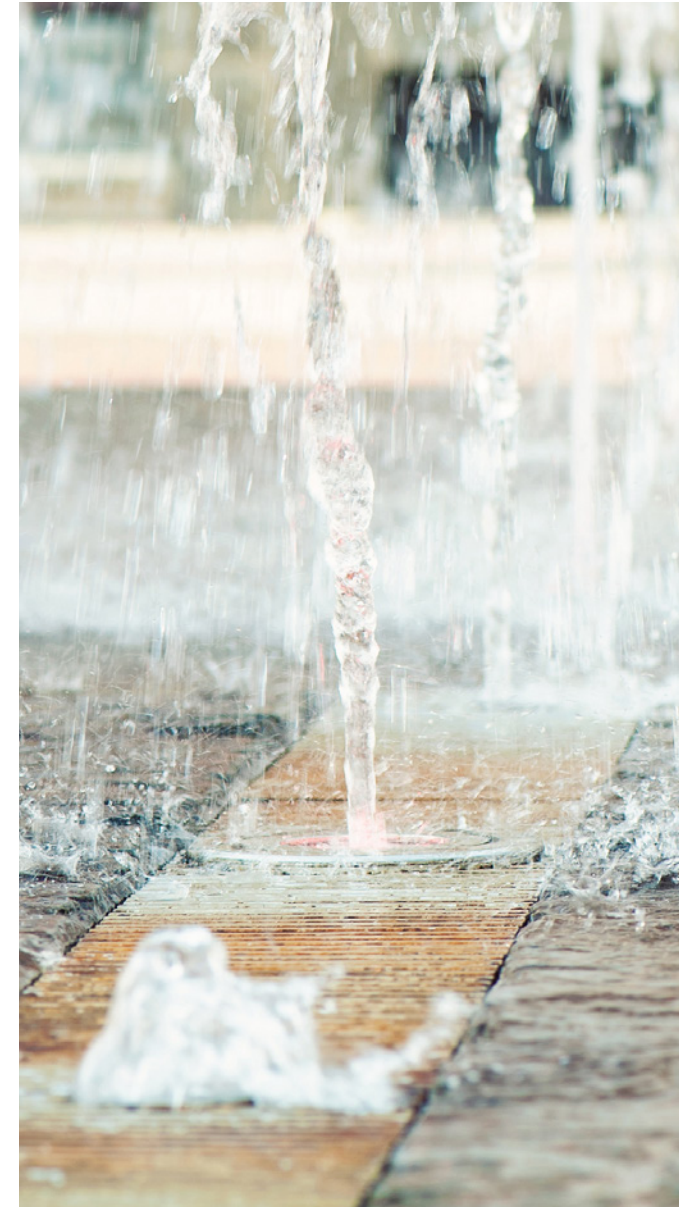
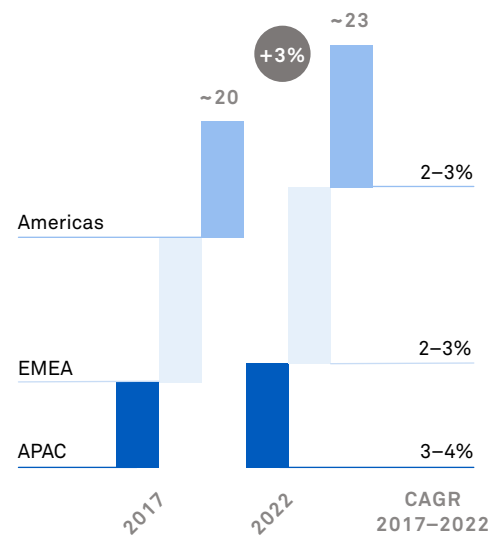
- E-commerce drives the need for packaging material
- Growing middle class, increased standards of living and urbanization leads to higher usage of water, energy, tissue, and board
- Recycling and use of renewables leads to e.g. higher usage of strength chemicals
- Regulation increases water treatment
- Scarcity of resources accelerates need to produce more with less

### Challenges

- Risks to global GDP growth
- Decline in demand for printing and writing paper
- Regulatory changes

### Relevant target market EUR billion

Management estimation based on various sources

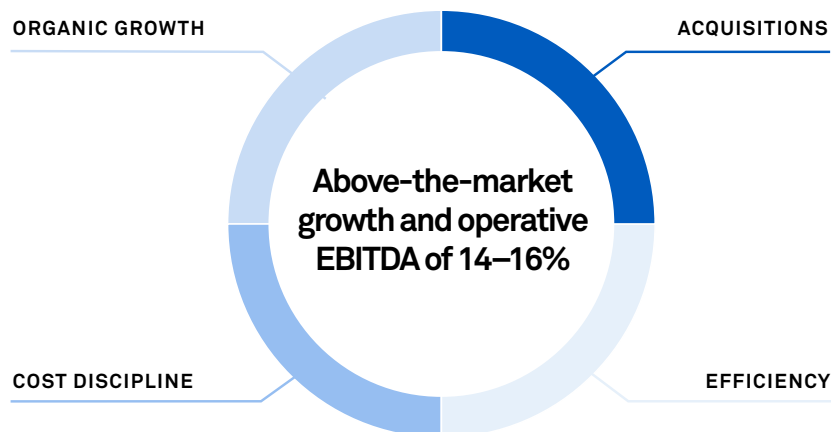


## Cornerstones of Kemira's strategy

**THE FOUR AREAS OF** Kemira's strategy illustrate how we plan, operate and execute our strategy to achieve our financial targets.

To fuel **organic growth**, we have been investing into capacity in areas where we see further growth and where we see our capacity being constrained, for example sodium chlorate, a bleaching chemical for the growing pulp business. We capture growth opportunities, whether it's new geographies, new customers, or new applications. Notable examples include oil sands and Chemical Enhanced Oil Recovery. Both applications did not generate any revenue a few years ago, but are now becoming meaningful new businesses with revenue in tens of millions of euros.

We are both very selective and careful with regards to **acquisitions**. In 2016 and 2017, we did not complete any acquisitions. In September 2017, Kemira signed an agreement to form a joint venture in China, which is 'practically' an acquisition of paper chemical manufacturer, and the transaction is expected to close in the first half of 2018. The deal represents an excellent strategic fit and is accretive to Kemira's profitability in 2019.

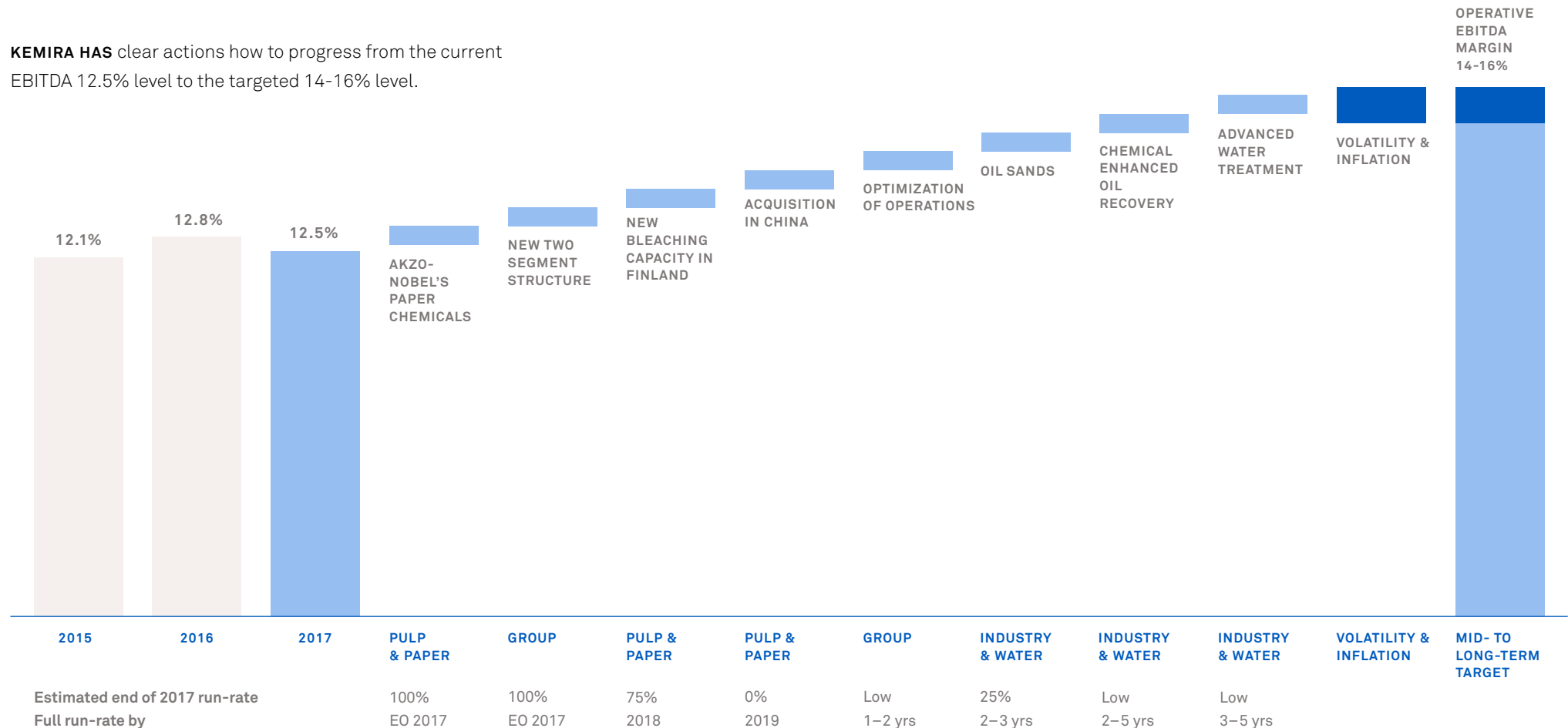


In the area of **efficiency**, there is an inherent complexity in the environment where Kemira operates, with its 63 manufacturing sites, 200 warehouses and 16,000 ship-to locations. This means we need to continuously strive for efficiency in our operations. In 2016, we introduced our BOOST program which mainly aims to simplify our processes from the sourcing of materials to the customer delivery. In 2017, we have also adjusted our organizational structure and worked to simplify our complexity. **Cost discipline** in daily operations is self-evident and a way to keep the business in good financial shape.



## Our key actions to improve profitability

**KEMIRA HAS** clear actions how to progress from the current EBITDA 12.5% level to the targeted 14-16% level.



## Core elements driving Kemira towards the targets

**KEMIRA HAS** opportunities to grow by investing in growing applications. However, the investments will be implemented with strict focus on maintaining a solid balance sheet and improving cash flow. Kemira's capital expenditure is targeted to be around EUR 160–200 million in 2018, and was EUR 190 million in 2017 and EUR 213 million in 2016.

Innovation will also be a key tool to fuel growth in the future and we want to capture market opportunities, for example in Chemical Enhanced Oil Recovery, where we see good potential for long-term growth. We continue to increase efficiency and work hard to reach our financial targets.

**Investments will be implemented with strict focus on maintaining a solid balance sheet and improving cash flow.**

**BALANCED CASH FLOW AND CAPEX**

**GROW BY INVESTING, INNOVATING AND CAPTURING MARKET OPPORTUNITIES**

**INCREASE EFFICIENCY**

**GROUP'S MID- TO LONG-TERM TARGETS**

**Above-the-market growth**  
**Operative EBITDA 14-16%**  
**Gearing below 60%**

Dividend policy: stable and competitive dividend

## Innovation is supporting Kemira's growth

Our innovation work is addressing global trends for recycling, e-commerce, growing middle class, regulation and scarcity of resources.

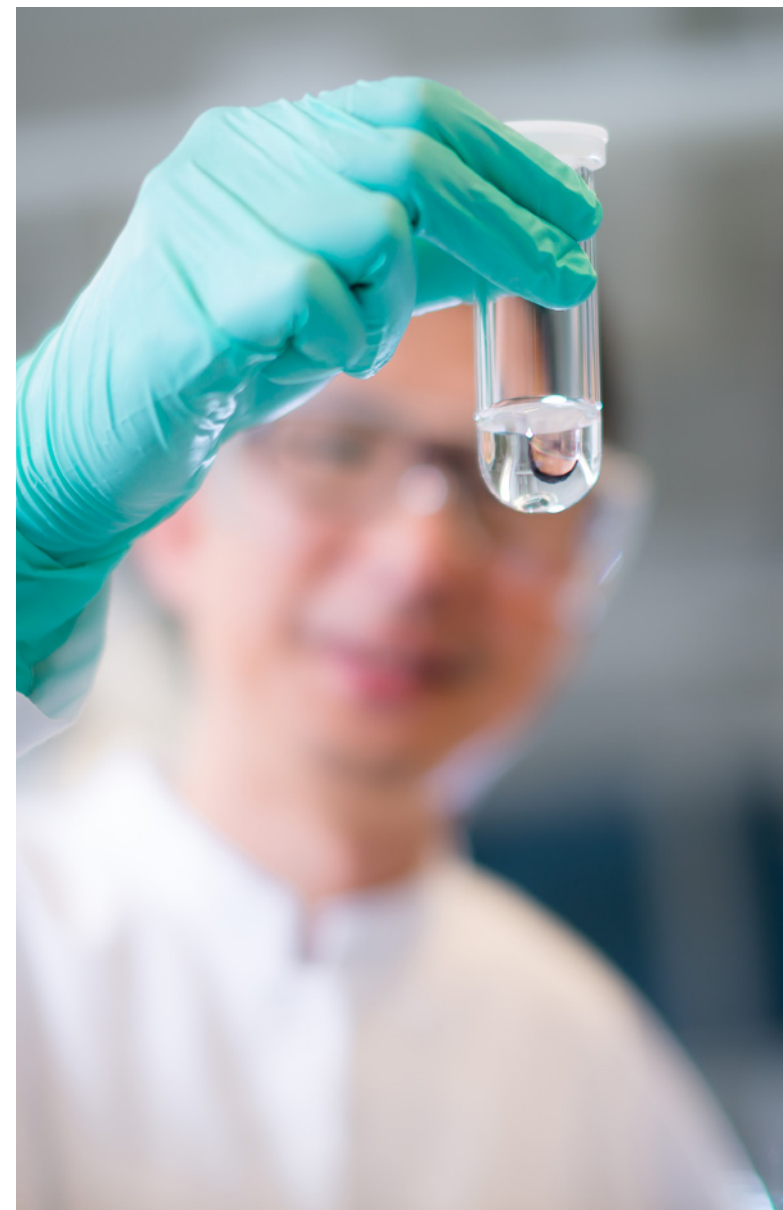
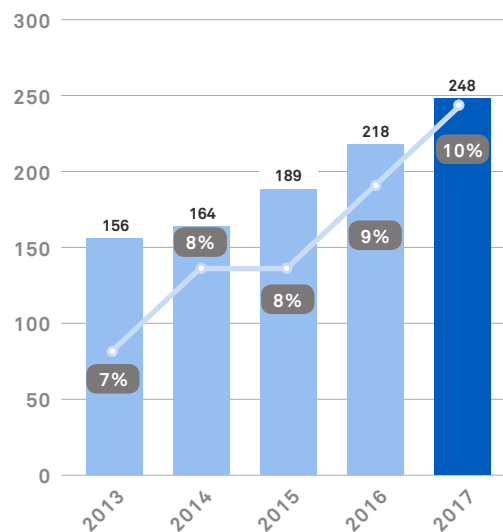
**PRODUCT AND SOLUTIONS** addressing our customers' needs are an crucial part of Kemira's long-term strategy and growth.

We have 240 experts in our three R&D and Technology centers in Atlanta (US), Espoo (Finland), and Shanghai (China). During 2017 Kemira received 52 (48) new patents and introduced 11 (14) new products.

Our innovation capability is measured through an innovation sales target to ensure portfolio renewal with new and more sustainable products. We define innovation sales as new chemistries, product upgrades and tailored chemistries sold into new applications, developed and launched within the last 5 years.

In 2017, we invested about EUR 30 million (1.2% of revenue) into R&D and technical customer service. Technical customer service is an important part of launching new products, supporting customers and also getting continuous feedback from customer processes.

**Kemira's innovation revenue**  
EUR million



## People

We strive to attract, develop and retain the right mix of talented people for the continued success and growth of Kemira.

To implement our strategy, we must ensure that we have committed people, a strong leadership bench and the indispensable competencies in place to implement our strategy. This is achieved by focusing on our culture and commitment to people.

Safety culture is our priority in all our locations globally. We are continuously developing safety awareness to prevent incidents and mitigating health and safety risks.

Skilled leaders are key to the successful execution of Kemira's strategy. We continue to help our leaders to develop by running on-the-job learning, stretch projects, coaching and mentoring schemes, and development programs. Kemira's performance management process aligns our strategic targets with each employee's personal targets, performance evaluation, competencies and development plans.





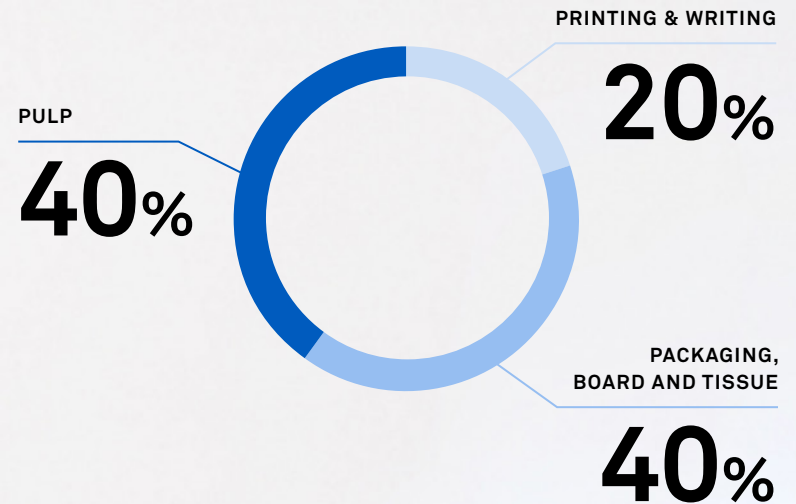
Pulp & Paper

## From wood to fiber-based materials

We enable pulp to turn into tissue that is a little bit softer, but stronger. Our application expertise, technology and smart process management help our customers to improve their process efficiency, productivity and end-product quality.



Kemira Pulp & Paper customers



## Pulp & Paper – driving growth as market leader

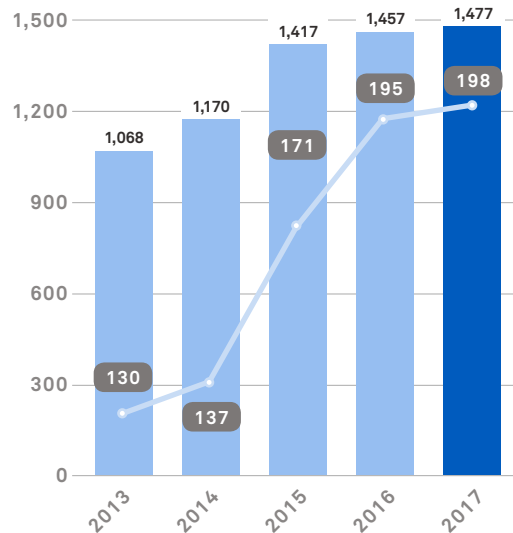
During the last 10 years, Pulp & Paper has worked its way from position #5 to #1 with organic growth and carefully selected acquisitions. Pulp & Paper has a global market share of around 16%.

**GROWTH IN** the use of pulp & paper chemicals is driven by higher production volumes for board and tissue grades. Kemira has unique expertise in chemical applications, and we are well-placed to help our pulp & paper producing customers to innovate and constantly improve their operational efficiency and end-product quality. We are working to support our customers through the transition to a bio-based economy, by enabling production with fewer inputs, lower environmental impacts and a reduced water footprint.

Our pulp & paper business is expected to grow at an above-the-market growth rate. The relevant market's compounded annual growth rate (CAGR) is estimated to be 1%. The majority of the growth is expected to occur in emerging markets in South America and the APAC region. There is also an increased demand for pulp chemicals in the Nordic region, where several expansion projects are ongoing or have been announced. Thanks to our comprehensive offering, our

global reach and our strong application knowhow, Kemira is well positioned to serve the pulp and paper industry globally.

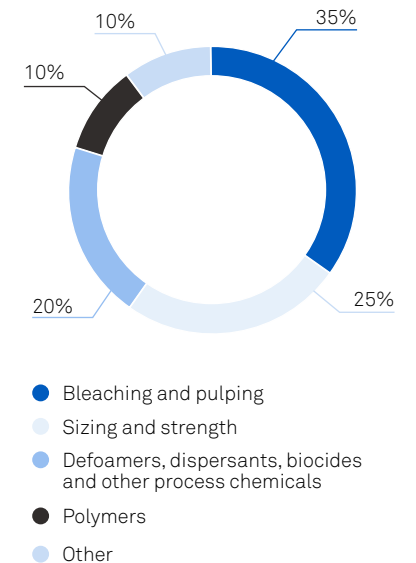
**Revenue and operative EBITDA**  
EUR million



### Market positions

- #1 Kemira (pulp and paper)
- #2 BASF (paper)
- #3 Solenis (paper)
- #4 AkzoNobel (pulp)
- #5 Ecolab (paper)

### Revenue by product category



Successful value creating investments – case Joutseno

## Successful value creating investments

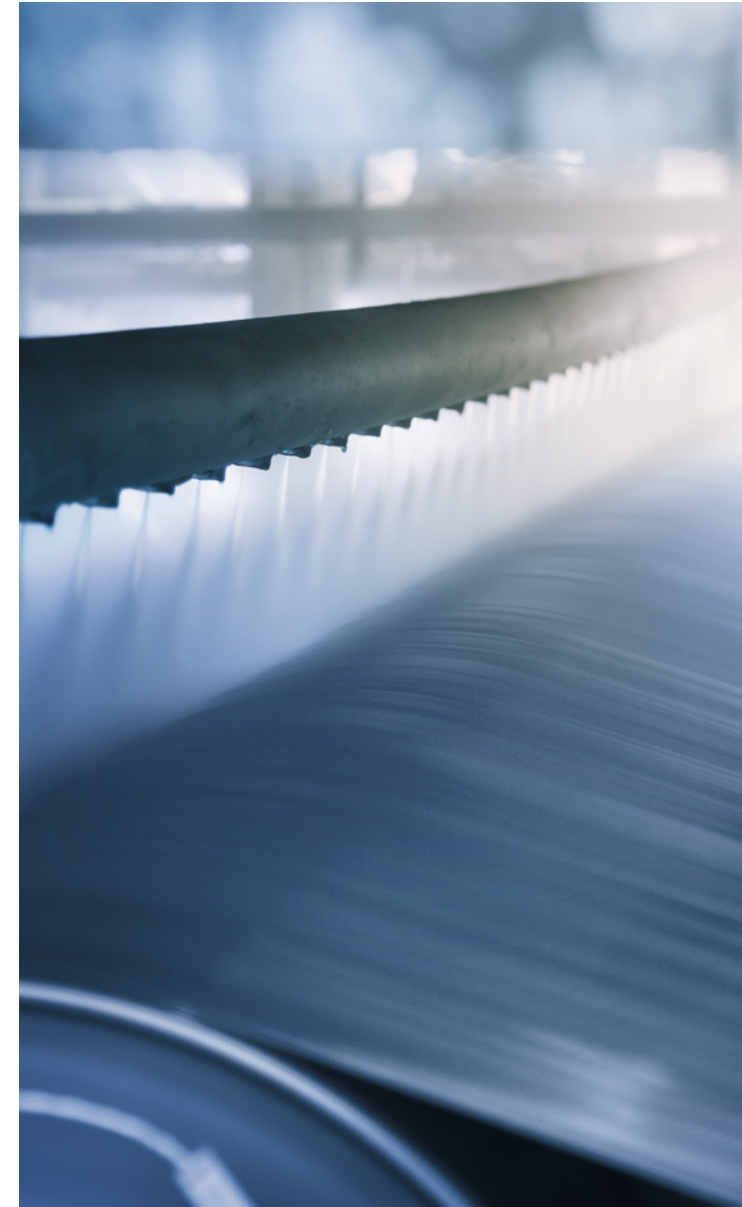
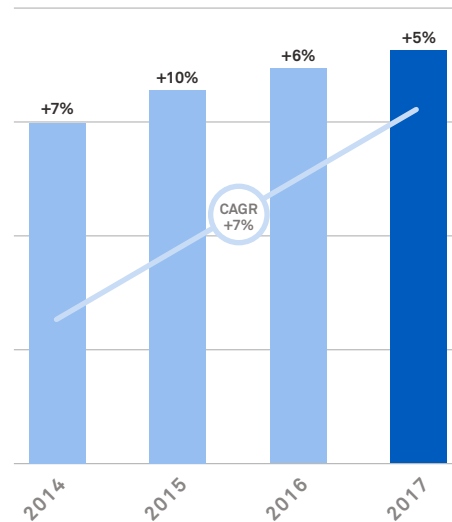
Growing global demand in packaging, board and tissue is driving the need for pulp. In the pulp producing process, bleaching chemistry is a key component. Kemira as one of the leading pulp chemical providers is benefiting from the growth in the pulp & paper market.

The most recent example of our successful investments is the sodium chlorate capacity addition in Joutseno, Finland. The investment doubles tonnage at the site.

### Key elements of the investment:

- Customer demand for bleaching chemicals is steadily increasing in a tight Nordic market, hence the need for additional capacity
- Capacity doubled in Joutseno with approximately EUR 50 million investment
- Investment completed according to budget and start-up was ahead of schedule in autumn 2017
- Targeting maximum capacity utilization in from beginning of 2018
- Part of the production will be shipped to other regions to support growth

**Kemira bleaching chemicals revenue growth**



## APAC is the fastest growing region

E-commerce, a growing middle class, increased standards of living and urbanization are the main factors behind economic growth in the Asia-Pacific region. Kemira benefits from these megatrends as the growth leads to higher usage of board, tissue and water.

APAC is the fastest growing region with around 3–4% annual growth in chemicals. Our business has doubled in the last three years. A new manufacturing site in Nanjing, China, opened in 2014 and the acquisition of AkzoNobel's paper chemicals in 2015 have helped to grow the business in the region.

During the last five years, our growth in APAC region has been strong, and we have been able to achieve #1 market position. In addition, our water treatment business continues to grow, albeit from a smaller base.

In the first half of 2018, we expect to close the acquisition of 80% of Tiancheng. The joint venture with Tiancheng (NewCo), will mainly produce AKD wax and its key raw material, fatty acid chloride. AKD wax is a sizing chemical used in board and paper manufacturing to create resistance against liquid absorption. Kemira is the global market leader in sizing chemicals. In addition, NewCo plans to produce polyaluminum chloride which is a coagulant for water treatment. We are really excited about the transaction and expect it to further enhance our growth and profitability in APAC.



Industry & Water

## Chemistry solutions for sustainable water treatment and resource extraction

We help in optimizing every stage of the water cycle. In oil and gas applications, our chemistries enable improved yield from existing reserves and reduced water and energy use.

Industry & Water application split

WATER TREATMENT

70%

OIL & GAS

20%

OTHER

10%

# Industry & Water - stronger platform for profitable growth

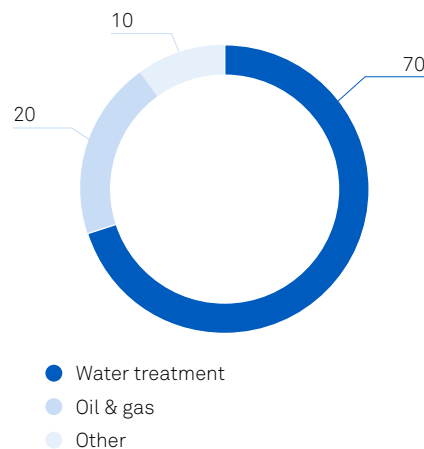
Industry & Water focuses on water treatment and selected oil & gas applications. We are the leading chemicals supplier for raw water, waste water and sludge treatment applications in Europe and North America. In oil & gas, we have focused on polymers used in the shale fracking industry, more precisely in friction reduction, where we have a leading position with over 30% market share. In addition, we have a growing business in oil sands and Chemical Enhanced Oil Recovery which brings stability to the more volatile shale oil & gas business.

The water treatment market is driven by regulation. We are the only manufacturer offering a full product portfolio of coagulants, polyacrylamide polymers and other water treatment chemicals. This makes our position in the market unique.

In oil & gas, we are well-positioned in the shale industry and growing fast in water treatment related to unconventional oil recovery in Canada, and polymers used in Chemical Enhanced Oil Recovery (CEOR). In CEOR, we are currently investing in new polymer manufacturing capacity in Europe.

Our Industry & Water segment is expected to grow faster than the market. The water treatment market is estimated to grow around 2–3% and the oil & gas market around 5–6% per annum until 2022.

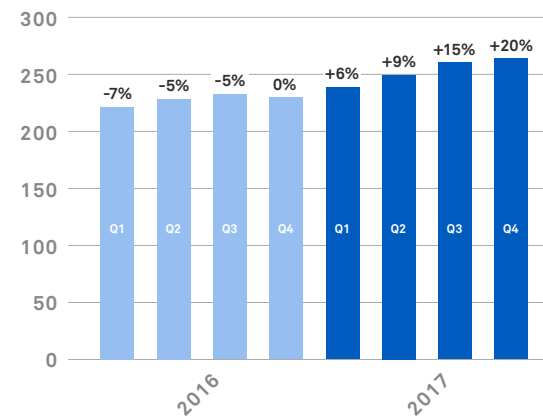
Industry & Water application split



Main competitors

Main competitors in coagulants: Chemtrade, Feralco, Kronos, PVS, and USALco.  
Main competitors in polymers: BASF, SNF, and Solenis.

Revenue and organic growth (Y-O-Y)  
EUR million



## Next generation of water treatment

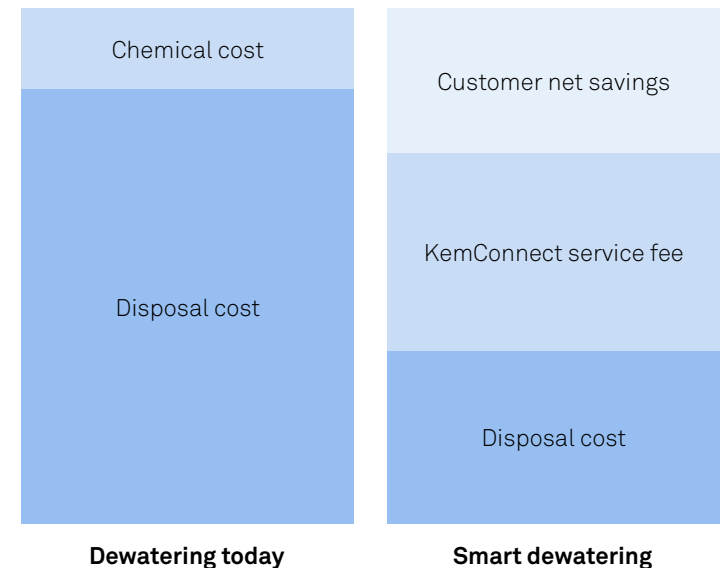
The water treatment market provides growth opportunities for Kemira.

The KemConnect Smart Dewatering application is an innovation which works well for many of our customers. Sludge is the residual product of the wastewater treatment operation. More than half of the cost structure of the operator comes from the disposal cost of the sludge. Chemicals are only a small part of that. With the digital tools and our chemistry, we can help operators to significantly increase the dry solids content in the sludge. This means savings in their energy and transportation costs, i.e. disposal costs.

### Business model

**The next generation of sludge treatment will focus on customer performance and value created**

**KemConnect Smart Dewatering combines a complete chemicals portfolio, continuous chemistry optimization and real-time monitoring to a new business model**



# Kemira growing fast in Chemical Enhanced Oil Recovery

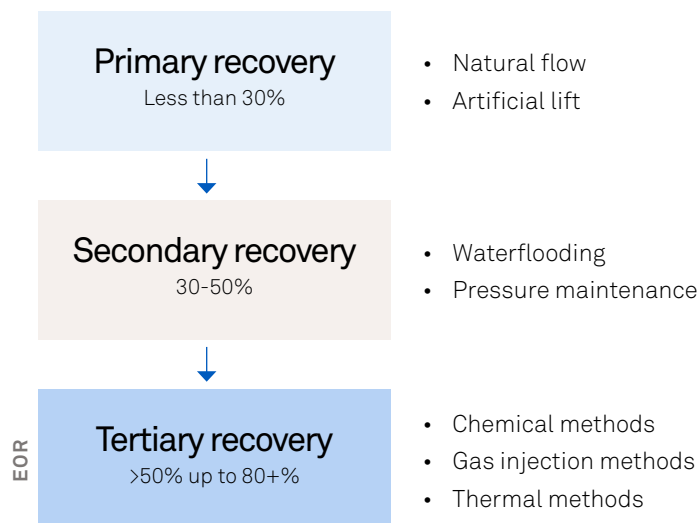
Kemira has tailored and offered polymers to its clients in pulp & paper and water treatment for decades. This vast knowledge is also utilized in oil & gas applications where the largest growth potential is in Chemical Enhanced Oil Recovery.

With the help of polymers, oil operators can extend the life of an existing reservoir by up to 7–15 years. This means huge savings in terms of capital expenditure for our clients, as new exploration is not needed if more can be recovered from current fields.

CEOR does not work in every field but it provides a huge growth opportunity. Approximately one million barrels of oil is extracted daily with CEOR compared to more than 90 million barrels of total oil extraction. The use of CEOR is expected to grow rapidly in the coming years.

We have recently signed a multi-year contract with one of the major oil companies, which gives us confidence to continue to grow in this field.

### Oil recovery methods





## Risks & Opportunities

### Changes in market demand

#### Opportunities

- Rising demand for products enabling our customers' product quality, process and resource efficiency: packaging, board and tissue grades; water recycling and reuse; and unconventional oil and gas recovery and enhanced conventional oil recovery
- New geographical markets with growing middle class are emerging

#### Risks

- Declining demand for printing and graphical paper grades
- Shift towards water treatment technologies with lower chemical consumption
- Volatility in oil and gas activity

#### Management Approach

- Systematic market and business monitoring
- Market differentiation by geographies and customer-industries
- Active product portfolio management
- Flexible manufacturing network with competitive scale

### Changes in competition

#### Opportunities

- Large customers looking for strategic suppliers with global supply capability
- Comprehensive product and service concepts enabled by digital solutions
- Competitive advantage through externally recognized sustainability performance

#### Risks

- Major competitor or customer consolidations that could reshape market positions
- New standard commodity chemical producers entering the market, and/or new type of competition

#### Management Approach

- Close monitoring of competitive activities and regular strategy reviews to act on the observed changes
- Development of new product and service concepts based on comprehensive chemistry management and increased use of digitalization
- Participation in market consolidation and active M&A monitoring
- Competence and capability development to enable differentiation by market changes

### Changes in laws and regulations

#### Opportunities

- Increased amount of water treatment driven by stricter regulation and enforcement
- New opportunities for chemicals is created by regulatory developments to promote recycling and reuse of resources

#### Risks

- Alternative, non-chemical water treatment technologies
- Bans or restrictions on substances used as raw material due to stricter chemical legislation
- Increased complexity in global trade compliance due to trade regulation changes
- Political instability resulting in changes of laws and regulations

#### Management Approach

- Active follow-up of developments in chemical legislation and regulations relating to the use of chemicals PSRA personnel in US, Brazil, China, South Korea and European countries having early visibility to regional regulatory initiatives and possibility to impact through local industry associations
- Pro-active evaluation of alternative substances to replace substances of concern
- Innovation of solutions enabling improved resource efficiency in customers' processes
- Compliance management (e.g. trade compliance, selection 3rd party business partners) with dedicated resources and formalized management processes

# Risks & Opportunities

## Sourcing and supply chain management

### Opportunities

- Operational efficiency improvement through active tracking of raw material and energy prices, and demand based inventory management
- Industrial by-products and bio-based materials as an alternative to virgin and fossil-based raw materials

### Risks

- Rising or volatile energy and raw material prices can impact profitability
- Dependency on a single source for some key raw materials
- Breaks or disturbances in the availability of key raw materials

### Management Approach

- Improving the overall efficiency of our processes through e.g. BOOST program
- Strategic sourcing through segmentation and performance management of our suppliers
- Backward integration for critical raw materials
- Securing energy supply through strategic investments and by hedging
- Portfolio management to simplify raw material base

## Innovation capability

### Opportunities

- Ability to innovate addressing global trends for recycling, e-commerce, growing middle class, regulation and scarcity of resources

### Risks

- New disruptive technologies by competitors
- Slow renewal of product portfolio and lack of differentiation
- Failing to commercialize new products and service concepts

### Management Approach

- Active technology scouting to enable responsiveness to changing market needs
- Collaborative product development to ensure fast response to market needs
- R&D project management by the New Product Development process covering checks also for improved economic, environmental and social performance
- Ensuring effective product launches through targeted marketing activities and training of sales

## Environmental, health, safety and quality (EHSQ) management

### Opportunities

- Ability to demonstrate high performance and compliance with applicable legal requirements, standards and stakeholder expectations, providing us a competitive edge

### Risks

- Possible negative impact through incidents such as process safety deficiencies, machinery breakdowns, environmental incidents or employee health and safety incidents, together with the consequent financial losses and brand damage

### Management Approach

- Systematic risk management and continuous improvements in competences, procedural, technical and physical protection mechanisms
- Systematic focus on achieving set targets and implementing certifiable management systems and related reporting, crisis management procedures
- Insurance programs against potential hazards

## People and leadership

### Opportunities

- Ability to attract, retain and develop the right mix of talent leveraging our strong employer brand and globally diverse, result orientated, and collaborative work environment
- Culture of talent management, performance management and development leading to employee engagement
- Strong leadership competences, skilled technical expertise/industry know-how and competent workforce

### Risks

- Losing key talents to competitors and other industries
- Competence development needs to match the rate of digital transformation

### Management Approach

- Continued emphasis on talent and succession development to ensure we have a strong platform for the future, through growing leadership and talents from within the organization
- Focus on performance management, employee engagement, learning and development, and building a strong employer brand. Investment in competence and capability development to develop technical and leadership competences for the future

# Kemira

**KEMIRA IS** a global chemicals company serving customers in water intensive industries. We provide expertise, application know-how and chemicals that improve our customers' product quality, process and resource efficiency. Our focus is on pulp & paper, oil & gas and water treatment. In 2017, Kemira had annual revenue of around EUR 2.5 billion and 4,730 employees. Kemira shares are listed on the Nasdaq Helsinki Ltd.

**[WWW.KEMIRA.COM](http://WWW.KEMIRA.COM)**

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