Combined Annual Report 2018

BOREALIS

Keep Discovering

Cover Image:
Borealis' high voltage testing centre in Stenungsund, Sweden

Contents

Reviewing 2018

Borealis at a Glance

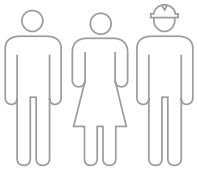
Worldwide

Head Office **in Vienna,** Austria.
Operating on **five continents**
in **120 countries**

Market Position

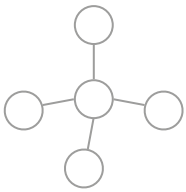
#2 among polyolefin
producers in **Europe**

Employees



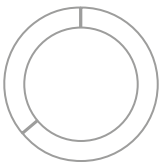
More than
6,800 employees

Line of Business



Production and distribution of
polyolefins and **base chemicals**

Ownership Structure

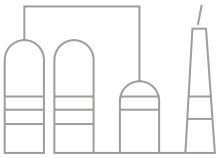


64% Mubadala, United Arab
Emirates / **36%** OMV, Austria

Joint Venture

Borouge – the world's largest
integrated polyolefin complex
in Ruwais, UAE

Joint Venture



Bayport Polymers – brings
Borstar® technology to American
polyethylene markets

Circularity

Two **polyolefin recycling**
operations in Europe

Patents

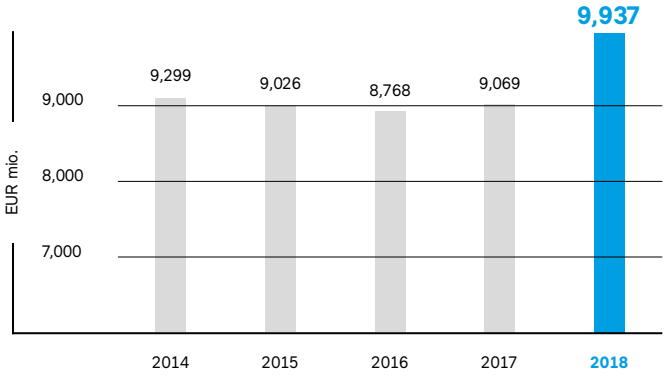
117 priority patents
filed in 2018

Five Year Comparison of Borealis' Key Figures

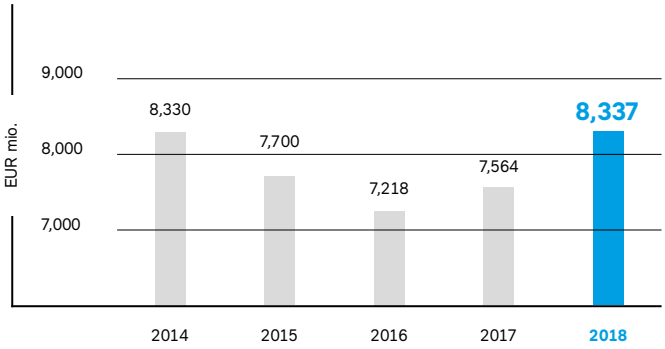
		2018	2017	2016	2015	2014
Health, Safety & Environment						
Total Recordable Injuries	number/million workhours	1.3	1.1	0.9	1.4	1.3
EU ETS CO_2 emissions	kilotonnes	4,299	4,210	4,600	4,270	4,250
Number of employees (Full-time equivalent)		6,834	6,619	6,494	6,266	6,290
Flaring performance	tonnes	26,275	51,600	38,700	47,690	38,000
Income and profitability						
Net sales	EUR million	8,337	7,564	7,218	7,700	8,330
Operating profit	EUR million	496	791	938	718	280
Operating profit as percentage of net sales	%	6	10	13	9	3
Net profit	EUR million	906	1,095	1,107	988	571
Return on capital employed, net after tax	%	13	15	16	15	10
Cash flow and investments						
Cash flow from operating activities	EUR million	517	725	1,145	1,103	428
Investments in tangible fixed assets	EUR million	326	453	333	336	370
Cash and cash equivalents	EUR million	72	229	762	548	42
Financial position						
Balance Sheet total	EUR million	9,949	9,395	9,932	9,261	8,353
Net interest-bearing debt	EUR million	1,305	790	651	1,096	1,798
Equity attributable to owners of the parent	EUR million	6,421	6,365	6,496	5,697	4,511
Gearing	%	20	12	10	19	40

Key Financial and Sustainability Metrics

Total Sales [1)]

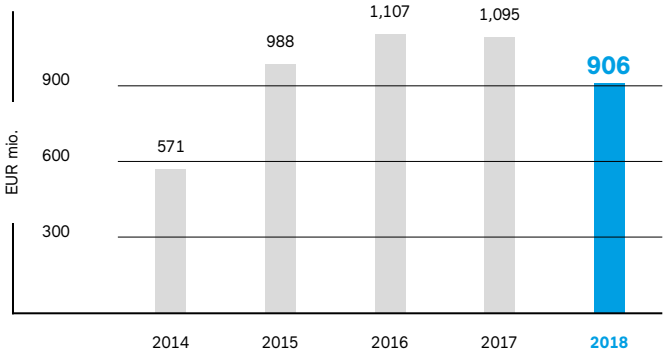


Net Sales

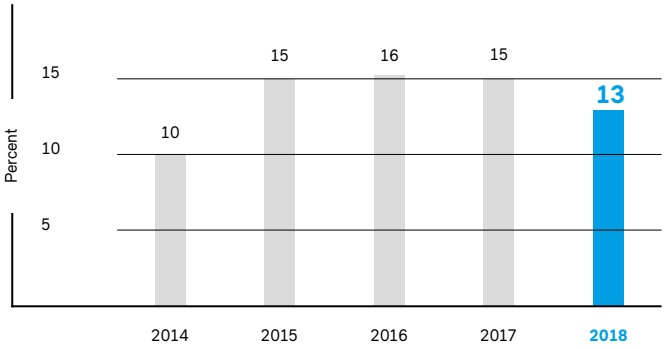


1) Total net sales of Borealis and pro-rata sales of at equity consolidated companies

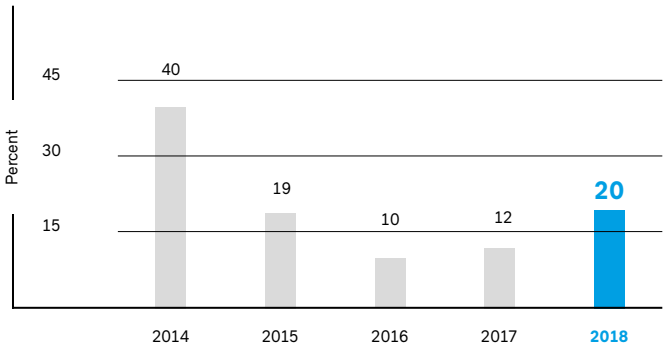
Net Profit



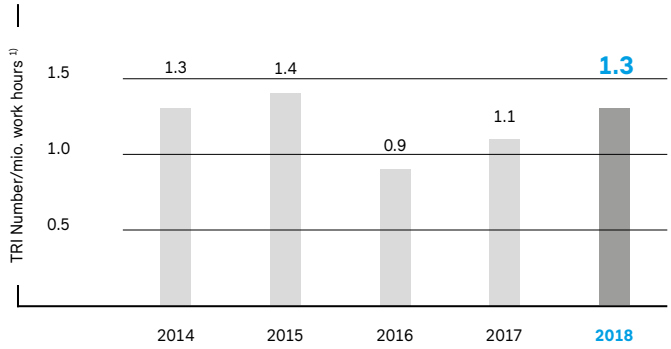
ROCE



Gearing

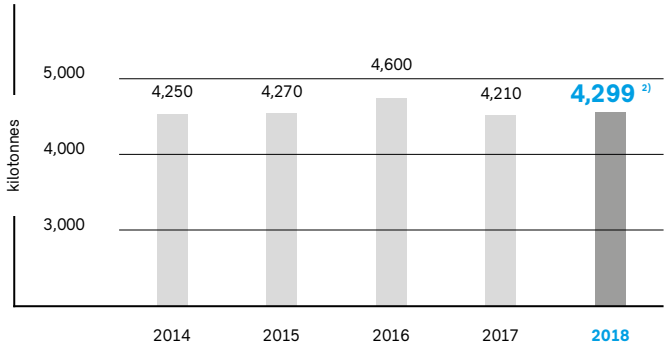


Occupational Safety Performance



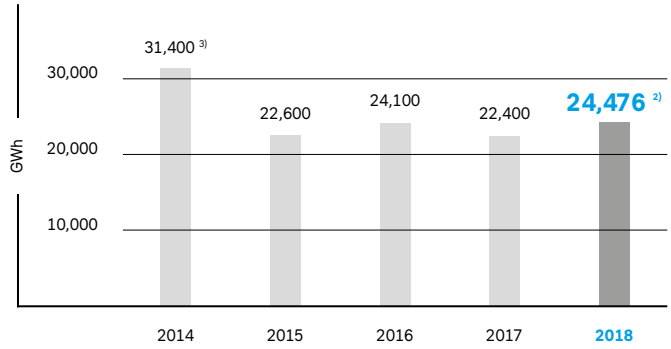
1) Includes own employees and contractors

CO_2 Emissions



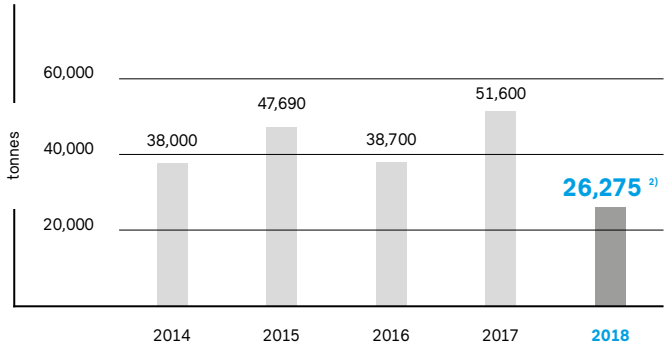
2) Environmental data might be subject to minor adjustments due to ongonig audits and missing 3rd party data at the time of closing of this report

Energy Consumption

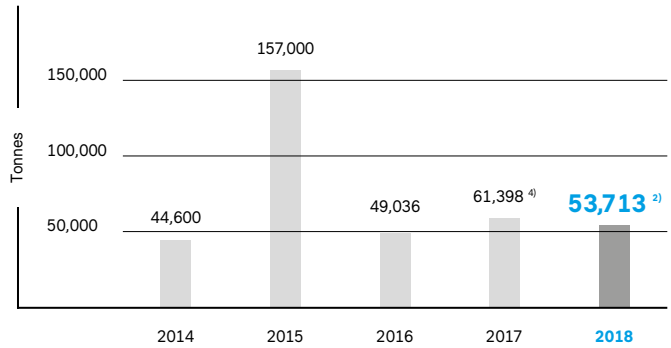


3) Data reported until including the year 2014 included the consumption of gas used for the production of ammonia as a raw material

Flaring Performance

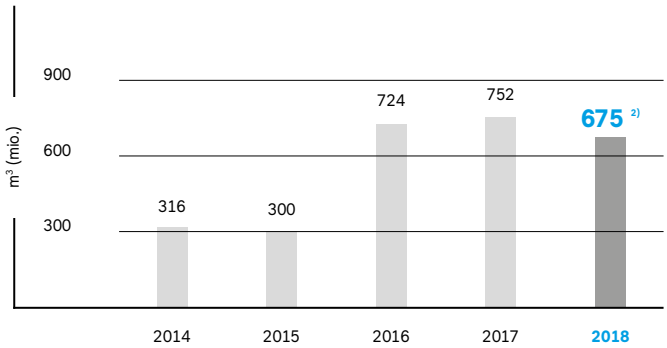


Waste Generation



4) Restated (figure adjusted due to incomplete data at the time of closing of the report 2017)

Water Consumption



Highlights 2018

January–December 2018

Safety first: Continued focus on safety with a TRI rate of 1.3 in 2018.

Decision to **build** new, world-scale 750,000 tonnes/year propane dehydrogenation plant in Belgium and propylene **capacity increase** in Belgium strengthen commitment towards European customer base.

Appointment of **Alfred Stern as new CEO,** succeeding Mark Garrett.

Establishment of **Bayport Polymers Joint Venture** in petrochemicals with Total and NOVA Chemicals in Houston, Texas.

Additional **polypropylene plant (PP5)** to be integrated with the Borouge 3 complex.

Signing of **Joint Development Agreement** with United Chemical Company for the development of a world-scale polyethylene project in the Republic of Kazakhstan.

Mechanical completion and production start-up of a new **compounding plant** in North Carolina, USA.

Borealis **supports Ellen MacArthur Foundation's** Global Commitment to eliminate plastic pollution at the source and commits to quadruple its recycled plastics solutions by 2025.

Inauguration of newly expanded high voltage testing centre in Stenungsund, Sweden.

Project STOP Ocean Plastics: scale-up commitment includes at least 2 more city partnerships in Indonesia over next five years with additional partners.

Polymers for Europe Alliance honors Borealis as **best European polymer producer** of both high- and low density polyethylene.

Launch of **EverMinds™,** the new communication platform dedicated to circular economy solutions.

Completion of EUR 15 mio. **recycling** investment in mtm plastics in Germany, and **acquisition** of Austrian plastics recycling company Ecoplast.

About Borealis

Statement of the Supervisory Board

Borealis achieved a strong financial result in 2018, with a net profit of EUR 906 million, albeit below the record net profits of EUR 1.1 billion realised in both 2016 and 2017. The result was driven by reasonable polyolefins margins and a very good contribution from Borouge. The Total Recordable Injuries (TRI) frequency per million working hours of 1.3 is world-class in the industry but a deterioration versus 2017. Borealis took steps in 2018 to improve process safety and ensure an accident-free work environment for both employees and contractors, and will continue to strive to reach the ultimate goal of zero accidents.

Feedstock prices moved in line with the fluctuating Brent Crude oil price, which rose gradually from around USD 63/bbl in February to a peak of USD 86/bbl in October, as oil markets reacted to reduced supply and increased political uncertainty but dropped again to an average price of USD 58/bbl in December. Unlike feedstock prices, polyethylene prices were down 2% compared to the previous year. Polypropylene prices, however, were 6% higher on average than in 2017.

While the European polyolefins market contracted by 1% compared to 2018, Borealis was able to increase the sales volume of its European-produced polyolefins by 4% and consequently increase its market share from 13% in 2017 to 14% in 2018. Overall, the profit contribution from the Polyolefins business segment remained solid but was lower than in 2017.

The fertilizer market environment remains challenging due to global oversupply resulting in depressed margins. Borealis' Fertilizers sales volumes decreased by 4% versus 2017, while the European market share remained unchanged at 7%. Taking into account lower production volumes at the Borealis site in Linz, Austria, due to the turnaround carried out in 2018, this disappointing performance had an overall negative impact on the contribution made by Fertilizers to the bottom line.

Change in Leadership

As of 2 July 2018, Alfred Stern was appointed Borealis CEO, succeeding Mark Garrett. Alfred Stern was previously Borealis Executive Vice President Polyolefins and Innovation & Technology. The Supervisory Board is confident that the Management team under Alfred's leadership will continue the successful journey of sustainable growth.

In 2018, the reorganisation of the Borealis Base Chemicals business included the appointment of Rainer Höfling as CEO of the dedicated Fertilizers and Melamine business on 1 October.

Focus on Sustainable and Global Growth

Significant progress was made in 2018 on two key projects being undertaken to extend and expand the Borouge downstream petrochemicals business. The pre-FEED phase for the construction of the Borouge 4 complex was almost completed, involving a world-scale, mixed feedstock

Supervisory Board

Suhail Mohamed Faraj Al Mazrouei
Chairman

Rainer Seele
Vice Chairman

Musabbeh Al Kaabi
Board Member

Khalifa Al Suwaidi
Board Member

Manfred Leitner
Board Member

cracker using existing feedstock available in Abu Dhabi, United Arab Emirates (UAE), and downstream derivatives units for both polyolefin and non-polyolefin products. The complex will be combined with the existing Borouge production complex in Ruwais, UAE, and is slated to come on stream in 2025. Also in 2018, the construction of a new PP plant in Borouge based on the proprietary Borstar® technology was approved, thus adding value to the surplus propylene available from ADNOC Refining's new propane dehydrogenation (PDH) unit.

In May Borealis announced the establishment of Bayport Polymers LLC, a 50/50 joint venture owned by Total S.A. and Novealis Holdings LLC, a joint venture between Borealis AG and NOVA Chemicals. Polyethylene (PE) production capacity at the existing site in Bayport, Texas, U.S, will be more than doubled to approximately 1.1 million tonnes/year through the construction of a new 625,000 tonnes/year PE unit, the first in North America to use proprietary, third-generation Borstar technology. The 1 million tonnes/year steam cracker being built in Port Arthur, Texas, and part of the same joint venture, will process the competitively priced ethane available in the U.S. for use in the Bayport PE units.

In October, Borealis announced that it will commence construction of a new, world-scale propane dehydrogenation (PDH) plant at its existing production site in Kallo, Belgium. With a production capacity of 750,000 tonnes/year, the plant will be one of the largest of its kind in the world, and will enable Borealis to fulfil the growing European demand for propylene more efficiently. Borealis is at the same time strengthening its long-term commitment to fulfilling European market demand for polypropylene (PP) by taking the decision to expand its Kallo PP plant by 80,000 tonnes/year, and by entering the Front End Engineering and Design (FEED) phase for the expansion of its PP plant in Beringen, Belgium.

An agreement was signed by Borealis and United Chemical Company LLP in March for the joint development of a major project in the Republic of Kazakhstan. The feasibility of constructing an ethane cracker and two Borstar PE units with a total capacity of 1,250 kilotonnes/year is currently being evaluated, along with pre-investment in an integrated ethane cracker for future expansion.

Outstanding Launches and Achievements in 2018

In June, two new Quentys™ polyolefin grades that form the base of two novel solar encapsulant film types were released. Quentys grades make photovoltaic modules more sustainable because they offer better and longer operational reliability at a lower cost.

The first controlled plastomers solution for the global healthcare market, Bormed™ PL8830-PH, was introduced in October. At present, Borealis is the only raw material supplier able to bridge the gap between thermoplastics and elastomers.

After investing in cutting-edge testing equipment and a facility expansion, Borealis inaugurated its high voltage testing centre at the Borealis Innovation Centre in Stenungsund, Sweden. The facility opens up new possibilities for collaboration with Wire & Cable partners.

Borealis announced a new open-innovation project with Qpinch in October. This start-up has developed a technology that uses a chemical process to recover industrial waste heat. Together, Borealis and Qpinch will build the first commercial-scale heat recovery unit to employ this revolutionary technology at an existing Borealis plant in Antwerp, Belgium. Borealis has stepped up its efforts in the circular economy sphere by investing in the mechanical recycling of plastics, which itself has become a core component of the overall Borealis Polyolefins strategy. In 2018, an additional EUR 15 million was invested in mtm plastics in Germany, in order to accelerate development of new technologies and products made of post-consumer polyolefin recyclates. In August, Borealis also announced its full acquisition of an additional plastics recycler, the Austria-based Ecoplast.

In 2018, several novel products and applications with enhanced sustainability were developed and launched in cooperation with value-chain partners, including new packaging solutions based entirely on 100% post-consumer recycled material. In the automotive sector, proprietary Daplen™ PP compound grades composed of post-consumer recycled and virgin content were used by premium car maker Volvo for applications in a custom-built hybrid SUV.

In 2017, Borealis and the consultancy firm SYSTEMIQ co-founded Project STOP, a frontline initiative to prevent leakage of plastics into the ocean in South-East Asia. Since then, Borealis has engaged strategic partners, including NOVA Chemicals, Veolia, Nestle, Borouge and the Norwegian government, to support the first successful implementation of a city partnership in Muncar, Indonesia. During 2018, Borealis committed to scale up Project STOP to include at least two more city partnerships over the next five years, aimed at preventing over 10,000 tonnes of plastics from entering the marine environment.

Continued Strong Performance Expected for 2019

Borealis' management and employees are firm in their commitment to being the leading provider of chemical and plastic solutions. Sustainable success is made possible through dedication to innovation, operational excellence, commercial excellence, and safety. While market conditions in polyolefins are expected to be less favourable in 2019 than in 2018, Borealis can build on its sturdy foundation of Polyolefins, Base Chemicals, and Borouge. Borouge is expected to contribute in 2019 at a level on par with 2018, while the newly-installed, dedicated management team in Fertilizers and Melamine is set to positively impact the overall Fertilizers contribution. Important investments and acquisitions in the past several years have put Borealis in a good position to capitalise on existing and future market opportunities, in particular those in the circular economy sphere. The commitment to Value Creation through Innovation is deeply embedded throughout the organisation, thus ensuring that Borealis will continue to provide chemical and plastic solutions that create real value for society. Both the Supervisory Board and Borealis' management are confident that Borealis will again deliver solid results in 2019.

Executive Board

Alfred Stern

Chief Executive Officer
Appointed as CEO: July 2018

In April 2018, Alfred Stern was appointed CEO effective 2 July 2018, after having held the position of Borealis Executive Vice President Polyolefins and Innovation & Technology since 2012. Alfred Stern joined Borealis as Senior Vice President Innovation & Technology in 2008. Prior to that, he spent over twelve years at E.I. DuPont de Nemours, holding leadership positions in R&D, sales and marketing, and quality and business management. Following posts in Switzerland and Germany, his final DuPont assignment was as Global Business Manager of an Engineering Polymers business unit in the US.

Mark Tonkens

Chief Financial Officer
Appointed: November 2014

Mark Tonkens first joined Borealis in 2009. Before assuming the position as Borealis CFO in November 2014, he had served as Borealis Senior Vice President Group Controlling. Mark Tonkens came to Borealis after holding a number of senior management roles in the Royal Philips group, acting as CFO and Senior Vice President of major business units and country organisations around the globe, from the Netherlands and Greece in Europe, to Taiwan and Hong Kong in Asia.

Lucrèce Foufopoulos-De Ridder

Executive Vice President Polyolefins & Innovation & Technology
Appointed: January 2019

Lucrèce Foufopoulos was appointed to the Borealis Executive Board as Executive Vice President Polyolefins and Innovation & Technology in January 2019. She joined Borealis after a career of more than 20 years in the chemical and petrochemical industry, most recently at Eastman, where she served as Vice President & General Manager of the Rubber Additives business unit. Prior to that, Lucrèce Foufopoulos held a variety of positions at multinationals, including Dow Chemical, Rohm and Haas, Dow Corning and Tyco. She currently serves on the board of Royal Vopak.

Martijn Arjen van Koten

Executive Vice President Base Chemicals, Operations & Health, Safety and Environment & Quality (HSEQ)
Appointed: September 2013

Martijn van Koten was appointed Executive Vice President Base Chemicals, Operations & Health, Safety and Environment & Quality (HSEQ) in October 2018 after serving as EVP Operations & HSE for five years. He joined Borealis after a 19-year career at Shell, where he held numerous and international leadership posts in Manufacturing, Technical Service, R&D and Strategic Development, culminating in the position of Vice President Manufacturing East, based in Singapore.

Philippe Roodhooft

Executive Vice President Middle East & Growth Projects
Appointed: November 2017

Philippe Roodhooft was appointed Executive Vice President Middle East and Growth Projects in November 2017, after having served since 2013 as Chief Operating Officer of Borouge ADP in the UAE. Prior to that, Philippe Roodhooft held Vienna-based senior management positions, including Senior Vice President Supply Chain and Product Management for Polyolefins, Senior Vice President Operations for the Borealis Group, and General Manager for the Central European production sites.

Mark Garrett former CEO left in June 2018 and Markku Korvenranta former Executive Vice President, Base Chemicals left in September 2018.

from left: Philippe Roodhooft, Mark Tonkens, Alfred Stern, Lucrèce Foufopoulos-De Ridder, Martijn Arjen van Koten

Our Mission and Strategy

Continuity combined with the flexibility to seize new opportunities

Our Mission

To be **the** leading provider of innovative plastics, chemical and fertilizer solutions that create value for society.

Our Strategy

We will

- Grow our PO business with a focus on **advanced applications** and **differentiated products,** strengthen our European base and ensure cost competitiveness from feedstock to customer.
- Pursue excellence and optimise **Borouge** in the Middle East and Asia, including **leveraging into Europe.**
- Continue to maximise the value of **Base Chemicals** with a focus on **strengthening the cracker asset base** with increased feedstock flexibility and integrated economics for our polyolefin products.
- Realise **growth opportunities** in other geographies/related businesses.
- Pursue **operational excellence** and a **Goal Zero** mindset
- Achieve a step change in **innovation.**
- Exceed in serving our customers with a focus on **quality** and **reliable execution.**
- Continue to develop our cross-cultural **organisational capability** and a learning organisation
- **Drive sustainability,** explore and realise business opportunities from the **circular economy.**

Outperform Financially

11%+
average return on capital employed (ROCE) after tax

40–60%
debt to equity ratio

Our Values

Responsible

... is just a theory until you put it into action.

– We strive for zero incidents in health and safety.
– We consider our local and global responsibility for the environment in our decisions.
– We do business according to high ethical standards and lead by example.

Respect

... is just a word until you live its meaning.

– We trust and involve people and communicate openly, respectfully and in a timely manner.
– We collaborate, support and help each other to develop for the best of Borealis.
– We build on diversity for better results as "One Company".

Exceed

... is just a goal until it becomes your path.

– We win through Excellence and deliver beyond expectations.
– We commit to making joint decisions and follow through.
– We give feedback and make "Connect-Learn-Implement" and "Continuous Improvement" a natural way of working.

Nimblicity™

... is just a concept until you make it your routine.

– We are fit, fast and flexible and seek smart and simple solutions.
– We encourage decisions on all levels of the organisation to increase ownership and speed to realisation.
– We welcome change and manage it to shape our future.

An Interview with Borealis CEO Alfred Stern and CFO Mark Tonkens

from left: Mark Tonkens, CFO and Alfred Stern, CEO

Alfred Stern – from your perspective as the new Borealis CEO, how would you characterise 2018?

AS The year 2018 was an eventful one, with excellent business results, yet full of changes. I personally embrace the idea of change because it is invigorating and keeps things interesting. For me, of course, the biggest change was the opportunity to succeed Mark Garrett as Borealis CEO. For someone who has spent his entire career in the petrochemicals industry, it is a privilege to be able to lead this great company, and I thank the Board for their confidence in me.

Under Mark Garrett's leadership over the past eleven years, we have had an incredible period of growth, and excellent improvements in business results. Having been along for part of the ride during Mark's tenure, I'm looking forward to building on these achievements. The important global growth projects we kicked off in 2018 will take Borealis to the next level.

In 2018, we made good progress in regard to process safety, with our Goal Zero journey showing positive effects. We have been able to reduce the number of high and medium severity process safety incidents. Yet despite our intense focus on personal safety, the total TRI frequency of 1.3 in 2018 falls short of our target, and fails to reach the 1.1 charted in 2017. While it is a top quartile performance within the industry, it is still not good enough for Borealis. We owe it to our employees and their families to do better, and we intend to.

And for you, Mark Tonkens, Borealis CFO, what stood out in 2018?

MT First and foremost, the fact that we achieved very solid financial results for the fourth year in a row, with a net profit of EUR 906 million. In terms of contribution to the bottom line, Borouge has gone from strength to strength and posted an absolute record year in 2018. While the industry environment for polyolefins in Europe has normalised, we are still facing challenges in Fertilizers.

How is Borealis proceeding with its phase of growth and global outreach?

AS In the past decade, our focus has been on expanding Borouge, and optimising our European footprint and performance. A change of CEO often brings about new impulses, and in 2018 this was indeed the case. We are now moving into the next phase of growth with several sizeable projects, and we are fortunate to have the strong backing of our Board in these endeavours.

A first significant project is our Bayport Polymers joint venture with NOVA Chemicals and TOTAL. In 2018, we took the final investment decision to jointly build a one million tonnes/year ethane cracker, and a new 625,000 tonnes/year polyethylene (PE) unit in Texas. This more than doubles the site's existing PE capacity. We are capitalising on each JV partner's strengths: NOVA's strong presence in the US market, TOTAL's on the Gulf Coast, and our superior technology. The Bayport plant is a genuine milestone and a giant leap for Borealis. It will enable us to bring third generation Borstar to North America for the first time.

In Europe, we took a second major investment decision to build a new, world-scale propane dehydrogenation (PDH) plant at our existing production site in Kallo, Belgium, after the FEED (front end, engineering and design) phase concluded in June. This plant will have a production capacity of 750,000 tonnes/year, making it one of the world's largest and most efficient.

MT Borouge, which continues to provide an outstanding contribution to our overall financial performance, is also undergoing another expansion. The pre-FEED study for Borouge 4 is currently underway. In 2018 we also approved the so-called PP5 plant in order to drive growth in Borouge 1, 2, and 3. We welcome the opportunity to step up collaboration with our partner ADNOC in order to seize growth opportunities in the Middle East and Asia.

We should also mention the Joint Development Agreement with United Chemical Company LLP to develop a world-scale PE project with an integrated ethane cracker and two Borstar PE plants in the Republic of Kazakhstan. This particularly promising project is currently in the feasibility study phase, but we expect to proceed to FEED phase in the course of 2019.

What is the strategic rationale behind these major projects?

AS What all of these growth projects have in common is that they will enable us to better support the global growth efforts of our customers. We will have greater global capability to supply differentiated, high-performing Borstar grades thanks to world-scale Borealis, Borouge, and Bayport facilities. For instance, by enlarging our presence in Kallo with the Borealis PDH plant, we are responding to European market demand for propylene, which is growing due to a confluence of factors involving changes to product mixes in refineries, and feedstock mixes in crackers. In recent years, Europe has in fact turned from a net exporting into a net importing, polypropylene (PP) region. It is part of the Borealis mission to be a reliable, high-quality supplier with local production capabilities. We can react quickly to global market fluctuations and varying economic conditions, and also drive innovation together with our customers in a nimble way.

How have acquisitions in 2018 driven the business growth of Borealis, particularly in the circular economy sphere?

MT We always strive to achieve a balance between organic growth, and growth through acquisitions. While acquisitions create value right from the start, organic investments demand more patience. We have a very solid track record with organic growth in the United Arab Emirates. This now gives us full confidence to do the same in other regions. That said, it is already clear that our intention to acquire a controlling stake in South Korean DYM Solution Co. Ltd. in 2018 will be a good move in light of our efforts to expand our global footprint in the Wire & Cable industry. The agreement and transaction are still subject to all required regulatory approvals. Gaining access to an Asian manufacturing base helps facilitate organic growth whilst enabling us to better serve our Wire & Cable customers, in particular.

AS Another key move made in 2018 was our acquisition of Ecoplast, the Austrian plastics recycler. We predict substantial growth in the recycled polyolefins market in the years to come, and have made mechanical recycling a key element within our overall Polyolefins strategy. Following on the heels of a EUR 15 million investment in our 2016 acquisition, mtm plastics, to increase our recycling capacity by nearly 50%, this newest acquisition further boosts our mechanical recycling capabilities. It also consolidates our position as a technology leader within the industry.

But taking the larger view, it is also a significant step in implementing the principles of a circular economy of plastics. We created our Circular Economy Solutions unit to find new growth opportunities in both mechanical recycling and design for recyclability. Because, while it is essential to take active measures to collect plastic waste, it is just as important to create as little waste as possible in the first place. At the same time, we are collaborating with our customers and partners to design products that are more easily recyclable, produce more high-quality recyclates, and also find novel applications for this recyclates. A key enabler for this will be the EverMinds™ platform we launched in December.

What other concrete measures is Borealis taking to create value through innovation?

AS Innovation is of course the lifeblood of Borealis. Our excellent technology portfolio is often decisive in securing partners for global projects, as was the case in Kazakhstan, but also in Texas, where we will build the first plant to use third-generation Borstar technology. Our Value Creation through Innovation strategy consistently pays off: not only for us, but for our customers as well. Working together to develop new applications and products, or to improve existing ones, is the most cost-competitive way to implement innovation. For example, in a core segment like Energy we are a key enabler of the "Energiewende" – the change to a greener energy landscape – thanks to our solar and photovoltaic solutions based on Quentys. Likewise in Automotive: be it with lightweight material solutions based on Fibremod™ Carbon and Daploy™, or Daplen™ PP compound grades composed of post-consumer recycled and virgin content, we will continue to invest in our proprietary technologies in order to remain an innovation leader.

MT We are harnessing the power of digital solutions to offer more value to our customers. Our Digitalisation Programme has really gained momentum in the past 18 months. It is much more than a programme – it is an entirely new way of working. Digitalisation is the accelerator for initiatives throughout the whole company. We have made great progress thanks to the successful 2018 launches of the NutriGuide within Fertilizers, and the MyBorealis customer platform in Polyolefins. Our new Brussels-based Digital Studio can produce innovative and value-creating products within a very short time frame. This enhances our visibility among our customers. What is more, we can use the process to come up with solutions that our customers truly need, and not with solutions we think they should need.

How did the year 2018 shape up in terms of excellence?

MT The charm and the challenge of excellence is that it is something you can never fully achieve. By the time you have realised your immediate goals, the bar has already been raised. So achieving excellence, whether operationally or commercially, requires a lot of creativity. I am very pleased that in 2018 we were able to achieve production records in quite a number of sites, some of which have been operating for thirty or forty years – and all while heeding "safety first."

AS Excellence is at the core of our values. For example, Nimblicity™ is really about doing away with waste. It is about eliminating anything in our processes that isn't necessary in order to deliver a solution that helps the customer. It also dovetails perfectly with our efforts to act in a more sustainable way, because no one wants to produce waste with no value.

"Miracles don't happen when you just think about great ideas, but when you actually make them happen. What distinguishes Borealis is our ability to execute innovation successfully."

Alfred Stern, CEO

Mark Tonkens, looking to 2019 and beyond, which areas make up your strategic focus?

MT Striving for excellence in safety and operations remains paramount. Deeper integration of digitalisation in our operations will also be an important focus. Taking meaningful steps to achieve greater circularity in plastics is another key area.

One important change that will affect our figures starting in 2019 is the realignment of our Fertilizer business. At the end of 2018 we took the decision to create a fully-fledged Fertilizer and Melamine unit which stands apart from our Polyolefins and Hydrocarbons businesses. After analysing the market environment in detail, we determined that a dedicated structure would make our Fertilizer, Technical Nitrogen Products (TEN) & Melamine businesses more agile. Rainer Höfling and his team have managed a very strong start. Empowering a team and encouraging them to find new ways of doing things always builds positive momentum.

"We can use the digitalisation process to come up with solutions that our customers truly need, and not with solutions we think they should need."

Mark Tonkens, CFO

Alfred Stern, in 2019 and beyond, which strategic focus areas are most important from the CEO's perspective?

AS While we have a large number of important focus areas, I'd like to address five main points. First, Polyolefins and Hydrocarbons: we will cement our position as partner of choice for our customers by remaining a reliable global supplier with local operations, and by offering the highest quality. Second, we will drive operational and commercial excellence in our new Fertilizer, Technical Nitrogen Products (TEN) & Melamine business unit. This may include seeking new business partners who can play a role in expanding our global footprint. Third, the ongoing expansion of the Borouge complex, as mentioned previously. The fourth priority also involves global growth projects on the Gulf Coast in Texas, and in the Republic of Kazakhstan. The fifth and final area entails continuing our pioneering efforts in circular economy solutions and digitalisation. Both of these areas are potential industry disruptors. Because we at Borealis are creative and innovative by nature, it is in our blood to embrace disruption. We are confident that we can be an industry leader in both of these areas.

Very last word: what will the year 2019 bring?

MT It will be another exciting year, yet with more uncertainty in both the global economy and the industry. As always, we must continue to focus on the areas we can influence, manage our assets as efficiently as possible, serve our customers in the best possible way, and maintain the ideal framework we have already implemented in order to drive global growth.

AS We live in an era of accelerated change. If we as an organisation are willing to embrace change, we can seize many business opportunities. I believe that our Borealis team can offer solutions to many problems and achieve incredible things if we empower them to do so. Miracles don't happen when you just think about great ideas, but when you actually make them happen. What distinguishes Borealis is our ability to execute innovation successfully.

The full interview is available on → www.borealisgroup.com

Borealis Worldwide

– Borealis Locations

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info@borealisgroup.com

Customer Service Centres
Austria, Belgium, Brazil, Finland, France, Hungary, Turkey, United States

Production Plants
Austria, Belgium, Brazil, Finland, France, Germany, Italy, Sweden, The Netherlands, United States

Innovation Centres
Austria, Finland, Sweden

Sales Offices/Representative Offices
Argentina, Chile, China, Colombia, Czech Republic, Denmark, France, Hong Kong, Mexico, Morocco, Poland, Russia, South Africa, Spain, Turkey, UAE, UK

Borealis L.A.T Locations
Austria, Bulgaria, Croatia, Czech Republic, France, Greece, Hungary, Romania, Serbia, Slovakia

Borealis Rosier Locations
Belgium, The Netherlands

O– Borouge Locations

Head Offices
Singapore, UAE

Innovation/Application Centres
China, UAE

Production Plants
China, UAE

Sales Offices/Representative Offices
China, India, Indonesia, Japan, Singapore, Thailand, UAE, Vietnam

Logistics Hubs
China, Malaysia, Singapore, UAE

The purpose of this visualisation is of representational nature only. Though it was prepared with the greatest possible attention to detail, simplified illustrations may have been applied.

Digitalisation Programme

"The Digital Studio believes in early delivery and creating business value fast. Last year was fantastic, as we set up the new organisation and delivered several projects. Next year we will maintain this speed, while maturing the existing solutions by integrating them into the business."

Nic de Backer, Head of Borealis Digital Studio; Brussels, Belgium

Borealis began its Digitalisation Programme in June 2017, with the aim of creating value for both the Group and its customers.

Borealis' systems and tools generate large quantities of data which can be combined with mature and readily available digital technology to create a competitive advantage for the Group. Coupling this technology with advanced analytics, process digitalisation and mobile devices enables Borealis to generate valuable insights from these data. The benefits include better customer service, preventive maintenance and innovation, and the potential to create disruptive new services.

To support the Digitalisation Programme, the company has created the Borealis Digital Studio. The Studio, which recently celebrated its first year in its inspirational workspace at Brussels Airport, is designed to be a creative and agile enabler for developing smart solutions for customers and employees. Its role is to:

- change the way Borealis interacts with customers and employees, by radically improving the customer and employee experience;
- build new value propositions for customers and innovate the Group's business;
- help to use resources and plan processes more efficiently and effectively; and
- enable Borealis to make better decisions based on improved use of data.

In addition, Borealis is able to learn from the experiences of early adopters of digital technologies, and add them to its own experience in this area.

The Digitalisation Programme is already providing benefits. Borealis has launched NutriGuide which runs on mobile, tablet and desktop devices and enables farmers to determine the precise amount of fertilizer for their specific needs. The Group has also introduced the MyBorealis portal which allows polyolefins customers to access the latest information about their orders, complaints and deliveries. The polyolefin sales and marketing organisation uses Connect, the company's customer relationship management (CRM) tool, to look for business opportunities based on tracked actions. A predictive maintenance module was developed to monitor steam compressors.

DigitalStudio
BOREALIS

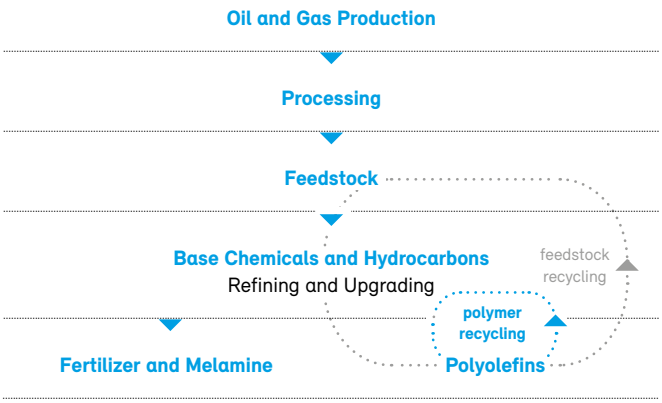
Our Business

Borealis is a leading provider in the fields of polyolefins and base chemicals.

Borealis believes in progress. By driving ideas forward, Borealis aims to change the world for the better.

Borealis keeps discovering new applications and material solutions that address global challenges in the areas of climate, energy, food, health, water and sanitation, waste, and the mechanical recycling of polyolefins. As a reliable partner, Borealis creates ever more value for its customers and partners by developing new approaches, technologies and products.

Fig. 1: **Petrochemical Production Flow**



Polyolefins

The polyolefin products manufactured by Borealis form the basis of many valuable plastics applications that are an intrinsic part of our daily lives. Advanced Borealis polyolefins have a role to play in saving energy along the value chain and promoting more efficient use of natural resources. Borealis works closely with its customers and industry partners to provide innovative and value-creating plastics solutions in a variety of industries and segments that make end products safer, lighter, more affordable and more sustainable.

Borealis provides services and products to customers around the world in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC).

Base Chemicals

At Borealis, the Base Chemicals business is a solid foundation to build upon. Borealis produces a wide range of base chemicals for use in numerous and diverse industries, including melamine, phenol, acetone, ethylene and propylene; and a wide range of fertilizers and technical nitrogen products.

The Borealis Base Chemicals business consists of three units: Hydrocarbons & Energy, Melamine, and Fertilizers.

What Drives Borealis

Sustainability Strategy and Objectives

Borealis' Approach to Sustainability

Borealis strives to balance the needs of society, the environment and economic growth in everything that it does throughout the value chain, from resourcing raw materials through to the impact of its products after use.

To foster true sustainability throughout its business, Borealis takes responsible and fact-based decisions by applying the principles of the so-called 3Ps, which encompass People, the Planet and Profit. This has enabled Borealis to include sustainability aspects in its major policies and decision-making processes. For example, contribution to sustainability is one factor considered when the Group evaluates its innovation portfolio and investment projects.

Embedding sustainability in the business is key for Borealis and a priority for the Executive Board. As a result, current sustainability concerns such as the circular plastics economy and plastic debris in the marine environment were key topics highlighted at the Group's 2018 Senior Leadership Summit. This helped to engage the Group's leaders in understanding these issues, so they could contribute to the Group's approach to managing them and act as ambassadors for these topics. Furthermore, Borealis enhanced its sustainability management in 2018, with the appointment of a Director for Sustainability and Public Affairs.

Since 2016, Borealis has engaged more than 50 senior and mid-level managers from across the organisation in a Business Sustainability course led by IMD Business School. In 2018, the Group established a network of alumni from this course, to contribute to embedding sustainability across all of its functions. Interactive sustainability sessions are held with the alumni on current and emerging topics and issues.

During the year, Borealis also looked to increase the awareness of sustainability issues across the Group. This led to a new Sustainability Access Point portal being created on the Group Intranet, to engage employees and give them direct access to information, particularly in relation to Borealis' position on its Sustainability Focus Areas (see next page) and key sustainability issues for the Group.

Strategy and Objectives

Borealis' Group Strategy is supported by three Sustainability Focus Areas:
– Circular Economy
– Energy & Climate
– Health & Safety

These Sustainability Focus Areas were identified in 2013 as the result of a materiality analysis review, based on the concerns and priorities of more than 500 stakeholders, including customers, brand owners, suppliers, academics, non-governmental organisations, investors, representatives of the local communities, regulatory authorities and the media.

By focusing on these three Sustainability Focus Areas across the company, Borealis aims to enhance the sustainability of its operations and supply chain, support profitable business growth and enhance its employee capabilities in the areas of sustainability and stakeholder engagement.

The 2017 to 2019 Sustainability Roadmap comprises 44 key sustainability initiatives, built around the three Sustainability Focus Areas, both on a local level and Group-wide. Implementation of these initiatives continued in 2018 and by year-end, 35 initiatives were completed. Every two months, the Sustainability Advisory Team comprising senior leaders from key functions across the Group, provides insights and guidance on these initiatives to optimise their business impact.

Fig. 2: **Borealis' Sustainability Strategy**

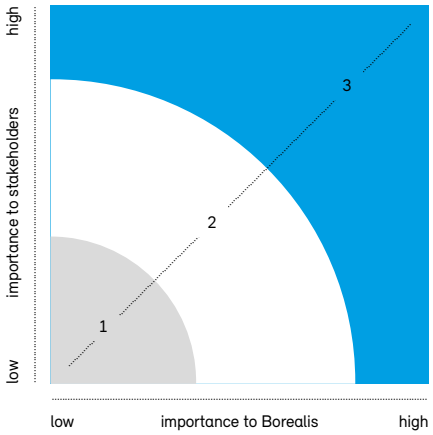
Borealis' vision — **To be the leading provider of innovative plastics, chemical and fertilizer solutions that create value for society**

Strategic objectives	**Focus areas**		
	Circular Economy	**Energy & Climate**	**Health & Safety**
Enhance sustainability in our operations and the supply chain	– Reduce packaging & waste – Strive towards Zero Pellet Loss – Explore 2nd generation renewable feedstock & chemical recycling of plastics	– Increase Borealis' energy efficiency and reduce flaring – Leverage opportunities to use locally produced renewable energy – Reduce CO_2 emissions in transportation	– Implement a pro-active strategy on chemicals safety and substitution planning – Ensure occupational health & safety and process safety
Support profitable business growth	– Become recycling technology leader and increase circularity of PO – Enhance sustainable farming services & technologies	– Enhance PO product portfolio that increases the use of renewable energy, energy efficiency and reduces emissions – Enhance our AdBlue® business	– Launch new innovations that provide enhanced safety in food packaging, automotive, healthcare, energy and communication infrastructure
Enhance capabilities and stakeholder engagement	**Enablers** Employee training & capability building // Stakeholder engagement & advocacy Sustainability reporting // Community & Social Engagement		

Fig. 3: **Key aspects of Borealis' materiality assessment**

1. Low importance
- Biodiversity
- Water availability & quality

2. Medium importance
- Sustainability in the supply chain
- Transparent documentation & reporting
- Community & social engagement



3. High importance
- Energy efficiency
- Climate change mitigation
- Pollution prevention
- Resource efficiency
- Waste prevention
- Eco-design & innovation
- Occupational health & safety
- Process safety
- Product safety/consumer protection
- Working conditions & labour practices
- Employee development & retention
- Ethical business practices

Portfolio Assessment

Borealis' flagship sustainability project this year was the establishment of a Product Sustainability Compass. Extensive work was done with several functions, such as marketing and sales, business intelligence, product stewardship, innovation, supply chain and strategy, guided by an expert external consultant, to create a robust method that systematically identifies the sustainability-related opportunities and risks of our polyolefin product portfolio. The method conforms to the WBCSD chemical industry methodology for portfolio sustainability assessments, and during this pilot phase around 10% of the Group's products by sales volume were assessed. The Product Sustainability Compass adds valuable insights into Borealis' product portfolio at a much deeper level, thus embedding sustainability at the core of product decision making. In 2019, the Group will extend the Product Sustainability Compass across a wider range of its products and align its Innovation Sustainability Index accordingly.

Responsible Sourcing

To ensure responsible sourcing throughout its supply chain, in 2017 Borealis took up the voluntary obligation to be annually assessed according to the systematic Ecovadis Standard. In 2018, Borealis was awarded its second consecutive Gold Status for its Ecovadis Scorecard, placing it within the top 1% of all Ecovadis assessments completed by participating companies during the year.

Outlook

In line with its ongoing commitment to progressing on its sustainability journey, in 2019 Borealis will:
- revise its sustainability strategy in line with the review of the corporate strategy and identify a clear roadmap for the years ahead;
- increase its focus on Circular Economy, Health & Safety, and Energy & Climate initiatives;
- reinforce and address the industry's advocacy challenges through an effective public affairs organisation.
- enhance employees' engagement and ambassadorship for plastics and the circular economy;
- develop a Group-wide sustainability scorecard for improved target setting and progress reporting on key sustainability aspects;

and specifically, Borealis will also
- expand its Product Sustainability Compass across a wider range of products and align it with the current Innovation Sustainability Index;
- advance its responsible sourcing outreach to additional suppliers; and
- complete a stakeholder engagement and materiality review, identifying current and evolving stakeholder concerns and priorities.

Project STOP (Stop Ocean Plastics)

"Project STOP is a remarkable and tangible example of how Borealis addresses societal concerns by fostering the circularity of plastics also in developing nations."

Dorothea Wiplinger, Sustainability Manager; Vienna, Austria

Partners
Co-founders: Borealis, SYSTEMIQ; **Strategic partners:** Borealis, Nestlé, Norwegian Ministry of Foreign Affairs, NOVA Chemicals, and SYSTEMIQ; **Supporting & technical partners:** Borouge, Sustainable Waste Indonesia (SWI), Veolia; **Government partners:** Indonesian Ministry of Environment and Forestry and the Banyuwangi Regency; the Coordinating Ministry of Maritime Affairs, BAPPPENAS and the Ministry of Public Works play a supportive role.

A frontline initiative creating comprehensive, economically sustainable waste management systems in areas of high plastic leakage into the ocean.

Sustainable and scalable solutions to ocean plastic need intensive local efforts, backed by national agreements and international support. Borealis and SYSTEMIQ therefore launched Project STOP in 2017. Its "system enabler" approach helps a city to introduce a dependable, low-cost waste management system, benefiting the community and keeping plastics out of the environment. Project STOP also targets wider impact through government policy and industry practices and supports other organisations and communities working on this issue.

How Project STOP Works

1. Scoping
Project teams assess cities for high levels of ocean plastic leakage and dedicated government support.

2. Preparation & Design
Baseline assessments are done, government agreements are created at all levels, and a team is gathered to provide investment, technical expertise, waste system design, project management, skills transfer, behaviour change and recycling/reprocessing valorisation. Existing local initiatives and informal waste pickers become part of the business model.

3. Implementation
Working with governments and local stakeholders, the team prepares the community to operate the waste system and stays until the job is done. The aim is to maximise value capture from the waste, with all profits used to cover the system's costs.

4. Scale-up
Applying lessons from previous cities, the system enabler can be expanded to new regions.

The first city partnership was started in Muncar, East Java, Indonesia early in 2018. Based on tangible success in Muncar, in October 2018, Borealis, SYSTEMIQ and their partners from the Government of Norway, NOVA Chemicals, Borouge and Veolia, committed to expanding Project STOP, with at least two more city partnerships in the country and USD 10-15 million raised for technical assistance, community engagement, improved infrastructure and other packaging recovery solutions. This will prevent more than 10,000 tonnes of plastic from leaking to the ocean over the next five years, while growing local employment and providing replicable solutions for other cities.

→ www.stopoceanplastics.com

STOP
WWW.STOPOCEANPLASTICS.COM

Stakeholder Engagement

Introduction

Collaborating with internal and external stakeholders is intrinsic to Borealis' ability to create value through innovation and is anchored in the Group's commitment to Responsible Care®. → Infobox Responsible Care®, p. 63

Regular engagement with a broad range of stakeholders ensures that Borealis can address their concerns and expectations, and better anticipate and respond to business risks and opportunities, thereby supporting the implementation of the Group's strategy.

Borealis' business activities involve a diverse and complex range of stakeholders at a global, national and regional level. Mapping and prioritising Borealis' stakeholders is a continuous and dynamic process.

Based on a Group-level stakeholder mapping exercise, which provided the basis for stakeholder group identification, Borealis has rolled out a stakeholder mapping process and related issue and risk assessment in all of its major locations over the past few years. At the same time, individual departments have carried out stakeholder mapping for specific market segments, such as consumer packaging and mineral fertilizer.

A process for stakeholder mapping is planned to be integrated into the Borealis Management System during 2019 and will form the basis of a Group-wide sustainability engagement and materiality assessment. → Chapter Sustainability Strategy and Objectives, p. 24

Borealis' Stakeholder Groups and Activities

Academia and Science

Borealis has ongoing research and development collaborations with leading universities, and regularly participates in symposia, working groups and advisory committees, and supports research studies.

Customers

Dialogue is actively driven through face-to-face meetings, customer visits to Borealis, customer feedback and satisfaction surveys, trade fair activities and customer conferences, product launch events, and many other channels. Most importantly, Borealis partners with selected key customers to jointly develop new products and solutions with sustainability benefits.

Employees

In line with its value Respect, Borealis engages with its employees through regular evaluation and feedback from their line manager, within the framework of the Borealis performance management system. Borealis also has a biennial employee survey, regular town hall meetings, an annual Executive Board tour to all locations, engagement walks by management and many other channels to ensure continuous feedback and enhance engagement and well-being.

Governments and Regulators

Interactions take place at a European, national and local level and through different channels, such as face-to-face meetings and participation in workshops. Borealis also welcomes visitors to its operations from governments and European institutions, as evidenced by visits to its Kallo and Schwechat operations in 2018.

Industry and Trade Associations
Borealis is an active member and has leadership positions in numerous national, regional, European and international associations, such as the World Plastics Council, CEFIC, Plastics Europe, Plastics Recyclers Europe and Fertilizers Europe, as well as HSE, logistics and industry sector, trade and networking organisations and their affiliated working groups.

Investors and Capital Providers
Borealis regularly holds Bankers & Investors Days. The Group also actively participates in relevant treasury, funding and investor relations forums and associations.

Local Communities
Borealis maintains an ongoing dialogue with communities in which it has production facilities through channels best suited to local needs. These include face-to-face meetings with community representatives, regular newsletters and Open Door Days.

Media
Borealis frequently interacts with the media via established channels, including media interviews and events, press releases and the news section of the Borealis website.

Non-governmental organisations (NGOs)
Borealis regularly participates in symposia, conferences, trade fairs and workshops, is a member of associations and alliances, and collaborates with NGOs on specific projects.

Owners
There are regular Supervisory Board meetings and owners' controllers meetings, as well as individual face-to-face interactions at executive level, project level (for example, where working on joint projects) or expert level, to exchange experiences or use synergies.

Society
Borealis interacts with the general public through events such as Open Door Days at its plants, and through dialogue with representatives such as consumer associations.

Suppliers and Contractors
Borealis has a continuous interface with suppliers and contractors through the Borealis Supplier Relationship Management programme, as well as regular face-to-face meetings, suppliers' events and annual industry conventions for experience exchange and relationship management.

Value Chain Partners
In addition to regular engagement with companies throughout the plastics and fertilizer value chain, including the waste management and plastics recycling industries, Borealis actively participates at petrochemical and chemical industry conferences and events such as the Stockholm World Water Week and GPCA Forum in Abu Dhabi, as well as various HSE conferences such as the EHS Conference in Berlin.

Works Councils
There are regular meetings of the Corporate Co-operation Council, a dialogue platform between employee representatives, works councils and top management.

Public Affairs

Approach to Public Affairs

Regulators, policy influencers and non-governmental organisations (NGOs) can all shape regulation and legislation that affect Borealis' business and its ability to implement its strategy. Borealis therefore needs to understand the policy, regulatory and NGO environment in the EU and ensure that it can contribute its knowledge and insight to discussions about the future of regulation and legislation. In line with the Group's Ethics Policy, Borealis does not join political parties or make financial contributions to them or their candidates.

Borealis' Public Affairs develops the Group's advocacy strategy and positions on key issues to support Borealis' business activities, and it implements this strategy by engaging with key stakeholders through an effective Public Affairs organisation. The aim is to drive the best outcome for society, government, the industry and Borealis, recognising that well-designed legislation and regulation can help to tackle issues such as resource efficiency, climate change, waste reduction, improved safety, fair trade and marine littering.

Public Affairs is combined with Sustainability at Borealis and forms part of Strategy and Group Development, reporting to the Chief Executive. The Group also has an internal Public Affairs Network, made up of senior location leaders.

Public Affairs works at a Group, European and location level. At the Group level, the function develops position papers on Group issues, maps stakeholders and plans engagement activities with them, carries out research to determine material issues, and manages Borealis' membership of associations such as the World Business Council for Sustainable Development.

At the European level, Public Affairs helps to shape EU policies by engaging with decision makers and influencers. It also manages the Group's membership of industry associations, such as PlasticsEurope, Polyolefin Circular Economy Platform (PCEP) and the European Chemical Industry Council (CEFIC).

At a location level, Public Affairs supports the location in the stakeholder engagement process, and manages industry association memberships and specific issues.

Borealis' Public Affairs goals in 2018 were to:
- help shape the EU Strategy on Plastics and make voluntary commitments towards it;
- support the development of a new EU Fertilizer Regulation;
- maintain the Group's license to operate in its end-use markets and support Borealis' business strategy; and
- ensure that trade issues are effectively resolved.

Key Activities

Issue Management

Borealis identified a number of Group-level issues, primarily within its three Sustainability Focus Areas of Circular Economy, Health & Safety and Energy & Climate.
→ Chapter Sustainability Strategy and Objectives, p. 24
Examples of these issues include marine littering, single use plastics, fossil-based feedstock and the safety of chemicals. Each issue has an owner, who has a number of responsibilities including developing the Group's response, identifying relevant stakeholders and channels for engaging with them to advance positions and influence policy, monitoring potential impacts on Borealis, providing input to Borealis' strategies, and representing Borealis on the issue. Borealis shares its position on issues with key stakeholders to support its business activities and growth, and focus on doing the right thing for the society, environment and economy.

EU Strategy on Plastics

In January 2018, the EU Commission issued a call for action in the Strategy on Plastics, identifying key targets for the plastics industry for 2030. These were for:
- more than 50% of the plastic waste generated in the EU being recycled;
- 100% of the plastics packaging in the EU market being either reusable or recyclable in a cost-effective manner;
- 55% recycled content in plastic packaging and in food-contact applications, although the priority for food contact is high food-safety standards;
- a four-fold increase in sorting and recycling capacity, against a 2015 baseline; and
- a cap on landfilling, with a maximum of 10% of waste going to landfill by 2035.

The aim of these targets is to drive forward at speed the development of the plastics Circular Economy in Europe by reducing plastic waste, advancing plastics packaging design for recyclability, increasing recycled content in plastic products and ensuring additional recycling capacity.

Taking leadership in the Circular Economy, Borealis went further and made its own pledge to the Ellen MacArthur Foundation, an organisation which aims to accelerate the transition to a circular economy, as part of its Global Commitment to the New Plastics Economy announced in Bali, Indonesia, in October 2018. Borealis is targeting a fourfold increase in its recycled plastics solutions by 2025.

Borealis played a key role in preparing the industry to commit to the Strategy, by being a founding member of the Polyolefins Circular Economy Platform (PCEP). It was launched during 2018 and comprises polyolefin producers, converters and recyclers. The platform brings together all members of the value chain to work together to overcome barriers to a Circular Economy in polyolefins, with a focus on consumer packaging. The organisation submitted voluntary commitments to the European Commission, whereby it committed to:

- announcing in 2018 an ambitious industry-wide 2030 roadmap, to reach 60% recycling and reuse of collected PO packaging;
- working collaboratively with all relevant stakeholders in Europe, to have more than 75% of all PO packaging designed for recycling by 2030;
- working collaboratively with all relevant stakeholders in the European waste management value chain, including municipalities and collection schemes, with the aim of collecting all PO packaging and sorting it to produce a high-quality and high-value feedstock for the PO value chain; and
- preparing an annual reporting system and inviting EU legislators to challenge and scrutinise PCEP's progress on a yearly basis.

In 2019, PCEP will turn this qualitative commitment into a quantitative pledge. This pledge will be submitted to the EU Commission, thereby supporting the voluntary pledge Borealis made to the EU Commission during 2018.

Single Use Plastics Directive

At the end of 2018, the European Commission issued the Single Use Plastics Directive aimed at eliminating and reducing the usage of highly littered plastic products and Member States will now implement the identified measures over the next two years. As a result, Borealis executed an internal risk assessment to identify the potential impact on its business.

Borealis played an active role in developing a position on the Directive and sharing its view with key stakeholders, such as European Parliament members on the Environment, Public Health and Food Safety (ENVI) Committee and the Austrian Ministry for Environment and Sustainability. This was based on intensive discussions with PlasticsEurope, the European Organisation for Packaging and the Environment (Europen) and other relevant associations.

New European Fertilizer Regulation

The European Fertilizer Regulation was revised during the year in support of developing a level playing field for all types of fertilizers ina circular economy and reached the "trialogue" phase of negotiations, between the European Council, the European Commission and the European Parliament. The three EU institutions came to an agreement at the end of 2018, under the Austrian presidency. The final regulations will be voted on in the European Parliament in early 2019.

Borealis was active in the development of this new regulation, which will allow the creation of a circular economy around these products, strengthening the supply of quality mineral fertilizer in Europe.

Ammonium Nitrate Anti-dumping

The European Commission has finalised proposals arising from two interim investigations into imports of AN from Russia. AN is the EU fertilizer industry's core product, representing 60% of its output. With Fertilizers Europe in the lead, Borealis has engaged with the European Commission, member states and their Permanent Representations in Brussels, to state that the existing anti-dumping duty on Russian imports should remain, since there is no "change in circumstance". The Commission reviewed the anti-dumping duties favourably and a new regulation was issued in November 2018.

Visits from EU Legislature

Borealis hosted two major events with two EU institutions in 2018. In September, the EU40 Network, represented by 35 members of the European Parliament and Commission, visited the Kallo location in Belgium. The network's ambition is to strengthen its members' role, which includes their understanding of business.

The EU Competitiveness Council works to enhance competitiveness and increase growth in the EU. During its meeting in Vienna, Austria, it visited the OMV/Borealis operations in Schwechat to discuss topics relevant to policy makers and Borealis' industry.

Value Chain Advocacy

Borealis Public Affairs has also been active in supporting other parts of the value chain during 2018, notably in the areas of pipes, medical devices and cables. As such, Borealis is supporting:

- Proposed revisions to the EU-wide Drinking Water Directive which governs the quality of water intended for human consumption. The proposal responds to the European Citizens' Initiative Right2Water and builds on a fitness check which concluded that the 20-year old directive is fit for purpose but needs updating. The main elements of the proposal consist of updating water quality standards, introducing a risk-based approach to the monitoring of water, improving and streamlining the information provided to consumers, harmonising the standards for products in contact with drinking water and imposing obligations to improve access to water.
- The development of an EU-wide Medical Device Directive. Representatives from the European Commission will visit Borealis' factory in Beringen, Belgium, so the Group can demonstrate that certain requirements in the directive, such as unannounced audits, would not be appropriate for raw materials producers supplying the medical device industry. On behalf of MedPhamPlast Europe, Borealis will take the lead in shaping the new directive with policy makers, reinforcing the Group's leadership position in the healthcare market.
- The development of a classification system with appropriate testing methods on smoke toxicity, which the Group expects will gain support from industry stakeholders. Smoke toxicity is a key criterion for inclusion in the EU Construction Product Regulation (CPR), in line with Borealis' halogen-free cable strategy. The Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG Grow) has launched the Fire Information Exchange Platform (FIEP) which has three initial workstreams – data collection, fire engineering and exchange of best practices. Borealis is a member of Fire Safe Europe (FSEU) which is providing general support to DG Grow and more specific support on smoke toxicity data collection. FSEU has published its position paper on the regulation urging the European Commission to consider smoke toxicity as part of the CPR and is establishing a smoke toxicity working group, including industry experts.

Outlook

Borealis Public Affairs' focus areas for 2019 are to:

- engage with stakeholders, to optimise Borealis' influence and support the Group's strategy implementation;
- continue to align the Company's position on sustainability issues;
- strengthen the voice of Borealis and PO within the European Commission and across the value chain; and
- contribute to the implementation of the EU Strategy on Plastics and Circular Plastics Alliance, to support Borealis' circular economy strategy.

Association Memberships

Borealis is an active member or has leadership positions in numerous national, European and global associations, as well as in industry, trade and networking organisations and their affiliated working groups. This enables Borealis to take part in policy debates, to exchange expertise and experience, and to monitor trends and developments. Memberships also enable Borealis to support industry efforts to implement our sustainability and business strategy. Borealis has strengthened the alignment of its positions across the key associations and aims to improve its footprint.

Borealis is a member of the following organisations and associations (in alphabetical order; not exhaustive):

- APA (Aromatics Producer Association, a sector group within Petrochemicals Europe)
- CEFIC (European Chemical Industry Council)
- CEFLEX (A Circular Economy for Flexible Packaging)
- CIRA (Cercle Investor Relations Austria)
- Cool Farm Alliance
- ECMA (European Catalyst Manufacturers Association, sector group within CEFIC)
- Ellen MacArthur Foundation “The New Plastics Economy” (NPEC)
- EMPA (European Melamine Producer Association)
- EPCA (The European Petrochemical Association)
- Essenscia (Belgium, Federation for Chemistry and Life Sciences industries)
- Europacable (as associated industry partner).
- EUROPEN (European Organisation for Packaging and the Environment)
- FARM REACH Consortium
- Fertilizers Europe
- FSEU (Fire Safe Europe)
- IFA (International Fertilizer Industry Association)
- IPLOCA (International Pipe Line & Offshore Contractors Association)
- IV ("Vereinigung der Österreichischen Industrie", the Federation of Austrian Industries)
- IVA (Industrie Verband Agra, German Agrochemical Industry Association)
- Kemianteollisuusry (The Finnish Chemical Industry Federation)
- LOSG (Lower Olefins Sector Group, a sector group within Petrochemicals Europe)
- MPPE (MedPhamPlast Europe)
- PCEP (Polyolefins Circular Economy Platform)
- Petrochemicals Europe (petrochemicals industry sector within CEFIC)
- PlasticsEurope
- PRE (Plastics Recyclers Europe)
- TCFD (Taskforce on Climated-related Financial Disclosures)
- TEPPFA (The European Plastic Pipes and Fittings Association)
- UNIFA ("Union des Industries de la Fertilisation", the association of the French fertilizer industry)
- VDT ("Verband Deutscher Treasurer e.V.")
- WBCSD (World Business Council for Sustainable Development)
- WKO ("Wirtschaftskammer Österreich", the Austrian Federal Economic Chamber)
- WPC (World Plastics Council)

Best Polymer Producers Awards for Europe 2018

Borealis was as awarded high-density polyethylene and low-density polyethylene supplier of the year by EU converters and was runner-up in the PP category. EU Commissioner Elżbieta Bieńkowska, who presented the awards, mentioned in her speech that she was impressed that a single company could win in multiple areas

Social Engagement

Introduction

Businesses can only grow sustainably in a healthy environment and stable society. To help foster social stability, Borealis has established the Borealis Social Fund. This receives funding equal to a percentage of Borealis' profits, so it can support both long-term commitments and one-off projects.

To maximise the impact of its engagement and to align Borealis' corporate social responsibility (CSR) activities with its sustainability strategy, the Group has defined three areas of engagement. These are Education and Social Integration, with the following focus:
– nurturing interest in chemistry and science;
– supporting education to meet future challenges; and
– integrating marginalised and underprivileged people.

Water and Sanitation (Water for the World), with the following focus:
– providing access to safe water and sanitation;
– supporting preservation of water resources; and
– raising awareness and promoting best practices.

Waste and Resource Efficiency and Prevention of Marine Litter, with the following focus:
– supporting research and innovation;
– improving waste management in emerging and developing countries, to prevent marine litter; and
– raising awareness and encouraging behaviour change.

In 2015, the Member States of the United Nations (UN) adopted the 2030 Agenda for Sustainable Development. 17 Sustainable Development Goals (SDGs) form the core of this Agenda, which represents a shared blueprint for peace and prosperity for people and the planet, now and into the future. Borealis is committed to acting responsibly and contributing to achieving the SDGs.
→ sustainabledevelopment.un.org/sdgs

By focusing on its three core areas for social engagement, Borealis' CSR activities contribute to the following SDGs:

SDG 4: Quality Education

SDG 6: Clean Water and Sanitation

SDG 14: Life Below Water

Education and Social Integration

Young people's education, creativity and innovation skills will determine the future of the economy and society's development. Educational systems therefore need to adopt a framework and practices that enable young people to develop the right skills, so they can put their ideas into practice. Stimulating enthusiasm for science and chemistry at an early age means that today's young and inquisitive minds will become tomorrow's leading scientists and innovators. Borealis therefore supports programmes that motivate children and young people to learn more about science and to consider a scientific career.

For example, Borealis co-finances and provides technical expertise to experimental laboratories in Austria, Finland and Sweden, which are the countries that are home to its Innovation Centres. The Johannes Kepler University (JKU) Open Lab in Linz, Austria, is one of these laboratories.

It is a hands-on laboratory for children and young adults, co-sponsored by Borealis and the province of Upper Austria. Guided by trained supervisors, young visitors can carry out experiments to experience and understand the exciting world of chemistry first hand. Borealis also supports the Gadolin Chemistry Lab in Helsinki, Finland, and the Molekylverkstan Science Centre in Stenungsund, Sweden.

Project Highlights

ZOOM Children's Museum

ZOOM, a children's museum in Vienna, Austria, explains complex content in a simple way and encourages children to develop a critical mind. Borealis has supported ZOOM since 2013 and in 2018, the Group sponsored ZOOM's Earth & Soil interactive exhibition. The exhibition teaches children about the vital importance of protecting biological diversity and the ecological balance of the soil, so we can feed a growing global population and safeguard the environment.

TGM Open Lab

Borealis is the main sponsor of the STaR (Science, Technology and Research) programme run by the TGM (School of Technology) in Vienna, Austria. In 2018, the programme extended its range with three new workshops covering plastics recycling, the significance of having clean water and air, and new technologies such as the 3D printing of plastics. Children and school classes are able to carry out enjoyable and motivating experiments which help them to learn and awaken their natural curiosity.

JKU MORE Scholarship

Asylum seekers' ability to integrate into their new society is largely dependent on their education and training. With this in mind, Borealis and JKU have initiated the "MORE" scholarship programme. This is the first scholarship programme of its kind in Austria, enabling asylum applicants to start university studies and filling a critical gap in government support. An initial 23 students from eight nations were selected for the 2017/18 academic year and 21 for the academic year 2018/19.

Water and Sanitation

Billions of people around the world lack access to clean water and adequate sanitation. This contributes to nearly 1,000 children dying each day due to preventable diseases and is a major hurdle for the development of both people and nations.

Water for the World is a joint Borealis and Borouge initiative which supports sustainable solutions for this global problem. To maximise the benefit it brings, Water for the World works in partnership with non-governmental organisations and the private sector, including business partners and customers of Borealis and Borouge. Since its launch in 2007, Water for the World and its partners have carried out numerous projects across Asia and Africa, including in India, Pakistan, Nepal, China, Ethiopia and Kenya, benefiting more than 800,000 people.

Project Highlight

Mozambique

Severe water shortages in Mozambique particularly affect low-income communities who cannot afford to buy tankered water. Water for the World has therefore teamed up with Water and Sanitation for the Urban Poor (WSUP) in a project to benefit around 50,000 low-income residents in the cities of Maputo and Matola.

The project will enable borehole operators to upgrade their water supply systems, for example by identifying and fixing leaks, improving disinfection and pumping systems, and extending the network with high-quality pipes. The pipes are being manufactured by Borealis customer Politejo, using Borealis' PE 100 material. Borouge provided training for technical staff on PE 100 pipe systems, focusing on supporting better design, management and operation of the network. The project, which is scheduled for completion in 2019, will also improve the capacity of the national infrastructure owner, FIPAG, to better manage and operate the network, including the regular control of water quality.

Waste and Resource Efficiency and Prevention of Marine Litter

The growing quantity of plastic leaking into the environment has reached a critical level, with up to 12 million tonnes entering the oceans every year. Ocean plastic leakage is a symptom of a linear take-make-dispose economic model. Studies indicate that the total economic damage to the world's marine ecosystem caused by plastic amounts to at least USD 13 billion annually.

Project Highlight

Project STOP – Stop Ocean Plastics

In 2017, Borealis joined with SYSTEMIQ, an advisory and investment company that aims to tackle system failures, and jointly launched Project STOP to achieve the following three objectives:

– zero leakage of waste into the environment;
– increased resource efficiency and recycling; and
– benefits for the local community, by creating new jobs in the waste management system and reducing the impact of mismanaged waste on public health, tourism and fisheries.

Project STOP uses a "system enabler" approach in which a team of experts in waste management, plastic recycling, business development and behaviour change helps cities design and implement integrated, low-cost waste management systems. The STOP team is embedded with local government for several years and provides implementation support across every facet of waste system development until the new system is institutionalised.

Project STOP was formally kicked-off in July 2017 and publicly announced at the Our Oceans Conference 2017 in Malta. Implementation of the first city partnership project started in April 2018 in Muncar, East Java, Indonesia. Muncar is a major fishing port suffering from plastic litter in its harbour, beaches and rivers.

Community meetings and door-to-door household trainings were conducted to teach local people how to sort waste at a household level. This is important for ensuring that plastic waste is not contaminated with organic waste, thereby increasing the value of the plastics collected, so better prices can be achieved for it. A more efficient collection system was designed and is now being implemented in an initial district. This included defining an ideal collection route and frequency, as well as designing a special waste collection cart which allows easy collection. In addition, the people who will actually run the waste collection and sorting facilities were trained in organisational design, finance management and business planning. Major improvements were made in the one existing community sorting facility, where waste is being sorted and processed. A conveyer belt was installed which makes the sorting faster and easier, with better separation of the different waste types. The achievements of Project STOP were acknowledged by the Abu Dhabi National Oil Company (ADNOC) at its annual Excellence Awards celebration, where the project was named the winner in the "Responsible" category.

At the Our Oceans Conference 2018 in Bali, Borealis and SYSTEMIQ joined forces with the Government of Norway, NOVA Chemicals, Borouge and Veolia, to announce their commitment to expanding Project STOP, initiating at least two additional city partnerships in Indonesia and raising up to USD 15 million. At a minimum, this will prevent more than 10,000 tonnes of plastic from leaking into the ocean over the next five years, while growing local employment and providing replicable solutions and innovations for other cities. → www.stopoceanplastics.com

At a location level, Public Affairs supports the location in the stakeholder engagement process, and manages industry association memberships and specific issues.

What We Do At Borealis

Our Business Model

Industry Segments

Polyolefins

Energy

Borealis is a leading provider of polyolefin compounds for the global energy industry. Step-change innovations based on the Borlink™ technology make electricity power grids more robust and reliable, eliminate wastage, and help transport energy from renewable sources more efficiently, and over longer distances. The broad range of sophisticated solutions include extra high, high, and medium voltage solutions for energy transmission, and low voltage solutions for energy distribution cable applications.

Safer wires and cables for the solar, automotive, and construction industries are made possible by unique Borealis polymer manufacturing technologies. Borealis also has a proven track record of innovation in the area of flame retardant cables for these industries. Borealis offers a comprehensive range of communications cables solutions for advanced data, copper multipair, fibre optic, and coaxial cables, all of which enhance the efficiency of data and communication networks.

Leading Borealis PP material solutions are used to produce capacitor film products. Exhibiting exceptional cleanliness standards, these materials help achieve outstanding electrical properties. Their consistent processing behaviour enables the production of extremely thin films.

Unique polymer and manufacturing technologies using Borlink™, Visico™/Ambicat™, Borstar® and Casico™ allow Borealis to offer innovative compounds tailored to specific customer needs.

Borealis has recently expanded the scope of its endeavours in the energy sector. With the launch of the new flagship solar brand Quentys in 2017, Borealis began to revolutionise the global solar industry. Pioneering new products based on Quentys are making solar energy more effective and

Fig. 4: **Industries served by Borealis' polyolefins applications**

Polyolefins industries

Automotive

Energy

Pipes & Fittings

Segments served

Consumer Products

Healthcare

Polymer Solutions

Circular Economy Solutions

affordable. For example, the ICOSOLAR® CPO 3G, a co-extruded PP solar backsheet, boosts photovoltaic (PV) module output and reduces output decay. Borealis Polyolefin encapsulant films improve the operational reliability of PV modules throughout product lifetime. This results in better cost efficiency and thus greater viability for solar power.

Automotive

Borealis is a leading supplier of innovative polyolefin plastic materials for engineering applications in the automotive industry.

Proprietary Borealis technologies are lighter weight replacement solutions for conventional materials like metal, rubber and engineering polymers. Borealis' material solutions help facilitate lightweight construction and thus play an important role in reducing carbon emissions. For instance, over the lifespan of an automotive application like a bumper, eight kilogrammes (kg) of carbon emissions can be avoided by using one kg of polypropylene (PP) compounds. Borealis grades with post-consumer recycled (PCR) plastics content meet growing industry and end-user demand for high quality materials that make better use of the planet's resources. By combining PCR and virgin material to produce high-end grades of consistent quality, fewer resources are used and less waste is generated over the lifetime of the product.

Borealis offers these leading-edge, lightweight polyolefins for a wide range of exterior, interior, and under-the-bonnet applications, including: bumpers, body panels, dashboards, door claddings, central consoles, pedal housings, cooling systems, battery trays and semi-structural body parts. Working closely with key value chain partners, Borealis continually develops novel materials for specific composite applications such as structural carriers.

Pipes & Fittings

A trusted partner to the pipe industry for over 50 years, Borealis supplies advanced polyolefin pipe system materials to a wide range of projects and communities around the world. By offering more durable and reliable pipes, Borealis' step change innovations continue to boost the sustainability of pipe networks by making them safer and more efficient. These improved networks also help eliminate wastage and loss whilst at the same time offering energy savings. Water and sanitation systems can be made more efficient and reliable by using proprietary Borealis materials. For example, when compared to conventional materials, modern polyethylene (PE) systems reduce water losses by a factor of eight. Trenchless technology reduces installation costs by up to 60%.

Using its proprietary Borstar technology as a base, Borealis offers pipes used in many different industries: water and gas supply, waste water, drainage and sewage disposal, and plumbing and heating.

For the oil and gas industry, Borealis provides reliable and high-quality solutions from one end of the pipeline to the other, including multi-layer coating solutions for onshore and offshore oil and gas pipelines.

Consumer Products

With over 50 years' experience in the industry, Borealis is an innovative and reliable supplier of superior polyolefin plastic materials used in advanced packaging, fibre, and appliances.

Value-added packaging and fibre innovations play a role in safeguarding the quality and safety of consumer and industrial products, but also fulfil demand for enhanced functionality and convenience. Plastic food packaging, for example, helps protect and preserve food from farm to fork. Spoilage is avoided thanks to efficient filling systems and leak-resistant packaging. Food stays fresher longer, and less must be thrown away. What is more, the consumer has a wider range of choices when it comes to convenient and appealing packaging formats.

Superior and proprietary Borealis technologies, such as Borstar, also make advanced applications possible in flexible packaging (including lamination film, shrink film, stand-up pouches); rigid packaging (caps and closures, bottles, thin wall and transport packaging); and non-woven and technical fibres (filtration systems, hygiene products, technical textiles).

Advanced PP solutions offered by Borealis make white goods (such as washing machines, refrigerators, air conditioning units and more); and small appliances (toasters, ventilators, power tools etc.) lighter yet more robust, more energy efficient yet visually appealing.

Healthcare

Borealis offers reliable solutions that add value to healthcare thanks to an impressive track record in Value Creation through Innovation, and close cooperation with customers.

The growing Bormed polyolefins portfolio offers superior technical performance for medical devices, pharmaceuticals, and diagnostic packaging. Borealis' innovations help make healthcare packaging and medical devices safer and more affordable whilst improving usability, a key criterion in today's ageing society.

Healthcare products that have all been enhanced by advanced polyolefins made by Borealis include, among others: medical devices, medical pouches, sachets, syringes, insulin injection devices, unbreakable transparent bottles, and single-dose eye drop dispensers.

Importantly, as global suppliers, Borealis and Borouge can ensure the security of supply, and provide technical support tailored to the specific and stringent requirements of the market.

Polymer Solutions

Borealis continually develops novel and performance-enhancing solutions such as polymer modifiers (plastomers and elastomers), foam solutions, and reinforced polyolefins for structural parts. These material solutions may be designed for new or existing applications.

In polymer modifiers, Borealis continues to expand its wide range of attractive solutions. The multitalented Queo™ brand helps bridge the performance gap between conventional plastics such as PE and conventional elastomers like ethylene propylene diene monomer. Queo makes it possible to meet or even surpass the most demanding requirements in sealing, flexibility, compatibility and processability.

Borealis' high melt strength (HMS), PP-based foamed products fulfil the varying and sophisticated needs of both converters and consumers in the packaging, automotive and construction industries. For example, foam solutions in packaging offer excellent recyclability, especially when compared to conventional alternatives. Furthermore, HMS PP foam also offers weight reduction, heat stability (for microwavable packaging) and good thermal insulation properties.

Borealis' reinforced polyolefins are novel, performance-enhancing material solutions. The wide range of PP compounds are globally available and help contribute to enhanced sustainability, for example through improved cost and energy efficiency.

Borealis' Brand Reputation

Strong brands outperform in the marketplace and are therefore sources of sustainable competitive advantage. Their ability to influence buying decisions and generate economic value means that strong brands affect the three fundamental levers of business value creation: growth, profit and risk.

Borealis strongly believes that in today's quickly changing environment, its brand is one of the strengths that sets it apart from the competition. In previous years, the Group had invested in building a strong Borealis brand, to reflect and communicate its business growth.

Today and in the future, the Group must focus on managing and utilising the Borealis brand in the best way for its business.

Over the last 18 months, the Group has therefore looked closely at where the Borealis brand stands against the competition, in all of its business segments. As part of this process, Borealis conducted a survey among customers, potential customers and other stakeholders, including local communities, environmental organisations, investors, media, academia, supply chain partners and potential employees. After analysing the answers of more than 7,000 respondents, totalling more than 200,000 data points, the Group determined that the Borealis brand is outperforming its competition in most instances and for most stakeholders. In particular, Borealis' efforts over recent years have been rewarded with high authenticity and relevance scores. Borealis is honoured by its stakeholders' trust and is committed to delivering the best solutions for their needs.

Going forward, Borealis will monitor its brand performance periodically and use the resulting insights in brand and business management. This will help the Group to become ever more responsive, differentiated and engaging for all its stakeholders and partners.

Circular Economy Solutions

The Borealis Circular Economy Solutions team is dedicated to discovering new opportunities for long-term business growth in the areas of mechanical recycling and design for recyclability (DfR). → Chapter Circular Economy, p. 46

Base Chemicals

Hydrocarbons & Energy

Borealis sources various feedstock such as naphtha, butane, propane and ethane from the oil and gas industry. Through its olefin units, it converts these into the building blocks of the chemical industry: ethylene, propylene and C4 hydrocarbons (petrochemical derivatives consisting of butanes, butylenes and butadienes), among others. Steam crackers in Finland, Sweden, and Abu Dhabi – the latter operated by Borouge – produce ethylene, propylene and C4 hydrocarbons, while propylene is also produced in a propane dehydrogenation plant in Kallo, Belgium. Feedstock and other olefins required for Borealis and Borouge polyolefin plants are either sourced from its owners, or purchased on the markets. A range of co-products from the steam cracking process, including butadiene, butene compounds, and pygas, are also sold on international markets.

Phenol, benzene, cumene, and acetone are produced in Finland, and sold mainly to the adhesive, fibre, epoxy resin and polycarbonate industries. In the Nordic and Baltic regions, Borealis is the leading producer of phenol, which is used in adhesives, construction materials, carpets, CDs, DVDs, mobile phones and household appliances. Acetone is commonly used in solvents for paints, acrylics, fibres and pharmaceuticals.

Melamine

As the second-largest producer of high-quality melamine in Europe, Borealis produces melamine at its plants in Linz, Austria, and at its facility in Piesteritz, Germany. Converted from natural gas, melamine has become an essential material for the global production of synthetic resins. Around 80% of Borealis' melamine production is destined for the wood-based panel industry, for example for decorative surface coatings of wood-based materials.

In the manufacture of everyday objects used in the kitchen or around the house, melamine also plays an important role, for example as one component used to make handles for pots and pans.

Fertilizers

Efficient and effective use of fertilizers has become more essential than ever. The world's population is expected to rise from today's 7.6 billion to over 9.6 billion by 2050, and an increasing number of people will live in densely populated urban areas. As incomes in emerging nations rise, more meat is consumed and thus more grain to feed livestock must be produced. Biofuels also generate demand for increased yields. Because space for agricultural expansion is limited, yields must be optimised.

At the same time, in many nations there is a heightened environmental awareness of the need to promote fertilizers with low carbon footprints, maintain healthy soil environments, and reduce run-off from fields.

Borealis produces and then distributes and supplies around five million tonnes of fertilizers and technical nitrogen products each year via its Borealis L.A.T distribution network. With more than 60 warehouses across Europe and an inventory capacity of over 700,000 tonnes, Borealis L.A.T promotes a broad fertilizer portfolio: nitrogen-based straight fertilizers; complex fertilizers – a combination of nitrogen (N), phosphate (P) and potassium (K) as well as speciality fertilizers; and a range of technical nitrogen products, from ammonia and ammonium nitrates to nitric acid and urea solutions. Non-European markets are serviced mainly via the Borealis Rosier distribution network.

Technical nitrogen products

A broad range of technical nitrogen product solutions is derived from the raw materials urea, ammonia, ammonium nitrate and nitric acid.

AdBlue®

AdBlue, a high purity aqueous urea solution, is used as an NO_x reduction agent for trucks, buses, tractors, construction machinery, and diesel passenger cars.

Innovation

Goals

Borealis' innovation goals are as follows:
- in Polyolefins, to continue to develop unique products and solutions based on proprietary technology, with high purity and improved performance;
- in Fertilizers, to improve processes, reduce emissions, develop and improve products, and investigate alternative feedstocks; and
- in Base Chemicals, to evaluate new technology, improve energy efficiency and emissions and improve feedstock purity and flexibility.

Key Achievements and Results

During 2018, Borealis made further progress with its innovation projects across the Group. In Polyolefins, Borealis continued its key innovation programmes, resulting in:
- a successful technology transfer to Bayport Polymers, a joint venture with Total and Nova Chemicals at the Gulf coast in Texas, US;
- starting a feasibility study to support growth projects in Kazakhstan;
- new products including record-breaking cable insulation, solar panel solutions, lightweight materials for automotive applications and recycled packaging solutions; and
- progress towards ensuring all polypropylene products are produced using a non-phthalate-containing catalyst;
- 117 priority patent applications filed in 2018, a recent company record.

Polyolefins also:
- improved its portfolio management process to enable the business to prioritise its projects;
- inaugurated an expanded high-voltage testing centre in Stenungsund, Sweden, to help develop products supporting society's growing demand for electricity; and
- further increased its open innovation programme, working on specific projects with customers and other partners.

In Fertilizers, Borealis' innovation achievements included:
- testing new phosphorous sources for fertilizers;
- implementing monitoring tools for critical equipment and installing ammonia process simulation models which are used for process optimisation and the implementation of advanced process control tools;
- investing in emission reduction technologies and other environmental enhancements;
- developing new product formulas and enhancing product quality;
- increasing production throughput by reducing caking and fouling; and
- introducing a laboratory piloting capability for raw material assessment.

In Base Chemicals, achievements in the year included:
- evaluating and testing alternative hydrocarbon sources;
- evaluating and testing bio-feedstock technology;
- running a project to improve cracker feedstock purity; and
- improving production processes, for example through optimising catalyst selection, fouling mitigation and material support for furnaces.

Introduction

Innovation is fundamental to Borealis' ability to create added-value products that benefit society. It also helps the Group to improve its competitiveness and enhance its efficiency and sustainability, and therefore has a direct impact on people, the planet and profit.

In Polyolefins, innovation focuses on providing solutions to societal challenges, for example by increasing food durability through efficient packaging, improving the effectiveness of water and energy distribution or enabling new medical applications. Innovation is therefore driven by market needs and is focused on specific outcomes. It enables Borealis to remain among the leading European polyolefins producers, as the only producer that operates all types of polymerisation processes. Borealis is also able to use its leading technology position in venture-based licensing, in which Borealis provides the technology and its partners bring their complementary strengths.

In Fertilizers, innovation enables Borealis to improve its product formulas and quality, make its processes more reliable, and enhance its efficiency and sustainability. Examples include finding new ways of utilising waste, reducing emissions or adapting to alternative feedstocks, such as secondary phosphorous sources for NPK fertilizers. Similarly in Base Chemicals, Borealis looks to find innovative approaches to using new feedstock sources, improving resource efficiency and reducing energy consumption and flaring, which in turn reduces emissions of greenhouse gases and other substances such as dust.

Innovation Culture

In Polyolefins, the Value Creation through Innovation strategy sets Borealis apart from other companies. This is because Borealis' strategy does not focus on any one product or solution, but on the entire polyolefins value chain. Together with Borouge, Borealis examines the complete life cycle of a product: how it can be created, processed, deployed and, ultimately, recovered or recycled.

The Visioneering Philosophy™ describes this drive towards Value Creation through Innovation. The Visioneering Philosophy is about pushing the boundaries of science to develop customer solutions with exceptional performance. This means understanding what the customer wants and leveraging the right competencies, tools and expertise to develop the best solution with a specific service level. Borealis therefore works to address the challenges of society with smarter, more sustainable solutions for the future.

In Base Chemicals and Fertilizers, innovation is primarily focused on operational excellence and process improvements. Reducing energy use and CO_2 emissions are prime research areas which include new technology assessments. The collaboration with QPinch is an excellent example of how Borealis works with external companies, including start-ups, to reduce its environmental footprint.

Organisational Structure

Borealis' key innovation sites are its Innovation Headquarters (IHQ) in Linz, Austria, and two Innovation Centres in Stenungsund, Sweden, and Porvoo, Finland. Three PE and PP pilot plants are also integral to Borealis' competencies in InnoTech. Two of these pilot plants are in Porvoo and one is in Schwechat, Austria. The Group's innovation facilities engage in independent but coordinated efforts, with the common aim of developing innovative solutions that provide added value for customers and end users.

The IHQ's main R&D focus is on polymer design and compound research for polymer applications in the energy, automotive, advanced packaging and healthcare industries. Another important focus is the surface aesthetics of plastics. The Borealis Sirius catalyst plant is also located in Linz.
In the Innovation Centre in Stenungsund, the focus is on polymer design, scientific services and R&D in the area of energy and infrastructure industry solutions. This Innovation Centre includes Borealis' newly expanded high-voltage testing centre. With catalyst scale-up facilities and fully integrated Borstar PE and PP pilot plant lines, the Innovation Centre in Porvoo is an important site for advanced catalyst and process research. All Innovation Centres have close collaborations with local and international universities and research institutes.

The Borouge Innovation Centre in Abu Dhabi, UAE, cooperates closely with Borealis' Innovation Centres, to explore enhanced infrastructure, automotive and advanced packaging application solutions.

Borealis' global innovation community comprises more than 500 employees. The Group invests approximately 1.6% of its revenue in innovation and R&D, in line with Borealis' position as the technology powerhouse of the industry.

In addition to its internal collaborations, Borealis undertakes a wide range of engagement with relevant stakeholders in innovation. It is a member of the Dutch Polymer Institute, attends polyolefins industry conferences and publishes papers. The Borealis Innovation and Technology management team is invited to present at about ten leading conferences around the globe each year, such as SPE and PEPP. Borealis is also a member of the European Ethylene Producers Conference (EEPC) and participates in a number of EEPC issue groups. → Chapter Public Affairs, p. 30

Protecting Intellectual Property

Borealis has an extensive patent portfolio, comprising around 6,400 granted patents and around 2,800 pending patent applications. On average, Borealis registers roughly 100 different patent families each year, which safeguard Borealis' proprietary technologies and protect its licensees. Many patents also protect products and applications.

Risks and Opportunities

Borealis faces both general and business unit-specific risks in relation to innovation.

In general, the Group must ensure it protects the confidentiality of its innovation projects and that it can attract and develop the talent it needs. There is a diminishing talent pool available which Borealis looks to address by attracting young people into the industry.
→ Chapter Corporate Governance, p. 85

Borealis raises its profile with talented individuals through the Borealis Student Award, which goes to students with the best Diploma, Masters and PhD thesis. The Group also develops its R&D talent, for example through its Talent Expert Pool. Through this activity, ten or twelve colleagues are engaged in learning over a period of two years. The Borealis Business Academy also offers an extensive range of training, covering a wide variety of skills.

In Polyolefins, market volatility affects Borealis' profitability but the business continues to invest similar amounts in R&D and innovation each year, independent of the market situation. The industry is also mature, which means that step-change product development is needed to drive growth, rather than small improvements. Borealis' philosophy includes a long-term commitment to innovation and technology.

In Fertilizers, feedstock prices and operational excellence are the drivers of business performance, so the task of Innovation and R&D is to help ensure high-quality feedstock sourcing and assist in continuously increasing the uptime of Borealis' assets.

"Our highly skilled and creative researchers must develop sustainable solutions that add value for our customers, grow Borealis' business and enable society to make progress."

Alexandra Albunia, Competence Manager, Innovation & Technology, Project Driven Organisation; Linz, Austria

Innovation Success Stories

Polyolefins

New Business Development identifies and assesses new opportunities and develops them accordingly. At present, the Foam & High Melt Strength, Polypropylene, Solar and Emerging Markets units are addressed in New Business Development.

To turn innovative ideas into new business, New Business Development first identifies opportunities across all areas of Borealis Polyolefins and beyond. As polyolefins show advantageous Life Cycle Analysis, they are increasingly replacing incumbent materials such as paper, metal, glas and PVC, polystyrene and engineering plastics. Then, after a systematic assessment which evaluates both market demand and unmet market needs as well as any technical and commercial factors crucial to success, the new business opportunity is cycled into development.

Sustainability is an important part of the project assessment process. All projects must be health, safety and environmentally compliant and must pass a review of their sustainability impact compared with any existing solutions. Once the project has achieved certain predefined goals, it is transitioned to the business within Advanced Products, where development and growth of this emerging business continues.

Key achievements in 2018 included major progress within the Solar division of New Business Development, with several applications such as polyolefin backsheet and encapsulant materials being launched for solar photovoltaic panels. In addition, new recyclable polypropylene foams attracted widespread attention from customers.

Fertilizers

In both Fertilizers and Base Chemicals (see next page), Operations and Research & Development work closely together to identify innovative ideas, evaluate them through innovation projects and advance them to implementation in Borealis' operational units, as well as with customers.

In 2018, Borealis L.A.T launched NutriGuide in Austria and France. This user-friendly digital tool optimises crop nutrition by allowing farmers and resellers to determine the amount of fertilizer application required for their specific needs. In only a few intuitive steps, the user enters information about soil composition, crop type and growth stage. NutriGuide then generates instant recommendations for optimal fertilizer types and amounts, compliant with local regulations.

The NutriGuide tool runs on mobile, tablet and desktop devices. It complements the digital services offered by the Borealis L.A.T diagnostic tool N-Pilot®, which has found widespread use among growers since its launch in 2014. The NutriGuide is the first digital tool designed and developed by Borealis' new in-house Digital Studio.

Base Chemicals

In Base Chemicals, feedstock prices are volatile and innovative new sources of feedstock are required. This means that Innovation and R&D focused, amongst other things, on developing high-speed analytical tools and methods for rapid purity assessment of the feedstocks on offer.

Outlook

Borealis will continue to develop technologies enabling the production of advanced materials that satisfy customers' needs and keep the Group competitive in the market. The Group is also making a significant effort to develop and participate in the circular economy of polyolefins.
→ Chapter Circular Economy, p. 46

Technologies that will enable and/or simplify the recycling of polyolefins are being actively developed with the highest priority.

Borealis will also continue to work on further improving the efficiency of its Base Chemical plants.

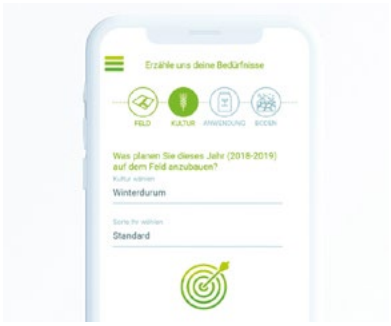
Borealis continues to have a long-term vision and commitment to research, development and innovation. Addressing sustainability topics, both challenges and opportunities, forms an increasing part of the Group's innovation efforts.

Innovation Highlights

Quentys™: improving the reliability and cost efficiency of solar modules

Solar power has the potential to transform the global electricity industry. To help their partners and customers exploit the potential of solar, Borealis and Borouge introduced solar encapsulant film in 2018, based on new Quentys polyolefin grades. The encapsulant film protects photovoltaic cells that generate power from sunlight. It is a significant advance on previous films and can be applied more quickly and cheaply, while reducing the chance of creating waste. In use, the film is more reliable and longer lasting, helping to increase the module's service life. The film also helps to increase power output, further reducing the cost of solar power generation. The encapsulant film is the second solar application launched under the Quentys brand, following the introduction of a new backsheet in 2017.

→ www.borealisempoweringsolar.com



NutriGuide: optimising crop nutrition

NutriGuide is the first digital tool designed and developed by Borealis' in-house, Digital Studio. → Digitalisation Programme, p. 22. The free, user-friendly platform runs on mobile, tablet and desktop devices. It allows farmers to enter information about soil composition, crop type and growth stage. It then determines the precise amount of fertilizer they need to apply, while staying compliant with local regulations. NutriGuide complements Borealis' diagnostic N-Pilot tool which identifies the current nitrogen requirements of crops quickly and conveniently, and has found widespread use among growers. Smart farming technologies such as NutriGuide help to increase crop yields, reduce fertilizer costs for farmers and avoid excess run-off from fields which can pollute water courses.

→ nutriguide.borealis-lat.com

EverMinds™: making the circular economy front of mind

Borealis recognises that it is essential for the polyolefins industry to implement new solutions that promote a circular economy. The Group has therefore launched EverMinds, a communication platform designed to heighten the visibility of plastics circularity and promote a more circular mind-set within the industry. The platform will help Borealis, its customers and value chain partners to innovate and exchange knowledge in the circular economy space. EverMinds will therefore boost the impact of Borealis' own circular economy activities and broaden familiarity with the topic. The ultimate aim is for the platform to inspire new, high-quality and innovative polyolefins solutions, based on the circular model of recycling, reuse and design for circularity.

→ www.borealiseverminds.com

How We Move Forward

Circular Economy

Introduction

As the global population grows, demand for plastics is increasing. Continuing with the current linear economy model, in which plastic products are made, used and disposed of, will lead to growth in plastic waste and environmental pollution while putting pressure on the planet's limited resources. The solution is to transition to a circular economy where plastics are reused and recycled and made from renewable feedstock. A circular economy therefore decouples economic growth from resource constraints while reducing the leakage of waste into the environment. It also cuts greenhouse gas emissions by substituting virgin feedstock with recyclates which have a 30% lower carbon footprint.

The circular economy model also benefits people. It provides employment for those working in the value chain and recycling operations, while creating better living and working conditions through a cleaner environment. Its benefits to people and planet show that the circular economy protects the industry's license to operate.

Borealis therefore sees the circular economy as a business opportunity and strongly believes that the model will support its growth ambitions. In particular, the principles of reusing products where possible, recycling plastic waste and maximising resource efficiency present clear business opportunities for Borealis. The circular economy is therefore one of the three focus areas in the Group's sustainability strategy, alongside Energy & Climate and Health & Safety.
→ Chapters Energy & Climate, p. 50, Environmental Management, p. 78, Occupational Health & Safety, p. 55

To help identify and realise the growth opportunities, Borealis has established a Circular Economy Solutions group within its Polyolefins (PO) business. This team focuses on recycling of post-consumer plastic waste with current and enhanced recycling technologies which Borealis has identified as the area where it can have the most impact. Over the past few years, the Group has therefore been actively advancing its recycling and sustainability efforts, in line with its sustainability strategy which has PO recycling as one of its cornerstones. However, Borealis is also exploring other opportunities, such as chemical recycling.

The Challenges for the Industry

Plastics recycling companies could produce more recycled plastic products if more raw materials were available that could be recycled economically. However, market disruptions caused by, for example, landfilling, incineration, exports, bad packaging design and insufficient sorting result in low recycling efficiency. Even in Germany, which is one of the leading countries with a circular economy waste regime run by extended producer responsibility schemes, less than 30% of collected post-consumer plastic packaging waste return as recycled materials to the converting markets.

One of the biggest issues preventing greater recycling of plastics is that many products are not designed for recycling. For example, flexible packaging often uses multiple layers of different materials, making separating and recycling the plastic layers extremely difficult. The challenge is to create packaging using only one material, while maintaining or even improving the packaging's performance.

To prevent plastic waste going to landfill or incineration, it needs to be collected separately from other waste streams. However, cheap local landfilling and the ability to recover energy by burning municipal waste reduce the incentive to separate and collect plastic waste. The European Commission's Circular Economy Package contains a plan to ban landfilling by 2030, but this will only improve the situation if it is strictly enforced in all EU member states and if the construction of new incinerators is prevented. This will require economic incentives or penalties to encourage recycling, with incineration of separated plastics seen as a last resort when they cannot be recycled in an eco-efficient way.

Easing restrictions on transporting plastic waste would help to increase recycling rates within the EU. At present, the Waste Shipment Directive stops plastic waste moving freely between member states and sometimes from one region to another within the same country. One positive development has been the Chinese Government's ban on importing most plastic waste from Europe, which began on 1 January 2018.

Creating and enforcing a legal framework that promotes a reliable supply of feedstock for recycling and provides incentives for the industry to use recycled materials, is a necessary condition for the circular economy. Extended producer responsibility schemes make manufacturers responsible for what happens to their products or packaging at the end of their lives. Examples of these schemes include Green Dot in Germany, Eco Emballages in France and Corepla in Italy. Ensuring the schemes have clear rules and stringent enforcement can give all participants in the value chain the right incentives to change their approach to corporate sustainability.

Higher and more ambitious recycling targets for plastic packaging are also important for increasing recycling rates but require transparent and standardised calculation methods. This would provide a common platform for objectively monitoring progress towards the circular economy and understanding the impact of improvement initiatives. The European Commission has included the first steps in that direction in its plastic strategy paper. Germany is leading the way at a national level, with its new Packaging Law increasing plastic packaging recycling target from 36% in 2018 to 58,5% as of 2019 and 63% as of 2022.

Advancing a circular economy through partnerships, Borealis is helping to improve the circularity of polyolefins in a number of ways. The Group shows leadership by creating and participating in activities and platforms that drive recycling options and solutions. For example, Borealis initiated the Polyolefins in a Circular Economy Platform (PCEP), actively shares its expertise as a member of the New Plastics Economy (NPEC) project of the Ellen McArthur Foundation, and is a member of Project CEFLEX, an initiative to make flexible packaging more relevant to the circular economy.

PCEP, NPEC and Project CEFLEX aim to drive the circular economy by improving product design to make it easier to re-use or recycle, helping to develop common standards for sorting plastic waste, exploring new technologies to address the limitations of mechanical recycling, and developing after-use markets for recycled plastics.

Borealis plays an important role in supporting these goals, for example, by having expert representation in all six of PCEP's working groups. These cover product design and quality standards; innovation for increased recycling of flexible packaging; developing end-use markets for PO recyclates; improving mechanical recycling and conversion technologies; driving collection and sorting of packing; and advocacy and awareness building.

During 2018, Borealis has also engaged directly with various players in the plastics value chain on the topic of the circular economy. These ranged from waste management and sorting companies to converters and brand owners who want to increase the share of recyclate in their products and applications. This is an ongoing engagement and the Group will look to build on the opportunities and relationships created.

"Borealis is truly committed to making plastics more circular. I am very happy to be part of the change."

Sofia Lönnqvist, Marketing Coordinator Circular Economy Solutions; Vienna, Austria

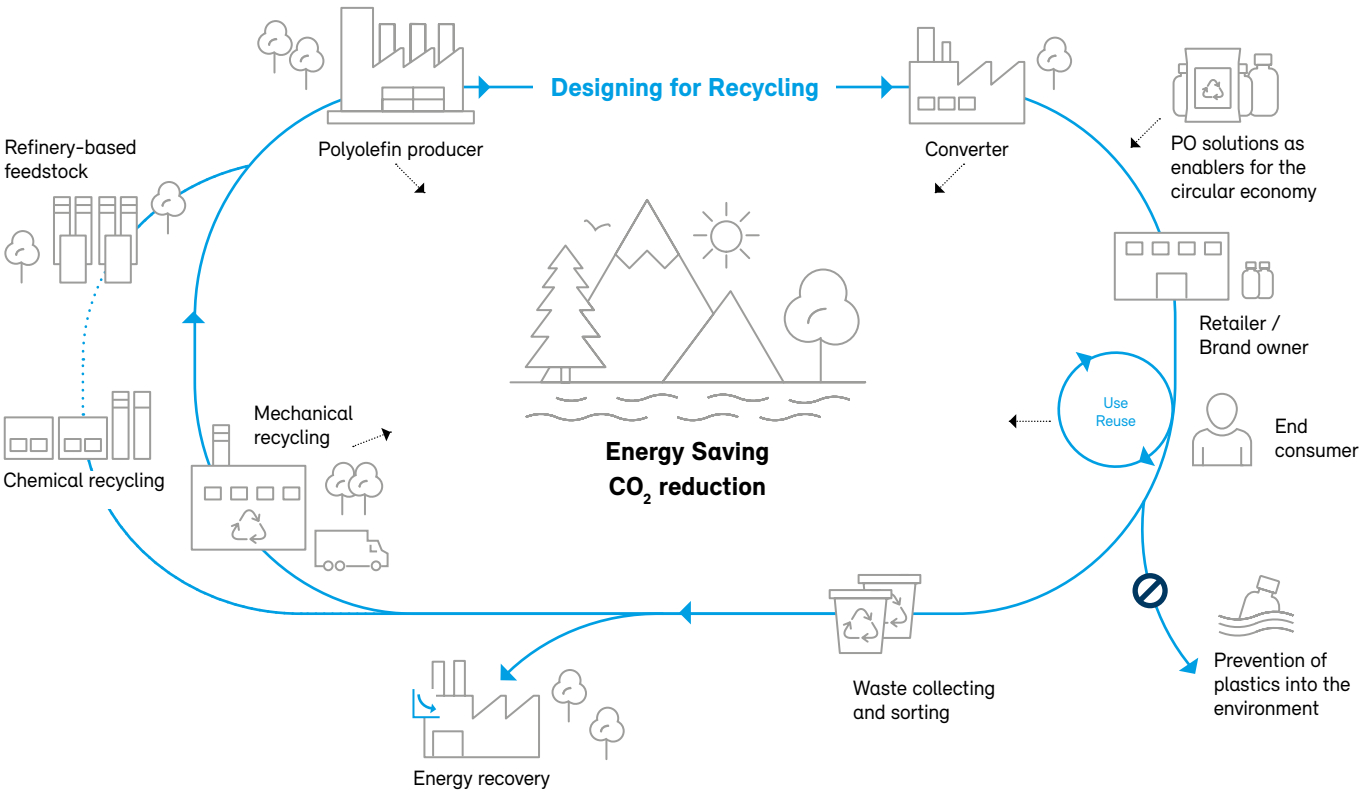
The Group supports and encourages policy makers in the development of legislation that will advance the circular economy of plastics, in particular the European Commission's Strategy on Plastics. Borealis also looks to use its European recycling experience to develop an effective blueprint for the end-of-use phases for plastics that can be adopted in other parts of the world.

In addition, Borealis cooperates with a range of stakeholders to improve product design so that products are suitable for

either reuse or recycling. The Group prototypes packaging concepts and creates proof of concept for each step in the value chain, including recyclability and performance of recyclate material. For example, Borealis' full polyethylene laminate solution can be recycled and processed into extruded film applications, opening up a broader spectrum of second life options. Another example is the Borealis grade Daploy which is recyclable and suitable for a wide range of applications where an improved environmental footprint is sought.

Based on its know-how about polyolefins and the expertise from its recycling operations, Borealis has developed ten Codes of Conduct for polyolefin packaging design. These ten codes provide guidelines on how to maximise the quality and quantity of materials that can be recycled. At the same time, they support the achievement of recycling targets and contribute to a more sustainable transition to a circular economy. The ten Codes of Conduct have been actively shared with retailers, brand owners, packaging manufacturers and designers, in order for them to embed recyclability principles into their design processes.

Fig. 5: **Borealis' vision for a circular economy**



Advancing the Circular Economy within Borealis

Within its own business, Borealis has already taken important steps towards increasing the circularity of plastics. Since 2014, the Group has offered high-end compound solutions to the automotive industry, consisting of 25% and 50% post-consumer recycled content. In 2016, Borealis strengthened its commitment to the circular economy by acquiring two of Europe's largest producers of post-consumer polyolefin recyclates – mtm plastics GmbH and mtm compact GmbH (together "mtm"). This established Borealis as the industry leader in providing innovative solutions that address growing market requirements and that meet the market's expectations in terms of sustainability.

The acquisition of mtm was a first step for Borealis in discovering the possibilities of mechanical recycling. During 2018, the mtm plastics production location in Niedergebra was upgraded and expanded with a EUR 15 million investment project, and an additional EUR 2.5 million will be invested in environmental protection and capacity expansion of mtm compact, the sister company in Fürstenwalde.

During 2018, the Group further increased its capabilities by acquiring Ecoplast Kunststoffrecycling GmbH, an Austrian plastics recycler. While mtm's focus is on rigid injection moulding solutions, Ecoplast specialises in recycling flexibles from highly contaminated household and commercial waste into high-quality low-density polyethylene recyclates, primarily but not exclusively for the plastic film market. This makes Ecoplast an important complement to mtm.

Another significant development in 2018 was Borealis signing NPEC's global commitment to eliminate plastic pollution at source. Targets within the global commitment include:

- eliminating problematic or unnecessary plastic packaging and moving from single-use to reuse packaging models;
- innovating to ensure 100% of plastic packaging can be easily and safely reused, recycled or composted by 2025; and
- circulating the plastic produced, by significantly increasing the amounts of plastics reused or recycled and made into new packaging or products.

As part of this, Borealis has committed to increasing its recycled plastics volume more than fourfold by 2025.

Outlook

Borealis recognises that the transition to a circular economy is a journey. The Group intends to further explore opportunities to increase the circularity of plastics, which may include moving beyond mechanical recycling.

At the end of 2018, Borealis announced the launch of EverMinds, a new communication platform dedicated to circular economy solutions. EverMinds has been created to heighten the visibility of plastics circularity and promote a more circular mind-set within the polyolefins industry. It will serve to streamline all of Borealis' circular economy-related activities in order to boost their impact and engender familiarity with the topic. EverMinds also aims to spark interaction and exchange between Borealis and its stakeholders. → www.borealiseverminds.com

Energy & Climate

Goals

Borealis has two energy and flaring ambitions which it aims to achieve by 2020. The Group aspires to achieve:

- a 10% improvement in energy efficiency against a 2015 baseline; and
- a 50% reduction in flaring against a 2013 baseline which equals zero non-emergency flaring.

Key Achievements and Results

- Including 2018 Borealis has approved projects which will result in annual energy savings of 1,811 GWh primary energy
- Borealis has achieved a 36% reduction in flaring compared to the baseline

Key energy efficiency achievements in the year included securing ISO 50001 certification of all of Borealis' European sites. The Group has also approved projects to save 1,811 GWh of primary energy. Projects implemented in 2018 included an upgrade to a cracking furnace; a reactor replacement at a nitric acid plant; new equipment to reduce the use of steam and cooling in producing propylene; and flaring improvements.

Introduction

Energy consumption accounts for a significant proportion of Borealis' total costs and for around 62% of its greenhouse gas (GHG) emissions, which are a key contributor to climate change. Process emissions from ammonia production represent 23% of GHG emissions and flaring losses and nitrous oxide (N_2O) emissions, represent a further 11%. This means that improving energy efficiency is the most effective way to reduce the Group's direct carbon footprint and its energy costs, while increasing its competitiveness. Energy efficiency also reduces Borealis' reliance on public energy grids and improves the security of supply.

Borealis therefore aims to continuously reduce its energy footprint through greater energy efficiency and by developing innovative solutions that save energy along the value chain. These solutions range from lightweight plastics to chemicals used for renewable energy solutions and accurate fertilizer dosing in farming. Borealis also looks to increase its use of renewable energy, as described in the Materials & Logistics chapter.

Flaring is a necessary safety measure used in refineries and petrochemical operations in which excess gases which cannot be recovered or recycled are safely burned. However, the noise and emissions caused by flaring affect surrounding communities, and flaring also incurs high costs for the Group. Flaring is incident driven and Borealis strives to reduce the need for it by continuously improving its plants' operational performance and reducing the number of plant interruptions and upsets. Flaring only occurs in hydrocarbon and polyolefin plants and not at the Group's production sites that produce fertilizers or melamine.

Organisational Structure

The Energy & CO_2 Committee is Borealis' governing body for energy and carbon management. It develops and implements Group-wide energy and emission targets, strategies and guidelines, and measures performance using key performance indicators (KPIs). The committee is headed by the EVP Operations and Health, Safety & Environment, and comprises representatives from relevant businesses and functions.

Borealis' Group-wide certifications to ISO 9001 and ISO 14001 cover almost all locations. Energy is an integral part of the environmental management system. To further strengthen its energy management, Borealis started in 2015 to prepare for certification of all its European entities in accordance with ISO 50001. This certification was successfully achieved at all European locations in 2018. Borealis' decision to achieve certification to ISO 50001 was triggered by the introduction of the European Energy Efficiency Regulation, with the Group opting to roll out a management system covering all locations rather than aiming for just the minimum legal requirements, such as having external energy audits. Plants that process raw materials for the automotive industry are also certified and regularly audited to ISO/TS 16949. The full list of certificates can be found on Borealis' website.

Borealis has improved its performance evaluations at plant level. These are performed daily, weekly and monthly, with a detailed review each quarter focusing on deviations and improvement actions. The Energy KPI tool, which contains more than ten years of data on the performance of each plant, enables an in-depth analysis of performance to highlight deviations and identify areas for improvement.

"The energy trend board helps us to optimise our plant in real time and delivers key insights when we are not fully energy-efficient, so we can bring the plant back to optimal efficiency."

Mario Tancos, Production Engineer PP3 production plant; Schwechat, Austria

The Group has also developed an "Energy Walk Curve" tool which is mandatory for each plant. The tool covers all factors that influence energy efficiency, including volume effects, feed and product mix effects, legal obligations and improvement projects. The Energy Walk Curves and other KPIs are compiled into a location energy plan which is regularly reviewed by the plant management. The Energy & CO_2 Committee reviews energy plans for all locations over a three-year period.

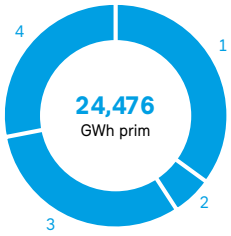
Measuring Energy Consumption and Efficiency

Borealis' main sources of energy are electricity, heat (primarily from steam), natural gas and fuel gas. The Group documents, tracks and follows up on all sources of energy each month, for every location.

The total primary energy consumption within the organisation was about 24,500 GWh in 2018. In total, 500 GWh of steam were sold. Figure 7 shows the activities for which the energy was used.

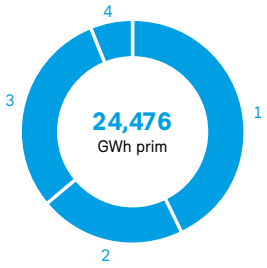
Data on all Borealis' energy consumption is collected as it is metered, then converted to the equivalent in primary energy using the Group's environmental data management tool. This allows Borealis to summarise different energy sources using one consumption figure, enabling comparability across plants and production lines and providing the Group with better information for identifying technological improvement opportunities.

Fig. 6: **Total energy consumption per source**



1. Electricity 35%
2. Steam 6%
3. Fuel gas 31%
4. Natural gas 28%

Fig. 7: **Total energy consumption per product group**



1. Hydrocarbons 43%
2. Polyolefins 21%
3. Melamine and Fertilizer 30%
4. Infrastructure, offices, warehouses, research 6%

Borealis Energy Roadmap 2020

In 2015, Borealis initiated a comprehensive energy roadmap to drive progress towards achieving a 10% improvement in energy efficiency (or 2,400 GWh) in 2020 compared to 2015. The roadmap sets out a sequence of different activities, starting with establishing a baseline and followed by three levels of action known as levers, which will deliver increasing optimisation.

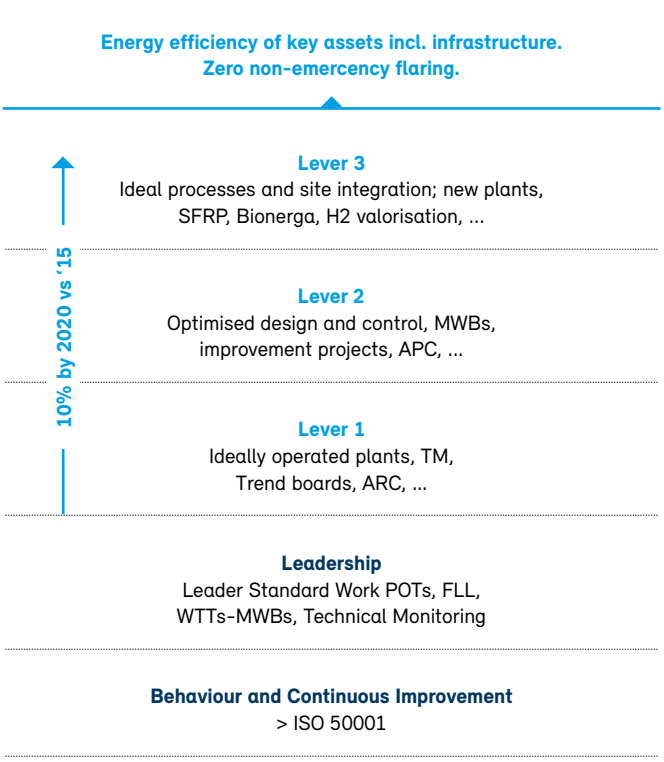
The baseline for any energy efficiency improvement is to implement and comply with ISO 50001, combined with continuous leadership engagement from key teams. Initiatives include energy teams at each production location who drive the location's energy planning process, increase awareness, act as a forum for energy issues and ensure ISO 50001 compliance.

To progress beyond this baseline, all Borealis locations run energy screening programmes every four years, often with third-party support, to evaluate their energy performance and identify improvement opportunities. Actions are prioritised based on their benefit to people (for example through improved working conditions), profit (such as the ability to generate cost savings) and the planet, in the form of environmental benefits. The prioritisation is based on factors such as a risk/opportunity assessment, total cost of ownership, internal rate of return and organisational capacity.

The three levels of actions are as follows:

– Lever 1: As a first step, Borealis is implementing tools to run its plants in the ideal way, such as introducing an energy trend board which helps operators to maintain a continuous focus.
– Lever 2: Running plants most effectively requires continual optimisation of plant design and control, and the implementation of improvement projects to remove potential barriers.
– Lever 3: Another way to increase energy efficiency is to implement new technologies during periodic production line revamps, and to seek energy integration through industrial clusters.

Fig. 8: **Building blocks of the Energy Roadmap 2020+**



APC: Advanced Process Control // ARC: Advanced Regulatory Control // FLL: Front Line Leader // MWB: Must Win Battles – high priority projects // POT: Plant Operational Excellence Team – management team of a plant striving for excellence // SFRP: Stenungsund Furnace Revamp Project // TM: Technical Monitoring // WTT: Winning Triangle Team: combined team of operation, business and innotech

Actions 2018

Borealis has approved energy saving projects which will save 1,811 GWh of primary energy each year, compared to the baseline 2015. The following projects are examples of measures that were implemented in 2018:

- a cracking furnace at Stenungsund, Sweden, was upgraded to improve its thermal efficiency, saving 30 GWh of energy a year;
- a reactor replacement in the nitric acid plant at Linz, Austria, produced an increase in steam production of 13.8 tonnes per hour, resulting in energy savings of approximately 100 GWh a year;
- the Propylene Production Upgrade project included new equipment that requires less steam in the reboiler and a new heat-pump compressor which reduces steam usage and the need for cooling; and
- the Group achieved energy savings of 30 GWh a year through flaring improvements in Porvoo, Finland. A new cavern enables zero flaring when unloading rail tank cars, the amount of flared gas has been significantly reduced due to operational changes, and new measurement equipment enables root cause analyses and improvements.

All energy efficiency measures are being tracked and their performance monitored.

The Group also undertook a series of internal audits to prepare for certification of the energy management system. This enabled Borealis to achieve ISO 50001 certification across its European locations during the year.

Borealis is also enhancing its reporting of flaring incidents.

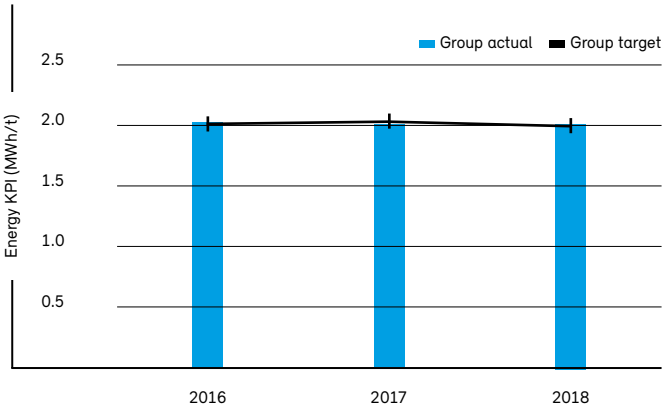
Performance 2018

Energy Efficiency

In 2018, Borealis' total primary energy consumption was about 24,500 GWh compared to 22,400 GWh in 2017. This represents an increase of 2,100 GWh compared to the previous year due to fewer turnaround activities and higher production output.

Figure 9 shows the Group's energy intensity since it established its Energy Roadmap. The Group's performance in 2018 means that the energy intensity is currently still rather stagnant, but the continuous focus on energy efficiency and the realisation of further energy efficiency project should improve the energy intensity in the years to come.

Fig. 9: **Development energy intensity indicator 2016–2018**



Year	Group target	Group actual
2016	2.02	2.06
2017	2.04	2.03
2018	2.00	2.06

CO_2 Emissions

The absolute level of CO_2 equivalent emissions is related to Borealis' overall production volumes and to the number of turnarounds which result in flaring related CO_2 emissions from emptying storage and plants. The Group is committed to continuously improving its energy efficiency and thereby reducing its CO_2 equivalent emissions, while increasing production volume and ensuring plant reliability. This remains a challenging journey.

To calculate its emissions performance, Borealis uses a broad range of emission factors which are a means to calculate the GHG emissions for a given source. Each EU member state has a national inventory of emission factors, which means that, for example, natural gas use in Austria would have the specific Austrian emission factor applied to it. Other emission factors are standard factors from scientific literature or are measured by a certified laboratory. All emission factors are permitted and approved by the relevant authorities.

In 2018, Borealis had 4,299 kilotonnes of scope 1 CO_2 equivalent emissions. This compares to 4,210 kilotonnes in 2017, due to fewer turnaround activities and higher production output.

N_2O emissions

N_2O emissions from nitric acid plants increased to 1,330 tonnes in 2018, compared to 866 tonnes in 2017, due to fewer turnaround activities and higher production output.

Flaring

Flaring losses in 2018 were 26.3 kilotonnes, compared to 51.6 kilotonnes in 2017, due to fewer turnaround activities, fewer upsets and flaring improvements. Every year, the Group defines its targets for flaring. Turnarounds and other internal and external factors require adaptation, resulting in deviations from the Group's ambition.

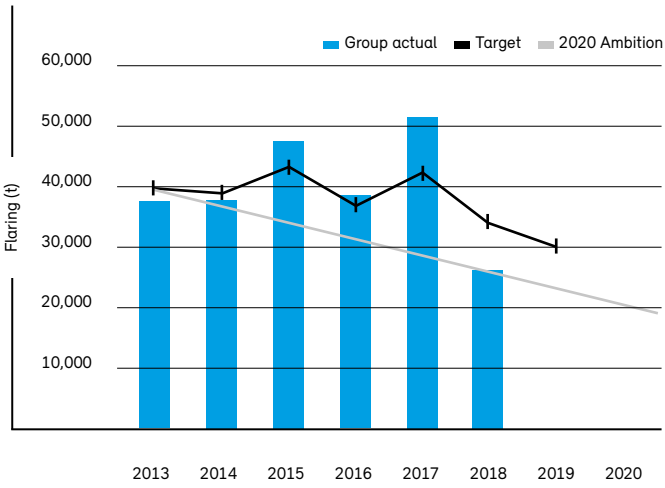
The increases in flaring in 2015 and in 2017 were caused by the turnarounds in Stenungsund and Porvoo in those years. In 2017 alone, the Group ran five turnarounds. These regular maintenance programmes inevitably lead to a higher amount of flaring, as plants or lines must be shut down, emptied and ramped up again, causing flaring.

Outlook

Borealis' energy-related objectives are to:

- continue to focus on the energy roadmap, to deliver on the ambition of 10% reduction in 2020;
- further roll-out of the energy trend boards; and
- implementation of the new, more detailed reporting on flaring.

Fig. 10: **Flaring performance 2013–2018 and ambition 2020**



Year	Group actual	Target	Ambition
2013	37,538	40,000	40,000
2014	38,031	39,100	37,143
2015	47,687	43,500	34,286
2016	38,740	36,925	31,429
2017	51,620	42,355	28,571
2018	26,273	34,200	25,714
2019		30,000	22,857
2020			20,000

Occupational Health & Safety

Goals

The Group had the following occupational health and safety goals for 2018:

- to continue to reduce Total Recordable Injuries (TRI), with the ultimate aim of achieving zero incidents;
- to review the major incident management organisation and supporting documents;
- to integrate occupational health aspects in the risk matrix; and
- to introduce a best-in-class approach for communicating goals.

Key Achievements and Results

In 2018, Borealis

- achieved a TRI rate of 1.3 incidents per million working hours
- set up and successfully tested a new major incident management organisation;
- integrated occupational health aspects into the risk matrix;
- introduced an extranet site to improve sharing of information with contractors and released two videos to increase awareness of Borealis' health and safety programmes "Take 2" and "Priming"; and
- held its first internal Group-wide Safety day, in parallel in all locations.

Introduction

Chemical operations involve highly flammable, toxic and hazardous substances that could pose a significant risk to people and the environment, if not handled correctly. Health and safety is the number one priority in Borealis. In addition, safety incidents have a direct link to lost working time and damage to valuable assets, both of which could affect the Group's reliability to supply it's customers, profitability and performance.

Borealis has achieved a world-class health and safety record for many years. However, the Group must stay vigilant and therefore adopted a Goal Zero journey in 2014, which aims to develop a zero-accident mindset among everyone in Borealis. To keep its safety culture at the top of people's minds, Borealis constantly promotes the motto "If we can't do it safely, we won't do it at all."

Organisational Structure

The Borealis Responsible Care® Committee comprises all the Executive Board members and is chaired by the CEO. The committee oversees the implementation of the Group's Responsible Care® Policy and programmes and monitors overall HSE performance against KPIs → Infobox Responsible Care®, p. 63. The committee also assesses any serious HSE incidents to help avoid future risks to people and the environment. At a location level, the local leadership and the HSE team meet each month to discuss HSE performance. Various informal platforms and meetings ensure that all employees of operational sites are represented.

Preventing Health & Safety Incidents

Borealis proactively prevents accidents by developing risk management tools, implementing controls, undertaking awareness campaigns and safety training, and conducting regular audits for both employees and contractors. The Group continuously improves through systematic learning. This includes creating training packages to raise employees' competence in areas such as social psychology, office ergonomics, musculoskeletal disorder and use of hydraulic tools. Borealis also coordinates emergency planning with external medical and public health experts, and implements detailed exposure controls as part of its corporate standards.

The Group introduced "lifesaving rules" in 2013 and refreshed them in 2015 to make employees aware of the biggest health and safety risks across Borealis. These rules cover working at height, entry into confined spaces, lifting operations and working under suspended loads, working on potentially energised or pressurised equipment, and exposure to traffic.

Meetings in Borealis commonly start with health and safety topics and, at many meetings, it is a mandatory topic. In addition, at every Corporate Co-operation Council (CCC) meeting, health and safety issues are a standard agenda point. All visitors to Borealis' locations must pass safety training before they get access to the site.

Learning from incidents is important. Every quarter, lessons learned are shared and discussed throughout the organisation. Learning from incidents is also part of the Group's three-day OPEX (OPerational EXcellence) training. Borealis organises several OPEX courses every year.

All levels of management in Borealis, from front line leaders to Executive Board members, carry out regular engagement walks. These ensure dialogue between management, employees and contractors. The walks are designed to spot safety risks and encourage positive changes in daily work routines. They focus on effective employee-management dialogue, by using open questions and carefully listening to what is said, as well as what is not said. The aim is to truly engage employees in Borealis' Goal Zero journey. Each year, Borealis has more than 16,000 walks across its locations.

Borealis wants to develop its HSE culture from a calculative level (where safety is based on having systems in place to manage hazards) via a more proactive level (where safety leadership and values drive continuous improvement) towards a generative level, where health and safety becomes "how we do business". The ultimate goal is to create an accident-free workplace. Effective field leadership is a key enabler of this. In addition, each Borealis employee has a shared responsibility for others. "Care for my colleague" means encouraging employees to report incidents, actively participate in investigations and contribute to making Borealis safer for all.

Promoting Employees' Health and Well-being

Borealis promotes and protects its employees' health in several ways. In addition to detailed chemical exposure monitoring, carried out in accordance with local laws, the Group offers physical examinations and subsequent check-ups, periodic screenings and evaluations. Employees may also take part in voluntary health counselling programmes, to identify and monitor health problems.

As working lives become longer, the Group actively manages well-being across all generations, so it can secure a healthy, engaged and productive workforce.

Borealis' well-being concept sets common standards across all locations, enables sharing of best practices and builds on existing activities. It takes a holistic view of well-being and identifies four key areas for ensuring motivated and healthy employees. These are health, job engagement, competence, and work and private life balance.

The Group's employee health initiatives vary depending on local needs, but they typically include addressing issues such as back pain, blood pressure and weight management. Employees can receive on-site flu vaccinations, learn about stress prevention, find help to quit smoking and consult a psychologist. Borealis also encourages healthy eating by providing fresh fruit and healthy meals in many locations. Borealis conducts a rolling programme of workplace health surveys, which covers every location in the Group every five years. The surveys identify, evaluate and document the current standard of the working environment in both operations and offices, to establish a base for further improvement and prioritise an action plan. Their primary focus is to prevent occupational health risks, occupational illnesses and accidents. The health surveys also put a considerable focus on the psychosocial aspects of work and work-life balance. There are three main elements to the surveys: a workplace evaluation which identifies and assesses all potential hazards and exposures; an anonymous questionnaire; and an individual medical check-up.

Highlights 2018

The Group recorded a higher number of TRI at the start of 2018. This triggered a "There is always time for safety" campaign supported by banners, videos, monthly HSE topics and the organisation of a safety day in all locations, which the majority of the Group's employees participated in. As part of the safety day, all employees received a booklet explaining how they can contribute to further improvements in health and safety.

During the year, Borealis continued to run its training for front line leaders on the "social psychological impact on behaviour". This training focuses on behaviour, factors influencing behaviour and how to influence the unconscious mind to change behaviour. A similar Group-wide programme for middle management has been ongoing since 2016, with two sessions organised every year to raise the competence of the Group's middle managers in social psychology.

Borealis completed workplace surveys at a number of locations in the year. These were Antwerp (Belgium), Beringen (Belgium), Grand-Quevilly (France), Ottmarsheim (France) and Schwechat (Austria).

The Group took action to improve the focus on the behavioural aspects of incidents when conducting investigations for more severe incidents. A list of sample questions, focusing on personal and group behaviour related biases, now supports the investigators. Engagement boards were also introduced in all locations. For any HSE

related topic, the team discusses its relevance, the causes (such as design or behaviour) and measures to prevent similar incidents.

Borealis participated in a number of conferences during 2018. These included the HSE conference in Amsterdam, organised by GLC; the EHS Congress in Berlin, organised by ERM; and the Prebes National Network Events, held four times a year in Belgium.

Performance 2018

TRI per million working hours has been a Borealis Group Scorecard KPI for many years. Recordable injuries are those that require medical treatment, restrict work or result in lost working hours. Both Borealis employees and contractors are tracked. A TRI frequency of two or less is considered world class in the industry.

Borealis has set an ambitious target of a TRI of 1.1 or less and continuously works towards zero TRI. In 2018, Borealis' TRI frequency was 1.3 compared with 1.1 in 2017. The TRI frequency for Borealis' employees was 1.1 against 0.9 in 2017, while that of its contractors was 1.8 compared to 1.3 in 2017. In total, 730 calendar days were lost due to lost time accidents, compared to 653 days in 2017.

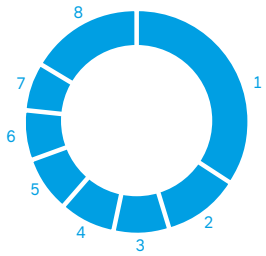
Since most of Borealis' activities are in Europe, a regional breakdown of TRI does not add value and is therefore not tracked. In addition, Borealis does not track the split of TRI by gender, as the number of female operators, technicians and contractors is relatively low and the Group cannot observe any major differences in risks posed to each gender.

Over the last ten years, two fatalities have occurred at Borealis' sites. In 2009, a contractor died after an unauthorised confined space entry. In 2015, an operator fell while descending stairs.

Analysis using Synergi, the Group's corporate software for incident management, showed that hands and fingers remain the main body parts harmed in accidents. Borealis launched a Group-wide awareness campaign in mid-2017, using all available communications channels, including posters in 14 local languages, training sessions in toolbox trainings and a screensaver. High-impact gloves are increasingly used since they have built-in protection to keep hands safe for mechanics, construction workers, and people in a wide range of industries. On the Group-wide Safety Day, attention was given to this topic via supplier info stands.

Slips, trips and falls still cause several TRI each year, despite Borealis running a number of health and safety campaigns over recent years. Although the nature of Borealis' business means there is high potential for exposure to chemicals, such incidents are rare.

Fig. 11: **Part of the body harmed; Analysis of 775 injuries between 2016 and 2018**



1. Hand, finger, wrist 34%
2. Leg, knee 11%
3. Foot, ankle, toe 8%
4. Neck, shoulder 8%
5. Face, mouth 8%
6. Eye 7.5%
7. Arm, ellbow 7.5%
8. Others 16%

The sick leave rate is another important occupational health indicator. Borealis has a target of 3.2% or less, which is below the industry average in countries where the Group operates. In 2018, the sick leave rate was 3.6% compared to 3.3% in both 2017 and 2016.

A late winter flu season was the main reason for this increase.

Outlook

Borealis has identified three primary focus areas. These are to:

- provide refresher training in social psychology for front line leaders; and
- maintain focus on goal zero journey:
- ensure that by 2021, the Hydrocarbons and Polyolefin businesses meet the new ISO 45001 international standard for occupational health and safety management systems.

Fig. 12: Health & Safety Performance Indicators

Issue	Definition	2018	2017	2016	2015	2014
Total Recordable Injuries (TRI)	number/million work hours	1.3	1.1	0.9	1.4	1.3
TRI Borealis		1.1	0.9	0.8	1.0	0.9
TRI Contractors		1.8	1.3	1.3	2.4	2.2
Fatalities		0	0	0	1	0
Sick leave rate [1)]	% of total hours worked	3.6	3.3	3.3	3.2	3.1
Incident action completion rate	% of finalised action in due time	99.3	98.8	98.4	98	–
Response rate on process safety incidents	% actions completed on time	97.1	97.9	96.7	97.3	97
High severity incidents		0	1	0	0	0
Medium severity incidents		16	19	16	23	23

1) Borealis' definition for sick leave rate differs slightly from the absentee rate defined by GRI ("absent from work because of incapacity of any kind, not just as the result of work-related injury or disease; excludes permitted leave absences such as holidays, study, maternity or paternity leave and compassionate leave")

Definitions

Total Recordable Injuries (TRI): Accidents resulting in absence from work, the need to do a different type of work or any other case in which medical treatment is required. The frequency is calculated as the number of accidents per million working hours. Borealis' employees and contractors working on company premises are included in this calculation.

Sick leave rate: The sick leave rate indicates the amount of time employees were absent from work due to sickness or injury. The overall sick leave rate is calculated as a percentage of the total number of planned working days in the current year.

Incident action completion rate: This monitoring parameter is focusing on action completion in due time. It is calculated on a monthly basis and is looking at the actions due in the past months for all incidents reported, regardless of their consequences, with a risk factor ≥8. The parameter represents the percentage of actions finalised in due time. The incident action completion rate includes all incidents reported on the incident management module including HSE, Quality and Operational incidents.

Response rate of process safety incidents: Process safety incidents of a certain severity or risk potential are recorded and investigated through root cause analysis. Corrective actions are defined to prevent re-occurrence. The response rate of process safety incidents is measured as the ratio (%) of corrective actions completed within a defined time period.

High-severity incidents: are incidents with significant consequences rated above 300 in Borealis' severity rating tool. No high-severity incidents were reported in 2018.

Medium-severity incidents: are those resulting in a loss of containment, with medium consequences towards people, planet and profit. There were 16 medium-severity incidents reported in 2016, a significant improvement on the 23 incidents in the previous year. This shows the clear effect of Borealis' intensive awareness campaign and the roll out of improved Process Safety processes.

Process Safety

Goals

Borealis' process safety goals for 2018 were to:

- continue to reduce the number of medium- and high-severity process safety incidents, with the ambition of achieving Goal Zero;
- ensure corrective actions from incident investigations are completed on time;
- raise awareness of potentially hazardous situations;
- implement training programmes in process safety;
- enhance systems to further improve process safety.

Key Achievements and Results

During 2018, Borealis' key achievements in process safety were:

- achieving the targeted level of medium- and high-severity incidents and completion of corrective actions;
- implementing a system for reporting and investigating near miss process safety incidents, helping to raise awareness of potentially hazardous situations;
- enhancing root cause identification and actively sharing lessons learned;
- introducing process safety training for engineers;
- beginning to screen all of Borealis' fired heaters (process furnaces or steam boilers) to assess the barriers to major incidents;

Introduction

Borealis processes large quantities of flammable materials under high pressure and temperatures, creating the potential for serious process safety incidents. In a worst-case scenario, leaks, fires or explosions could cause multiple fatalities, both inside and outside Borealis, as well as major environmental impacts. In turn, this could lead to substantial disruption of supply to customers, financial costs, or even bankruptcy for Borealis.

The possible significant consequences of a serious incident mean that Borealis has a duty to invest in process safety and to properly design, maintain and operate its plants. The Group also actively supports industry-wide efforts to enhance process safety, as a member of the European Process Safety Centre.

To reach Borealis' objective of achieving zero accidents, the Group launched the Goal Zero programme in 2014. The programme covers both occupational health and safety and process safety and is a key deliverable of the Group's sustainability strategy. As Borealis employees are encouraged to see Goal Zero as a journey to be taken together, the programme helps establish a collective health and safety mindset.

Organisational Structure

The EVP Operations and HSE chairs the Group-level Process Safety Committee. The Committee's members are directors and departmental leaders from all of the relevant operational streams: Safety, Plant Availability and Turnaround, Operations Polyolefins and Base Chemicals, and Technical Development and Engineering. Each production location also has its own Process Safety Sub-Committee, chaired by a nominee appointed by local management. Its members come from different areas in the location and include a member of the Process Safety Group to ensure cross-learning and a link to Group developments.

The Process Safety Committee and Sub-Committees meet regularly to oversee Borealis' process safety performance and programme, steer the Group's process safety Goal Zero roadmap, review progress and provide guidance on priorities, key activities and performance measures. Priorities are identified based on reoccurring or severe incidents, leading to a programme being launched to improve performance by multifunctional teams, who determine best practice and roll it out in the locations, with support and supervision from Group Process Safety. Group Process Safety also takes an active role in resolving challenges for Borealis' large growth projects by providing its expertise in an early stage study.

The Group Process Safety department has developed tools that enhance risk identification. For example, an incident and fire severity rating tool ranks incidents as high, medium or low severity, or as a near miss. With these tools, every process safety incident (whether it results in an actual release of product or is a near miss) is assessed, investigated and reviewed, and preventive actions are taken. The resulting actions are monitored at Group level.

"We started near miss reporting for process safety in 2018. It helps us to prevent process accidents proactively, instead of acting when something has already happened."

Bert-Inge Salhammar, Production Leader High Density Polyethylene; Stenungsund, Sweden

The primary Group Policies that are relevant to Process Safety are the Risk Management Policy and the Responsible Care® Policy. The Risk Management Policy defines Borealis' risk management framework by providing principles, roles and responsibilities, guidelines for risk assessment, mitigation and reporting. The policy aims to ensure the implementation of sound risk management practices across the Group and at all levels. The Responsible Care® Policy statement sets out the guiding principles for the Group-wide implementation of Responsible Care® at Borealis.
→ Infobox Responsible Care®, p. 63

Borealis also works with other organisations to help improve Process Safety standards. Borouge established its process safety network at the start of 2018 and Borealis is sharing best practice in three areas: learning from incidents across borders, defining the minimum process safety design requirements for new plants, and setting minimum competence levels and education programmes related to process safety.

The Group is an active member of the European Process Safety Council and shares lessons from incidents and supports process safety developments. The Group also takes part in a number of fora related to process safety, such as the High Pressure Safety Conference, Fertilizer Europe and the European Ethylene Producers Conference. In addition, the Group exchanges information with other companies to assess the best technical solutions for preventing and mitigating the escalation of major scenarios.

Activities in 2018

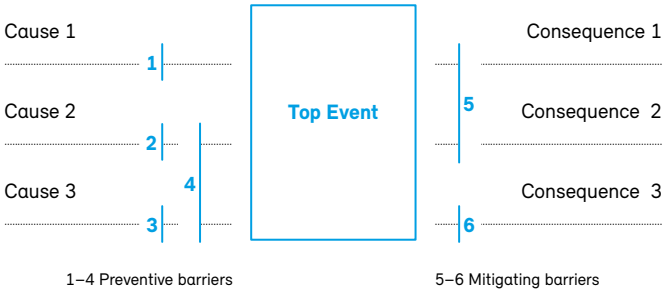
Borealis undertook a wide range of activities during 2018, which were designed to further improve its process safety. The Group implemented a system for reporting and investigating near miss process safety incidents, helping to raise awareness of potentially hazardous situations. Near misses are incidents where there was no actual loss of primary containment (an unplanned or uncontrolled release of material from the device or container it is kept in) but which could have resulted in a severe incident. The Group risk rates these near misses, to ensure appropriate focus on high-potential incidents.

The Group also enhanced its root cause identification during the year, making it easier to identify reoccurring drivers that lead to incidents. Lessons learned from accidents are also being more actively shared throughout the Group. The lessons learned from important internal incidents/near misses and lessons captured from external incidents are translated into specific actions for each relevant unit which has to assess and implement effective mitigation actions to prevent a similar accident happening in Borealis. This process is managed using the Group's corporate software for incident management, Synergi. Several critical safety processes were standardised in previous years and fully implemented in all locations in 2018. These relate to physical isolation and "Lock Out Tag Out Try Out" (LOTOTO), a process that defines how to safely take out of service a certain technical part which needs maintenance, and how to put it back into service without triggering any process safety risks such as leaking gases.

Borealis developed a standard "bow tie" for its fired heaters in 2018, to assess if they have sufficient and effective barriers to prevent major incidents such as boiler explosions.

A bow tie is a graphical representation of a possible dangerous event, setting out the initiating events, potential causes and related preventive and mitigating barriers.

Fig. 13: **Bow tie diagramme**



The Group has begun screening its fired heaters using this tool and this work will continue in 2019. Identified gaps will be closed as they are integrated into Borealis' risk and opportunity (R&O) process where all risks and opportunities are assessed on a similar basis by using a standard risk matrix to guide the organisation in priority setting. In addition, all of the Group's tanks have been screened to ensure they are protected against overfilling. The identified gaps are now being closed by integrating them into the R&O process in each location.

The Group has introduced specific safety training for engineers on process safety in design. So far, 75 engineers have been trained. The programme will continue to integrate new focus areas to ensure it keeps pace with developments in process safety.

Another important development in the year was the continued roll-out of the electronic risk assessed permitting system which enhances risk evaluations during the preparation of maintenance or project activities in Borealis' plants. In 2018, Burghausen (Germany) and Grand Quevilly (France) implemented the system. Four other locations had already introduced the system in previous years.

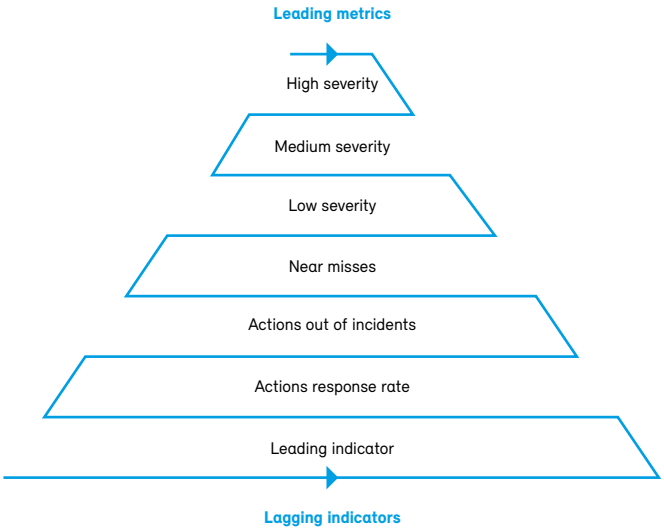
During 2018, Borealis started its fourth five-year cycle of safety audits for all plants. These audits are known as "Blue Audits" and they focus on areas such as operations, plant availability and engineering, and health and safety. The Blue Audit scope has been extended and now also includes an audit covering the environment (including Operation Clean Sweep, an international programme to reduce pellet loss) and energy management. Six Blue Audits were carried out in 2018 in Monza (Italy), Porvoo PO and HC (Finland), Antwerp (Belgium), Kallo (Belgium) and Schwechat (Austria). This represented all of the planned reviews for 2018 and covered 30% of all sites. Borealis' insurance brokers conducted seven insurance audits and five follow-up audits during the year. All of these audits reassured the Group's insurance brokers that the Group has a well-managed process to prevent and limit the impact of incidents.

Process Safety Performance

Borealis uses a so-called Loss of Primary Containment Pyramid tool (see Figure 14) to support the monitoring of incidents, ensure they are investigated and that actions are completed in time, to prevent reoccurrence.

The pyramid includes the performance of the safety critical processes designed to prevent incidents. This performance is measured using indicators such as the status of safety critical inspections, the testing of critical interlocks and the closure of actions. The leading indicators are followed up annually through a 'deep dive' into overall performance and review by the Process Safety Committee.

Fig. 14: **Borealis' Loss of Primary Containment Pyramid**



Borealis follows the recommendations of the European Chemical Industry Council (CEFIC), and its incident rating tool is similar to the International standard API 754 (American Petroleum Institute). An incident is evaluated based on the hazardous properties of the product, the quantity released, the location of the release (for example, into the atmosphere or through a safety system such as flare scrubbers), the volume that could have been released, how the preventive and mitigating barriers functioned, and the impact on people, planet and profit.

High-severity incidents are comparable to Tier 1 API 754 and include a large fire or explosion resulting in injuries or fatalities, and significant business loss and impact on the environment.

Medium-severity incidents are those resulting in a loss of containment, with medium consequences for people, planet and profit. This means limited possible injuries, easy-to-repair damage and a controllable environmental impact.

Low-severity incidents are those where substances are released but which result in a very low to zero impact.
The Loss of Primary Containment Pyramid allows Borealis to measure its process safety performance using two principal metrics:

– the number of reported low-, medium- and high-severity process safety incidents; and
– the process safety response rate, which is the percentage of corrective actions resulting from incident investigations that are completed within a defined time period.

Performance in 2018

In 2018, the Group's target was to have no high-severity incidents and a maximum of 16 medium-severity incidents, including fires. This represents a reduction of 30% against 2015, which was the start of Borealis' Goal Zero journey.

In 2018, 0 high-severity incidents were reported.
16 medium-severity incidents and 949 low-severity process safety incidents were reported in 2018, along with 852 process safety near misses. As general process safety awareness increases due to Borealis' educational initiatives and campaigns, more low-severity incidents are being reported. → Chapter Occupational Health & Safety, p. 55

Each incident is investigated and appropriate actions are defined, along with responsibilities and the due date for completion. The process safety response rate measures the number of actions closed against the number due to be closed, on a 12-month rolling basis. In 2018, it remained the same at 97.1% (2018 target: 98%). Taking into account the continued integration of newly acquired plants, maintaining this rate was a clear safety process achievement for Borealis. A total of 1,772 actions were implemented in response to high-, medium- and low severity incidents.
In 2018, 852 near misses were reported, of which 14 were high potential.

Outlook

During 2019, the Group will focus on the following areas in process safety:

- integrating the understanding of individual and group behaviour into accident investigations;
- updating the siting of facilities at each location to minimise the impact of low-frequency, high-severity scenarios;
- continuing to assess the effectiveness of all fired heaters using the bow tie tool;
- driving the alarm management programme and reducing the amount of high-risk hot works;
- continuing to implement the electronic permitting system and digitalising the LOTOTO process; and
- developing and rolling out process safety awareness training for front line leaders.

Responsible Care®

Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

Borealis is committed to implementing the guidelines of the Responsible Care® Global Charter, which is the chemical industry's voluntary initiative aimed at continuous improvement in health, safety and environmental (HSE) performance. The guidelines contained in the charter, such as efficient use of natural resources and efforts to avoid the production of waste, are also among the central principles guiding Borealis.

Through Responsible Care®, Borealis commits to:

- A corporate leadership culture which proactively supports safe chemical management through the global Responsible Care® initiative.
- Safeguarding people and the environment by continuously improving the HSE performance and security of Borealis' facilities, processes and technologies, and by driving continuous improvement in chemical product safety and stewardship throughout the supply chain.
- Strengthening chemicals management systems by participating in the development and implementation of lifecycle-oriented, science- and risk-based chemical safety legislation and best practices.
- Influencing business partners to promote the safe management of chemicals within their own operations.
- Engaging stakeholders, understanding and responding to their concerns and expectations for safer operations and products, and communicating openly on Borealis' performance.
- Contributing to sustainability through improved performance, expanded economic opportunities and the development of innovative technologies and other solutions to societal challenges.

Materials & Logistics

Goals

Borealis had a wide range of procurement goals for 2018. These included

- continuing to enhance the Group's sustainable profitability through supplier selection;
- further improving the security of supply of raw materials;
- supporting Borealis' growth projects through state-of-the-art Technical Procurement;
- continuing to develop the Group's renewable energy strategy and its energy trading tools; and
- continuing to improve logistics safety, reduce carbon emissions from transport and enhance management of logistics service providers.

Key Achievements and Results

During the year, the Group

- implemented the Together for Sustainability programme, a chemical industry initiative to assess and improve sustainability practices in the global supply chain;
- improved the security of raw materials supply, by approving alternative and equivalent supply sources;
- further reduced material used in the main packaging type for polyolefins and increased the use of reusable pallets;
- supported Borealis' key growth projects, namely the joint venture with NOVA Chemicals and Total in the US, the propane dehydrogenation (PDH) project in Belgium and Borealis' interest in Kazakhstan;
- sourced additional monomers for the Polyolefins business and achieved commercial excellence in line with target;
- promoted the Group's renewable energy strategy and continued to add to the renewable energy portfolio, including the ongoing construction of a waste-to-energy plant in Beringen, Belgium; and
- reduced emissions from transport through improvement projects and increasing off-road transport, engaged with carriers in Fertilizers business to improve safety, and enhanced the contract strategy in Fertilizers to optimise logistics flow.

Introduction

To manufacture and deliver its products, Borealis purchases and sources feedstock, energy, utilities, technical equipment and services, raw materials, packaging materials, logistics and general business services from around 10,000 vendors. Approximately 74% of the procurement volume relates to feedstock, energy and utilities, around 7% to technical equipment and services, 6% to raw materials and packaging, 6% to logistics and 7% to business and other services.

The products and services the Group procures can have an important influence on its business performance, including critical areas such as safety, environmental impact, quality and customer service. The Group therefore looks to carefully manage its procurement activities to optimise performance in these areas. Borealis does this by developing the right procurement strategies for the individual product and services categories using sourcing tactics such as competitive bidding (tendering), professional negotiations and pooling volumes with partners in the Mubadala family, namely OMV, Borouge, NOVA Chemicals and Cepsa. The Group also looks to further improve the security of its raw materials supply through alternative and equivalent supply sources, and to optimise the cost, material volume and performance of its packaging.

Resources and Performance

Feedstock

Borealis sources basic feedstock such as naphtha, butane, propane and ethane and converts them into ethylene, propylene and a range of co-products through its olefin units. Steam crackers in Finland and Sweden produce both ethylene and propylene, while propylene is also produced in a PDH plant in Kallo, Belgium.

The Group's main focus is on the quality, value and availability of feedstock. Global sourcing is therefore crucial as it gives the Group a broader supplier base, so it can obtain the right quality of feedstock at competitive prices and avoid disruptions to supply and consequently production processes. A dedicated team of feedstock traders and product managers is responsible for sourcing the whole Borealis feedstock range. Feedstock and olefins required for Borealis' plants are either sourced from Borealis' owners or purchased globally via strategic long-term supply agreements, short-term contracts and spot trading, covering deliveries from the US, Russia and Europe.

Where applicable, the Group looks to ensure appropriate quality by sourcing feedstock using either industry or Borealis specifications.

The price of crude oil has a direct impact on the cost of the Group's feedstock, so Borealis implements hedging strategies and ensures it develops and maintains a high-performing commercial team. The Group actively screens specific markets for new suppliers, customers and new sources of material, maintains its market knowledge through report subscriptions and by attending industry and market conferences, and engages with industry partners to share best practices. Borealis is a member of a number of industry groups, such as the European Chemical Industry Council's (CEFIC) Lower Olefins Sector Group, and takes part in industry gatherings such as the European Petrochemical Association and the European Petrochemical Luncheon.

Performance in 2018

In 2018, the Group sourced 2,558 kilotonnes (kt) of feedstock for its olefins production units (namely the crackers and PDH unit) and 1,420 kt of olefins for its polyolefin units. The Group also sourced 1,351 kt of feedstock for fertilizer production, which includes natural gas as a raw material for the production of ammonia.

Fig. 15: **Feedstock sourced for production of olefins, polyolefins and fertilizers (kt)**

kt	2018	2017	2016	2015
Feedstock for Olefins	2,558	2,388	2,779	2,517
Olefins for Polyolefin production	1,420	1,382	1,396	1,412
Feedstock for Fertilizer production	1,351	1,431	1,159	1,396

During 2018, the Group successfully sourced additional monomers needed for the Polyolefins business, on top of Borealis' own production. The Group also achieved a good result in line with its target, despite volatile market conditions affecting both price and availability.

There was a delay to the start of a long-term supply agreement for ethane with a supplier in the US, which required the Group to purchase spot ethane instead. The Group was able to achieve optimal ethane cracking in Stenungsund, Sweden, using spot ethane opportunities with our time charter vessel, Navigator Aurora.

Energy & Utilities

Energy and utilities are a significant cost factor for Borealis and their use therefore has a direct impact on the Group's profit. The consumption of natural gas and utilities has an environmental impact, in the form of greenhouse gas emissions. The Group's energy consumption and emissions are discussed in the Energy chapter.

Borealis Energy & Utilities Sourcing is responsible for the sourcing and risk management of electricity, natural gas, emission rights and utilities. The Group's energy contracts are generally spot indexed and contracted on a one to three year basis. The strategy to be close to the near-time market is continuously being improved and the Group is developing the necessary trading tools. Commodity pricing risk is managed using financial risk instruments. Delivery of energy commodities is managed by the respective regulated transmission system operator in each country.

Utilities are sourced on a longer time horizon of ten to 15 years and very often within the context of petrochemical clusters, enabling delivery by pipelines from neighbouring industry. In some cases, where infrastructure is lacking, utilities are delivered by truck.

Borealis is working on a long-term renewable energy strategy to expand the current renewable portfolio. Four wind turbines already supply the plant at Kallo, Belgium. Bionerga builds a 200 kilotonnes waste to energy plant in Beringen, Belgium, with Borealis as a project partner to integrate and extract energy.

This facility will deliver steam, electricity and other utilities to Borealis and will come online in early 2020. The plant will provide the majority of the location's energy and utilities needs and will process gases that are generated during production. Borealis is investigating similar possible projects at other locations.

During 2018, the Group also approved and implemented a procedure for strategically hedging natural gas purchases and began the procurement of an energy trading and risk management tool, which will help to optimise the energy sourcing strategy by allowing Borealis to directly participate in the energy markets.

Borealis made further progress with constructing the waste-to-energy plant in Beringen.

In addition, the new dehydrogenation plant in Kallo will include a combined heat and power plant.

Raw Materials & Packaging (RMP)

Raw materials and additives play a vital role for Borealis, giving unique properties which enable the Group to produce value-added specialty products that conform to both customer and legal requirements. Reliable supply of these materials, on time and in the agreed quality and quantity, supports Borealis' operational excellence.

Packaging materials are essential for protecting Borealis' goods in transit and to prevent, for example, pellet losses to the environment. They also help customers to dose the goods accurately, influence Borealis' energy consumption for transportation and support the Group's branding. Borealis uses dedicated procurement teams to source Raw Materials and Packaging (RMP) for fertilizers and polyolefins globally, primarily from suppliers in Europe, North America, Japan, China and Korea. The Group maintains an approved list of approximately 700 suppliers which are categorised as high, medium or low strategic suppliers. High strategic suppliers are those with which Borealis spends at least EUR 2 million a year and which make an important contribution to the Group's current and future business success. They represent around 80% to 85% of the total yearly spend on RMP.

Growth in the polyolefin industry and a number of plant closures in China have led to shortages of raw materials. Borealis' procurement teams are adapting to these changing conditions by focusing on longer-term contracting and improving supplier relationships to ensure security of supply and a sustainable business.

Raw Materials

Fertilizer

Major raw materials for the Fertilizer business are phosphate and potash which are used for a variety of products, such as calcium ammonium nitrate or nitrogen-phosphate-potassium fertilizer.

Sulfuric acid is also used for fertilizer production. Borealis' Linz fertilizer plant takes advantage of the nearby OMV Schwechat refinery, where sulfuric acid is a by-product of a plant used to remove nitrogen oxides from heater exhaust gas. This supplies around 30 kilotonnes of sulfuric acid to Borealis, reducing cost and environmental impact.

Polyolefins

Major material categories used to produce polyolefins are additives, co-monomers, carbon black and catalysts. Additives are needed in all products to stabilise the polymers against the impact of air, light and any remaining catalyst components. Catalysts enable polymerisation under even conditions and shape the final product properties. Carbon black is a necessary component for pipe and semicon grades.

Borealis sources several polymer additives which are produced using renewable feedstocks, such as palm oil or rapeseed oil. The Group only buys additives that use palm oil if they are certified by the Roundtable on Sustainable Palm Oil (RSPO). Borealis also uses four recycled polypropylene grades as feedstock for the compounding plants in Europe and Brazil.

During the year, Borealis joined the Together for Sustainability (TfS) programme (→ see p. 69) to improve the sustainability practices within its supply chain. Borealis also further improved its security of supply by approving alternative and equivalent supply sources for raw materials.

Packaging

Packaging materials are needed for all solid products that Borealis delivers to customers. The Group continually looks to balance the cost of packaging with the volume of material used and its functionality, such as the packaging's ability to prevent damage, contamination or pellet spills. In addition to the volume of material used, significant influences on the cost of packaging include the prices of polyethylene, polypropylene, wood and paper. Packaging is an important part of the Group's approach to achieving a circular economy and Borealis uses reusable packing where possible, such as reusable pallets.

For semibulk packages, which are those containing between 450 kg and 1,200 kg of product, key packaging types include big bags, which are woven from polyethylene or polypropylene, and octabins, a type of cardboard packaging. Fertilizers are mainly packed in big bags. The Group's high-quality cable insulation polymer grades for high-voltage applications often use octabins.

Borealis improves its polyolefin packaging material by carefully balancing energy and material efficiency against cost and packaging quality. During the past few years, the Group has increased material efficiency by reducing the thickness of form fill seal (FFS) material used for 25 kg bags, the main packaging type used for transportation of polyolefin (see figure 17).

Fig. 16: **Packaging consumption based on 1,000 kg of Fertilizer produced**

kg	2018	2017	2016
Fertilizers			
Form fill seal	0.13	0,22	0.27
Big bags	0.53	0.59	0.68
Total	**0.66**	**0.82**	**0.95**

Fig. 17: **Packaging consumption based on 1,000 kg of packaged PO**

kg	2018	2017	2016
Polyolefins			
Carton	13.86	13.39	13.82
Form fill seal	4.29	4.36	4,42
Big bags	3.93	3.91	3.90
Other materials	1.14	1.01	1.07
Total	**23.22**	**22.67**	**23.21**

During the year, Borealis continued to reduce the thickness of FFS foil from 120 µm to 110 µm. This compares with 130 µm a few years ago. The Group also reinforced its octabins, to improve packaging quality for value-add products, and increased reuse of wooden pallets, with a pallet return rate of 70%. In addition, the Group implemented the TfS programme in relation to its packaging suppliers.

Technical Procurement

The Technical Procurement area encompasses all procurement related to investing in or maintaining Borealis' assets. This includes equipment, materials, services and spare parts, covering:

- static equipment, rotating equipment, automation, furnaces, pipe materials, valves, electrical equipment and logistics equipment;
- civil works, steel works, piping works, mechanical works, electrical and automation works, scaffolding, insulation and industrial cleaning; and
- facility management and waste management.

Borealis sources technical equipment globally. Services related to capital expenditure are also sourced globally (for example, engineering services for major investment projects) while maintenance services are sourced predominantly within Europe, as they require suppliers with permanent locations in the proximity of Borealis' sites. The supplier selection process is split into technical and commercial bid phases. In total, the technical supplier base covers 6,500 suppliers from which Borealis has identified its strategic suppliers.

The Procurement Strategy Board is a forum for Technical Procurement and Operations to define and prioritise strategic objectives related to scoping, execution and implementation of tenders that affect multiple locations and that aim to combine operational spend and capital expenditure. Supplier performance management takes place at the end of each contract or on a continuous basis through the strategic supplier management programme.

In 2017, Borealis expanded its sourcing activities to the US, following the announcement of two major projects in the country. These were an agreement to form a joint venture with NOVA Chemicals and Total which will develop and own a new ethane cracker and Borstar polyethylene facility in Texas, and the decision to construct a dedicated automotive polypropylene compounding line in North Carolina.

The final investment decision to build a PDH plant in Kallo, Belgium, was taken and Borealis has started its tendering process.

Actions in 2018

During 2018, Technical Procurement actively participated in the TfS programme and continued the development of strategic sourcing through the Procurement Strategy Board, implementing Group-level sourcing strategies and location action plans. Its approach ensures a holistic focus encompassing total cost of ownership, sustainability and ethical principles.

Technical Procurement also supported the Group's key growth projects, helping to implement the US joint venture with NOVA Chemicals and Total, successfully preparing the contracting for the PDH project in Belgium, which is the largest petrochemical investment in Europe, and contributing to a feasibility study for Borealis' interest in Kazakhstan.

Sourcing

Processes and Standards

Purchasing of goods and services at Borealis follows a strict process to ensure product quality and consistency and reliability of supply. When purchasing goods and services, Borealis aims to get the best value by applying the Total Cost of Ownership philosophy. This requires the Group to consider the full costs it will incur during the lifetime of the product or service, rather than looking only at the up-front cost. When defining and adopting sourcing strategies, Borealis also considers market and technology intelligence and supplier innovation potential.

The process also takes account of sustainability considerations, such as compliance with safety, environmental aspects and ethics compliance. After defining Borealis' needs, including scope and specifications, reviewing the supply market and defining the sourcing strategy, the process moves to supplier selection. This includes questionnaires and audits to be performed on-site. Borealis assures the selection of competitive and reliable suppliers. All of Borealis' counterparts for

feedstock, cracker products and logistics services are thoroughly screened and vetted by the Borealis risk management department. The supplier portfolio contains key strategic suppliers whose performance is measured on a regular basis.

Every year, Borealis defines a set of strategic suppliers, based on criteria such as turnover, innovation, impact on operability and potential for growth. The Group uses a supplier relationship management process for strategic suppliers, which combines KPI-based performance management with supplier segmentation and professional knowledge of business risks. Activities with strategic suppliers can include top management meetings and common innovation programmes. On a monthly basis, Procurement monitors the performance of around 80 strategic suppliers, evaluating risks and taking mitigating actions where needed.

In 2017, Borealis joined the chemical industry's Together for Sustainability (TfS) initiative, which supports and promotes the principles of the UN Global Compact and Responsible Care®. TfS enables its members to implement sustainable procurement by sharing the results of supplier audits and assessments performed by independent experts. These cover key areas of sustainable business practice including environmental impact, health and safety, labour and human rights, management and governance. The audits and assessments benefit both members and suppliers, who only need to go through the process once and avoid multiple assessments by different customers. This will support Borealis' approach to ensuring that environmental and social aspects in the supply chain are monitored and continuously improved. The TfS membership also gives Borealis access to a large database of previously screened suppliers, avoiding duplication of effort. As the 20th member of this initiative, Borealis will be among the leaders in sustainability and will contribute to improving the chemical industry through workshops reflecting the principles of "People – Planet – Profit".

In 2018, Borealis focused on implementing its Responsible Sourcing Policy (Code of Conduct) which has been communicated to all major suppliers (which are those with which Borealis spent more than EUR 500,000 in 2017) and is also available on the Group's website. The policy defines the Group's approach to key aspects of business ethics when sourcing, such as anti-corruption, compliance and child labour, as well as health, safety and the environment. All existing major suppliers have been asked to confirm their commitment to the policy and must expect audits by Borealis focusing on social and environmental aspects, on top of the Group's commercial and quality related agenda. New major suppliers must agree to Borealis' Code of Business Conduct for suppliers by signing the contract. Sustainable supply can only be achieved by using suppliers committed to the Borealis Code of Business Conduct for suppliers. The Group does not see significant sustainability risks with major suppliers in North America and Europe, where most have implemented similar Codes of Conduct and may also be members of TfS.

New suppliers should have a TfS EcoVadis assessment or equivalent.

Logistics

Introduction

Borealis' Polyolefins, Fertilizers and Hydrocarbons businesses transport a combined volume of up to 16,8 million tonnes of raw materials and finished products to the Group's sites or customers' premises each year.

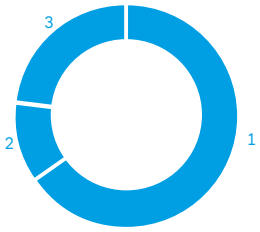
The Group considers its logistics service providers to be part of Borealis and therefore requires them to adhere to the same standards of safety, ethics and environmental improvement. When Borealis awards logistics contracts, it applies almost equal weighting to cost, service and quality, safety, and sustainability. The primary sustainability impacts relating to logistics are potential accidents and spills and greenhouse gas emissions, primarily in the form of carbon dioxide (CO_2).

Transport modes

Polyolefins

Borealis' Polyolefins business has approximately 120 providers of road transport, container transport, maritime transport, warehousing and on-site logistics services. The business manages these providers through logistics contract managers who cover bulk transport, packed transport, maritime shipments and warehousing, respectively, and logistics operations managers.

Fig. 18: **Polyolefins transported volumes (kt) 2018**



1. Road 2,424
2. Maritime 429
3. Rail 851

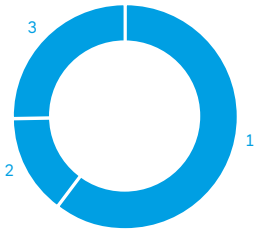
The Group requires its polyolefins logistics suppliers to be Safety & Quality Assessment System (SQAS) certified and to have a proven track record of reducing their CO_2 emissions year on year. By 2020, the aim is for all polyolefins logistics suppliers to be part of a Responsible Care® programme (or similar) and to be either SQAS certified or to have an acceptable EcoVadis rating. An EcoVadis rating helps procurement teams to monitor sustainability practices in their supply chains.

In 2018, the business focused on its suppliers' SQAS certifications. More than 95% of its logistics partners are certified with an acceptable rating.

Fertilizers

The Fertilizers business has around 400 providers of road, maritime and rail transport. About 150 logistics service providers carry out 90% of the business's transport. Fertilizers has logistics managers who cover rail, waterborne and ports (including both deep sea vessels and river barges), and road haulage in West Europe, Central Europe and South East Europe. Logistics service providers transporting dangerous liquid cargo are required to have an SQAS certification.

Fig. 19: **Fertilizer transported volumes (kt) 2018**



1. Road 2,528
2. Maritime 755
3. Rail 331

During 2018, the Fertilizers business unit reviewed its logistics contract strategy to ensure it is fully in line with business needs. Meetings were held in all countries where Fertilizers operates, to discuss the logistics and business needs in that country. The full supply chain cost, from production plant to final destination, was then calculated in order to select the most optimal logistics flow and to allow the business unit to put logistics contracts in place accordingly. Fertilizers also implemented a logistics service cost project to ensure logistics costs and contracts are accurately recorded in SAP.

© Picture: Eeva Sumiloff

"Technical procurement drives commercial excellence to support Borealis' overall strategy in Europe and our growth initiatives globally."

Minna Mentzer, Senior Category Manager in Technical Procurement; Porvoo, Finland

Together with the planning department, Logistics has implemented a monthly planning meeting and is sharing this plan with its carriers. This improves the visibility of workloads for the carriers and makes it easier for them to support the business.

Climate change is having an impact on logistics. A major issue that has come to the fore in recent months is low water levels on European rivers, in particular the Danube and Rhine. Water levels have been extremely low for a long time, with the consequence that many river ports are not reachable and river traffic is heavily disrupted. Barges can only load between one third and half the normal volume, which has led to a shortage of barge capacity.

Hydrocarbons

The main transport modes for feedstock and cracker products are seagoing vessels, pipelines and rail. The Hydrocarbons business unit has three contract partners for shipping, two for external pipeline services, two for rail transport and several for storage and throughput services. Some road transportation is used for phenol and acetone, with targets to increase lot sizes and the share of intermodal flows. The business unit has five partners for road transport. Road transport companies are required to have SQAS certification.

Hydrocarbons' supply chain manager is responsible for contracting logistics services. Contracts are managed either at business unit level or location level, depending on the scope of services.

Borealis is a joint venture partner in a harbour company, Petroport, and a storage services company, EFAB, in Sweden. The Group also uses its time charter vessel, Navigator Aurora, to source additional ethane from US-based shale gas for its flexible cracker in Stenungsund, Sweden.

The business unit has long-term partnerships with its strategic logistics partners, helping it to develop optimal solutions with them. Long-term partners are encouraged to obtain EcoVadis ratings. With its contracted ship-owners, Borealis tracks the fleet's safety performance and energy efficiency, and promotes the use of environmentally friendly bunker solutions.

Transportation safety

Transportation safety is key for Borealis. The Group requires all its logistic partners to report the following accidents:

- any injury or fatality to their own personnel, as well as third parties;
- any damage to property of any party involved in the accident;
- all material damage while transporting Borealis' goods to the final customer;
- any public disruption; and
- any intervention by the emergency services.

Within 24 hours of an accident, the logistics partner must send a report to Borealis which includes information on the cause of the accident. During 2019, Borealis will define and document the process for reporting logistics incidents to ensure consistent reporting across regions and enable more effective follow-up.

Hydrocarbons tracks transport safety performance using a key performance indicator (KPI) based on CEFIC definitions to classify incidents. The KPI score for 2018 was above target and no major incidents with fatalities or spills occurred. Fertilizers had no major transport incidents in 2018.

Preventing pellet spills during transportation is key to avoid pellets ending up in the environment and ultimately the ocean. Borealis is committed to achieving zero pellet loss in and around its operations and has set a range of measures to achieve this.

The Group has a truck driver manual in place at all sites which includes guidelines for safe loading and unloading of material. The European Chemical Transport Association (ECTA) and CEFIC also provide comprehensive guidelines for safe loading and unloading of pellets in bulk. These have been communicated to all of Borealis' logistics service providers and shared with the Group's sales team for communication to customers. The objective is to increase awareness regarding the safety, quality and environmental aspects of bulk unloading processes.

During 2018, the Polyolefins business introduced more detailed follow-ups of spills at its own sites and at external logistics partners to continue its progress towards zero incidents. All its logistics partners for bulk transport have signed the CEFIC guideline for zero pellet spills.

Spills of hydrocarbons are potentially dangerous and can have a greater impact on people and the environment, as the size of cargos is larger than for the other business units. The Hydrocarbons business unit looks to continuously improve transport safety and carries out an annual transport safety audit plan.

Drivers transporting dangerous goods require a special licence and training and must operate under restrictions, such as only parking in secure areas. For the Fertilizers business, any loss of ammonium nitrate must be reported to the authorities as it can be used as an ingredient for explosives. Fertilizers introduced a rail tracking system in 2018 which enables all ammonia rail tank cars (RTCs) to be fitted with a GPS device. This makes transportation more secure and reliable as the location of all RTCs is known at all times.

The Fertilizers business has also employed The Borealis Way, an approach to process improvement based on Six Sigma, to improve the safety of Technical Nitrogen logistics in France. This has included safety meetings with all carriers and the inclusion of safety information in the transport management system, with audits now being planned. These actions have reduced notifications in the Carrier Performance Rating System by 60% during 2018. More generally, safety standards are not uniform in all countries where Fertilizers operates and the business treats safety as a journey, working with local service providers to take steps in the right direction.

Carrier Performance Rating System

The Carrier Performance Rating System (CPRS) is a SAP-based tool which Borealis uses in its Polyolefins and Fertilizers businesses to:

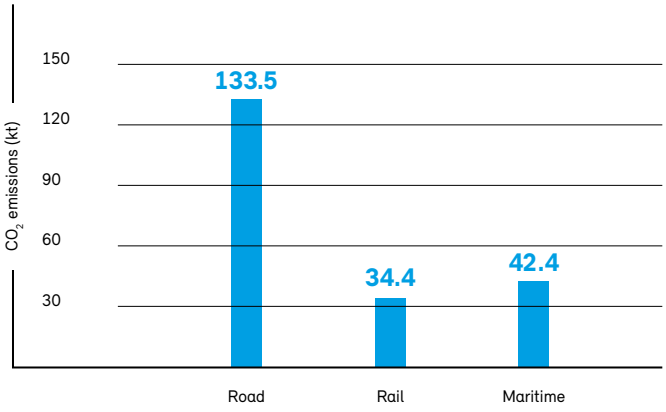
- continuously monitor the quality and performance of carriers, based on criteria specific to Borealis' business;
- visualise carrier performance in a measurable and standardised way;
- observe how performance levels change over time; and
- counteract any quality issues identified.

If a transport incident (known as a deviation) occurs, it is entered into the CPRS system. All departments and people involved are asked to collect and forward their observations of deviations and other issues. CPRS is based on around 50 different types of deviations which are important to Borealis and happen in daily business. These deviation types have been determined by the whole supply chain and are then grouped into five main areas relevant for transport quality. These are safety, loading performance, delivery performance, documents and information.

Emissions from Transport

The Group looks to balance the cost of transport with the potential to reduce CO_2 emissions. Wherever possible and economically feasible, the Group seeks to transport products off-road via rail, barges, vessels or pipelines. In total, around 60% of Borealis' polyolefins and around 70% of its fertilizer products are transported by road, with the result that road transport generates the large majority of Borealis' emissions from logistics activities, as shown in Figure 20.

Fig. 20: **Borealis' CO_2 emissions by mode of transport for polyolefins and fertilizer products in 2018 (kt)**



In 2016, Borealis began to implement a tool to track the CO_2 emissions of its downstream transportation. Analysis of Polyolefin and Fertilizer transportation has shown that Borealis' downstream transportation produced 210 kilotonnes of CO_2 emissions in 2018. Around 30% of the transported volume in the Fertilizer business are collected by customers (mostly by truck) and are therefore not included in the CO_2 emission calculation. This also applies to Polyolefin customers who collect the material themselves.

Borealis has a target to reduce its CO_2 emissions by 25% by 2025, based on 2015 transport volumes and emissions. By 2018, it had achieved a 5% reduction compared to 2017. The reduction compared to the baseline of 2015 reached a level of about 8% in 2018.

In October 2017, Borealis' Executive Board approved an investment project to debottleneck the material handling capabilities of the Group's French production site, Grand Quevilly. The investment relates to the bulk conveying of fertilizer products from the on-site warehouse to the quay of Grand Quevilly, which is approximately 1 km away. Borealis expects to export more than 300 kilotonnes of fertilizer products annually through this quay over the coming years. These products are currently transported by truck and this will end completely with the installation of a conveyor belt. The project will improve Borealis' sustainability by reducing the cost of logistics and cutting CO_2 emissions while improving safety in the warehouse and at the quay. The project became operational in early 2019.

Deep sea shipping produces significant emissions of CO_2, sulfur oxides and nitrous oxides which may be subject to stricter global targets in future. In 2018, the engine of the Navigator Aurora vessel used by Hydrocarbons was converted to run on liquefied natural gas or ethane to reduce its environmental footprint.

Product Stewardship

Goals

Borealis has the following product stewardship goals

- To integrate and maintain the key principles agreed in the Responsible Care® Charter into Borealis' daily raw material and product safety related work processes, by responsibly managing the health, safety and environmental aspects of Borealis' products throughout their lifecycle, from initial development to disposal or recovery/recycling.
- To assure that the products sold by Borealis are:
  * correctly classified, packed, and labelled according to legislation worldwide;
  * in compliance with the legal requirements for their intended use and market area;
  * supported with documents, available for Borealis employees and the customer value chain; and
  * reported to authorities according to legal requirements.
- To ensure that Product Stewardship effectively supports InnoTech, Procurement, Operations, and Product management and the marketing and sales organisations, so that
  * raw materials and feedstock used by Borealis meet or exceed all relevant legal requirements and high-level safety standards; and
  * Borealis' products always meet or exceed legal requirements and value chain needs regarding their use, safety and environmental aspects.
- To rank questionable or hazardous chemicals according to their risk level, identify mitigating actions and update the Borealis Banned Substances List.

Key Achievements and Results

During the year, Borealis

- completed its 2018 REACH registration, covering all relevant substances produced and imported into the EU exceeding one tonne a year, and assured that all sourced raw materials comply with REACH registration obligations;
- took part in several customer initiatives regarding non-intentionally added substances (NIAS) in contact with food and drinking water, identifying problem areas and proposing alternatives;
- continued the ongoing risk rating of critical chemicals, with three substances added to the Borealis Banned Substances List; and
- completed the necessary notifications according to the revised United States Toxic Substances Control Act (TSCA) inventory of active substances.

Introduction

Chemical substances, or products containing them, can pose risks to health, safety and the environment. These include negative health effects such as sensitisation, irritation or intoxication; physical hazards such as fires, explosions or exposure to dust; or environmental hazards such as bioaccumulation or persistence.

In addition to these risks to people and the environment, Borealis' failure to comply with its product stewardship obligations could lead to the loss of market share because its products are non-compliant. Poor product stewardship could also result in certain types of products being banned from sale. Conversely, a proactive approach to product stewardship could open up new opportunities if Borealis is first to market, for example with a product in which critical chemicals have been replaced. Reuse and recycling can also open up new application fields.

The importance of product stewardship means Borealis is committed to the principles of Responsible Care® and enforces high product stewardship standards to ensure that its products do not pose a risk at any stage along the value chain. This requires clear communication up and down the value chain.

The Group also ensures it understands consumer perceptions of product stewardship issues which are driven by non-governmental organisations, the media and brand owners, and anticipates the development of legislation concerning chemicals, their applications and the environment, so it can ensure continued compliance.

Organisational Structure

The Product Stewardship Committee manages the use of high-risk chemicals and has a crucial role in ensuring chemical safety at Borealis and across the entire value chain. It is chaired by the Director Health, Safety and Environment (HSE) and brings together experts from across the Group, including areas such as Product Stewardship, Ethics, Innovation & Technology, as well as all of Borealis' business sectors and operations. This range of competencies ensures that the company's risk assessments take a holistic perspective and consider market needs, legal and technological requirements and stakeholder views.

The committee updates the Borealis Banned Substances List which contains more than 220 substances and substance groups that the Group has banned for use in its production processes and products. It also selects the substances to be evaluated using the Borealis Risk Matrix, which is a proprietary ranking tool to evaluate risks in detail. These assessments enable Borealis to identify, mitigate and manage the risks posed by hazardous chemicals.

Borealis' product stewardship procedures cover the HSE aspects of a product throughout its lifecycle, from raw material sourcing, through the production process, conversion and use, to its recycling, recovery or disposal.

All new or modified products undergo mandatory HSE assessments and continuous monitoring to ensure they are suitable for use in the countries where they are sold, and that they comply with all applicable legislation. This includes legislation on the evaluation and registration of chemicals, such as the TSCA in the United States and REACH in the European Union. REACH is the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals. It is a comprehensive and stringent regulation on the production and use of chemical substances, and their potential impacts on both human health and the environment.

Other relevant legislation and regulations include the Globally Harmonised System (GHS) for the classification and labelling of hazardous chemicals, the Classification, Labelling and Packaging of substances and mixtures regulations (CLP) and, depending on use, any application-related legislation such as the EU framework regulation on food contact materials.

Borealis also closely monitors emerging legislative initiatives, so it can anticipate and take measures to maintain its products' legal compliance. According to the REACH principle of "no data equals no market", this is essential to sell any product worldwide. Borealis therefore incurs the significant costs of registration fees, data creation and external consultancy to ensure compliance.

Controlling and approving raw materials

All incoming chemicals used in Borealis' products are assessed using a sophisticated incoming material process before they are approved for use. An initial assessment is performed by Group Product Stewardship to ensure basic legal compliance. Local Product Stewardship teams then perform additional assessments at each plant to ensure the chemical meets plant-specific requirements and complies with national or community related legislation. This system ensures that the procurement organisation does not purchase any substance before the Product Stewardship team has controlled and approved it. Once materials are approved for purchase, they are subject to Borealis' quality control to ensure they continue to comply with the agreed material properties.

All materials are documented based on Borealis' knowledge of the exact composition of a raw material and on detailed information about the material's hazardous constituents. Proper documentation of the raw materials used is a key element of high-quality Borealis product compliance statements, such as safety data sheets (SDSs), application-related statements such as medical use, food contact and drinking water, and other statements such as on raw materials origin.

Borealis also regularly audits its raw material suppliers for compliance with, for example, their legal and hygiene requirements, with a special focus on new and strategic suppliers. In 2018, the Group audited 27 raw material suppliers in Polymers and Fertilizers. The Group requires its suppliers to provide documentation for each raw material and to keep it up to date, including the information required by national chemical inventory control laws, the CLP and REACH. This enables Borealis to issue the respective SDSs for its customers.

In addition to these measures, Borealis' production sites are subject to frequent external audits. For example:

– Sites that manufacture products with sensitive hygiene requirements are regularly audited by external expert organisations and customers. This includes products for use in drinking water, food contact, personal hygiene and medical applications, which represent about 50% of Borealis' polyolefin products. In 2018, 73 audits and certification processes were conducted at Borealis' polyolefin plants and sites, comprising ISO 9001, ISO 14001, ISO 18001, IATF 16949 and ISO 50001, with a further 31 audits by customers or institutes.

– The fertilizer business is regularly inspected by local authorities. In addition, every three years, Borealis must pass an external audit by Fertilizers Europe Product Stewardship which covers the HSE and security aspects of the whole life cycle of fertilizers, from raw material to application.
– Urea feed grades are audited each year by the Feed Additives and Premixtures – Quality and Safety organisation. The audit was successfully passed in 2018.

Assessing Chemical Risks

The Group has adopted a hazardous chemicals strategy. This follows the precautionary principle of continuously assessing the risk potential of all substances used in Borealis products, to identify critical chemicals whose use needs to be stopped or that need to be replaced by less hazardous alternatives. This includes all substances which were already classified as substances of very high concern (SVHC) according to REACH and other comparable legislation around the world, or which fulfil the criteria to be considered as SVHC in the future. Examples include raw materials based on cadmium salts, polycyclic aromatic hydrocarbons or many poly-halogenated organic compounds.

The risk evaluation utilises a tailor-made tool which ranks the substances according to their overall risk. It considers related HSE risk and regulatory aspects, evolving stakeholder concerns, the technical feasibility of substitution and the financial consequences of doing so, such as the required innovation costs, approval costs and modifications to technical equipment. Substances with the highest identified risk are further assessed by the Product Stewardship Committee.

Maintaining Open and Transparent Communication

Open and transparent communication with stakeholders about the substances used in products is one of the cornerstones of Responsible Care®, and Borealis takes this obligation very seriously. Issues raised by stakeholders include substances of concern, REACH and similar developments around the world, and non-intentionally added substances in food and drinking water contact.

Borealis communicates with its stakeholders through a wide range of channels. The Borealis website allows anyone to find information about the Borealis Banned Substances List. The website also includes examples of successful substitutions of hazardous chemicals and some position statements regarding “hot topics”.

The Group also provides information and support to its customers in a number of other ways. These include documentation that covers REACH information and CLP classifications, and product information sheets which provide technical data such as physical properties and performance in application, recommendations for safe handling and storage, and specific guidance regarding product use.

Less than 10% of Borealis' products require a Safety Data Sheet (SDS). For all other products, Borealis issues a product safety information sheet (PSIS). After the full revision of all related SDSs and PSISs in 2015 to implement the revised GHS and CLP rules, Borealis now continually monitors this set of statements and keeps them up to date. All SDSs and PSISs are available to download on the Borealis website.

If product modifications could influence customers’ safety or require additional testing of finished articles, Borealis informs customers or authorities in due time before it makes the modifications. Borealis also informs customers in advance when legislative changes have consequences for them.

In addition, Borealis offers training and education to customers. Healthcare is one of the most sensitive application segments in terms of reliability, hygiene and product consistency. Sharing Borealis' expert product stewardship knowledge with value chain partners therefore makes an important contribution to helping customers continuously meet the highest product quality standards. Borealis shares this knowledge via formal customer training sessions and through technical dialogues throughout the year. Borealis' plants are also subject to regular customer audits.

In the Fertilizers area, Borealis offers education and awareness activities for farmers. This informs them about proper use of chemical fertilizers and how to avoid pollution of groundwater or soil.

Borealis actively participates in industry associations and standardisation groups to stay at the forefront of regulatory and public requirements. Borealis is a member of various chemical industry consortia and several European chemical industry council sector groups, including the Lower Olefins Sector Group, the Aromatics Producer Association, Fertilizers Europe and the European Melamine Producer Association. Borealis is also a member of Plastics Europe's work groups on food contact materials, and a member of the "European Drinking Water" initiative which focuses on regulatory schemes for drinking water pipes and fittings.

Borealis is an active member of the REACH teams at CEFIC (European Chemical Industry Council) and PlasticsEurope and related national organisations. The Group works closely with its own experts, customers and suppliers, engages in experience exchange at REACH conferences and other activities, and assists small and medium-sized companies with meeting their REACH obligations.

Good internal communication is also critical to robust product stewardship. Borealis uses an e-learning tool for its employees, and teams hold regular meetings involving Product Management, local Product Stewardship, raw material owners, Innovation & Technology, and the business units.

Performance 2018

In 2018, the following three substances were added to Borealis' Banned Substances list:

- Benzene-1, 2,4-tricarboxylic acid 1,2 anhydride (CAS 552-30-7),
- Benzoghiperylene (CAS 191-24-2) and
- Ethylenediamine EDA (CAS 107-15-3).

Outlook

The Group's future product stewardship objectives are to

- support Borealis to become a leader in regulatory compliance;
- drive sustainability by minimising potential hazards and risks associated with Borealis' portfolio;
- continue to implement globaly emerging legislation, such as chemical inventories and registration, and application – related legislation; and
- implement the Circular Economy, including the integration of Ecoplast and mtm plastics into the Group's standard processes and systems for Product Stewardship.

Environmental Management: Emissions, Water, Effluents & Secondary Resources

Goals

In 2018, Borealis' goals were to

- further reduce emissions to air;
- continue a gap analysis against the best available technology for waste water and waste gas management systems;
- increase the focus on waste prevention and recycling rates; and
- ensure zero cases of environmental non-compliance.

Key Achievements and Results

There was a huge focus on resource efficiency in all locations which allowed to increase the recycling rate in 2018.

- Internal workshops were organised where it was clearly shown that connections between different departments (production, sales, research, HSE, logistics) is one of the keys to success in enhancing circularity and identifying resource improvement measures.

Introduction

Borealis' approach to environmental management encompasses managing its emissions to air, its use of water and discharge of wastewater, its production and use of secondary resources in the form of waste, and its overall environmental compliance.

Borealis' emissions to air result from its production processes and from combustion for energy generation. In addition to carbon dioxide and nitrous oxide, which are addressed in the Energy chapter, these emissions comprise:

- nitrogen oxides (NO_x) emissions, created by the burners in steam boilers and furnaces;
- volatile organic compounds (VOC), which are fugitive emissions of hydrocarbons, occurring due to high pressure and temperature; and
- dust and ammonia (NH_3) emissions, from production and handling solid material in fertilizer plants.

For Borealis, the most relevant environmental impacts from emissions are the contribution to climate change at a global level, and the generation of ground-level ozone and eutrophication at a local level. VOC emissions contribute to the generation of ground-level ozone, particularly in combination with traffic-generated emissions. NO_x emissions can react in the air with ammonia and moisture to form acidic particles, and can also react with VOC in the presence of sunlight leading to ozone generation. NO_x also contributes to nitrogen ending up in soil and water, which can lead to eutrophication. This is when surface water is enriched with excessive levels of nutrients, which in turn support excessive growth of algae and plants.

Borealis requires water for its operations. Industrial water, which has less strict purity standards than drinking water, is used for production purposes in processes such cooling, steam generation and product handling. Lower quantities of water are needed for drinking and cleaning, and for sanitary and firefighting purposes. The Group looks to minimise its water use by recycling water in its production process. It also looks to improve the quality of the water it discharges and to comply with its legal obligations, through filtration, neutralisation and biological waste water treatment. Each production process uses specific chemicals, with the result that wastewater may contain nitrate and ammonium from fertilizer plants, hydrocarbons from crackers or solid material from polyolefin plants.

The most common types of waste produced in Borealis' operations include excavated soil, wastewater treatment sludge, solvents, mixed industrial waste and inert construction material. The Group must ensure it meets the requirements of regulations relating to waste, as well as ISO 14001 standards. Borealis' aim is to minimise the production of waste where possible, to treat waste as a resource and to better handle products at end of life.

Borealis' failure to comply with its environmental obligations could have a severe impact. Such failures could result in fines, loss of business, reputational damage, loss of permits and enforcement action by the relevant authorities, all of which could affect the Group's financial performance.

Management Approach

Borealis is committed to implementing the guidelines of the Responsible Care® Global Charter, the chemical industry's voluntary commitment for continuous improvements in health, safety and environmental (HSE) performance.

At least every three years, the Group performs a detailed and systematic environmental risk and opportunity assessment for every plant in all locations. The assessments are also performed if there have been major changes, near misses, incidents or accidents, or if potential improvements have

been identified. The risk assessments are based on an evaluation of the legal framework and possible upcoming changes, any deviations from permit limits and selected stakeholder input.

Based on these assessments, Borealis defines and documents HSE objectives and targets for each location. Clear responsibilities and timelines are agreed and reviewed at the Group HSE level twice a year. The consolidated outcomes, including HSE performance, are reported to the Responsible Care® Committee. → Chapter Occupational Health & Safety, p. 55

The risk and opportunity assessments determined that reducing CO_2 emissions and energy consumption are the main drivers of Borealis' performance improvement and have the biggest impact on the environment. These were therefore defined as key materiality issues and prioritised in the Group's environmental management agenda.

Nevertheless, emission to air of NO_x, NH3, dust and VOC, as well as water, waste and effluents, also play a significant role in high-quality HSE management. As a consequence, they are included in the Group's HSE management process and are monitored as part of the environmental objective of each location.

All Borealis production locations are part of an ISO 14001 compliant environmental management system, including Ottmarsheim, France, which was the last production location to achieve the certification in 2018.

Emissions to Air

Emissions management is an integral part of Borealis' HSE management system. This means that the Group identifies its emissions and assesses and monitors risk. Borealis evaluates and implements control measures, depending on the significance of the emission and according to the ISO 14001 standard and regulatory requirements. The Group operates a broad mix of measurements, including external measurements, on a daily, weekly, monthly, yearly or continuous basis.

With all emissions, the Group follows its legal requirements and the stipulations in its permits. In addition, Borealis has established its own requirements for measuring and following up on key pollutants. Deviations from the norm are reported within the Borealis incident management system and then investigated and addressed through corrective actions. The approach depends on the magnitude of the emissions' impact and their criticality. In line with Borealis' general management approach towards sustainability, actions are prioritised using the principles contained in the Group's Risk Management Policy. These principles aim to create and protect value, ensure risk management is an integral part of the organisation's processes and help to distinguish between alternative options and support prioritisation.

Borealis uses Teams SR, an integrated environment data management system and reporting software package. This ensures control of data flows from varied sources, in multiple formats and on different schedules, as well the traceability and transparency required for reporting.

High-risk items and proposals with significant potential for improvement are regularly discussed and addressed by the Responsible Care® Committee.

Volatile Organic Compounds (VOC) Emissions

Borealis pursues the goal of reducing its overall VOC emissions by detecting and repairing leaks quickly. In 2018, Borealis' VOC emissions reached 3,784 tonnes, compared to 3,333 tonnes in 2017, due to a leakage in a furnace.

Dust Emissions

Dust reduction and prevention is a focus for all Borealis operations and for improvement projects. Dust emissions are continuously measured in the Group's fertilizer locations which are the main contributor. Borealis' polyolefin production plants monitor dust emissions using spot samples which do not allow for an annual average to be calculated.

Dust emissions originating from the fertilizer production units totalled 437 tonnes in 2018, compared to 477 tonnes in 2017. The slight decrease was mainly due to improvements in the quantification of dust emissions.

NO_x Emissions

Borealis measures most of its NO_x emissions, with the remainder being calculated by using a standardised emission factor. Absolute NO_x emissions in 2018 were 3,035 tonnes, compared to 2,891 tonnes in 2017.

Ammonia (NH_3) Emissions

Ammonia emissions are a consequence of either failures during the ammonia production process or leaks during storage or transportation. These emissions amounted to 727 tonnes in 2018, compared to 862 tonnes in 2017.

Sulfur Oxide (SO_x) Emissions

Borealis does not produce SO_x emissions as it only uses gaseous fuels (natural gas and hydrocarbons) where no sulfur is present.

Ozone Depleting Substances (ODS)

Borealis does not produce ODS emissions. In 2014, all equipment containing ODS was replaced by non-ODS, for example by using different cooling media such as propylene or ammonia.

Water

Water Consumption

Borealis' water withdrawal was 675 million m^3 in 2018, compared to 752 million m^3 in 2017. The decrease in consumption is due to the reduced activities because of a turnaround and lower cooling water consumption during summer because of extreme weather conditions.

The majority of the water Borealis uses in its operations is surface water, for example from water bodies such as rivers and oceans. The remainder is extracted from ground water, waste water from another organisation, municipal water supplies or other water utilities, and rainwater is being collected.

Fig. 21: **Borealis' sources of water consumption and locations of water discharge in 2018**

Sources/Locations	2018
Water consumption	**675 Mio. m^3**
Surface water	97.51%
Ground water	1.87%
Water from 3rd party	0.42%
Municipal water	0.19%
Rainwater	0.01%

Water availability or scarcity varies by location. Borealis has not identified any major risk related to water at the locations where it operates. Borealis' environmental experts in each operation continuously monitor water consumption as part of the Group's environmental monitoring programme, and in order to comply with the permit limits set by the respective local authorities.

Every five years, Borealis performs an in-depth environmental liability assessment at each location, of which water consumption is a key element. Key aspects of this assessment include a check of the legal framework and any upcoming changes to it, an evaluation of the current consumption levels versus permit levels, and an evaluation of the water stress index of all water bodies. The last assessment took place in 2015, with the next one scheduled for 2020.

Water Discharge

The volume and nature of wastewater Borealis generates depend on the type of production at its locations. Borealis therefore installs water treatment techniques that are appropriate for each plant's production process. These techniques can include filtration, neutralisation, osmosis, gravimetric and biological water treatment.

Almost all Borealis locations are connected to wastewater treatment installations, consisting of internal treatment units, external plants or both. The exception is the location in Grandpuits, France, where Borealis has no permit to discharge into the surface water but discharges into a special salted groundwater aquifer instead.

Each operation carefully monitors wastewater flows and contaminants to ensure that all parameters are within permitted levels, and reports this regularly to the respective authorities. Depending on the type and size of the operation, monitored emission parameters relate to, for example, chemical or biochemical oxygen demand, aromatics, hydrocarbons, nitrogen, phosphate and trace elements. The monitoring and analysis of wastewater discharge is currently done at a location level, without consolidation at a Group level.

On a regular basis, national authorities evaluate Borealis' water use and wastewater discharge. Under the EU's Industrial Emissions Directive, Borealis locations producing

melamine and hydrocarbons are currently developing soil and groundwater baseline reports, together with national experts and the national authorities, to ensure the Group minimises its negative impact on water bodies. The locations are also working on a gap analysis in relation to the content of the Best Available Technology (BAT) reference document for Common Waste Water and Waste Gas Treatment. This document details the techniques to prevent or, where this is not practicable, reduce the environmental impact of operating installations. Due to the publication of the Best Reference (BREF) document on Large Volume Organic Chemicals (LVOC) in December 2017, Borealis conducted a gap analysis on all the applicable and published BREF in 2018.

In July 2018, the Group's location in Kallo, Belgium, began operating an additional wastewater treatment unit to remove polyaromatic hydrocarbons.

Recycling and Reusing Water

To increase water use efficiency, Borealis seeks, whenever possible, to recover its process water or to reuse wastewater as cooling water. For example, in some operations cooling towers use recycled water or rain water. This is not possible in all locations, as it depends on permit stipulations and on the water body. Borealis' site Itatiba, Brazil, implemented a rainwater reuse system during 2018. The system supplies water to the production process, reducing the intake from the public water system.

As noted above, Borealis prioritises reductions in energy consumption and CO_2 emissions. As water consumption and energy use are linked due to the energy recovery from cooling water, the Group may on some occasions decide to increase its water withdrawal in order to recover more energy.

From Waste to Secondary Resources

Borealis generates waste during production and during short regular shutdowns and plant turnarounds. Turnarounds are regularly scheduled events during which a plant is temporarily taken out of operation to ensure asset integrity and process safety by carrying out important maintenance works and inspections.

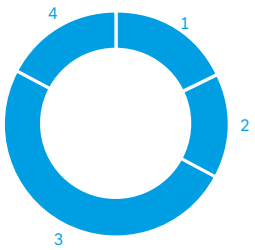
Borealis monitors waste production and implements control measures in all its operations, based on the requirements of regulations and ISO 14001 standards. The Group has waste management plans for each location which are coordinated by local environmental experts. All locations follow the "4R" rules: reduce, reuse, recycle and recover.

Borealis' overall aim is to avoid producing waste. The Group has therefore implemented an integrated manufacturing process which recovers as much co-product as possible. For example, the CO_2 emitted by the ammonia production site in Linz, Austria, is used in the production of urea at the same site. In the fertilizer production process, condensate from steam contains co-products which are reinjected into the process to minimise loss of resources. If a co-product cannot be reused and therefore becomes waste, the Group's preference is to recycle it, taking into account relevant regulations and environmental aspects. The Group only employs accredited contractors for handling its waste streams.

2018 Performance

In 2018, the Group's total waste volume was 53.7 kilotonnes, compared to 61.4 kilotonnes in 2017. The amount of waste is impacted by the work carried out during the turnaround. Approximately 51% of Borealis' waste volume was recycled, 17% was recovered and 32% was disposed of, with 15% going to landfill and 17% receiving a different treatment. Borealis' target is to achieve a recycling rate above 40%.

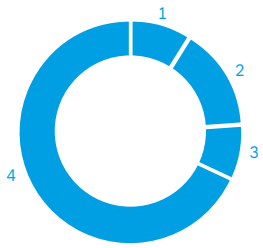
Fig. 22: **Waste treatment** [1)]



1. Energy recovery 17%
2. Landfill 15%
3. Recycling 51%
4. Other treatment 17%

1) Environmental data might be subject to minor adjustments due to ongoing audits and missing 3rd party data at the time of closing of this report

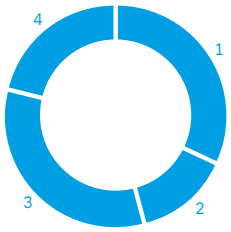
Fig. 23: **Non-hazardous waste treatment 2018** [1)]



1. Energy recovery non-hazardous 9%
2. Landfill non-hazardous 15%
3. Other treatment non-hazardous 8%
4. Recycling non-hazardous 68%

1) Environmental data might be subject to minor adjustments due to ongoing audits and missing 3rd party data at the time of closing of this report

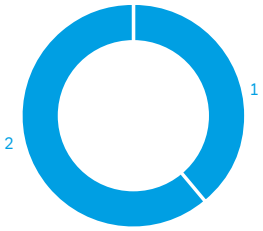
Fig. 24: **Hazardous waste treatment 2018** [1)]



1. Energy recovery hazardous 32%
2. Landfill hazardous 14%
3. Other treatment hazardous 33%
4. Recycling hazardous 21%

1) Environmental data might be subject to minor adjustments due to ongoing audits and missing 3rd party data at the time of closing of this report

Fig. 25: **Waste characterisation** [1)]



1. Hazardous waste 40%
2. Non-hazardous waste 60%

1) Environmental data might be subject to minor adjustments due to ongoing audits and missing 3rd party data at the time of closing of this report

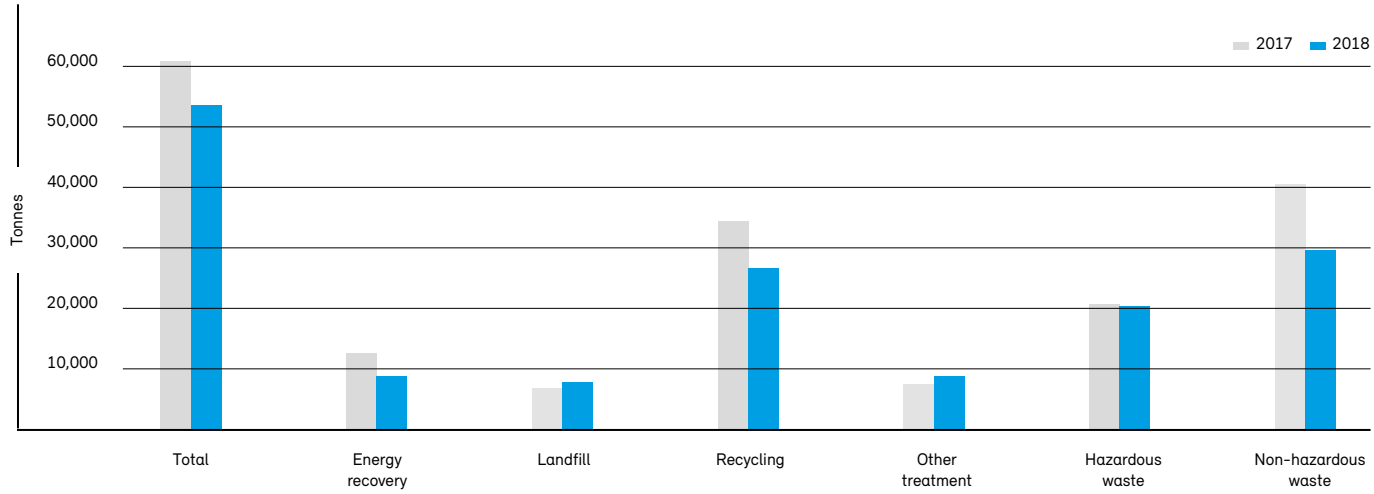
In 2018, Borealis enhanced its resource efficiency management at all locations by identifying improvement opportunities to prevent waste production and to increase waste recovery. This required the involvement of a number of different parts of the organisation, including procurement, research, operations, business units and HSE. Two workshops were organised for the Fertilizer and Hydrocarbon/Polyolefin businesses, leading to resource improvement measures for both the short and the long term.

Zero Pellet Loss

Plastic pellets released unintentionally during the production and transportation processes can end up in streams, rivers and oceans. Preventing spillage is a core responsibility for the industry. Borealis is committed to achieving zero pellet loss in and around its operations and was therefore an early signatory to Operation Clean Sweep® (OCS), an international programme initiated by the Society of the Plastics Industry and the American Chemistry Council and rolled out in Europe by PlasticsEurope. Borealis is also a signatory of the “Zero Pellet Loss” pact in Austria, which is similar to the OCS programme.

Achieving zero pellet loss is challenging and requires continuous leadership, effort, targeted and effective work practices and investment. Together with Total, Borealis has developed a comprehensive audit catalogue covering the assessment of all factors leading to potential pellet loss, based on 14 categories and a rating level of one to five (with one being the lowest score), leading to three maturity levels: basic containment, advanced and world class. Borealis aims to reach or exceed an average rating level of four for all 14 categories at all sites. It started in 2016 with a first set of audits at all of its polymer sites.
In 2018, a second set of audits confirmed that Borealis

Fig. 26: **Waste treatment comparison between 2017 and 2018 for all total waste, all treatments and the ratio of hazardous and non-hazardous waste** [1)]



1) Environmental data might be subject to minor adjustments due to ongoing audits and missing 3rd party data at the time of closing of this report

met or exceeded its ambition of a rating of four for all 14 categories at almost every site. The primary reason for not reaching level four is the complexity of implementation, which requires more time. Action plans for the areas that are not yet at level four are in place and regularly followed up.

In August 2018, Borealis participated in the "Business Leadership for Oceans – Source to Sea Solutions" session at the Stockholm World Water Week. Executive Board member Martijn van Koten represented Borealis at the event and explained the Group's engagement in marine litter prevention through its focus on zero pellet loss and Project STOP. → Social Engagement, p. 34 & Infobox Project STOP, p. 27

Environmental Compliance

Borealis complies with all relevant environmental laws, regulations, standards and other legal requirements, such as operational permits. This ensures the Group can continue to operate and is protected from fines, reputational damage and other associated cost related to impact mitigation. The Group reviews all cases of non-compliance and takes action to prevent them from reoccurring.

There were two incidents of non-compliance during the year. In February 2018, there was media attention relating to the publication of research about pellets on the beaches in the Stenungsund area and in Borealis' water effluents. The Group investigated all beaches around the location and completed the planned installation of new microfiltration equipment for all effluents.

In May 2018, VOC leakage from a high stack at the Group's location in Stenungsund caused odour problems which were detected far from the site and reported by several media outlets. The Group conducted an investigation with Flux-Sense, a company which uses a new state-of-the-art technique to locate and quantify fugitive gas emissions. A leak was quickly found and repaired.

Outlook

The Group's priorities for 2019 include further stimulating its resource efficiency through better valorisation of side-streams and industrial symbiosis. The purpose is to minimise the production of waste to consume fewer resources and to better handle the end-of-life of Borealis' products, for example through a better use of excess heat and recovery optimisation of the side-streams products.

Fig. 27: Key Environmental Performance Indicators [1)]

Issue	Definition	2018	2017	2016	2015	2014
EU ETS CO_2 emissions	kilotonnes	4,299	4,210	4,600	4,270	4,250
N_2O emissions	tonnes	1,330	866	1207	978	1,160
Flaring losses	tonnes	26,275	51,600	38,700	47,690	38,000
VOC emissions	tonnes	3,784	3,333	3,599	3,055	3,250
NO_x emissions	tonnes	3,035	2,891	3,330	4,055	3,400
Dust emissions	tonnes	437	477	489	–	–
NH_3 emissions	tonnes	727	862	909	–	–
Primary energy consumption	GWh	24,476	22,400	24,100	22,600	31,400 [2)]
Water consumption	m^3 (million)	675	752	724	300	316
Waste generation	tonnes	53,713	61,398 [1) 3)]	49,036	157,000	44,600

1) Environmental data might be subject to minor adjustments due to ongonig audits and missing 3rd party data at the time of closing of this report // 2) Data reported until including the year 2014 included the consumption of gas used for the production of ammonia as a raw material // 3) Restated (figure adjusted due to incomplete data at the time of closing of the report 2017)

Definitions

EU Emission Trading Scheme (ETS) CO_2 emissions: All greenhouse gas emissions (GHG) as per the European ETS expressed in CO_2 equivalents (since 2009 this indicator has replaced the reporting of direct carbon dioxide emissions).

Nitrous Oxide (N_2O) emissions: Emissions of N_2O (also known as laughing gas) are generated by the production of nitric acid in the fertilizer plants. N_2O is a GHG with a global warming potential (GWP) 310 times higher than CO_2.

Flaring losses: All streams sent to the flare, except streams that assure a constant flame (e.g. fuel gases to pilot burners, fuel gas purges to flare lines for safety reasons, steam, nitrogen).

Volatile Organic Compound (VOC) emissions: Emission of all organic compounds (from C1 to Cn) with a vapour pressure of 0.01 kilopascal (kPa) or more at either room temperature or at actual temperature when processed. The quantification is based on measurements and estimates.

Nitrogen Oxide (NO_x) emissions: Emissions of all nitrogen oxides from all relevant sources, including flares. The emissions are quantified as NO_x. When NO_x measurements are not done, emission factors correlated to the fuel type and heating value are used.

Dust: Emission of dust from production of fertilizers.

NH_3 (Ammonia): Emissions of NH_3 from fertilizer plants, loading stations and water treatment of fertilizer locations.

Primary energy consumption: Consumption of all energy vectors (i.e. fuels, electricity and steam). Electricity and steam are converted into primary energy with standard conversion factors of 40% (electricity) and 90% (steam).

Water consumption: Total amount of fresh water withdrawn from surface or groundwater sources for any type of usage (e.g. cooling, steam generation, cleaning, sanitation).

Waste generation: Generation of all waste at company locations during normal operation as well as during special projects. Any substance or object that is to be discarded is included in the definition of waste. Exceptions are atmospheric emissions, liquid effluents and by-products with commercial value.

Corporate Governance

Goals

The Group's corporate governance goals for 2018 were to:
- roll out new or additional standards and certifications as required; and
- increase the number of certified locations.

Key Achievements and Results

In 2018, Borealis
- successfully achieved recertification to the 2015 versions of relevant ISO standards at all European locations;
- rolled out the ISO 50001 standard across Europe; and
- achieved certification to three ISO standards for the first time at its location in Ottmarsheim, France.

Introduction

Good corporate governance is essential for gaining and retaining the trust and respect of investors and other stakeholders interested in Borealis, including employees, customers, suppliers, government and the general public. It ensures everyone in the Group follows defined processes, resulting in consistency, effectiveness and the inclusion of relevant stakeholders in decision making. Well-defined governance also supports compliance with legislation, industry standards and market and customer requirements. This approach supports profitability and employee and customer satisfaction, while helping to optimise the use of resources.

Borealis' approach to governance is documented in the Borealis Management System (BMS) which sets high standards of professional and personal conduct and assures Group-wide compliance. Addressing risks and opportunities is an integral part of the management system to ensure continuous improvement and to identify mitigating actions where needed.

The Group's governance is supported by compliance with ISO standards. Being certified to standards such as ISO provides independent confirmation that Borealis applies these best practices in its daily activities. Embedding ISO standards also requires Borealis to continuously improve, increasing the value the Group generates for customers and other stakeholders.

Corporate Governance Structure

The Supervisory Board governs the Borealis Group and consists of members of Mubadala and OMV, Borealis' two shareholders. The Supervisory Board currently comprises the chairperson, the vice-chair and three additional Board members. It has established an Audit Committee and a Remuneration Committee and delegated the respective responsibilities to those sub-committees. The Supervisory Board met five times in 2018. The Audit and Remuneration Committees each met three times in 2018.

The Supervisory Board appoints the members of the Borealis Executive Board, who manage Borealis' business activities. The Executive Board members lead their respective areas of responsibility and hold monthly meetings to align on activities and decide on strategic matters and key investments.

Sustainability Governance

The Executive Board is Borealis' highest governance body for sustainability and approves the Group's overall sustainability and public affairs strategy. It reviews the strategy's implementation and performance annually, providing guidance on major topics and approving the Group's position on key sustainability issues, such as the Circular Economy, Climate and Energy, and Health & Safety. The Executive Board has delegated the routine management of social, environmental and economic issues to senior leaders in their respective functions.

The Director of Sustainability & Public Affairs leads the development of the Group's sustainability strategy and reports to the Vice President Strategy & Group Development, who in turn reports to the Chief Executive. The Sustainability & Public Affairs organisation leads Borealis' commitment to sustainability by driving and guiding the sustainability strategy throughout the Group and being a catalyst for sustainability related initiatives that create value for Borealis' stakeholders. The team helps the leaders of key functions to develop sustainability-oriented strategies and implement a sustainability roadmap through capability building, expertise, consultancy and dedicated methodologies and tools. It also collaborates with various committees that address social and environmental issues. In addition, the team orchestrates the execution of the public affairs strategy with key stakeholders in the regulatory environment through a newly created internal Public Affairs Network, which has representatives in the Group's major locations across Europe.

A Sustainability Advisory Team, comprising leaders from key functions across the organisation, reviews the Group's progress against the sustainability roadmap, providing guidance on key projects' objectives, targets, deliverables and gaps, proposing new areas of involvement and ensuring excellence and rigour in execution.

Borealis Management System

Borealis' core values Responsible, Respect, Exceed and Nimblicity are supported by five corporate governance principles which ensure a common understanding of leadership throughout the Group and establish effective organisational structures and control. The principles are that

1. Borealis is managed as ONE cross-cultural company;
2. the Borealis Executive Board steers the company through directional guidance and empowerment of its people;
3. Borealis is steered by centrally organised functions and businesses;
4. Borealis promotes a performance culture based on clear accountabilities for delivery; and that
5. Borealis' leaders follow explicit processes and pursue transparent and effective decision-making.

The values and governance principles run through the Group at all levels. They are the foundation for Borealis' integrated management system, which is known as the Borealis Management System (BMS).

Group Policies

The BMS is set up as a layer pyramid, with ten Group Policies on top. The Group Policies define how Borealis works as a company and thus provide guidance for subsequent governance documents. The policies must be applied by all employees in their day-to-day activities.

The ten Group Policies are:

1. Authority Schedule
2. Commercial Policy
3. Communication Policy
4. Ethics Policy
5. Innovation Policy
6. People Policy
7. Project Policy
8. Quality Policy
9. Responsible Care® Policy
10. Risk Management Policy

Each Group Policy is owned by the Chief Executive or Chief Financial Officer (CFO) and is issued by the Executive Vice President (EVP), (Senior) Vice President (SVP) or Director responsible. Any change to a Group Policy must be approved by either the Chief Executive or CFO as the policy owner, and subsequently by the Borealis Supervisory Board.

Fig. 28: **The Borealis Management System**

The Borealis Management System is the basis for Borealis' governance

Policies
10 Group Policies define how Borealis works.

Procedures and Handbooks
About 30 procedures/handbooks provide specific guidance, connecting key processes, organisational purpose/scope and setup.

Processes
Processes provide detailed guidance on the execution of activities on group, business or location level.

Instructions
Instructions provide detailed guidance on the execution of activities on group, business or location level.

The Authority Schedule defines how authority is delegated in all business and functional areas and establishes the approval levels for senior management in key processes.

Secondary BMS Documents and BMS Setup

In addition to the Group Policies, the BMS encompasses handbooks and procedures, process descriptions, operative instructions and committee and meeting charters.

Below the Group Policy level there are nearly 30 handbooks and procedures. These provide specific guidance, describe key processes and explain the organisational purpose, scope and setup at a departmental level. The subsequent

process descriptions and operative instructions have a more operative focus and provide detailed guidance on the execution of activities at a Group, business or location level.

The BMS has both a Group and location dimension, which together document the complete way of working in Borealis. The Group BMS is managed in a centrally controlled document management database and applies to all locations and all Borealis' affiliates. The policies and governance documents are revised at least every three years. Local BMSs apply to a particular location and are written in the local language to ensure they are fully understood by local employees. Controlled documents in the local BMS are revised at least every five years.

Committees

For particularly important social and environmental matters, Borealis has set up committees in addition to the regular Executive Board meetings to provide additional governance and ensure continuous improvement in these areas. These committees are cross-functional and are overseen by Executive Board members. Notable examples of these committees are:

- The Borealis Responsible Care® Committee, which comprises all the Executive Board members and is chaired by the Chief Executive. The committee oversees implementation of the Group's Responsible Care® Policy and programmes and monitors overall health, safety and environment (HSE) performance against key performance indicators (KPIs). The committee also assesses any serious HSE incidents, to help avoid future risk to human safety and the environment.
- The Energy & CO_2 Committee → Chapter Energy & Climate, p. 50
- The Product Stewardship Committee → Chapter Product Stewardship, p. 74
- The Quality Committee, chaired by Borealis' Executive Vice President Operations & Health, Safety and Environment & Quality (HSEQ), which sets the Group's quality management priorities and drives implementation of all quality management programmes and initiatives. The committee evaluates the BMS's effectiveness and efficiency each year and develops continuous improvement actions. In particular, the committee discusses market requirements, customer feedback and changes to industry standards, as input for improvement programmes.

Ensuring Compliance with the BMS

Compliance with the BMS is monitored on multiple levels and by various stakeholders.

- Processes are monitored continuously by the respective process owners across the organisation using performance indicators, and are reviewed regularly through internal audits.
- Management system reviews are performed annually at location level by the respective location leadership team and at Group level by the Executive Board.
- Compliance with external standards is assured via the relevant ISO standard certifications, with Borealis having re-certified to the latest editions of these standards. Depending on the location, these include ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System) and OHSAS 18001:2007 (Health & Safety Management System). IATF 16949:2016 (Quality Management System for Automotive suppliers) applies to plants manufacturing products for the automotive industry, while Fertilizer Europe certifies the fertilizer business for selected locations. The Group has also rolled out the ISO 50001:2011 (Energy Management System) to all European locations. In parallel, Borealis' location in Ottmarsheim, France, was certified for the first time to ISO 9001:2015, ISO 14001:2015 and ISO 50001:2011. A detailed overview of certified locations and the related scope is published on → www.borealisgroup.com
- In addition to the external certifications, governmental institutions and a number of Borealis' customers selected locations as part of their supplier qualification and review process. Borealis uses these audits as a key source for continuous improvement initiatives. In 2018, more than 25 customer and authority audits were conducted at Borealis' locations.

Managing Customer Complaints

Despite a tightly integrated set of controls before, during and after production, for example while supplying the products to the customer, customers might still not be fully satisfied with the products and services Borealis delivers. In such cases, Borealis uses a formalised customer complaint handling process to ensure it consistently provides the right quality and maintains customer confidence. Borealis recognises that effective complaint handling can enhance its reputation, customer relationships and customer satisfaction, even when it has initially not lived up to the full expectations of the customer. Each complaint is taken

seriously, registered, investigated and seen as an opportunity to learn. The information obtained through the complaint handling process therefore helps Borealis to improve its products, services and processes. The Group also uses regular customer satisfaction surveys as a source of information for continuous improvement.

Internal Control Systems and Audits

Borealis has established a system of internal controls, in line with EU regulations. These controls assess the robustness of the Group's systems and processes, and support monitoring, management and reporting of related risks. The system of internal control is owned by the Chief Executive and senior management. The Audit Committee is responsible for monitoring its effectiveness.

Internal controls are defined for core processes and require control owners to complete self-assessments. Borealis has an independent Internal Audit function which supports and monitors these self-assessments to ensure compliance, while external auditors assess the effectiveness of the internal controls.

Internal Audit is headed by the Director of Internal Audit and Risk Management, who reports directly to the Audit Committee. The Audit Committee reviews the effectiveness of Internal Audit and Risk Management and approves the annual internal audit plan proposed by Internal Audit. All audit results are reported to and discussed by the Audit Committee.

In 2018, more than 20 internal audits, special investigations and internal control reviews for key processes were carried out. The audits covered all business groups, as well as Group functions. Audit areas encompassed compliance, operations, strategic and financial topics including enterprise risk management (ERM), ethics and management control, procurement, strategy execution and innovation. Prevention, risk management and process safety-related audits were also conducted at Borealis' locations.

The Audit Coordination Forum, headed by the Director of Internal Audit and Risk Management, coordinates the separate audits carried out by the HSE, Quality and Internal Audit and Risk Management departments in order to align their approach.

Risk and Opportunity Management

Borealis' Risk Management Policy is owned by the CFO. Its objective is to establish sound risk management practices in all business areas and in all places where Borealis operates. While every Borealis employee is responsible for managing risk within his or her own area of activity, the Executive Board owns the Group-wide risk landscape and frequently reports on it to the Supervisory Board. The Supervisory Board reviews the effectiveness of Borealis' risk management practices and processes, the Group's risk exposure and the effectiveness of mitigating actions. The Supervisory Board delegates some of these responsibilities to the Audit Committee.

Borealis is committed to proactive and effective risk management based on the core objectives of identifying, assessing and managing risk factors that could affect the performance of any part of the Company's operation, by gaining a better understanding of how the explicit consideration of risk may affect the choice of strategy. Risk management contributes to achieving Borealis' long-term strategies and short-term goals and is designed to enrich management dialogue by adding perspective to the strengths and weaknesses of a strategy, as conditions change. It also enhances enterprise resilience, which is the ability to anticipate and respond to change and enable the organisation to identify factors that affect performance and necessitate a shift in strategy. This process, known as Enterprise Risk Management, is driven by Internal Audit.

The Three Lines of Defence

Borealis applies the "three lines of defence" approach to risk management. This recognises that each line of defence has a distinct role in identifying, assessing and mitigating risk, and overseeing the effectiveness of these processes. It ensures that risk management is embedded in Borealis' daily business, rather than being a standalone process.

The three lines of defence are:

1. Operational management, which is responsible for maintaining effective internal controls and for carrying out risk and control procedures on a day-to-day basis.
2. Risk management and compliance functions, which ensure that the first line of defence is well designed and working effectively.

3. Internal Audit, which provides independent and comprehensive assurance about the effectiveness of governance, risk management and internal controls, including how well the first and second lines of defence are achieving their risk management objectives.

This risk management process ensures that all parts of the Group routinely identify and assess their risks, including environmental and social risks, and develop and implement appropriate mitigating actions. Key risks across the Group are periodically discussed at a Group-wide level and consolidated to produce the Group's overall risk landscape. Executive Board members review these key risks each quarter, validate the risk tolerance levels, monitor the implementation of mitigating actions and ensure they are integrated into strategic planning. This approach also ensures that risk management is a key part of the Group's decision-making process, for example for investments and capital allocation.

Fig. 29: **Principal risks and impacts**

Risk	Impact
Process Safety	The first priority at Borealis is Safety, and extensive attention is given across the company to deliver HSE awareness and the prevention of safety hazards. In a manufacturing-based organisation, process safety including transportation safety is critical and stringent policies and requirements are in place to ensure that Borealis' plants operate at the highest level of safety to avoid unintentional impact on people in the operations and communities the company serves, as well as on the environment.
Growth	The strategic growth ambitions and project implementation can be impacted by financial, market, technical, legal, IPR, strategic, operational, country-related, and political factors relevant for growth projects. Risk assessment and mitigation elements are introduced into these growth projects to ensure timely project completion, definition of resource requirements, and delivery on key project objectives.
Innovation	In the innovation process, the capability and selection of sustainable projects is key for Borealis' operations and partnerships. Therefore, Borealis ensures that they deliver long term benefits for the society, environment and company particularly in the areas of catalyst supply, proprietary technology platforms and technology transfer.
Sustainability	Plastics play an increasing role in reducing climate change compared to alternative materials from production through to conversion, transportation and use. At the same time, customer demand, public opinion and increasing legislation against certain types of plastics make it imperative for Borealis to work with the value chain and to drive the development of the Circular Economy to improve the circularity of plastics and avoid the harmful leakage of plastic waste into the environment, especially in consumer packaging. Operation CleanSweep® also ensures zero pellet loss from our operations into the environment.
Quality	Meeting customer expectations is fundamental and Borealis' goal is to succeed in understanding customer expectations and to achieve optimum levels of quality, reliability and delivery service with the aim of preventing customer claims and reputational loss.
Industry Volatility	Financial performance can be impacted by industry cyclicality and global and regional economic drivers, exemplified directly by margin volatility risk and potential inventory devaluation, but indirectly also by liquidity and financial stability of supplier risks. Borealis' geographical footprint, broad resourcing approach and financial monitoring provides protection from fluctuations, whenever possible.
Operational	The Overall Asset Effectiveness and therefore production optimisation can be negatively impacted by unplanned stops, turnaround execution, general plant reliability and performance improvement ambitions and therefore Borealis' Operational Excellence approach is deeply embedded in its operations.
Compliance	Compliance risks exist due to the increasingly regulated environment and any non-compliance related to external/internal standards. It covers, for instance, competition law aspects, product and contract liabilities, protection of intellectual property, behaviour, reputation, ethics and compliance to standards. Borealis aims to avoid, safeguard and protect the organisation from unexpected compliance impacts.
IT Security	In today's digital environment, Borealis needs to protect itself from increasingly sophisticated criminal efforts related to a breach of IT or information security, access security in a more traditional sense, business interruptions, loss of confidential information and reputational damage. To protect the company and its stakeholders, Borealis conducts regular reviews and maintains up-to-date security measures.

Ethics & Compliance

Goals and Principles

The Group's ethics & compliance principles are to
- ensure that Borealis acts in an ethical and compliant way in all its business dealings;
- increase awareness and knowledge of ethics and compliance requirements and risks;
- ensure full compliance with applicable laws worldwide;
- standardise the integration of compliance and ethical aspects into key business projects; and
- promote a culture of speaking up and raising concerns.

Key Achievements and Results

During 2018, the Group
- developed and approved a new Ethics Policy (Code of Business Conduct), including new chapters on anti-corruption, anti-competitive behaviour and data privacy;
- updated and promoted Borealis' Ethics Ambassador network;
- introduced new processes, rules and instructions on how to deal with ethical and compliance issues;
- ran dedicated ethics & compliance training sessions and workshops;
- launched a "speak up" campaign;
- enhanced the compliance and ethics aspects of its processes for mergers and acquisitions and high-risk projects; and
- enhanced the Group's data protection rules, processes, systems and internal governance.

Introduction

Maintaining the highest standards of integrity is essential for securing and maintaining the trust of Borealis' customers, suppliers, employees, shareholders and other key stakeholders, and for mitigating the risk of financial and reputational damage. Borealis' commitment to ethical business conduct is strongly reflected in its core values of Responsibility, Respect, Exceed and Nimblicity.

Borealis' Ethics Policy (Code of Business Conduct) is the Group-wide standard for ensuring Borealis applies an ethical culture and its compliance with all applicable laws. The main focus areas embedded in the Ethics Policy are ethical principles, anti-corruption, business and personal integrity, compliance with competition laws and data privacy.

Failing to meet its ethical and compliance obligations could damage Borealis' reputation and cause it to lose the trust of its stakeholders. In addition, the company could face fines, legal claims, loss of business, contracts or licences, or even the imprisonment of management and employees involved. An unethical or non-compliant culture can also affect employees' engagement, job satisfaction and emotional well-being. This in turn could affect Borealis' efficiency and profitability.

Organisational Structure

The Compliance & Ethics function has both a preventive and a controlling role. It looks to prevent infringements of laws and agreed ethical principles and compliance matters, mitigate risk, react to issues and implement lessons learned. The function is headed by the Group Compliance & Ethics Officer who reports to the Chief Legal Officer and who also has a reporting line to the Audit Committee, which receives an annual report on compliance and ethics issues. The Group Compliance and Ethics Officer is supported by an Ethics & Compliance Officer and Data Protection Manager and a network of more than 80 Ethics Ambassadors from different functions and locations who promote an ethical culture in all Borealis' locations.

The Ethics Ambassador network is a key tool for strengthening Borealis' ethics culture. The Group therefore enhanced and promoted the Ethics Ambassador network in 2018. This included a survey and assessment with the ambassadors to understand how well the network has been working and to identify areas for improvement. The survey revealed that almost all of the ambassadors are well qualified, with a good understanding of Borealis' ethics rules, and that they are motivated and satisfied with their voluntary role which they assume in addition to their daily responsibilities. The network now has global coverage,

with one ambassador at almost every location and all functions covered. Communications have also been improved, with regular calls and talks for ambassadors, a newsletter and a personalised end-of-year letter from the Chief Executive Officer to each ambassador. A global Ethics Conference was held in November 2018 and attended by members of the Executive Board, representatives of our shareholders, senior leaders and most of the ambassadors.

Borealis' Compliance & Ethics function has regular exchanges of information with its counterparts at the Group's owners, Mubadala and OMV. There are also training sessions and updates with the Corporate Co-operation Council (CCC), a forum for exchanging information between the works councils in the various Borealis locations and top management. In addition, the function holds regular meetings with Borealis' Chief Executive Officer, senior management from the different businesses and functions as well as location leaders.

Ethics Policy (Code of Business Conduct)

The Borealis Ethics Policy sets out Borealis' commitment to ethical business conduct and compliance with applicable national and international laws and regulations. It applies to all Borealis employees, managers and temporary workers. On 12 December 2018, the Group introduced a new version of the Ethics Policy which will continue to be updated every two to three years. The Ethics Policy will be available in 13 languages and is accessible to all employees and to the public on the Borealis website.

Borealis' contractors and other business partners are requested to adhere to the Borealis Ethics Policy or to have their own policies which are comparable to the standard of Borealis' policy. Eligible Borealis suppliers must also adhere to the Responsible Sourcing Policy which was launched in 2017. This defines the Group's approach to key aspects of business ethics when sourcing, such as anti-corruption, compliance and child labour, as well as health, safety and the environment.

Key areas covered by the Ethics Policy:

"2018 was a great year, culminating with the new Code of Conduct. The new year will be focused on continuing to build a true and authentic ethics culture in Borealis."

Ioana Laes-Ichim, Ethics & Compliance Officer and Data Protection Manager; Vienna, Austria

Corruption and Bribery

Before entering into a relationship with business partners from countries which are rated as high-risk in Transparency International's Corruption Perception Index, Borealis conducts a compliance clearance review. This is supported by an IT application provided by Thomson Reuters which verifies legal entities and associated individuals. Borealis will only proceed with the business relationship if the review shows no negative results. In all other cases, Borealis will not enter into any business relationship or will conduct thorough due diligence to clarify any concerns.

Borealis' anti-corruption and anti-bribery rules include not accepting or tolerating any kind of facilitation payments. The Group also strictly prohibits offering, giving or accepting gifts or anything of value in order to obtain or grant an improper business advantage. Any gift or hospitality in connection with Borealis' business activities must be reasonable and appropriate and must have a legal and reasonable business purpose.

Human Rights

Borealis does not tolerate any form of harassment, bullying, discrimination, disrespect, taking advantage of a person's vulnerability or dependency to exploit them, or any other violation of human rights. Borealis expects all its suppliers, customers and other business partners to strictly observe and comply with human rights laws.

The Group is committed to implementing and enforcing effective systems and controls to ensure modern slavery is not taking place anywhere in its own business or in any of its supply chains, and to ensure it continues to comply with the UK Modern Slavery Act. As part of its initiative to identify and mitigate risks related to modern slavery, Borealis is putting in place systems (such as audits and interviews) to identify, assess and monitor potential risk areas in its supply chains, mitigate these risks and protect whistle-blowers.

Competition

Borealis is committed to healthy, lawful, equitable and ethical competition between companies. The Group applies policies to ensure full compliance with applicable competition laws in all of the jurisdictions where it does business. Borealis also puts special focus on antitrust and competition requirements in its compliance trainings and workshops.

Data Privacy

It is essential Borealis treats all personal information of its employees and business partners sensitively, in confidence and in line with legal requirements. Borealis takes its obligations under the General Data Protection Regulation (GDPR) and any other applicable data protection laws seriously and takes care to prevent unauthorised disclosure. Certain employees may, as part of their role, legally handle personal information about other employees or about third parties. Those employees receive specific training on what is expected and required from them in regard to the holding of such data. Borealis expects all employees to treat personal data in accordance with the law and sensitively when they encounter it, no matter the context.

Implementing Ethics & Compliance

Ethics & Compliance Performance

Borealis, to the best of its knowledge, has not been involved in any material violation of anti-corruption, anti-trust or competition law, human rights or data privacy restrictions during 2018. Consequently, no penalties, fines or other permanent sanctions were imposed on Borealis and no legal action was initiated against Borealis or any Borealis employee for non-compliance with these legal requirements.

Ethics Training

In April 2018, Borealis' contract with its e-learning provider expired and the company was unable to agree on new terms for a contractual extension. Borealis therefore launched a procurement process to identify a new service provider. In October 2018, Borealis awarded the contract to LRN, which is able to provide 64 different up-to-date, high quality and interactive training courses for different compliance areas. In December 2018, Group Compliance & Ethics started to roll out trainings to the employees. In contrast to previous years, Borealis now intends to roll out trainings to all Group employees, including employees of Borealis' subsidiaries and including all blue-collar employees. The training plan is illustrated in Figure 30.

Up to April 2018, 719 employees successfully completed at least one e-learning course. This was less compared to the previous years, because of the replacement of the service provider.

Borealis therefore increased efforts to providing classroom trainings to a large number of employees in all different locations. In 2018, the Borealis Group Compliance and Ethics team, Legal, the Ethics Ambassadors and members of the Executive Board provided almost 60 compliance-related classroom trainings for a total audience of approximately 1,100 employees. In addition to that, Group Compliance & Ethics conducted special workshops for data privacy and for the improvement of investigation skills. In 2018, dedicated anti-corruption trainings were provided to the Executive Board, the Supervisory Board, managers, project teams and external business partners. For functions such as Sales, Procurement and HR, dedicated training sessions and workshops covering anti-competitive practices, and training sessions covering awareness of and sensitivity to data privacy were held.

Fig. 30: **E-learning schedule**

Training title	Target group	Training description	Frequency
Code of Conduct	All Borealis Employees	Principal rules of Ethics Policy	Annually
Annual Certification	All Borealis Employees	Commitment of everyone that Ethics Policy is understood and followed	Annually
Data Privacy & Safeguarding Information	All Borealis Employees	GDPR and data privacy requirements	Annually
Information Security	All Borealis Employees	Protection of confidential information, internal & external rules for IT, email, housekeeping, visitors	Once in February 2019
Mutual Respect	To be decided	How to treat colleagues with respect and dignity	Annually
Combating Bribery in Business	Managers, Sales & Procurement	Training Legal for complying with corruption and bribery requirements	Annually
Trade Compliance	Managers, Sales, Procurement, Tax & Customs	Training on sanctions & embargos and trade control requirements	Bi-annually
Trade Secrets	To be decided	Specific training requested for clarification of trade secrets	Bi-annually
Anti-Competition	Managers, Sales & Procurement	Legal requirements for complying with competition and anti-trust laws	Annually
Financial Integrity and Fraud	To be decided	Training to avoid misrepresentation and falsification of data	To be decided

Training on human rights issues is part and parcel of each compliance training. Topics covered include non-discrimination, respect, fair treatment and data protection.

Whistleblowing and Speak Up Campaign

Borealis' Ethics Policy encourages employees to report any unethical behaviour. The Group has updated its investigation and disciplinary procedures in relation to any breaches to ensure they are thoroughly and professionally investigated and that there is appropriate action in any cases of substantiated misconduct.

The Borealis QuestionLine enables individuals inside and outside Borealis to report witnessed or suspected violations of Borealis' Ethics Policy. All reports are reviewed, kept strictly confidential and handled with professional care and diligence. To file a report, employees can contact their manager, HR, local Ethics Ambassador, the Compliance & Ethics team, or report to a dedicated Ethics hotline. Reports can be anonymous, in which case Borealis guarantees to respect the anonymity of the reporter and will not investigate his or her identity. Borealis does not accept any retaliation against any reporter of alleged compliance incidents.

In support of the Ethics Policy, Borealis continuously promotes "speaking up" to encourage employees to report any actual or suspected ethical or compliance breaches. In 2018, Compliance and Ethics received more than 60 reports out of which 26 cases were brought to an investigation. Eleven of the investigations substantiated or partially substantiated misconduct, three did not substantiate misconduct but identified process failures, eight did not substantiate any allegation and four are ongoing.

Who Drives Our Progress

Our People

Goals

The Group's primary people-related goals in 2018 were to
- implement the new organisational structure for HR;
- successfully follow up the actions arising from the 2017 People Survey;
- upgrade the HR-related IT infrastructure to achieve process automation and standardisation;
- enlarge the portfolio of training programmes; and
- enhance performance management, including an increased focus on behaviours in performance evaluations.

Key Achievements and Results

During 2018, Borealis
- tracked all 52 actions arising from the People Survey, with 122% on track for successful completion;
- implemented the Success Factors Learning tool, with positive feedback from the organisation;
- expanded the eLearning portfolio with new content on procurement, legal and operations;
- made performance management and the follow-up of low performance a key focus throughout the Group;

Introduction

Borealis' People Strategy focuses on developing a learning organisation, supporting the needs of a growing company and leveraging the benefits and opportunities of digitalisation. To implement this strategy, the Group focuses on five areas: employee engagement, diversity and equal opportunity, training and people development, process automation and fair remuneration.

Achieving the Group's goals in these areas supports Borealis' profitability, helps to ensure high levels of employee engagement and satisfaction, contributes to operational excellence, a strong health and safety performance and continuous improvement, and broadens the talent pool from which the Group can recruit, especially to achieve its growth ambitions. In 2018, around 6,800 employees[1)] worked for Borealis on a permanent (98%) or temporary (2%) basis. This workforce was supported by around 177 leasing employees (non-employees), mainly in Austria, and some 300 summer workers, job students, apprentices and interns, as shown in figure 33.

Organisational Structure

Borealis' Human Resources (HR) organisation provides people-related support and guidance to leaders and employees throughout their career. The needs supported by HR include recruitment and on-boarding, organisational and individual development, and compensation and benefits.

The Vice President (VP) HR, together with the Executive Board, identifies how HR can best support the Group's strategy and initiatives and, together with the HR leadership team, ensures that the Group has the relevant tools and resources. The VP HR reports to the Chief Executive.

The Borealis HR Handbook sets out the Group's HR governance which is managed through the Borealis People Policy and a number of HR Group process descriptions, procedures and operative instructions. These cover areas such as performance management, including bonuses and development, the Borealis Incentive Plan, succession planning and talent management. The Borealis Management System collates all these documents in one system. Documents are reviewed and updated at least every three years, or as needed.

Borealis reorganised its HR organisation with effect from February 2018. The new organisation consists of two parts:
1. HR Business Partners, who provide improved HR support, focusing on coaching and challenging leaders at all levels on their leadership behaviour, supporting them in performance management and organisational change, and using HR data to provide leadership teams with more impactful consulting on people and teams.
2. HR Service Partners, who provide HR operational services such as payroll, administration and recruitment to employees and leaders across the Group. HR Service Partners are established in most Borealis locations and are steered centrally to achieve process standardisation and ensure a "one company" approach.

The reorganisation delivers substantial improvements to drive Borealis' HR strategy, by enabling HR to make a more impactful contribution to leaders, leadership teams and employees at all levels. The HR Business Partners are able

1) In 2018 more than 6,800 employees worked for Borealis on a permanent or temporary basis. In figure 31 the details are shown for all Borealis except mtm plastics GmbH, mtm compact GmbH, Ecoplast GmbH and all Rosier subsidiaries.

to provide more support to line managers, in areas such as change and performance management. The Services organisation is also more effective, through a focus on global processes under a single global lead. The change also ensures better allocation of the Group's HR resources.

As part of the reorganisation, Borealis reviewed and updated all its HR processes to meet the requirements of the new structure. In addition, service level agreements and key performance indicators (KPIs) have been developed to clarify when services will be delivered and to what quality, as well as to improve planning and budgeting. In 2019, KPIs will be incorporated in an agile approach to start measuring delivery against the performance goals.

Improving the Human Resources Information System

Borealis' HR administration, including payroll, employee data, organisational management, time management, competence management, merit, long term incentive plan and automated processes, is centrally managed via SAP on one core platform. All employees (excluding employees of mtm plastics GmbH, mtm compact GmbH, Ecoplast GmbH and all Rosier subsidiaries) are documented in SAP, which is the Group's primary IT tool. Leasing employees are currently documented outside SAP. In 2017, Borealis HR began to implement Success Factors, an SAP cloud solution interfaced with the existing SAP core system. This three-year project is creating IT solutions to help employees and leaders make better use of important HR processes, such as recruitment and on-boarding, learning and development, and performance and compensation.

An enhanced learning tool, the learning module of Success Factors, was the first module to go live, in January 2018. It allows the 200 employees in Borealis' people development community (such as technical trainers and training module owners) to capture all employee learning needs, solutions, planning, tracking and follow-up in one place. The module ensures compliance with required training, and supports employees to develop their own competences for future career moves.

Two further modules covering succession planning and talent management went live at the Spring People Day, which is a mandatory annual event at Borealis to identify high-potential employees and monitor diversity. The modules were well received by the business, with benefits including visualisation of candidacies for succession and overviews of talent pools.

Borealis HR is currently designing two further modules: Performance, which will replace the myPDS performance and development system, and Recruitment.

In addition to Success Factors, HR has introduced new automated processes, for example for making financial awards to people and teams who have exceeded expected performance levels.

"Acquiring the right talents is key for Borealis' growth journey. The sector faces a talent crunch, and we need to clearly communicate Borealis' unique culture so we appeal to the entire talent pool and stand truly diverse."

Sandra Gillberg, Group Expert, Talent Acquisition; Stenungsund, Sweden

Employee Engagement

Achieving high employee engagement strengthens employee satisfaction and is in line with Borealis' Values and desired behaviours. As engaged employees are more productive, high engagement is also important for delivering Borealis' growth strategy and links directly to the Group's profitability. Borealis has the opportunity to further improve engagement and its business by maintaining an open dialogue with employees to understand what drives engagement.

This helps the Group to manage the risk of declining engagement, which could affect the sustainability of the business.

The Borealis People Survey is the Group's key tool for obtaining feedback from employees, evaluating employee engagement and measuring the effectiveness of Borealis' people management. It takes place every two years and has a tagline of "Building a better Borealis". Being able to provide direct feedback for the Group to act on has a strong impact on employees and teams, improving their satisfaction levels, performance, the manager-employee relationship and the working environment.

The most recent People Survey took place in 2017. The survey showed that engagement at Borealis was 56%, in line with the European chemical industry benchmark.

The People Survey enables managers and their teams to define concrete improvement actions. The 2017 survey resulted in a total of 52 actions, comprising:
– 23 location actions;
– 28 business group and business unit actions; and
– 1 Executive Board action.

The successful follow-up on these actions is a target in the Group Scorecard, with performance reviewed each quarter. This is the first time all People Survey actions have been tracked in the Group Scorecard. At 31 December 2018, the implementation rate was on 122% according to Borealis' rating scale (50 (threshold) – 100 (target) – 150 (outstanding)).

All sites have increased their efforts to communicate the actions to employees, so they are aware of what is being done to address their feedback. In addition, all Executive Board members had individual discussions with employees during the Executive Board tour, giving them increased insight into employee feedback.

One of Borealis' four core values is Respect. This value includes respecting employees who wish to organise themselves and be represented by unions or works councils. In Borealis, all employees who fall under the definition of a collective labour agreement or national bargaining agreement are covered by them. Only employee groups such as senior management, who are excluded by definition, are not covered. In some countries, no comparable agreement exists.

The Corporate Co-operation Council (CCC) is another important platform for dialogue between employees and employee representatives. It is a forum for exchanging information between the works councils at the various Borealis locations, top management and owners. The CCC holds four meetings and one conference each year. The main HR topic addressed in the CCC during 2018 was well-being. All locations presented best practices, with the aim that everyone takes home two or three ideas for implementation, with an update to be provided at the 2019 CCC conference.

Borealis also has Open Fora and other opportunities for interaction at all of its locations. Common topics discussed at these events include the Group's financial performance, different Group initiatives and special topics such as plastic waste in the ocean and Borealis' related programmes.

Diversity and Equal Opportunity

Diversity and equal opportunity, in terms of gender, origin, religion, nationality or any other facet, are integral elements of Borealis' open culture and enriches the Group's working environment. Borealis strongly believes that diverse teams are more creative, resourceful and knowledgeable in generating broader perspectives, ideas and options. Diversity and inclusion therefore have a strong impact on people and teams, improving engagement and job satisfaction and directly contributing to the Group's profitability and sustainability.

One element of diversity where Borealis is only in line with the industry average is gender diversity. Currently, about 20% of Borealis' employees are female.

Fig. 31: **Total number of employees by employement contract (permanent or temporary) by gender & by region / and total number of employees by employment type (full-time or part-time) by gender & by region [1) 2) 3)]**

M ... male // F ... female	Gender	Permanent	Temporary	Total	Full time	Part time	Total
Total	M	5,257	73	5,330	4,924	406	5,330
	F	1,293	48	1,341	1,064	277	1,341
	Total	**6,550**	**121**	**6,671**	**5,988**	**683**	**6,671**
Austria	M	1,497	14	1,511	1,373	138	1,511
	F	393	14	407	283	124	407
	Total	**1,890**	**28**	**1,918**	**1,656**	**262**	**1,918**
Belgium	M	859	12	871	734	137	871
	F	225	9	234	151	83	234
	Total	**1,084**	**21**	**1,105**	**885**	**220**	**1,105**
Finland	M	685	18	703	692	11	703
	F	187	10	197	187	10	197
	Total	**872**	**28**	**900**	**879**	**21**	**900**
France	M	771	2	773	770	3	773
	F	143	7	150	146	4	150
	Total	**914**	**9**	**923**	**916**	**7**	**923**
Sweden	M	590	2	592	577	15	592
	F	155	3	158	152	6	158
	Total	**745**	**5**	**750**	**729**	**21**	**750**
Other Europe	M	605	22	627	526	101	627
	F	142	5	147	100	47	147
	Total	**747**	**27**	**774**	**626**	**148**	**774**
Non-Europe	M	250	3	253	252	1	253
	F	48	0	48	45	3	48
	Total	**298**	**3**	**301**	**297**	**4**	**301**
Borealis AG (also included in Austria above)	M	110	2	112	112	0	112
	F	109	4	113	99	14	113
	Total	**219**	**6**	**225**	**211**	**14**	**225**

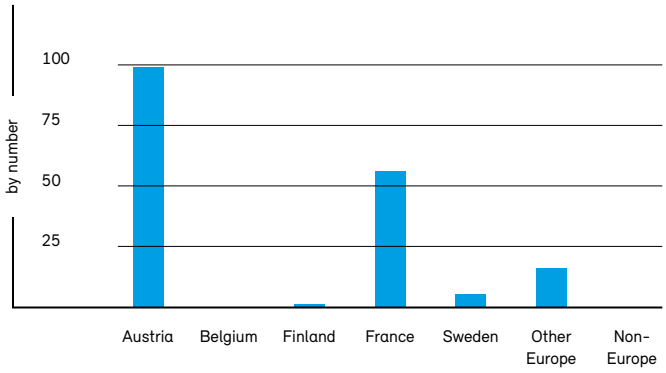
1) The reported number of employees does not cover mtm plastics GmbH, mtm compact GmbH, Ecoplast GmbH and all Rosier subsidiaries. // 2) Austria, Belgium, Finland, France and Sweden are our significant locations of operation with more than 500 employees. All other European production or sales locations are summarised under Other Europe. Non-Europe covers all production or sales locations outside Europe. // 3) All numbers as of 31.12.2018.

Fig. 32: **Percentage of employees by employee category & by gender & by age** [1) 2)]

in % M ... male // F ... female	Gender	<25	25–34	35–44	45–54	≥55	Total
Senior Leaders	M	0.00	0.00	10.34	39.66	32.76	83
	F	0.00	0.00	5.17	10.34	1.72	17
Managers	M	0.00	4.68	21.40	32.55	20.14	79
	F	0.00	0.90	8.63	9.35	2.34	21
Team Leaders	M	0.18	8.59	27.73	30.95	23.26	91
	F	0.00	0.54	3.76	3.40	1.61	9
Experts	M	0.66	10.62	25.10	20.25	18.27	75
	F	0.25	5.51	9.96	5.93	3.46	25
Administration	M	2.12	15.91	13.63	15.13	13.68	60
	F	1.24	9.74	12.33	10.88	5.34	40
Blue Collar	M	5.27	24.05	23.25	24.99	18.49	96
	F	0.21	1.23	1.10	1.06	0.34	4

1) Employee category grade refers to the internal role classification system (grade 1 to 21): Senior Leaders: all line managers grade 16 and above; Managers: all line managers grade 12 – grade 15; Team Leaders: all line managers grade 11 and below; Experts: all non-line managers grade 10 and above; Administration (white collar employees): non-line managers grade 1 – grade 9; Blue collar employees: non-line managers grade 1 – grade 9 // 2) All numbers as of 31.12.2018.

Fig. 33: **Total number of leasing employees (non employees) per region**



Region	
Austria	99
Belgium	0
Finland	1
France	56
Sweden	5
Other Europe	16
Non-Europe	0
Total	**177**

The Group tracks the proportion of women it hires, the number of female successors for key roles and the number of women who are promoted. However, Borealis does not set targets at a Group level for increasing the percentage of women it employs. Instead, the business leadership teams have individual actions to increase the number of female employees in their areas, depending on the specific gap they have. These gaps are identified during the annual People Day process which is a mandatory event for Borealis each year. Among its functions, the People Day acts as the prime forum for diversity monitoring, assessing whether gender diversity has improved and proposing initiatives for promoting underrepresented employee groups. The People Day process starts at a business unit or location level, followed by the business group and finally the Executive Board. The process is carried out by the respective management teams and facilitated by the assigned HR Business Partner.

At Group level, Borealis is continuously working to encourage more women to join its workforce and to take on more responsibilities. Borealis HR actively engages with national institutions, such as universities and chemical

schools, to promote Borealis and the chemical industry as an attractive employer for women and to increase women's interest in a technical career path. In 2016, Borealis launched a Group-wide well-being programme which includes a focus on work-life balance with the aim of providing more flexible working arrangements. The Group also facilitates and supports an internal network at top management level which aims to support women who aspire to a management career. In addition, Borealis encourages line managers to nominate women to take part in talent programmes.

The Group's gender diversity is also raised at some CCC meetings and Open Fora, with discussions of how everyone can contribute to improving diversity and inclusion and what might help women looking to take a next career step. The impact on diversity of different national cultures is also often discussed. For example, some countries have previously had more restrictive working practices, such as the "Nachtarbeitsverbot für Frauen" in Austria, which still affect the number of women in the workforce.

Fig. 34: **Percentage of new hires by age & by gender & by region in relation to total number of employees with that age / gender / region** [1) 2)]

in % M ... male // F ... female	**Gender**	**% of new hires <25**	**% of new hires 25–34**	**% of new hires 35–44**	**% of new hires 45–54**	**% of new hires ≥55**
Austria	M	33.85	15.89	9.01	2.03	0.00
	F	40.00	21.15	9.03	7.84	0.00
Belgium	M	17.14	24.24	8.00	5.37	0.87
	F	50.00	16.67	13.33	9.09	0.00
Finland	M	19.35	10.23	0.00	1.26	0.00
	F	66.67	19.23	5.88	0.00	0.00
France	M	62.50	31.33	10.74	9.57	0.00
	F	0.00	23.26	13.64	18.18	8.00
Sweden	M	0.00	18.18	5.13	2.84	0.00
	F	0.00	33.33	5.26	3.23	0.00
Other Europe	M	60.00	32.32	14.94	5.91	1.42
	F	0.00	20.00	23.33	0.00	0.00
Non-Europe	M	75.00	44.44	36.59	77.55	23.53
	F	200.00	22.22	35.29	75.00	0.00
Total	M	35.63	21.93	10.18	6.65	1.02
	F	43.5	21.23	12.25	9.38	1.14

1) The percentage of new hires is based on employee changes during the year in the respective category (e.g. 100 employees with 10 new hires is 10% new hires) // 2) Austria, Belgium, Finland, France and Sweden are our significant locations of operation with more than 500 employees. All other European production or sales locations are summarised under Other Europe. Non-Europe covers all production or sales locations outside Europe.

Fig. 35: **Percentage of leavers by age & by gender & by region in relation to total number of employees with that age / gender / region** [1) 2)]

in % M ... male // F ... female	Gender	% of leavers <25	% of leavers 25–34	% of leavers 35–44	% of leavers 45–54	% of leavers ≥55
Austria	M	18.46	8.22	8.11	3.54	44.63
	F	26.67	32.69	12.90	5.88	19.35
Belgium	M	0.00	1.52	3.43	1.34	13.85
	F	0.00	0.00	5.33	4.55	0.00
Finland	M	6.45	2.27	3.73	3.77	1.14
	F	0.00	0.00	5.88	0.00	5.88
France	M	0.00	8.43	4.13	0.00	23.60
	F	0.00	9.30	9.09	0.00	16.00
Sweden	M	33.33	6.06	8.55	6.64	7.11
	F	0.00	0.00	0.00	6.45	41.03
Other Europe	M	60.00	26.26	10.34	15.76	11.35
	F	0.00	6.67	20.00	9.30	33.33
Non-Europe	M	12.50	30.56	29.27	24.49	23.53
	F	0.00	0.00	0.00	0.00	50.00
Total	M	13.22	9.48	7.89	5.46	18.44
	F	12.50	13.70	9.63	4.69	19.32

1) Leavers refers to employees who left Borealis voluntarily. The percentage of leavers is based on employee changes during the year in the respective category (e.g. 100 employees with 10 leavers is 10% leavers). // 2) Austria, Belgium, Finland, France and Sweden are our significant locations of operation with more than 500 employees. All other European production or sales locations are summarised under Other Europe. Non-Europe covers all production or sales locations outside Europe.

Training and People Development

Borealis looks to continuously train and develop employees, as well as external people who work with and for the Group. These ambitions require employees to understand how their work affects customer satisfaction and to have a zero-accident mindset that puts safety first. Providing appropriate training therefore helps Borealis to protect the health and safety of all employees, offer them job security, conduct business ethically and ensure production processes and products are safe. It also helps employees to develop their skills and to advance their careers within Borealis.

The primary opportunity for Borealis in this area is to use the Group's new tools to gather more data and insights, resulting in a better understanding of what the organisation requires. The Group identifies each employee's training and development needs through its yearly performance management process. This results in line managers and employees agreeing on Individual Development Plans (IDPs). Employees with performance gaps have mandatory Performance Improvements Plans (PIPs). Employees can register themselves for training, described above, or they can be registered by their line managers. The Success Factors Learning tool offers more technical opportunities than the previous system and has improved functionality and the ability for line managers to follow up on training implementation. The catalogue of training available in Success Factors Learning is designed based on IDPs and PIPs. Line managers and management teams can also contact the Borealis Learning Network if a new training need is identified in their organisation. This could include new training courses or a tailor-made team building exercise.

Borealis HR's primary training and development goals in 2018 were to implement the Success Factors Learning tool and to enhance its functionality, through the introduction of notifications for learners and the trainer/instructor portal. These goals were successfully achieved, with positive feedback from the organisation. In addition, the Group has focused on enlarging its eLearning portfolio, which supports its experts with Borealis-specific content, primarily in the technical and research areas. During 2018, new content covering procurement, legal and operations was added to the portfolio.

Offering meaningful careers and ways to unlock people's potential is essential for attracting and retaining a highly skilled, qualified and diverse work force. The Borealis Talent Management Process focuses on attracting, identifying, promoting and grooming talented people for leadership and expert positions using Leadership Talent Management Programmes (since 2010), Expert Talent Programmes (since 2013) and a Graduate Recruitment Programme established in 2016. The Group also offers outplacement programmes for employees who leave Borealis.

The Borealis Performance and Development System, myPDS, is available throughout Borealis. It facilitates regular developmental dialogues, covering performance feedback and goal setting, as well as career aspiration, mobility and development. Documentation is mainly done in the myPDS electronic tool, although some parts of the organisation are not yet using this system. As noted earlier, myDPS will be replaced with a new Success Factors Performance module.

Increasing Employees' Sustainability Awareness and Competence

One aim of Borealis' sustainability strategy is to build the Group's sustainability capabilities and culture. Together with the IMD Business School, which is amongst the highest ranked schools in executive leadership, Borealis has developed an online training programme called "Building Business Sustainability" (BBS) which launched during 2017. In 2018, this learning programme became part of the Group's standard training. BBS helps participants to explore how the business can successfully address sustainability as a key strategic issue, how a business can create value and how to engage stakeholders to collaborate in building a sustainable society.

Fair Remuneration

Fair remuneration means ensuring fair pay for performance, based on transparent performance evaluation. It supports strong business results by incentivising high-performing individuals and teams and encouraging employees to continuously improve.

To ensure employees are remunerated fairly, Borealis needs to have insight into remuneration market data. The main risk for the Group in this area is that people feel unfairly paid, which would affect people retention and could harm Borealis' reputation.

Borealis is therefore committed to providing fair and transparent reward packages for all employees, whether full-time or part-time. Every employee reward package in Borealis consists of a base salary and an incentive compensation. The reward package is based on the systematic evaluation of roles, using an external evaluation methodology linked to Borealis' internal grading structure. This requires up-to-date role descriptions which define core activities and responsibilities. The reward package is evaluated regularly, in light of national market data and developments. This approach ensures the reward package is competitive both internally and externally. Some reward packages for temporary employees are linked to the duration of their employment with Borealis.

Borealis performs a yearly equal pay analysis to identify focus areas for improvement. Borealis' owners may provide additional focus areas through the Remuneration Committee. This committee also assists the Supervisory Board in reviewing and approving Borealis' compensation approach. The Pension & Benefits Council, which is led by the CFO, sets the overall principles for employee benefit programmes, monitors the implementation of these programmes across the Group and takes decisions on significant changes to those programmes. Based on the output from the Pension & Benefits Council and the Remuneration Committee, the Executive Board then gives HR a mandate to design new concepts for remuneration and to propose changes. These proposals are then presented to the Executive Board and approved by the Pension & Benefits Council or Remuneration Committee, depending on the financial impact.

Borealis' reward evaluation processes are gender neutral by design, with all positions evaluated and placed into a Company grading system, and each grade having a country specific pay range. The employee position within a grade pay range is monitored both at a country level and at Group level, to control overall pay equality. In some countries, the Group has started to share this aggregated gender pay analysis with its employees.

An annual merit review process allows management to adjust pay, for example for inflation or performance reasons, and enables each country to request funds for eliminating any pay gaps among employee groups. Employees are also entitled to information about how their salary compares to the respective market.

Individual performance can influence the size of the reward package. Demonstrating the right behaviours is crucial to achieving Borealis' objectives, so one of the Group's goals for 2018 was to make behaviour a more significant part of the performance evaluation and to introduce a behaviour objective when assigning goals. The Group also aimed to increase its focus on managing poor performers through the performance improvement plans discussed above. As a result, performance management has been a key focus throughout the Group in 2018, with improvements including introducing quarterly follow-ups with line managers across the organisation. Training sessions are also now offered to line managers to help them foster the behavioural aspect of performance. The new Success Factors Performance module will also support effective performance management. Feedback on the system test from line managers, employees and employee representatives was positive.

Employees are offered additional benefits aligned to local markets, such as subsidised lunches, access to or subsidised gym membership, health and dental care insurance and company pension plans, on top of the national social security system. The benefits and, where applicable, the level of subsidy are aligned with the Group's ambition to promote a healthy lifestyle, taking into account local market practice and national taxation rules.

Data Protection

Borealis ensures it protects employee data by following its data protection procedure. As part of this, the Group has two Operative Instructions for HR.

The first Operative Instruction covers HR Authorisation and defines, for example, who has access to which HR data, how to request authorisation and approval workflows. The 8th EU Directive requires Borealis to monitor critical authorisations (such as salary levels) and ensure segregation of duties, so that for example, the same person cannot change salary levels and run the payroll. To meet these obligations, Borealis has defined self-control actions.

The second instruction covers HR Data Protection, which includes tools to ensure compliance with the General Data Protection Regulation, an EU law on data protection and privacy. The instruction contains definitions of purpose limitation (meaning that personal data collected and stored shall only be used for specific purposes), data minimisation, data accuracy, storage limitation, integrity and confidentiality, transfer of personal data to third parties, the right to be forgotten, portability of data and consent management.

Financial Report

Auditor's Report [1)]

We draw attention to the fact that the English translation of this auditor's report according to Section 274 of the Austrian Commercial Code (UGB) is presented for the convenience of the reader only and that the German wording is the only legally binding version.

Report on the Consolidated Financial Statements

Audit Opinion

We have audited the consolidated financial statements of Borealis AG, Vienna, and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 31 December 2018, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated cash flow for the fiscal year then ended, and the notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements comply with legal requirements and give a true and fair view of the financial position of the Group as at 31 December 2018, and of its financial performance and cash flows for the year then ended in accordance with the International Financial Reporting Standards (IFRSs) as adopted by the EU and the additional requirements under Section 245a Austrian Commercial Code.

Basis for Opinion

We conducted our audit in accordance with Regulation (EU) No. 537/2014 (hereinafter EU Regulation) and Austrian generally accepted auditing standards. Those standards require the application of the International Standards on Auditing (ISAs). Our responsibilities under those provisions and standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements" section of our report. We are independent of the Group in accordance with Austrian Generally Accepted Accounting Principles and professional requirements, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the fiscal year. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

We have structured key audit matters as follows:
– Description
– Audit approach and key observations
– Reference to related disclosures

Tax litigations

Description

Several group companies of Borealis AG, Vienna, are currently subject to routine tax audits performed by their respective (national) tax authorities. In some of the audits, specific emphasis is put on business restructuring and transfer pricing. The most significant tax litigations relate to the reassessment of taxable income by the Finnish Tax Authorities (FTA) of:

– Borealis Technology OY, Finland, for 2008 and 2010: The reassessment decision results in an increased taxable income, leading to an additional requested payment in a total amount of EUR 297,000 thousand, consisting of additional income taxes, penalties and interests.
– Borealis Polymers OY, Finland, for 2009: According to the reassessment decision the taxable income increases by EUR 142,000 thousand, leading to an additional requested payment in a total amount of EUR 62,000 thousand, consisting of additional income taxes, penalties and interests.

The management of Borealis AG, Vienna, is of the opinion that the companies were and are in compliance with all applicable regulations. Given the estimation uncertainty and the judgements involved this is considered a key audit matter.

Audit approach and key observations

We have discussed the individual legal matters with the internal tax department of Borealis AG, Vienna, and evaluated the information available to assess the likelihood of a negative outcome of the tax cases for the subsidiaries of Borealis AG, Vienna. In doing so, we have consulted with international transfer pricing experts within the PwC

network. We have further confirmed the status of the cases with the legal representatives of Borealis AG, Vienna.

Our audit procedures have verified the appropriateness of management's judgements and the appropriate accounting treatment in the consolidated financial statements as at 31 December 2018.

Reference to related disclosures
Management has disclosed this key audit matter under "10. Taxation" in the consolidated financial statements.

Recoverability of tangible assets and intangible assets including goodwill

Description
In the consolidated financial statements of Borealis AG as at 31 December 2018, an amount of 2,886.6 million EUR (29.0% of total assets) is presented under "tangible assets", an amount of 418.3 million EUR (4.2% of total assets) is presented under "intangible assets" which includes goodwill in the amount of 111.7 million EUR (1.1% of total assets).

Goodwill is tested for impairment at least annually and whenever triggering events occur that indicate that goodwill may be impaired. For this purpose, Borealis AG, Vienna, estimates the recoverable amount using the discounted cash flow methodology.

Tangible and intangible assets including goodwill are allocated to cash-generating units ("CGUs"). The carrying amounts of the CGUs are compared to the recoverable amounts (value in use) derived from the valuation model. As far as the recoverable amount is lower than the carrying amount, goodwill will be impaired.

As of 31 December 2018, a total impairment in the amount of EUR 83.9 million is recognised for the Fertilizer & Melamine CGU.

Given the complexity of the impairment model, the estimation uncertainty involved in the derivation of data used, the immanent discretionary decisions, the recoverability of tangible and intangible assets including goodwill is considered as a key audit matter.

Audit Approach and key observations
As part of our audit of the consolidated financial statements, we have assessed the annual process, the procedure for budgeting, and the impairment test for tangible and intangible assets including goodwill. In particular we have verified the appropriateness of the significant assumptions used in the valuation model.

We evaluated whether the assumptions used to derive the future cash flows are based on the most recent five-year planning prepared by management and approved by the supervisory board. We confirmed the accuracy of the five-year planning by performing an analysis of historic budget deviations.

We have further evaluated the appropriateness of assumptions used to determine the discount rates. Our internal specialists have evaluated whether the assumptions used for the discount rate as well as the growth rate for the perpetuity are in line with external market and industry data.

Additionally, we carried out own sensitivity analyses to determine the impact of parameter changes (changes in discount rate and cash flows) on the recoverable amount. Furthermore, we have assessed whether the long-term profitability in the terminal value period is plausible. We also evaluated whether the disclosures on impairment made by Borealis AG, Vienna, in the notes to the consolidated financial statements are complete and accurate.

Our audit procedures have verified the appropriateness of the valuation model used by the entity to carry out an impairment test as required by IFRS (impairment test in accordance with IAS 36) and the impairment amount recognised as of 31 December 2018. The assumptions and parameters used in the valuation are appropriate. The disclosures required by the relevant standards are complete and appropriate.

Reference to related disclosures
Management has disclosed this key audit matter under "4. Intangible assets" in the consolidated financial statements.

Responsibilities of Management and the Audit Committee for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards (IFRSs) as adopted by the EU, and the additional requirements under Section 245a UGB, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

The audit committee is responsible for overseeing the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the EU Regulation and with Austrian generally accepted auditing standards, which require the application of ISAs, will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with the EU Regulation and with Austrian generally accepted auditing standards, which require the application of ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risks of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

– obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the audit committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the audit committee with a statement that we have complied with all relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the audit committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Report on Other Legal and Regulatory Requirements

Comments on the Management Report for the Group

Pursuant to the Austrian Commercial Code, the management report for the Group is to be audited as to whether it is consistent with the consolidated financial statements and as to whether the management report for the Group was prepared in accordance with the applicable legal requirements.

Management is responsible for the preparation of the management report for the Group in accordance with the Austrian Commercial Code.

We conducted our audit in accordance with Austrian Standards on Auditing for the audit of the management report for the Group.

Opinion

In our opinion, the management report for the Group was prepared in accordance with the applicable legal requirements, includes accurate disclosures pursuant to Section 243a UGB and is consistent with the consolidated financial statements.

Statement

Based on the findings during the audit of the consolidated financial statements and due to the obtained understanding concerning the Group and its circumstances no material misstatements in the management report for the Group came to our attention.

Other information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated financial statements, the management report for the Group and the auditor's report.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Additional Information in Accordance with Article 10 of the EU Regulation

We were appointed as statutory auditor at the ordinary general meeting dated 28 February 2018. We were engaged by the supervisory board on 28 February 2018. We have audited the Group for an uninterrupted period since 2016.

We confirm that the audit opinion in the "Report on the Consolidated Financial Statements" section is consistent with the additional report to the audit committee referred to in Article 11 of the EU Regulation.

We declare that we did not provide any prohibited non-audit services (Article 5 (1) of the EU-Regulation) and that we remained independent of the audited group in conducting the audit.

Responsible Engagement Partner

Responsible for the proper performance of the engagement is Peter Pessenlehner, Austrian Certified Public Accountant.

Vienna, 15 February 2019
PwC Wirtschaftsprüfung GmbH

Peter Pessenlehner
Austrian Certified Public Accountant

1) This report is a translation of the original report in German, which is solely valid. Publication and sharing with third parties of the consolidated financial statements together with our auditor's opinion is only allowed if the consolidated financial statements and the management report for the Group are identical with the German audited version. This audit opinion is only applicable to the German and complete consolidated financial statements with the management report for the Group. For deviating versions, the provisions of Section 281 (2) UGB apply.

Group Management Report

Safety Performance

In 2018, Borealis reported a Total Recordable Injuries (TRI) frequency per million working hours of 1.3. While it is a top quartile performance within the industry, this rate is a decline versus the 1.1 in 2017 and below ambition level. Steps taken in 2018 to improve process safety and deliver an accident-free work environment for both employees and contractors yielded immediate results in the second half of 2018, during which the TRI frequency again began to improve. Safety is always the top priority at Borealis. The management team will continue to work together with all employees and contractors in order to reach the ultimate goal of zero injuries.

Market Environment

The average monthly Brent Crude oil price increased from 66 USD/bbl in February to 81 USD/bbl in October as oil markets reacted to reduced supply and increased political uncertainty. Following this peak, the Brent Crude oil price dropped to an average of 58 USD/bbl in December on back of the fear of a global economic slowdown. The annual average Brent Crude oil price of 72 USD/bbl in 2018 was up 31% from the average 55 USD/bbl in 2017. Feedstock prices moved in line with the development of the Brent Crude oil price. Polyethylene prices averaged 2% lower compared to 2017, while polypropylene prices averaged 6% higher in 2018 than in 2017.

Borealis saw the sales volume of its European-produced polyolefins increase by 4% in 2018, while the European polyolefins market contracted by 1% compared to 2018. Consequently, the market share of 14% in 2018 was above previous year's 13%.

In 2018, polyolefin industry margins continued to decrease from the record levels reached in 2016. Therefore, the profit contribution delivered from the polyolefins business segment remained solid, but lower compared to last year. Within the Base Chemicals business, the oversupplied fertilizers market and the high gas prices throughout 2018 kept the fertilizer industry margins low. Fertilizer sales volumes decreased by 4% in 2018 compared to 2017 mainly due to the turnaround of the Borealis production site in Linz whilst the European market share remained unchanged at 7%. Lower price realisation further affected Borealis' Fertilizers business result, leading to a 2018 performance below expectations and below the prior year.

New Leadership under Alfred Stern

Significant organisational changes took place in 2018. As of 2 July 2018, Alfred Stern, previously Borealis Executive Vice President Polyolefins and Innovation & Technology, was appointed Borealis CEO. He succeeded Mark Garrett who stepped down to pursue new career opportunities after having steered the Company through a period of sustained growth and expansion over the past eleven years.

A reorganisation of the Borealis Base Chemicals business was carried out in 2018 in order to achieve increased customer focus and greater agility in reacting to specific market trends for the Fertilizers and Melamine business. The dedicated Fertilizer and Melamine business becomes effective as of 1 January 2019. As of 1 October 2018, Rainer Höfling was appointed CEO of this dedicated Fertilizers and Melamine business. Markku Korvenranta, formerly Borealis Executive Vice President Base Chemicals, left the Company as of 30 September 2018.

Continued focus on sustainable, international growth

Borealis made significant progress throughout 2018 in advancing existing growth projects while at the same time initiating promising new ventures.

In May, Borealis announced the establishment of Bayport Polymers LLC, a 50/50 joint venture owned by Total S.A. and Novealis Holdings LLC, the latter a joint venture between Borealis AG and NOVA Chemicals Inc. The final investment decision for the new 625,000 tonnes/year polyethylene (PE) unit in Bayport, Texas, was taken in September and will be the first in North America to use the proprietary, third-generation Borstar technology. The site's existing PE capacity will be more than doubled, to around 1.1 million tonnes/year. Also under construction is a 1 million tonnes/year steam cracker in Port Arthur, Texas. This cracker will process the abundant and competitively priced ethane available in the U.S. for use in the Bayport PE units.

In October, Borealis announced that it is proceeding with the construction of its new, world-scale propane dehydrogenation (PDH) plant in Kallo, Belgium, with an annual production capacity of 750,000 tonnes. As one of the largest and most efficient plants of its kind in the world, it will enable Borealis to better fulfil growing European demand for propylene. At the same time, Borealis will strengthen its long-term commitment to fulfilling European

market demand for polypropylene (PP) with the final investment decision to expand the Kallo PP plant by 80 kilotonnes/year and by entering the Front End Engineering and Design (FEED) phase for the expansion of the PP plant in Beringen, Belgium. Once approved, the latter project would entail the expansion and process technology upgrade of the existing facility, with start-up planned for mid-2022.

March 2018 saw the signing of a Joint Development Agreement by Borealis and United Chemical Company LLP for the development of an important joint project in the Republic of Kazakhstan. A feasibility study now in progress is evaluating the construction of an ethane cracker and two Borstar PE units with a total capacity of 1,250 kilotonnes/year. With the final investment decision expected in 2020, start-up would take place in the course of 2025. Once operational, the facility shall greatly improve the Borealis position in the Commonwealth of Independent States (CIS) markets.

Two key projects to extend and expand the Borouge petrochemicals business have also progressed. Currently underway is the pre-FEED phase for the construction of the Borouge 4 complex which would involve a world-scale, mixed feedstock cracker using existing feedstock available in Abu Dhabi, and downstream derivatives units for both polyolefin and non-polyolefin products. The complex will be integrated with ADNOC Refining's refinery and is scheduled to come on stream in 2025.

In 2018, the construction of a new PP plant in Borouge based on proprietary Borstar technology has been approved. The plant will use the surplus propylene available from ADNOC Refining's new PDH unit and thereby optimising the value chain.

Commitment to R&D and innovation

Borealis' commitment to Value Creation through Innovation is unwavering. Because it applies not only to individual products and solutions, but rather to the polyolefins value chain in its entirety, it involves truly circular thinking. Value Creation through Innovation embraces the entire life cycle of a product: from genesis, to design, processing, deployment, and ultimate recovery for recycling or reuse. More than 500 employees work in R&D at the Borealis Group. This figure includes scientists and researchers at the Innovation Headquarters in Linz, Austria, and the two Innovation Centres in Stenungsund, Sweden, and Porvoo, Finland.

In March, the newly expanded high voltage electrical testing centre at the Borealis Innovation Centre in Stenungsund was inaugurated. This investment in cutting-edge testing equipment opens up promising new opportunities for collaboration with Wire & Cable customers and partners.

May saw the launch of ICOSOLAR® CPO 3G, a co-extruded PP solar backsheet based on Quentys. It was developed in cooperation with ISOVOLTAIC SOLINEX GmbH, a global market and technology leader in backsheets. In June, two new Quentys polyolefin grades that form the base of two novel solar encapsulant film types were released. These grades offer a more sustainable solution for photovoltaic modules because they offer better and longer operational reliability at a lower cost.

In October, the first controlled plastomers solution for the global healthcare market, Bormed PL8830-PH, was introduced. Borealis is currently the only raw material supplier to be able to bridge the gap between thermoplastics and elastomers. The launch underscores the Company's commitment to ensuring the reliable and secure supply of controlled raw materials to its healthcare customers.

Concerted efforts in the circular economy

In 2018, Borealis took significant steps to consolidate its industry leadership in the move towards a more circular economy of plastics.

In 2016, Borealis became the first virgin polyolefins producer to engage in mechanical recycling of plastics through its acquisition of mtm plastics, a leading German recycler. In 2018, Borealis invested an additional EUR 15 million in mtm plastics in order to accelerate the development of new technologies and products made of post-consumer polyolefin recyclates. In August, Borealis announced its 100% acquisition of another important plastics recycler, the Austria-based Ecoplast (short for Ecoplast Kunststoffrecycling GmbH).

The mechanical recycling of plastics is a core element of the overall Borealis polyolefins strategy because of its potential to support long-term business growth on the one hand, and enhanced sustainability on the other. In line with this strategy, novel products and applications with enhanced sustainability are being developed in cooperation with value-chain and other partners. Several of those products have already been launched in 2018. For example, a robust new glue packaging solution based entirely on 100% post-consumer recycled material was developed together with Henkel, a global leader in adhesives, along with plastics processor KKT Kaller Kunststoff Technik GmbH, and plastic components manufacturer bomo trendline Technik GmbH. Also in 2018, proprietary Daplen PP compound grades composed of post-consumer recycled and virgin content were used by premium car maker Volvo for applications and parts in a custom-built hybrid SUV.

In 2017, Borealis and the consultancy firm SYSTEMIQ co-founded Project STOP, a frontline initiative to prevent the leakage of plastics into the ocean in South-East Asia. Since then, Borealis has engaged strategic partners, including NOVA Chemicals, Veolia, Nestle, Borouge and the Norwegian government to support the first successful implementation of a city partnership in Muncar, Indonesia. During 2018, Borealis committed to scale-up Project STOP to include at least two to three more city partnerships over the next five years, aimed at preventing over 10,000 tonnes of plastics from entering the marine environment.

Borealis also launched its EverMinds platform, a dedicated umbrella brand created to heighten the visibility of plastics circularity and promote a more circular mind-set within the polyolefins industry.

Operational development of the Group

With a net profit of EUR 906 million, Borealis achieved a strong financial result, however, below the record net profits of EUR 1.1 billion in 2016 and 2017. The 2018 result was driven by reasonable polyolefins margins and an improved contribution from Borouge compared to 2017.

The ongoing difficult market environment in the fertilizers market drove the disappointing performance of the Borealis Fertilizers business and led to an impairment charge of EUR 84 million related to the Borealis Fertilizers assets. The Base Chemicals segment offset somewhat and recorded a solid result contribution, yet contributed less in 2018 compared to the previous year.

Return on capital employed (ROCE) after tax of 13% in 2018 remained above the Company's through the cycle target of 11%, but was 2 percentage points below 2017. This decrease reflects the lower business result combined with an increased average capital employed, the latter driven by a high level of investment in growth projects and the turnaround in 2018. The completion of ongoing investment programmes, as well as the focus on operational and commercial excellence, will enable Borealis to continue to realise the targeted ROCE level of 11% through the cycle.

In 2018, Borealis' net debt increased by EUR 515 million. This resulted in a gearing ratio of 20% at the end of 2018, compared to 12% at the end of 2017. This gearing level is well below the target gearing range of 40%–60%. Borealis benefits from a well-diversified financing portfolio and a balanced maturity profile. After obtaining a BBB+ rating with stable outlook by S&P Global Ratings in November, Borealis has issued for the first time a rated corporate bond with a volume of EUR 300 million and a tenure of seven years. Going forward, the Company will maintain access to a wide range of funding options, including capital markets and bank funding as well as private placements.

Review of results

Sales

Borealis sold 3.8 million tonnes of polyolefins in 2018, a 4% increase versus 2017. Borealis' Fertilizers sales reached 4.0 million tonnes, a decrease of 0.2 million tonnes versus 2017, and Melamine sales volumes amounted to 135 kilotonnes in 2018, down from 140 kilotonnes in 2017. Both, Fertilizers and Melamine sales volumes were negatively impacted by the turnaround of the Borealis site in Linz.

Cost development

With the higher feedstock price environment the production costs increased in 2018 compared to 2017. Sales and distribution costs of EUR 704 million in 2018 increased from EUR 673 million in 2017; administration costs increased by 3% to EUR 226 million. Research and development costs amounted to EUR 128 million in 2018, a decrease of EUR 10 million from 2017. The number of full-time equivalent employees (FTE) as per year-end 2018 was 6,834, an increase of 215 compared to last year driven by the ongoing global growth agenda.

Operating profit

Operating profit amounted to EUR 496 million compared to EUR 791 million in 2017. The decrease is due to lower contributions from both the Polyolefins and the Base Chemicals business segments compared to 2017 as well as the impairment charge related to the Fertilizers assets.

Return on capital employed (ROCE)

The return on capital employed after tax decreased to 13%, compared to 15% in 2017, driven by the reduced operating profit and higher capital employed due to investment in growth projects and the turnaround.

Financial income and expenses

Net financial expenses amounted to EUR 31 million, a decrease from EUR 66 million in 2017, mainly due to lower interest expenses to finance institutions compared to 2017 and currency exchange gain, both offsetting the increased financing volume towards year-end.

Taxes

Income taxes amounted to EUR 164 million, a decrease of EUR 9 million from tax charges of EUR 173 million in 2017. The reduced overall tax charge in 2018 was mainly due to a lower operating profit. Borealis paid income taxes in the amount of EUR 154 million in 2018, compared with EUR 260 million in 2017.

Net profit and distribution of dividend

The net profit for the year amounted to EUR 906 million, compared to a net profit of EUR 1,095 million in 2017. During 2018, Borealis distributed a dividend of EUR 1,000 million to its shareholders, EUR 700 million for 2017 and EUR 300 million as interim dividend for 2018.

Financial position

Total assets/capital employed

At year-end, total assets and capital employed stood at EUR 9,949 and EUR 7,814 million, respectively, compared to EUR 9,395 and EUR 7,401 million at the end of 2017.

The solvency ratio was 64% at year-end 2018, compared to 66% at year-end 2017. The gearing ratio increased to 20% at year-end 2018, compared to 12% in 2017, as a result of the increased net debt and partially compensated by an increased total equity.

Cash flows and liquidity reserves

Cash flow from operations amounted to EUR 517 million, driven by solid operating profitability. Liquidity reserves, composed of undrawn, long-term committed credit facilities and cash balances, amounted to EUR 1,072 million at year-end 2018, compared to EUR 1,395 million at year-end 2017. Net interest-bearing debt increased to EUR 1,305 million at year-end, up from EUR 790 million at the end of 2017. The change in net interest-bearing debt is analysed in the following table.

EUR million	2018	2017
Change of net interest-bearing debt		
Cash flow provided by operating activities	517	725
Capital expenditure	-420	-505
Other investments	0	-14
Advanced payments for investments into associated companies and joint ventures	0	-72
Capital contribution to and financing of associated companies and joint ventures	-94	-12
Dividends of associated companies	573	479
Acquisition of subsidiaries net of cash	-28	-12
Acquisitions of associated companies	-86	0
Proceeds from sale of intangible assets	33	0
Other (mainly relating to foreign exchange differences)	-10	22
Dividends paid to equity holders and non-controlling interest	-1,000	-751
Total decrease/increase	**-515**	**-140**

Capital expenditure

Investments in tangible fixed assets amounted to EUR 326 million in 2018, compared to EUR 453 million in 2017. The largest portion of the total investment relates to the upgrade and revamp of four cracker furnaces in Stenungsund, Sweden, the building of an automotive compounding plant in North America and the site turn-around in Linz. Health, Safety and Environment (HSE) capital expenditure amounted to EUR 34 million, compared to EUR 27 million in 2017. Depreciation and amortisation amounted to EUR 457 million, compared to EUR 393 million in 2017. The increase was driven mainly by the EUR 84 million impairment charge related to the Borealis Fertilizers assets.

Shareholders' equity

The shareholders' equity at year-end 2018 was EUR 6,421 million.

EUR million	2018	2017
Equity development		
Net result attributable to the parent	907	1,095
Exchange and fair value adjustment (net)	154	-475
Gross increase/decrease	1,061	619
Dividends paid	-1,000	-750
Reclassification of cash flow hedges to balance sheet	-13	0
Net increase/decrease	48	-131
Opening equity	6,365	6,496
Adjustments on initial application of IFRS 9	8	0
Ending equity	**6,421**	**6,365**

Risk Management

Borealis has a documented risk management process ensuring that all parts of the Group routinely identify and assess their risks, and develop and implement appropriate mitigation actions. Risk management contributes to achieving Borealis' long-term strategies and short-term goals. Borealis believes that an effective risk culture makes it harder for an outlier, be it an event or an offender, to put the Company at risk.

The Company's overall risk landscape is periodically consolidated, reported and reviewed. While the risks discussed below exemplify the Company's risks, the list is not exhaustive. Borealis distinguishes between the following risks categories.

Strategic & reputational risks are those that may severely impact Borealis' strategy or reputation. Often, strategic risks are related to unfavourable long-term developments, such as market or industry developments, technology, innovation, a change in the competitive environment, or a threat to the reputation of the Group.

Operational & tactical risks usually refer to unfavourable and unexpected short-term or mid-term developments, and include all risks that may have a direct impact on the Group's daily business operations. All operational risks are assessed according to documented guidelines and procedures that are administered by the respective business functions. A pro-active risk prevention management approach has been implemented in the Operations function, covering risks in the area of Production, HSE, Product Stewardship, Plant Availability and Quality. The risk management approach also safeguards the Responsible Care® approach towards risks in Operations. The standard risk management process includes a common risk matrix and risk registers, built bottom-up from plant level up to portfolio level, enabling a common risk rating system for the whole of Operations.

Health, Safety and Environment (HSE) risks are assessed according to the procedures and framework described in the Borealis Risk-based Inspection Manual. The Director HSE is responsible for managing all HSE-related risks and reports the Borealis HSE risk landscape to the Executive Board periodically.

Project-related risks are assessed in the Borealis project approval process. The applicable key risks related to an individual project are assessed. These include financial, market, technical, legal, patent infringement, strategic, operational, country-related, and political factors. The risk assessment also reflects the probability of project completion within the estimated time frame and forecasted resource requirements, and the likelihood that key project objectives will be achieved. Project-related risks are managed by the Project Manager and reported to the Project Steering Committee.

Financial & market risks may refer to risks arising from unexpected changes in market supply, demand, price of commodity, services or financing costs for instance. Risks arise from liquidity, interest rates, foreign exchange rates, credit, commodity prices, and insurance, the inability of a counterparty to meet a payment or delivery commitment but also extend to incorrect assumptions or the inappropriate application of a model for instance. The assessment of financial risk management is described in detail in note 17 of the consolidated financial statements. The Director Treasury & Funding and the General Counsel shall be responsible for reporting and coordinating the management of all financial risks.

Compliance Risks focus on legal and regulatory risks, code of conduct (ethics policy), standards as well as contracting compliance. Doing business in an ethical manner is vital to Borealis' good reputation and continued success. Tactical or generic risks are risks identified as part of standards or compliance. These risks relate mainly to processes or control weaknesses.

Information security risks relate to the confidentiality, integrity and availability of critical company information. The Director IT and the General Counsel support line managers with the assessment of information security risk, and the development and implementation of risk mitigation actions.

The Executive Board periodically reviews the Group's key risks, defines the Group's risk tolerance levels, monitors the implementation of mitigation actions, and reports the key risks and mitigation steps to the Supervisory Board. The Executive Board safeguards the integration of risk assessment in its strategic planning.

The Supervisory Board is responsible for reviewing the effectiveness of Borealis risk management practices and processes, risk appetite / tolerance levels, risk exposure of the Group, and the effectiveness of mitigation actions. The Supervisory Board delegates some of these responsibilities to the Audit Committee, which is a sub-committee of the Supervisory Board.

All Borealis employees are responsible for managing risk, within their authority and in their field of work, in order to ensure that risk management is properly embedded in the organisation and reflected in the daily decision-making processes.

Greater energy efficiency

Borealis is committed to reducing its environmental footprint by lowering CO_2 emissions and increasing energy efficiency. Improving energy efficiency is the most effective way to reduce the Company's direct carbon footprint while simultaneously cutting energy costs.

In July, Borealis announced that it had implemented the international energy management standard ISO 50001, following a four-year certification process carried out with the assistance of DNV GL, a certification body and the world's largest source of independent energy experts. ISO 50001 implementation is an active contribution to energy efficiency and climate change mitigation. Borealis will be able to cut over 360,000 metric tons of CO_2 annually. This is the equivalent of the greenhouse gas emissions of 80,000 cars driven for one year. By reducing the energy consumed by its operations, Borealis not only reduces emissions but also improves cost efficiency.

In October, Borealis announced an open-innovation project with Qpinch, a start-up which has developed a technology that uses a chemical process to recover industrial waste heat. Together, the first commercial-scale heat recovery unit to employ this revolutionary technology will be built at an existing Borealis plant in Antwerp, Belgium.

Following up on the 2017 Borealis People Survey

As an important vehicle for employee feedback, the Borealis People Survey measures levels of employee engagement, among other things, and compares these to peer companies in the petrochemicals sector and beyond. The 2017 People Survey results were translated into measurable actions across the organisation and implemented in 2018 with the full engagement of the Borealis Executive Board and senior leadership team.

Economic development and outlook to 2019

Management expects 2019 to be another good year for Borealis. Despite less favourable market conditions expected in polyolefins compared to 2018, Borealis is well positioned for the future thanks to the initiatives taken in the past years. Improvements in operational reliability and the establishment of a commercial and operational excellence mindset are embedded in the organisation. The committed investments in 2019 and beyond will further strengthen the three Borealis segments Polyolefins, Base Chemicals, and Borouge. Driven by the newly established, dedicated management team and supported by an improvement in market conditions, the contribution from the Fertilizers business is expected to improve. With European polyolefin prices coming under pressure, a declining contribution from the Polyolefins business is envisaged. The profit contribution from Borouge to Borealis is anticipated to remain at the same level as in 2018. Borealis' management believes that the Company is in a strong position to maintain being the leading provider of chemical and innovative plastic solutions that create value for society.

		2018	2017	2016	2015	2014
Health, Safety & Environment						
Total Recordable Injuries	number/million workhours	1.3	1.1	0.9	1.4	1.3
EU ETS CO_2 emissions	kilotonnes	4,299	4,210	4,600	4,270	4,250
Number of employees (full-time equivalent)		6,834	6,619	6,494	6,266	6,290
Flaring performance	tonnes	26,275	51,600	38,700	47,690	38,000
Income and profitability						
Net sales	EUR million	8,337	7,564	7,218	7,700	8,330
Operating profit	EUR million	496	791	938	718	280
Operating profit as percentage of net sales	%	6	10	13	9	3
Net profit	EUR million	906	1,095	1,107	988	571
Return on capital employed, net after tax	%	13	15	16	15	10
Cash flow and investments						
Cash flow from operating activities	EUR million	517	725	1,145	1,103	428
Investments in tangible fixed assets	EUR million	326	453	333	336	370
Cash and cash equivalents	EUR million	72	229	762	548	42
Financial position						
Balance Sheet total	EUR million	9,949	9,395	9,932	9,261	8,353
Net interest-bearing debt	EUR million	1,305	790	651	1,096	1,798
Equity attributable to owners of the parent	EUR million	6,421	6,365	6,496	5,697	4,511
Gearing	%	20	12	10	19	40

Definitions

Capital employed	Total assets less non-interest-bearing debt
Return on capital employed	Operating profit, profit and loss from sale of operations, net result in associated companies plus interest income, after imputed tax, divided by average capital employed
Solvency ratio	Total equity less goodwill divided by total assets
Gearing ratio	Interest-bearing debt, including subordinated loans, less cash and cash equivalents divided by total equity
HSE	Health, Safety and Environment

Vienna, 15 February 2019
Executive Board:

Alfred Stern
Chief Executive

Mark Tonkens
Chief Financial Officer

Martijn Arjen van Koten

Philippe Roodhooft

Lucrèce De Ridder

Consolidated Financial Statements

Consolidated Income Statement

EUR thousand	2018	2017	Note
Net sales	**8,337,127**	**7,564,335**	1, 2
Production costs	-6,806,867	-5,750,863	6, 13, 14
Gross profit	**1,530,260**	**1,813,472**	
Sales and distribution costs	-703,723	-672,969	6, 13, 14
Administration costs	-226,284	-219,609	6, 13, 14
R&D costs	-127,699	-138,360	3, 6, 13, 14
Other income	23,374	8,147	30
Operating profit	**495,928**	**790,681**	
Net results in associated companies and joint ventures after tax	605,760	542,985	8
Financial income	9,372	8,972	18
Financial expenses	-40,841	-74,720	18
Profit before taxation	**1,070,219**	**1,267,918**	
Taxes on income	-164,034	-172,823	10
Net profit for the year	**906,185**	**1,095,095**	
Attributable to:			
Non-controlling interest	-1,233	426	
Equity holders of the parent	907,418	1,094,669	

Consolidated Statement of Comprehensive Income

EUR thousand	2018	2017	Note
Net profit for the year	**906,185**	**1,095,095**	
Items that may be reclassified subsequently to the income statement			
Net gain/loss on translation of financial statements of foreign operations	131,226	-479,326	
Reclassifications during the period to the income statement	0	0	
Tax effect recognised in other comprehensive income	0	0	
Net gain/loss on long-term loans to foreign operations	-8,210	-699	19
Reclassifications during the period to the income statement	0	0	19
Tax effect recognised in other comprehensive income	2,056	175	
Net gain/loss on loans and financial contracts to hedge investments in foreign operations	-8,079	14,779	19, 22, 23
Reclassifications during the period to the income statement	0	0	19, 22, 23
Tax effect recognised in other comprehensive income	2,020	-8,745	
Fair value adjustments of cash flow hedges	81,703	41,667	19, 22, 23, 24, 25
Reclassifications during the period to the income statement	-38,888	-10,917	19, 22, 23, 24, 25
Tax effect recognised in other comprehensive income	-10,704	-4,070	
Fair value adjustments of available for sale financial assets	0	-294	19
Reclassifications during the period to the income statement	0	0	19
Tax effect recognised in other comprehensive income	0	74	
Items that will not be reclassified to the income statement			
Actuarial gains and losses	3,284	-27,840	14
Tax effect recognised in other comprehensive income	-1,680	-1,320	
Net income/expense recognised in other comprehensive income	**152,728**	**-476,516**	
Total comprehensive income	**1,058,913**	**618,579**	
Attributable to:			
Non-controlling interest	-2,085	-849	
Equity holders of the parent	1,060,998	619,428	

Consolidated Balance Sheet

EUR thousand	31.12.2018	31.12.2017	Note
Assets			
Non-current assets			
Intangible assets	418,314	386,369	3, 4
Tangible assets			5
Production plants	2,596,705	2,651,411	
Machinery and equipment	33,058	31,504	
Construction in progress	256,790	236,518	
	2,886,553	2,919,433	
Investments in associated companies and joint ventures	3,755,171	3,398,341	8
Other investments	29,984	35,985	9, 28
Contract assets	6,537	0	2
Other receivables and other assets	146,864	45,736	9, 27, 28
Deferred tax assets	46,737	54,622	10
Total non-current assets	**7,290,160**	**6,840,486**	
Current assets			
Inventories	1,198,362	1,160,421	11
Receivables			
Trade receivables	691,014	574,021	26, 27, 28
Receivables from associated companies and joint ventures	77,242	76,242	27, 28, 31
Income taxes	66,628	17,831	
Other receivables and other assets	552,903	496,812	27, 28
Total receivables and other assets	1,387,787	1,164,906	
Cash and cash equivalents	72,347	229,062	
Total current assets	**2,658,496**	**2,554,389**	
Total assets	**9,948,656**	**9,394,875**	

Consolidated Balance Sheet

EUR thousand	31.12.2018	31.12.2017	Note
Total Equity and Liabilities			
Shareholders' equity			
Share capital and contributions by shareholders	1,599,397	1,599,397	12
Reserves	47,349	-92,472	
Retained earnings	4,774,622	4,858,157	
Shareholders' equity	6,421,368	6,365,082	
Non-controlling interest	14,740	16,825	
Total equity	**6,436,108**	**6,381,907**	
Liabilities			
Non-current liabilities			
Loans and borrowings	726,478	844,228	20, 21, 28
Deferred tax liabilities	238,093	198,842	10
Employee benefits	426,404	444,459	14
Provisions	67,653	65,465	15
Government grants	18,474	12,702	16
Other liabilities	12,548	16,464	21, 28
Non-current liabilities	**1,489,650**	**1,582,160**	
Current liabilities			
Loans and borrowings	651,145	174,936	20, 21, 28
Trade payables	852,525	797,849	21, 28, 31
Income taxes	94,871	81,083	
Provisions	4,123	3,572	15
Contract liabilities	41,485	0	2
Other liabilities	378,749	373,368	21, 28
Current liabilities	**2,022,898**	**1,430,808**	
Total liabilities	**3,512,548**	**3,012,968**	
Total equity and liabilities	**9,948,656**	**9,394,875**	

Consolidated Statement of Changes in Equity

EUR thousand	Share capital [1] and contributions by share holders	Reserve for actuarial gains/losses recognised in equity	Hedging reserve	Reserve for unrealised exchange gains/losses and other [2]	Retained earnings	Total attributable to the equity holders of the parent	Non-controlling interest	Total equity
Balance as of 31 December 2016	**1,599,397**	**-190,672**	**-971**	**574,412**	**4,513,488**	**6,495,654**	**18,704**	**6,514,358**
Net profit for the year	0	0	0	0	1,094,669	**1,094,669**	426	**1,095,095**
Other comprehensive income	0	-29,160	26,680	-472,761	0	**-475,241**	-1,275	**-476,516**
Total comprehensive income	0	-29,160	26,680	-472,761	1,094,669	**619,428**	-849	**618,579**
Dividend payments	0	0	0	0	-750,000	**-750,000**	-1,030	**-751,030**
Balance as of 31 December 2017	**1,599,397**	**-219,832**	**25,709**	**101,651**	**4,858,157**	**6,365,082**	**16,825**	**6,381,907**
Adjustment on initial application of IFRS 9	0	0	0	-778	9,047	**8,269**	0	**8,269**
Adjusted balance as of 1 January 2018	**1,599,397**	**-219,832**	**25,709**	**100,873**	**4,867,204**	**6,373,351**	**16,825**	**6,390,176**
Net profit for the year	0	0	0	0	907,418	**907,418**	-1,233	**906,185**
Other comprehensive income	0	1,604	32,111	119,865	0	**153,580**	-852	**152,728**
Total comprehensive income	0	1,604	32,111	119,865	907,418	**1,060,998**	-2,085	**1,058,913**
Dividend payments	0	0	0	0	-1,000,000	**-1,000,000**	0	**-1,000,000**
Reclassification of cash flow hedges to balance sheet	0	0	-12,981	0	0	**-12,981**	0	**-12,981**
Balance as of 31 December 2018	**1,599,397**	**-218,228**	**44,839**	**220,738**	**4,774,622**	**6,421,368**	**14,740**	**6,436,108**

1) Share capital of Borealis AG (parent company) amounts to EUR 300,000.00 (31 December 2017: EUR 300,000.00). // 2) Reserve for unrealised exchange gains/losses and other include reserves relating to available for sale financial assets as of 31 December 2017.

A dividend of EUR 700,000 thousand was paid in 2018 out of the result of the year 2017.
Furthermore, an amount of EUR 300,000 thousand was paid in 2018 as interim dividend for the fiscal year 2018.

Consolidated Cash Flow

EUR thousand	2018	2017	Note
Cash flows from operating activities			
Payments from customers	8,221,622	7,527,857	
Payments to employees and suppliers	-7,507,450	-6,473,275	
Interest received	1,516	1,057	18
Interest paid	-35,693	-41,730	18
Other financial expenses paid	-8,448	-29,114	18
Income taxes paid	-154,072	-259,666	10
	517,475	**725,129**	
Cash flows from investing activities			
Investments in tangible assets	-326,297	-453,171	5
Investments in intangible assets	-93,793	-51,816	4
Advanced payments for investments into associated companies and joint ventures	0	-72,242	
Acquisitions of subsidiaries net of cash	-27,758	-11,767	7
Earn-out payments	-4,000	-3,340	28
Acquisitions of and investments in other financial investments	0	-14,378	
Acquisitions of associated companies	-86,460	0	8
Dividends of associated companies	573,073	478,561	8
Capital contributions to and financing of associated companies and joint ventures	-93,848	-12,546	8
Proceeds from sale of intangible assets	33,397	0	30
	-25,686	**-140,699**	
Cash flows from financing activities			
Non-current loans obtained	300,628	729	20
Current loans obtained	425,912	130,810	20
Current loans repaid	-374,601	-497,137	20
Dividends paid to equity holders of the parent	-1,000,000	-750,000	
Dividends paid to non-controlling interest	0	-1,030	
	-648,062	**-1,116,628**	
Net cash flow of the period	**-156,273**	**-532,198**	
Cash and cash equivalents as of 1 January	229,062	762,421	
Effect of exchange rate fluctuations on cash held	-442	-1,161	
Cash and cash equivalents as of 31 December	**72,347**	**229,062**	

Notes to the Consolidated Financial Statements

Reporting entity

Borealis AG (the Company or Group) is a company domiciled in Austria. The address of the Company's registered office is Wagramer Strasse 17–19, 1220 Vienna, Austria. Borealis is a leading provider of chemical and innovative plastics solutions.

In the Polyolefins segment Borealis focuses on the application areas Energy, Automotive, Consumer Products, Pipe, New Business Development and Circular Economy Solutions.

Base Chemicals is the second segment and includes essentially the following product ranges: melamine, phenol, acetone, ethylene, propylene, fertilizer and technical nitrogen.

Statement of compliance

The consolidated financial statements have been prepared in compliance with the International Financial Reporting Standards issued by the IASB as adopted by the EU and additional Austrian disclosure requirements. The consolidated financial statements were authorised for issuance by the Executive Board on 15 February 2019.

Basis of preparation

The consolidated financial statements are presented in Thousand Euro (EUR), rounded to the nearest thousand, hence rounding differences may arise. The consolidated financial statements are prepared on the historical cost basis except for the following assets and liabilities, which are stated at their fair value: derivative financial instruments and financial assets at fair value through profit or loss (FVPL). Recognised assets and liabilities that are hedged are stated at fair value in respect of the risk that is being hedged.

Consolidation principles

The consolidated financial statements include the financial statements of Borealis AG, the parent company, and all the companies over which it has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Companies in which the Group has significant influence (interest of 20% or more) but no control nor joint control are considered associated companies. A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The consolidated financial statements are based on audited financial statements of the parent company and of each individual subsidiary. The consolidated financial statements have all been prepared in accordance with the Group's accounting policies. Items of a similar nature have been combined. Intra-group transactions (revenues and costs), unrealised intra-group profits, internal shareholdings, and intra-group balances have been eliminated.

Acquired subsidiaries, associated companies and joint ventures are included in the consolidated financial statements from the date of control or significant influence, respectively, and until control or significant influence ceases. A revaluation of the acquired net assets is made at the date of acquisition. Any remaining positive difference between the fair value of the assets and liabilities and the purchase consideration is capitalised as goodwill and subject to an annual impairment test. Any gain from a bargain purchase is recognised in the income statement. Investments in associated companies and investments in joint ventures are recorded under the equity method in the consolidated financial statements.

Significant accounting judgements, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent liabilities, at the end of the reporting period. However, uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying value of the asset or liability affected in future periods. The judgements, estimates and assumptions relate mainly to the useful life and impairment of intangible and tangible assets (note 4 and note 5), value of tax assets and liabilities and unused tax losses (note 10), inventory impairment (note 11), actuarial assumptions for employee benefits (note 14), future cash-outflows for provisions (note 15), allowance for impairment in respect of trade receivables (note 27) and are included in the description of the respective note to the position.

Foreign currency

Transactions and balances

Monetary assets and liabilities denominated in foreign currencies have been translated into Euro (EUR) at the exchange rates quoted on the balance sheet date. Non-monetary items that are measured at historical cost in a foreign currency are translated using the exchange rate as at the date of transaction.

All foreign exchange related gains and losses, both realised and unrealised, are recorded as financial items in the income statement. However, the exchange adjustments arising from the following items are recognised in other comprehensive income: conversion of the net assets of foreign subsidiaries and associated companies as of 1 January using the closing rate on 31 December, translation of long-term intra-group receivables that are considered part of investments in subsidiaries or associated companies, conversion of long-term loans hedging net assets of foreign subsidiaries and associated companies or intra-group receivables considered part of investments in subsidiaries and associated companies, and conversion of the net income of foreign subsidiaries calculated at monthly rates to figures converted using the exchange rates applicable at the balance sheet date.

Group companies

Consolidated financial statements are presented in Euro (EUR), the functional currency of the parent.

Financial statements of foreign subsidiaries in functional currencies other than EUR have been translated at the exchange rates quoted on the balance sheet date for assets and liabilities. The income statements of foreign subsidiaries have been translated on the basis of monthly exchange rates. The exchange differences arising from the translation are recognised in other comprehensive income.

Income statement

Revenue recognition

Borealis' main business model is to produce, market and sell various goods (polyolefins, base chemicals) to its customers. Each sale typically includes an obligation to deliver one particular good. No bundling of various goods in one contract currently exists and price is not interdependent with prices in other contracts, delivery of other goods or promises. In case of additional services provided as part of the contract that typically do not meet the requirements of a separate performance obligation in accordance with IFRS 15 and no allocation of the transaction price to multiple performance obligations is necessary.

Revenue is recognised when control of the products has transferred, being when the products are delivered to the customer. All Borealis contracts for delivery of the goods include Incoterms, like DDP, CIF or FCA, which govern change of the control of the goods. This will be the point of revenue recognition by Borealis. Payment is generally due up to 90 days from delivery.

For some contracts, variable considerations are being agreed, typically volume discount for goods purchased during the particular period, i.e. one year. Borealis estimates the expected discount regularly based on the best available data supported by a large number of similar contracts and historical information.

Generally, Borealis does not expect to have any contracts where the period between the transfer of the promised goods to the customer and payment by the customer exceeds one year. Consequently, Borealis does not adjust the promised amount of consideration for the effects of a significant financing component.

The Group typically provides warranties for general repairs of defects that existed at the time of sale, as required by law. These assurance-type warranties are accounted for under IAS 37 Provisions, Contingent Liabilities and Contingent Assets. No other warranties or rights to return are offered by Borealis.

Net sales comprise revenue from contracts with customers and revenue from other sources arising in the course of the ordinary activities of the Group, excluding value-added tax and after deduction of goods returned, discounts and allowances.

Under IAS 18 revenue from sales of goods was recognised in the income statement when the significant risks and rewards of ownership have been transferred to the buyer.

The Group recognises contract liabilities for consideration received in respect of unsatisfied performance obligations. If the Group satisfies a performance obligation before it receives the consideration, the Group recognises a contract asset or a receivable in its statement of financial position,

depending on whether something other than the passage of time is required before the consideration is due.

Research and development
Research costs are charged to the income statement in the year they have been incurred.

Development costs relating to a definable product or process that is demonstrated to be technically and commercially feasible are recognised as an intangible asset to the extent that such costs are expected to be recovered from future economic benefits. The expenditure capitalised includes the costs of materials, direct labour and an appropriate proportion of overheads.

Other development costs not meeting these criteria are recognised in the income statement as an expense when incurred.

Results from associated companies and joint ventures
The proportionate share of the net profit or loss after tax of these companies is included in the consolidated income statement.

Financial income/expenses
Interest income and expenses are included in the income statement using the effective interest rate with the amounts relating to the financial year.

Financial income/expenses also include borrowing costs, costs incurred on finance leases, realised and unrealised gains and losses from exchange and price adjustments of financial instruments, investments and items in foreign currencies.

Taxes on income
The income tax charged to the income statement comprises expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the balance sheet date, adjusted for the change in deferred tax assets and liabilities for the year and for any tax payable in respect of previous years. Income tax that relates to items recognised in other comprehensive income is recognised in other comprehensive income as well.

Balance sheet
Intangible assets
Intangible assets are stated at cost, less accumulated amortisation and impairment losses.

Goodwill arising from an acquisition represents the excess of the purchase consideration over the fair value of the net identifiable assets acquired. Goodwill is not amortised but is subject to an annual impairment test.

Licences and patents acquired externally are stated at cost, less accumulated amortisation and impairment losses. Amortisation is calculated according to the straight-line method based on an estimated useful life of 3–10 years.

Capitalised development costs are stated at cost, less accumulated amortisation and impairment losses. Amortisation is charged to the income statement on a straight-line basis over the expected useful life of the asset of 3–10 years. Development costs not yet amortised are subject to an annual impairment test.

Costs to purchase and develop software for internal use are capitalised and amortised on a straight-line basis over 3–7 years.

Emission rights are reported as intangible assets. They are measured at cost, if purchased in the market, or at fair value, if received through government grants. A liability to return emission rights for actual emissions made is recognised as well.

Tangible assets
Tangible assets are valued at cost, less accumulated depreciation and impairment losses. Cost comprises purchase price, site preparation and installation. Day-to-day servicing expenses are not included in the cost of the assets. If certain conditions are met, the costs of major inspections and overhauls are recognised in the carrying value of the property, plant and equipment.

Production plants include land, buildings, related non-movable machinery and equipment. Assets held under finance leases are also included. Machinery and equipment are recognised at purchase price and any directly attributable costs.

Depreciation is made on a straight-line basis over the expected useful life of the components of the assets. The useful lives of major assets are determined individually, while the lives of other assets are in respect of groups of uniform assets. Land is not depreciated. Buildings are depreciated over 20–40 years, production facilities over 15–20 years and machinery and equipment over 3–15 years.

The determination of whether an arrangement is or contains a lease is based on the substance of the arrangement and classified to operating and finance lease in accordance with IAS 17. Assets leased under finance leases are recognised in the balance sheet and depreciated over the shorter of the lease period or useful life. The cost of assets leased under finance leases are stated at the lower of fair value and the present value of the future minimum lease payments at the time of acquisition.

The present value of the expected cost for the decommissioning of the asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met. The estimated future costs of decommissioning are reviewed annually and adjusted as appropriate. Changes in the estimated future costs or in the discount rate applied are added to or deducted from the cost of the asset. Borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset are capitalised as part of the cost of that asset.

Impairment losses

The carrying values of both tangible and intangible assets, other than inventories, deferred tax assets and certain financial assets, are reviewed at each balance sheet date to determine whether there is any indication of impairment. If any such indication exists and for annual impairment tests of goodwill and intangible assets with an indefinite useful life, the asset's recoverable amount is estimated as the greater of net selling price and value in use. An impairment loss is recognised whenever the carrying value of an asset or its cash-generating unit exceeds its recoverable amount. Impairment losses are recognised in the income statement.

Leases

A lease is classified at the inception date as a finance lease or an operating lease. A lease that transfers substantially all the risks and rewards incidental to ownership to the Group is classified as a finance lease.

Finance leases are capitalised at the commencement of the lease at the inception date fair value of the leased property or, if lower, at the present value of the minimum lease payments. Lease payments are apportioned between finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are recognised in finance costs in the income statement.

A leased asset is depreciated over the useful life of the asset. However, if there is no reasonable certainty that the Group will obtain ownership by the end of the lease term, the asset is depreciated over the shorter of the estimated useful life of the asset and the lease term.

An operating lease is a lease other than a finance lease. Operating lease payments are recognised as an operating expense in the income statement on a straight-line basis over the lease term.

Non-current assets held for sale and discontinued operations

Non-current assets (or disposal groups comprising assets and liabilities) that are expected to be recovered primarily through sale rather than through continuing use are classified as held for sale. Prior to classification as held for sale, the assets (or components of a disposal group) are re-measured in accordance with IFRS 5. Thereafter, generally the assets (or disposal group) are measured at the lower of their carrying value and fair value, less cost to sell. Any impairment loss on a disposal group is first allocated to goodwill, and then to remaining assets and liabilities on a pro rata basis, no loss is allocated to inventories, financial assets, deferred tax assets and employee benefit assets, which continue to be measured in accordance with the Group's accounting policies. Impairment losses on initial classification as held for sale and subsequent gains or losses on re-measurement are recognised in the income statement. Gains are not recognised in excess of any cumulative impairment loss.

Associated companies and joint ventures

Associated companies and joint ventures are accounted for using the equity method. The consolidated financial statements include the Group's share of the comprehensive income of equity accounted investees.

Cash and cash equivalents

Cash and cash equivalents comprise cash in bank and liquid short-term deposits.

Inventories

Raw materials, work in progress and finished goods are stated at the lower of cost and net realisable value. Costs incurred are based on the first in, first out principle (FIFO method), and comprise direct materials, direct labour and an appropriate proportion of variable and fixed overhead expenditure, the latter being allocated on the basis of normal operating capacity. Cost includes the reclassification from equity of any gains or losses on qualifying cash flow hedges relating to purchases of raw material but excludes borrowing costs. Costs are assigned to individual items of inventory on the basis of weighted average costs. Costs of purchased inventory are determined after deducting rebates and discounts. Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale. Valuation of spare parts is based on the weighted average cost method.

Government grants

Government grants include grants for research and development as well as investment grants. Investment grants are recognised in the balance sheet as non-current liabilities and recognised as income over the useful life of the asset. Other grants are recognised in the income statement without offsetting the related cost.

Provisions

A provision is recognised if, as a result of a past event, the Group has a present legal or constructive obligation against third parties that can be estimated reliably and if it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions reflect the present value of future cash outflows. The cash flows are discounted at a current pre-tax rate that reflects the risks specific to the liability. The unwinding of the discount is expensed as incurred and recognised in the income statement as finance cost.

Deferred tax

Deferred tax assets and liabilities are computed individually for each company in accordance with the balance sheet liability method, providing for temporary differences between the carrying values of assets and liabilities for financial reporting purposes and the amounts used for tax purposes. Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets and liabilities and when the deferred tax balances relate to the same taxation authority. Current tax assets and tax liabilities are offset where the entity has a legally enforceable right to offset and intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously. Deferred tax is measured at the tax rates that are expected to be applied to the temporary differences when they reverse, based on the laws that have been enacted or substantively enacted at the balance sheet date.

A deferred tax asset is recognised only to the extent that it is probable that future taxable profits will be available, against which the temporary differences and unused tax loss carryforwards can be utilised within a period of five years, based on a three year business plan and a long-term projection for further two years. Deferred tax assets are reviewed at each reporting date and are remeasured to the extent that is probable to be realised.

The uncertain tax positions, for example tax disputes, are accounted for by applying the most likely amount. The most likely amount is the single most likely amount in a range of realistically possible options. The Company evaluates the unit of account related to the uncertain tax positions on a case-by-case basis.

Reserves

A reserve has been established under the consolidated equity for unrealised exchange differences related to deferred foreign exchange gains and losses on intercompany loans, hedge loans and the equity of foreign operations. The hedging reserve contains fair value adjustments to financial instruments held for hedging purposes. The reserve for actuarial gains/losses recognised in equity contains the actuarial gains and losses on employee benefit plans.

Employee benefits

Defined contribution plans

Obligations for contributions to defined contribution plans are recognised as an expense in the income statement as incurred.

For defined contribution plans, the Group pays contributions to publicly or privately administered pension insurance plans on a mandatory, contractual or voluntary basis. The Group has no further payment obligations once the contributions have been paid. The contributions are recognised as employee benefit expense when they are due. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

Defined benefit plans

The Group's net obligation in respect of defined benefit pension plans and other post-employment benefit plans is calculated separately for each plan by estimating the amount of future benefits that employees have earned in return for their service in the current and prior periods. The benefit is discounted to determine the present value of it, and the fair value of any plan assets is deducted. A qualified actuary, using the projected unit credit method, performed the calculation.

The discount rate used in the actuarial valuations is determined with a reference to long-term yields of AA-rated corporate bonds. In countries where no deep market for such bonds exists, market yield of government bonds is used.

The Group has the following plans in place: defined benefit pension plans, post-employment medical plans, severance plans and other long-term employee benefit plans. Pension plans in place are both funded and unfunded. The plan asset funds are kept predominantly in a form of insurance contracts.

The parameters of the pension promises vary from country to country; there are both plans open and closed to new entrants, contributory as well as non-contributory.

Post-employment medical plans cover the medical expenses mainly of retirees in Belgian companies. They are non-contributory and closed to new entrants. The expected costs of these benefits are accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans.

Severance plans cover employees of Austrian companies who started their service before 1 January 2003. They are entitled to receive severance payments upon termination of their employment or on reaching their pension age.

Furthermore, the Group operates severance plans in France, Italy and the United Arab Emirates. The benefits depend on the years of service and remuneration level. These plans are non-contributory and unfunded.

Other long-term employee benefits include jubilee schemes and pre-pension benefits. Jubilee schemes entitle the members to benefits in the form of a payment and/or additional paid holiday when reaching a defined time of service. These plans are non-contributory and unfunded. All actuarial gains and losses relating to post-employment benefit plans are recognised in other comprehensive income. Actuarial gains and losses related to other long-term services are recognised in the income statement.

Past-service costs are recognised immediately in the income statement. Net interest expenses resulting from employee benefits are included in the consolidated income statement as part of the operating profit.

Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either in the principal market for the asset or liability, or in the absence of a principal market, in the most advantageous market for the asset or liability.

The principal or the most advantageous market must be accessible to the Group. The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest. A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use. The Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximising the use of relevant observable inputs and minimising the use of unobservable inputs.

For assets and liabilities that are recognised in the financial statements on a recurring basis, the Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorisation (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period. For the purpose of fair value disclosures, the Group has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy as explained in note 28.

Financial instruments

Recognition and derecognition

Financial assets and financial liabilities are recognised on the trade date, when the Group becomes a party to the contractual provisions of the financial instrument. Financial assets are derecognised when the contractual rights to the cash flows from the financial asset expire, or when the financial asset and substantially all the risks and rewards are transferred. A financial liability is derecognised when it is extinguished, discharged, cancelled or expires.

Classification and initial measurement of financial assets

Financial assets are initially recognised at their fair value, except for those trade receivables that do not contain a significant financing component and are measured at the transaction price in accordance with IFRS 15. For all financial assets which are not subsequently measured at fair value, the fair value at initial recognition is adjusted for transaction costs (where applicable). Financial assets, other than those designated and effective as hedging instruments, are classified into the following categories:

– amortised cost
– fair value through profit or loss (FVPL)
– fair value through other comprehensive income (FVOCI).

In the periods presented the Group does not have any financial assets categorised as FVOCI.

The classification is determined by both:

– the entity's business model for managing the financial asset
– the contractual cash flow characteristics of the financial asset.

Subsequent measurement of financial assets

Financial assets at amortised cost

Financial assets are measured at amortised cost if the assets meet the following conditions (and are not designated as FVPL):

– they are held within a business model whose objective is to hold the financial assets and collect their contractual cash flows
– the contractual terms of the financial assets give rise to cash flows that are solely payments of principal and interest on the principal amount outstanding

After initial recognition, these are measured at amortised cost using the effective interest rate method. Discounting is omitted where the effect of discounting is immaterial. The Group's cash and cash equivalents, trade receivables (except trade receivables under the factoring programme), receivables from associated companies and joint ventures and part of other receivables fall into this category of financial instruments.

Financial assets at fair value through profit or loss (FVPL)

Financial assets that are held within a different business model other than 'hold to collect' or 'hold to collect and sell' are categorised at fair value through profit or loss. Further, irrespective of the business model, financial assets whose contractual cash flows are not solely payments of principal and interest are accounted for at FVPL.

Derivative financial instruments for which hedge accounting is not applied fall into this category.

The Group has a pool of specifically designated trade receivables that are all subject to factoring. This pool of receivables represents a hold to sell business model and is measured using FVPL.

The category also contains equity investments. These equity investments consist mainly of fully owned subsidiaries which are not consolidated on materiality basis. The Group accounts for these investments at FVPL and did not make the irrevocable election to account for the investments at fair value through other comprehensive income (FVOCI).

Certain investments in listed securities in Austria are measured at FVPL. The investments represent puttable shares, which are classified as a debt instrument. As such,

puttable shares do not fulfil the solely payment of principal and interest (SPPI) criteria and have to be measured at FVPL.

Assets in this category are measured at fair value with gains or losses recognised in profit or loss. The fair values of financial assets in this category are determined by reference to active market transactions or using a valuation technique where no active market exists.

Impairment of financial assets

The Group has three types of financial assets that are subject to IFRS 9's new expected credit loss (ECL) model:
– trade receivables (excluding trade receivables held to sell), receivables from associated companies and joint ventures and contract assets
– cash and cash equivalents
– debt investments carried at amortised cost

For the measurement of the ECLs a distinction is made between:
– financial instruments for which credit risk has not increased significantly since initial recognition ('Stage 1' – 12-month expected credit losses)
– financial instruments for which credit risk has increased significantly since initial recognition ('Stage 2' – lifetime expected credit losses)

'Stage 3' covers financial assets that have objective evidence of impairment at the reporting date (credit-impaired financial assets).

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Group expects to receive).

Lifetime ECLs are the ECLs that result from all possible default events over the expected life of a financial instrument.

12-month ECLs are the portion of ECLs that result from default events that are possible within the 12 months after the reporting date.

At each reporting date, the Group assesses whether financial assets carried at amortised cost are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred.

Evidence that a financial asset is credit-impaired includes the following observable data:
– significant financial difficulty of the borrower or issuer;
– a breach of contract such as a default or being more than 180 days past due;
– it is probable that the borrower will enter bankruptcy or other financial reorganisation;

A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows, like bankruptcy.

Trade receivables and contract assets

Trade Receivables and contract assets are impaired by using the simplified approach which does not distinguish between 12-month ECL and lifetime ECL but all assets are generally impaired using lifetime ECL. For trade receivables and contract assets, the Group distinguishes between trade receivables past due up to 180 days and trade receivables past due over 180 days. For trade receivables past due up to 180 days, the Group calculates ECLs by using a provision matrix. The provision matrix is based on an entity's historical default rates over the expected life of the trade receivables and is adjusted for forward-looking estimates. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate over the next year, which can lead to an increased number of defaults, the historical default rates will be adjusted. To measure the expected credit losses, trade receivables and contract assets have been grouped based on shared credit risk characteristics (like geography or risk category) and the days past due. The Group uses one provision matrix based on days past due as there are no material differences by considering several provision matrices for diverse credit risk characteristics. Trade receivables overdue for more than 180 days are assessed individually and credit-impaired if necessary. See note 27 for further information how credit risk is managed.

The identified impairment loss for contract assets was immaterial.

Loss allowances for trade receivables measured at amortised cost are deducted from the gross carrying amount of the assets and recognised in sales and distribution costs in the income statement.

Cash and cash equivalents
While cash and cash equivalents are also subject to the impairment requirements of IFRS 9, the identified impairment loss (based on the general approach) was immaterial.

Debt investments carried at amortised cost
The Group's debt investments at amortised cost are considered to have low credit risk, and the loss allowance recognised during the period was therefore limited to 12 months expected losses. Debt investments are considered to be low credit risk when they have a low risk of default and the counterparty has a strong capacity to meet its contractual cash flow obligations in the near term. On that basis, the identified impairment loss (based on the general approach) was immaterial.

Classification and measurement of financial liabilities
Financial liabilities are initially measured at fair value, and, where applicable, adjusted for transaction costs unless the Group designated a financial liability at fair value through profit or loss. Subsequently, financial liabilities are measured at amortised cost using the effective interest method except for derivatives, which are carried at fair value with gains or losses recognised in profit or loss (other than derivative financial instruments that are designated and effective as hedging instruments).

All interest-related charges and, if applicable, changes in an instrument's fair value that are recognised in profit or loss are included within financial expenses or financial income.

The Group's financial liabilities include loans and borrowings, trade payables and parts of other liabilities and derivative financial instruments.

Derivatives and hedging activities
Derivatives are initially recognised at fair value on the date a derivative contract is entered into and are subsequently remeasured at their fair value at the end of each reporting period.

The accounting for subsequent changes in fair value depends on whether the derivative is designated as a hedging instrument, and if so, the nature of the item being hedged. The Group designates certain derivatives as either:
– hedges of the fair value of recognised assets or liabilities or a firm commitment (fair value hedges)
– hedges of a particular risk associated with the cash flows of recognised assets and liabilities and highly probable forecast transactions (cash flow hedges), or
– hedges of a net investment in a foreign operation (net investment hedges).

In the periods presented, the Group does not have any fair value hedges.

At inception of the hedge relationship, the Group documents the hedge relationship between hedging instruments and hedged items including whether changes in the cash flows of the hedging instruments are expected to offset changes in the cash flows of hedged items. The Group documents its risk management objective and strategy for undertaking its hedge transactions. A hedging relationship qualifies for hedge accounting only if all of the following hedge effectiveness requirements are met:
– there is an economic relationship between the hedged item and the hedging instrument
– the effect of credit risk does not dominate the value changes that result from that economic relationship
– the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the entity actually hedges and the quantity of the hedging instrument that the entity actually uses to hedge that quantity of the hedged item

Cash flow hedging
When a derivative is designated as a cash flow hedging instrument, the effective portion of changes in the fair value of the derivative is recognised in OCI and accumulated in the hedging reserve. The effective portion of changes in the fair value of the derivative that is recognised in OCI is limited to the cumulative change in fair value of the hedged item, determined on a present value basis, from inception of the hedge. Any ineffective portion of changes in the fair value of the derivative is recognised immediately in profit or loss. The Group designates the full change in fair value of forward exchange contracts as the hedging instrument in cash flow hedging relationships.

At the balance sheet date, Borealis has several foreign exchange forward contracts but no outstanding foreign exchange options.

When the hedged forecast transaction subsequently results in the recognition of a non-financial item such as inventory, the amount accumulated in the hedging reserve is included directly in the initial cost of the non-financial item when it is recognised.

For all other hedged forecast transactions, the amount accumulated in the hedging reserve is reclassified to profit or loss in the same period or periods during which the hedged expected future cash flows affect profit or loss.

If the hedge no longer meets the criteria for hedge accounting or the hedging instrument is sold, expires, is terminated or is exercised, then hedge accounting is discontinued prospectively. When hedge accounting for cash flow hedges is discontinued, the amount that has been accumulated in the hedging reserve remains in equity until, for a hedge of a transaction resulting in the recognition of a non-financial item, it is included in the non-financial item's cost on its initial recognition or, for other cash flow hedges, it is reclassified to profit or loss in the same period or periods as the hedged expected future cash flows affect profit or loss.

If the hedged future cash flows are no longer expected to occur, then the amounts that have been accumulated in the hedging reserve are immediately reclassified to profit or loss.

Net investment hedges

Hedges of net investments in foreign operations are accounted for similarly to cash flow hedges.

Any gain or loss on the hedging instrument relating to the effective portion of the hedge is recognised in OCI and accumulated in the reserve for unrealised exchange gains/losses. The gain or loss relating to the ineffective portion is recognised immediately in profit or loss. Gains and losses accumulated in equity are reclassified to profit or loss when the foreign operation is partially disposed of or sold.

Derivatives that do not qualify for hedge accounting

Certain derivative instruments do not qualify for hedge accounting. Changes in the fair value of any derivative instrument that does not qualify for hedge accounting are recognised immediately in profit or loss.

Offsetting of financial instruments

Financial assets and financial liabilities can be offset and the net amount is reported in the consolidated balance sheet if there is a currently enforceable legal right to offset the recognised amounts and there is an intention to settle on a net basis, or to realise the assets and settle the liabilities simultaneously.

Cash flow statement

The consolidated cash flow statement shows the Group's cash flow provided by/used in operating, investing and financing activities. The cash flow from operating activities is calculated using the direct method. The cash flow from investing activities comprises payments made on the purchase and disposal of operations and the purchase and disposal of tangible and intangible as well as financial assets. The cash flow from financing activities comprises changes in the Group's share capital, as well as loans, repayments of principals of interest-bearing debt and payment of dividends. Cash and cash equivalents consist of cash and bank deposits.

Segment reporting

A segment is a distinguishable component of the Group that is engaged in business activities from which it may earn revenues and incur expenses whose operating results are regularly reviewed by the Executive Board (chief operating decision maker) and are taken to make decisions about resources to be allocated to the segment and assess its performance and for which separate financial information is available (reportable segment).

Moreover, a geographical segment is based on risks and rewards of a particular economic environment (geographic region). The Executive Board concluded to also show the net sales by geographical segment next to the reportable segment.

The Executive Board has identified two reportable segments:

Polyolefins – this part of the business manufactures and markets polyolefin products. Although the Automotive, Energy, Consumer Products, Pipe, and New Business Development operating segments provide separate reports on their performance, they have been aggregated into one reportable segment, as they have similar long-term growth rates and raw material economics, as well as demonstrate similarities in other aspects required by the Standard.
Base Chemicals – Borealis produces and markets a wide range of base chemicals, such as melamine, phenol, acetone, ethylene, propylene, fertilizer and technical nitrogen. The operating segments Hydrocarbons & Energy, Melamine and Fertilizer provide separate reports on their performance, but based on their similar economic characteristics, such as raw material economics, next to similarities in other aspects as required by the Standard, they have been aggregated into one reporting segment.

All other segments – Corporate, Middle East and Asia and Research & Development are not reportable segments, as they are either not separately included in the reports provided to the Executive Board or contain only results of the associated companies. The results of these operations are included in the Non-Allocated column (see note 1).

New accounting standards

New and amended standards/interpretations adopted by Borealis

In 2018, the following new and amended standards and interpretations became effective and have been adopted by Borealis, whereas effective means effective for annual periods beginning on or after that date (as endorsed by the EU):

Standards/Interpretations		IASB effective date	EU effective date
New Standards and Interpretations			
IFRS 9	Financial Instruments	1 January 2018	1 January 2018
IFRS 15	Revenue from Contracts with Customers including amendments to IFRS 15: Effective date of IFRS 15	1 January 2018	1 January 2018
IFRIC 22	Foreign Currency Transactions and Advance Consideration	1 January 2018	1 January 2018
Amended Standards and Interpretations			
IFRS 4	Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts	1 January 2018	1 January 2018
IFRS 15	Clarifications to IFRS 15 Revenue from Contracts with Customers	1 January 2018	1 January 2018
Misc.	Annual Improvements to IFRS Standards 2014-2016 Cycle	1 January 2017 1 January 2018	1 January 2017 1 January 2018
IAS 40	Transfers of Investment Property	1 January 2018	1 January 2018
IFRS 2	Classification and Measurement of Share-based Payment Transactions	1 January 2018	1 January 2018

IFRS 9 Financial Instruments

IFRS 9 replaces the provisions of IAS 39 that relate to the recognition, classification and measurement of financial assets and financial liabilities, de-recognition of financial instruments, impairment of financial assets and hedge accounting.

IFRS 9 was adopted without restating comparative information. The reclassifications and the adjustments arising from the new impairment rules are therefore not reflected in the balance sheet as at 31 December 2017, but are recognised in the opening balance sheet on 1 January 2018.

The following table reconciles the adjustments recognised for each individual balance sheet line item. The adjustments are explained in more detail below.

Consolidated Balance Sheet EUR thousand	31.12.2017	Changes due to initial application of IFRS 9	1.1.2018	Note
Assets				
Other investments	35,985	8,909	44,894	b
Total non-current assets	**6,840,486**	**8,909**	**6,849,395**	
Trade receivables	574,021	-618	573,403	e
Total current assets	**2,554,389**	**-618**	**2,553,771**	
Total assets	**9,394,875**	**8,291**	**9,403,166**	
Equity				
Reserves	-92,472	-778	-93,250	d
Retained earnings	4,858,157	9,047	4,867,204	b, d, e
Total equity	**6,381,907**	**8,269**	**6,390,176**	
Liabilities				
Deferred tax liabilities	198,842	22	198,864	
Non-current liabilities	**1,582,160**	**22**	**1,582,182**	
Total liabilities	**3,012,968**	**22**	**3,012,990**	
Total equity and liabilities	**9,394,875**	**8,291**	**9,403,166**	

The total impact on the Group's equity as of 1 January 2018 is as follows:

EUR thousand	Effect on Reserves	Effect on Retained Earnings	Note
Opening balance as of 1 January 2018 under IAS 39	**-92,472**	**4,858,157**	
Reclassification of investments from available for sale to fair value through profit or loss (FVPL)	-778	778	d
Gain on re-measurement of non-consolidated companies		8,733	b
Increase of the loss allowance for trade receivables		-464	e
Total impact	-778	9,047	
Opening balance as of 1 January 2018 under IFRS 9	**-93,250**	**4,867,204**	

Classification and measurement

On 1 January 2018 (the date of initial application of IFRS 9), the Group's management assessed which business models apply to the financial assets held by the Group and their contractual cash flows characteristics and classified its financial instruments into the appropriate IFRS 9 categories.

The following table and the accompanying notes below explain the original measurement categories under IAS 39 and the new measurement categories under IFRS 9 for each class of the Group's financial assets as of 1 January 2018. There are no changes in classification and measurement for the Group's financial liabilities.

EUR thousand	**Measurement category**		**Carrying amount**			
	Original (IAS 39)	New (IFRS 9)	Original	New	Differences	Note
Listed securities	Available for sale	FVPL	12,095	12,095	0	a
Other investments	Available for sale	FVPL	35,985	44,894	8,909	b
Trade receivables	Loans and receivables	FVPL	40,576	40,576	0	c
Trade receivables	Loans and receivables	amortised cost	533,445	532,827	-618	d, e
Receivables from associated companies	Loans and receivables	amortised cost	76,242	76,242	0	d
Loans granted	Loans and receivables	amortised cost	9,408	9,408	0	d
Deposits and other receivables	Loans and receivables	amortised cost	190,927	190,927	0	d
Cash and cash equivalents	Loans and receivables	amortised cost	229,062	229,062	0	d
Derivative financial instruments for which hedge accounting is applied	Hedging instrument	Hedging instrument	60,626	60,626	0	
Derivative financial instruments for which hedge accounting is not applied	FVPL	FVPL	29,208	29,208	0	
Total financial assets			**1,217,574**	**1,225,865**		

The main effects resulting from this reclassification are as follows:

a. Reclassification from available for sale to FVPL (listed securities)

Certain investments in listed securities were reclassified from available for sale to financial assets at FVPL (EUR 12,095 thousand as at 1 January 2018). The investments represent puttable shares, which according to IFRS 9 shall be classified as debt instruments. As such, puttable shares do not fulfil the solely payment of principal and interest (SPPI) criteria and have to be measured at FVPL. Related fair value gains of EUR 778 thousand after tax were transferred from the available-for-sale financial assets reserve to retained earnings on 1 January 2018.

b. Reclassification from available for sale to FVPL (other investments)

Borealis carries other investments, previously classified as available for sale. These equity investments consist mainly of fully owned subsidiaries which are not consolidated on materiality basis and amounted to EUR 35,985 thousand as of 31 December 2017. Borealis started measuring these equity investments at FVPL and posted a gain of EUR 8,733 thousand, net of deferred taxes. The Group elected to present changes in the fair value of all its equity investments previously classified as available for sale in the income statement.

c. Reclassification from loans and receivables to FVPL
With a trade receivables factoring programme in place, there is a pool of receivables to be classified as held to sell with change in their fair value to be presented in the income statement. As of 31 December 2017, these receivables amounted to EUR 40,576 thousand. Due to their short-term nature it is expected that their fair value approximates their nominal value.

d. Reclassification from loans and receivables to amortised cost
Under IFRS 9 the category loans and receivables is not existing anymore. Therefore, financial assets, except the trade receivables under the factoring programme, previously classified into this category are now classified into the category at amortised cost.

Impairment of financial assets (note e)
The Group has three types of financial assets that are subject to IFRS 9's new expected credit loss model:
– trade receivables and contract assets
– cash and cash equivalents
– debt investments carried at amortised cost

Trade receivables and contract assets
The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables and contract assets.

To measure the expected credit losses, trade receivables and contract assets have been grouped based on similar credit risk characteristics and the days past due. This resulted in an increase of the loss allowance as of 1 January 2018 by EUR 618 thousand gross of deferred taxes. For more details see note 27.

Cash and cash equivalents
While cash and cash equivalents are also subject to the impairment requirements of IFRS 9, the identified impairment loss was immaterial.

Debt investments
All of the entity's other debt investments at amortised cost are considered to have low credit risk, and the loss allowance recognised during the period was therefore limited to 12 months expected losses. On that basis, the loss allowance as at 1 January 2018 was immaterial.

Derivatives and hedging activities
The Group adopted IFRS 9 and its hedging related requirements for derivatives and hedging activities from 1 January 2018. Under IAS 39, for all cash flow hedges the amounts accumulated in the cash flow hedge reserve were reclassified to profit or loss as a reclassification adjustment in the same period as the hedged expected cash flows affected profit or loss. However, under IFRS 9, for cash flow hedges of commodity risk associated with forecast inventory purchases, the amounts accumulated in the cash flow hedge reserve are instead included directly in the initial cost of the inventory item when it is recognised. Besides this the adoption of IFRS 9 did not result in any material effects for derivatives.

IRFS 15 Revenue from Contracts with Customers including amendments to IFRS 15: Effective date of IFRS 15
With IFRS 15, the IASB has issued a new standard for the recognition of revenue. This replaces IAS 18 which covered contracts for goods and services, and IAS 11 which covered construction contracts. The new standard is based on the principle that revenue is recognised when control of a good or service transfers to a customer. Management has assessed the effects of applying the new standard on the Group's financial statements by reviewing a representative sample of contracts of each segment, evaluating possible combinations of contracts, identifying and evaluating individual performance obligations, reviewing and evaluating the determination of transaction price and of variable considerations, including their allocation to performance obligations, existence of incremental contract costs and other relevant aspects of the new standard. Management concludes that it has not identified any areas that will be affected, apart from the introduction of the new balance sheet items contract assets and contract liabilities and additional disclosure requirements.

The Group has initially applied IFRS 15 in 2018 using the cumulative effect method. The comparative information has not been restated and continues to be reported under IAS 18.

The following table reconciles the adjustments recognised for each individual balance sheet line item.

Consolidated Balance Sheet EUR thousand	31.12.2017	Changes due to initial application of IFRS 15	1.1.2018
Liabilities			
Conctract liabilities	0	45,115	45,115
Other liabilities	373,368	-45,115	328,253
Current liabilities	**1,430,808**	**0**	**1,430,808**
Total liabilities	**3,012,968**	**0**	**3,012,968**
Total equity and liabilities	**9,394,875**	**0**	**9,394,875**

IFRIC 22 Foreign Currency Transactions and Advance Consideration

IFRIC 22 considers how to determine the date of the transaction when applying the standard on foreign currency transactions, IAS 21. The Interpretation applies where an entity either pays or receives consideration in advance for foreign currency-denominated contracts. This new interpretation did not have a material impact on the consolidated financial statements of the Group.

IFRS 4 Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts

The amendments to IFRS 4 Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts address the concerns related to the misalignment of the effective dates of IFRS 9 and the future insurance contracts standard. These amendments did not have a material impact on the consolidated financial statements of the Group.

IFRS 15 Clarifications to IFRS 15 Revenue from Contracts with Customers

On 12 April 2016, the IASB issued amendments to IFRS 15, clarifying some requirements and providing additional transitional relief for companies that are implementing the new Standard. The amendments clarify how to identify a performance obligation in a contract, how to determine whether a company is a principal or an agent and how to determine whether the revenue from granting a licence should be recognised at a point in time or over time. In addition to the clarifications, the amendments include two additional reliefs to reduce cost and complexity for a company when it first applies the new Standard. These amendments did not have a material impact on the consolidated financial statements of the Group.

Annual Improvements to IFRS Standards 2014-2016 Cycle

The IASB's annual improvements process deals with non-urgent, but necessary clarifications and amendments to IFRS. The annual improvements to IFRSs 2014–2016 cycle clarifies IFRS 1 First-time Adoption of International

Financial Reporting Standards, IFRS 12 Disclosure of Interests in Other Entities and IAS 28 Investments in Associates and Joint Ventures. These amendments did not have a material impact on the consolidated financial statements of the Group.

IAS 40 Transfers of Investment Property

The amendments to IAS 40 Transfers of Investment Property address the question whether property under construction can be transferred from inventory to investment property when there is an evident planned change in use. These amendments did not have an impact on the consolidated financial statements of the Group.

IFRS 2 Classification and Measurement of Share-based Payment Transactions

The objective of the amendments to IFRS 2 is to provide guidance on three issues: the effects of vesting conditions on the measurement of a cash-settled share-based payment, the classification of share-based payment transactions with net settlement features for withholding tax obligations and the accounting for a modification to the terms and conditions of a share-based payment that changes the classification of the transaction from cash-settled to equity-settled. These amendments did not have an impact on the consolidated financial statements of the Group.

New and amended standards/interpretations not yet effective

A number of interpretations, new standards and amendments to standards are issued but not yet effective (as adopted by the EU). Borealis will adopt the standards on the effective date. Effective means effective for annual periods beginning on or after that date (as endorsed by the EU).

Standards/Interpretations		IASB effective date	EU effective date
New Standards and Interpretations			
IFRS 16	Leases	1 January 2019	1 January 2019
IFRIC 23	Uncertainty over Income Tax Treatments	1 January 2019	1 January 2019
IFRS 17	Insurance contracts	1 January 2021	
Amended Standards and Interpretations			
IFRS 9	Prepayment Features with Negative Compensation	1 January 2019	1 January 2019
IAS 28	Long-term Interests in Associates and Joint Ventures	1 January 2019	1 January 2019
Misc.	Annual Improvements to IFRS Standards 2015-2017 Cycle	1 January 2019	
IAS 19	Plan Amendment, Curtailment or Settlement	1 January 2019	
Conceptual Framework	References to the Conceptual Framework in IFRS Standards	1 January 2020	
IFRS 3	Definition of a Business	1 January 2020	
IAS 1 and IAS 8	Definition of Material	1 January 2020	

IFRS 16 Leases

IFRS 16 was issued in January 2016. It will result in almost all leases being recognised on the balance sheet by lessees, as the distinction between operating and finance leases is removed. Under the new standard, an asset (the right to use the leased item) and a financial liability to pay rentals are recognised. The only exceptions are short-term and low-value leases.

Borealis has set up a project team which has reviewed all of the Group's leasing arrangements in light of the new lease accounting rules in IFRS 16. The standard will affect primarily the accounting for the Group's operating leases.

The Group will apply the standard from its mandatory adoption date of 1 January 2019. Borealis intends to apply the simplified transition approach and will not restate

comparative amounts for the year prior to first adoption. Right-of-use assets will be measured at the amount of the lease liability on adoption (adjusted for any prepaid or accrued lease expenses).

Borealis will elect to use the exemptions proposed by the standard on lease contracts for which the lease terms ends within 12 months as of the date of initial application, and lease contracts for which the underlying asset is of low value. The Group has e.g. leases of certain office and IT equipment, textiles or smaller containers that are considered of low value.

As at the reporting date, the Group has non-cancellable operating lease commitments of EUR 258,158 thousand, see note 29. Of these commitments, approximately EUR 5,415 thousand relate to short-term leases and EUR 171 thousand to low value leases which will both be recognised on a straight-line basis as expense in profit or loss.

For the remaining lease commitments the Group expects to recognise right-of-use assets of approximately EUR 210,147 thousand on 1 January 2019 and lease liabilities of EUR 208,660 thousand (after adjustments for prepayments and accrued lease payments recognised as at 31 December 2018). The current part of the lease liability will amount to approximately EUR 32,792 thousand.

Borealis expects that net profit after tax will decrease by approximately EUR 2,353 thousand for 2019 as a result of adopting the new rules. Depreciation is expected to increase by approximately EUR 35,934 thousand. Operating profit will increase by approximately EUR 1,267 thousand since EUR 37,201 thousand former operating lease payments will not be included in this measure anymore. Financial expenses will increase by approximately EUR 4,409 thousand now including the interest on the lease liability.

Operating cash flows will increase and financing cash flows decrease by approximately EUR 32,792 thousand as repayment of the principal portion of the lease liabilities will be classified as cash flows from financing activities.

Borealis' activities as a lessor are not material and hence the Group does not expect any significant impact on the financial statements. However, some additional disclosures will be required from next year.

IFRIC 23 Uncertainty over Income Tax Treatments

The IAS issued IFRIC 23 Uncertainty over Income Tax Treatments in July 2017. IFRIC 23 clarifies the accounting for uncertainties in income taxes. Borealis does not expect a material impact of these amendments on the consolidated financial statements.

IFRS 17 Insurance contracts

IFRS 17 was issued in May 2017 as replacement for IFRS 4 Insurance Contracts. It requires a current measurement model where estimates are remeasured each reporting period. Contracts are measured using the building blocks of discounted probability-weighted cash flows, an explicit risk adjustment, and a contractual service margin ("CSM") representing the unearned profit of the contract which is recognised as revenue over the coverage period.

The standard allows a choice between recognising changes in discount rates either in the income statement or directly in other comprehensive income. The choice is likely to reflect how insurers account for their financial assets under IFRS 9.

An optional, simplified premium allocation approach is permitted for the liability for the remaining coverage for short duration contracts, which are often written by non-life insurers.

There is a modification of the general measurement model called the 'variable fee approach' for certain contracts written by life insurers where policyholders share in the returns from underlying items. When applying the variable fee approach the entity's share of the fair value changes of the underlying items is included in the contractual service margin. The results of insurers using this model are therefore likely to be less volatile than under the general model.

At this stage, Borealis is not able to estimate the impact of the new standard on the consolidated financial statements.

IFRS 9 Prepayment Features with Negative Compensation

The IASB has issued a narrow-scope amendment to IFRS 9 to enable companies to measure at amortised cost some prepayable financial assets with negative compensation. The assets affected that include some loans and debt securities would otherwise have been measured at fair

value through profit or loss (FVPL). Borealis does not expect a material impact of these amendments on the consolidated financial statements.

IAS 28 Long-term Interests in Associates and Joint Ventures
The IASB has published amendments to IAS 28 Investments in Associates and Joint Ventures which clarifies that long-term interests in an associate or joint venture – to which the equity method is not applied – must be accounted for under IFRS 9 Financial Instruments. This shall include long-term interests that, in substance, form part of the entity's net investment in an associate or joint venture. Borealis does not expect a material impact of these amendments on the consolidated financial statements.

Annual Improvements to IFRS Standards 2015-2017 Cycle
The IASB's annual improvements process deals with non-urgent but necessary clarifications and amendments to IFRS. The annual improvements to IFRSs 2015–2017 cycle clarifies IFRS 3 Business Combinations and IFRS 11 Joint Arrangements, IAS 12 Income Taxes and IAS 23 Borrowing Costs. Borealis does not expect a material impact of these amendments on the consolidated financial statement.

IAS 19 Plan Amendment, Curtailment or Settlement
The amendments to IAS 19 clarify the accounting for defined benefit plan amendments, curtailments and settlements. They confirm that entities must calculate the current service cost and net interest for the remainder of the reporting period after a plan amendment, curtailment or settlement by using the updated assumptions from the date of the change. Any reduction in a surplus should be recognised immediately in profit or loss either as part of past service cost, or as a gain or loss on settlement. In other words, a reduction in a surplus must be recognised in profit or loss even if that surplus was not previously recognised because of the impact of the asset ceiling. Any changes in the asset ceiling must be separately recognised through other comprehensive income.

These amendments will apply only to any future plan amendments, curtailments, or settlements of the Group. Borealis does not expect a material impact of these amendments on the consolidated financial statements.

References to the Conceptual Framework in IFRS Standards
The objective of the amendments is to update references to and quotes from the Conceptual Framework in IFRS Standards so that they refer to the revised Conceptual Framework for Financial Reporting issued by the IASB on 29 March 2018. Borealis does not expect a material impact of these amendments on the consolidated financial statements.

IFRS 3 Definition of a Business
On 22 October 2018, the IASB issued amendments to the guidance in IFRS 3, 'Business Combinations', that revises the definition of a business. The changes will likely result in more acquisitions being accounted for as asset acquisitions across all industries, particularly real estate, pharmaceutical, and oil and gas. Application of the changes would also affect the accounting for disposal transactions. Differences in accounting between business combinations and asset acquisitions include, among other things, the recognition of goodwill, recognition and measurement of contingent consideration, accounting for transaction costs, and deferred tax accounting.

These amendments will apply on future business combinations of the Group. Borealis does not expect a material impact of these amendments on the consolidated financial statements.

IAS 1 and IAS 8 Definition of Material
In October 2018, the IASB issued amendments to IAS 1 Presentation of Financial Statements and IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors to align the definition of 'material' across the standards and to clarify certain aspects of the definition. The new definition states that, 'Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.' Borealis does not expect a material impact of these amendments on the consolidated financial statements.

Amounts

All amounts are in EUR thousand unless otherwise stated. The amounts in parentheses relate to the preceding year.

1. Segment reporting

	Polyolefins		Base Chemicals		Non-Allocated		Consolidated	
EUR thousand	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Net sales by segment								
Total sales	5,435,861	5,082,113	6,002,493	5,256,465	183,463	132,842	11,621,817	10,471,420
Group internal sales	0	0	-3,284,690	-2,907,085	0	0	-3,284,690	-2,907,085
	5,435,861	**5,082,113**	**2,717,803**	**2,349,380**	**183,463**	**132,842**	**8,337,127**	**7,564,335**
Prices for Group inter-segment sales are based on monthly market prices for ethylene and propylene contracts.								
Segment result								
Operating profit	415,283	605,507	269,712	366,008	-189,067	-180,834	495,928	790,681
Net result in associated companies and joint ventures	15,684	0	-9,321	-331	599,397	543,316	605,760	542,985
Financial income/expenses					-31,469	-65,748	-31,469	-65,748
Taxes on income					-164,034	-172,823	-164,034	-172,823
Non-controlling interest					1,233	-426	1,233	-426
Net profit for the year attributable to equity holders of the parent							**907,418**	**1,094,669**
Other information								
Segment assets	3,405,691	3,061,743	2,648,640	2,694,994	3,894,325	3,638,138	9,948,656	9,394,875
thereof Austria	2,092,975	1,722,445	1,357,820	1,313,204	3,658,258	3,400,903	7,109,053	6,436,552
Segment liabilities	0	0	0	0	3,512,548	3,012,968	3,512,548	3,012,968
Investments in tangible assets	108,287	144,186	199,427	296,776	18,583	12,209	326,297	453,171
Depreciation, amortisation and impairment	149,351	153,692	247,471	165,880	59,842	73,299	456,664	392,871
Over 90% of the above relate to segment EU countries.								
Net sales by geographic segment (by delivery destination)								
EU countries	3,905,191	3,622,644	2,193,347	2,087,791	54,812	48,060	6,153,350	5,758,495
thereof Austria	152,939	147,492	148,338	135,819	30,213	34,707	331,490	318,018
Non-EU countries in Europe	504,531	526,750	295,064	86,644	422	0	800,017	613,394
USA	208,378	177,075	31,050	24,709	751	734	240,179	202,518
Middle East and Asia	281,327	297,361	87,878	53,031	127,478	84,048	496,683	434,440
Other regions	536,434	458,283	110,464	97,205	0	0	646,898	555,488
	5,435,861	**5,082,113**	**2,717,803**	**2,349,380**	**183,463**	**132,842**	**8,337,127**	**7,564,335**

2. Revenue from contracts with customers

EUR thousand	2018
Revenue from contracts with customers	8,273,987
Revenue from other sources	63,140
Net sales	**8,337,127**

Revenue from other sources mainly includes amortisation of government and investment grants.

In the following table revenue from contracts with customers is disaggregated by segment and geographical market. The table also includes a reconciliation of the disaggregated revenue with the Group's reportable segments (see note 1).

EUR thousand	2018			
	Polyolefins	Base Chemicals	Non-allocated	Total
EU countries	3,897,725	2,189,619	2,923	6,090,267
Non-EU countries	504,531	295,064	422	800,017
USA	208,378	31,050	751	240,179
Middle East and Asia	281,327	87,878	127,478	496,683
Other regions	536,377	110,464	0	646,841
Revenue from contracts with customers	**5,428,338**	**2,714,075**	**131,574**	**8,273,987**
Revenue from other sources	7,523	3,728	51,889	63,140
Net sales (as reported in note 1)	**5,435,861**	**2,717,803**	**183,463**	**8,337,127**

The following table provides information about receivables, contract assets and contract liabilities from contracts with customers.

EUR thousand	31 December 2018	1 January 2018
Receivables	768,256	650,263
Contract assets	6,537	0
Contract liabilities	41,485	45,115

The Group applies the practical expedient in IFRS 15.121 and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

For impairment recognised on receivables and contract assets, please see note 27 credit risk.

The contract assets relate to an agreement where Borealis already satisfied the performance obligations and has not yet received the consideration as it is linked to timing settlement conditions.

The contract liabilities include mainly advance consideration received from customers and expected volume discounts payable to customers in relation to sales made.

3. Research and development

At the end of the year, 507 FTEs were engaged in research and development (515 FTEs in 2017). The total cost of these activities including impairments costs amounted to EUR 127,699 thousand compared to EUR 138,360 thousand in 2017 (see note 6). Internal development costs amounting to EUR 27,304 thousand (EUR 26,023 thousand) were capitalised as intangible assets.

4. Intangible assets

	Goodwill		Development costs		Capitalised software		Others	
EUR thousand	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Cost								
As of 1 January	142,037	147,264	359,767	327,686	60,771	88,680	185,626	183,209
Exchange adjustments	-71	-1,108	0	0	-38	-56	-1,064	-934
Additions	0	0	36,627	32,223	6,897	7,978	134,353	34,409
Changes in consolidation scope	17,068	0	0	0	8	0	3,922	0
Other movements	0	-4,119	0	0	0	0	0	3,746
Disposals	0	0	0	0	-206	-38,797	-80,406	-35,539
Transfers	0	0	0	-142	6,924	2,966	360	735
	159,034	**142,037**	**396,394**	**359,767**	**74,356**	**60,771**	**242,791**	**185,626**
Accumulated amortisation								
As of 1 January	0	0	202,523	190,864	32,477	60,215	126,832	120,796
Exchange adjustments	0	0	0	0	-22	-29	-534	-448
Disposals	0	0	0	0	-119	-38,611	-641	-8,857
Amortisation	0	0	14,371	15,101	12,629	10,902	16,264	15,341
Impairment	47,375	0	4,156	1,607	0	0	0	0
Reversal of impairment	0	0	-1,050	-5,049	0	0	0	0
	47,375	**0**	**220,000**	**202,523**	**44,965**	**32,477**	**141,921**	**126,832**
Carrying value as of 31 December	**111,659**	**142,037**	**176,394**	**157,244**	**29,391**	**28,294**	**100,870**	**58,794**

Other intangible assets contain mainly patents and licences as well as emission rights.

Additions arising from internal development amounted to EUR 27,304 thousand (EUR 26,023 thousand). Intangible assets received by the way of government grant as allowances for emissions (EU Emissions Trading System) amounted to EUR 52,191 thousand (EUR 26,353 thousand), whereas the increase compared to 2017 was mainly driven by the market price increase. Emission rights purchased from external parties amounted to EUR 33,764 thousand (EUR 0 thousand) and received back certificates which were borrowed to external parties amounted to EUR 39,178 thousand (EUR 333 thousand). An equivalent of EUR 55,726 thousand (EUR 22,932 thousand) was returned to the respective EU ETS regulatory authorities for the emitted emissions in 2017. This increase compared to the previous year was also driven by a market price increase.

In 2017, the line other movements comprised EUR 3,746 thousand which were related to the fair value measurement of the assets and liabilities of mtm plastics GmbH, Niedergebra, Germany, and mtm compact GmbH, Fürstenwalde, Germany (hereafter together "mtm") within the transition period. This fair value measurement in connection with the fair value measurement in the tangible assets and the deferred tax impact on these adjustments resulted in a reduction of goodwill relating to the acquisition of mtm in the amount of EUR 4,119 thousand.

The Group tests on an annual basis whether any impairment of goodwill is required. The recoverable amount of a cash-generating unit (CGU) is determined based on value in use calculations which require the use of assumptions. The calculations use cash flow projections based on financial budgets covering a five-year period. Key assumptions of the forecasted cash flows are volumes sold and underlying industry margins. These are estimated based on industry reports issued by highly regarded business intelligence providers and management's experience. Cash flows beyond the five-year period are extrapolated using the estimated growth rates stated below. These growth rates are consistent with forecasts included in industry reports specific to the industry in which each CGU operates. For all impairment tests performed, the recoverable amount was based on the value in use.

Due to significant deviations of the development of the cash-generating unit Fertilizer & Melamine, which is part of the segment Base Chemicals, against the financial budget which was valid for 2018, a triggering event for an impairment test of this CGU has been recognised. Main reasons were declining sales volumes together with increased variable production costs due to higher gas prices. The performance of this impairment test resulted in a recoverable amount based on the value in use, which was EUR 83,910 thousand lower than the carrying amount of this cash generating unit. Therefore, the full related goodwill of EUR 47,375 thousand and additional fixed assets of the class property, plant and equipment of EUR 36,535 thousand have been impaired.

The allocated goodwill for each CGU as well as parameters influencing the calculation of the value in use can be seen in the following table:

Goodwill impairment test parameters 2018					
Segment	**Polyolefins**				**Base Chemicals**
Cash generating unit	Polyethylene	Polypropylene	Recyclates	Brazil	Fertilizer & Melamine
Allocated goodwill in EUR thousand	50,687	22,000	33,695	5,277	0
Post tax discount rate	7.8%	7.8%	7.2%	10.0%	10.1%
Growth rate	1.3%	1.4%	2.0%	3.1%	1.2%

Goodwill impairment test parameters 2017					
Segment	**Polyolefins**				**Base Chemicals**
Cash generating unit	Polyethylene	Polypropylene	Recyclates	Brazil	Fertilizer & Melamine
Allocated goodwill in EUR thousand	50,687	22,000	16,627	5,348	47,375
Post tax discount rate	7.7%	7.7%	6.8%	9.8%	9.7%
Growth rate	1.2%	1.3%	2.0%	2.8%	1.5%

Post tax discount rates (weighted average cost of capital) reflect specific risks relating to the relevant segments and the countries in which they operate.

The long-term growth rate is the weighted average growth rate used to extrapolate cash flows beyond the budget period. The rates are consistent with forecasts included in industry reports.

Additionally to the parameters above, sensitivities regarding discount rates and feedstock prices are taken into consideration. None of the calculated cases, except for the CGU Fertilizer & Melamine, showed any need for an impairment.

Sensitivities for the CGU Fertilizer & Melamine have been calculated for the inputs gas price and discount rate. An increase of the discount rate by 0.5 percentage points would increase the impairment charge by EUR 52,112 thousand. An increase of the gas price by EUR 2 would increase the impairment charge by EUR 94,163 thousand.

5. Tangible assets

	Production plants		Machinery and equipment		Construction in progress	
EUR thousand	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Cost						
As of 1 January	6,757,911	6,541,470	132,712	150,119	236,518	270,449
Exchange adjustments	-82,036	-67,737	-598	-613	-3,209	-1,644
Additions	212,266	290,258	3,800	4,715	147,722	170,477
Changes in consolidation scope	6,835	0	283	0	1,871	0
Other movements	0	2,180	0	0	0	0
Disposals	-62,593	-204,569	-14,487	-24,348	0	-57
Transfers	113,830	196,309	4,998	2,839	-126,112	-202,707
	6,946,213	**6,757,911**	**126,708**	**132,712**	**256,790**	**236,518**
Accumulated depreciation						
As of 1 January	4,106,500	4,004,556	101,208	119,472	0	0
Exchange adjustments	-53,267	-44,727	-498	-533	0	0
Disposals	-59,292	-201,719	-14,412	-24,310	0	0
Depreciation	319,172	327,313	7,212	6,579	0	0
Impairment	36,395	21,077	140	0	0	0
	4,349,508	**4,106,500**	**93,650**	**101,208**	**0**	**0**
Carrying value as of 31 December	**2,596,705**	**2,651,411**	**33,058**	**31,504**	**256,790**	**236,518**

The figures for production plants include capitalised finance leases with a net value of EUR 742 thousand (EUR 1,231 thousand) comprising acquisition costs of EUR 3,004 thousand (EUR 1,592 thousand) and accumulated depreciation of EUR 2,262 thousand (EUR 361 thousand). The lease obligation is included in loans and borrowings (see note 20).

In 2018, borrowing costs amounting to EUR 1,866 thousand (EUR 3,832 thousand) have been capitalised, using an average interest rate of 2.3% (2.8%). The line other movements amounting to EUR 2,180 thousand in 2017 relates to the fair value measurement of the assets and liabilities of mtm within the transition period. Additions to tangible assets that were not paid at the end of the reporting period amounted to EUR 21,757 thousand.

Additions comprise major projects advanced in 2018, which are the upgrade and revamp of four cracker furnaces in Stenungsund, Sweden, the building of an automotive compounding plant in North America, the turnaround in the production facility in Linz, Austria, and an upgrade of the PE4 plant in the production facility in Schwechat, Austria.

At 31 December 2018, Borealis' contractual commitments amounted to EUR 131,763 thousand (EUR 104,958 thousand) for the acquisition of tangible assets (see note 21).

Assets pledged

Assets pledged amounted to EUR 12,389 thousand (EUR 12,906 thousand) and relate to tangible assets. The liabilities covered by the above assets amounted to EUR 3,462 thousand (EUR 3,659 thousand) at the end of the year.

6. Depreciation, amortisation and impairment

Depreciation, amortisation and impairment are allocated as follows in the income statement.

EUR thousand	2018	2017
Production costs		
Depreciation and Amortisation	296,812	303,232
Impairment	83,910	0
Sales and distribution costs		
Depreciation and Amortisation	11,976	11,674
Administration costs		
Depreciation and Amortisation	22,192	20,875
Research & development costs		
Depreciation and Amortisation	38,668	39,456
Impariment/Reversal of impairment	3,106	17,634
Total	**456,664**	**392,871**

The production costs include an impairment of EUR 83,910 thousand for the impairment of the intangible and tangible assets within the Base Chemicals segment (see note 4).

The research & development costs include an impairment of EUR 4,156 thousand (EUR 1,607 thousand) of intangible assets for which the carrying value exceeds the present value of future cash flows, and a reversal of impairment of EUR 1,050 thousand (EUR 5,049 thousand). In 2017, additionally, an impairment of EUR 21,076 thousand was recognised which was relating to the decision to discontinue one line of the catalyst plant in Linz, Austria. Like last year, the impairment and reversal of impairment of the intangible assets within the research & development costs are relating to the non-allocated segment.

7. Business Combinations

Borealis has made one acquisition in 2018, which is described below:

7.1. Acquisition of Ecoplast Kunststoffrecycling GmbH

On 27 August 2018, Borealis (via Borealis AG, Vienna, Austria) acquired 100% of the shares of Ecoplast Kunststoffrecycling GmbH, Wildon, Austria, (Ecoplast) from Martha Intemann, Reinhard Intemann and INTREC Vernetzte Recycling-Lösungen GmbH & CO KG (the sellers).

Borealis recognises the increasing need for plastic recycling and sees the Circular Economy as a business opportunity. Borealis already had a long-term collaboration with Ecoplast and the acquisition was the next logical step in building the Company's mechanical recycling capabilities. As an important complement to mtm in Germany, Ecoplast will help Borealis address critical sustainability challenges and become a polyolefin recycling leader.

Ecoplast processes around 35,000 tonnes of post-consumer plastic waste from households and industrial consumers every year, turning them into high-quality LDPE and HDPE recyclates, primarily but not exclusively for the plastic film market.

The acquisition has been accounted for using the acquisition method. The acquisition date fair value of the acquired assets and liabilities is final. The consolidated financial statements include the results of Ecoplast for the four-months plus five-days period from the acquisition date.

Assets acquired and liabilities assumed

The fair value of the identifiable assets and liabilities of Ecoplast as at the date of acquisition were:

EUR thousand	Fair value recognised on acquisition
Assets	
Tangible and intangible assets	12,919
Inventories	990
Trade receivables	1,768
Other current receivables and other assets	1,214
Cash and cash equivalents	287
Total assets acquired	**17,178**
Liabilities	
Non-current provisions	472
Non-current loans and liabilities	7,133
Deferred tax liabilities	1,323
Trade payables	1,530
Other current liabilities	678
Total liabilities	**11,136**
Total identifiable net assets at fair value	**6,042**
Total purchase consideration	23,110
Goodwill arising on acquisition	**17,068**
Percentage acquired	**100%**

The total acquisition costs of 100% of the share capital of Ecoplast comprised an initial cash payment in August 2018 of EUR 21,110 thousand (including a first purchase price step up of EUR 1,000 thousand), contingent considerations of EUR 2,000 thousand and costs of EUR 856 thousand directly attributable to the acquisition (thereof EUR 482 thousand in 2018). The cash acquired with this acquisition amounted to EUR 287 thousand, resulting in net cash outflow on the acquisition of EUR 21,305 thousand and refinancing of debt acquired of EUR 6,453 thousand in 2018. The transaction costs have been expensed and are included in administrative expenses in the income statement and are part of operating cash flows in the statement of cash flows.

Borealis agreed with the sellers to transfer two additional considerations up to a total maximum amount of EUR 2,000 thousand to the sellers if defined project targets related to the ongoing construction of a new production line are met. The additional considerations shall be transferred to the sellers once the production line is commissioned (latest by June 2019) and once it is producing a defined quantity of in-spec materials at nameplate capacity (latest by October 2019). Since the project was already in an advanced stage at acquisition date and the conditions for the first purchase price step up were already fulfilled at closing, Borealis assumed that the conditions for the second purchase price step-up will be fulfilled by early 2019, and those for the third step-up by mid 2019. Therefore, Borealis recognised the maximum amounts as an additional part of the purchase price and accounted the contingent consideration liability at the nominal value, as the liability is short-term. As of 31 December 2018, above assumptions remained intact.

The fair value of the trade receivables acquired through the business combination amounted to EUR 1,768 thousand which have been fully collected. From the date of the acquisition until the year end, Ecoplast has contributed EUR 4,318 thousand of revenue and EUR 726 thousand to the net result of the Group. If the combination had taken place at the beginning of the year, the revenue contribution from Ecoplast would have been EUR 13,145 thousand and the contribution to the net result would have been EUR 1,085 thousand.

The goodwill of EUR 17,068 thousand comprises the value of the expected synergies and other benefits from combining the assets and activities of Ecoplast with those of Borealis and has been allocated to the cash generating unit recyclates. None of the recognised goodwill is deductible for income tax purposes.

7.2. Other changes

Borealis Digital Studio BVBA, Zaventem, Belgium, was incorporated on 18 March 2018. This 100% subsidiary is not consolidated due to immateriality. Furthermore, the name of Borealis Insurance A/S in Denmark was changed to Borealis Insurance A/S (captive insurance company) as of 17 May 2018. The subsidiary Borealis BoNo Holdings LLC became material for consolidation with the acquisition of Bayport Polymers LLC, Pasadena, US, (a joint venture of Novealis Holdings LLC and Total) in May 2018. Borealis Denmark ApS, Copenhagen, Denmark, was incorporated on 25 October 2018. This 100% subsidiary is not consolidated due to immateriality. On 29 October 2018 Borealis announced the signing of an agreement to acquire a controlling stake in South Korean compounder DYM Solution Co. Ltd. The agreement and transaction are subject to all required regulatory approvals.

8. Investments in associated companies and joint ventures

	Shares in associated companies and joint ventures	
EUR thousand	**2018**	**2017**
Cost		
As of 1 January	356,241	338,200
Investments and acquisitions	178,264	25,250
Disposals	0	-7,209
As of 31 December	534,505	356,241
Adjustments		
As of 1 January	3,042,100	3,434,558
Exchange adjustments	145,879	-456,882
Dividends received	-573,073	-478,561
Net result of associated companies and joint ventures, after tax	605,760	542,985
As of 31 December	3,220,666	3,042,100
Carrying value as of 31 December	**3,755,171**	**3,398,341**

In 2018, net results of associated companies and joint ventures, after tax, included an impairment of the shares in Neochim AD amounting to EUR 7,862 thousand. The impairment was triggered by the share price at closing date. The recoverable amount of Borealis' share in Neochim AD at 31 December 2018 amounted to EUR 8,457 thousand and represents the fair value less cost of disposal. The fair value is based on quoted prices at the measurement date (Level 1 inputs).

The Group presents the investments in associated companies and joint ventures as follows:

EUR thousand	**2018**	**2017**
Material associated company (Abu Dhabi Polymers Company Limited (Borouge))	3,459,898	3,294,481
Non-material associated companies	92,808	87,071
Non-material joint ventures	202,465	16,789
Carrying value as of 31 December	**3,755,171**	**3,398,341**

Investments in non-material associated companies contain accumulated impairment losses of EUR 7,862 thousand (EUR 0 thousand).

Investments in non-material joint ventures contain Borealis' share in Novealis Holdings LLC amounting to EUR 180,505 thousand (EUR 0 thousand). This amount is almost entirely related to the 50% share of Novealis Holdings LLC in Bayport Polymers LLC, Pasadena, US.

Investments in Neochim AD, Kilpilahti Power Plant LTD and GCA Holding LLC are part of the Base Chemicals segment. The share in Novealis Holdings LLC is included in the Polyolefins segment. All other investments in associated companies and joint ventures are part of the non-allocated segment.

At the reporting date, the Group (via Borealis BoNo Holdings LLC) has a contractual obligation for additional capital contributions into Novealis Holdings LLC amounting to EUR 152,805 thousand. Thereof, EUR 76,402 thousand are due during 6 months or less whereas another EUR 76,403 thousand are due within 1-2 years.

The Group has the following investments in associated companies:

		Ownership in %	
Associated companies	**Country**	**2018**	**2017**
Abu Dhabi Polymers Company Limited (Borouge)	United Arab Emirates	40.00	40.00
Borouge Pte. Ltd.	Singapore	50.00	50.00
Neochim AD	Bulgaria	20.30	20.30
Kilpilahti Power Plant LTD [1)]	Finland	20.00	20.00
Chemiepark Linz Betriebsfeuerwehr GmbH [1)]	Austria	47.50	47.50
AZOLOR S.A.S. [1)]	France	34.00	34.00
Société d'Intérêt Collectif Agricole par Actions Semplifiée de Gouaix (SICA de Gouaix) [1)]	France	25.00	25.00
Société Industrielle Commerciale et Agricole de Maiziéres La Grande Paroisse S.A.S. (SICAM) [1)]	France	33.99	33.99
Société d'Intérêt Collectif Agricole Laignes Agrifluides (SICA Laignes Agrifluides) [1)]	France	49.90	49.90
Franciade Agrifluides S.A.S. (FASA) [1)]	France	49.98	49.98

1) Excluded from consolidation at equity due to immateriality

Abu Dhabi Polymers Company Limited (Borouge) is a leading provider of innovative, value creating plastic solutions for infrastructure, automotive and advanced packaging applications.

The following table illustrates the summarised full financial information of the Group's investment in Abu Dhabi Polymers Company Limited (Borouge):

EUR thousand	2018	2017
Current assets	1,874,564	1,564,302
Non-current assets	7,206,571	7,255,580
Current liabilities	-369,995	-522,823
Non-current liabilities	-56,341	-52,350
Equity	**8,654,799**	**8,244,709**
Share of Borealis	40%	40%
Share of net assets	3,461,920	3,297,884
Adjustments	-2,022	-3,403
Carrying value as of 31 December	**3,459,898**	**3,294,481**
Net sales	3,610,354	3,488,337
Net profit for the year	1,475,070	1,295,994
Other comprehensive income	0	0
Total comprehensive income	1,475,070	1,295,994
Dividends received by Borealis from Borouge	565,002	478,203

Summary of financial information for non-material associated companies, adjusted for the ownership by the Group:

EUR thousand	2018	2017
Net profit for the year	10,491	23,428
Other comprehensive income	-1,528	2,253
Total comprehensive income	8,963	25,681

The Group has the following investments in joint ventures:

Joint ventures	Country	Ownership in % 2018	2017
PetroPort Holding AB	Sweden	50.00	50.00
GCA Holdings LLC	US	50.00	50.00
BTF Industriepark Schwechat GmbH [1]	Austria	50.00	50.00
Novealis Holdings LLC [2]	US	50.00	50.00
Silleno Limited Liability Partnership [1]	Kazakhstan	50.10	–

1) Excluded from consolidation at equity due to immateriality // 2) Borealis BoNo Holdings LLC holds 50% of Novealis Holdings LLC and was excluded from consolidation due to immateriality at 31 December 2017

Summary of financial information for non-material joint ventures, adjusted for the ownership by the Group:

EUR thousand	2018	2017
Net profit for the year	3,824	592
Other comprehensive income	0	0
Total comprehensive income	3,824	592

9. Other investments and other non-current assets

Other investments mainly include interests in infrastructure companies in Germany and distribution and blending entities in France and Eastern Europe.

The other non-current receivables and other non-current assets mainly include shareholder loans with Novealis Holdings LLC amounting to EUR 85,738 thousand (EUR 0 thousand) and with Kilpilahti Power Plant LTD amounting to EUR 9,387 thousand (EUR 6,908 thousand). The remainder consists of non-current derivative financial instruments (see note 22), listed securities in Austria (long-term deposits for statutory and tax requirements) and government grant receivables in Belgium.

10. Taxation

EUR thousand	2018	2017
Taxes		
Income tax payable	142,769	177,338
Change in deferred tax	44,972	-2,022
Adjustment to prior years' tax charge	-23,707	-2,493
Taxes on income	**164,034**	**172,823**

Calculation from tax expense at statutory rates to accounting tax expense at the effective group tax rate.

EUR thousand	2018		2017	
Tax expense at statutory rates (weighted average tax rate of the Group)	**24%**	**258,455**	**24%**	**305,941**
Tax effect of result in associated companies	-14%	-152,102	-11%	-135,737
Tax effect of permanent differences	2%	19,214	0%	-320
Adjustment of valuation allowance/re-assessment of unrecognised tax assets	5%	49,521	1%	12,324
Change due to changes in tax rates	-1%	-9,820	0%	-4,491
Prior years' adjustments and other	0%	-1,234	0%	-4,894
Taxes on income	**15%**	**164,034**	**14%**	**172,823**

	Balance sheet		Income statement	
EUR thousand	**2018**	**2017**	**2018**	**2017**
Deferred tax assets				
Tangible assets	12,096	10,268	1,828	-10,011
Intangible assets	5,066	4,538	528	-1,133
Adjusted depreciation for tax purposes	**17,162**	**14,806**		
Revaluation of cash flow hedges	2,997	47	2,950	-3,219
Net gain on hedge of a net investment	8,933	24,995	-20,134	0
Valuation of inventories for tax purposes	18,650	15,402	3,248	1,779
Fair values compared to tax values	**30,580**	**40,444**		
Employee benefits	79,358	80,920	490	-2,535
Other provisions	9,614	8,180	1,434	-1,423
Other assets and liabilities	27,677	1,995	25,682	-11,255
Other timing differences	**116,649**	**91,095**		
Losses available for offsetting against future taxable income	**30,284**	**62,508**	-30,684	2,878
Netting with deferred tax liabilities	**-147,938**	**-154,231**		
Deferred tax assets	**46,737**	**54,622**	**-14,658**	**-24,919**

	Balance sheet		Income statement	
EUR thousand	**2018**	**2017**	**2018**	**2017**
Deferred tax liabilities				
Tangible assets	-222,631	-224,271	-2,268	5,943
Intangible assets	-49,081	-47,547	-1,534	-114
Accelerated/adjusted depreciation for tax purposes	**-271,712**	**-271,818**		
Revaluation of cash flow hedges	-62,783	-9,039	-47,177	2,766
Valuation of inventories for tax purposes	-17,417	-16,590	-842	6,584
Fair values compared to tax values	**-80,200**	**-25,629**		
Employee benefits	-5,080	-1,688	-3,392	-997
Other provisions	-13,655	-16,411	2,756	4,538
Other assets and liabilities	-15,384	-37,527	22,143	8,221
Other timing differences	**-34,119**	**-55,626**		
Netting with deferred tax assets	**147,938**	**154,231**		
Deferred tax liabilities	**-238,093**	**-198,842**	**-30,314**	**26,941**
Net tax asset/liability	**-191,356**	**-144,220**	**-44,972**	**2,022**

The deferred tax assets of EUR 46,737 thousand (EUR 54,622 thousand) include an amount of EUR 23,663 thousand (EUR 4,846 thousand), which most likely will be utilised within one year. The deferred tax liabilities of EUR 238,093 thousand (EUR 198,842 thousand) include an amount of EUR 73,964 thousand (EUR 58,789 thousand), which most likely will be utilised within one year.

In addition to the tax assets capitalised, the Group has unrecognised tax losses amounting to EUR 473,038 thousand (EUR 339,472 thousand) and unrecognised temporary differences amounting to EUR 36,534 thousand (EUR 21,229 thousand), where current forecasts indicate insufficient future profits, thus resulting in unrecognised tax assets of EUR 131,540 thousand (EUR 93,165 thousand).

EUR thousand	**2018**	**2017**
Deductible temporary differences	9,435	5,482
Tax losses carried forward	122,105	87,683
Total unrecognised net tax assets	**131,540**	**93,165**

The tax losses carried forward have no expiry date.

The recognised deferred tax assets are expected to be utilised against future profits based on internal projections in the relevant jurisdictions. The benefit arising from previously unrecognised tax losses, tax credits or temporary differences of prior periods amounts to EUR 3,898 thousand (EUR 18,313 thousand). Deferred tax expense as a result of impairment of deferred tax assets due to forecasts indicating insufficient future profits amount to EUR 7,200 thousand (EUR 0 thousand). Dividend payment to Borealis AG by its subsidiaries has no tax effect for Borealis AG. The temporary differences related to subsidiaries amount to EUR 140,841 thousand (EUR 132,966 thousand) for which no deferred tax liability has been recognised in accordance with IAS 12.39 Income Taxes.

Tax contingencies

On 5 January 2017, Borealis received two decisions of the Finnish Board of Adjustment with regard to Borealis Technology Oy. The Board of Adjustment has confirmed the Finnish tax authority's view that the license arrangements, entered into between Borealis Technology Oy and Borealis AG in 2008 and 2010, should be re-characterised into transfers of businesses. Based on this the Board of Adjustment requests Borealis to pay EUR 297,000 thousand, comprising taxes, late payment interest and penalties.

Borealis believes that this decision fails to properly apply Finnish and international tax law and does not adequately consider the relevant facts of the case. Therefore, Borealis has appealed this decision to the Helsinki Administrative Court on 6 March 2017, and has obtained a suspension of payment.

On 11 October 2017, Borealis received a decision of the Board of Adjustment with regard to Borealis Polymers Oy. Unlike the Finnish tax authority, the Board of Adjustment has recognised the license agreement which Borealis Polymers Oy and Borealis AG had concluded in the course of the introduction of the toll manufacturing set up in 2009. The Board of Adjustment has, however, decided that the license percentage should be increased from 1% to 2.6% and that in the course of the introduction of the toll manufacturing setup "something else of value" amounting to EUR 142,000 thousand has been transferred. The resulting payment request for the year 2009 amounts to EUR 62,000 thousand, comprising taxes, late payment interest and penalties. The decision of the Board of Adjustment did not comprise other years than 2009 and no reassessment claims for other years have been received yet.

Borealis believes that this decision fails to properly apply Finnish and international tax law and does not adequately consider the relevant facts of the case. Therefore, Borealis has appealed this decision to the Helsinki Administrative Court on 15 December 2017, and has obtained a suspension of payment.

Several other Borealis Group companies are currently subject to tax audits performed by their respective tax authorities. In some of the audits, specific emphasis is put on business restructuring and transfer pricing. Management's opinion is that the Company is in compliance with all applicable regulations.

11. Inventories

EUR thousand	2018	2017
Finished products	917,016	866,862
Raw materials and consumables	281,346	293,559
Total	**1,198,362**	**1,160,421**

The costs for the consumption of inventories recognised during the period in the income statement amounted to EUR 5,623,679 thousand (EUR 4,691,291 thousand), including impairment cost of EUR 35,131 thousand (EUR 18,968 thousand).

12. Share capital and contributions by shareholders

	Share capital		Contributions by shareholders	
EUR thousand	**2018**	**2017**	**2018**	**2017**
Balance as of 1 January	300	300	1,599,097	1,599,097
Capital increase (decrease)	0	0	0	0
Balance as of 31 December	**300**	**300**	**1,599,097**	**1,599,097**

The share capital of Borealis AG (parent company) amounts to EUR 300,000.00 (EUR 300,000.00) and is divided into 300,000 (300,000) shares, none of which have special voting rights.

The contributions by shareholders amounted to EUR 1,599,097 thousand (EUR 1,599,097 thousand).

Borealis AG is owned 61% by IPIC Beta Holdings GmbH, Wagramer Strasse 17–19, 1220 Vienna, Austria, 3% by Mubadala Petroleum and Petrochemicals Holding Company LLC, P.O. Box 45005, Al Mamoura A, Muroor Road, 15th Street, Abu Dhabi, United Arab Emirates, 33% by OMV Refining & Marketing GmbH, Trabrennstrasse 6–8, 1020 Vienna, Austria, and 3% by OMV Aktiengesellschaft, Trabrennstrasse 6–8, 1020 Vienna, Austria. The 3% share of Mubadala Petroleum and Petrochemicals Holding Company LLC was transferred from International Petroleum Investment Company, IPIC Square, Muroor (4th) Road, PO Box 7528, Abu Dhabi, United Arab Emirates, on 7 February 2019. The ultimate controlling party is Mubadala Investment Company PJSC, Abu Dhabi, United Arab Emirates. None of the shares have special rights. Distribution of dividends to its shareholders does not have any tax effect for Borealis AG.

The Group's objectives are to safeguard the entity's ability to continue as a going concern and to provide an adequate return to its shareholders. The Group monitors capital on the basis of the gearing ratio. This ratio is calculated as net interest-bearing debt, including subordinated loans, divided by total equity. The Group's target is to keep the gearing ratio within a range of 40%-60% to meet the business needs of the Group. As per year-end, the gearing stands at 20% (12%), significantly below the target range due to the strong performance of the Group.

13. Personnel

EUR thousand	**2018**	**2017**
Costs		
Salaries and wages	501,204	499,309
Costs of defined contribution plans	31,281	32,899
Costs of defined benefit plans and other long-term employee benefits	19,397	30,695
Social security costs	130,848	117,159
Other personnel expenses	21,127	20,162
Total	**703,857**	**700,224**

Costs of defined benefit plans and other long-term employee benefits are recognised in the production costs with EUR 11,443 thousand (EUR 18,118 thousand), sales and distribution costs with EUR 3,328 thousand (EUR 5,235 thousand), costs of administration with EUR 3,115 thousand (EUR 4,932 thousand) and research & development costs with EUR 1,511 thousand (EUR 2,410 thousand).

Number of employees (FTEs[1]) by country as of 31 December	2018	2017
Austria	1,864	1,786
Belgium	1,148	1,117
Finland	912	915
France	895	879
Germany	419	396
Sweden	927	915
Other	669	611
Total	**6,834**	**6,619**

1) FTEs: Full-time equivalents

The remuneration of former and current management included in personnel costs is shown in the table below:

EUR thousand	2018	2017
Salaries and wages management (Executive Board)	11,879	8,962
Pension and severance costs management (Executive Board)	1,777	660
Salaries and wages other key management	1,547	1,404
Pension and severance costs other key management	102	70
Total	**15,305**	**11,096**

From the salaries and wages of the Executive Board of EUR 11,879 thousand (EUR 8,962 thousand), EUR 1,393 thousand (EUR 0 thousand) were paid to former members of the Executive Board.

From the pension and severance costs of the Executive Board of EUR 1,777 thousand (EUR 660 thousand), EUR 1,034 thousand (EUR 77 thousand) were paid to former members of the Executive Board.

No loans were granted to current or former members of the Executive Board. The remuneration paid to members of the Supervisory Board amounted to EUR 856 thousand (EUR 856 thousand).

14. Employee benefits

Most Group companies operate post-employment and other long-term benefit plans. The forms and benefits vary with conditions and practices in the countries concerned. The plans include both defined contribution plans and plans that provide defined benefits based on employees' years of service and estimated salary at retirement. A summary is shown below.

EUR thousand	2018	2017
Pensions and other post-employment benefit plans		
Present value of funded defined benefit pension plans	360,917	383,913
Fair value of plan assets	-230,679	-221,796
Deficit of funded defined benefit pension plans	130,238	162,117
Present value of unfunded defined benefit pension plans	181,647	167,105
Effect of asset ceiling (according IAS 19.64)	2,516	0
Total deficit of defined benefit pension plans	314,401	329,222
Medical plans	14,054	14,908
Severance plans	65,178	68,499
Pensions and other post-employment benefit plans	**393,633**	**412,629**
Other long-term employee benefits	32,771	31,830
Net liability recognised in the balance sheet	**426,404**	**444,459**

The Group operates defined post-employment benefit plans in the EU, Norway and the United Arab Emirates under broadly similar regulatory frameworks. These comprise pension plans, severance plans as well as post-retirement medical plans.

Defined benefit pension plans

The pension plans typically are final salary pension plans which provide benefits to members in the form of a guaranteed level of pension payable for life. The level of benefits provided depends on members' length of service and their salary in the final years leading up to retirement. The pensions in payment are generally updated in line with the retail price or a similar index. The benefit payments related to funded plans are from insurance funds, however, there are also a number of unfunded plans where the Company meets the benefit payment obligation as it falls due. The movement in the benefit pension obligation over the year is as follows:

EUR thousand	2018	2017
Defined benefit obligation as of 1 January	**551,018**	**512,358**
Net current service cost	20,024	19,364
Interest cost on defined benefit obligation	9,235	8,694
Past service cost	-15,282	-707
Gains (-)/losses due to settlements	-694	-843
Total amount recognised in profit or loss	13,283	26,508
Gains (-)/losses due to changes in demographic assumptions	5,027	26,574
Gains (-)/losses due to changes in financial assumptions	-3,673	4,053
Change in unrecognised asset due to asset ceiling	2,516	0
Experience gains (-)/losses	2,179	-689
Exchange rate gains (-)/losses	-1,737	0
Total amount recognised in other comprehensive income	4,312	29,938
Actual benefits paid directly from the plan assets	-15,694	-9,497
Actual benefits paid directly by employer	-4,723	-4,890
Actual plan participants' contributions	1,128	909
Actual expenses/taxes and premiums paid	-1,587	-1,446
Other changes	0	424
Exchange rate gains (-)/losses	-2,657	-3,286
Defined benefit obligation as of 31 December	**545,080**	**551,018**
Fair value of plan assets as of 1 January	**221,796**	**211,676**
Interest income on plan assets	3,417	3,233
Gains/losses (-) due to settlements	-361	-570
Actual admin expenses paid	-342	-316
Total amount recognised in profit or loss	2,714	2,347
Return on plan assets excluding amounts included in interest income	5,139	908
Total amount recognised in other comprehensive income	5,139	908
Actual benefits paid directly from the plan assets	-15,694	-9,497
Actual plan participants' contributions	1,128	909
Actual employer contributions	17,181	16,704
Actual taxes paid	-1,587	-1,446
Other changes	0	424
Exchange rate gains/losses (-)	2	-229
Fair value of plan assets as of 31 December	**230,679**	**221,796**

The plan assets in 2018 and 2017 consist mainly of insurance contracts.

Medical plans

Medical plans reimburse certain medical costs for retired employees mainly in Belgium. The movement in the medical obligation over the year is as follows:

EUR thousand	2018	2017
Defined benefit obligation as of 1 January	**14,908**	**16,369**
Net current service cost	695	790
Interest cost on defined benefit obligation	222	240
Past service cost	0	-301
Total amount recognised in profit or loss	917	729
Gains (-)/losses due to changes in demographic assumptions	0	-1,636
Gains (-)/losses due to changes in financial assumptions	-821	0
Experience gains (-)/losses	-804	-409
Total amount recognised in other comprehensive income	-1,625	-2,045
Actual benefits paid directly by employer	-146	-145
Defined benefit obligation as of 31 December	**14,054**	**14,908**

Severance plans

Severance plans are operated in the Austrian group companies and cover employees who started their service before 1 January 2003. Furthermore, the Group operates severance plans in France, Italy and the United Arab Emirates. The movement in the severance obligation over the year is as follows:

EUR thousand	2018	2017
Defined benefit obligation as of 1 January	**68,499**	**70,246**
Net current service cost	1,839	1,804
Interest cost on defined benefit obligation	1,026	1,043
Total amount recognised in profit or loss	2,865	2,847
Gains (-)/losses due to changes in demographic assumptions	1,034	16
Gains (-)/losses due to changes in financial assumptions	-1,891	29
Experience gains (-)/losses	25	810
Total amount recognised in other comprehensive income	-832	855
Actual benefits paid directly by employer	-5,371	-5,402
Exchange rate gains (-)/losses	17	-47
Defined benefit obligation as of 31 December	**65,178**	**68,499**

Other long-term employee benefits

Other long-term employee benefits provided by the Group companies include items such as jubilee payments and pre-pension benefits. The movement in the other long-term benefit obligation over the year is as follows:

EUR thousand	2018	2017
Defined benefit obligation as of 1 January	**31,830**	**32,978**
Net current service cost	1,642	1,602
Interest cost on defined benefit obligation	417	425
Past service cost	2,450	3
Gains (-)/losses due to changes in demographic assumptions	1,788	198
Gains (-)/losses due to changes in financial assumptions	-731	168
Experience gains (-)/losses	-520	562
Total amount recognised in profit or loss	5,046	2,958
Actual benefits paid	-4,105	-4,106
Defined benefit obligation as of 31 December	**32,771**	**31,830**

Discount rates, projected future salary, pension increases and expected rates of return on plan assets vary for the different defined benefit plans, as they are determined in light of local conditions. Assumptions regarding future mortality are based on published statistics and mortality tables. The principal assumptions used were as follows (expressed as weighted averages):

Percent	2018	2017
Discount rate	1.9%	1.7%
Projected future salary growth	3.2%	3.2%
Expected pension increase	1.9%	1.8%

The sensitivity of the defined benefit obligation for pensions and other post-employment benefit plans to changes in the principal assumptions is:

		Impact on defined benefit obligation	
	Change in assumption	Increase in assumption	Decrease in assumption
Discount rate	0.5%	Decrease by 6.7%	Increase by 7.4%
Projected future salary growth	0.5%	Increase by 4.3%	Decrease by 4.0%
Expected pension increase	0.5%	Increase by 3.9%	Decrease by 3.6%

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions, the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the statement of financial position.

Expected contributions to post-employment benefit plans for the year 2019 are EUR 35,915 thousand (EUR 28,439 thousand). The weighted average duration of the defined benefit obligation is 13.8 years (14.0 years). The defined benefit plans expose the Group to actuarial risks, mainly the longevity risk, interest rate and market (investment) risk.

15. Provisions

EUR thousand	2018					
	Restructuring	Decommissioning	Legal	Environmental	Other	Total
As of 1 January	802	36,669	5,184	3,959	22,423	69,037
Additions	291	6,572	998	0	11,953	19,814
Changes in consolidation scope	0	0	0	0	472	472
Utilised	-55	0	-335	-1,334	-1,323	-3,047
Reversed	0	0	-333	0	-166	-499
Reclassifications	0	0	100	0	-14,127	-14,027
Interest expense	0	204	0	0	0	204
Exchange adjustments	-2	0	-140	0	-36	-178
Balance as of 31 December	**1,036**	**43,445**	**5,474**	**2,625**	**19,196**	**71,776**
Other provisions current	830	0	2,188	0	1,105	4,123
Other provisions non-current	206	43,445	3,286	2,625	18,091	67,653
Balance as of 31 December	**1,036**	**43,445**	**5,474**	**2,625**	**19,196**	**71,776**

EUR thousand	2017					
	Restructuring	**Decommissioning**	**Legal**	**Environmental**	**Other**	**Total**
As of 1 January	1,164	31,208	3,869	6,692	23,327	66,260
Additions	0	5,291	1,983	1,659	17,178	26,111
Utilised	-1,684	0	-541	-388	-1,592	-4,205
Reversed	0	0	-94	-4,004	-418	-4,516
Reclassifications	1,436	0	-1	0	-16,042	-14,607
Interest expense	0	170	0	0	0	170
Exchange adjustments	-114	0	-32	0	-30	-176
Balance as of 31 December	**802**	**36,669**	**5,184**	**3,959**	**22,423**	**69,037**
Other provisions current	745	0	1,815	0	1,011	3,572
Other provisions non-current	57	36,669	3,369	3,959	21,412	65,465
Balance as of 31 December	**802**	**36,669**	**5,184**	**3,959**	**22,423**	**69,037**

Restructuring
Provisions for restructuring cover estimated costs for the ongoing restructuring programmes mainly in Norway and Germany.

Decommissioning
Provisions for decommissioning cover the expected clean-up and dismantling costs for plants situated on rented land in Germany and Belgium. It is expected that EUR 12,257 thousand will be used until 2024, EUR 5,377 thousand until 2027 and EUR 25,811 thousand until 2049.

Legal
Legal provisions represent litigation provisions in different areas.

Environmental
Environmental provisions cover several environmental exposures in the Group.

Other
Other provisions cover numerous types of long-term obligations including long-term incentive plans. The reclassifications are items, that do not fulfil the definition of a provision anymore and are therefore reclassified to the balance sheet item current other liabilities.

The provisions are generally based on the past events and commitments arising thereon. The timing of the cash outflows cannot be determined for all provisions with certainty.

16. Government grants
In 2018, Borealis received government grants mainly for investments in a new production plant in Belgium and for research and development activities. During the year, EUR 4,746 thousand (EUR 9,133 thousand) were recognised in the income statement.

The EU ETS emission allowances for the year 2018 were granted in 2018 and amounted to EUR 52,191 thousand (2017: EUR 26,353 thousand for the year 2017). The increase compared to the previous year was mainly driven by the market price increase. The carrying value as per 31 December 2018 of the grant relating to these certificates is EUR 0 thousand (EUR 0 thousand).

17. Financial risk management

The Group is exposed through its operations to the following financial risks:
– Foreign currency risk (note 23)
– Interest rate risk (note 24)
– Liquidity risk (note 21)
– Commodity risk (note 25)
– Credit risk (note 27)

The objective of financial risk management is to support the core businesses of Borealis. It operates within the framework of the treasury procedure. Borealis aims to minimise effects related to foreign exchange, interest rate, liquidity, credit, commodity price and refinancing risks.

The use of any financial instrument is based on actual or forecasted underlying commercial or financial cash flows or identified risks as defined in the policy. Note 22 provides an overview of the financial instruments used by Borealis to manage risk. Financial risk management is centralised in the Treasury and Funding department.

For more details regarding the risk management process in general, please see the Group Management Report.

18. Financial income/expenses

EUR thousand	2018	2017
Interest income from		
Cash and loans granted	3,021	1,280
Derivatives	3,046	3,073
Interest expenses to		
Finance institutions	-35,694	-41,731
Derivatives	-3,258	-3,328
Capitalised interest	1,866	3,832
Exchange adjustments, net	6,843	-16,244
Other financial expenses and income	-7,293	-12,630
Financial income/expenses	**-31,469**	**-65,748**

19. Gains and losses from financial instruments

EUR thousand	2018	2017
Recognised in profit or loss		
Change in fair value of commodity derivative contracts	31,221	-6,138
Change in fair value of cross currency interest rate swaps	-399	0
Change in fair value of foreign exchange derivative contracts	253	-1,871
Change in fair value other investments and listed securities [1]	1,186	n/a
Realised result on commodity derivative contracts	-18,688	-4,765
Realised result on cross currency interest rate swaps	223	0
Realised result on foreign exchange derivative contracts	100	664
Realised result other investments and listed securities [1]	590	n/a
Financial assets and liabilities at fair value through profit or loss	**14,486**	**-12,110**
Amounts recognised in profit or loss for realised cash flow hedges		
Commodity derivative contracts	49,246	14,434
Interest derivative contracts	-437	-507
Foreign exchange derivative contracts	-9,921	-3,010
Hedging instruments	**38,888**	**10,917**
Interest income from available for sale assets [1]	n/a	80
Available for sale financial assets [1]	**n/a**	**80**
Interest income on cash and loans granted	3,021	1,280
Foreign exchange effects on cash and deposits	-14,888	-3,397
Foreign exchange effects on receivables	14,117	-26,582
Impairment losses on receivables	-654	-1,216
Financial assets at amortised cost [2]	**1,596**	**-29,915**
Interest expenses and other expenses on financial liabilities	-44,761	-54,441
Foreign exchange effects on financial liabilities	7,660	15,195
Financial liabilities at amortised cost	**-37,101**	**-39,246**

1) Before 1 January 2018, these financial instruments were classified as available-for-sale in accordance with IAS 39. From 1 January 2018, these financial instruments are classified as FVPL in accordance with IFRS 9. // 2) Before 1 January 2018 measurement category "loans and receivables" (under IAS 39)

The amounts recognised in the income statement for the commodity and foreign exchange derivative contracts are booked as a correction to the net sales or mainly production costs that are being hedged. The amounts recognised in the income statement for interest rate derivatives and the foreign exchange effects on non-derivative financial assets and liabilities are reported as part of the financial income and expenses. Impairment losses on receivables are reported in sales and distribution costs.

EUR thousand	2018	2017
Recognised in other comprehensive income		
Commodity derivative contracts designated as cash flow hedge	93,180	29,844
Interest derivative contracts outstanding designated as cash flow hedge	-58	89
Foreign exchange derivative contracts designated as cash flow hedge	-11,419	11,734
Foreign exchange effects on receivables part of net investment in foreign operations	-8,210	-699
Foreign exchange effects on financial liabilities and derivatives designated as hedge of investment in foreign operations	-8,079	14,779
Available for sale financial assets [1)]	n/a	-294
Amounts reclassified to the income statement		
Commodity derivative contracts	-49,246	-14,434
Interest derivative contracts	437	507
Foreign exchange derivative contracts	9,921	3,010
Total recognised in other comprehensive income	**26,526**	**44,536**

1) Before 1 January 2018, these financial instruments were classified as available-for-sale in accordance with IAS 39. From 1 January 2018, these financial instruments are classified as FVPL in accordance with IFRS 9.

20. Loans and borrowings

The composition of interest-bearing loans and borrowings (current and non-current debt) at year-end was as follows:

EUR thousand		2018						
Due		**Total**	Term loans	Bonds	Utilised uncommitted facilities	Export credits	Finance leases	Unutilised committed facilities
After	5 years	**361,615**	61,615	300,000				
Within	5 years	**37,574**	37,574					
	4 years	**71,616**	71,536				80	
	3 years	**154,513**	154,436				77	1,000,000
	2 years	**101,160**	101,071				89	
Total non-current debt		**726,478**	**426,232**	**300,000**	**0**	**0**	**246**	**1,000,000**
Total current debt		**651,145**	300,098	125,000	59,901	166,011 [1)]	135	0
Total debt		**1,377,623**	**726,330**	**425,000**	**59,901**	**166,011**	**381**	**1,000,000**

1) Borealis maintains EUR 166,011 thousand in export credit facilities (these facilities were fully drawn at 31 December 2018). These facilities are economically evergreen in nature, but include a one year notice for cancellation.

EUR thousand		2017						
Due		**Total**	Term loans	Bonds	Utilised uncommitted facilities	Export credits	Finance leases	Unutilised committed facilities
After	5 years	**95,807**	95,807					
Within	5 years	**69,004**	68,924				80	
	4 years	**155,118**	155,041				77	930,000
	3 years	**101,138**	101,049				89	70,000
	2 years	**423,161**	298,032	125,000			129	
Total non-current debt		**844,228**	**718,853**	**125,000**	**0**	**0**	**375**	**1,000,000**
Total current debt		**174,936**	174,544	0	0	0	392	166,011 [2)]
Total debt		**1,019,164**	**893,397**	**125,000**	**0**	**0**	**767**	**1,166,011**

2) Borealis maintains EUR 166,011 thousand in export credit facilities (these facilities were fully undrawn at 31 December 2017). These facilities are economically evergreen in nature, but include a one year notice for cancellation.

The carrying amounts of the loans and borrowings developed as follows:

EUR thousand	2018	2017
Current and non-current total		
As of 1 January	1,019,164	1,413,000
Current loans obtained	425,911	130,810
Non-current loans obtained	628	729
Non-current bonds obtained	300,000	0
Current loans repayments	-374,601	-297,137
Current bonds repayments	0	-200,000
Exchange adjustments non-cash	6,907	-28,116
Finance lease repayments	-386	-122
As of 31 December	**1,377,623**	**1,019,164**

The Group's financing mainly comprises of committed credit lines (largely syndicated), term loans, bonds, private placements and export credits. The loans and borrowings are all measured at amortised cost.

In July 2012, a 7-year bond was issued with a nominal value of EUR 125,000 thousand and a fixed interest rate of 4.000%. In December 2018, Borealis issued an inaugural rated corporate 7-year bond with a nominal value of EUR 300,000 thousand and an interest rate of 1.750%. The bonds are listed at the secondary market of the Vienna Stock Exchange.

Borealis continues to maintain a strong liquidity position through its EUR 1 billion fully committed revolving credit facility of which EUR 1 billion remained undrawn at the end of December 2018 and by terming out its debt through diverse funding channels. The Syndicated Revolving Credit Facility is based on a five-year tenor with two one-year extension options at lenders' discretion. This facility was originally refinanced in 2014 and extended in 2016 the second and final time by one additional year, with the participating relationship banks consenting to a final maturity date of 2021.

In 2018 the debt position of Borealis increased by EUR 358,000 thousand. Due to a decreased cash position, Borealis increased its net debt by EUR 515,000 thousand, which resulted in a gearing ratio of 20%.

In 2018, Borealis concluded R&D financing agreements with the Österreichische Forschungsförderungsgesellschaft mbH in Austria with the total amount of EUR 508 thousand (EUR 671 thousand).

At year-end, the Group had committed credit facilities of EUR 1,166,011 thousand (EUR 1,166,011 thousand). Thereof the OeKB Export Credit Facilities of EUR 166,011 thousand are fully drawn in 2018.

Under Borealis' funding strategy a very diversified financing portfolio was implemented over the last years with the aim to maintain a balanced maturity profile. In addition, Borealis is pursuing a long-term relationship approach with a larger group of international financing institutions that support the company in funding and risk management transactions.

In November 2018, S&P Global Ratings issued a BBB+ rating with stable outlook for Borealis. This constitutes the first public rating for the company, which has been successfully active in a wide range of financing markets and instruments over the last ten years and has built up a robust and well diversified funding portfolio. While Borealis' long-term banking partners and investors have always appreciated the strong credit quality of the company, the public rating provides a very good additional evaluation basis for all external stakeholders.

Based on this, combined with a strong balance sheet and the recently obtained strong public rating, Borealis has a wide variety of attractive funding instruments at hand (such as Bonds, German Schuldschein, US Private Placement, Foreign Investment Financings, bank loans and other) to meet the financing needs in 2019 and beyond. Borealis will continue to explore several suitable financial instruments fitting its strategy. With its at year end undrawn EUR 1 billion syndicated revolving credit facility, Borealis has a significant committed liquidity headroom at its disposition.

Some loan agreements have financial covenants based on maintaining certain gearing and solvency ratios.

Currency Mix **EUR thousand**	**2018**	**%**	**2017**	**%**
USD	187,732	14%	179,653	18%
EUR	1,151,245	84%	798,028	78%
GBP	33,449	2%	33,888	3%
BRL	5,197	0%	7,595	1%
Interest bearing total	**1,377,623**	**100%**	**1,019,164**	**100%**

21. Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty in meeting the obligations associated with its financial liabilities. Liquidity is managed on a daily basis to ensure the Group's liquidity requirement and is covered at all times with the lowest possible level of working capital. For further details on loans and borrowings see note 20.

The following are the contractual maturities of non-derivative financial liabilities, including forecasted interest payments, and derivative financial liabilities. All carrying values exclude the outstanding interest accruals at year-end. Cash outflows are reported with a negative sign.

EUR thousand	2018						
Non-derivative financial liabilities	Carrying value	**Contractual cash flows**	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
EUR floating rate loans	-272,195	**-274,014**	-13,673	-17,443	-30,779	-46,108	-166,011
EUR fixed rate loans	-818,768	**-885,890**	-7,775	-350,629	-74,444	-120,252	-332,790
EUR financial leases	-381	**-381**	0	-135	-89	-157	0
USD fixed rate loans	-187,732	**-227,909**	-5,311	-61,194	-10,899	-100,621	-49,884
GBP fixed rate loans	-33,449	**-42,881**	-1,572	-1,572	-3,144	-36,593	0
BRL floating rate loans	-4,986	**-5,381**	-977	-917	-1,787	-1,700	0
BRL fixed rate loans	-211	**-230**	-41	-40	-77	-72	0
Trade payables	-852,525	**-852,525**	-852,525	0	0	0	0
Uncommitted facilities	-59,901	**-59,901**	-59,901	0	0	0	0
Total	**-2,230,148**	**-2,349,112**	**-941,775**	**-431,930**	**-121,219**	**-305,503**	**-548,685**

EUR thousand	2017						
Non-derivative financial liabilities	Carrying value	**Contractual cash flows**	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
EUR floating rate loans	-152,987	**-155,912**	-13,908	-34,108	-30,826	-77,070	0
EUR fixed rate loans	-644,274	**-694,380**	-19,863	-125,732	-353,417	-169,235	-26,133
EUR financial leases	-767	**-767**	0	-392	-130	-245	0
USD fixed rate loans	-179,653	**-228,265**	-5,082	-5,082	-63,642	-69,331	-85,128
GBP fixed rate loans	-33,888	**-46,629**	-1,593	-1,593	-3,185	-40,258	0
BRL floating rate loans	-7,281	**-8,380**	-1,185	-1,140	-2,162	-3,893	0
BRL fixed rate loans	-314	**-352**	-48	-47	-90	-167	0
Trade payables	-797,849	**-797,849**	-797,849	0	0	0	0
Total	**-1,817,013**	**-1,932,534**	**-839,528**	**-168,094**	**-453,452**	**-360,199**	**-111,261**

EUR thousand	2018						
Derivative financial liabilities/outflow	Carrying value	**Contractual cash flows**	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
Interest rate swaps	-611	**-688**	-190	-131	-234	-133	0
Cross currency interest rate swaps	-3,645	**-45,183**	-1,485	-1,485	-2,969	-39,245	0
Foreign exchange contracts	-4,704	**-197,186**	-135,892	-61,294	0	0	0
Feedstock contracts	-61,021	**-61,995**	-46,803	-14,596	-596	0	0
Electricity contracts	-15,613	**-15,596**	-8,161	-6,871	-471	-93	0
Natural gas hedges	-1,817	**-1,815**	-1,475	-340	0	0	0
Total	**-87,411**	**-322,464**	**-194,006**	**-84,717**	**-4,270**	**-39,471**	**0**

EUR thousand	2017						
Derivative financial liabilities/outflow	Carrying value	**Contractual cash flows**	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
Interest rate swaps	-992	**-1,088**	-240	-184	-381	-283	0
Cross currency interest rate swaps	-3,246	**-48,153**	-1,485	-1,484	-2,969	-42,215	0
Foreign exchange contracts	-3,488	**-312,564**	-199,444	-113,120	0	0	0
Feedstock contracts	-46,177	**-46,903**	-21,670	-25,189	-44	0	0
Electricity contracts	-12,052	**-12,024**	-4,314	-3,471	-3,987	-252	0
Natural gas hedges	-947	**-946**	-410	-408	-128	0	0
Total	**-66,902**	**-421,678**	**-227,563**	**-143,856**	**-7,509**	**-42,750**	**0**

EUR thousand	2018					
Off balance sheet liabilities	Contractual cash flows	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
Contingencies provided by the entity	-56,674	-19,968	-1,498	-314	-1,150	-33,744
Operating lease payables	-258,158	-22,725	-19,924	-35,576	-70,383	-109,550
Capital commitments – tangible assets	-131,763	-107,662	-19,373	-4,105	-623	0
Commitments in joint ventures	-152,805	-76,402	0	-76,403	0	0

EUR thousand	2017					
Off balance sheet liabilities	Contractual cash flows	6 months or less	6–12 months	1–2 years	2–5 years	More than 5 years
Contingencies provided by the entity	-56,395	-396	-1,780	-20,071	-314	-33,834
Operating lease payables	-218,507	-17,287	-16,198	-27,546	-62,650	-94,826
Capital commitments – tangible assets	-104,958	-71,847	-24,728	-7,744	-639	0

For details with respect to off balance sheet liabilities, please see note 5, note 8, note 29 and note 32.

22. Derivative financial instruments

The Group is exposed to certain risks relating to its ongoing business operations. The primary risks managed using derivative instruments are foreign currency risk, interest rate risk and commodity price risk.

The Group's risk management strategy and how it is applied to manage risk are explained in note 17 and in the Group Management Report.

Hedge accounting policies of the Group

Hedges are generally placed in the legal entities where the underlying exposure exists. When certain conditions are met, Borealis applies IFRS 9 hedge accounting principles in order to recognise the offsetting effects on profit or loss of changes in the fair value of the hedging instrument and the hedged items. Borealis has the following hedge accounting relationships:

- Cash flow hedging – foreign exchange (see notes 22 and 23)
- Cash flow hedging – interest rate (see notes 22 and 24)
- Cash flow hedging – commodity (feedstock, electricity, natural gas - see notes 22 and 25)
- Net investment hedging in a foreign operation (see note 23)

Derivatives are only used for economic hedging purposes and not as speculative investments. However, where derivatives are not designated as hedging instruments, they are classified as fair value through profit or loss (FVPL) for accounting purposes.

The Group is holding the following derivative financial instruments:

EUR thousand	2018	2017
Non-current assets		
Feedstock contracts – cash flow hedges	0	67
Electricity contracts – cash flow hedges	27,686	18,878
Natural gas – cash flow hedges	0	250
Total non-current derivative financial instrument assets (Other receivables and other assets)	**27,686**	**19,195**

EUR thousand	2018	2017
Current assets		
Foreign exchange contracts – FVPL	493	409
Foreign exchange contracts – cash flow hedges	2,078	2,091
Feedstock contracts – FVPL	27,328	28,799
Feedstock contracts – cash flow hedges	27,377	12,239
Electricity contracts – cash flow hedges	80,452	26,321
Natural gas – cash flow hedges	796	781
Total current derivative financial instrument assets (Other receivables and other assets)	**138,524**	**70,640**

EUR thousand	2018	2017
Non-current liabilities		
Cross currency interest rate swaps – FVPL	3,645	3,246
Interest rate swaps – cash flow hedges	611	992
Feedstock contracts – cash flow hedges	596	44
Electricity contracts – cash flow hedges	566	4,245
Natural gas – cash flow hedges	0	128
Total non-current derivative financial instrument liabilities (Other liabilities)	**5,418**	**8,655**

EUR thousand	2018	2017
Current liabilities		
Foreign exchange contracts – FVPL	240	509
Foreign exchange contracts – cash flow hedges	4,464	2,979
Feedstock contracts – FVPL	4,916	36,852
Feedstock contracts – cash flow hedges	55,509	9,280
Electricity contracts – cash flow hedges	15,047	7,807
Natural gas – cash flow hedges	1,817	819
Total current derivative financial instrument liabilities (Other liabilities)	**81,993**	**58,246**

Impact of hedging on equity

The Group's hedging reserve disclosed in Consolidated Statement of Changes in Equity relates to the following hedging instruments:

Hedging reserve EUR thousand	2018					
	Cash flow hedge – foreign currency	Cash flow hedge – interest rate	Cash flow hedge – feedstock	Cash flow hedge – electricity	Cash flow hedge – natural gas	Hedging reserve total
As of 1 January	-666	-743	2,195	24,860	63	25,709
Change in fair value of hedging instrument recognised in OCI	-11,419	-58	-14,341	107,649	-128	81,703
Reclassified from OCI to profit or loss	9,921	437	0	-48,269	-977	-38,888
Reclassified to the cost of non-financial items	0	0	-17,308	0	0	-17,308
Deferred tax	375	-95	7,912	-14,845	276	-6,377
As of 31 December	**-1,789**	**-459**	**-21,542**	**69,395**	**-766**	**44,839**

Hedging reserve (under IAS 39) EUR thousand	2017					
	Cash flow hedge – foreign currency	Cash flow hedge – interest rate	Cash flow hedge – feedstock	Cash flow hedge – electricity	Cash flow hedge – natural gas	Hedging reserve total
As of 1 January	-15,342	-1,190	-2,442	18,494	-491	-971
Change in fair value of hedging instrument recognised in OCI	11,734	89	5,137	24,012	695	41,667
Reclassified from OCI to profit or loss	3,010	507	380	-14,858	44	-10,917
Deferred tax	-68	-149	-880	-2,788	-185	-4,070
As of 31 December	**-666**	**-743**	**2,195**	**24,860**	**63**	**25,709**

Reserve for unrealised exchange gains/losses EUR thousand	2018	2017
As of 1 January	100,873	573,415
Foreign currency revaluation of the USD loans, designated in net investment hedge	-8,079	14,779
Foreign currency revaluation of the net foreign operations	123,869	-478,751
Deferred tax	4,075	-8,570
As of 31 December	**220,738**	**100,873**

At 31 December 2018, the Group held the following cash flow and net investment hedging relationships. The table shows the profile of the timing (maturity) of the nominal amount of the hedging instruments.

	2018									
	Unit	**Total**	3 months or less	3–6 months	6–12 months	1–2 years	2–3 years	3–4 years	4–5 years	More than 5 years
Foreign exchange contracts	EUR thousand	**302,904**	94,137	70,827	137,940	0	0	0	0	0
USD Loans, designated in net investment hedge	USD thousand	**215,000**	0	0	64,000	5,000	0	56,000	40,000	50,000
Interest rate swaps	EUR thousand	**46,154**	0	0	0	0	0	0	46,154	0
Feedstock contracts	tonnes	**253,812**	100,901	112,396	34,515	6,000	0	0	0	0
Electricity contracts	GWh	**5,611**	767	716	1,416	1,853	858	0	0	0
Natural gas contracts	GWh	**520**	520	0	0	0	0	0	0	0

As of 31 December 2018 and 31 December 2017, no fair value hedges existed.

Offsetting

The Group enters in the normal course of business into derivative transactions under International Swaps and Derivatives Association (ISDA) master netting agreements. The ISDA agreements do not meet the criteria for offsetting in the statement of financial position. This is because the Group does not have any currently legally enforceable right to offset recognised amounts.

The following table presents the recognised financial instruments (derivatives) that are subject to enforceable master netting arrangements but not offset. The column 'Net amount' shows the impact on the Group's balance sheet if all set-off rights were exercised.

EUR thousand	2018		
	Amounts presented in the balance sheet	Related amounts not set off in the balance sheet	Net amount
Financial assets			
Derivative financial instruments	166,210	-67,623	98,587
Financial liabilities			
Derivative financial instruments	87,411	-67,623	19,788

EUR thousand	2017		
	Amounts presented in the balance sheet	Related amounts not set off in the balance sheet	Net amount
Financial assets			
Derivative financial instruments	89,835	-54,295	35,540
Financial liabilities			
Derivative financial instruments	66,901	-54,295	12,606

We have no offsetting of financial assets and financial liabilities in the balance sheet. There is no further netting potential for non-derivative financial instruments.

23. Foreign currency risk

Foreign exchange risk is the risk that the fair value or future cash flows of an exposure will fluctuate because of changes in foreign exchange rates.

Borealis incurs foreign currency risk on sales, purchases and borrowings that are denominated in currencies other than EUR. The most significant currencies in terms of hedged amounts are USD and SEK.

The foreign exchange risk related to short-term commercial cash flows are hedged and limits for long-term foreign exchange exposures are established. Based on regular cash flow forecasts, Borealis hedges its foreign exchange exposure coming from forecasted sales and purchases, and from committed investment projects.

Borealis hedges forecasted positions denominated in foreign currencies. At any time, Borealis may also hedge its long-term commercial exposures up to a predefined level and duration. Borealis normally hedges the currency positions using forward exchange contracts. Borealis classifies its foreign exchange forward contracts which are hedging a forecasted currency position as cash flow hedges and states them at fair value.

Changes in the fair value of forward exchange contracts that hedge monetary assets and liabilities in foreign currencies and the forward legs of currency swaps used in liquidity management, for which no hedge accounting is applied, are recognised in the income statement. Both changes in the fair value of the forward contracts and the foreign exchange gains and losses relating to the monetary items are recognised as part of the financial expenses. There is an economic relationship between the hedged

items and the hedging instruments as the critical terms of the foreign exchange contracts match the terms of the expected highly probable forecast transactions (i.e., notional amount, exchange rate and expected payment date). Hence the Group has established a hedge ratio of 1:1. To test the hedge effectiveness, the Group uses the Dollar Offset method and compares the changes in the fair value of the hedging instruments against the changes in fair value of the hedged items attributable to the hedged risks.

Hedge ineffectiveness may arise from:
- Differences in the timing of the cash flows of the hedged items and the hedging instruments
- Different indexes (and accordingly different curves) linked to the hedged risk of the hedged items and hedging instruments
- The counterparties' credit risk differently impacting the fair value movements of the hedging instruments and hedged items
- Changes to the forecasted amount of cash flows of hedged items
- Change in fair value of the cross currency basis spread element of the forward exchange contracts ('ccbs')

Borealis does not recognise any ineffectiveness in profit or loss due to immateriality.

Hedges of net investments in foreign operations

A foreign currency exposure arises from the Group's long-term net investment in its subsidiaries, associated companies and joint ventures in foreign currencies. Foreign exchange translation differences relating to these net investments are recognised in other comprehensive income. Borealis has hedged part of its investment in an associated company which has USD as its functional currency, by designating certain external loans in USD as hedges of the Group's investments in its foreign operations. The hedged risk in the net investment hedge is the risk of a weakening USD against the EUR that will result in a reduction in the carrying amount of the Group's net investment in the associated company in USD. The EUR/USD impact on the valuation of the loan is recognised in other comprehensive income.

To assess hedge effectiveness, the Group determines the economic relationship between the hedging instrument and the hedged item by comparing changes in the carrying amount of the debt that is attributable to a change in the spot rate with changes in the investment in the foreign operation due to movements in the spot rate (the dollar-offset method). The Group's policy is to hedge the net investment only to the extent of the debt principal.

There is an economic relationship between the hedged item and the hedging instrument as the net investment creates a translation risk that will match the foreign exchange risk on the USD borrowing. The Group has established a hedge ratio of 1:1 as the underlying risk of the hedging instrument is identical to the hedged risk component. The hedge ineffectiveness will arise when the amount of the investment in the foreign associated company becomes lower than the amount of the borrowing.

Effects of hedge accounting on the financial position and performance

The effects of the foreign currency related hedging instruments on the Group's financial position and performance are as follows:

Foreign exchange forwards **EUR thousand**	**2018**	**2017**
Carrying amount (asset – current)	2,078	2,091
Carrying amount (liability – current)	4,464	2,979
Line item in the balance sheet where the hedging instrument is included	Other receivables and other assets / other liabilities	Other receivables and other assets / other liabilities
Total notional amount	kEUR 302,904	kEUR 283,406
Hedge ratio	1:1	1:1
Hedged rate for the year	EUR/USD 1.14–1.26 EUR/SEK 10.28–10.67	EUR/USD 1.13–1.23 EUR/SEK 9.52–9.80
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	-11,419	11,734
Change in value of the hedged item used for measuring ineffectiveness for the period	-11,419	11,734
Cash flow hedge reserve (net of deferred taxes)	-1,789	-666
Total hedging gain (+) or loss (-) recognised in OCI	-11,419	11,734
Hedge ineffectiveness recognised in profit or loss	0	0
Amount reclassified from hedging reserve to profit or loss	9,921	3,010
Line item in the statement of profit or loss affected by the reclassification	Net sales and Production costs	Net sales and Production costs

Net investment in foreign operations **EUR thousand**	**2018**	**2017**
Carrying amount (liability)	187,732	179,653
Line item in the balance sheet where the hedging instrument is included	Loans and borrowings	Loans and borrowings
Total notional amount	kUSD 215,000	kUSD 215,000
Hedge ratio	1:1	1:1
Weighted average hedged rate for the year	n/a	n/a
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	-8,079	14,779
Change in value of the hedged item used for measuring ineffectiveness for the period	-8,079	14,779
Reserve for unrealised exchange gains/losses (net of deferred taxes)	-14,907	-8,848
Balances remaining in the reserve for unrealised exchange gains/losses from hedging relationships for which hedge accounting is no longer applied	2,740	n/a
Total hedging gain (+) or loss (-) recognised in OCI	-8,079	14,779
Hedge ineffectiveness recognised in profit or loss	0	0

Sensitivity analysis

The Group's exposure to the risk of changes in foreign exchange rates relates primarily to the Group's operating activities, invoicing mainly in EUR and purchasing raw materials mainly in USD, and the Group's net investments in associated companies mainly denominated in USD. The sensitivity analysis has been prepared on the basis that the financial instruments in foreign currencies and all other parameters, apart from changes in foreign exchange rates themselves (foreign exchange rate against EUR), are constant and on the basis of hedge designations in place at 31 December 2018. The Group assumes that the prevailing polyolefin market pricing mechanisms reduce the foreign exchange risk in practice.

As of 31 December 2018, the Group shows a net payable (prior year: net receivable) position of USD and a net payable position of SEK (prior year: net payable).

Effect in EUR thousand	Profit for the year		Equity	
	Strenghtening +1%	Weakening -1%	Strenghtening +1%	Weakening -1%
31 December 2018				
USD	-335	274	-3,753	3,070
SEK	-700	573	1,575	-1,289
USD – including net investment	-335	274	39,057	-31,956
SEK – including net investment	-700	573	7,235	-5,919
31 December 2017				
USD	1,666	-1,633	-2,916	2,858
SEK	-1,068	1,047	1,491	-1,462
USD – including net investment	1,666	-1,633	31,065	-30,450
SEK – including net investment	-1,068	1,047	6,951	-6,814

24. Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

Borealis adopts a policy of managing its interest rate risk through the modified duration of its loan portfolio. Average modified duration is allowed to deviate within a predefined range. Overall, Borealis' risk management strategy according to its financial procedures is to protect against adverse interest rate movements and to obtain predictable interest costs. As of 31 December 2018, Borealis had one outstanding interest rate swap. Borealis classifies this interest rate swap as a cash flow hedge and states it at fair value. The purpose of this hedge is to fix the cash outflows related to the floating rate loans.

The Group enters into interest rate swaps that have matching critical terms as the hedged item, such as reference rate, reset dates, payment dates, maturities and notional amount.

The hedge ratio is based on a swap with a nominal amount in EUR and a receive leg of a rate index. This results in a 1:1 hedge ratio (100%). Since loan and hedging instrument are fully aligned and cannot be changed unless termination, the hedge ratio will not change and hence, does not result in any imbalances that would create hedge ineffectiveness.

Hedge effectiveness will be assessed by comparing changes in the fair value of the hedging instrument to changes in the fair value of a hypothetical derivative. The terms of the hypothetical derivative are as such that its fair value changes offset exactly the changes in the fair value of the hedged

item. The terms are identical to the hedging instrument but assuming no counterparty risk. Hence, the hedge is expected to be highly effective.

As a potential source of ineffectiveness, a significant change in the credit risk of either Borealis or counterparty is identified. Group treasury monitors the company and the bank's credit risk for significant adverse changes.

Hedge ineffectiveness may arise from:
- Differences in the timing of the cash flows of the hedged items and the hedging instruments
- The counterparties' credit risk impacting the fair value movements of the hedging instruments and hedged items differently

Borealis has one cross currency interest rate swap that is classified as fair value through profit or loss and stated at fair value.

Of total interest-bearing debt, approximately 80% (84%) have a fixed interest rate, and 20% (16%) are based on a floating interest rate before applying interest rate swaps. After applying interest rate swaps, approximately 83% (90%) have a fixed interest rate and 17% (10%) are based on a floating interest rate. The floating interest rates are set by adding a spread to the reference rates (mainly EURIBOR and LIBOR).

Effects of hedge accounting on the financial position and performance

The effects of the interest rate related to hedging instruments on the Group's financial position and performance are as follows:

Interest rate swap **EUR thousand**	**2018**	**2017**
Carrying amount (liability – non-current)	611	992
Line item in the balance sheet where the hedging instrument is included	Other liabilities	Other liabilities
Total notional amount	kEUR 46.154	kEUR 57.692
Hedge ratio	1:1	1:1
Weighted average hedged rate for the year	0,55%	0,55%
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	-58	89
Change in value of the hedged item used for measuring ineffectiveness for the period	-58	89
Cash flow hedge reserve (net of deferred taxes)	-459	-743
Total hedging gain (+) or loss (-) recognised in OCI	-58	89
Hedge ineffectiveness recognised in profit or loss	0	0
Amount reclassified from hedging reserve to profit or loss	437	507
Line item in the statement of profit or loss affected by the reclassification	Financial expenses	Financial expenses

Effective interest rate

In respect of interest-bearing financial liabilities, the following table indicates their effective interest rates at the balance sheet date.

EUR thousand	2018		2017	
	Effective interest rate	Carrying value	Effective interest rate	Carrying value
EUR floating rate loans	0.5%	272,195	0.6%	152,987
Effect on interest rate swaps	0.0%		0.0%	
EUR fixed rate loans	2.6%	878,668	3.1%	644,274
EUR financial leases	2.7%	381	2.7%	767
USD fixed rate loans	5.7%	187,732	5.7%	179,653
GBP fixed rate loans	9.4%	33,449	9.4%	33,888
BRL floating rate loans	7.6%	4,987	7.9%	7,281
BRL fixed rate loans	6.0%	211	6.0%	314
Total interest bearing debt		**1,377,623**		**1,019,164**

Sensitivity analysis

In managing interest rate risks, Borealis aims to reduce the impact of short-term fluctuations on its earnings. Over the long term, permanent changes in interest rates will have an impact on consolidated earnings. The sensitivity analysis has been prepared on the basis of the amount of net debt, floating interest rates of the debt and the derivatives as per 31 December 2018.

Effect in EUR thousand	Profit for the year		Equity	
	Strenghtening +1%	Weakening -1%	Strenghtening +1%	Weakening -1%
31 December 2018				
Interest rate	-1,739	1,753	205	-206
31 December 2017				
Interest rate	-2,998	3,017	1,319	-1,326

25. Commodity risk

Commodity price risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in commodity prices. Borealis states its inventories at the lower of cost and net realisable value, taking into account future price developments. Commodity price risk is managed by the feedstock and energy traders and monitored by Trade Support and Risk Management.
The commodity price risk exposure is calculated by a trading software. On a daily basis, Trade Support and Risk Management take a snapshot of all data in the trading system and retrieve the daily position from the system. The position is analysed and compared with the trading limits. Traders use financial derivatives (i.e. financial swaps) in order to stay within the limits.

Feedstock contracts

Borealis hedges some of its forecasted feedstock purchases and finished product sales through feedstock swaps. Cash flow hedge accounting is applied to those derivatives, except for the derivatives that are used to limit the price risk on the inventory held for immediate consumption. Part of the contracts has been designated as cash flow hedge for future sales and purchases. Contracts not designated as cash flow hedges are classified as fair value through profit or loss and stated at fair value.

Electricity contracts

Borealis hedges its forecasted electricity purchases using electricity swaps. Cash flow hedge accounting has been applied for these contracts.

Natural gas contracts

Borealis hedges its forecasted natural gas purchases using natural gas swaps. Cash flow hedge accounting has been applied for these contracts.

There is an economic relationship between the hedged items and the hedging instruments as the terms of the commodity forward contracts match the terms of the expected highly probable forecast transactions (i.e., notional amount and expected payment date). The Group has established a hedge ratio of 1:1 for the hedging relationships as the underlying risk of the commodity forward contracts are identical to the hedged risk components. To test the hedge effectiveness, the Group compares the changes in the fair value of the hedging instruments against the changes in fair value of the hedged items attributable to the hedged risks.

The hedge ineffectiveness can arise from:
- Differences in the timing of the cash flows of the hedged items and the hedging instruments
- Changes to the forecasted amount of cash flows of hedged items and hedging instruments

Effects of hedge accounting on the financial position and performance

The effects of the commodity related hedging instruments on the Group's financial position and performance are as follows:

Feedstock contracts **EUR thousand**	**2018**	**2017**
Carrying amount (asset – non-current)	0	67
Carrying amount (asset – current)	27,377	12,239
Carrying amount (liability – non-current)	596	44
Carrying amount (liability – current)	55,509	9,280
Line item in the balance sheet where the hedging instrument is included	Other receivables and other assets / other liabilities	Other receivables and other assets / other liabilities
Total notional amount	253,812 tonnes	318,000 tonnes
Hedge ratio	1:1	1:1
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	-14,341	5,137
Change in value of the hedged item used for measuring ineffectiveness for the period	-14,341	5,137
Cash flow hedge reserve (net of deferred taxes)	-21,542	2,195
Total hedging gain (+) or loss (-) recognised in OCI	-14,341	5,137
Hedge ineffectiveness recognised in profit or loss	0	0
Amount reclassified from hedging reserve to profit or loss	0	380
Line item in the statement of profit or loss affected by the reclassification	Production costs	Production costs
Amount reclassified from hedging reserve to the cost of non-financial items	-17,308	0

Electricity contracts **EUR thousand**	**2018**	**2017**
Carrying amount (asset – non-current)	27,686	18,878
Carrying amount (asset – current)	80,452	26,321
Carrying amount (liability – non-current)	566	4,245
Carrying amount (liability – current)	15,047	7,807
Line item in the balance sheet where the hedging instrument is included	Other receivables and other assets / other liabilities	Other receivables and other assets / other liabilities
Total notional amount	5,611 GWh	6,919 GWh
Hedge ratio	1:1	1:1
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	107,649	24,012
Change in value of the hedged item used for measuring ineffectiveness for the period	107,649	24,012
Cash flow hedge reserve (net of deferred taxes)	69,395	24,860
Total hedging gain (+) or loss (-) recognised in OCI	107,649	24,012
Hedge ineffectiveness recognised in profit or loss	0	0
Amount reclassified from hedging reserve to profit or loss	-48,269	-14,858
Line item in the statement of profit or loss affected by the reclassification	Production costs	Production costs

Natural gas contracts EUR thousand	2018	2017
Carrying amount (asset – non-current)	0	250
Carrying amount (asset – current)	796	781
Carrying amount (liability – non-current)	0	128
Carrying amount (liability – current)	1,817	819
Line item in the balance sheet where the hedging instrument is included	Other receivables and other assets / other liabilities	Other receivable and other assets / other liabilities
Total notional amount	520 GWh	307 GWh
Hedge ratio	1:1	1:1
Change in fair value of the hedging instrument used for measuring ineffectiveness for the period	-128	695
Change in value of the hedged item used for measuring ineffectiveness for the period	-128	695
Cash flow hedge reserve (net of deferred taxes)	-766	63
Total hedging gain (+) or loss (-) recognised in OCI	-128	695
Hedge ineffectiveness recognised in profit or loss	0	0
Amount reclassified from hedging reserve to profit or loss	-977	44
Line item in the statement of profit or loss affected by the reclassification	Production costs	Production costs

Sensitivity analysis

The sensitivity analysis has been prepared for all derivative financial instruments on the basis that the amount of the feedstock held and all other parameters besides commodity prices (in particular sales prices) are constant and on the basis of the hedge designations in place at 31 December 2018. The Group assumes that the prevailing market pricing mechanisms reduce the commodity price risk in practice.

Effect in EUR thousand	Profit for the year		Equity	
	Strenghtening +1%	Weakening -1%	Strenghtening +1%	Weakening -1%
31 December 2018				
Feedstock - Naphtha	861	-861	-1,451	1,451
Feedstock - Other	-38	38	516	-516
Electricity	0	0	2,805	-2,805
Natural gas	0	0	114	-114
31 December 2017				
Feedstock - Naphtha	367	-367	-358	358
Feedstock - Other	-16	16	356	-356
Electricity	0	0	2,767	-2,767
Natural gas	0	0	55	-55

26. Factoring

Borealis has a factoring programme under which the Company sells certain trade receivables to external parties. The Group does not retain any major interest in the trade receivables and thus accordingly derecognises the receivables sold. Borealis continues to administer the relationship with debtors and has to transfer all receivables collected and previously sold to the purchaser under this programme. Several reserves are deducted from the nominal value of the sold receivables and will be released upon transfer of the respective collected receivables to the purchaser.

The total nominal value sold to the purchaser under the factoring programme in the current year amounted to EUR 3,393,056 thousand (EUR 3,234,020 thousand). As of 31 December 2018, receivables worth EUR 326,441 thousand (EUR 312,091 thousand) were sold to the purchaser under the factoring programme. The reserves deducted from the nominal value of the sold receivables amounted to EUR 26,695 thousand (EUR 25,763 thousand) as of 31 December 2018 and are included in other current receivables. During the year, expenses amounting to EUR 3,658 thousand (EUR 2,612 thousand) were recognised in the income statement for the factoring programme.

27. Credit risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Group is exposed to credit risk from its operating activities (primarily trade receivables) and from its financing activities, including deposits with banks and financial institutions and other financial instruments.

Trade receivables credit risk (incl. associated companies)

A credit control procedure is in place. Credit risk is monitored on an ongoing basis. Credit risk of a specific counterparty is the sum of all outstanding trade receivables and is compared to the individual credit limit allocated to that counterparty. Credit limit evaluations are performed on a daily basis and all customers are at least reviewed annually. Approval and escalation limits are used to authorise the available credit limits to customers. For some trade receivables, the Group may obtain security in the form of guarantees (bank and parental guarantees), letters of credit or credit insurance, which can be called upon if the counterparty is in default under the terms of the agreement. At the balance sheet date, Borealis has no large concentrations of credit risks representing more than 10% of the total outstanding trade receivables. No credit risk is retained in trade receivables sold under the factoring programme (note 26).

The maximum exposure to credit risk for trade receivables at the reporting date by geographic region was:

EUR thousand	2018	2017
EU Countries	444,397	375,372
Non-EU in Europe	103,999	89,581
USA	39,262	35,297
Middle East and Asia	88,711	88,464
Other regions	91,887	61,549
Total	**768,256**	**650,263**

The maximum exposure to credit risk for trade receivables at the reporting date by type of segment and group of customers was:

EUR thousand	2018	2017
Polyolefins	461,036	414,375
Base Chemicals	261,222	220,334
Non-Allocated	45,998	15,554
Total	**768,256**	**650,263**

All customers are classified in risk categories based on criteria such as their financial strength, ownership, size, payment behaviour and country of domicile.

The categories include:
- Risk category 1: preferred customers, customers with excellent credit standing and financial strength
- Risk category 2: medium-size customers with good reputations
- Risk category 3: financially sound customers, but with history of slow payments
- Risk category 4: customers with repetitively slow payments or with a weak financial situation
- Risk category 5: customers paying cash in advance
- Risk category 6: customers with secured payment terms (L/C or other)
- Risk category 7: all new customers

Comparative amounts for 2017 represent the allowance account for impairment losses under IAS 39.

EUR thousand	2018	2017
Risk category 1	101,277	147,991
Risk category 2	68,638	154,946
Risk category 3	158,519	86,662
Risk category 4	388,249	211,889
Risk category 5	1,976	249
Risk category 6	58,613	61,777
Risk category 7	4,778	41
Total gross carrying amount	**782,050**	**663,555**
Less loss allowance	-13,794	-13,292
Total	**768,256**	**650,263**

Other credit risk

The Group is also exposed to credit risk relating to other financial assets. The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets disclosed in note 28.

The table below shows the maximum exposure to credit risk (gross carrying amount) for financial assets that are measured at amortised cost and subject to a 12-month expected credit loss.

	Credit Risk		Loss allowance recognised	
EUR thousand	**2018**	**2017**	**2018**	**2017**
Cash and cash equivalents	72,347	229,062	0	0
Debt investments carried at amortised cost				
Loans granted	97,625	9,408	0	0
Deposits and other receivables	88,436	190,927	0	0

Borealis' cash balances are deposited with relationship banks or are invested in liquid securities with counterparties that fulfil a certain predefined credit rating threshold. Counterparty credit risks for long-term financial treasury transactions are managed by mandatory credit limits and external credit rating requirements or have undergone a special approval process. A real time treasury system is used to monitor exposures and risk limits. The Executive Board does not expect any counterparty to fail to meet any of its current obligations.

Impairment of financial assets

The Group has three types of financial assets that are subject to the expected credit loss model:

– trade receivables (incl. associated companies and joint ventures, excluding trade receivables at FVPL) and contract assets
– cash and cash equivalents
– debt investments carried at amortised cost

At each reporting date, the Group assesses whether financial assets carried at amortised cost are credit-impaired. For trade receivables the Group applies the IFRS simplified approach to measuring expected credit losses, which uses a lifetime expected loss allowance. To measure the expected credit losses, trade receivables and contract assets have been grouped based on shared credit risk characteristics and the days past due.

On that basis, the loss allowance as at 31 December 2018 and 1 January 2018 (on adoption of IFRS 9) was determined as follows for trade receivables (incl. associated companies and joint ventures, excl. trade receivables at FVPL).

EUR thousand	**31 December 2018**			
	Weighted average loss rate	**Gross carrying amount**	**Loss allowance**	**Credit-impaired**
Current (not past due)	0.05%	650,988	-314	No
Past due 0–30 days	0.03%	72,557	-23	No
Past due 31–90 days	2.79%	4,798	-134	No
Past due 91–180 days	16.68%	1,840	-307	No
Past due over 180 days	87.76%	14,831	-13,016	Yes
Total		**745,014**	**-13,794**	

EUR thousand	1 January 2018			
	Weighted average loss rate	Gross carrying amount	Loss allowance	Credit-impaired
Current (not past due)	0.03%	548,776	-165	No
Past due 0–30 days	0.03%	56,130	-17	No
Past due 31–90 days	3.02%	2,421	-73	No
Past due 91–180 days	13.99%	2,237	-313	No
Past due over 180 days	99.46%	13,415	-13,342	Yes
Total		**622,979**	**-13,910**	

The loss allowance for trade receivables past due over 180 days consists mainly of credit-impaired trade receivables.

The identified impairment loss for contract assets was immaterial.

The movement in the loss allowance in respect of trade receivables during the year was as follows. Comparative amounts for 2017 represent the allowance account for impairment losses under IAS 39.

EUR thousand	2018		2017
	Lifetime ECL - not credit-impaired	Lifetime ECL – credit-impaired	
Balance as of 1 January under IAS 39	0	13,292	13,371
Adjustment on initial application of IFRS 9	618	0	0
Balance as of 1 January under IFRS 9	**618**	**13,292**	**13,371**
Impairment loss recognised	777	179	1,216
Written off	0	-413	-1,145
Reversal of impairment	-618	-41	-150
Balance as of 31 December	**777**	**13,017**	**13,292**

The trade receivables at the end of the year 2018 increased compared to the amounts at the end of the year 2017 due to higher net sales in the last quarter 2018 versus the same period in 2017. In 2018, the Group did not renegotiate the terms of trade receivables. Generally, trade receivables written off during 2018 are not subject to enforcement activity.

The total guarantees received (bank guarantees and parental guarantees) in respect of the trade receivables amounted to EUR 360,620 thousand (EUR 249,680 thousand). The Group does not require collateral in respect of trade receivables. The Group does not have trade receivables for which no loss allowance is recognised because of collateral or guarantees received.

While cash and cash equivalents are also subject to the impairment requirements of IFRS 9, the identified impairment loss was immaterial. All of the entity's other debt investments at amortised cost are considered to have low credit risk, and the loss allowance recognised during the period is therefore limited to 12 months expected losses. On that basis, the loss allowance was immaterial.

Comparative information under IAS 39

An analysis of the credit quality of trade receivables that were neither past due nor impaired and the ageing of trade receivables that were past due but not impaired as at 31 December 2017 shows the following results.

Risk categories 2017 **EUR thousand**	**Gross**	**Impairment**
Risk category 1	147,991	0
Risk category 2	154,946	0
Risk category 3	86,662	0
Risk category 4	211,889	-13,292
Risk category 5	249	0
Risk category 6	61,777	0
Risk category 7	41	0
Total	**663,555**	**-13,292**

Ageing of receivables 2017 **EUR thousand**	**Gross**	**Impairment**
Not past due	586,616	0
Past due 0–30 days	58,911	0
Past due 31–90 days	2,403	0
Past due 91–120 days	671	0
Past due 121–180 days	1,569	0
Past due over 180 days	13,385	-13,292
Total	**663,555**	**-13,292**

28. Fair values

The following table shows the carrying values and fair values of financial assets and financial liabilities, including their levels in the fair value hierarchy. It does not include fair value information for financial assets and financial liabilities not measured at fair value if the carrying value is a reasonable approximation of fair value.

EUR thousand	2018			2017		
Assets	**Carrying value**	**Fair value**	**Fair value hierarchy level**	**Carrying value**	**Fair value**	**Fair value hierarchy level**
Other investments						
Other investments	29,984	29,984	3	35,985	n/a	n/a
at fair value through profit or loss [1]	**29,984**			**35,985**		
Trade receivables						
Trade receivables	691,014			574,021		
thereof at amortised cost	**653,978**			**574,021**		
thereof at fair value through profit or loss	**37,036**			**0**		
Receivables from associated companies and joint ventures						
Receivables from associated companies and joint ventures	77,242			76,242		
at amortised cost	**77,242**			**76,242**		
Cash and cash equivalents						
Cash	48,876			63,023		
Other current deposits	23,471			166,039		
at amortised cost	**72,347**			**229,062**		
Other receivables and other assets (current and non-current)						
Listed securities	12,058	12,058	1	12,095	12,095	1
at fair value through profit or loss [1]	**12,058**			**12,095**		
Derivative financial instruments for which hedge accounting is applied	138,389	138,389	2	60,626	60,626	2
Hedging instruments	**138,389**			**60,626**		
Derivative financial instruments for which hedge accounting is not applied	27,821	27,821	2	29,208	29,208	2
at fair value through profit or loss	**27,821**			**29,208**		
Loans granted	97,625	121,477	2	9,408	12,407	2
Deposits and other receivables	88,436			190,927		
at amortised cost	**186,061**			**200,335**		
Other non financial assets	335,438	n/a	n/a	240,284	n/a	n/a
Total other receivables and other assets (current and non-current)	**699,767**			**542,548**		

1) Before 1 January 2018, these financial instruments were classified as available-for-sale in accordance with IAS 39. From 1 January 2018, these financial instruments are classified as FVPL in accordance with IFRS 9.

EUR thousand	2018			2017		
Liabilities	**Carrying value**	**Fair value**	**Fair value hierarchy level**	**Carrying value**	**Fair value**	**Fair value hierarchy level**
Loans and borrowings (current and non-current)						
Floating rate loans and borrowings	277,182	278,705	2	160,268	163,839	2
Fixed rate loans and borrowings	1,100,441	1,149,746	2	858,896	927,480	2
at amortised cost	**1,377,623**			**1,019,164**		
Trade payables						
Trade payables	852,525			797,849		
at amortised cost	**852,525**			**797,849**		
Other liabilities (current and non-current)						
Derivative financial instruments for which hedge accounting is applied	78,610	78,610	2	26,295	26,295	2
Hedging instruments	**78,610**			**26,295**		
Derivative financial instruments for which hedge accounting is not applied	8,801	8,801	2	40,607	40,607	2
at fair value through profit or loss	**8,801**			**40,607**		
Contingent consideration	2,000	2,000	3	3,983	3,983	3
Interest accruals on loans and borrowings	10,283			10,064		
Other financial liabilities	57,624			120,018		
at amortised cost	**69,907**			**134,065**		
Other non-financial liabilities	233,979	n/a	n/a	188,865	n/a	n/a
Total other liabilities (current and non-current)	**391,297**			**389,832**		

The Group measures fair values using the following fair value hierarchy that reflects the significance of the inputs used in making the measurements:

Level 1: Quoted market price (unadjusted) in an active market for an identical instrument.

Level 2: Valuation techniques based on observable inputs, either directly or indirectly. This category includes instruments valued using quoted market prices in active markets for similar instruments, quoted prices for identical or similar instruments in less active markets, or other valuation techniques where all significant inputs are directly or indirectly observable from market data.

Level 3: Valuation techniques using significant unobservable inputs. This category includes all instruments where the valuation technique includes inputs not based on observable

data and the unobservable inputs have a significant effect on the instruments' valuation. This category includes instruments that are valued based on quoted prices for similar instruments where significant unobservable adjustments or assumptions are required to reflect differences between the instruments.

In 2018, no transfers between the different levels took place.

Other investments

Other investments consist mainly of subsidiaries which are not consolidated on materiality basis. The equity value of the other investments is assumed to equal other investments' fair value. If the equity decreases (increases), the fair value decreases (increases) accordingly.

The following table presents the changes in other investments (level 3 items):

EUR thousand	2018
Balance as of 1 January	35,985
Gain on re-measurement [1]	8,909
Adjusted balance as of 1 January	**44,894**
Investments and acquisitions	50
Disposals [2]	-16,184
Fair value changes recognised in income statement (financial expenses)	1,224
Balance as of 31 December	**29,984**

1) included in retained earnings due to initial application of IFRS 9 // 2) a subsidiary became material for consolidation

Trade and other receivables and assets

The fair value of trade and other receivables and assets and receivables from associated companies is estimated to equal the nominal values less impairments (= carrying value).

The carrying value of deposits and other receivables is not materially different from their fair value.

The fair value of loans granted is calculated based on the present value of future principle and interest cash flows discounted at the market rate of interest adjusted for the respective counterparty credit risk at the reporting date.

Derivatives

The fair value of forward exchange contracts is estimated by discounting the difference between the contractual forward price and the current forward price for the residual maturity of the contract using market interest rates at the reporting date.

The fair value of interest rate swaps is estimated by discounting estimated future cash flows based on the terms and maturity of each contract and using market interest rates for a similar instrument at the reporting date. The credit quality of counterparties did not lead to a significant change in the fair values.

The fair value of commodity derivative contracts is estimated by discounting the difference between current forward price and contractual forward price.

Other non-financial assets and liabilities

Other non-financial assets and liabilities are shown solely for reconciliation purposes.

Non-derivative financial liabilities

Fair value for non-current and current loans and borrowings is calculated based on the present value of future principal and interest cash flows discounted at the market rate of interest adjusted for Borealis' credit risk at the reporting date. All fair values are excluding the outstanding interest accruals as at 31 December 2018.

The fair value of trade and other payables is estimated to equal the carrying value.

Contingent consideration

The contingent consideration for the acquisition of Borealis Plastomers was re-measured by EUR 17 thousand to EUR 4,000 thousand in 2018 through the income statement (administration costs) and fully paid in April 2018.

The fair value of the contingent consideration for the acquisition of Ecoplast amounts to EUR 2,000 thousand as of 31 December 2018. It has been estimated at the maximum amount based on the management forecast for defined project targets related to the ongoing construction of a new production line. The forecasted project budget, the start-up date of the line and the production quantity are the most significant valuation inputs for the determination of the contingent consideration liability. An overrun of the project budget would result in a lower fair value of the contingent consideration liability. The fair value would also be lowered if the new production line was only put at location and condition necessary to be capable of operating in the manner intended by management after 30 June 2019. Thirdly, the fair value would be lowered if production of in-spec material at nameplate capacity was only achieved after 31 October 2019. An underrun of project budget, an early start-up of the line or an accelerated production ramp-up to nameplate capacity would not lead to an increase of the fair value of the liability.

29. Operating leases

The Group has operating leases relating to certain operational assets. Total rental during the non-terminable periods amounts to:

EUR thousand	2018	2017
1 year	42,649	33,485
1–5 years	105,959	90,196
Thereafter	109,550	94,826
Total	**258,158**	**218,507**
Operational lease payments during current year	42,395	41,083

The Group leases mainly machinery, means of transport, real estate and logistics facilities under operating leases. The majority of the lease contracts typically run for an initial period of three to five years, with an option to renew the lease after that date. The disclosed amount for the total rental during the non-terminable periods is mainly based on one logistics contract with an initial term until 2026 and a renewal option for five years thereafter.

Borealis has no intention to terminate contracts for which contractual termination payments would materially affect the Group's financial position.

30. Other income

In 2018, other income consisted fully of profits from the sale of emission rights. In 2017, other income consisted mainly of the release of contingent consideration in relation to business combinations amounting to EUR 4,040 thousand. Additionally, other income comprised earn-out proceeds related to the sale of technology from previous periods amounting to EUR 1,950 thousand, income from a short-term sublease amounting to EUR 1,900 thousand and a EUR 257 thousand fair value gain from the step-up acquisition of Feboran EOOD.

31. Transactions with related parties

EUR thousand	2018									
	Goods and Services						Financing			
	Purchases from	Sales to	Receivables from	Contract assets from	Payables to	Contract liabilities to	Loans receivable	Loans payable	Interest received	Interest paid
Associated companies and joint ventures	337,105	358,737	77,242	0	69,758	0	95,125	0	1,477	0
Parent company	0	0	0	0	0	0	0	0	0	0
Companies with significant influence	1,433,965	47,927	6,517	0	142,585	0	0	0	0	0
Key management personnel	0	0	0	0	0	0	0	0	0	0
Other related parties	86,750	82,057	6,225	6,537	7,678	0	0	0	0	0
	1,857,820	**488,721**	**89,984**	**6,537**	**220,021**	**0**	**95,125**	**0**	**1,477**	**0**

EUR thousand	2017									
	Goods and Services						Financing			
	Purchases from	Sales to	Receivables from	Contract assets from	Payables to	Contract liabilities to	Loans receivable	Loans payable	Interest received	Interest paid
Associated companies and joint ventures	297,839	383,105	76,242	0	54,220	0	6,908	0	207	0
Parent company	0	0	0	0	0	0	0	0	0	0
Companies with significant influence	1,127,617	42,422	5,618	0	141,019	0	0	0	0	0
Key management personnel	0	0	0	0	0	0	0	0	0	0
Other related parties	42,606	10,229	4,388	0	2,417	0	0	0	0	0
	1,468,062	**435,756**	**86,248**	**0**	**197,656**	**0**	**6,908**	**0**	**207**	**0**

The sales to associated companies and joint ventures mainly include sales of finished goods and services. Purchases from companies with significant influence mainly relate to purchase of feedstock and utilities from OMV group companies at market rates. Purchases from associates mainly include purchases of finished goods produced in Borouge and sold in Europe. Payables to related parties are included in the trade payables. For details with respect to remuneration of key management personnel please see note 13. For details on contract assets please see note 2. For details on loans receivable see note 9.

32. Commitments and contingent liabilities

Legal claim contingencies

While the Group has certain lawsuits pending, it is the Executive Board's opinion that these proceedings will not materially affect the Group's financial position.

Financial guarantees

The Group has EUR 56,674 thousand (EUR 56,395 thousand) of financial guarantees outstanding by the end of the year. These mainly consist of commercial bank and parental guarantees which serve as assurance that Borealis will make payment to a beneficiary in the event that it fails to fulfil its financial obligation. The guarantees have various maturity dates. The outstanding amount by the end of the year is equal to the maximum credit risk exposure.

Furthermore, the Group is subject to numerous national and local tax laws and regulations concerning its sales and environmental activities. These laws and regulations may require the Group to issue guarantees to respective authorities for the Group's payment obligations. These guarantees have been provided to the extent the authorities have requested them.

The Group has committed several rental guarantees mainly for its own rental agreements. The Group will be responsible if the tenant or Borealis itself fails to pay rent or causes any damages to the property. No material losses are expected to arise from such contingent liabilities.

Next to the contractual commitments for property, plant and equipment (see note 5) and operating lease obligations (see note 29), Borealis has a contractual obligation for additional capital contributions (see note 8).

33. Subsequent events

On 30 January 2019, Borealis concluded an amendment of the member loan agreement with the related party Bayport Polymers LLC. Out of this amendment Borealis took over a commitment from Novealis Holdings LLC to grant a loan to Bayport Polymers LLC with a total value of USD 700,000 thousand. Until the signature date of this annual report, Bayport has already drawn USD 117,191 thousand.

34. Subsidiaries included in the consolidated accounts

Company name	Country, City	Currency	Issued share capital	Percentage of shares owned
Borealis AG				
▪ Borealis Sverige AB	Sweden, Stenungsund	SEK	1,063,000	100
▪▪ Borealis AB	Sweden, Stenungsund	SEK	65,000,000	100
▪▪▪ Etenförsörjning i Stenungsund AB	Sweden, Stenungsund	SEK	5,000,000	80
▪▪▪ Munkeröd 1:72 [1)]	Sweden, Stenungsund	SEK	0	100
▪▪▪ Borealis Group Services AS	Norway, Bamble	NOK	1,000,000	100
▪ Borealis Polymers Oy	Finland, Porvoo	EUR	108,321,644	100
▪ Borealis Technology Oy	Finland, Porvoo	EUR	43,728,860	100
▪ Borealis Financial Services N.V.	Belgium, Mechelen	EUR	99,189,000	100
▪ Borealis Polymers N.V.	Belgium, Beringen	EUR	61,500	100
▪▪ Borealis Kallo N.V.	Belgium, Kallo	EUR	40,575,176	100
▪▪ Borealis Antwerpen N.V.	Belgium, Zwijndrecht	EUR	11,277,054	100
▪ Borealis Plastomers B.V.	The Netherlands, Geleen	EUR	1	100
▪ Rosier S.A.	Belgium, Moustier	EUR	2,550,000	77
▪▪ Rosier Netherlands B.V.	The Netherlands, Sas Van Gen	EUR	11,141,000	77
▪▪ Rosier France S.A.S.	France, Beaumetz-Les-Loge	EUR	516,600	77
▪ Borealis Brasil S.A.	Brazil, Itatiba	BRL	94,743,513	80
▪ Borealis Poliolefinas da América do Sul Ltda [1)]	Brazil, Itatiba	BRL	16,000	100
▪ Borealis UK Ltd	UK, Manchester	GBP	15,000	100
▪ Borealis Funding Company Ltd [2)]	Isle of Man, Ramsey	EUR	10	100
▪ Borealis Insurance A/S (captive insurance company)	Denmark, Copenhagen	DKK	52,795,000	100
▪ Borealis France S.A.S.	France, Courbevoie	EUR	269,477,216	100
▪▪ Borealis Services S.A.S. [1)]	France, Courbevoie	EUR	5,000	100
▪▪ Borealis Produits et Engrais Chimiques du Rhin S.A.S.	France, Ottmarsheim	EUR	20,010,000	100
▪▪ Borealis L.A.T France S.A.S.	France, Courbevoie	EUR	752,500	100
▪▪ Borealis Chimie S.A.S.	France, Courbevoie	EUR	70,000,000	100
▪▪▪ AGRIPRODUITS S.A.S. [1)]	France, Courbevoie	EUR	952,000	100
▪▪▪ STOCKAM G.I.E. [1)]	France, Grand-Quevilly	EUR	0	100
Borealis Química España S.A.	Spain, Barcelona	EUR	60,101	100
▪ Borealis Chile SpA [1)]	Chile, Santiago de Chile	CLP	4,000,000	100
▪ Borealis Chimie S.A.R.L. [1)]	Morocco, Casablanca	MAD	219,986	100
▪ Borealis Colombia S.A.S. [1)]	Colombia, Bogota	COP	84,000,000	100

1) Excluded from the consolidation due to immateriality (individual and in total) // 2) In dissolution

Company name	Country, City	Currency	Issued share capital	Percentage of shares owned
■ Borealis s.r.o. [1]	Czech Republic, Prague	CZK	500,000	100
■ Borealis Polska Sp. Z.o.o. [1]	Poland, Warsaw	PLN	50,000	100
■ Borealis Polymere GmbH	Germany, Burghausen	EUR	18,407,000	100
■ Borealis Polyolefine GmbH	Austria, Schwechat	EUR	46,783,928	100
■ Borealis Plasticos S.A. de C.V. [1]	Mexico, Mexico City	MXN	50,000	100
■ Borealis Asia Ltd [1]	Hong Kong, Hong Kong	HKD	500,000	100
■ Borealis Italia S.p.A.	Italy, Monza	EUR	7,570,600	100
■ Borealis Compounds Inc.	US, Port Murray	USD	2,000	100
■■ Borealis US Holdings LLC	US, Port Murray	USD	0	100
■ Borealis Plastik ve Kimyasal Maddeler Ticaret Limited Sirketi [1]	Turkey, Istanbul	TRL	10,000	100
■ Borealis RUS LLC [1]	Russia, Moscow	RUB	3,600,000	100
■■ Borealis Agrolinz Melamine GmbH	Austria, Linz	EUR	70,000,000	100
■ Borealis Agrolinz Melamine Deutschland GmbH	Germany, Wittenberg	EUR	500,000	100
■ Borealis L.A.T GmbH	Austria, Linz	EUR	35,000	100
■■ Borealis L.A.T d.o.o. Beograd	Serbia, Belgrade	RSD	63,282,000	100
■■ Borealis L.A.T Hungary Kft. [1]	Hungary, Budapest	HUF	500,000,000	100
■■ Borealis L.A.T Bulgaria EOOD [1]	Bulgaria, Sofia	BGN	10,000	100
■■ Borealis L.A.T Hrvatska d.o.o. [1]	Croatia, Klisa	HRK	21,200	100
■■ Borealis L.A.T Czech Republic spol. s.r.o. [1]	Czech Republic, Budweis	CZK	2,000,000	100
■■ Borealis L.A.T Romania s.r.l. [1]	Romania, Bucharest	RON	18,392,320	100
■■ Borealis L.A.T Slovakia s.r.o. [1]	Slovakia, Chotin	EUR	497,909	100
■■ Borealis L.A.T Greece Single Member P.C. [1]	Greece, Athens	EUR	50,000	100
■ mtm plastics GmbH	Germany, Niedergebra	EUR	26,000	100
■ mtm compact GmbH	Germany, Fürstenwalde	EUR	26,000	100
■ Feboran EOOD	Bulgaria, Sofia	BGN	35,203,895	100
■■ Feboran Prim EOOD	Bulgaria, Sofia	BGN	5,000	100
■ Borealis Chemicals ZA (Pty) Ltd [1]	South Africa, Germiston	ZAR	750,000	100
■ Borealis USA Inc.	US, Port Murray	USD	0	100
■■ Borealis BoNo Holdings LLC	US, Wilmington	USD	0	100
■ Borealis Argentina SRL [1]	Argentina, Buenos Aires	ARS	100,000	100
■ Borealis Digital Studio BVBA [1]	Belgium, Zaventem	EUR	20,000	100
■ Ecoplast Kunststoffrecycling GmbH	Austria, Wildon	EUR	50,000	100
■ Borealis Denmark ApS [1]	Denmark, Copenhagen	DKK	223,398	100

1) Excluded from the consolidation due to immateriality (individual and in total) // 2) In dissolution

35. Auditor's fees

The following fee information relates to the auditors of the Group (including their related networking firms):

EUR thousand	2018	2017
Audit of Borealis AG's subsidiaries	1,062	1,066
Audit of consolidated and standalone financial statements of Borealis AG	297	263
Other assurance services	307	207
Tax consulting services	594	610
Other services	124	262
Total	**2,384**	**2,408**

The following fees for 2018 relate to the Group auditor, PwC Wirtschaftsprüfung GmbH, Vienna, Austria: audit of Borealis AG's subsidiaries amounting to EUR 226,100 (EUR 170,893), audit of consolidated and standalone financial statements of Borealis AG amounting to EUR 296,600 (EUR 262,671), other assurance services amounting to EUR 265,740 (EUR 156,000) and other services amounting to EUR 3,000 (EUR 54,236).

36. Executive Board and Supervisory Board

Executive Board

Alfred Stern (Member and appointed as Chairman as per 2 July 2018), Mark Garrett (Chairman until 2 July 2018), Mark Tonkens, Markku Korvenranta (Member until 30 September 2018), Martijn Arjen van Koten, Philippe Roodhooft, Lucrèce De Ridder (Member since 1 January 2019)

Supervisory Board

Suhail Mohamed Faraj Al Mazrouei (Chairman), Rainer Seele (Deputy Chairman), Musabbeh Al Kaabi, Khalifa Al Suwaidi, Manfred Leitner

Vienna, 15 February 2019

Executive Board:

Alfred Stern
Chief Executive

Mark Tonkens
Chief Financial Officer

Martijn Arjen van Koten

Philippe Roodhooft

Lucrèce De Ridder

Statement of the Executive Board according to § 124 (1) Z 3 Vienna Stock Exchange Act

We confirm to the best of our knowledge that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group as required by the applicable accounting standards and that the group management report gives a true and fair view of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties the company faces.

Vienna, 15 February 2019
Executive Board:

Alfred Stern
Chairman of the Executive Board

Mark Tonkens
Member of the Executive Board

Martijn Arjen van Koten
Member of the Executive Board

Philippe Roodhooft
Member of the Executive Board

Lucrèce De Ridder
Member of the Executive Board

Report of the Supervisory Board of Borealis AG

In the year under review, the Supervisory Board received a comprehensive overview of the activities of the Management of Borealis AG and performed its duties and exercised its powers under the law and the articles of association in five plenary sessions.

The Management informed the Supervisory Board regularly, in a timely fashion and comprehensively, both in writing and verbally, on all the relevant issues of business development as well as on the state and strategy of the company and the important group companies, including risk conditions and risk management.

The Management of Borealis AG submitted the financial statements as of 31 December 2018, including the management report, and the consolidated financial statements as of 31 December 2018, including the group management report, and the consolidated non-financial report to the Supervisory Board and explained it thoroughly.

The financial statements of Borealis AG were drawn up in accordance with the applicable provisions of the (Austrian) Business Code (Unternehmensgesetzbuch), and PwC Wirtschaftsprüfung GmbH issued the unqualified audit opinion (uneingeschränkter Bestätigungsvermerk) on the financial statements.

Further, the consolidated financial statements of Borealis AG were drawn up in accordance with the International Financial Reporting Standards (IFRS), and PwC Wirtschaftsprüfung GmbH, issued the unqualified audit opinion (uneingeschränkter Bestätigungsvermerk) on the consolidated financial statements.

The (consolidated) financial statements documents, the consolidated non-financial report and the audit reports were submitted to the Audit Committee and the Supervisory Board in due time. After a thorough examination and discussion by the Audit Committee and by the Supervisory Board, the Supervisory Board reached the final agreement that no material objections shall be raised, and the drawn up financial statements, the management report, the proposal for the appropriation of the retained earnings, the proposal for the appointment of the auditor for the Financial Year 2019, the consolidated financial statements, the group management report and the consolidated non-financial report were approved/acknowledged.

Vienna, 21 February 2019

Suhail Mohamed Faraj Al Mazrouei
Chairman of the Supervisory Board

Annex

Table of Figures

About the Non-financial Report

The 2018 Annual Report contains non-financial information published in line with the Global Reporting Initiative (GRI) and has been prepared in accordance with the GRI Standards: Core option, as well as the Austrian law for non-financial reporting (Nachhaltigkeits- und Diversitätsverbesserungs-gesetz – NaDiVeG).

The report covers information for the period from 1 January 2018 to the 31 December 2018.

Borealis applies an annual reporting cycle.

The last report was published for the year 2017 in March 2018.

The GRI Content Index below outlines where specific GRI reporting elements and indicators are addressed in the report.

Scope of the Non-financial Information

The data presented in the report are consolidated at Group level. Non-financial data are collected for those activities where Borealis is the operator, or where Borealis has a stake of more than 50% and exerts controlling influence.

Further Exceptions

- Health, Safety and Environmental reporting includes data from all production locations but excludes Borealis L.A.T warehouses.
- Environmental reporting excludes data from mtm plastics and mtm compact GmbH.
- Human Resources excludes employee data from Rosier S.A., Rosier Netherlands B.V., and Rosier France S.A.S, as Borealis is legally not allowed to document this data.
- Procurement & Transportation Polyolefins (PO): Borealis Brasil S.A., Borealis Poliolefinas da América do Sul Ltda and Borealis Compounds Inc. are excluded from PO procurement data and from CO_2 emissions arising from shipment of PO products.
- Procurement & Transportation Fertilizer (FE): reporting includes the flows of Rosier S.A., Rosier Netherlands B.V. and Rosier France S.A.S products sold by Borealis L.A.T, but excludes all other flows of Rosier S.A., Rosier Netherlands B.V. and Rosier France S.A.S. The reporting scope of PO and FE will be further aligned in the next report.

The exclusions listed above are not of significant importance with regard to the Group's total non-financial performance. However, Borealis will work on further increasing the scope of its non-financial reporting in future.

Changes to the Previous Report

There have been no major changes of the material topics and in the reporting method. The non-financial report has been subject to an internal quality review. External assurance is currently not taking place, but options for an external audit are being evaluated.

For questions regarding sustainability or social responsibility at the Borealis Group, please contact → sustainability@borealisgroup.com.

GRI Content Index

GRI Standard	Disclosures		Page	Reported fully/partially	Note
GRI 102: General Disclosures 2016	**102-1**	Name of the organisation	20	●	
	102-2	Activities, brands, products, and services	23, 37–40	●	
	102-3	Location of headquarters	20	●	
	102-4	Location of operations	20–21	●	
	102-5	Ownership and legal form	4, 20	●	
	102-6	Markets served	20, 37–40	●	
	102-7	Scale of the organisation	5, 20–21, 9, 120	●	
	102-8	Information on employees and other workers	97	●	
	102-9	Supply chain	64–69	●	
	102-10	Significant changes to the organisation and its supply chain	8–11, 16–19	●	
	102-11	Precautionary Principle or approach	76	●	
	102-12	External initiatives	33, 63	●	
	102-13	Membership of associations	30, 33	●	
	102-14	Statement from senior decision-maker	16–19	●	
	102-16	Values, principles, standards, and norms of behaviour	15, 85–86, 90–92	●	
	102-18	Governance structure	85–88	●	
	102-40	List of stakeholder groups	28–29	●	
	102-41	Collective bargaining agreements	96	●	
	102-42	Identifying and selecting stakeholders	28	●	
	102-43	Approach to stakeholder engagement	24, 28–29	●	
	102-44	Key topics and concerns raised	26–27, 30–32 76–77	●	
	102-45	Entities included in the consolidated financial statements	197–198	●	
	102-46	Defining report content and topic boundaries	24–25	●	
	102-47	List of material topics	26	●	
	102-48	Restatements of information	205	●	
	102-49	Changes in reporting	205	●	
	102-50	Reporting period	205	●	
	102-51	Date of most recent report	205	●	
	102-52	Reporting cycle	205	●	
	102-53	Contact point for questions regarding the report	205	●	
	102-54	Claims of reporting in accordance with the GRI Standards	205	●	
	102-55	GRI Content Index	206–211	●	
	102-56	External assurance	205	●	

GRI Standard	Disclosures		Page	Reported fully/partially	Note
Ethics & Compliance					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	90–93	●	
	103-2	The management approach and its components	90–93	●	
	103-3	Evaluation of the management approach	90–93	●	
GRI 205: Anti-corruption 2016	**205-2**	Communication and training about anti-corruption policies and procedures	92–93	●	The Ethics Policy, incl. a chapter on anti-corruption, was communicated to all employees. Borealis provided specific anti-corruption trainings to almost 300 dedicated employees from our Sales, Procurement, Legal and eligible project teams. 100% of the members of the Borealis Executive Board and 100% of the members of the Borealis Supervisory Board (SVB) have received training about anti-corruption policies and procedures.
	205-3	Confirmed incidents of corruption and actions taken	92	●	No confirmed or suspected incidents of corruption.
GRI 206: Anti-competitive Behaviour 2016	**206-1**	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	92	●	
GRI 412: Human Rights Assessment 2016	**412-2**	Employee training on human rights policies or procedures	92–93	●	Approx. 1,700 employees received training in human rights which corresponds to ca 25% of our total staff. 700 out of 1,700 trainings were e-learning trainings. About 1,000 employees received in-person trainings, which result in a total of 20 hours.
GRI 415: Public Policy 2016	**415-1**	Political contributions	30	●	
GRI 419: Socioeconomic Compliance 2016	**419-1**	Non-compliance with laws and regulations in the social and economic area	92	●	
Materials and Circular Economy					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	46–49, 64–65	●	
	103-2	The management approach and its components	46–49, 64–69	●	
	103-3	Evaluation of the management approach	49	●	
GRI 301: Materials 2016	**301-1**	Materials used by weight or volume	65–67	◗	Currently restricted availability of information for certain categories of material.

GRI Standard	Disclosures		Page	Reported fully/partially	Note
Energy					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	50–52	●	
	103-2	The management approach and its components	50–52	●	
	103-3	Evaluation of the management approach	50–52	●	
GRI 302: Energy 2016	**302-1**	Energy consumption within the organisation	51	●	Quantitative data on energy consumption by source cannot be published due to reasons of commercial confidentiality. The amount of fuel used is insignificant. The split of energy consumption is based on energy sources as well as on consumers, as reflected in the data management systems of Borealis. Energy consumption is converted into primary energy as follows: fuels (including natural gas): 100% conversion to energy, factor 1; steam: 90% boiler efficiency, factor 1.11; electricity: 40% efficiency, factor 2.5. energy efficiency, which is the number of MWh of primary energy divided by total production tonnes, can then be calculated using the following formula: see footnote 1.
	302-3	Energy intensity	51, 53	●	Energy efficiency is the number of MWh of primary energy divided by total production tonnes. [1] Basis for the energy intensity indicator: production volume of all production plants; energy consumption of the whole organisation, including infrastructure, R&D, offices; includes compensation for production and energy consumption that happens outside Borealis but is necessary to include to have one consistent value chain through the Group and the KPI. This avoids distortion when Borealis has more output from fully integrated sites, for example a site where Borealis does not own the cracker.
	302-4	Reduction of energy consumption	51–53	●	
Water					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	78	●	
	103-2	The management approach and its components	78–80	●	
	103-3	Evaluation of the management approach	78–80	●	
GRI 303: Water 2016	**303-1**	Water withdrawal by source	80, 84	●	
	303-2	Water sources significantly affected by withdrawal of water	–	●	Zero water sources significantly affected.

1) Energy efficiency can be calculated using the formula: $\text{Energy KPI} \left[\frac{\text{MWh}}{\text{t}}\right] = \frac{\text{Fuels (MWh)} + 1.11 \times \text{Steam (MWh)} + 2.5 \times \text{Electricity (MWh)}}{\text{Total plant production (t)}}$

GRI Standard	Disclosures		Page	Reported fully/partially	Note
Emissions					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	78–79	●	
	103-2	The management approach and its components	78–79	●	
	103-3	Evaluation of the management approach	78–79	●	
GRI 305: Emissions 2016	**305-1**	Direct (Scope 1) GHG emissions	53–54	●	There are no biogenic CO_2 emissions. The consolidation is based on operational control. The GWP rates are CO_2 = 1 CO_2eq, N_2O = 298 CO_2eq
	305-6	Emissions of ozone-depleting substances (ODS)	80	●	
	305-7	Nitrogen oxides (NOX), sulphur oxides (SOX), and other significant air emissions	79–80	●	POP and HAP are not relevant for Borealis.
Effluents and Waste					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	78–79, 81	●	
	103-2	The management approach and its components	78–79, 81	●	
	103-3	Evaluation of the management approach	78–79, 81	●	
GRI 306: Effluents and Waste 2016	**306-2**	Waste by type and disposal method	81–83	●	The category "Other treatment" covers, for example, land treatment, biological treatment and physico-chemical treatment.
Process Safety					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	59	●	
	103-2	The management approach and its components	59–62	●	
	103-3	Evaluation of the management approach	59–62	●	
GRI G4: Oil & Gas Sector Supplement	**OG13**	Number of process safety events, by business activity	62	●	
Supply Chain Management					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	64	●	
	103-2	The management approach and its components	68–69	●	
	103-3	Evaluation of the management approach	68–69	●	
GRI 308: Supplier Environmental Assessment 2016	**308-1**	New suppliers that were screened using environmental criteria	69	●	
GRI 414: Supplier Social Assessment 2016	**414-1**	New suppliers that were screened using social criteria	69	●	

GRI Standard	Disclosures		Page	Reported fully/partially	Note
Employee Engagement and Development					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	94–96	●	
	103-2	The management approach and its components	94–96	●	
	103-3	Evaluation of the management approach	94–96	●	
GRI 401: Employment 2016	**401-1**	New employee hires and employee turnover	99	●	In order to keep data anonymous it was decided to deliver these data only in percentages. The rates of new employee hires and employee turnover are based on the total employee numbers in each category as well as on the leavers/new hires in the same category. End-of-year data are used for the calculation.
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	101–102	●	Fair and transparent reward packages are provided to temporary employees.
GRI 404: Training and Education 2016	**404-1**	Average hours of training per year per employee	100	◗	Trainings are currently tracked based on the number of courses, not hours, since this is considered a more relevant indicator for Borealis.
	404-2	Programmes for upgrading employee skills and transition assistance programmes	100–101	●	
	404-3	Percentage of employees receiving regular performance and career development reviews	–	●	Quantitative data for 2018 is not available yet because the performance and development cycle does not correspond with the financial year. 2017: female employees: 93%, male employees: 95%; senior leaders: 90%, managers: 96%, team leaders: 97%, experts: 93%, administration: 94%, blue collar: 94%.
Occupational Health & Safety					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	55–57	●	
	103-2	The management approach and its components	55–57	●	
	103-3	Evaluation of the management approach	55–57	●	

GRI Standard	Disclosures		Page	Reported fully/partially	Note
Occupational Health & Safety					
GRI 403: Occupational Health and Safety 2016	**403-1**	Workers representation in formal joint management-worker health and safety committees	–	●	The formal joint management-worker health and safety committee is covered within the Responsible Care® Committee; in addition, there are various informal platforms and meetings which ensure that all employees of operational sites are represented.
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	57–58	◗	Occupational Illnesses: Borealis does not currently track occupational illnesses. Borealis will adapt the risk matrix, which is part of one of the ten Group Policies. Once this is done, the Group will be able to report on this parameter in the future. Lost Day Rate: This rate is so low that it is not significant enough to report. Absentee rate: The sick leave rate is reported. This does not include leave due to occupational injuries. Regional split: This data is not available because the majority of Borealis locations are in Europe (6,000+ employees versus around only 300 employees in South and North America). Gender split: Borealis also does not track the split of TRI by gender as the number of female operators, technicians and contractors is relatively low, and Borealis cannot observe any major differences in risks posed to each gender. Contractor Injuries in general are tracked. They include TRI, EMC (external medical check) and FAC (first aid cases).
Diversity and Equal Opportunity					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	94	●	
	103-2	The management approach and its components	94–99	●	
	103-3	Evaluation of the management approach	94–99	●	
GRI 405: Diversity and Equal Opportunity 2016	**405-1**	Diversity of governance bodies and employees	–	●	At the end of 2018, the Executive Board (EXB) has four members (one position vacant), all males and with an average age of 53. At the end of 2018, the Supervisory Board has five members, all males. We have no information about the age of the Supervisory Board members.
Customer and Product Safety					
GRI 103: Management Approach 2016	**103-1**	Explanation of the material topic and its boundary	74–75	●	
	103-2	The management approach and its components	74–75	●	
	103-3	Evaluation of the management approach	74–75	●	
GRI 416: Customer Health and Safety 2016	**416-1**	Assessment of the health and safety impacts of product and service categories	75–76	●	
GRI 417: Marketing and Labeling 2016	**417-1**	Requirements for product and service information and labeling	76–77	●	

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