umicore
materials for a better life

Staying the course

Integrated Annual Report 2019

2019 Annual review

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About this report

Our 2019 Annual Report consists of the following documents, which can be downloaded in pdf format:

2019 ANNUAL REVIEW
The report tells Umicore's story of the year. It explains who we are and what we do, the context in which we operate, including the risks and opportunities, and outlines our strategy and the progress we have made towards achieving our goals.

WEB-BASED CONTENT
To access the full web-based report including our case studies please visit our dedicated reporting centre via the link below.

ANNUALREPORT.UMICORE.COM

Front cover image: Thia Elena Zhou and Melanie Gross working at our site Sample Lab Hanau, Germany

Umicore's response to COVID-19

THE FOLLOWING TEXT WAS PUBLISHED BY UMICORE ON MARCH 26 2020

KEEPING OUR PEOPLE HEALTHY, ENSURING SAFE WORKING CONDITIONS AND PRESERVING CASH

In recent weeks the novel coronavirus (COVID-19) has become a pandemic, severely affecting people, society and industries globally. In response to the COVID-19 outbreak, Umicore has rolled out its business continuity plans and has taken precautionary measures to keep its people healthy, to ensure that the workplace is safe and to preserve cash.

Umicore's priority is the health and safety of its employees. Since Lunar New Year, Umicore has implemented strict hygiene and other precautionary measures such as home working and social distancing in all its facilities in Asia and later in the rest of the world, in line with recommendations and guidelines issued by governments and the World Health Organization, to protect its employees' health and wellbeing and help contain the further spread of the virus.

COVID-19 IMPACT ON UMICORE'S OPERATIONS

While Umicore's activities were off to a strong start this year, the virus outbreak caused a serious slowdown in Umicore's automotive catalyst and battery materials activities in Asia at the time of the Lunar New Year holidays and in the following weeks. Demand and production levels for both automotive catalysts and battery materials in Asia are now gradually picking up. However, as the contagion of the virus spread to the rest of the world, the automotive industry has been forced to shut down most of its assembly lines outside Asia, in many cases for an undefined period of time. Until automotive OEMs restart production again, Umicore is temporarily shutting down most of its catalyst production capacity outside Asia and is resorting to temporary unemployment where applicable. Umicore has adjusted the inflow of raw materials accordingly and is reducing other costs.

The Hoboken plant, together with the majority of Umicore's other recycling facilities, is continuing operations.

In response to the changed business context, Umicore is also delaying certain capital expenditures programs.

STRONG FUNDING STRUCTURE IN PLACE

Umicore has a strong balance sheet and ample liquidity with € 1 billion of immediate cash availability, of which approximately half is cash on balance sheet and the other half corresponds to the unused portion of its committed syndicated loans. In addition, Umicore has well over € 0.5 billion of unused, uncommitted credit lines with its core relationship banks.

Next to significant liquidity, Umicore has a well balanced debt structure with no material maturities prior to 2023 and has ample headroom compared to its credit covenants. In recent years it secured € 1.1 billion of medium- and long-term, fixed-rate private placement debt with a phased maturity profile between 2023 and 2031. Its two syndicated loan facilities from a total of twelve banks expire in 2022 and 2025.

DECISION TO REDUCE THE DIVIDEND IN RESPECT OF THE FULL YEAR 2019

As a matter of prudence and in light of the extreme unpredictability of the global situation, Umicore's Board of Directors has decided to propose a dividend of € 0.375 per share in respect of the full year 2019. This proposal replaces the proposal initially made on 7 February 2020 of € 0.75 per share and corresponds to the amount of the interim dividend of € 0.375 per share which was already paid out on 27 August 2019. This decision is also to be seen as a way for Umicore's management and Board of Directors to share the efforts among its stakeholders. Umicore will assess the appropriate amount to be returned to shareholders in 2020 once it gains more clarity around the full impact of COVID-19.

WITHDRAWAL OF FULL YEAR 2020 OUTLOOK PROVIDED IN FEBRUARY 2020

Results in the first two months of 2020 were well ahead of the prior year.

However, the magnitude and the duration of the impact of COVID-19 are presently highly uncertain and the situation is evolving rapidly with many automotive customers shutting down their operations for an undetermined period of time. Hence, it is impossible at present to predict its full impact on the automotive market and Umicore's activities. Umicore therefore withdraws the outlook given on 7 February 2020 which guided for growth in revenues and earnings for the full year 2020 as it assumed at that time that the virus outbreak would not result in a protracted or material effect on the economy in 2020.

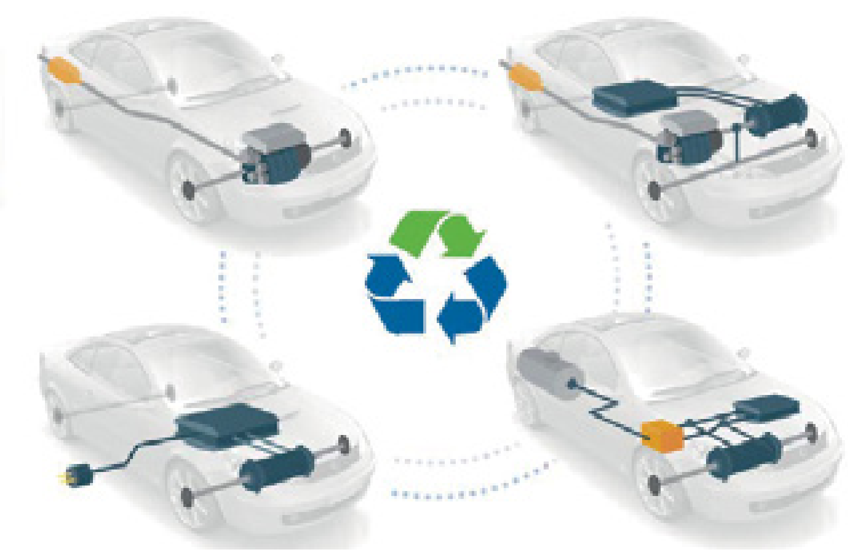
Umicore is monitoring the situation closely and will continue to respond as required to help safeguard its people and help contain the spread of the pandemic, while adjusting its operations and preserving its cashflows. Umicore will provide further updates at the time of its AGM which will be held on 30 April 2020.

The global materials technology & recycling group

PROVIDING TOMORROW'S SUSTAINABLE SOLUTIONS FOR CLEAN MOBILITY AND RECYCLING

INTERNAL COMBUSTION ENGINE
Umicore provides:
Emission control catalysts

PLUG-IN HYBRID ELECTRIC VEHICLE
Umicore provides:
Battery cathode materials and emission control catalysts



FULL ELECTRIC VEHICLE
Umicore provides:
Battery cathode materials

FUEL CELLS
Umicore provides:
Electro-catalyst and battery cathode materials

Umicore is uniquely positioned in all aspects of clean mobility materials and in recycling. We provide clean-mobility solutions for all platform types and we recycle these materials when they reach the end of their useful life.

Using our metallurgy, chemistry and materials science expertise, this closed-loop business model is our powerful differentiator and it will continue to be the basis on which we carry out our business and build our strategy.

We provide automotive catalysts to clean the exhaust gases from internal combustion engines for light-duty and heavy-duty vehicles of all fuel types, and the rechargeable battery materials and automotive catalysts that are required to power hybrid, plug-in hybrid and full electric vehicles. We also produce catalysts for fuel cell-powered vehicles and for static or industrial applications.

Umicore operates one of the world's most sophisticated precious metals recycling facilities and, across our activities, we can recover 28 precious and non-ferrous metals from industrial residues, used electronic scrap, batteries, automotive and industrial catalysts, fuel cells and more. We also provide recycling services to customers to help maximize their efficiency. The recovered materials are then transformed into pure metals or new products.

We develop custom materials and ensure that processes take account of health and safety, recyclability, cost efficiency, waste reduction and energy efficiency, both in our own facilities and across the value chain.

We believe our success is linked to how we balance the economic, environmental and social impact of our operations.

Our integrated approach to sustainability is not just about minimizing the impact of our industrial operations: our commitment to ethical and responsible sourcing distinguish us from our competitors while delivering value for all.

Umicore strives to have a positive impact, enhancing quality of life through our products and services, reducing harmful vehicle emissions, giving new life to used metals and powering the cars of the future.

materials for a better life

OUR COMPLEMENTARY BUSINESS GROUPS ENABLE A MORE SUSTAINABLE WORLD COMBINING CUTTING-EDGE TECHNOLOGIES AND RECYCLING TO GIVE NEW LIFE TO USED METALS

CATALYSIS

REDUCING HARMFUL EMISSIONS

AUTOMOTIVE CATALYSTS
We are one of the leading producers of emission control catalysts for gasoline and diesel on-road and non-road applications, power generation and industrial processes to meet environmental standards around the world.

PRECIOUS METALS CHEMISTRY
We are experts in metals-based catalysis for life-enhancing applications. Emission treatment technologies, cancer treatments, the production of fine chemicals and advanced electronics – all are made possible by our organometallic technology know-how.

ENERGY & SURFACE TECHNOLOGIES

POWERING THE FUTURE

COBALT & SPECIALTY MATERIALS
We are experts in sourcing, production and distribution of cobalt and nickel products. Our materials are at the heart of everyday products such as rechargeable batteries, tools, paints and tyres. Our recycling and refining processes, including our proprietary lithium-ion rechargeable battery recycling technology, give new life to cobalt and other metals.

RECHARGEABLE BATTERY MATERIALS
We are a pioneer in battery materials and a leading cathode material supplier for rechargeable lithium-ion batteries, giving added range and performance to electric vehicles, and longer battery life for portable electronics.

ELECTROPLATING
We are experts in developing metal-based coating products applied to printed circuit boards, jewelry and industrial components. Our precious metal electrolytes and processes are used in coatings for technical, functional and decorative applications.

ELECTRO-OPTIC MATERIALS
We are a leading supplier of material solutions for the space, optics and electronics sectors, including products for thermal imaging, wafers for space solar cells, high brightness LEDs and chemicals for fiber optics.

RECYCLING

GIVING NEW LIFE TO USED METALS

PRECIOUS METALS REFINING
We operate the world's most sophisticated precious metals recycling facility and we are experts in treating the most complex materials. Our refining and recycling technology gives used metals a new lease of life. Our processes help bring value to the circular economy.

PRECIOUS METALS MANAGEMENT
We supply and handle all precious metals, ensuring physical delivery by using both the output of our precious metals refineries and our network of industrial partners and banks. We offer our customers tailor-made solutions for delivering, hedging and trading precious metals.

JEWELRY & INDUSTRIAL METALS
We are experts in developing products and processes based on precious metals such as gold, silver and platinum. Our customers use these materials to make fine jewelry, coins, high-purity glass and industrial catalysts. We provide our customers with sustainable and responsible sourcing of these metals and closed-loop recycling.

horizon 2020

Horizon 2020 progress

OUR OBJECTIVES	ECONOMIC PERFORMANCE			VALUE CHAIN AND SOCIETY	
	STRENGTHEN LEADERSHIP	DOUBLE THE EARNINGS	REBALANCE PORTFOLIO	SUSTAINABLE SUPPLY	SUSTAINABLE PRODUCTS & SERVICES
WHY THEY ARE IMPORTANT	To position Umicore to thrive faced with the accelerating global megatrends of stringent emissions control, transport electrification and resource scarcity.	To secure Umicore's future success and sustainability by consistently investing in R&D to develop and market innovative products and services, and to ramp-up capacity to meet growing market demand for Umicore products and services.	To sharpen Umicore's focus on the ambitious growth initiatives in clean mobility materials and recycling.	To provide environmental and ethical sourcing benefits for comparatively scarce raw materials in order to foster sustainable success and growth.	To develop products and services that create sustainable value for our customers and society and increase resource security.
KEY PERFORMANCE INDICATORS	GROUP REVENUES ANNUAL GROWTH +3%	OBJECTIVE ACHIEVED 2019 REBIT € 509m	OBJECTIVE ACHIEVED: 2019 REBIT SPLIT 33% CATALYSIS 33% ENERGY & SURFACE TECHNOLOGIES 34% RECYCLING 2019 REVENUES 43% CATALYSIS 37% ENERGY & SURFACE TECHNOLOGIES 20% RECYCLING	FULLY ALIGNED WITH OECD DUE DILIGENCE GUIDANCE FOR RESPONSIBLE SUPPLY CHAINS OF MINERALS FROM CONFLICT-AFFECTED AND HIGH-RISK AREAS	75% OF TOTAL REVENUES FROM CLEAN MOBILITY AND RECYCLING MUCH OF THE REST IS FROM SOLUTIONS SUCH AS IMPROVING CONNECTIVITY OR REDUCING ENERGY CONSUMPTION
SUSTAINABLE DEVELOPMENT GOALS	11 SUSTAINABLE CITIES AND COMMUNITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION			8 DECENT WORK AND ECONOMIC GROWTH; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	

READ MORE ABOUT ECONOMIC PERFORMANCE ON PAGE 26

READ MORE ABOUT VALUE CHAIN AND SOCIETY ON PAGE 36

OUR OBJECTIVES	ECO-EFFICIENCY	GREAT PLACE TO WORK		
	EFFICIENT OPERATIONS	SAFETY	HEALTH	PEOPLE ENGAGEMENT
WHY THEY ARE IMPORTANT	To make sustainability an irrefutable competitive advantage for Umicore.	To offer a safe workplace and embed a safety culture in our workforce.	To monitor, manage and protect from exposure risks.	To ensure Umicore's status as an employer of choice in all the regions where we operate. To manage talent as a driver for reaching our desired business growth.
KEY PERFORMANCE INDICATORS	ENERGY CONSUMPTION **-23%** vs 2015 benchmark, adjusted for intensity	NUMBER OF ACCIDENTS **90**	EXCESS READINGS* **1.8%** * based on internal target values	TOTAL EMPLOYED **11,152** RETENTION RATE **94%**
SUSTAINABLE DEVELOPMENT GOALS	7 AFFORDABLE AND CLEAN ENERGY 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	3 GOOD HEALTH AND WELL-BEING 5 GENDER EQUALITY 8 DECENT WORK AND ECONOMIC GROWTH		

READ MORE ABOUT ECO-EFFICIENCY ON PAGE 42

READ MORE ABOUT GREAT PLACE TO WORK ON PAGE 49

OUR MATERIAL ISSUES AND STAKEHOLDER ENGAGEMENT

The Horizon 2020 strategy represents a strong focus on materially important topics for Umicore in the coming years: Economic performance, Value Chain and Society, Eco-Efficiency, and Great Place to Work.

Umicore applies a localized approach to stakeholder engagement and manages stakeholder relationships in line with our decentralized approach to unit management.

READ MORE ABOUT THIS ON PAGES 14 AND 21

Umicore at a glance

WE ARE A GLOBAL GROUP FOCUSED ON MATERIALS TECHNOLOGY AND RECYCLING. OUR WORK HELPS IMPROVE AIR QUALITY, MAKES ELECTRIFIED TRANSPORT POSSIBLE AND TACKLES RESOURCE SCARCITY

REVENUES

€ 3,361m

R&D EXPENDITURE

6%
of revenue

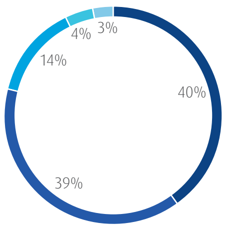
RECURRING EBIT

€ 509m

RECURRING EPS

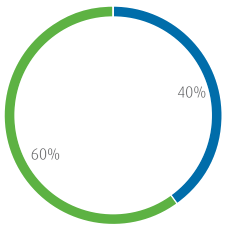
€ 1.30
per share

REVENUES BY GEOGRAPHY



- Europe | 40%
- Asia-Pacific | 39%
- North America | 14%
- South America | 4%
- Africa | 3%

RESOURCE EFFICIENCY



- Primary materials | 40%
- Secondary & end-of-Life materials | 60%

COLLEAGUES

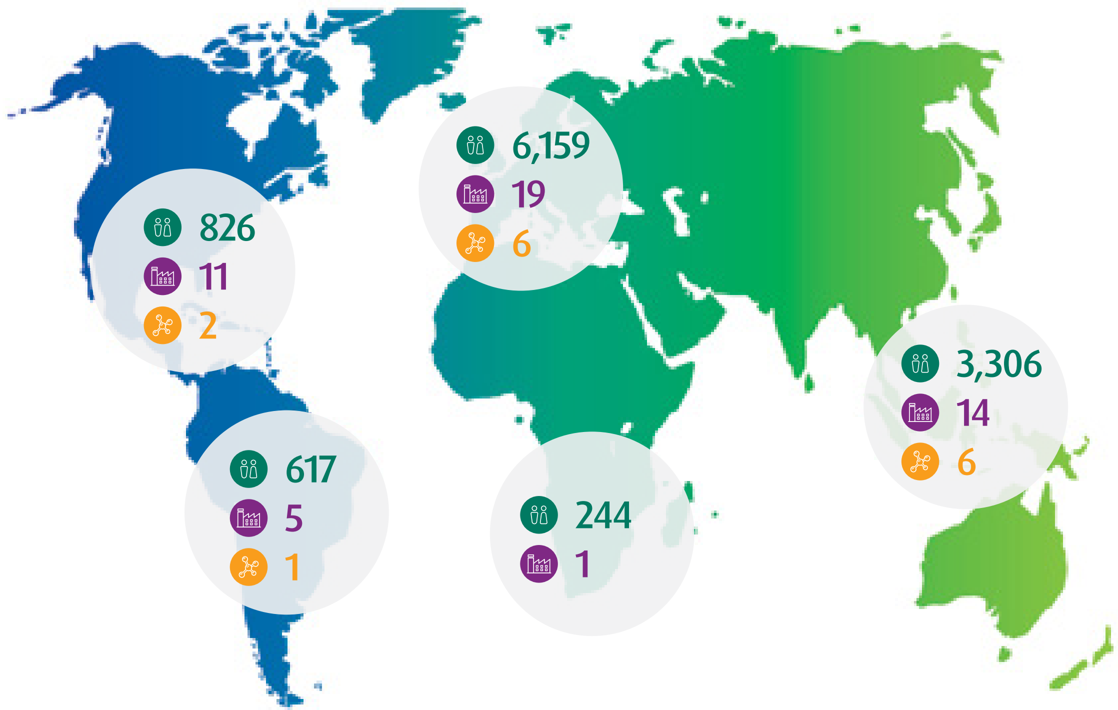
11,152

PRODUCTION SITES

50

R&D | TECHNICAL CENTRES

15



CEO & Chairman's review

MARC GRYNBERG AND THOMAS LEYSEN LOOK BACK ON 2019 AND EVALUATE THE OUTLOOK FOR UMICORE

MARC GRYNBERG CEO
& THOMAS LEYSEN CHAIRMAN

Marc Grynberg and Thomas Leysen at Umicore's Brussels headquarters

Umicore posted a strong performance in 2019 in a challenging market environment, particularly in the automotive sector.

Revenues for the full year grew by 3% to € 3.4 billion and recurring EBITDA increased 5% to € 753 million, while recurring EBIT was € 509 million, close to the record levels of 2018. Return on Capital Employed was down from 15.4% in 2018 to 12.6%, impacted by the weight of our growth investments.

The demand patterns for cathode materials deteriorated in the course of 2019, particularly in the Chinese electric vehicles market following an abrupt cut in government subsidies. This deterioration came in a context of an overall weak automotive market which saw global car production decline by close to 7% year on year. Against this challenging market backdrop we nonetheless delivered a strong performance, reaching the original financial target of our **Horizon 2020 strategic plan,** while making significant strides in the execution of our growth strategy in all three major activities.

In **Catalysis** we grew revenues and recurring EBIT and significantly outperformed the car market as a result of market share gains in gasoline catalyst applications. This trend was most pronounced in China, the world's largest car market, where we became the leading light-duty catalyst provider. We also recorded strong growth in the demand for fuel cell catalysts and for pharmaceutical and fine chemicals applications. The performance in **Energy & Surface Technologies** was well below the record levels of 2018 due to a temporary market slowdown as well as the impact of depressed cobalt prices and competition from unethically sourced cobalt from artisanal mining. In addition, the performance reflected higher depreciation charges and upfront costs related to our greenfield investments. We recorded a very strong performance in **Recycling**. While processed volumes in Hoboken were lower due to the extended scheduled maintenance shutdown in the first half and the fire incident in July, we were able to offset most of the volume shortfall by optimizing the feed mix. The business group also benefitted from favorable supply terms and higher precious metals prices.

Investments in our strategic growth projects continued in 2019 with capital expenditure increasing to € 553 million. The two greenfield projects in China and Poland for cathode material production took up the majority of the 60% of investments carried out in Energy & Surface Technologies. Expenditure also included the investments made during the extended maintenance shutdown in Hoboken, where the multi-year expansion program has now been completed, and the expansion investment in Korea for fuel cell catalysts.

Operating **cash flows** reached € 549 million compared with € 92 million in 2018. Working capital increased by € 78 million in the second half, with PGM price fluctuations the dominant driver. Another key use of cash in 2019 was the acquisition of the Kokkola operations for € 188 million. Overall, net debt increased by € 582 million over the year to a level of € 1.4 billion at year-end, corresponding to 1.9 times recurring EBITDA. This includes the new € 390 million long-term US private debt placement drawn in September. We continue to maintain sufficient funding headroom to execute our growth strategy and to remunerate shareholders.

Our ambition remains to turn **sustainability** into a greater competitive edge and we continue to pursue goals in areas such as safety, great place to work, eco-efficiency, sustainable sourcing and supply chain, although with varied progress in 2019.

Despite our determination to turn around the **safety** performance in recent years, our results in 2019 were again disappointing. We have still not made sufficient progress in our pursuit of accident-free workplaces and have even regressed in certain business units. The group recorded 90 lost time accidents in 2019 compared to 61 in 2018. The frequency rate increased from 3.36 to 4.6 over the same period and the severity rate from 0.1 to 0.2. There is a clear need to change behavior and mindset in order to install a true safety culture across the company and this will guide us in our relentless efforts to turn the tide, with specific and targeted measures for those business units and sites where safety performance remains unsatisfactory.

Our effort in 2019 to make Umicore a **great place to work** focused on recruiting for our growing business and preparing the integration of colleagues from newly acquired businesses. Total headcount increased by 7% from 10 420 at the end of 2018 to 11 152 at the end of 2019, primarily reflecting increases in Rechargeable Battery Materials in China, Korea and Belgium, as well as additional new colleagues from the activities in Kokkola, Finland, acquired in December. Diversity was a mixed story in 2019, with an increase in the proportion of women in senior management, but a small decrease overall. With 11% of women in senior management, Umicore remains committed to reach the voluntary target of 15% as early as possible. Umicore has a promising pool of more diversified and inclusive talent which is expected to reach the senior management echelons over the coming years. In October 2019 we renewed our agreement with IndustriALL Global Union for a four-year period.

We have also introduced far-reaching policy changes in terms of our **operational environmental profile**. A new Responsible Business Travel Policy commits Umicore to significantly reduce air travel. In summer 2019 we initiated the Umicore Climate Action program to collect and implement innovative ideas from all colleagues to reduce our carbon footprint in all areas. Starting in Belgium in 2020, we are also changing the company car policy to exclusively allow the use of electrified vehicles in our fleet.

Our **eco-efficiency** is measured against our Horizon 2020 goal of performing equally well or better than in 2015, with values adjusted for activity levels. The impact of our metal emissions to water was 57% lower than 2015 levels but increased year-on-year by 15%, mainly due to temporary issues with management of the water treatment plant in Hoboken. Metal emissions to air, expressed in impact units, were down 41% year on year and 54% lower than 2015 levels. Energy consumption remained at the same level as in 2018, despite expansion and production ramp-up. Using values corrected for activity levels, energy consumption was 23% down compared to 2015.

We pursue our unwavering stance on the ethical supply of raw materials and our OECD-compliant cobalt procurement framework, covered by third party assurance, remains a prime example of our **sustainable sourcing**. Umicore remains the first and so far only cathode material producer to offer certified materials from a clean and ethical origin to its customers. In 2019 we concluded a long-term supply partnership for sustainable cobalt with Glencore and a similar agreement with CMOC in January 2020.

The **Global Battery Alliance**, of which Umicore is a founding member, has now issued clear sustainability principles for the rechargeable battery industry. The alliance will develop a battery passport which will trace the origins of materials and monitor them throughout the entire lifecycle of batteries. This passport, which would act as a quality seal on a global digital platform, should help eradicate unacceptable practices from a social or environmental viewpoint and establish a level playing field. We will seek widespread support from automotive producers for its implementation.

The gradual year-on-year increase in the percentage of end-of-life materials in our **supply chain** demonstrates the growing added value of our sustainability approach. Future sourcing for catalysts, fuel cells and batteries alike, will only be possible by closing the loop and recovering the scarce metals used in these products when they reach end of life.

The **3 megatrends** that we identified in our Horizon 2020 strategy remain our drivers for long-term structural growth.

The long-term prospects for **electrified vehicles** are stronger than ever as the authorities in several regions are pushing for an accelerated transition to decarbonized mobility. In 2019 we continued to position Umicore to benefit from this trend and capture significant future growth. We signed multi-year agreements with leading EV battery producers LG Chem and Samsung SDI for deliveries from our plants in Korea, China and Europe. Umicore commissioned its new Process competence center in Olen, Belgium. Another milestone was the award of grants for some of our innovation programs under the umbrella of Important Projects of Common European Interest (IPCEI), which has created a framework for European Union member states to provide financial support to projects aiming to establish a sustainable and innovative battery value chain for EVs in Europe.

The accelerated trend to **cleaner mobility** was also confirmed in 2019 by the early introduction of China 6 emission norms in some cities. More stringent norms in Europe and India will provide continued value growth in automotive catalysts, especially given our leading position in particulate filters for gasoline engines and the emerging fuel cell business served by our newly extended plant in Korea.

The increase in capacity at our Hoboken plant goes some way to answering **resource scarcity** concerns and will continue to support our closed loop business model.

The **geo-political environment** was a major driver in 2019 and many of the sources of the turbulence in 2019 – such as trade tensions, political change in Europe, and an evolving automobile industry – remain unresolved and limit visibility. We remain committed to our strategic goals and we are convinced that the major steps taken in 2019 have prepared us well to capture future growth, while we will continue to remain agile in the face of evolving market needs. Technology innovation remains key to our success, with R&D expenditure increasing by 8% in 2019 to € 211 million, equivalent to 6.2% of our revenues. This year's report highlights innovation and fit-for-future R&D.

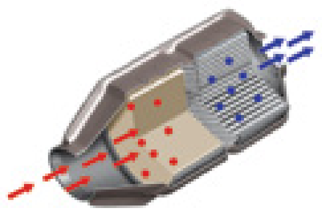
This year, we have reorganized the annual report into a single volume to give readers a clearer pathway through our integrated reporting. We are also sharing additional information on value chain and society, including on human rights and on our cobalt supply chain, while improving our on-line presence.

We would like to express our thanks to all the stakeholders for their contribution to our performance in the face of fluctuating conditions in 2019.

We are proud of our performance and results in 2019 and confident that our long term growth strategy will continue to deliver value. As we write this, the magnitude and the duration of the impact of COVID-19 are highly uncertain and the situation is evolving rapidly with many automotive customers shutting down their operations for an undetermined period of time. It is impossible at present to predict its full impact on the automotive market and Umicore's activities. Umicore therefore withdraws the outlook given on 7 February 2020 which guided for growth in revenues and earnings for the full year 2020 as it assumed at that time that the virus outbreak would not result in a protracted or material effect on the economy in 2020. All of us at Umicore are working hard to mitigate the negative impacts as much as is feasible.

MARC GRYNBERG CEO
& **THOMAS LEYSEN** CHAIRMAN

Global trends



We reduce harmful industrial and vehicle emissions to provide cleaner air

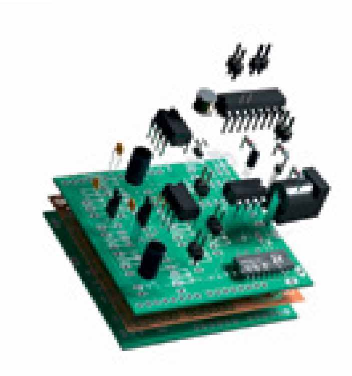
CATALYSIS

We are a technology leader in emission control catalysts for light-duty and heavy-duty vehicles and for all fuel types

We deliver clean energy storage solutions and power the vehicles and technologies of the future

ENERGY & SURFACE TECHNOLOGIES

We are an innovative leader in cathode materials for lithium-ion batteries in electrified transportation, portable electronics and energy storage



We contribute to resource stewardship by recycling metals and end-of-life products in a closed loop

RECYCLING

We are a quality leader in recycling complex waste streams containing precious metals and other valuable materials

CLEAN AIR

Automotive emission legislations and public advocacy for clean air continue to increase. In Europe and in Asia, legislators are developing clean mobility policies to reduce SOx, NOx and CO_2 emissions and strengthening emission standards to push industry to design innovative emission control systems, including catalysts and catalytic filters.

VEHICLE ELECTRIFICATION

The transport sector is the fastest growing source of global greenhouse gases, with the largest share from road transport. Electrified transport is essential to meet ambitions of reduced emissions and clean air by combining energy efficient systems with renewable energy sources. Incentives favoring electric vehicles are increasing globally.

RESOURCE SCARCITY

Developing technologies, such as increasingly powerful rechargeable batteries to reduce the environmental impacts of society, increases the demand for specialty and precious metals. Mining metals from primary sources has significant environmental impacts, including a high carbon footprint. Easy-to-mine deposits are increasingly scarce and ore bodies poorer.

Taking on the big challenges

OUR BUSINESS MODEL AND HORIZON 2020 STRATEGY ARE FOCUSED ON ADDRESSING THE WORLD'S MOST PRESSING ISSUES

Umicore is working to meet the growing demand for clean mobility and clean air. We are a leading producer of catalysts and catalytic filters used in emission abatement systems for light and heavy-duty vehicles, on-road and off-road. Our catalysts and particulate filters convert pollutant emissions into harmless gases and trap the particulate matter, enabling our customers to meet present and future environmental standards. Our products have prevented hundreds of million tonnes of harmful pollutants from being emitted into the air.

We strive to deliver environmentally friendly technologies that ensure resource efficiency and sustainability in industry's supply chain.

Umicore is working to deliver energy efficiency technologies, optimize resource use and reduce pollution. We are a leading producer of cathode materials for lithium-ion batteries, which are key in determining the power and energy density of rechargeable batteries, to maximize driving distance of electrified vehicles. Our nickel-manganese-cobalt (NMC) cathode materials are a reference in the industry. To meet growing market demand, we announced significant investments from 2017 to 2019 to further increase our production of NMC cathode materials.

We provide solutions for a cleaner and more resilient future.

Umicore fosters sustainable growth and champions its circular business model. Our Hoboken facility is the world's largest and most complex precious metals recycling operation, processing over 200 types of raw material – from mining and industrial residues to "End-of-life" materials, such as electronic scrap and spent rechargeable batteries – and recovering over 20 different metals. As part of our closed-loop business model, most of our business units recycle industrial residues from customers. Umicore is growing its capacity to cater to rising demand.

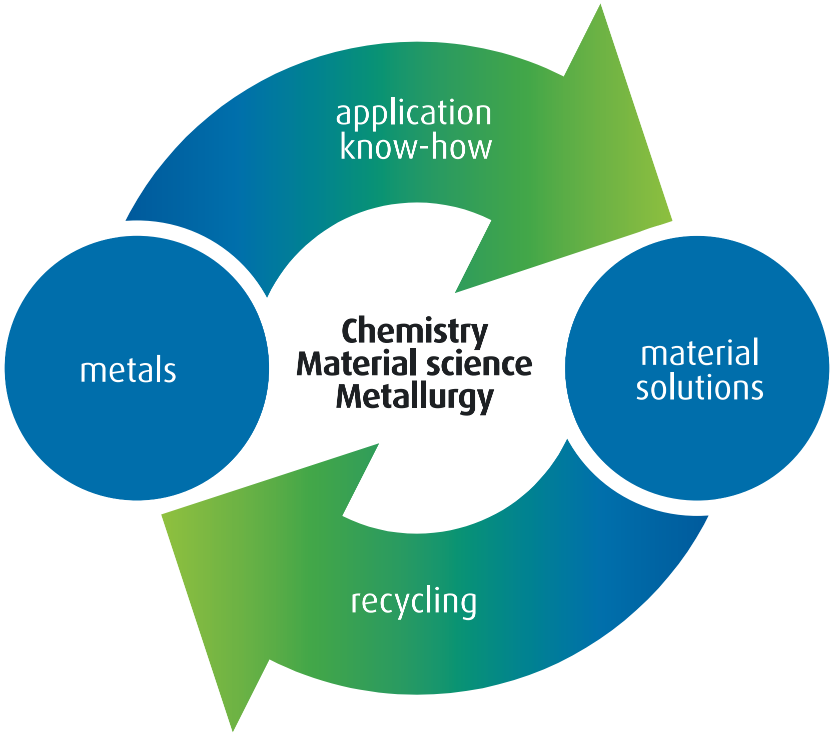
We deliver environmental and ethical sourcing benefits, and increased resource security.

Umicore is determined to be a preferred employer wherever we operate and is committed to empowering women for leadership. We are a growing business with presence in markets around the world and have won Top Employer status for our sites in Europe and Asia. We think this is because we strive to create a collaborative environment, ensuring meaningful work and career-long learning and development opportunities. This means our employees have an average length of service of 10 years, and that group-wide we have over 94% retention rate.

We all share the same values, we all respect one another and we are all working towards making materials for a better life.

Turning sustainability into a greater competitive edge

PROVIDING THE BEST TECHNOLOGICAL SOLUTIONS FOR CLEAN MOBILITY AND RECYCLING



We transform metals into functional materials and recycle them to make new materials. Our products deliver solutions for cleaner air and increased e-mobility, while we turn waste metals into a resource. Our ethical sourcing and closed-loop approach distinguish us from our competitors.

MATERIAL SOLUTIONS

We transform metals into functional materials that are integrated into products by our customers, usually companies making products for consumer or industrial use. Our catalysis materials provide clean air and health solutions, while our battery materials give added range and performance to electric vehicles and increased battery life to portable electronics. Our materials are also inside computer motherboards and in the fiber optics and satellites that keep you connected.

APPLICATION KNOW-HOW

We take metal and apply our expertise in metallurgy, chemistry, engineering and materials science skills, we add our product, process and market know-how and offer solutions that enable our customers to develop better, more sophisticated and safer products.

RECYCLING

Metals are an outstanding ingredient for sustainable materials production because they can be recycled infinitely without losing any of their chemical or physical properties. This is one of the foundations of our business model. A high volume of our metals come from recycled sources – production scraps and residues from customers and other industries, and end-of-life materials through our closed-loop services. Our recycling operations can recover 28 metals. Our precious metals recycling operation in Hoboken, Belgium, is built to recycle and refine the most complex materials and to recover a broad spectrum of metals. Using our Sustainable Procurement Charter and our framework for Cobalt, we purchase the remainder of our metal supplies from sustainably and ethically vetted primary sources.

Many factors – from raw materials supply to talent retention – underpin our business model. We manage these resources and relationships for the long term.

SKILLS AND EXPERTISE

Our employees contribute their expertise and commitment to Umicore. Metallurgy, chemistry, engineering and materials science skills are critically important in our key growth areas: recycling and materials for clean mobility.

We are growing in Asia and in Europe and this means a greater focus on attracting talent for positions ranging from production operators, engineers, research scientists, to commercial and administrative functions.

UMICORE TECHNOLOGY

Technology is at the core of our success. We are committed to innovation and research and development (R&D) are key for innovation-led growth. We develop a significant part of our technology using Umicore R&D findings and invest 6% of our revenues in R&D. Umicore also develops technology in with our industrial or academic partners and we protect our intellectual property with patents.

UMICORE OPERATIONS

Our operations are carried out in recycling plants, specialized chemicals and materials production facilities, offices and research centers, in 30 countries, often close to our customers to support collaboration and to meet their specific product requirements. We aim for excellence in environmental and social performance in all our operations.

We seek to minimize the impact of metal emissions, generate improved material and energy efficiency and offer a safe and healthy workplace. Operational excellence is important both in securing our license to operate and in helping to make Umicore more competitive.

MAXIMUM EFFICIENCY

Input materials such as fuels and chemicals are essential to Umicore operations and are purchased using our Sustainable Procurement Charter framework. In most of the countries where we operate and given the specific nature of many of our operations, there is limited choice in terms of energy sourcing. For this reason, our priority is to maximise energy and auxiliary materials efficiency.

INVESTMENT & FUNDING

Investing in Umicore is an investment in producing materials for a better life – our mission – and supporting our strategy. Umicore has a proven track record of funding strategic growth initiatives from the cash-flow generated by our own operations. Indebtedness is kept at reasonable levels, as we aim to retain an investment-grade credit status at all times.

Our closed-loop business model delivers economic, social and environmental value for all our stakeholders.

PRODUCTS & SERVICES

Our ambition is to produce materials for a better life. Umicore products can be found in applications that make day-to-day life more comfortable and contribute to a cleaner, more efficient world. We work closely with our customers to develop customized materials or processes that consider health and safety, recyclability, cost efficiency, waste reduction and energy efficiency both in our own facilities and in the value chain. We continuously search for innovative solutions for our customers and work to meet the needs of a rapidly changing and more demanding world.

THE UMICORE WAY

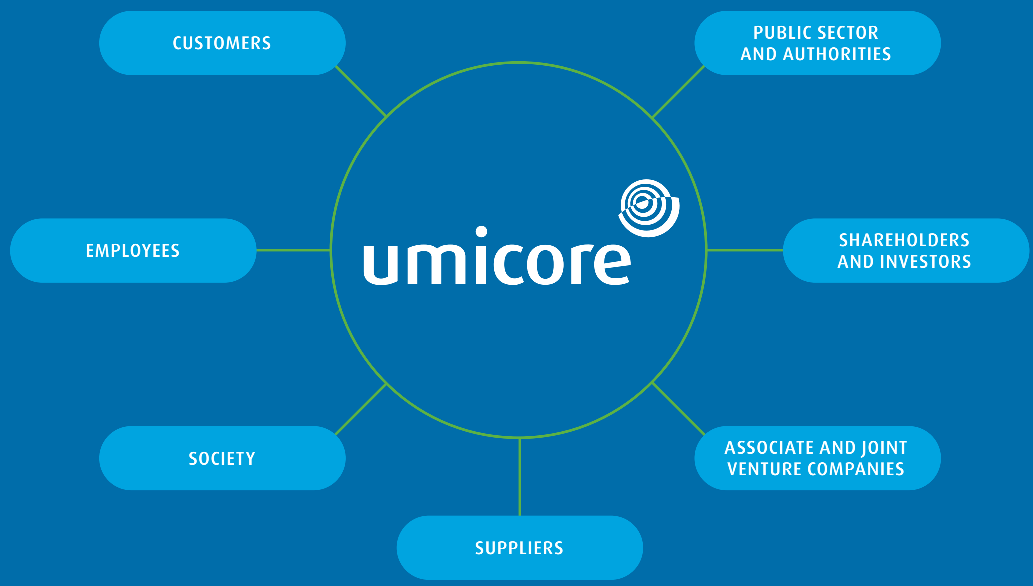
Umicore is committed to the principles of sustainable development. We aim for excellence in environmental and social impact and strive to offer a safe and healthy workplace. We offer solutions to global challenges: our recycling services address growing resource scarcity and reduce industrial waste and emissions. Our catalysts help reduce air pollution, while our rechargeable battery materials help make electrified transportation a reality. Umicore offers high quality employment with competitive salaries, training and development opportunities and long-term employment prospects.

Each site aims to be considered as a preferred employer locally. Umicore supports the principle of collective bargaining and signed a Global Framework Agreement on Sustainable Development with the IndustriALL Global Union.

SUPERIOR GROWTH & RETURNS

Umicore aims to generate a return on capital employed of more than 15%. One of our Horizon 2020 goals is to double our earnings, mainly through growth in recycling and materials for clean mobility. While the primary focus is on organic growth, acquisitions are also considered if they fit the strategy and can add value for shareholders.

Stakeholder engagement




From left to right: Ignace de Ruijter (SVP Human Resources), Marc Grynberg (CEO), Guy Ryder (Director General of the International Labour organization, Valter Sanches, Secretary General of IndustriALL Global Union

Customers	16
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Engaging with our stakeholders

OUR RELATIONSHIP WITH OUR STAKEHOLDERS HAS A DIRECT IMPACT ON OUR SUCCESS

€ 776m
IN SALARIES & OTHER BENEFITS

€ 102m
IN SOCIAL SECURITY PAYMENTS

€ 117m
IN TAXES

Umicore is a publicly listed company. As such, we interact with many parties who have an interest in the way we conduct business. The relationship that we foster with these parties or stakeholders has a direct impact on our success.

Stakeholder engagement at Umicore is based on a localised approach whereby all sites are required to identify their respective stakeholders and establish suitable ways of engaging with them. In many cases, such as the dialogue with customers and suppliers, the stakeholder relationships are primarily managed by the business units themselves, in line with our decentralised approach to unit management.

The executive committee receives feedback from stakeholders in several ways, ranging from direct feedback from visits to customers, suppliers, employees and investors, to information provided by the business units, departments or workers' representatives during their regular briefings to senior management. Other forms of input include periodic employee survey results.

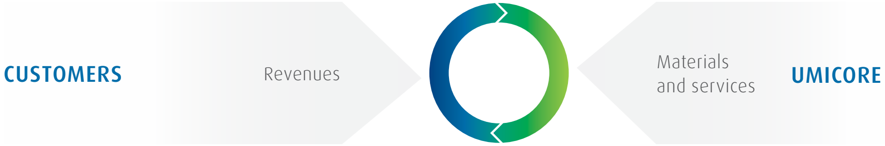
The Horizon 2020 strategy represents a strong focus on what is of material importance for Umicore in the coming years. The development of the strategy has involved a specific stakeholder approach, described in the materiality assessment process in this chapter.

Umicore is an active participant in various industry associations through which we engage with policy makers to contribute to a better understanding of industry-related issues. These associations are also important platforms for Umicore to contribute to broader, industry-wide action on sustainable development.

On a less formal level, members of our senior management are often called upon or volunteer to participate in public forums to discuss our business strategy and sustainable development approach. Such events provide the opportunity to interact with various groups including business leaders, academics and civil society.

Umicore's main stakeholder groups are highlighted and have been categorised in broad terms, using generic stakeholder categories that apply to most industrial organisations. Also shown are the nature of the transactions that occur and a brief description of the dialogue between Umicore and the stakeholders.

CUSTOMERS



Umicore materials can be found in a variety of applications that deliver solutions for cleaner air and increased e-mobility. Umicore's unique closed-loop services turn waste metals into a resource. To be the preferred partner of our customers, we work closely with them to develop, produce and recycle metal-related materials for material-based solutions tailored to their needs.

We provide advanced products that are built on our customers' specific performance, environmental and sustainable sourcing needs, including development of bespoke solutions when needed. Beyond this customer-oriented approach, we provide close collaboration across all regions to deliver a sustainable and secure supply of high-quality products and services. Umicore has an international customer base and the presence to support them in both growing and established markets. Our high investments in R&D provide advanced and efficient production and process technologies that enable our customers to meet the most stringent sustainability demands and ambitions.

Ongoing interaction with customers is managed by the business units. In addition to this close contact, all business units have a customer feedback process to periodically gauge customer satisfaction.


Jodie Finkbiner at the site in Tulsa (OK)

83
COUNTRIES WITH UMICORE CUSTOMERS

EMPLOYEES

Umicore employs 11,152 people worldwide. Because our employees are key to our success, we invest significant resources in ensuring we are an employer of choice in all the regions where we operate. In 2019, Umicore paid a total of € 776 million in salaries and other benefits to the employees of fully consolidated companies. Social security payments totaled € 102 million.

Umicore is committed to providing competitive salaries and working conditions to its employees and to providing occupational and professional training opportunities. Employees are expected to adhere to the principles and policies outlined in The Umicore Way and Code of Conduct. Open dialogue is promoted within the company and includes an opinion survey every 3 years.

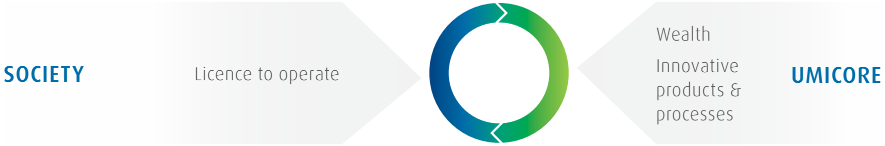
Umicore respects the principle of collective bargaining wherever it is requested. While such practice is commonplace in Europe, in other locations collective bargaining mechanisms and trade unions may be less common or face local legal restrictions. In 2019, Umicore renewed the sustainable development agreement with the international union IndustriALL on the global implementation of its policies on human rights, equal opportunities, labor conditions, ethical conduct and environmental protection. The agreement allows trade unions to participate constructively in the pursuit of these objectives. A joint monitoring committee composed of both parties oversees the implementation of the agreement.

Company-wide communication channels include intranet and company and business unit newsletters. Umicore operates a Group-wide learning management platform called "MyCampus". In the last quarter of 2019 Umicore also deployed MS Teams which will be used as a social collaboration tool to facilitate knowledge sharing through the company.


Liang Z at the Jiangmeng site

€ 776m
IN SALARIES & OTHER BENEFITS TO EMPLOYEES

SOCIETY



Umicore can only continue operating if it has the licence to do so from society and we do the utmost to operate in a way that promotes sustainable development, going beyond the legally defined boundaries set for all companies. We set our own standards, applicable across the Group, often surpassing the legislative demands in many areas where we operate. Umicore also strives to develop materials that enhance quality of life and specifically addressing certain critical environmental or societal challenges.

Contact with the communities where Umicore operates is the most direct way that we interact with society. Open and transparent dialogue with such communities is an integral part of our stakeholder engagement.

Through employment, Umicore participates in the generation of wealth in the areas where it operates. Although wealth generation is an obvious benefit, the way in which this wealth is generated is also of great importance. We strive to be top employer wherever we operate.

Civil society groups periodically declare a stake in our operations and the way we do business. Umicore welcomes such interest and attempts to engage openly and constructively.

Umicore makes voluntary contributions at site and Group-level to a range of charitable causes. We manage Group-level engagement efforts through a Group Donations Committee that has the mandate of engaging with civil society groups and determining the extent of partnerships. For information on these initiatives in 2019 see Giving Back to Society, p. 25.


Visit to the Hall O learning center at Olen

€ 1.6m
DONATED TO CHARITABLE CAUSES
(INCLUDING STAFF FREED TIME)

SUPPLIERS

Umicore operates through three business groups on 5 continents. These business groups not only require materials to make their products but also energy, transportation and a range of other services. Overall, Umicore has over 18,000 suppliers worldwide. These suppliers benefit from our presence as a customer: in 2019, Umicore paid these suppliers € 15.6 billion (including the metal content of raw materials).

We are engaged in a constant dialogue with our suppliers to define technical specifications and to ensure mutually acceptable terms and conditions for continued partnership, such as prompt and uninterrupted delivery of materials/services. The business units are responsible for the purchase of raw materials while the corporate Purchasing and Transportation department works to ensure that transportation, energy and other provisioning needs are met.

Our approach is shaped by our Sustainable Procurement Charter. This charter is complemented by specific approaches or frameworks for some critical raw materials.

Our Horizon 2020 strategy includes an objective on sustainable supply that builds on the experience gained through our previous objective on sustainable procurement. For information, see Value Chain & Society, p. 36


Kenya Lashway at the site in Glen Falls (NY)

€ 15,600m
PAID TO SUPPLIERS WORLDWIDE

ASSOCIATE AND JOINT VENTURE COMPANIES

ASSOCIATE AND JOINT VENTURE COMPANIES

Contribution to Umicore profits
Technological complementarities
Market access

Investment
Guidance

UMICORE

Umicore has investments in various business activities over which it does not exercise full management control. Associate companies are those where Umicore has a significant influence over financial and operating policies, but no control. Typically, this is evidenced by ownership of between 20% and 50% of the voting rights, while joint ventures usually entail a 50:50 split in ownership and control. Joining forces is a way to speed up technological developments or gain access to specific markets.

Where management control is not exercised by Umicore, we are able to guide and control the management and monitor business developments through representation on the board of directors. Although we cannot impose our own policies and procedures on any associate (or indeed any joint venture where we do not possess majority voting rights), our expectations that the operations be run in accordance with the principles of the Umicore Way are clearly communicated.

Umicore is rigorous in safeguarding any intellectual property that is shared with associate or joint venture partners. For a full list of associate and joint venture companies, see note F17.

Umicore Shokubai Japan Co. Ltd. is a 60%-owned joint venture

4
ASSOCIATE COMPANIES

SHAREHOLDERS AND INVESTORS

SHAREHOLDERS AND INVESTORS

Capital
Funds

Shareholder value
Superior returns

UMICORE

Umicore strives to provide timely and accurate information on its strategy, performance and prospects to its shareholders. Next to the publication of press releases and the Annual Report, Umicore's management and Investor Relations team communicated in 2019 with investors during roadshows in North America, Europe and Asia, as well as through regular site visits, investor conferences, webcasts, conference calls and the annual general meeting of shareholders. Main topics covered included the strides made in the execution of the growth strategy in clean mobility materials and recycling, the financial performance and outlook as well as sustainability and social corporate responsibility themes.

Umicore has a high free float with a broad base of international shareholders which at the end of 2019 were primarily situated in Europe and North America. The overview of shareholders holding voting rights equal to 3% or more and analyst research and consensus information can found on our website under Share Information. 23 brokerage firms cover and publish equity research notes on Umicore, reflecting strong and global interest from the financial market in Umicore's equity story and growth opportunities.

Umicore's disclosure covers both financial and Environmental, Social and Governance (ESG) performance and we regularly engage with our investors on those topics.

Capital markets day in Korea, 2018

17
MANAGEMENT ROADSHOWS

PUBLIC SECTOR AND AUTHORITIES

Umicore aims to increase understanding of our technologies and contribute to the discourse on materials-related issues. In 2019 our efforts to foster contacts with public authorities worldwide, coordinated by the Government Affairs department, focused primarily on North America, China and Europe, where efforts centered on three main topics: resource efficiency, including waste and raw materials policies and ongoing developments for a Circular Economy in the EU; advanced materials as a key enabler for low carbon technologies; and material technologies for the purification of exhaust gases from combustion engines. Our initiatives also include access to EU and national government funding and innovation networks, particularly programs that support the development of breakthrough technologies with environmental benefits. Umicore experts are often invited as members of working groups and panels initiated by European or national authorities. Umicore is also a member of the Knowledge and Innovation Community on Raw Materials, a consortium of over 100 partners addressing the accessibility, availability and efficient use of raw materials in Europe.

Umicore is mindful of the sensitivity of taking positions on issues of public interest and has developed guidelines to do so responsibly through the industry groups to which we are affiliated.

Umicore paid € 117 million in taxes on our 2019 operations and with our employees contributed € 102 million in social security payments. Umicore periodically enters partnerships with public institutions such as universities with the primary aim of furthering research projects. Partnerships and research grants are occasionally contracted with public organizations.

As a matter of policy, Umicore does not make donations to political parties or organization.


The European parliament, Brussels

€ 117m
TAXES PAID ON OUR 2019 OPERATIONS

KEY MEMBERSHIPS

A3M (L'Alliance des Minerais, Minéraux et Métaux); Agoria (Belgian multi-sector federation for the technology industry); American European Community Association (AECA); Bebat; Belgian Indian Chamber of Commerce and Industry (BICC&I); Belgian industrial Research and Development (BiR&D); Belgium-Japan Association & Chamber of Commerce (BJA); Eurometaux (European Non-Ferrous Metals Association); European Industrial Research Management Association (EIRMA); European Round Table of Industrialists (ERT); ETION; Federation of Belgian Industrial Energy Consumers (FEBELIEC); Flemish Aerospace Group (FLAG); Flemish Network of Enterprises (Voka); Flanders-China Chamber of Commerce; Metalle pro Klima (a WirtschaftsVereinigung Metalle initiative); TransAtlantic Business Council; Vlaamse Technische Kring (VTK); World Economic Forum.

Associacao dos Fabricantes de Equipamentos para Controle de Emissoes Veiculares da América do Sul (AFEEVAS); Association for Emissions Control by Catalyst (AECC); Catalyst Manufacturers Association, Japan (CMAJ); Committee of Vehicle Emission Control in China (CVEC); Emission Controls Manufacturers Association, India (ECMA); European Precious Metals Association (EPMF); Manufacturers of Emission Controls Association (MECA); Verband der Automobilindustrie (VDA); Verband der Chemischen Industrie e.V. (VCI).

Cobalt Institute; Cobalt REACH consortium; Deutsche Gesellschaft für Galvano- und Oberflaechentechnik (DGO); Energy Materials Industrial Research Initiative (EMIRI); European Association for Battery, Hybrid and Fuel Cell Electric Vehicles (AVERE); Nickel Institute; Nickel REACH consortium.

European Battery Recycling Association (EBRA); European Electronics Recyclers Association (EERA); European Precious Metals Federation; Fachvereinigung Edelmetalle (German Precious Metals Association); Global Battery Alliance (GBA); International Platinum Group Metals Association (IPA); International Precious Metals Institute; Minor Metals Trade Association; Responsible Jewellery Council (RJC); The European Association of Advanced Rechargeable Batteries (RECHARGE); The International Platinum Group Metals Association (IPA); The London Bullion Market Association (LBMA); The London Platinum and Palladium Market (LPPM); Vereniging Nederlandse Metallurgische Industrie (VNMI).

European Innovation Partnership (EIP) on Raw Materials, B20-G20; the High-Level Group (HLG) on Key Enabling Technologies (KET); the Steering Committee of Energy Materials Industrial Research Initiative (EMIRI); the ERA-MIN network on industrial handling of raw materials for European Industries.

Advocacy for impact

CORPORATE

The World Economic Forum's Global Battery Alliance was launched in September 2017. This global public-private partnership comprises over 40 international organizations to establish a sustainable battery value chain to power the decarbonization of the world's energy and transport systems. Umicore chairs the Executive Board. In collaboration with our partners in 2019, we worked toward ensuring that the cobalt extraction industry is free of child labor and that alternative livelihoods for cobalt-dependent households are made available, and on assessing the viability of a circular economy for batteries. This work explored a second life battery market, material passports to enable battery recycling thanks to regulations that facilitate cross-border transport of spent batteries, the collection of end-of-life portable electronics to increase battery recycling and the creation of economic value for innovative projects supporting mining communities.

CATALYSIS

As air quality concerns, especially in cities, continue to increase, legislation aiming to minimize the impact on air quality of transportation using internal combustion engines is becoming increasingly stringent. As a producer of key components of catalytic emission control systems, Umicore is a member of various industry associations worldwide through which, in close collaboration with automotive engineering companies, we aim to provide an option in the portfolio of ultra-clean transportation of the future using the most advanced emission control technologies.

ENERGY & SURFACE TECHNOLOGIES

Accelerating the transition to a low-carbon society requires driving down the cost of clean energy and clean mobility technologies. Advanced materials represent a sizeable part of the cost of these clean technologies and are key enablers of the low-carbon society. The advanced materials path from lab to market is long, risky and capital-intensive, so industry welcomes risk-sharing initiatives supporting European industrial leadership. Founded in 2012 by Umicore and other industrial and research organizations, EMIRI (the Energy Materials Industrial Research Initiative) works to increase awareness about the role of advanced materials in everyday life and in the European economy, and advocates for stronger EU-level innovation support.

RECYCLING

The European Union is striving to establish a Circular Economy. Umicore, a frontrunner with our "closed loop" business model, contributes to numerous conferences and expert working groups. Specifically, we emphasize the links between a Circular Economy and responsible sourcing, resource efficiency, waste management and high-quality recycling. We use our experience to promote electromobility as a gateway to Circular Economy in Europe.

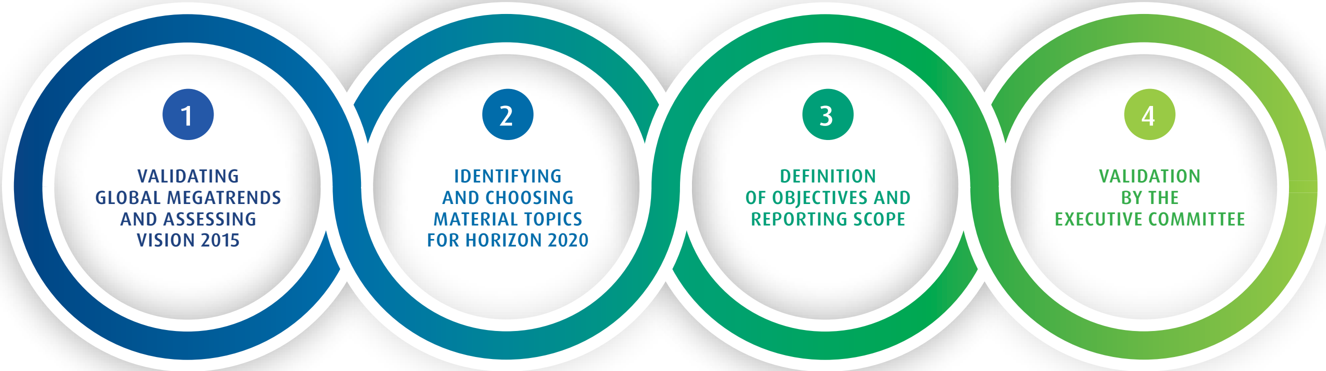
In 2019, Umicore contributed to the Global Battery Alliance report "A Vision for a Sustainable Battery Value Chain in 2030", detailing how batteries contribute to meeting the Paris climate agreement and empower social, environmental and economic change by 2030.

To view the report, go to:

UMICORE.COM/GLOBAL-BATTERY-ALLIANCE-REPORT-2019

Materiality

SETTING THE COURSE WITH OUR STAKEHOLDERS FROM 2015 THROUGH 2020



Umicore strives to plan for the best possible future by remaining in a healthy and competitive position whilst considering global economic, social and environmental megatrends.

Our Vision 2015 strategy built on existing competencies, market positions and our long-standing expertise in metallurgy, materials science, application know-how and recycling, and combined them with our closed-loop business model to give us strong growth potential in clean air, clean energy, vehicle electrification and addressing resource scarcity.

Horizon 2020, launched in 2015, represents continuity in Umicore's strategic choices over the past decade and sets out further economic, environmental, value chain and society challenges. The definition of the environmental, value chain and society objectives for the Horizon 2020 strategy involved a materiality assessment to identify areas with the potential to turn sustainability into a greater competitive edge, as follows:

1 VALIDATING GLOBAL MEGATRENDS AND ASSESSING VISION 2015 ACHIEVEMENTS

In 2014-15, the executive committee scanned in detail the four megatrends that underpin Umicore's growth ambitions. The results clearly showed that three of the four megatrends were strengthening: resource scarcity, the need for clean air and vehicle electrification (see pages 10-11 for more on these megatrends). The landscape had shifted significantly in photovoltaics, the fourth megatrend, where a combination of economic and technology choices led to a less favourable market for Umicore's higher-end solutions. Based on the results, the executive committee elected to focus Umicore's Horizon 2020 growth ambitions on activities that are linked to clean air (automotive catalysts), vehicle electrification (rechargeable battery materials) and resource efficiency, ensuring precious and specialty metals recycling through our closed-loop business model. These activities are therefore at the heart of our ambition to double Umicore earnings by 2020.

In terms of sustainability performance, Vision 2015 yielded positive results. On the environmental front, we achieved a significant reduction in CO_2 and metal emissions to water and air, surpassing our targets in all three cases.

We also made strides in personnel development and stakeholder engagement. By 2015, the vast majority of Umicore employees had received an annual appraisal and development plan and we had further reduced exposure levels of our employees to various metals. Our last People Survey in 2018 confirmed that we had achieved several of our Horizon 2020 objectives.

In sustainable procurement, we built on our reputation as a pioneer in the field by deploying our Sustainable Procurement Charter and sought out conflict-free certifications for our smelters.

Safety was the sole area where performance was less than satisfactory. We set ourselves the target of becoming an accident-free company by 2015 and, while our safety performance improved, we fell short of this objective.

The challenge for Horizon 2020 is to maintain the progress made, continue focusing on topics such as safety where we fell short of our goals and to develop goals that enhance Umicore's competitive positioning, as follows:

MAINTAIN ACHIEVEMENTS in carbon and metal emissions, preferred employer and stakeholder engagement. Although we will not set further objectives for these themes, we will continue to measure and report on the impact and performance when relevant from a materiality point of view.

IMPROVE safety and occupational exposure. We will continue to pursue the zero accident and zero excess readings goals.

SECURE COMPETITIVE ADVANTAGE through sustainable sourcing. Thanks to the implementation of the Umicore Sustainable Procurement Charter, we have developed a reputation for ethical sourcing. This approach is aligned with Umicore's values and ethics but comes at a cost that is only gradually accepted by customers. Horizon 2020 seeks to leverage this sustainable sourcing approach to generate an enhanced competitive edge.

2 IDENTIFYING AND CHOOSING MATERIAL TOPICS FOR HORIZON 2020

With the activities linked to clean air, vehicle electrification and recycling defined as the main levers for Umicore's growth, we screened for other topics of material importance to our business units and to our main stakeholder groups.

In addition to producing the initial list of material topics, based on the learning from Vision 2015, other potential topics were identified through direct feedback from stakeholders, including the findings of the annual internal business risk assessment, the results from the 2014 People Survey for all employees, the data from the implementation of Umicore's APS (Assessment of Product and services Sustainability) tool from 2012 to 2015 and direct questions submitted to Umicore or its business units by customers.

At corporate level, we screened material issues at peer companies and customers, as well as potentially relevant topics discussed by international business groups, research groups and media.

All topics identified in the materiality screening phase were used to produce a draft materiality matrix. The relevance of these topics for Umicore was assessed by a project team and discussed with the Environment, Health and Safety (EHS) and Human Resources (HR) corporate teams. The starting matrix, containing about 65 topics, was submitted for further refining with the business unit management teams.

Based on the feedback received, a revised version of the Umicore Group materiality matrix was compiled consisting of top quartile topics. These 25 topics were the basis of the materiality testing and for ease of reference were clustered into five categories: Supply, Products, Operational Excellence, Human Resources, Health and Safety.

The list of material topics was then tested using an online survey that was sent to 48 stakeholders. These stakeholders – investors, customers and employees – ranked the topics.

3 DEFINITION OF OBJECTIVES AND REPORTING SCOPE

Based on the results of the first two phases, we established the scope of the objectives for Horizon 2020. We clustered our objectives in four main themes. Three of the Vision 2015 themes were kept – Economic Performance, Eco-Efficiency and Great Place to Work – but "Stakeholder Engagement" was replaced by "Value Chain and Society" to highlight our ambition of adopting a more holistic view of Umicore's presence in and impact on the overall value chain. This constitutes Umicore's main focus through 2020.

The process for defining the environmental, value chain and society objectives within Horizon 2020 involved a structured dialogue with the management of each business unit to determine the social and environmental topics that could generate a greater competitive edge.

To ensure a degree of alignment with external expectations, we also conducted an online stakeholder survey. The objectives were debated and ratified by the executive committee in February 2016.

We also identified a range of issues that Umicore and our stakeholders identified as important for management purposes, which should remain part of the report, albeit not part of any specific Horizon 2020 objective.

One example is CO_2 emissions: in our Vision 2015 review, we assessed that the absolute level of our CO_2 emissions was dependent on the energy mix of the countries in which we operate, a roadblock to pursuing a specific CO_2 emission reduction objective. We therefore chose to pursue energy, operational and materials efficiency instead. However, many stakeholders expect Umicore to report CO_2 emission and this data remains part of the reporting scope.

4 VALIDATION BY THE EXECUTIVE COMMITTEE

The matrix and its translation into specific environmental, value chain and society objectives were validated by the executive committee in February 2016. The economic objectives and growth ambitions had been previously validated in 2015.

As a result, we believe that our Horizon 2020 objectives and the information that we report in this document represent a balanced reflection of external requirements and our own internal needs, and enable a balanced appreciation of our performance.

You will find the strategic targets associated with this materiality assessment on the following page.

UPDATES

Following the 2019 review, the board of directors confirmed that Operational Excellence, Supply, Products, Human Resources and Health and Safety remain Umicore's material issues. We continue to follow our Horizon 2020 objectives and the associated materiality in determining the content and disclosure in this report.

As preparation for future strategic planning, in 2019 Umicore conducted a preliminary study to assess our materiality approach and select possible themes for application to the next strategic round. Meanwhile, the methodology used served as inspiration to the Cobalt Institute Risk Assessment framework (see Value Chain and Society chapter).

In 2019 Umicore also mandated a preliminary report on climate change-related risks and opportunities and a first approach was made to determining Scope 3 emissions for the Umicore Group. Further analysis on these topics will be undertaken in 2020.

HORIZON 2020 TARGETS

ECONOMIC PERFORMANCE

STRENGTHEN LEADERSHIP

Confirm our strong position and unique offer in clean mobility materials and recycling processes

DOUBLE THE EARNINGS

At least double the size of recurring EBIT compared to 2014 and excluding the discontinued operations

REBALANCE PORTFOLIO

Ensure a more balanced distribution of earnings among the three business groups

VALUE CHAIN AND SOCIETY

SUSTAINABLE SUPPLY

Secure materials supply and promote our closed-loop business offer

Main material topics: *Criticality of raw materials, Recyclability and potential to close the loop, Recycled input materials use, Resource scarcity, Supplier screening, Supply disruptions, Sustainability of supply chain/responsible sourcing*

SUSTAINABLE PRODUCTS AND SERVICES

Develop products that create sustainable value for our customers or society

Main material topics: *Life cycle thinking, Opportunities and risk from technologies and products, Product stewardship, Public health and safety, Resource efficient products and production, Toxic substances and phase out or ban*

Main stakeholders: *Customers, Investors and funders, Public sector & authorities, Society, Suppliers*

ECO-EFFICIENCY

EFFICIENT OPERATIONS

Increase value through efficient use of metals, energy and other substances

Main material topics: *Energy consumption and efficiency, Opportunities and risk from technologies and products, Resource efficient products and production*

Main stakeholders: *Customers, Investors and funders, Public sector & authorities, Society, Suppliers*

GREAT PLACE TO WORK

SAFETY

Become a zero-accident workplace

Main material topics: *Occupational safety, Process safety*

HEALTH

Reduce employee exposure to specific metals

Main material topics: *Occupational health*

PEOPLE ENGAGEMENT

Further improve people engagement with specific focus on talent attraction & retention, diversity management and employability

Main material topics: *Diversity and inclusion, Employee training and development, Talent attraction and retention*

Main stakeholders: *Customers, Employees, Investors and funders, Public sector & authorities, Society, Suppliers*

Other topics that were defined as material by at least one stakeholder group during the materiality assessment but are not a specific Horizon 2020 objective (ie CO_2 or metal emissions) are reported in the statements section of the report.


Quentin Poncelet and Ella Pei visiting the UNICEF education project in Madagascar

Giving back to society

UMICORE.COM/GIVING-BACK-TO-SOCIETY

Umicore seeks to contribute to the well-being of the communities in which it operates and to be a responsible corporation and good corporate neighbor.

In this context, Umicore supports several causes both financially and by making time and talent available.

Umicore channels resources to sponsorships and donations with each business unit expected to allocate an annual donations budget based on an internal framework that promotes stable and longer-term commitments, irrespective of the wider economic environment.

Umicore believes that by empowering Umicore sites for local sponsorship and donation initiatives, it will make a positive difference in the communities in which it operates, beyond the direct benefits generated by employment and local taxes. Umicore's support may include contributions in kind and releasing staff to work on community-related projects.

While sites determine the specific focus of their own initiatives, the general focus is on supporting and promoting a strong social fabric in the community around the site, with priority given to educational initiatives.

Educational initiatives are particularly relevant for Umicore as a technology-oriented business and provide an excellent way of engaging with young people in the community and reinforcing links between Umicore and its neighborhood.

At corporate level, the emphasis is on projects with an international scope. Priority is given to initiatives with a clear educational component and that link with sustainable development (social, environmental and/ or technological).

PARTNERING FOR IMPACT

Quality education for all is one of the main objectives of UNICEF, with which Umicore has had a long-term partnership since 2011, committing to 2 specific child-education projects in India and Madagascar. Despite impressive achievements and tireless work, big efforts are still needed to ensure that every child has access to quality education in both countries. UNICEF is doing a remarkable job by acting in the field, hand in hand with local authorities. Our partnership translates into very concrete actions such as the construction of schools or the improvement of education systems.

In addition, Umicore is a founding member of Entrepreneurs pour Entrepreneurs/ Ondernemers voor Ondernemers which pairs corporate donors with development charities that focus on promoting entrepreneurship in the developing world. Over the years, Umicore and Entrepreneurs for Entrepreneurs have supported work in Bolivia, Cambodia, Congo, Ecuador, Haiti, Mali, Togo and more.

Umicore also aims to contribute to disaster relief wherever it may be needed, contributing in 2019 to the Doctors without Borders/Médecins sans Frontières fund for a maternal healthcare program in Afghanistan.

These combined efforts around the globe support us in our ambition to be a responsible company and to give back to society.

Driving economic performance

2020 Target

STRENGTHEN LEADERSHIP — Confirm our strong position and unique offer in clean mobility materials and recycling.

DOUBLE THE EARNINGS — Double the size of recurring EBIT compared to 2014 excluding the discontinued operations.

REBALANCE PORTFOLIO — Ensure a more balanced contribution of earnings from our 3 business groups.

KEY RISKS & OPPORTUNITIES

1. Regulatory and legal context
2. Sustainable and ethical supply
3. Technology and substitution
4. Market
5. Metal price

SEE RISKS ON PAGE 57

SUSTAINABLE DEVELOPMENT GOALS

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Thia Elena Zhou and Martin Schmidt at the Hanau site

CASE STUDY

Gasoline particulate filters

Strong sales of Umicore's catalyst technologies include a growing contribution from state-of-the-art gasoline particulate filters (GPFs), especially in Europe and China.

GPFs reduce vehicle particulate emissions; adding advanced coatings enhances the functions of the exhaust system. Coating GPFs with three-way catalytic materials contributes to the reduction of emissions such as hydrocarbons, carbon monoxide (CO), and nitrogen oxides (NOx). The resulting catalyzed GPFs are increasingly important as conformity factors decrease, emission regulations tighten, and future emissions limits may include ultrafine particles.

ANNUALREPORT.UMICORE.COM/STORIES

Economic review

€ 509m

GROUP REBIT

€ 553m

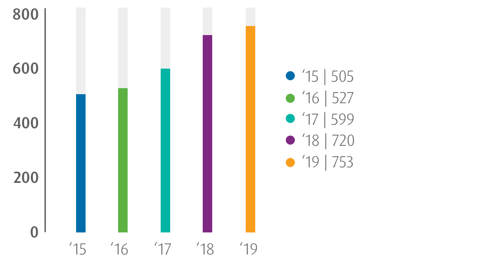
GROUP CAPEX

12.6%

ROCE

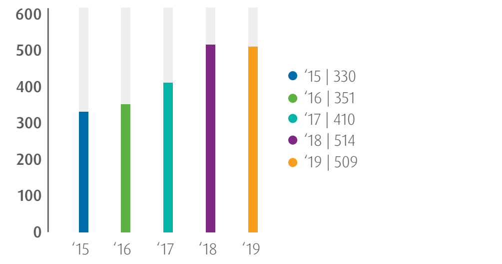
RECURRING EBITDA

Millions of Euros



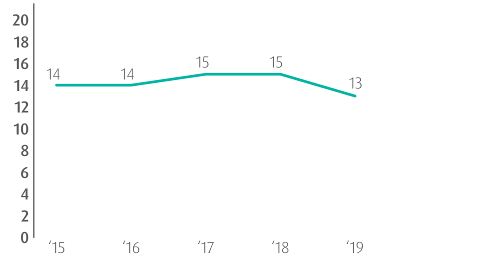
RECURRING EBIT

Millions of Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%



We have selected 3 key performance indicators to measure our success in the execution of our Horizon 2020 growth strategy and our progress towards our longer-term targets and objectives:

- Recurring EBITDA gives a clear indication on earnings and profitability, and is a good proxy for generated operating cashflows (cashflow from operations before change in cash working capital).
- As part of our Horizon 2020 strategy we had set a 2020 recurring EBIT target of doubling the 2014 figure.
- We want our investments to create value by generating attractive returns and have set a Group ROCE target of 15%+.

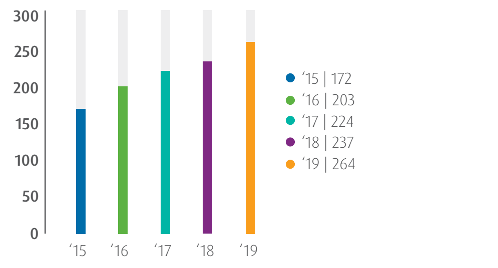
Umicore posted a strong performance in 2019 against a backdrop of persisting headwinds in key markets, in particular the automotive sector. Revenues for the full year grew by 3% to € 3.4 billion and recurring EBITDA increased 5% to € 753 million, while recurring EBIT was € 509 million, close to the record levels of 2018. After a somewhat softer first half performance, revenues and recurring EBIT in the second half posted strong sequential growth and were up 6% and 12% respectively. Over the course of 2019 Umicore made important strides in the execution of our growth strategy.

While the EV market was in the spotlight, the strength of Umicore's position as a supplier of materials technologies to all types of clean mobility solutions was confirmed. In Catalysis, this was demonstrated by several successes in catalyst technologies such as particulate filters for gasoline engines and the opening of the new plant for fuel cells catalysis in Korea. In Energy & Surface Technologies, we continued to invest in the growth of our business, albeit at an adjusted pace in line with current market demand. We commissioned a new Process Competence Center in Belgium, ramped up production in the new plant in China and started construction of the greenfield plant in Poland. We continued to promote a global sustainable battery materials value chain, as evidenced by the acquisition of the cobalt refinery and cathode precursor operations in Finland and the long-term partnerships for sustainable cobalt supply. Finally, Umicore signed sizeable multi-year strategic supply agreements with LG Chem and Samsung SDI for NMC cathode materials which demonstrate the quality of our technology offering. In Recycling, Umicore completed the multi-year expansion program at the Hoboken plant and carried out various investments to further improve our environmental performance.

CATALYSIS

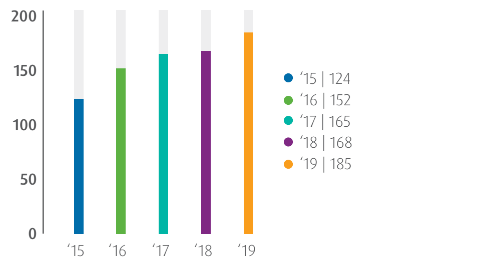
RECURRING EBITDA

Millions of Euros



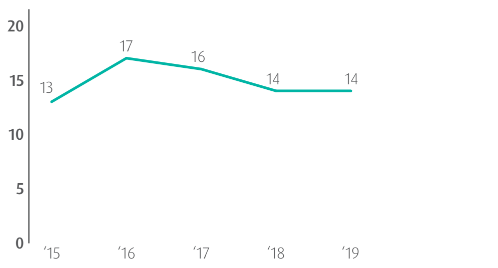
RECURRING EBIT

Millions of Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%



In 2019, Catalysis recorded revenues of € 1,460 million, up 7% from 2018, despite a steep decline in global car production. Umicore continued to outperform the light-duty vehicles market as a result of market share gains in light duty gasoline applications. In China, Umicore benefitted from the early launch of China 6-compliant platforms and continued to record solid growth. Revenues in Precious Metals Chemistry were also higher from 2018, due to growing sales of compounds used in pharmaceutical and fine chemical applications as well as fuel cell catalysts. Recurring EBIT for the Catalysis business group was € 185 million, up 10% from 2018, and recurring EBITDA was € 264 million, up 11%. Higher rhodium and palladium prices resulted in a significant increase in net working capital requirements in the second half of 2019.

While there are no signs of an imminent recovery in the automotive market, Catalysis is expected to continue to benefit from our strong market position in gasoline catalyst applications and a further penetration of higher value gasoline particulate filters in Europe and China. Fuel cell catalysts production will continue to ramp up in Korea.

Revenues for Automotive Catalysts increased compared to 2018, despite a global recession in the automotive market. In the light-duty vehicles segment, Umicore continued to outperform the market both in terms of volumes and revenues, particularly in China. This trend was more pronounced in the second half of 2019. We also grew volumes and revenues in a subdued heavy-duty diesel segment. Global light-duty vehicle production dropped by 6.3% from 2018, with all key markets posting a decline compared to 2018. Falling car production in China (-8.9%) was the largest factor behind the worldwide decline. The European and North American markets contracted by 5.0% and 4.4% respectively. In this challenging context, Umicore grew volumes and revenues reflecting market share gains in gasoline catalyst technologies and an increasing penetration of higher value gasoline particulate filters in China and Europe. In 2019, 40% of Umicore's light-duty catalyst volumes were sold in the Asian car market, with China representing the majority of that share. Europe and the Americas each accounted for 30% of the sales volumes of our global light-duty catalysts.

In China, Umicore's volumes increased significantly driven by the ramp-up of recently won gasoline platforms and a strong exposure to international car manufacturers. Umicore is now the leading light-duty catalyst producer in the region. The increase in revenues was even more pronounced due to the early implementation of China 6 emission norms in certain large cities as well as the growing penetration of gasoline platforms that require particulate filters. This strong performance was in stark contrast with the Chinese car market, which shrank for the second year in a row in 2019. After a steep contraction of the car market in the first half of 2019, the pace of decline eased somewhat in the second half, reflecting a traditionally stronger fourth quarter and a more favorable year-on-year comparison with a particularly weak demand in the second half of 2018.

In Japan, Umicore's volumes were slightly down in an overall stagnating market, while in Korea and South-East Asia, our volumes were adversely impacted by the timing of certain platform changes.

The European car market declined by 5% from 2018, due mainly to a strong decrease in the production of diesel cars (-12%) which represented 35% of the car market in 2019. Umicore is less exposed to the light-duty diesel segment and outperformed the European car market both in volumes and revenues as a result of our strong market position in gasoline catalyst technologies and a growing contribution from gasoline particulate filters.

In North America, Umicore posted stronger revenues despite a declining car market, benefitting from the introduction of new platforms, an increased exposure to the SUV segment and a favorable customer mix. Our volumes were down in South America, in line with the car production in the region, while revenues benefitted from a good platform mix.

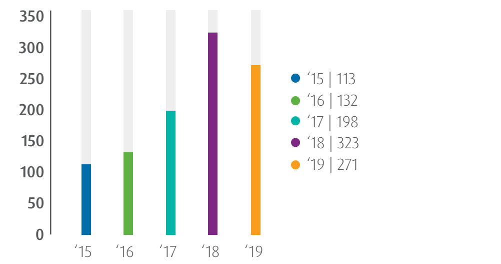
To cater for the growing demand for our catalysts, Umicore expanded capacity in key regions where legislation changes require more complex catalyst systems. In Poland, additional production lines came on stream in the second quarter of 2019, ahead of Euro 6d final. Production capacity was also expanded in the second half of 2019 in China, to fulfill stronger customer orders for China 6 compliant platforms, and in India to support the upcoming Bharat State 6 legislation.

Revenues for Precious Metals Chemistry were well up from 2018, driven by increased customer demand for Umicore's homogeneous catalysts used in pharmaceutical and fine chemical applications, as Umicore successfully expanded our customer base and portfolio of innovative solutions. Revenue growth was also supported by a significant increase in demand for Umicore's fuel cell catalysts used in the transportation segment. The demand for fuel cell drive trains is gaining momentum both for light and heavy-duty applications. To support the rapid growth of our automotive customers, we have expanded our production capacity for fuel cell catalysts in Korea. The new facility was inaugurated in October and production is ramping up.

ENERGY & SURFACE TECHNOLOGIES

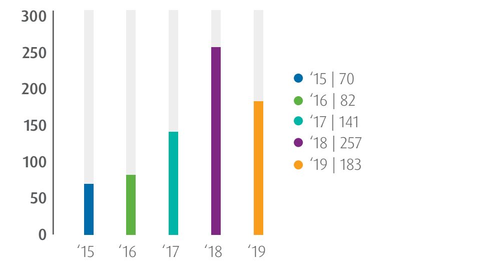
RECURRING EBITDA

Millions of Euros



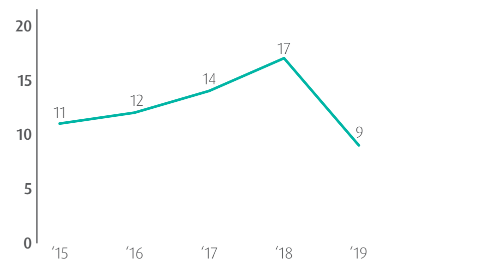
RECURRING EBIT

Millions of Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%



Revenues in Energy & Surface Technologies amounted to € 1,225 million, down 5% from the record levels in 2018, reflecting the impact of lower metal prices, reduced sales of high cobalt containing products and lower sales of cathode materials for high-end portable electronics and energy storage. Sales of Umicore's cathode materials used in automotive applications, however, grew in line with the global EV market, which was up 7.7%, supported by our exposure to a diverse mix of EV platforms with OEMs globally. Revenues and margins were severely impacted by the collapse of the cobalt price, which on average more than halved compared to 2018 and drove the cobalt refining, recycling and distribution margins much lower compared to the historically high levels of 2018. We integrated the cobalt and nickel refining activities that directly feed the cathode materials production plants in our Rechargeable Battery Materials business unit. The inflow of cheaper cobalt units unethically sourced from artisanal mining, which put our high cobalt-containing products at a competitive disadvantage, continued to impact the performance of the business group.

Recurring EBIT was well under the levels achieved in 2018 (-29%) and amounted to € 183 million. This decrease also reflects higher depreciation charges from recent investments and costs related to greenfield investments in China and Poland. Recurring EBITDA was € 271 million, down 16% from 2018.

Visibility remains limited, in particular in China where EV demand is not expected to materially recover in 2020. We anticipate benefitting from the consolidation of the recently acquired cobalt refining and cathode precursor activities in Kokkola, Finland. At the same time, the performance of the business group will reflect higher fixed costs, such as depreciation charges and upfront costs, related to the ongoing investments in capacity as well as higher R&D spending.

To align with the metric most commonly used in the rechargeable battery market and incorporate the evolution of the chemistry mix, we decided to express our projections in GWh rather than in tons of cathode materials. We expect to reach 60 GWh of cathode materials capacity by mid-2021 and 100 GWh by mid-2023, in line with the revised projections.

Revenues in Rechargeable Battery Materials were down compared to 2018 due to lower sales of high-energy LCO cathode materials for high-end portable electronics and reduced demand for NMC cathode materials used in energy storage applications. Sales volumes of NMC cathode materials to power EV applications grew in line with the global EV market, supported by our exposure to a diverse mix of EV platforms with OEMs globally. Our overall sales volumes of cathode materials in the second half of 2019 exceeded both the levels of the first half of 2019 and the second half of 2018.

In 2019, the global EV market slowed down with demand for full electric and plug-in hybrid vehicles up 7.7% after an impressive 62% year-on-year growth in 2018. While EV sales continued to grow in the first half of 2019, albeit at a slower pace than in the second half of 2018, sales decreased in the second half of 2019 due to an abrupt decline of EV demand in China once the subsidy cuts had taken their full effect at the end of June. The new subsidy regime was also less supportive for the use of NMC cathode material in e-buses for shorter distance public transport. Despite the near-term weakness in demand, EV sales in the region are expected to increase substantially over the next years, as the Chinese government remains fully committed to pushing forward electrified transportation. The Ministry of Industry and Information Technology recently proposed a new target penetration rate of 25% NEVs in 2025 (up from 20% previously and compared with a penetration rate of less than 5% in 2019) combined with an increase of the NEV credit targets for the period 2021-2023.

EV sales in Europe continued to grow strongly by 30% in 2019 with car OEMs increasingly electrifying their products to anticipate new CO_2 emission regulation and super credits both phasing-in in 2020. Europe accounted for 26% of EVs sold globally and its share is expected to increase over the coming years. The proposed European Green Deal provides another strong push towards electrification with the introduction of more stringent CO_2 targets to ensure a clear pathway from 2025 towards zero-emission mobility.

2019 was a challenging year in terms of EV demand but several regions are transitioning to electrified mobility. We reached major milestones that strengthen our global positioning as a battery materials supplier to support this transition. Umicore commissioned the new Process Competence Center in Olen, Belgium and started construction of our greenfield production site in Poland, due to start production by the end of 2020. Umicore also started commissioning our new site in China, with an adjusted schedule for further line additions due to the current market slowdown. We also signed multi-year agreements with leading EV battery makers LG Chem and Samsung SDI for the supply of respectively 125,000 and close to 80,000 metric tons of cathode materials, starting in 2020. In 2019 we expanded our integrated and sustainable battery materials value chain by acquiring Freeport Cobalt's cobalt refining and cathode precursor activities in Kokkola, Finland, in early December, and by concluding a long-term partnership with Glencore for the supply of sustainable cobalt. Our suppliers source Cobalt from state-of-the-art industrial-scale concessions in the DRC, which operate in full conformity with our Sustainable Procurement Framework for Cobalt and supply our refineries worldwide, including the Kokkola refinery.

Umicore obtained support for 3 projects within the framework of Important Projects of Common European Interest ("IPCEI"1F) for batteries. The Umicore IPCEI-projects are focused on research, innovation and first industrial deployment for new products and processes that are crucial to produce high-quality and affordable batteries that can be recycled in a safe and environmentally friendly way.

Demand for NMC materials used in energy storage applications in Korea came to a complete standstill in the first half of 2019 when the government halted the production of new systems after a series of safety incidents. Demand for cathode materials going into this application has remained subdued since then. Umicore's sales of High Energy LCO cathode materials for batteries in high-end portable electronics decreased due to high inventory levels in the supply chain and competition from products containing cheaper cobalt sourced unethically from artisanal operations.

Revenues and margins of Cobalt & Specialty Materials were significantly impacted by the lower cobalt price and the impact of cheaper cobalt from unethical artisanal mining which led to lower volumes and margins in most cobalt-related activities. Demand for cobalt-containing products was weak as customers were reducing excess inventories built up in 2018 when the cobalt price averaged more than double the price in 2019. Volumes and premiums of these products were impacted by the inflow of cheaper cobalt which is unethically sourced from artisanal mining, enabling several competitors to sell at a lower price. While the low cobalt price encouraged some diggers to step away from artisanal cobalt mining, a large stock overhang of such cobalt units is still feeding the market today. Margins in the distribution activity were also impacted by the lower cobalt price while volumes grew thanks to a successful geographical expansion.

Revenues for nickel compounds used in the battery, plating and catalyst industries were slightly higher than 2018. Due to a challenging market environment, Umicore decided to discontinue operations at our cobalt, nickel and rhenium refining and recycling plant in Wickliffe, OH, US. The plant transformed these metals into compounds for the catalyst, petrochemical refining and aviation industries. The recycling of cobalt-containing scrap will be taken over by the refining and recycling plant in Olen, Belgium. The other activities will be phased out in the course of 2020.

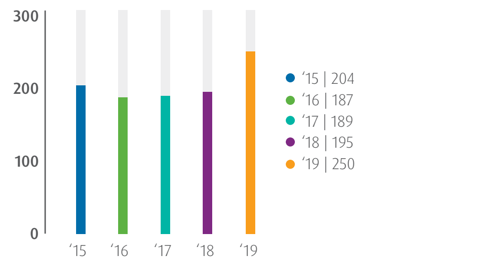
Revenues for Electroplating were slightly up from 2018 benefitting from higher demand for our technologically advanced precious metal-based electrolytes used in portable electronics. Demand for jewelry and decorative applications, however, was substantially lower due to the economic slowdown and as these industries reduced their metal consumption owing to fast-rising precious metal prices.

Revenues for Electro-Optic Materials were roughly stable compared to 2018. A higher contribution to revenues from finished infrared optics and germanium recycling and refining compensated for the impact of lower demand for thin film products from the microelectronics industry. Revenues for substrates remained broadly stable.

RECYCLING

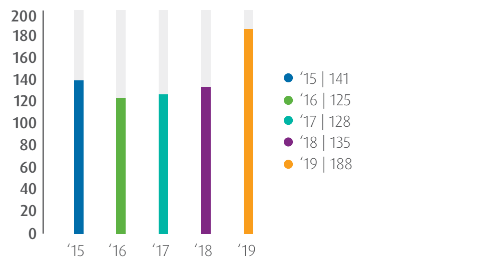
RECURRING EBITDA

Millions of Euros



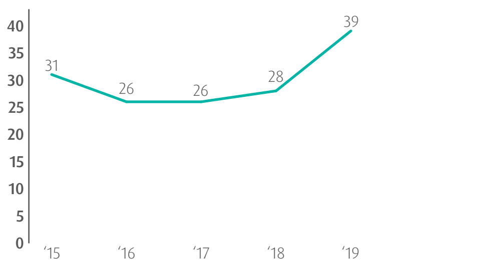
RECURRING EBIT

Millions of Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%



Recycling recorded revenues of € 681 million and a recurring EBIT of € 188 million in 2019, an increase of 9% and 40% respectively compared to 2018. The business group results were supported by higher metal prices. In addition, Precious Metals Refining benefitted from a favorable supply environment and optimized our input mix, offsetting most of the impact of the extended shutdown and the fire incident in July. Recurring EBITDA amounted to € 250 million, an increase of 29% compared to 2018.

Revenues and earnings for Precious Metals Refining were well up from 2018 benefitting from improved market conditions in certain supply segments and higher metal prices. Processed volumes were lower than in 2018 due to the extended maintenance shutdown of the Hoboken plant in the beginning of 2019. In addition, the overall availability of the smelter was affected by the fire incident in July. Umicore was able to offset most of the volume shortfall by optimizing the input mix.

The metal price environment was supportive in 2019, with increasing prices for certain precious and platinum group metals, particularly in the second half of 2019. While Umicore had already locked in a significant portion of our exposure to these metals in the first half of 2019 and could therefore not fully benefit from the rise in the second half of 2019, average received prices for these metals in 2019 were nevertheless well above the levels of 2018.

The availability of complex secondary materials increased, in particular end-of-life materials such as spent automotive catalysts with a higher metal loading than previous generations and a growing portion of diesel particulate filters. More printed circuit boards were available for recycling as a result of the stricter enforcement by the Chinese government of the Green Fence. We made full use of our distinctive technological capabilities to recycle a higher proportion of such complex materials. This optimization of the mix offset most of the volume shortfall in 2019.

The multi-year capacity expansion program at the Hoboken plant has now been completed and the focus will be to ensure maximum availability of the equipment and optimize the use of this expanded capacity in line with the supply opportunities in the market. As part of our continuous programs to improve the environmental performance of the Hoboken plant, Umicore carried out several investments aimed at upgrading existing plant facilities.

Revenues for Jewelry & Industrial Metals remained stable compared to 2018. The activity benefitted from higher market demand for silver coins, market share gains in our refining and recycling activities and continued strong demand for our performance catalysts. Order levels for our jewelry and industrial products were lower from 2018.

The earnings contribution from Precious Metals Management increased substantially compared to 2018 as the business unit benefitted from favorable trading conditions for precious and certain platinum group metals.

FINANCIAL REVIEW

NON-RECURRING ITEMS

Non-recurring items had a negative impact of € 30 million on EBIT over the period. Restructuring charges accounted for € 26 million and were mainly related to the discontinuation of the activities at the Wickliffe site in the business unit Cobalt & Specialty Materials. Umicore's definition of non-recurring items also includes impairments of permanently tied-up metal inventories. As previously mentioned, Umicore is applying as from 1 January 2019 the IAS 16 and IAS 36 principles to value our permanently tied-up metal inventories which implies that these inventories are part of our annual impairment testing of the businesses (cash generating units) that carry those inventories. The close of 31 December 2019 identified no need for impairments on the permanently tied-up metal inventories. The impact of non-recurring charges on the net result (Group share) amounted to € 24 million.

HEDGING

Over the course of 2019, Umicore entered into additional forward contracts to secure a substantial portion of our structural price exposure for certain precious metals, providing increased earnings visibility. In particular for gold and palladium, Umicore locked in more than half of our 2020 and 2021 exposure. Umicore also hedged a significant portion of our platinum exposure for 2020. In the absence of a paper market, no forward contracts were entered into for rhodium.

FINANCIAL RESULT AND TAXATION

Net recurring financial charges totaled € 83 million, compared to € 69 million in 2018, mainly due to higher forex costs and net interest charges. The latter reflect higher financial debt, including an increased portion of local funding in Asia.

The recurring tax charge for the period amounted to € 103 million, which is in line with 2018 and corresponds to a recurring effective tax rate of 24.7% (24.4% in 2018). The total tax paid in cash over the period amounted to € 87 million, which is € 41 million lower than the same period last year. The Group applied the IFRIC 23 interpretation retrospectively with the cumulative effect of initially applying the Interpretation recognized as an adjustment to the opening balance of the reserves on 1 January 2019.

CASHFLOW

Cashflow generated from operations, including changes in net working capital, amounted to € 549 million compared to € 92 million in 2018. After deduction of € 588 million of capital expenditures and capitalized development expenses, this corresponds to a negative free cash flow from operations over the period of € 39 million, compared to a negative free cashflow of € 406 million last year.

Recurring EBITDA amounted to € 753 million, up 5% compared to € 720 million in the same period last year, and corresponds to a recurring EBITDA margin of 22.1 % compared to 21.9% in 2018. The adoption of the new IFRS 16 lease standard had a positive effect of € 17 million on recurring EBITDA over the year. Net working capital for the Group increased € 78 million compared to end of 2018. This reflects a pronounced increase in working capital needs in the Catalysis business group in the second half of 2019 due to higher PGM prices, partly offset by a release of working capital in the Recycling business group.

Capital expenditures totaled € 553 million, up from € 478 million in 2018 reflecting higher investments in all business groups. Energy & Surface Technologies accounted for close to two thirds of the amount, with investments primarily linked to the ongoing major greenfield expansion programs in cathode materials in China and Poland.

The higher investments in Catalysis reflect the capacity expansions in China, Poland and India as well as the expansion of fuel cell catalyst capacity in Korea. In Recycling, capital expenditures comprise the investments carried out during the extended maintenance shutdown of the Hoboken plant as well as the investments to further improve the environmental performance of the plant.

The acquisition of the cobalt refining and cathode precursor activities at Kokkola, Finland, was completed early December, resulting in a net cash out of € 188 million. Dividends paid to Umicore shareholders over the period amounted to € 186 million and the net cash outflow related to the purchase of treasury shares to cover stock options and share grants was € 29 million.

FINANCIAL DEBT

Net financial debt at 31 December 2019 stood at € 1,443 million, up from € 861 million at the end of 2018, largely driven by our capital expenditures and the Kokkola acquisition. The recognition of operating leases in financial debt following the application of the new IFRS 16 lease standard had an impact of € 46 million. Net financial debt at the end of the period corresponded to 1.9x recurring EBITDA. Group shareholders' equity stood at € 2,593 million resulting in a net gearing ratio (net debt / net debt + equity) of 35.2%.

The net financial debt includes the € 390 million long term US private debt placement issued in June 2019, which was drawn upon in September 2019. It complements the existing long-term private debt placements which were issued in 2017 for a total amount of € 690 million, two undrawn Syndicated Bank Credit Facilities of a total amount of € 795 million and substantial additional shorter-term funding instruments.

Investing in Umicore

€ 1.30

EARNINGS PER SHARE

DENOMINATOR ELEMENTS

	2019
Total shares issued as at 31 December	**246,400,000**
of which treasury shares	5,624,550
of which shares outstanding	240,775,450
Weighted average number of outstanding shares	**240,558,659**
Potential dilution due to stock option plans	1,354,110
Adjusted weighted average number of outstanding shares	241,912,769

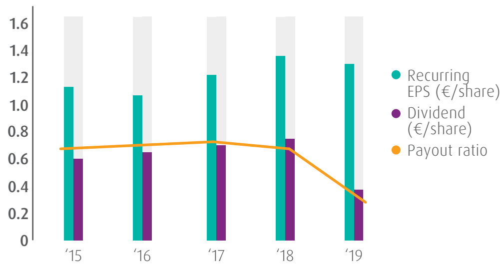
Investing in Umicore is an investment in producing materials for a better life – our mission – and supporting our growth strategy.

We have a healthy capital structure with funding headroom to execute our growth strategy while remaining within the equivalent of an investment grade credit status territory.

THE UMICORE SHARE

Umicore shares are listed on the Euronext stock exchange. The total number of outstanding and fully paid-up shares, and the number of voting rights, are 246,400,000. Umicore bought back 1,275,871 of its own shares in 2019. During the year, 936,604 shares were used in the context of exercised stock options. On 31 December 2019 Umicore held 5,624,550 shares in treasury, representing 2.28% of the Group's outstanding shares.

RETURNS TO SHAREHOLDERS



Euronext recognized Umicore as a leader in sustainable growth with the "Sustainable Growth company of the decade 2009-2019" award. The Sustainable Growth award is granted to the company with the strongest stock price performance over the past decade among Belgian stocks present in at least one Euronext sustainability index.

SHAREHOLDER RETURNS

Umicore aims to create value for its shareholders. There is no fixed pay-out ratio.

As a matter of prudence and in light of the extreme unpredictability of the global situation due to COVID-19, Umicore's Board of Directors has decided to propose a dividend of € 0.375 per share in respect of the full year 2019. This proposal replaces the proposal initially made on 7 February 2020 of € 0.75 per share and corresponds to the amount of the interim dividend of € 0.375 per share which was already paid out on 27 August 2019. This decision is also to be seen as a way for Umicore's management and Board of Directors to share the efforts among its stakeholders.

INDEXES & RATINGS

EURONEXT
BEL20; Euronext 100

AS YOU SOW
Carbon Clean 200 – 1st in Materials sector, 14th overall

CORPORATE KNIGHTS
GLOBAL 100 – 1st in Materials sector, 7th overall

ECPI
EMU Ethical Equity; Euro ESG Equity; World ESG Equity

FORUM ETHIBEL
Sustainability Index Excellence Europe
Sustainability Index Excellence Global
Ethibel PIONEER

FTSE RUSSELL
FTSE4GOOD; FTSE Environmental Opportunities 100

ISS OEKOM
PRIME ESG Rating

MSCI
ACWI Sustainable Impact Index
ACWI Low Carbon Target
Belgium IMI Index
EMU ESG Enhanced Focus Index
Global Pollution Prevention Index
World ESG Leaders Index
AAA ESG Rating (Leader)

STOXX
STOXX Europe 600; STOXX Europe Mid 200

VIGEO EIRIS
Benelux 20; Eurozone 120

The Kokkola cobalt refinery joined Umicore on December 2 2019, with 255 new colleagues

Sustainable battery materials supply chain

2019 marked several key milestones in the consistent execution of Umicore's long-term growth strategy, shaping a **sustainable battery value chain** and supporting the growing penetration of Electrical Vehicles (EV) globally. Battery materials customers, wherever they are located, will be supplied with materials of the highest quality with a certified and clean origin.

On 30 November 2019 Umicore acquired Freeport Cobalt's cobalt refining and cathode precursor activities in Kokkola, Finland. The state-of-the-art Kokkola cobalt refinery is one of the world's largest. Its refining and precursor know-how ideally complements Umicore's and the expertise and experience of its 255 employees are highly regarded in the battery materials industry. Both Kokkola and Umicore's Olen refinery are third-party assessed as compliant by the Raw Materials Initiative's Responsible Minerals Assurance process. The acquired operations will supply precursors for cathode materials production, including to the new Umicore plant in Nysa, Poland, which is due to start in the second part of 2020.

The Kokkola refinery will be supplied through Umicore's long-term agreements which source cobalt raw materials exclusively from best-in-class industrial scale cobalt mining operations, in full conformity with Umicore's sustainable procurement framework for cobalt, the third-party validated due diligence system created to avoid any link between the cobalt and unsustainable practices, including any form of child labor. One example is the long-term revolving agreement with Glencore for the supply of cobalt hydroxide to Umicore which was announced in May 2019 and guarantees Umicore's security of supply for a substantial part of its longer-term needs. The cobalt will be sourced from Glencore's state-of-the art industrial mining operations in the DRC. Umicore has assessed each operation in line with its **sustainable procurement framework for cobalt** and in 2019 performed a full compliance audit of Glencore's DRC facility. In January 2020, Umicore also signed a long-term supply agreement with CMOC for sustainable cobalt.

During 2019 Umicore also announced partnerships for the supply of Nickel Manganese Cobalt (NMC) cathode materials.

Umicore and LG Chem concluded a multi-year strategic supply agreement for cathode materials to serve LG Chem's needs from Umicore plants in Poland, Korea and China. The agreement takes effect in 2020 and covers a total volume of 125,000 metric tonnes over several years. The companies are also entering a technology licensing arrangement.

Umicore will be the first company to supply cathode materials to its global customers with identical quality and performance from different production plants across regions.

Umicore is also assisting LG Chem in closing the loop by recycling its production residues and a long-term cooperation in **battery recycling** is under discussion.

Umicore also signed a multi-year strategic agreement with Samsung SDI for the supply of close to 80,000 metric tonnes of high-performance NMC cathode materials starting in 2020. These materials will be supplied from Umicore plants in different regions with most volumes initially produced in Korea. A vast portion is intended for automotive applications and a smaller part for **energy storage systems**. The sizeable volume commitment offers critical predictability and visibility along the EV supply chain.

Value chain and society

2020 Target

SUSTAINABLE SUPPLY — Secure materials supply and promote our closed loop business offer.

SUSTAINABLE PRODUCTS & SERVICES — Develop products that create sustainable value for our customers and society.

KEY RISKS & OPPORTUNITIES

1. Regulatory and legal context
2. Sustainable and ethical supply
3. Technology and substitution
4. Market
7. Climate and environment

SEE RISKS ON PAGE 57

SUSTAINABLE DEVELOPMENT GOALS

8 DECENT WORK AND ECONOMIC GROWTH

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Formula E race in Marrakech on 1 March 2020 © Spacesuit

CASE STUDY

Formula E: from cathode production to battery recycling

Umicore is working in partnership with **Mahindra Racing** in the Formula E Championship, undertaking a technology development programme. As an example we enhance the performance of the 12V battery which runs all mission-critical systems on Mahindra Racing's Formula E cars.

Umicore is also the official battery recycling supplier of the **ABB FIA Formula E Championship** to recycle the lithium-ion battery units and cells. The recovered metals lose none of their properties and are transformed into active cathode materials that can be used again in new rechargeable batteries for the same application. This closed-loop approach results in a dramatically lower environmental footprint of the resulting battery materials.

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Marc Grynberg, Valter Sanches, Secretary General of IndustriALL Global Union
Guy Ryder, Director-General of the International Labour Organization

Value chain and society

UMICORE.COM/INDUSTRIALL

Human rights are fundamental to Umicore.

We want Umicore to be a leader in providing and creating material-based solutions to contribute to fundamental improvements in the quality of life. Human rights within the Umicore organization are enshrined in **The Umicore Way** which is the cornerstone of everything we do at Umicore, representing our organization's values. All Umicore personnel commit to upholding these values under the following key statement:

"We uphold fundamental human rights and respect those rights in conducting our operations throughout the world. We engage with the communities around our operations and communicate transparently with our stakeholders"

Our success is measured in our ability to provide environmental and ethical sourcing benefits of scarce raw materials and to deliver products and services that create sustainable value for our customers and society.

Umicore's Horizon 2020 objectives reflect a proactive view of our role in the overall value chain.

Upstream, we have placed greater emphasis on the management of key raw materials supply requirements. We have also sought to ensure that Umicore's efforts in the field of ethical sourcing can generate a competitive edge for the company.

Downstream, we have a strong portfolio of products and services that offer specific sustainability advantages to our customers and society. We use our long-standing and growing experience in ethical sourcing and sustainably managing raw materials to advocate for better practices.

On 17 October 2019, Umicore and IndustriALL Global Union renewed their Global framework Agreement on Sustainable Development for 4 years. The agreement reaffirms Umicore's commitment to sustainable development, embracing economic, environmental and social objectives. More specifically, it covers human rights, including collective bargaining and equal opportunities, safe and healthy working conditions, environmental and supply chain matters and digital transformation. All parties have undertaken to pursue the constructive dialogue they initiated in 2007 to ensure successful implementation of the agreement.

To ensure our activities are conducted in line with the Umicore Way, we have adopted policies including the Umicore Code of Conduct, Human Rights Policy, and our Sustainable Procurement Charter. Umicore fully supports the United Nations Universal Declaration of Human Rights. We are committed to uphold fundamental human rights and respect those rights in conducting our operations throughout the world. This commitment applies to all Umicore employees, all subsidiaries and joint ventures where we have operational control and all subcontractors working on our sites.

Our success depends on a relationship of trust and professionalism with employees, commercial partners, shareholders, government authorities and the public. These principles are embedded in our Code of Conduct which sets the framework for ethical behavior and respect of the rule of law, including regarding anticorruption and bribery. It incorporates whistle blowing procedures (Integrity Hotline) and supports our commitment to equal opportunities and diversity. All employees have access to, and are required to comply with, the Code of Conduct and The Umicore Way.

SUSTAINABLE & ETHICAL SUPPLY

We aim to leverage our sustainability approach in the value chain, both upstream with our suppliers and downstream with our customers.

As a global materials technology and recycling group, we purchase and recycle minerals and metals for use in a wide range of products and technologies. For our operations to function, we need raw materials, transportation, energy and other goods and services. Sustainable procurement is a key driver in Umicore's Horizon 2020 aspiration to turn sustainability into a greater competitive edge.

Our **Sustainable Procurement Charter** mitigates the supply chain risks, including human rights. The Charter outlines our commitment to fair dealing, transparency and communication, health and safety, and our efforts to include smaller sized and local suppliers in our procurement processes wherever possible, to support local economies where we operate.

We are determined to ethically and sustainably secure a competitive edge in our approach to critical raw materials. To avoid misuse of precious metals and minerals to finance armed conflict, cause human rights abuses, draw upon forced or child labor or support corruption and money laundering, we ensure that conflict minerals procurement is in line with Umicore's values through our policy for **Responsible global supply chain of minerals from conflict affected and high-risk areas** which is based on the OECD guidelines.

Umicore also continues to ensure that gold production operations are certified as conflict-free. Our customers are increasingly requesting such guarantees and we provide them with the necessary documentation to assure the conflict-free status of our products.

Our Hoboken and Guarulhos sites are certified as conflict-free smelters by the London Bullion Market Association (LBMA), and in 2019, our Hoboken smelter successfully passed the LBMA voluntary conflict-free silver audit of its 2019 activities. Umicore is certified by the Responsible Jewellery Council's Chain of Custody program. For more information on our many accreditations see note V2.

We expect our suppliers to be committed to business integrity, to promote the principles of sustainable procurement in their supply chain, to be compliant with local environmental laws and to respect international human rights law on their own sites and from their own suppliers, including to abolish child and forced labor and eliminate discrimination.

Overall, we have over 18,000 suppliers worldwide to which we paid over € 15.6 billion (including the metal content of raw materials) in 2019. Umicore's Purchasing & Transportation teams worldwide manage indirect procurement processes for energy and other goods and services (accounting for 10% of our spend) while the metal-bearing raw materials are purchased directly by the business units (accounting for 90% of our spend).

In 2019, EcoVadis continued to assess indirect procurement streams for Umicore.

Umicore Sustainable Procurement Charter available at:

UMICORE.COM/SUSTAINABLE-PROCUREMENT-CHARTER

Umicore Responsible global supply chain of minerals from conflict affected and high-risk areas available at:

UMICORE.COM/RESPONSIBLE-SUPPLY-CHAIN-POLICY

SUSTAINABLE COBALT

For over a century Umicore has been a world leader in cobalt products, used in many applications, from tooling to rechargeable batteries for electric cars. Some reserves of cobalt ore are in regions fraught with challenges, giving rise to unethical practices such as forced labor, poor health and safety conditions, child labor and corruption.

For us, sustainable procurement of cobalt means considering economic, environmental and social performance of our suppliers, and the social and environmental impact of the supply, in the purchase of materials. To source cobalt, we have implemented a pioneering Sustainable Procurement Framework for Cobalt and were the first to obtain external validation for our approach in this area.

The various sustainability aspects of the battery supply chain include the conditions under which raw materials are extracted and processed. Umicore is aware of the sustainability risks that are linked to the sourcing of cobalt particularly in the Democratic Republic of Congo. Often, artisanal and small-scale mining (ASM) activities are linked to issues such as human rights abuses, child labor, poor occupational health and safety conditions. In 2004 Umicore decided to exclude cobalt obtained from ASM from its supply chain.

Umicore is the first company in the world to have introduced a **Sustainable Procurement Framework for Cobalt** and to obtain external validation for its ethical procurement approach in this area. It aims to minimize the risk of any connection between the cobalt in its supply chain – and subsequently that of its customers – and human rights abuses or unethical business practices. Building on the specific approach to sustainable and ethical cobalt sourcing that Umicore introduced in 2004, the framework has evolved to address specific risks linked to unethical mining practices, such as child labor and poor health and safety conditions. Regular independent audits ensure that Umicore's supply chain remains compliant with these policies.

To ensure the traceability of materials in our supply chain, we carry out detailed research and risk assessments of our suppliers. This includes visiting plants, screening policies and procedures and, if required, developing improvement programs. In 2019, Umicore again performed due diligence activities for all its purchased cobalt materials used in rechargeable batteries, tools, catalysts and several other applications. We also piloted a new third-party site audit protocol on our largest cobalt supplier and will continue with other suppliers starting in 2020.

Our cobalt refinery in Olen became the first Responsible Minerals Initiative-conformant cobalt refinery worldwide. Our newly acquired cobalt operations in Kokkola were the second recognized refinery. The Responsible Minerals Initiative aims to tackle conflict materials issues and set sustainability standards for industry.

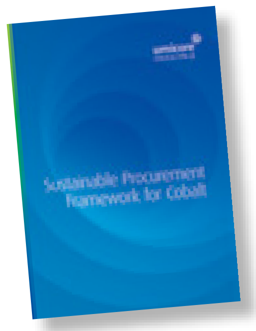
Umicore also supports the development of traceability projects across the industry. In 2019, the Cobalt Institute launched the Cobalt Industry Responsible Assessment Framework (CIRAF), a management framework which strengthens the ability of cobalt producers and buyers to assess, mitigate, and report on responsible production and sourcing risks in their operations and supply chain. For the first time, Umicore is also reporting on our supply chain using the CIRAF, which we helped develop. The CIRAF gives industry a first opportunity to take joint action to report on sustainable cobalt. For more, see note V2.

Within the Battery Alliance, Umicore is supporting the development of a battery passport to ensure transparency on the origin of the raw materials, their transformation, use and end of life. The passport will trace the origins of battery materials and monitor them throughout their entire lifecycle on a global digital platform, to help eradicate unacceptable social or environmental practices and push unsustainable materials out of the market.

Umicore obtained, for the fifth year in a row, third-party assurance from PwC that our 2019 cobalt purchases are carried out in line with the conditions set out in the Framework. The share of cobalt from recycled origin was also reviewed as part of the assurance process and was 9% for 2019, up from 6% in 2018.

The 2019 Due Diligence Compliance Report for Cobalt Procurement, as well as previous years' reports are available online.

UMICORE.COM/SUSTAINABLE-COBALT



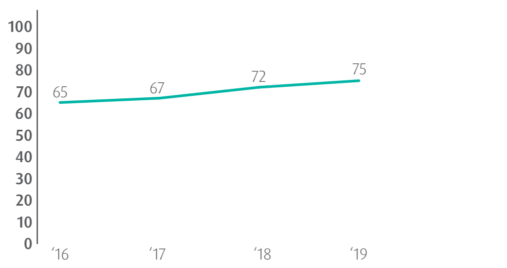
Umicore Sustainable Procurement Framework for Cobalt available at:

UMICORE.COM/SUSTAINABLE-PROCUREMENT-CHARTER-COBALT

SUSTAINABLE PRODUCTS AND SERVICES

CLEAN MOBILITY & RECYCLING REVENUES

%



Umicore's Horizon 2020 objective is to generate further competitive advantage through the development of products that have specific sustainability benefits.

Our primary focus is on activities that provide solutions for clean mobility and resource scarcity.

In 2019, 75% of Group revenues were from activities that deliver products or services that are directly linked to clean mobility or recycling, up from 72% in 2018. Many of the materials and services making up the remaining 25% of revenues provide answers to specific societal needs such as improved connectivity (materials for high quality glass, displays) or reduced energy consumption (materials for use in energy-efficient lighting such as LEDs).

To be a **preferred sustainable supplier**, we work directly with our customers to meet their environmental requirements and disclose our own performance and ambitions. In recent years, some customers have opted for a third party sustainable supplier assessment. For these customers, Umicore discloses to the Carbon Disclosure Project (CDP). Umicore has fully monitored and reported on emissions since 1999 and included reduction targets in our strategic approach in 2010. We delivered emissions reductions beyond our targets then, and today are committed to continuous improvement of our environmental performance even as we continue to grow through 2020.

To support our ambition to turn sustainability into a greater competitive advantage, it is essential to develop a full understanding of the impact that our products have on the world and use it as a lever for improving the footprint of our products and services. At Umicore, the business units work with corporate EHS on life cycle assessments (LCA) to identify the environmental impact of their products and services and set a baseline against which improvements can be measured. We share our learning and participate in association-driven efforts, such as those of the Nickel Institute, the International Platinum Association and the Cobalt Institute.

In 2019 we performed an LCA on our cathode materials and had our data verified by a third party. Using the opportunities identified in this new robust data, Umicore can leverage our unique combination of materials chemistry, energy mix and raw and recycled materials for improved overall environmental impact and a lower-carbon mobility. Umicore will continue to develop selective products and services that have specific sustainability benefits and answer the growing sustainability needs of our clients.

An LCA study we published in 2015[1] revealed that the global warming potential of germanium extracted from recycled sources is significantly lower than that of primary germanium sources. The Umicore ElectroOptic Materials (EOM) business unit was determined to maximize its sustainable germanium supply. For years EOM has been successful in offering germanium recycling services to its customer base, who return germanium-containing waste streams to Umicore for reprocessing into new products.

In 2019 the EOM team harnessed the closed-loop model by installing state-of-the-art Umicore technology at selected customers' facilities. Onsite germanium recycling provides significant financial and environmental advantages in terms of avoided sourcing and shipping costs and impact, in addition to increased resource efficiency. This type of innovation, which requires a close collaboration between multidisciplinary teams, will increase Umicore's growing sustainable germanium supply in the years to come.

We develop specific sustainability solutions for our products and their applications by working closely with customers.

In 2019, Audi and Umicore successfully completed the test phase of a strategic research partnership, having successfully recovered over 90% of the cobalt and nickel in Audi e-tron high-voltage batteries. In the second phase of this project, we will cooperate on a closed loop for cobalt and nickel. The recovered materials will be used in new battery cells.

(1) Robertz, B., Verhelle, J. & Schurmans, M. JOM (2015) 67: 412. https://doi.org/10.1007/s11837-014-1267-6


Horizontal DNX module being hoisted for DeNox installation

Stationary catalysis

UMICORE.COM/INDUSTRIES

CLEAN AIR IS OUR BUSINESS

Clean air is at the core of Umicore's vision. We are one of the world's leading producers of catalysts used in automotive emission systems and, with over 2000 installations worldwide, we are a leading supplier of Selective Catalytic Reduction (SCR) systems for stationary use (industrial plants and ships).

POWER GENERATION

Power generation from gas turbines, biomass, waste to energy and engines also generates harmful emissions. Using an emission control catalyst, most of these emissions can be reduced or, in some cases, completely neutralized. Umicore's DNX and DNO catalysts are responsible for reducing harmful emissions for over 100 gigawatts of power production worldwide.

MARINE PROPULSION

As of 2021, the majority of new ship engines will be equipped with SCR systems to reduce NOx emissions. Strict demands for reduction of SO_X, CO_2 and particulate matter emissions are also increasing. Umicore has supplied SCR systems and catalysts for marine engines since 1988. Today, a dedicated focus on the challenges in the marine industry enables us to provide SCR catalyst and technical assistance for all existing fuels and configurations. Umicore Marine SCR DNX® catalyst is optimized for eliminating NO_X from engines of all sizes. We have introduced new catalytic products, uniquely designed for marine applications, that are vibration resistant and perform well within regulations.

REFINING AND PETROCHEMICAL

Refined and processed petroleum products, such as plastics, affect almost every aspect of daily life. Umicore's DNX and DNO catalysts play an important role in reducing harmful emissions in this industry, helping customers meet strict air emission limits while minimizing downtime and limiting impact on plant operations.

CHEMICAL AND INDUSTRIAL

Umicore's catalysts enable industrial plants to improve air quality in their communities. This is the widest area of application with many different requirements. Plants producing nitric acid, sulfuric acid, food & beverage, specialty chemicals, alumina, glass, steel and cement are just a few examples for which Umicore supplies SCR catalyst for emission control.

ON THE ROAD OR IN INDUSTRY, UMICORE DELIVERS CLEAN AIR TECHNOLOGY

Umicore's highly efficient Nitrogen Oxide (NO_X) catalysts can reduce over 95% of NO_X emissions while our carbon monoxide (CO) and Volatile Organic Compounds (VOC) reduction catalysts can reduce both CO and VOCs emissions by more than 99%. Both catalyst types can be combined into a single product, ensuring energy-efficient removal of NO_X, CO and VOC from air and waste gas streams. Our catalysts and particulate filters have prevented hundreds of millions of tonnes of harmful pollutants from being emitted into the air.

A GROWTH MARKET

Annual growth in the market for emission control catalysts in industrial applications is assessed at 9% globally. A significant part of this growth is in China where the government is determined to win the battle of protecting the blue sky. In China new emission control systems will be installed in large-scale manufacturing industry, vessels built in China and the power segment.

Eco-efficiency

2020 Target

EFFICIENT OPERATIONS

Increase value through efficient use of metals, energy and other inputs.

KEY RISKS & OPPORTUNITIES

1 Regulatory and legal context
3 Technology and substitution
7 Climate and environment

SEE RISKS ON PAGE 57

Energy storage installation in Olen

CASE STUDY

Energy storage at Umicore's Olen site

In October 2019 Umicore implemented an industrial battery system on our Olen site, demonstrating energy storage on a large industrial scale, with a system consisting of 48 used batteries from electric cars, now forming one large storage battery of 1.2 MW or 720 kWh.

Umicore is pursuing three goals with this project: supporting the cradle-to-cradle principle and circular economy, learning and identifying opportunities in the balancing market, frequency containment market or smart energy management and aiming for a healthy Internal Rate of Return (IRR).

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Eco-efficiency

WE AIM TO OPTIMIZE THE SUSTAINABILITY PERFORMANCE OF OUR OWN OPERATIONS, FOCUSING ON ENERGY EFFICIENCY

-23%

ENERGY CONSUMPTION VS 2015

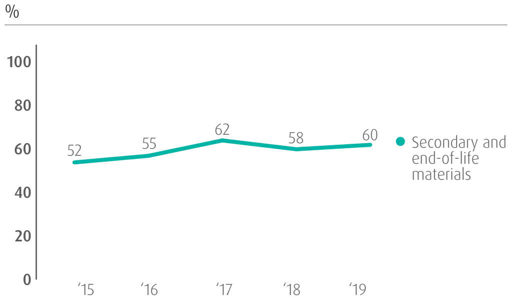
-59%

METAL EMISSIONS TO AIR VS 2015

-57%

METAL EMISSIONS TO WATER VS 2015

RESOURCE EFFICIENCY



As a materials technology company, we aim to drive an even more efficient use of metals, energy and other inputs in our operations to balance environmental and economic factors and work to increase closed-loop relationships with our customers.

As part of our commitment to sustainability, we take into account the environmental impact of our operations, and strive to continuously improve our environmental performance, implement risk management strategies based on valid data and sound science, actively participate in the management and remediation of risks that are the result of historical operations and facilitate and encourage responsible design, use, re-use, recycling and disposal of our products.

Our success is measured in our ability to make sustainability a competitive advantage by being increasingly energy and material efficient compared with our 2015 baseline.

Umicore is a world leader in the eco-efficient recycling and refining of precious metal-bearing materials.

These materials include by-products from other non-ferrous industries, end-of-life consumer and industrial products and e-scrap. Our **eco-efficient process** entails maximizing both the physical recycling of materials and the revenue obtained, while minimizing the associated environmental burden and total cost. We recover and sell precious, special, secondary and base metals and our **closed-loop business model** maximizes material re-use.

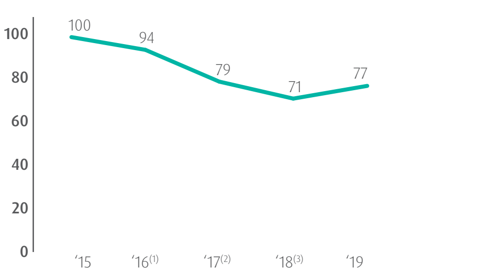
This ambition to address increasing global **resource scarcity** and achieve **material efficiency** is an important factor in our strategy. In 2019, despite an ongoing expansion and capacity ramp-up requiring additional primary raw materials, we still secured over half our materials supply from non-primary sources: 60% of the materials we used were from end-of-life or secondary origin, while 40% were of primary origin.

In our Horizon 2020 strategy, we defined **energy efficiency** and metal emissions reduction as key eco-efficiency performance indicators. We pursue eco-efficiency initiatives to generate compelling value and a competitive edge through reduced costs, minimizing our carbon footprint and strengthening our license to operate. In addition, we believe that it is equally important to continuously monitor, control and report our performance in relation to other environmental aspects.

We continue to invest in research to innovate in clean mobility and sustainability.

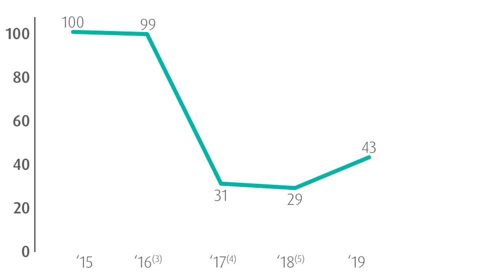
Umicore prioritizes R&D to support our Horizon 2020 ambitions by focusing on the development of innovative solutions for materials and processes. Our ability to create a pipeline for these innovations and solutions is an important component of our long-term eco-efficiency performance.

NORMALIZED ENERGY CONSUMPTION



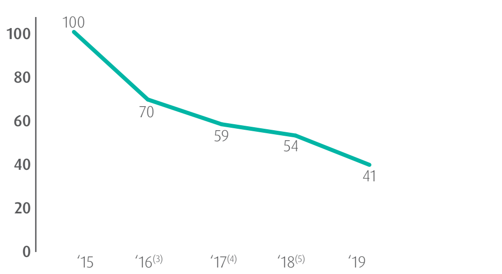
(1) and (2) see note E4 in Environmental Statements

METAL EMISSION REDUCTION
TO WATER



(3), (4) and (5) see note E2 in Environmental Statements

METAL EMISSION REDUCTION
TO AIR



(3), (4) and (5) see note E2 in Environmental Statements

ENERGY EFFICIENCY

Umicore plays a key role in the transition to a low-carbon society.

We produce rechargeable battery materials for EVs, catalysts for reducing transport and industrial emissions, and contribute to resource stewardship by recycling metals and end-of-life products in a closed loop. In our own operations, we are committed to achieving further energy efficiency compared to our 2015 levels.

Energy consumption is continually monitored and regulated at all sites. The bigger contributors are additionally encouraged to develop energy efficiency projects and are required to report on them. Several Umicore sites have implemented the ISO 50001 **energy efficiency** standard and the 2 largest sites in Belgium have been part of the energy efficiency covenant with the Flemish government since 2004.

In 2019, 27 sites accounted for 95% of the Group's energy consumption with a total of 34 energy efficiency projects implemented over the course of the year. By the end of 2019, Umicore had achieved a 23% reduction in energy consumption compared to the 2015 baseline, correcting for production intensity. This result is the combination of improvements in productivity and the implementation of energy efficiency projects.

When looking at our **direct carbon emissions**, despite our continued growth, we only register a 3% increase in comparison with 2018.

In recent years, as part of our commitment to sustainable operations, we began examining the share of **renewable energy** in our purchased energy mix. 2019 marks the first year in which we have systematically collected that information from our sites and can report the result: 14% of Umicore's purchased electricity was sourced from wind, solar and/or biomass energy.

While choosing the share of renewables in our purchased energy mix is a challenge in some of the regions where we are most active, Umicore is actively pursuing an increase in the share of renewables in our purchased energy mix.

METAL EMISSIONS

We monitor and take steps to reduce the impact of metals emissions on the environment – both to water and air. Each of the different metals that we emit has a specific level of potential toxicity for the environment and human health. For this reason, we focus on reducing the impact of our emissions.

The aim for 2020 is to reduce metal emissions impacts while considering growing volumes of production. While monitoring continues on all sites, reporting focuses on the 10 or fewer sites that contribute to 95% of the emissions expressed in impact.

Compared to 2015, after correction for activity levels, the impact of **metal emissions to water** in 2019 fell by 57% largely thanks to improvement projects on our sites. Compared to 2018, short-term and temporarily reduced efficiency at the Hoboken treatment plant in 2019, combined with higher activity levels, led to an increased impact to water. Our overall reduction compared to 2015 shows that we remain committed to the continuous improvement goals defined in Horizon 2020.

In 2019, the impact of **metal emissions to air** fell by 59% compared to 2015, mainly thanks to further efforts to improve filtration and process efficiency.

For more, see note E2.

STEWARDSHIP

Umicore is a global company with a global footprint. In terms of our products and services, we are uniquely positioned to address global megatrends — namely the need for **cleaner air** and **resource stewardship**, and environmental performance and safety are at the heart of our process designs.

Umicore continues to provide advanced emission control and battery material technologies while advocating for a ramp-up of clean energy and clean mobility technologies. We also emphasize the links between a **Circular Economy** and **responsible sourcing**, resource efficiency, waste management and **high-quality recycling**. We aspire to turn sustainability into a greater competitive edge through our unique business model and our commitment to ethical and responsible sourcing.

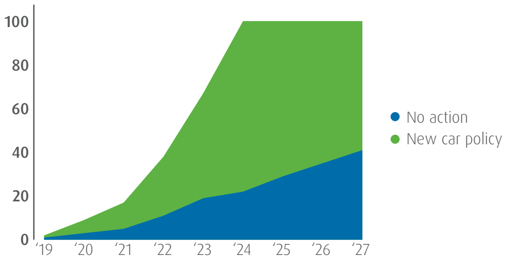
Part of our commitment to sustainability is to take into account the environmental impact of our operations with growing and expanding capacity. Many factors are considered in choosing to build new sites or to expand existing sites.

Our new site in Nysa, Poland, for example, was selected for its vicinity to our European customers (providing reduced transport impact of our products) and a skilled technical workforce, as well as low-carbon electricity supply. The Nysa site will make use of wind, hydro and photovoltaic energy.

Active participation in the management and remediation of risks from operations is an integral part of the Umicore Way. Our proactive program for assessing and remediating, where necessary, soil and groundwater contamination progresses tirelessly. For more, see note E7.

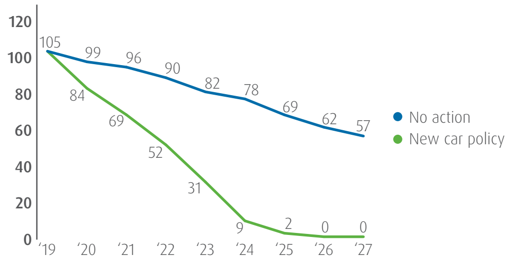
PROJECTED SHARE OF EVs IN FLEET

%



PROJECTED AVERAGE FLEET EMISSIONS

Grams of CO_2 per kilometer



Graphs compare 2 scenarios : one in which no change is made to the existing Umicore car policy, and the other representing an intake of plug-in hybrids and full EVs until 2022, followed by a gradual move to full EVs only in the subsequent years

SUSTAINABLE OPERATIONS: UMICORE UPDATES TRAVEL POLICY AND FLEET MIX

As a leader in sustainability, Umicore seeks to lead by example and to make a real difference by striving to reduce our environmental impact in everything we do. To this end, in 2019 Umicore revised company travel and car policies.

The overriding aim of Umicore's new Responsible business travel policy is to reduce our environmental impact through a substantial reduction in air travel. One solution is to reduce travel to essential business needs and maximize use of modern communication technologies, in particular for internal meetings. When travel cannot be replaced by video or voice communication, employees take account of the carbon footprint when choosing the best way to travel. High speed trains, now available in many regions, are the preferred solution for destinations within a range of approximately 500 km, while public transport is preferred to cars and taxis in urban areas. Umicore employees are expected to re-examine and change their habits – such as driving frequency and style – in order to contribute to a cleaner environment without compromising safety, cost or quality.

Umicore has also decided to accelerate the greening of its own company car fleet. Starting in Belgium, where Umicore headquarters has its largest company car fleet, car policy was redefined in 2019, aiming to reduce our carbon emissions rapidly and drastically. This new policy came into effect on 1 January 2020. Other countries will apply this example to local legislative conditions in 2020.

The main principles of the new car policy are that Umicore will only lease or buy full electric vehicles (EV) or plug-in hybrid vehicles (PHEV). Eventually, only EV models will be authorized. Umicore sites will provide appropriate charging facilities. Employees will be able to opt out of the company car system and receive a compensation in the form of gross salary. Umicore will of course continue to promote the use of public transport.

In 2019 Umicore also created a voluntary Umicore Climate Action Program for employees, aiming to collect and implement ideas to reduce the carbon footprint of Umicore's non-industrial activities. Proposals should contribute to carbon emission reduction, focusing on employees' behavior and changes in the working environment. Successfully implemented proposals will be eligible for Umicore Awards.

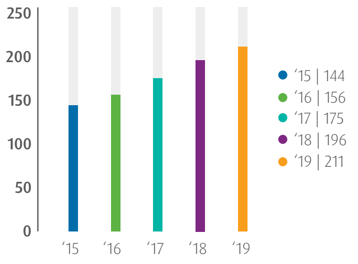
Research, development & innovation

€ 211m
2019 R&D SPEND

15
R&D SITES

1,214
R&D EMPLOYEES

R&D EXPENDITURE
Millions of Euros



Technology is at the core of our success.

As a materials technology company, our future success depends on our ability to develop and market innovative products and services. We strive to meet the needs of a rapidly changing world and continuously search for new solutions for our customers. We dedicate our research and development (R&D) to solving some of the world's largest societal challenges in the areas of clean mobility and clean air, resource scarcity and sustainability.

We have prioritized our R&D programs to support our Horizon 2020 ambitions, focusing on the development of **closed-loop material solutions**. We are working to meet growing demand by consistently investing in research for clean mobility materials and for recycling precious and other valuable metals.

From production and process technology to deep knowledge of metallurgy and materials science, a significant part of our technology is delivered using Umicore R&D findings. Umicore also develops technology in collaboration with industrial or academic partners and, where appropriate, we protect our intellectual property with patents. 56 patents were filed in 2019.

Umicore continues to invest in R&D and to attract international scientific talent to develop the next generation of sustainable products and process technologies for our customers. Umicore R&D employees cover 34 nationalities in 15 locations, and in 2019, 1 in 4 were women. Over the past 4 years, the R&D investments increased by 40%. In 2019 Umicore invested € 211 million on R&D with a significant increase in rechargeable battery materials development. The R&D spend represented 6% of revenues and capitalized development costs accounted for € 35 million.

CLEAN MOBILITY INNOVATION

The clean mobility trend, toward zero well-to-wheel emission standards, points to a combination of electric and hybrid vehicles, fuel cells vehicles and carbon neutrally fueled internal combustion engines.

Umicore has a unique position in clean mobility materials across all drive-train technologies. It is one of three global leaders in **emission control catalysts** for internal combustion engines, a leading supplier of materials for **rechargeable batteries** used in electric vehicles and catalysts for **fuel cell** applications.

Recent legislation will require gasoline vehicles to be equipped with particulate filters. Our work focuses on improved catalyst technologies for gasoline and diesel vehicles and for fuel cells to meet these increasingly stringent regulations. **For gasoline particulate filters** (GPF), Umicore is optimizing the distribution of the catalytic material in the pores of the filter so that an optimal balance of backpressure, filtration efficiency and chemical reactivity is obtained. Using x-ray tomography on automotive exhaust through a catalyst, in combination with flow simulations on the resulting data, Umicore R&D developed targeted optimization of the catalyst distribution to improve the coating of next generation GPFs. This work was performed in collaboration with Polytechnique Montreal and the Fraunhofer institute IWTM in Kaiserslautern.

Umicore's battery materials innovation pipeline spans the next 20 years driving energy density in today's and tomorrow's Li-Ion and solid state batteries.

Our competencies and expertise in materials science and deep understanding of battery applications form a sound basis for this materials research and development. These new developments entail both cathode and anode materials. To enable advanced Li-ion technologies we are developing **silicon composite anode** material. In combination with **high nickel cathode** materials, this will allow for high volumetric energy densities, **long cycle life and fast charging.** Looking further in the future of battery technologies, **solid-state batteries** that no longer use liquid electrolytes offer great prospects for increasing energy density and safety. Umicore R&D is developing next generation active cathode materials tuned for different solid electrolyte chemistries.

Hydrogen is a promising future clean fuel which is converted into clean electricity by fuel cells.

Umicore's Proton Exchange Membrane **fuel cell catalysts** use hydrogen in stationary and mobility applications **on the path to zero emissions.** Our fuel cell catalyst portfolio covers all relevant technologies for both anode and cathode electrode applications. Working with platinum and platinum alloy on carbon catalysts as well as special protective additives, Umicore R&D improves the robustness of the fuel cell under critical operating conditions to achieve performance requirements in vehicle applications

INNOVATION IN RECYCLING

Umicore is the world's leading recycler of complex waste streams containing precious and other valuable metals, including from batteries and catalysts. Umicore's closed-loop business model will be a powerful strategic differentiator for the foreseeable future.

Umicore's **urban mine to wheel cycle** starts by ensuring responsible sourcing, either from sustainable sources or from recycled feed from our own recycling facilities. Our innovative state-of-the art recycling plants meet the highest environmental standards and can **recover high percentage yields** of non-ferrous metals that are then used in our production processes. We produce **best-in-class high technology materials** for a range of clean mobility applications. Any production scrap created during production goes directly back into the cycle, including intermediates and production scrap created along the value chain. The loop starts again once Umicore receives end-of-life products.

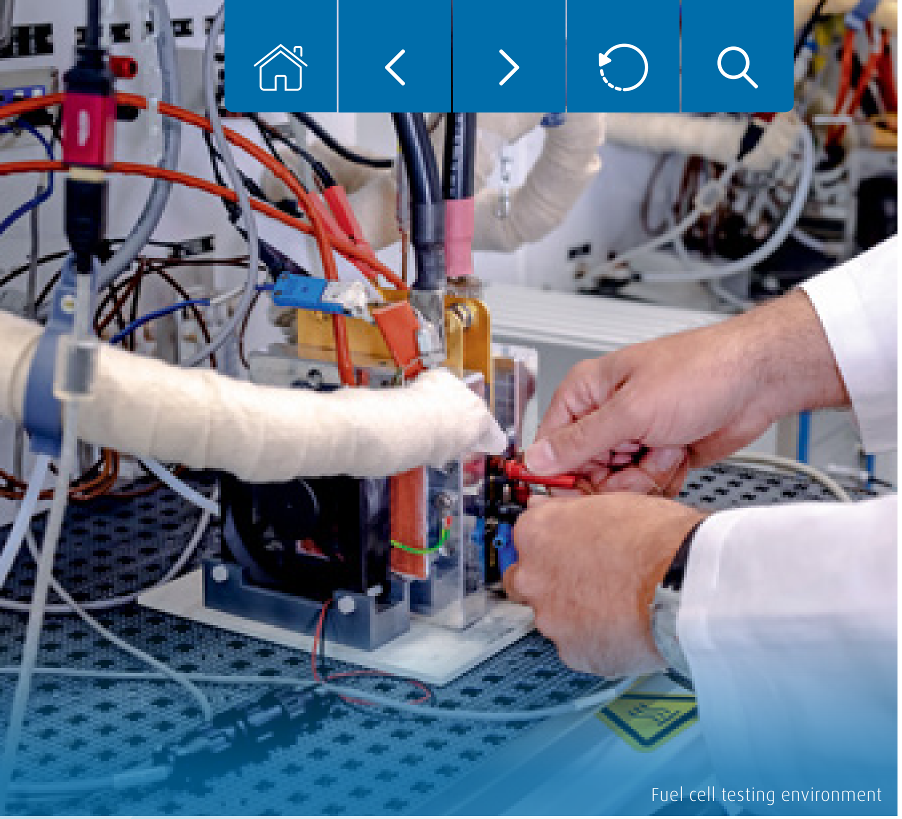
The efficient recycling of precious metals bearing catalysts from automotive applications and from chemical processes has always been a core competence of Umicore Precious Metals Refining. The continuous growth of the catalyst market has led to increasing complexity in catalyst composition, physical state and variety of catalyst types. This creates new challenges for the effective recycling of these catalysts and initiated a number of research programs to treat increased and more complex volumes of recyclable material more efficiently.

DIGITAL TRANSFORMATION

Umicore's digital strategy is focused on four high value opportunity domains: digital manufacturing, digital supply chain, product and process innovation and digital enterprise. Thanks to centralized digital expertise centers, synergies across all domains and business units are maximized.

In our data science expertise center, a wide variety of data sources, from raw materials to production and quality data, are connected and analyzed using machine learning techniques, to distil new insights to improve the quality of the final product.

Digitalization provides a competitive advantage in innovation and operational excellence.


Fuel cell testing environment

R&D fit for future growth

A carbon neutral economy by 2050 will require further adoption of clean mobility solutions and renewable energy sources for electricity such as hydrogen and other alternative fuels with zero carbon footprint (synthetic fuels, e-fuels, biofuels, etc.). Clean cities with zero local emission and with zero-waste streams are the ultimate goal. The evolution towards zero-waste streams will put even more emphasis on circular economy to address resource scarcity in all smart sectors (mobility, IoT, Industry 5.0, etc.).

> "Growing our technical competences for our current markets and expanding that know-how into new markets, is the basis of our future success."
> –An Steegen, CTO

Technology innovation and differentiation remains key for our future growth.

Innovation is value creation through knowledge. We continuously strengthen our in-house competence expertise in metallurgy, chemistry and material science, while constantly expanding our external collaboration network.

Our core competences provide fundamental insights about materials, their critical properties, and how they can be tuned to drive performance. A deep-rooted fascination for how materials function at an atomic scale in their respective applications allows us to **develop predictive power** for their efficient and targeted improvement.

Our forward-looking approach for materials R&D is therefore based more than ever on expanding our expertise in the synthesis of novel materials, their modeling, advanced characterization, and testing by means of relevant proxies that enable fast and reliable feedback loops.

In collaboration with a world-class research institution, for example, we develop optimized catalyst materials with unique features, supported by **highly advanced materials characterization**, such as unique solid-state magnetic resonance spectroscopy. This technology is applied for studying the local structures and electronic properties of battery materials as a function of their state of charge. This work takes many years to materialize but is a breeding ground for ideas, insights, novel materials and corresponding IP. Our ambition for the future is to steadily grow our portfolio of collaborative programs with research institutes and universities worldwide that focus on measuring and understanding materials functionality, leading to better product design.

Umicore supports open innovation and the creation of materials technologies through joint development programs focusing on rechargeable batteries, catalysis or digital connectivity. In 2019 we structured our venture capital approach to enable selective direct investments in start-up companies with which we have such collaborations.

Great place to work

2020 Target

HEALTH
Become a zero-accident workplace.

SAFETY
Reduce employee exposure to specific metals.

PEOPLE ENGAGEMENT
Further improve people engagement with specific focus on talent attraction & retention, diversity management and employability.

KEY RISKS & OPPORTUNITIES

6 Talent attraction and retention

SEE RISKS ON PAGE 57

SUSTAINABLE DEVELOPMENT GOALS

3 GOOD HEALTH AND WELL-BEING

5 GENDER EQUALITY

8 DECENT WORK AND ECONOMIC GROWTH


Johann Lindenmayer, dual learning student, with his mentor Thomas Müller, in Hanau, Germany

CASE STUDY

Cultivating Young Talent

As part of our contribution to the well-being of the communities in which we operate, Umicore provides dual training programs, allowing students to acquire professional experience in a real work environment during their studies. For Umicore the program is an opportunity to develop a pool of talent while helping students start their professional careers.

At the Hoboken plant in Belgium, the dual learning program was launched 2 years ago in close collaboration with several different schools. This initiative is also present in countries outside Belgium such as Germany, Austria and Liechtenstein.

ANNUALREPORT.UMICORE.COM/STORIES

Great place to work

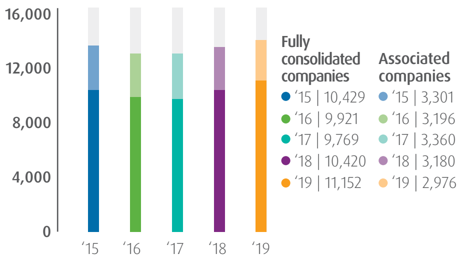
THE LONG-TERM SUCCESS OF UMICORE DEPENDS ON OUR BEING A SAFE, HEALTHY AND ENGAGING PLACE TO WORK

11,152
GROUP EMPLOYEES

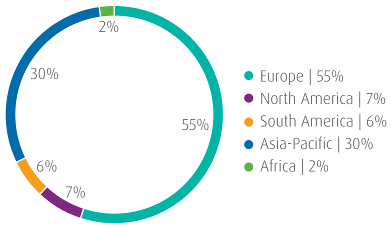
94%
RETENTION RATE

TOTAL WORKFORCE

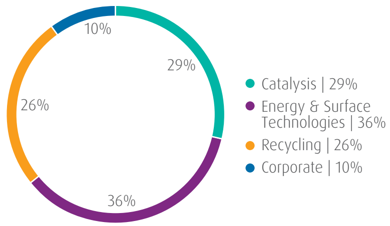
NUMBER OF EMPLOYEES



WORKFORCE BY REGION



WORKFORCE BY BUSINESS GROUP



Our success is measured by our ability to offer a safe workplace and embed a safety culture in our workforce, to monitor, manage and protect our employees from exposure risks, to ensure Umicore's status as an employer of choice in all the regions where we operate and to manage talent as a driver for reaching our desired business growth.

We are proud of our position as a pioneer and world leader in materials technology and sustainability, but in a disruptive industry, we need to continue innovating, challenging the status quo and growing, both as a company and as an employer.

We strive to create an environment in which all our employees can succeed, and which encourages innovation, thrives on collaboration, rewards contribution and provides every employee with the opportunity to develop.

The varying ambitions and interests of our colleagues and new recruits enrich Umicore with new outlooks and new ways of working together which build our competitive advantage.

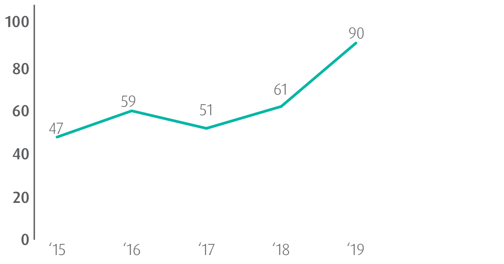
Our values and mutual respect remain consistent as we all work towards the same vision: to create materials for a better life.

Umicore has a truly global profile, with operations on every major continent. 11,152 employees currently work at Umicore, across 50 production sites, 15 research & development centers and in supporting offices including our global headquarters in Brussels.

Our Horizon 2020 strategy is designed to consider the future trends that impact Umicore, the labor market and societal expectations. Our objectives are centered on health and safety, talent management, diversity and employability – aspects that will have the greatest impact on reaching Horizon 2020 goals.

Despite competitive markets we are making strides in talent management, diversity and employee engagement. We continue to pursue our long-term goals of eliminating lost-time accidents and occupational-related ill-health and to seek new ways of engaging colleagues by promoting safety and wellbeing in the workplace.

HEALTH & SAFETY
LOST TIME ACCIDENTS



ZERO ACCIDENTS

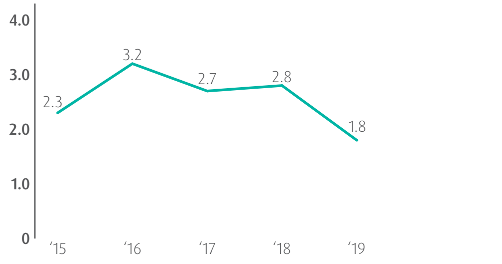
The safety of our people is a key priority for management.

In 2019, while 83% of the reporting sites operated without a lost time accident, our overall safety results were again disappointing.

We recorded 90 lost time accidents in 2019 compared to 61 in 2018. The frequency rate increased from 3.36 to 4.6 over the same period and the severity rate from 0.1 to 0.2. 91% of those accidents occurred in Europe, mostly at Belgian sites.

There is a clear need to change behavior and mindset to install a true safety culture. Cultural change is an endeavor over time and Umicore is committed to creating a safe and great place to work. We will continue our ongoing efforts and are implementing new specific and targeted measures, including awareness campaigns and specific programs aimed at changing mindset and creating a more prominent safety culture.

EXPOSURE RATIO 'ALL BIOMARKERS AGGREGATED'



In 2019, process safety activities focused on executing process risk assessment studies. At year end, 60% of the production processes had received specific process hazard and risk assessments compliant with Umicore standards. A detailed timeline for completion of the remaining studies over the coming years gives priority to processes with high risk profiles.

Umicore continues our internal HAZOP leader training program to increase and secure process safety knowledge.

OCCUPATIONAL EXPOSURE

Umicore makes continuous efforts to eliminate occupational-related health issues and to promote wellbeing in the workplace. The main occupational health risks are related to exposure to hazardous substances and physical hazards (mainly noise).

Umicore is leading the industry by setting voluntary, science-based targets for potentially hazardous exposure that are more stringent than legal requirements, where they exist.

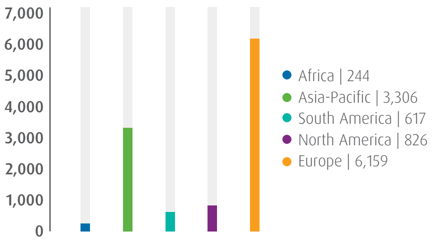
All employees with a potential workplace exposure to any of the target metals (arsenic, cadmium, cobalt, indium, nickel, lead and platinum salts) or other metals are monitored by an occupational health program. The Horizon 2020 objective for occupational exposure is to reduce to zero the number of individual readings that indicate an exposure for an employee that is higher than the internal target levels. While these excess readings do not necessarily indicate a risk for the person concerned, they are important indicators of recent or lifetime exposure and are used as the basis for further improvements on specific sites.

In 2019, a total of 7,481 biological samples were taken from employees with occupational exposure to at least one of the metals mentioned above (platinum salts excluded). 135 readings showed a result in excess of the internal target value, bringing the total excess rate to 1.8%, down from 2.8% in 2018. All occupationally exposed employees are regularly monitored by an occupational health physician.

TALENT MANAGEMENT

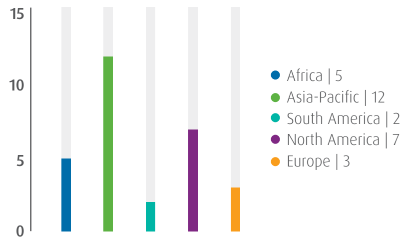
WORKFORCE BY REGION

NUMBER OF EMPLOYEES



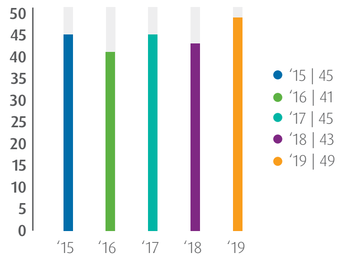
VOLUNTARY LEAVERS RATIO BY REGION

%



AVERAGE NUMBER OF TRAINING HOURS PER EMPLOYEE

HOURS/EMPLOYEE



Talent management involves finding and retaining the right people at all levels of the organization and in a wide variety of functions, including equipment operators, laboratory analysts, office staff and production engineers. For Umicore the main drivers are linked to the Horizon 2020 growth ambitions in the sectors and regions where we are active.

The number of employees in fully consolidated companies increased to 11,152 at the end of 2019 from 10,420 in 2018, in line with Umicore's growth trajectory and primarily reflecting new hires in China, Korea and Belgium and the acquisition of a new site in Kokkola, Finland. This growth shows that Umicore continues to be an attractive employer with wide recognition of its pioneering role in sustainability.

Umicore can attract, develop and retain high caliber leaders by offering attractive and challenging leadership roles.

In 2019, we implemented new measures to improve both the candidate and the new hire onboarding experiences, and a new Learning & Development curriculum for both managerial and non-managerial staff. These efforts are positively reflected in our overall retention rate of 94%, up from 92% in 2018.

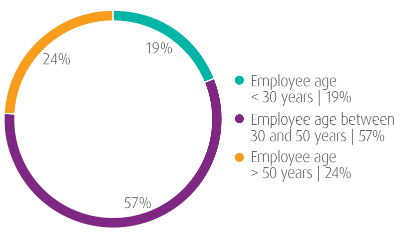
Significant regional differences in retention rates continue, with Asia-Pacific reporting the highest voluntary leaver rate at 11.87%, an improvement from 16.55% in 2018. This is not unique to Umicore and is due to the highly competitive and fluid labor market in the region.

Umicore provides managers with a training curriculum aligned across all regions and promotes career development using an internal online vacancies tool, promoting greater internal mobility. Training at Umicore encompasses traditional classroom-type modules, e-learning and in-service instruction.

In 2019, the average training hours per employee reached 48.7 hours, an increase from 2018. While overall managers' training hours (43 hours) are up from 2018, they remain lower than for other employees (49.5 hours).

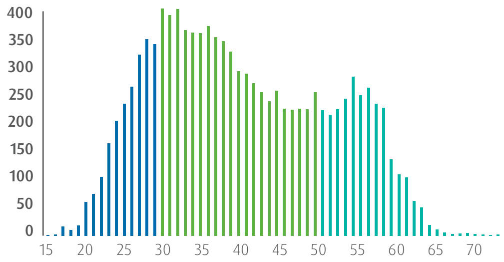
DIVERSITY

WORKFORCE AGE SPLIT



WORKFORCE AGE DISTRIBUTION(1)

NUMBER OF EMPLOYEES



(1) Employees under 18 are trainees, apprentices or interns. See note S4 on our commitment against child labor.

WOMEN AT UMICORE

%

Umicore seeks to benefit as much as possible from diversity, for example in gender, culture and ethnicity. Umicore believes that more diverse management teams improve the quality of decision-making.

Umicore developed a group policy on diversity to support an inclusive work culture that offers equal opportunities, leading to a high level of employee engagement for all employees, irrespective of their diverse backgrounds. Diversity includes gender, religion, race, national or ethnic origin, cultural background, social group, disability, sexual orientation, marital status, age or political opinion.

We are especially seeking broader cultural representation in our management teams. Currently, 18.49% of the top management positions in Umicore are filled by non-Europeans, up from 2018.

Considering that 60% of our revenues are generated outside Europe and our growing global footprint, we decided to act to ensure that non-Europeans are better represented in our senior management. Our efforts continue, as a better balance in this regard will enable us to make business decisions that are better aligned with the markets we serve.

Umicore employees cover 74 nationalities, and in 2019, 42 nationalities were included among our new hires, both up from 2018 levels.

Women are underrepresented at senior management level at Umicore. While this can be partly ascribed to the fact that chemical companies tend to attract fewer women, the career prospects for talented women can still be improved within Umicore. In 2019, only 20.88% of Umicore employees were female, a slight drop from 2018. This is attributed to our growth in industrial operations, where candidates are usually male. Women continue to be more prevalent in administrative, support and commercial functions than in industrial operation roles.

Women in management roles have steadily increased from 18.65% in 2010 to 23.13%. in 2019. While there was an increase in the overall number of women managers in "business operations" functions compared to 2018, the total number of managers in these functions also grew, leading to a slightly decreased share of women in these roles from 15.08% in 2018 to 14.90% in 2019. These functions are considered a pipeline for senior leadership positions.

Women in senior management increased to 10.96% in 2019, up from 9.7% in 2018. In 2015 we set the ambition of reaching 15% of women in senior management functions by 2020 and we will strive to reach this goal at the earliest possible date.

The Coaching Circles training program for female managers in Belgium offers a combination of mentoring, coaching, training and networking. This program was developed by the Focus on Women platform, in support of Umicore's diversity and inclusion policy with the purpose of making women more aware of their capacities and stimulating them to take their career actively into their own hands. In 2019, 18 managers participated in the program.

EMPLOYEE ENGAGEMENT

In today's dynamic environment, digital literacy and a mindset focused on collaboration, transparency and self-organized learning are crucial. If applied correctly, digital tools can improve efficiency, productivity and innovation. But it isn't enough just to provide tools and training. The most difficult and most important step is to change familiar patterns and ways of thinking. Employees need to break out of their comfort zone, share successes and failures transparently, try out new approaches, network across regions and departments, take the initiative and be empowered to do all this through an appropriate environment.

The vision of our digital workplace is to enable everyone within Umicore to collaborate from anywhere in the world.

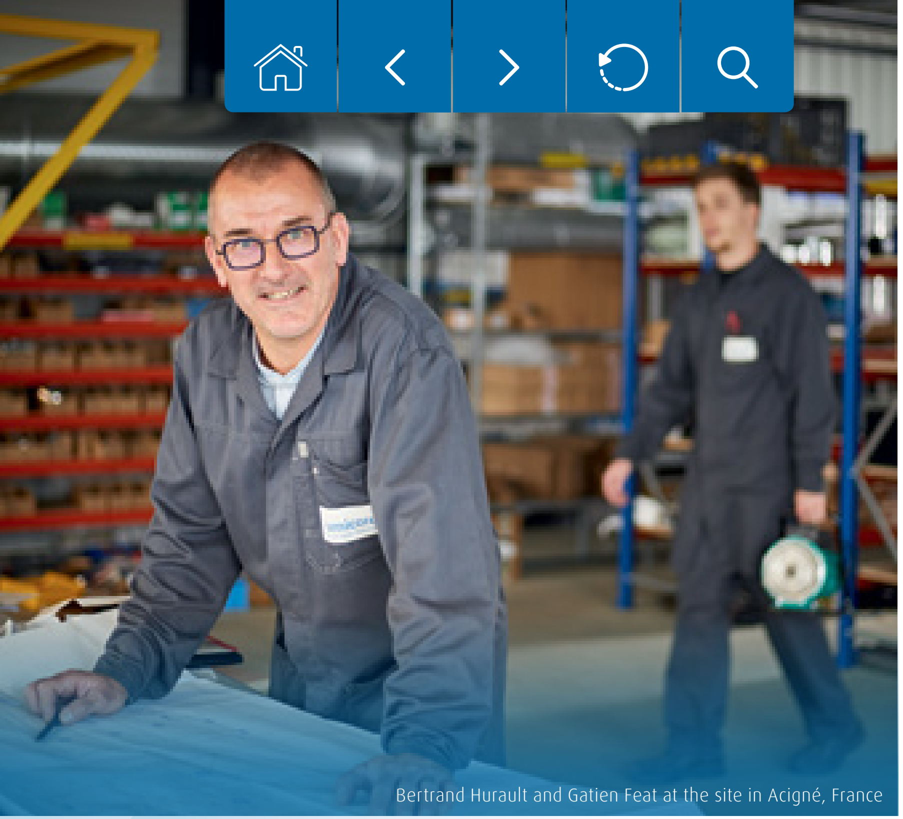
Our colleagues will share their experiences and knowledge through a worldwide network and learning will become part of our daily routine. Everyone will feel empowered to work in an increasingly complex and fast-changing world.

In 2019, an interdisciplinary team started to turn this vision into reality, taking an important step forward in Umicore's digital journey. In December 2019, the Digital Workplace project was launched globally with the slogan "Stay up to date. Let's upgrade".

All communication, from news articles to training materials, was provided in 8 languages, so that over 90% of Umicore employees were addressed in their native tongue. Time-critical activities, such as webinars, were provided at different times to cover all time zones.

The project approach was also unique by delivering digital content on a personal level. So that employees can find experts in their "normal" working environment who are familiar with both the specific local procedures and the new tools, we created an ambassador community of "digital heroes". Various local live events led by digital heroes help inform colleagues all over the world. For top management, we initiated a reverse mentoring program to allow learning in a confidential and customized setting.

Another special feature was the feedback-based structure of the project: both in terms of technology and content, the digital workplace and the associated communication and training materials were tested by digital heroes before the project launch. The communication and training materials were adapted and optimized before the launch, based on their experience.



Bertrand Hurault and Gatien Feat at the site in Acigné, France

Working at Umicore

UMICORE.COM/CAREERS

We aim to lead the way for both our customers and our employees.

We strive to create a collaborative environment and a culture of shared ideas, developing expertise and advancing careers, working together on technologies that will benefit future generations and setting new standards in one of the world's most dynamic and disruptive industries.

In our state-of-the-art production processes technical operators, production supervisors and engineers use their know-how and ideas to benefit future generations. Our support teams play a critical role in supporting the business growth by making sure our decisions are commercially viable, enhancing our reputation, building new customer relationships or finding the right people who can build on what we have already achieved.

Managers at Umicore work on projects that are as exciting as they are challenging. R&D experts develop the technologies that address issues from clean mobility to resource scarcity.

We seek to ensure career-long learning and development opportunities for our employees and to promote the transferability of skills and knowledge across Umicore.

The Junior Management Programme (JUMP) is offered to a selected group of junior managers using a "twin-coaching" format, bringing together two participants from different regions and business units, but within the same function family, to develop international thinking, shadow best practices and provide exposure to other business units.

Leading for Excellence (L4E) is offered to a selected group of managers in the Asia Pacific region to drive performance in the region by fostering collaboration and engagement across sites and sharpening leadership skills.

Entrepreneurs for Tomorrow (E4T) is offered to a selected group of middle to senior managers to develop corporate culture with highly competent managers and promote cross-functional integration within Umicore.

The Strategic Leadership Programme is offered to a selected group of senior managers, organised in collaboration with INSEAD. Participants move from exploration of the economic 'macro-environment', through doing business in Asia, to the challenges of creating an agile strategy and an aligned organisation, and developing their personal leadership style.

People work longer before retiring, particularly in Europe. Umicore wants to ensure that people who are working well into their sixties are provided with suitable, motivating and rewarding work and can transfer their skills and knowledge to younger colleagues. This is accomplished by training, maintaining their mental flexibility to carry out new tasks, managing work-life issues, and providing support in the transition from employee to retiree.

Opportunities & risks

RISK MANAGEMENT & INTERNAL CONTROL 57

KEY RISKS & OPPORTUNITIES 59
Regulatory and legal context 60
Sustainable and ethical supply 61
Technology and substitution 62
Market 63
Metal price 64
Talent attraction and retention 65
Climate and environment 66

Michael Kupgisch and Phillip Diaz in Bayport (TX)

Risk management and internal control

Each business unit operates in an environment which carries specific growth expectations and differing degrees of market and technological uncertainty that could impact strategic objectives. As such, the primary source of risk and opportunity identification lies within the business units.

Similarly, each business unit is responsible for mitigation of its own risks. Mitigating actions are systematically reported corresponding to the respective strategic objectives and identified risks.

Specific corporate departments are also tasked with managing and mitigating certain risks under the auspices of the Executive Committee. These risks cover Group-wide elements that extend beyond the purview of individual business units. These include environmental risks, financial risks etc.

OUR INTERNAL CONTROL SYSTEM

Internal control mechanisms exist throughout Umicore to provide management with reasonable assurance of our ability to achieve our objectives. They cover:

- Effectiveness and efficiency of operations
- Reliability of financial processes and reporting
- Compliance with laws and regulations
- Mitigation of errors and fraud risks

Umicore adopted the COSO framework for its Enterprise Risk Management and has adapted its various constituents within its organization and processes. "The Umicore Way" and the "Code of Conduct" are the cornerstones of the Internal Control environment; together with the concept of management by objectives and through the setting of clear roles and responsibilities they establish the operating framework for the company.

Specific internal control mechanisms have been developed by business units at their level of operations, while shared operational functions and corporate services provide guidance and set controls for cross-organizational activities. These give rise to specific policies, procedures and charters covering areas such as supply chain management, human resources, information systems, environment, health and safety, legal, corporate security and research and development.

Umicore operates a system of Minimum Internal Control Requirements (MICR) to specifically address the mitigation of financial risks and to enhance the reliability of financial reporting. Umicore's MICR framework requires all Group entities to comply with a uniform set of internal controls in 12 processes.

Within the Internal Control framework, specific attention is paid to the segregation of duties and the definition of clear roles and responsibilities. MICR compliance is monitored by means of self-assessments to be signed off by senior management. The outcome is reported to the Executive Committee and the Audit Committee.

Out of the 12 control cycles, 4 cycles (Internal Control Environment, Tax, Inventory Management and Hedging) were reviewed and assessed in the course of 2019 by the 99 control entities currently in scope. The Minimum Internal Control Requirements in Information Technology Management have been reviewed and updated. The assessment of this cycle is planned for the year 2020. Risk assessments and actions taken by local management to mitigate potential internal control weaknesses identified through prior assessments are monitored continuously. The Internal Audit department reviews the compliance assessments during its missions.

The aim of our risk management system is to enable the company to identify risks in a proactive and dynamic way and manage or mitigate risks to an acceptable level wherever possible.

BUSINESS UNITS

Carry out a risk scan to identify all significant risks (financial and non-financial)

Detail each risk on an "uncertainty sheet" outlining potential impact, likelihood, status of management action or mitigation, and ownership

Report bottom up to the Executive Committee member responsible for that business unit

EXECUTIVE COMMITTEE MEMBER

Identify, evaluate and mitigate risks

EXECUTIVE COMMITTEE

Successfully exploit business opportunities

Assess market conditions, competitor positioning, technology developments or regulatory changes against the business strategy execution

Manage and mitigate possible business risks

BOARD OF DIRECTORS

Assesses the risk profile of the company within the context of the Company strategy and external factors

Ensure adequate risk management and internal control processes are in place

AUDIT COMMITTEE (ON BEHALF OF THE BOARD)

Monitor and review internal control and risk management system, investigating specific aspects on an ongoing basis

EXTERNAL AUDIT

Independent assurance

Managing risk effectively

WE TAKE A BALANCED APPROACH TO MANAGING RISK AND SEIZE OPPORTUNITIES TO DELIVER ON OUR STRATEGIC GOALS

RISK & OPPORTUNITY	1 REGULATORY & LEGAL CONTEXT	2 SUSTAINABLE & ETHICAL SUPPLY	3 TECHNOLOGY & SUBSTITUTION	4 MARKET	5 METAL PRICE	6 TALENT ATTRACTION & RETENTION	7 CLIMATE & ENVIRONMENT
STRATEGIC FOCUS AREA	ECONOMIC PERFORMANCE VALUE CHAIN AND SOCIETY ECO-EFFICIENCY	ECONOMIC PERFORMANCE VALUE CHAIN AND SOCIETY	ECONOMIC PERFORMANCE VALUE CHAIN AND SOCIETY ECO-EFFICIENCY	ECONOMIC PERFORMANCE VALUE CHAIN AND SOCIETY	ECONOMIC PERFORMANCE	GREAT PLACE TO WORK	VALUE CHAIN AND SOCIETY ECO-EFFICIENCY
CHANGE IN RISK PROFILE	↑	↑	↑	↑	→	→	→
CHANGE IN OPPORTUNITY PROFILE	→	↑	↑	↑	→	↑	→
MORE INFORMATION	READ MORE ON PAGE 60	READ MORE ON PAGE 61	READ MORE ON PAGE 62	READ MORE ON PAGE 63	READ MORE ON PAGE 64	READ MORE ON PAGE 65	READ MORE ON PAGE 66

Key: ↑ increase → no change

Identifying the main issues that could impact our business

KEY RISKS TO OUR BUSINESS MIGHT ALSO OFFER UNIQUE OPPORTUNITIES FOR US TO GROW AND CREATE VALUE

1 REGULATORY AND LEGAL CONTEXT

STRATEGIC FOCUS AREA

- ECONOMIC PERFORMANCE
- VALUE CHAIN AND SOCIETY
- ECO-EFFICIENCY

CHANGE IN RISK PROFILE

Increase

CHANGE IN OPPORTUNITY PROFILE

No change

POTENTIAL IMPACT

Umicore is exposed to changes in the regulatory environment in the countries or regions where it operates. Umicore's businesses stand to benefit from certain regulatory trends, notably those regarding more stringent emission controls for vehicles, low carbon mobility and enforced recycling of end-of-life products.

Some regulations, such as environmental or product-related laws, can present operational challenges, higher costs and a potentially uneven competitive environment.

Data protection, IP and IP protection-related matters impact technology-driven businesses.

CHANGE IN CONTEXT

Worldwide, changes to existing product-related legislation and the introduction of new legislation might impact our business. Although the European REACH regulation is still the most relevant for Umicore, Korean REACH is gaining importance. For more information, see Statements, note V5.

The trend towards more stringent emission legislation and targets continued, while new measures on vehicle emissions push industry to innovate in emission control system design, including catalysts and catalytic filters, and increase the demand for electric vehicles.

Geopolitical conditions, trade and tariffs continue to be a factor in Umicore's trans-border activities.

MEASURES TAKEN BY UMICORE

To ensure ongoing compliance with environmental legislation on our industrial sites, Umicore has a well-established EHS compliance audit program and constantly monitors changes in legal requirements where we operate. For more information, see Statements, note E8.

Umicore continues to play an active role in informing legislators of various emission control technologies for both diesel and gasoline powered vehicles, to help legislators make informed decisions about future emission and testing norms.

Umicore continues to ensure its ability to meet the surging demand for cathode materials for rechargeable batteries used in electrified transportation. Our investment program to expand or establish production capacity of cathode materials in China and Europe, respectively, is on track.

We monitor that our products have the freedom to operate and we proactively manage our patent portfolio.

Umicore trade compliance closely follows and responds to global trade conditions.

Umicore monitors closely all changes in interpretation as well as guidance documents that might affect its REACH implementation strategy. In 2019 we submitted 28 additional substances for registration under REACH due to new business developments. As part of regular maintenance, we updated 47 REACH dossiers. Umicore has submitted 5 registrations in Korea in 2019 for priority chemical substances and has submitted 2 new substance registrations.

2 SUSTAINABLE AND ETHICAL SUPPLY

STRATEGIC FOCUS AREA

ECONOMIC PERFORMANCE

VALUE CHAIN AND SOCIETY

CHANGE IN RISK PROFILE

Increase

CHANGE IN OPPORTUNITY PROFILE

Increase

POTENTIAL IMPACT

Umicore requires certain metals or metal-containing raw materials to manufacture its products and feed its recycling activities. Some of these raw materials are comparatively scarce and require very specific sourcing strategies. Obtaining adequate supplies of these materials is important for the ongoing success and growth of our business.

Some metals are also found in regions facing social challenges. Trading in precious metals and minerals can be used to finance armed conflict, cause human rights abuses, draw upon forced or child labor and support corruption and money laundering. We ensure that procurement of minerals from conflict-affected and high-risk areas is in line with Umicore's values, while providing an advantage to our customers.

CHANGE IN CONTEXT

Existing and upcoming laws aiming to drive the responsible sourcing of conflict minerals (tin, tantalum, tungsten and gold), have increased the visibility and concern on the conditions around conflict mineral sourcing in public discourse.

MEASURES TAKEN BY UMICORE

Umicore has implemented policies and measures covering human rights, the right for workers to organize, collective bargaining, equal opportunities and non-discrimination, banning of child labor, banning of forced labor, consistent with International Labour Organisation (ILO) standards. These commitments are supported through a Global Framework Agreement on Sustainable Development with IndustriALL Global Union which was renewed in 2019.

In addition to existing policies and charters such as the Umicore Code of Conduct, Human Rights Policy and Sustainable Procurement Charter, Umicore also has a specific policy for "Responsible global supply chain of minerals from conflict-affected and high-risk areas".

In 2019, Umicore again received third-party validation for the application of its Sustainable Procurement Framework for Cobalt, which is aligned with the OECD 'Due Diligence Guidance for Responsible Supply Chains from Conflict-Affected and High-Risk Areas'. Umicore continues to ensure that its production operations are certified as conflict-free and receives site and metal-specific responsible sourcing certifications from the LBMA and RJC. For more information, see note V3.

We use our long-standing and growing experience in sustainable sourcing to advocate for more responsible sourcing. To read more about some of our advocacy work, see Stakeholder Engagement p. 20

3 TECHNOLOGY AND SUBSTITUTION

STRATEGIC FOCUS AREA

ECONOMIC PERFORMANCE

VALUE CHAIN AND SOCIETY

ECO-EFFICIENCY

CHANGE IN RISK PROFILE

Increase

CHANGE IN OPPORTUNITY PROFILE

Increase

POTENTIAL IMPACT

Umicore is a materials technology group with a strong focus on the development of innovative materials and processes. The choice and development of these technologies represents the single biggest opportunity and risk for Umicore.

Umicore's production plants and services highly depend on the availability of IT services.

Unavailability of services, disruption of the supply chains or interruption of our production facilities by cyber-attacks could have a major impact on our customers. A compromise in the confidentiality of intellectual property would negatively impact our competitive advantage. Unauthorized modification of financial data would jeopardize accurate reporting to shareholders.

Achieving the best cost-performance balance for materials is a priority for Umicore and its customers. There is always a risk that customers will seek alternative materials for their products should those of Umicore not provide this optimum balance. The risk is especially present in businesses producing materials containing expensive metals (especially those with historically volatile pricing characteristics).

CHANGE IN CONTEXT

Cyber-attacks may be very focused and advanced. The expanding threat landscape and expanding digital footprint is leading to an increase in cyber-attacks. Several cases of industrial manufacturing businesses being interrupted for several weeks as the result of a cyber incident have been extensively covered in the media.

Trends in rechargeable battery materials for automotive applications have underscored that NMC materials with increasing nickel content are the technology of choice for customers in current and upcoming electrified vehicle platforms. Besides the focus on high performing battery materials, novel processes are being developed to decrease cost and environmental impact across the entire battery value chain.

In vehicle emission control, regulatory debates have reinforced the need for a broad spectrum of technologies for both gasoline and diesel applications.

MEASURES TAKEN BY UMICORE

Umicore assessed the state of cyber resilience of its IT landscape against the current cyber threats. Our findings were translated in a cyber security roadmap. Progress is reported to the Executive Committee semi-annually. Execution of the cyber security roadmap is ongoing, awareness campaigns for the entire staff are organized and the IT security organization has been extended.

Every year, the Executive Committee identifies innovation projects ("Top 10") which are key to achieving Horizon 2020 (and beyond) growth ambitions and cover product and process developments. A selection of these projects is reviewed during the year either through dedicated technology reviews or as part of strategic business reviews.

Previous years' R&D investments have brought great success and created a space to shift R&D positioning. Umicore invested selectively in new fields relevant to core activities in 2019. Overall spend was equivalent to 6.2% of revenues and in 2019, the Innovation Fit for Future program was launched to protect technology leadership and future growth.

Umicore patents disruptive technologies. In 2019, Umicore registered 56 new patent families.

For more information, see Innovation and R&D, p. 46.

4 MARKET

STRATEGIC FOCUS AREA

ECONOMIC PERFORMANCE

VALUE CHAIN AND SOCIETY

CHANGE IN RISK PROFILE

Increase

CHANGE IN OPPORTUNITY PROFILE

Increase

POTENTIAL IMPACT

The main industries served by Umicore are automotive (clean mobility materials, recycling), consumer electronics (rechargeable battery materials, recycling, coating and electroplating solutions) and non-ferrous metal mining and refining industries (recycling activities). Umicore is sensitive to any major growth or global reduction in activity levels or market disruptions in these industries.

CHANGE IN CONTEXT

The global macro-economic outlook deteriorated significantly in 2019, particularly in the automotive sector. Trade and consumer confidence continued to decline given geo-political and trade tensions, uncertainty about Brexit, the slowdown of subsidy schemes and tariff implementations.

There was a significant contraction in global car production in 2019 – the strongest decline in car production since the 2008 recession. The biggest reduction was observed in the world's largest car market, China, which contracted for the second consecutive year. Diesel car production continued to decline in Europe. More stringent vehicle emission legislation coming into force in key regions and the market share of gasoline particulate filters increasing in Europe and China should provide a longer-term uplift.

The risk profile reflects growing exposure to the automotive industry and to Asia, in both cases driven by the sales of cathode materials for use in electrified vehicles. Umicore should continue to benefit disproportionally from the accelerating penetration of electrified vehicles given our broad portfolio of cathode material technologies certified for the most stringent automotive requirements, our industrial-scale production capabilities and our qualifications on over 20 platforms.

In consumer electronics there was also a slowdown in demand which was caused by destocking across the value chain. In the energy storage market in Korea, demand was very much down, owing to safety incidents on certain installations.

In recycling our process remains unique, giving a stable outlook in this high-value market, especially with increasing availability of complex secondary materials. Also, China's green fence policy resulted in higher availability of end-of-life materials, such as printed circuit boards.

MEASURES TAKEN BY UMICORE

Umicore is delivering on its growth strategy in clean mobility materials and recycling. As a result, Umicore delivered strong results in 2019 despite unfavorable conditions, having already reached the Horizon 2020 targets two years ahead of schedule. In recycling, a continuous program of new investments optimizes performance and enhances environmental impact.

For more information, see Driving Economic Performance, p. 26.

5 METAL PRICE

STRATEGIC FOCUS AREA

ECONOMIC PERFORMANCE

CHANGE IN RISK PROFILE

Change in perimeter
(see Change in context)

CHANGE IN OPPORTUNITY PROFILE

No change

POTENTIAL IMPACT

Umicore's earnings are exposed to risks relating to the prices of the metals which we process or recycle. These risks relate mainly to the impact that metal prices have on the surplus metals recovered from materials supplied for recycling, and concern platinum, palladium, rhodium, gold, silver and a wide range of base and specialty metals. For some metals quoted on futures markets, Umicore hedges a proportion of its forward metal exposure to cover part of the future price risks.

Umicore also faces transactional price risks on metals. The majority of its metal-based transactions use global metal market references. If the underlying metal price were constant, the price Umicore pays for the metal contained in the raw materials purchased would be transferred to the customer as part of the price charged for the product. However, because of the lapse of time between the conversion of purchased raw materials into products and the sale of products, the volatility in the reference metal price creates differences between the price paid for the contained metal and the price received. Accordingly, there is a transactional exposure to any fluctuations in price between the time raw materials are purchased (when the metal is "priced in") and the time the products are sold (when the metal is "priced out"). The Group's policy is to hedge the transactional risk to the maximum extent possible, primarily through forward contracts.

The accelerating growth in battery materials is rapidly increasing the exposure to specific related metals such as cobalt or nickel. Increasing volumes, the vulnerability to the associated price volatility and in the case of certain metals such as cobalt, the absence of a liquid paper forward market, result in increased metal risks.

For more information on the structural risk and on the transactional and inventory risk related to the metal prices, see Statements, note F3.

CHANGE IN CONTEXT

Prices for precious metals strengthened in 2019, particularly in the second half of the year. Prices for palladium and rhodium increased significantly, while gold, silver and platinum prices showed a more modest increase over the full year cycle.

Demand for cobalt containing products was weak in 2019, as customers were reducing excess inventories built up in 2018, when the cobalt price was more than double the price of 2019. This more moderate global demand resulted in continued pressure on the price.

MEASURES TAKEN BY UMICORE

Over the course of 2019, Umicore entered into additional forward contracts securing a substantial portion of its structural price exposure for certain precious metals and base metals in 2020 and 2021, thereby increasing earnings predictability. In particular for gold and palladium, Umicore locked in more than half of its 2020 and 2021 exposure. Umicore also hedged a significant portion of its platinum exposure for 2020. In the absence of a paper market, no forward contracts were entered into for rhodium.

For cobalt, Umicore's transactional hedging policy aims to match to a maximum extent the pricing in and pricing out of the contracted metal. Such physical back-to-back hedging in 2019 enabled Umicore to manage transactional risks related to cobalt.

6 TALENT ATTRACTION AND RETENTION

STRATEGIC FOCUS AREA

GREAT PLACE TO WORK

CHANGE IN RISK PROFILE

No change

CHANGE IN OPPORTUNITY PROFILE

Increase

POTENTIAL IMPACT

The attraction and retention of skilled people are important factors in enabling Umicore to fulfil its strategic ambitions and to build further expertise, knowledge and capabilities in the business. Being unable to do so would compromise our ability to deliver on our goals.

Horizon 2020 is predicated on disproportionate growth for Umicore in Asia – a region characterized by highly competitive and fluid labor markets. Umicore's challenge is to attract and retain talent in the region on a sufficient scale and at an appropriate pace.

CHANGE IN CONTEXT

Our expansion, combined with competitive labor markets, has increased our recruitment needs.

MEASURES TAKEN BY UMICORE

We continued to successfully recruit and retain employees in 2019, building on the strengths of our global employer brand. To bring on a large number of new talented people Umicore focused on an improved candidate experience, an expanded onboarding approach and the implementation of retention measures.

To attract employees, we participate in job fairs, in campus events at universities and use professional recruitment and social media channels.

We address retention, especially challenging in Asia, with initiatives to improve the well-being of our employees, by assessing and improving our positioning of compensation and benefits and by offering learning & development opportunities for our employees.

We also ensure leadership development and give special attention to the development of identified top talent through different initiatives and are very well positioned in terms of employee engagement and empowerment.

7 CLIMATE AND ENVIRONMENT

STRATEGIC FOCUS AREA

ECONOMIC PERFORMANCE

VALUE CHAIN AND SOCIETY

ECO-EFFICIENCY

CHANGE IN RISK PROFILE

No change

CHANGE IN OPPORTUNITY PROFILE

No change

POTENTIAL IMPACT

Climate and environment impacts are mostly related to our supply of primary raw materials or to our suppliers' extraction of these primary raw materials. Easy-to-mine deposits are becoming increasingly scarce and ore bodies poorer. Many specialty metals required for new, environmentally-friendly technologies can only be obtained as a by-product of other metals. Treating complex materials from above-ground sources, such as industrial residues and end-of-life materials, is increasingly important.

Climate change causes extreme natural events, chronic deviations in mean temperatures and precipitation patterns, and rising sea levels. This could impact our sites or supply chain.

Historical industrial activity requires active management and remediation. Increasingly stringent regulations on energy use and emissions can induce higher operational costs.

CHANGE IN CONTEXT

Civil society and political discourse are increasingly demanding that business takes an active role in mitigating climate change.

Our accelerated expansion combined with increased demand for our products have increased Umicore's exposure to potential climate or environmental risks and the opportunity to expand in a way that can mitigate or address these risks.

MEASURES TAKEN BY UMICORE

Umicore plays a key role in the transition to a low-carbon future as our materials tackle global trends for clean air and e-mobility, and our closed loop business model tackles resource stewardship.

Our facility in Hoboken is the world's largest and most complex precious metals recycling operation, processing over 200 types of raw material and recovering over 20 different metals. We ensure that a high volume of our metals come from secondary sources – production scraps, residues and end-of-life materials. We can also recycle customers' residues and production scrap to help them maximize their material efficiency and then transform the recovered materials into new products. In total we recover 28 metals from our closed loop activities. Our high yield recycling process continues to be a driving force in resource efficiency and contributing to the circular economy.

In 2019 Umicore carried out several studies to feed our process of climate and environment-related strategy for the future, these include studying our scope 3 emissions and climate related risks and opportunities. Umicore performed a life cycle assessment on the production of cathode materials and has identified the leverage it can have for a lower carbon mobility through the right choice of the cathode chemistry, energy mix, and raw materials, including recycled materials. For the new battery production plant in Poland, Umicore ensured that electricity will be from renewable sources.

We ensure that our current activities keep to the most stringent environmental standards for air and water and work every year to improve our energy efficiency despite our growth and increased production. For more information, see notes E2 through E6.

Our global footprint and diverse site locations reduce our exposure to physical risks. New sites have been chosen considering proximity to customers, access to skilled workforce, excellent logistics, infrastructure and green energy.

Umicore manages its historical environmental legacy, ensuring adequate financial provisions that are reviewed twice a year. For more information, see notes E7 and F29.

Leadership

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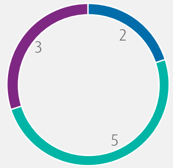
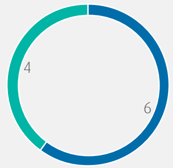
Board of directors

BOARD DIVERSITY

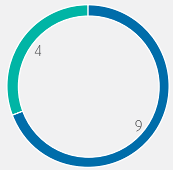
Tenure



Independence



Gender



Nationalities

Left to right: Marc van Sande (Board Advisor), Géraldine Nolens (Board Secretary), Mark Garrett, Ines Kolmsee, Marc Grynberg, Laurent Raets, Liat Ben-Zur, Françoise Chombar, Koenraad Debackere, Thomas Leysen, Eric Meurice, Gérard Lamarche. **Not pictured:** Karel Vinck (Honorary Chairman)

THOMAS LEYSEN
CHAIRMAN

Belgian, 59 NR

DATE APPOINTED TO BOARD
10 May 2000 (date appointment Chair: 19 November 2008)

EDUCATION
Law – KU Leuven, Belgium

EXPERIENCE
Thomas Leysen became Chairman of Umicore in November 2008 after serving as Chief Executive Officer of Umicore since 2000. During this mandate, he transformed the former Union Minière from a non-ferrous company into an international materials technology group called Umicore. He joined Umicore in 1993 as member of the Executive Committee, and successively managed several industrial divisions.

EXTERNAL APPOINTMENTS
Chair, KBC Group, banking and insurance group, Belgium

Chair, Mediahuis, a major newspaper publishing group in Belgium and The Netherlands

Chair, King Baudouin Foundation, Belgium

MARC GRYNBERG
CHIEF EXECUTIVE OFFICER, EXECUTIVE DIRECTOR

Belgian, 54

DATE APPOINTED TO BOARD
19 November 2008

EDUCATION
Commercial Engineering – Solvay Brussels School of Economics & Management, Belgium

EXPERIENCE
Marc Grynberg was appointed Chief Executive Officer of Umicore in November 2008 after heading the Automotive Catalysts business unit from 2006 to 2008 and serving as CFO of Umicore from 2000 until 2006. He joined Umicore in 1996 as Group Controller. Prior to joining Umicore, Marc worked for DuPont de Nemours in Brussels and Geneva.

EXTERNAL APPOINTMENTS
Non-Executive Director, Nexans SA, France

LIAT BEN-ZUR
INDEPENDENT NON-EXECUTIVE DIRECTOR

American, 43

DATE APPOINTED TO BOARD
25 April 2017

EDUCATION
Electrical engineering – UC Davis, USA

Business Administration – UCLA Anderson, USA

EXPERIENCE
Liat Ben-Zur has been Corporate Vice President for Modern Life and Devices Product Marketing Management at Microsoft since September 2018. Prior to joining Microsoft, she was SVP and Digital Technology Leader at Royal Philips where she was responsible for driving the connectivity and digital strategy, since 2014. She served previously in several leadership positions at Qualcomm, a US wireless telecommunications company, and was co-founder and Chairwoman of the AllSeen Alliance, a consortium for an open source, common language for the Internet of Things.

Key: NR Nomination & remuneration committee (Chair) NR Nomination & remuneration committee (Member) A Audit committee (Chair) A Audit committee (Member)

FRANÇOISE CHOMBAR
INDEPENDENT NON-EXECUTIVE DIRECTOR

Belgian, 57 NR

DATE APPOINTED TO BOARD
26 April 2016

EDUCATION
Dutch, English, Spanish Interpretation & Honorary Ambassadorship for Applied Language Studies – Ghent University, Belgium

EXPERIENCE
Françoise Chombar is co-Founder, Chief Executive Officer and Managing Director of Melexis, a producer of smart sensor and driver semiconductors for automotive, industrial and durable consumer applications. She served previously as planning manager at Elmos GmbH and operations manager and director at several companies within the Elex group. Françoise was a mentor in the Belgian women's network Sofia for 17 years and is committed to STEM and gender balance advocacy, for which she received a Flemish Community Honour in 2019. In 2018, she received the title of Science Fellow by the VUB, University of Brussels.

EXTERNAL APPOINTMENTS
CEO and Director, Melexis NV, Belgium

Chairwoman, Flemish STEM Platform, an independent advisory group to the government of Flanders

Independent Director, Soitec S.A., France

KOENRAAD DEBACKERE
INDEPENDENT NON-EXECUTIVE DIRECTOR

Belgian, 58 A

DATE APPOINTED TO BOARD
26 April 2018

EDUCATION
Engineering – Ghent University, Belgium

Management – Ghent University, Belgium

Management – MIT Sloan School of Management, USA

EXPERIENCE
Prof. Dr. Ir. Koenraad Debackere has been with KU Leuven since 1995, where he teaches Technology & Innovation Management and Policy. He has won numerous awards for his research, and in 2010 was awarded a Francqui Lecture Chair in economics and business. Since 2005 he has been the general manager of KU Leuven and member of the Board of KU Leuven.

EXTERNAL APPOINTMENTS
Non-Executive Director, Cera Beheersmaatschappij NV, Belgium

Non-Executive Director, KBC Group NV, Belgium

Non-Executive Director, Group Joos NV, Belgium

Non-Executive Director, LRM (Limburgse Reconversie Maatschappij) NV, Belgium

Member Board of Governors, RWTH Aachen University, Germany

Non-Executive Director, Televic Group NV, Belgium

MARK GARRETT
INDEPENDENT NON-EXECUTIVE DIRECTOR

Australian/Swiss, 57 NR

DATE APPOINTED TO BOARD
28 April 2015

EDUCATION
Economics – University of Melbourne, Australia

Applied Information Systems – Melbourne Institute of Technology, Australia

EXPERIENCE
Mark Garrett has been Chief Executive Officer at Marquard & Bahls AG, a Hamburg-based leading independent energy supply, trading and logistics company, since August 2018.

Before joining Marquard & Bahls AG, he served as Chief Executive Officer at Borealis AG, Austria, a position he had held since 2007. Prior to that, he built an extensive career in the chemical industry working with companies such as Ciba-Geigy and DuPont.

EXTERNAL APPOINTMENTS
CEO, Chairman of the Executive Board, Marquard & Bahls AG, Germany

Non-Executive Chairman, Board of Directors, Axalta Coating Systems Ltd., USA

Key: NR Nomination & remuneration committee (Chair) NR Nomination & remuneration committee (Member) A Audit committee (Chair) A Audit committee (Member)

INES KOLMSEE

INDEPENDENT NON-EXECUTIVE DIRECTOR

German, 49 A

DATE APPOINTED TO BOARD
26 April 2011

EDUCATION
Process and Energy Engineering – Technische Universität Berlin, Germany

Industrial Engineering – École nationale supérieure des Mines de Saint-Étienne, France

Business Administration – INSEAD Business School, France

EXPERIENCE
Ines Kolmsee has been Chief Executive Officer of Services & Solutions at Aperam since October 2017. She previously served as CEO of SKW Stahl-Metallurgie Group, a specialty chemicals company with operations worldwide, COO and CTO at German utility EWE AG and CFO at Arques Industries AG.

EXTERNAL APPOINTMENTS
CEO of Services & Solutions, Aperam SA, Luxembourg

GÉRARD LAMARCHE

NON-EXECUTIVE DIRECTOR

Belgian, 58 A

DATE APPOINTED TO BOARD
25 April 2017

EDUCATION
Economic Sciences – Louvain, Belgium

Advanced Management Program for Suez Executives, INSEAD Business School, France

EXPERIENCE
Gerard Lamarche built an extensive career, starting at Deloitte Haskins & Sells in Belgium, then Société Générale de Belgique as Investment Manager, Controller and Advisor to the Strategy and Planning Department, and Suez, as Secretary of the Executive Committee, then SVP in charge of Planning, Control and Accounting. In 2000, Gérard Lamarche joined NALCO as General Managing Director. He was appointed CFO of the Suez Group in 2003.

In 2012, he joined Groupe Bruxelles Lambert as Co-CEO until April 2019. He currently serves as a senior advisor to corporations, families and their related entities.

EXTERNAL APPOINTMENTS
Non-Executive Director, Audit Committee, SGS, Switzerland

Non-Executive Director, Standing Committee, Groupe Bruxelles Lambert, Belgium

ERIC MEURICE

INDEPENDENT NON-EXECUTIVE DIRECTOR

French, 63

DATE APPOINTED TO BOARD
28 April 2015

EDUCATION
Economics – Sorbonne, France

Mechanical Engineering – École Centrale Paris, France

Business Administration – Stanford Graduate School of Business, USA

EXPERIENCE
Eric Meurice was formerly President and Chief Executive Officer of Netherlands-based ASML Holding, a major provider of advanced technology systems for the semiconductor industry. He was previously EVP in charge of Thomson Multimedia TV Division and held senior positions in several technology groups such as Intel, ITT, and Dell Computer.

EXTERNAL APPOINTMENTS
Non-Executive Director, Global Blue Group S.A., Switzerland

Non-Executive Director, IPG Photonics Corp, USA

Non-Executive Chairman, Board of Directors, Soitec S.A., France

Key: NR Nomination & remuneration committee (Chair) NR Nomination & remuneration committee (Member) A Audit committee (Chair) A Audit committee (Member)

LAURENT RAETS

NON-EXECUTIVE DIRECTOR

Belgian, 40

DATE APPOINTED TO BOARD
25 April 2019

EDUCATION
Commercial Engineering – Solvay Brussels School of Economics & Management, Belgium

EXPERIENCE
Laurent Raets joined Groupe Bruxelles Lambert (GBL) in 2006 and became Deputy Head of Investments in 2016. He began his career in 2002 as an M&A consultant at Deloitte Corporate Finance, where he was involved in buy and sell mandates, due diligence and valuation assignments.

EXTERNAL APPOINTMENTS
Censor of the Board of Directors of Imerys S.A., France

MARC VAN SANDE

BOARD ADVISOR

Formerly EVP Energy & Surface Technologies

Belgian, 68

EDUCATION
Physics – University of Antwerp, Belgium

Business Administration – Antwerp Management School, Belgium

EXPERIENCE
Marc Van Sande was appointed Executive Vice-President Energy & Surface Technologies in June 2010, after serving as CTO from 2005 to 2010 and as EVP Advanced Materials from 1999 to 2005. Marc joined Umicore in 1980, and held several positions in research, marketing and production. He was also responsible for the Energy & Surface Technologies business group and China.

GÉRALDINE NOLENS

BOARD SECRETARY

Belgian, 48

(see Executive Committee)

KAREL VINCK

HONORARY CHAIRMAN

Belgian

ABOUT THE BOARD

The board's cumulative industry experience is broad, covering automotive, electronics, chemicals, metals, energy and finance sectors in addition to the fields of academia and science.

It also includes people experienced in the public and private sector and members with experience in the different regions in which Umicore is active.

Collectively, the board possesses strong experience of managing industrial operations and counts 8 active or former CEOs in its ranks.

The board also has collective experience in disciplines that are specifically relevant to Umicore's non-financial Horizon 2020 goals such as health and safety, talent attraction and retention and supply chain sustainability.

READ MORE ABOUT CORPORATE GOVERNANCE ON PAGE 83

Key: NR Nomination & remuneration committee (Chair) NR Nomination & remuneration committee (Member) A Audit committee (Chair) A Audit committee (Member)

Executive committee

Left to right: Stephan Csoma, Géraldine Nolens, Denis Goffaux, Marc Grynberg, Ralph Kiessling, Filip Platteeuw, An Steegen.

MARC GRYNBERG
CHIEF EXECUTIVE OFFICER

Belgian, 54

EDUCATION
Commercial Engineering – Solvay Brussels School of Economics & Management, Belgium

EXPERIENCE
Marc Grynberg was appointed Chief Executive Officer in November 2008 after heading the Automotive Catalysts business unit from 2006 to 2008, and serving as CFO of Umicore from 2000 until 2006.

He joined Umicore in 1996 as Group Controller. Prior to joining Umicore, Marc worked for DuPont de Nemours in Brussels and Geneva.

FILIP PLATTEEUW
CHIEF FINANCIAL OFFICER

Belgian, 47

EDUCATION
Applied Economics – Ghent University, Belgium

Financial Management – Vlerick Management School, Belgium

EXPERIENCE
Filip Platteeuw was appointed Chief Financial Officer in November 2012, after serving as VP of Corporate Development from 2010 to 2012.

He joined Umicore in 2004 and was instrumental in the Cumerio spin-off in 2005, and then led the project team for the creation of Nyrstar and its successful IPO in 2007. Filip has extensive experience in investment banking, corporate banking and equity research with KBC Bank.

AN STEEGEN
CHIEF TECHNOLOGY OFFICER

Belgian, 49

EDUCATION
PhD in Material Science and Electrical Engineering – KU Leuven, Belgium

EXPERIENCE
An Steegen joined Umicore and was appointed Chief Technology Officer in October 2018, after serving as Executive Vice President Semiconductor Technology and System R&D at imec, a leading research center with a focus on nanoelectronics and digital technology innovation.

Prior to joining imec in 2010, An worked at IBM's Semiconductor Research & Development center in Fishkill, NY and in the last several years of service at IBM, was in charge of the bulk CMOS technology development.

GÉRALDINE NOLENS
EXECUTIVE VICE-PRESIDENT
CHIEF COUNSEL

Belgian, 48

EDUCATION
Master of Laws – University of Chicago Law School, USA

European Economic Law – Julius Maximilians Universität Würzburg, Germany

Law – KU Leuven, Belgium

EXPERIENCE
Géraldine Nolens was appointed Chief Counsel for the Group in 2009 and joined the Executive Committee in 2015.

She started her career at the international law firm Cleary Gottlieb Steen & Hamilton before joining GDF Suez (now Engie) in 2001, where she was Electrabel's Chief Legal Officer for Southern Europe, France and new European markets. Géraldine's career includes periods working and living in the US, Germany, Italy and Belgium.

DENIS GOFFAUX

EXECUTIVE VICE-PRESIDENT
ENERGY & SURFACE TECHNOLOGIES

Belgian, 51

EDUCATION
Mining Engineering – Université de Liège, Belgium

EXPERIENCE
Denis was appointed Executive Vice-President Energy & Surface Technologies in 2018, after serving as Chief Technology Officer from 2010 to September 2018 and EVP for Precious Metals Refining from 2015 to 2018.

Prior to that, he occupied successive business line and country management functions in China and Japan. Denis began his career at Umicore with Research & Development in Olen, before moving to what was then our Cobalt & Energy Products Business Unit.

STEPHAN CSOMA

EXECUTIVE VICE-PRESIDENT
RECYCLING

Belgian, 55

EDUCATION
Economics – UC Louvain, Belgium

Mandarin – Fudan University Shanghai, China

EXPERIENCE
Stephan Csoma was appointed Executive Vice-President Recycling in 2015, after serving as EVP of the former Performance Materials from 2012 to 2015, SVP Government Affairs from 2009 to 2012, and SVP South America from 2005 to 2009.

Stephan joined Umicore in 1992 and set up Umicore's first industrial operations in China in the mid-1990s and went on to lead the Zinc Chemicals business unit.

RALPH KIESSLING

EXECUTIVE VICE-PRESIDENT
CATALYSIS

German, 54

EDUCATION
Chemical Engineering – University of Erlangen, Germany

EXPERIENCE
Ralph Kiessling was appointed Executive Vice-President Catalysis on 1 February 2019, after serving as Senior Vice President Operations for Automotive Catalysts since 2015.

He previously occupied successive management functions in process technology, production and business controlling, including 5 years in China. In 2012 he moved to India where he built Umicore's automotive catalyst plant. Prior to joining Umicore, Ralph held management positions in the Degussa group from 1995.

READ MORE ABOUT OUR MANAGEMENT APPROACH ON PAGE 78

Senior management

MARC GRYNBERG
CHIEF EXECUTIVE OFFICER

AN STEEGEN
CHIEF TECHNOLOGY OFFICER

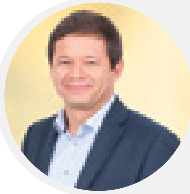
Corporate Research
& Development

FILIP PLATTEEUW
CHIEF FINANCIAL OFFICER

Finance

GÉRALDINE NOLENS
EXECUTIVE VICE-PRESIDENT

Chief Counsel



STEPHAN CSOMA
EXECUTIVE VICE-PRESIDENT

Recycling

DENIS GOFFAUX
EXECUTIVE VICE-PRESIDENT

Energy & Surface Technologies

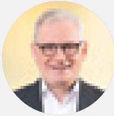
RALPH KIESSLING
EXECUTIVE VICE-PRESIDENT

Catalysis

IGNACE DE RUIJTER
SVP Human Resources

CHRISTOPHER SMITH
Director of Group
Communications

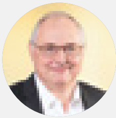

EGBERT LOX
SVP Government Affairs


JOHAN RAMHARTER
SVP Electro Optic Materials

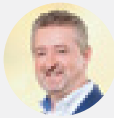

KURT VANDEPUTTE
SVP New Business Incubation


YVES VAN ROMPAEY
SVP Corporate Research & Development

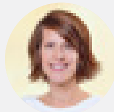

THOMAS JANSSEUNE
VP Digitalization & VP Corporate Development


PATRICK VERMEULEN
SVP Information Systems

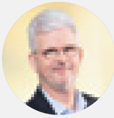

ALAIN BYL
VP Group Treasurer


ERIK BRIJS
VP Accounting & Control


FLAVIA LEONE
VP Group Tax


EVELIEN GOOVAERTS
Head of Investor Relations


GUY BEKE
SVP Strategic Projects

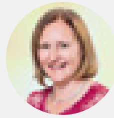

PIERRE VAN DE BRUAENE
SVP Environment, Health & Safety

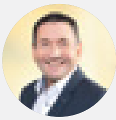

MARK CAFFAREY
President Umicore USA

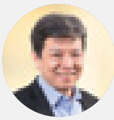

SYBOLT BROUWER
VP Purchasing & Transport


GEERT BENS
VP Strategic Projects

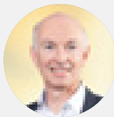

JENS BLECHSCHMIDT
Head of Internal Audit


KRISTL MATTON
Corporate Security


THOMAS ENGERT
SVP Electroplating


DAVID FONG
SVP Umicore Greater China


BERNHARD FUCHS
SVP Precious Metals Management & UMS

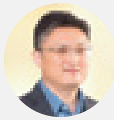

LUC GELLENS
SVP Precious Metals Refining

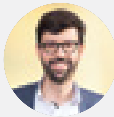

CARSTEN GERLEMAN
SVP Umicore South America


FRANZ-JOSEF KRON
SVP Jewelry & Industrial Metals


FRANK STREIGNART
SVP RBM Operations


GUY ETHIER
SVP Sustainability

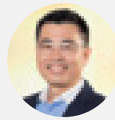

JUNDONG LU
SVP RBM Sales


BART SAP
SVP CSM & Supply


DONG-JOON IHM
Executive Chairman Umicore Korea


ENRICO CISCO
VP Control


BERNARD TONNON
VP RBM Process Technology & Engineering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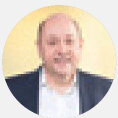
VP RBM Research & Development

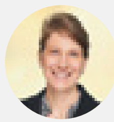

WILFRIED MÜLLER
SVP AC Global Research & Development


LOTHAR MUSSMAN
SVP Precious Metals Chemistry


MICHAEL NEISEL
SVP AC Control, Purchasing, IT & BD


JÖRG VON RODEN
SVP AC Global Sales & Marketing


ATSUYA HANAZAWA
President Umicore Japan


STEPHANIE DAM
VP AC Operations


JOAKIM REIMER THOGERSEN
VP Stationary Catalysis


GEERT OLBRECHTS
VP Research & Technology AC

Management approach

The Umicore Way is the cornerstone of everything we do at Umicore.

We believe that materials have been a key element in furthering the progress of mankind, that they are at the core of today's life and will continue to be enablers for future wealth creation. We believe that metal-related materials have a vital role to play, as they can be efficiently and infinitely recycled, which makes them the basis for sustainable products and services. We want Umicore to be a leader in providing and creating material-based solutions to contribute to fundamental improvements in the quality of life.

The overarching principles guiding our "Materials for a better life" mission are:

VALUES
We hold the values of openness, respect, innovation, teamwork and commitment to be crucial to our success.

ENVIRONMENT AND SOCIETY
We recognise that our commitment to financial success must also take into account the broader economic, environmental and social impact of our operations.

EMPLOYEES
We strive to be a preferred employer of both current and potential employees.

BUSINESS INTEGRITY
Wherever we operate, our reputation is a most valuable asset, and it is determined by how we act. We avoid any action that would jeopardise our reputation.

UMICORE.COM/EN/ABOUT/THE-UMICORE-WAY

POLICIES
The Umicore Way is supplemented by detailed company codes including:

- Code of Conduct, a comprehensive framework for ethical business practice;
- Corporate Governance Charter, which sets out our management philosophy and governance principles;
- Sustainable Procurement Charter, which outlines our commitment to align our supply chain to our own values and practices; and
- Many internal policies developed in support of our vision and values such as Safety, Human Rights and Working Conditions, Training & Development and Donations & Sponsorship.

GOALS AND PERFORMANCE 2016-2020
The Umicore Way outlines our values, the way in which we wish to achieve our strategic goals and our overall commitment to the principles of sustainable development. Our Horizon 2020 economic growth ambitions are tied to the megatrends of resource scarcity, clean air and vehicle electrification. The social and environmental objectives are clustered in three themes: Great Place to Work, Eco-efficiency and Value Chain and society. These objectives reflect our operational excellence and the aspects of our products and services that we can further improve to turn sustainability into a greater competitive edge.

The supporting components of our Horizon 2020 strategy (see Materiality, p.21) described in this chapter, including policies, responsibilities and evaluation, ensure a close monitoring of our economic, environmental and social performance.

RESPONSIBILITIES
Final accountability for all aspects of Umicore's business lies with the executive committee. The broad sustainability approach is guided by an interdepartmental team with representatives from Environment, Health and Safety (EHS), Human Resources (HR), Finance and Procurement & Transportation. This team is responsible for developing and obtaining approval for sustainability objectives and guiding business units in their efforts to contribute to these objectives. At business group level, the economic/financial, environmental and social performance is owned by the Executive Vice-President of that entity. At business unit level, these aspects are owned by the head of the business unit. At site level, the site manager is responsible for the economic, social and environmental performance of the site.

MONITORING, EVALUATION AND CONTINUOUS IMPROVEMENT
Corporate EHS and Corporate HR have developed detailed technical guidance notes to assist the business units and sites, ensuring a collective understanding of concepts, definitions, roles and responsibilities. Regular workshops and meetings are organised each year at various levels of the organisation to share best practices.

Progress towards our objectives is measured annually against a set of KPIs reported through a group data management system. The data is collected and reported at the relevant entity level: site, business unit or business group. Social and environmental performance indicators that are relevant and material to Umicore's operations are also measured and reported. Corporate EHS, Corporate HR and Corporate Finance aggregate the performance of the business units to evaluate Umicore's overall progress towards the Horizon 2020 objectives.

On-site data verification relating to social and environmental performance and progress towards objectives is carried out internally. In addition, Umicore uses an assurance provider to check its social and environmental data. This assurance has been carried out by PricewaterhouseCoopers (PwC) since 2011. PwC evaluates the completeness and reliability of the reported data as well as the robustness of the associated data management system. Wherever necessary, performance indicators and reporting processes are reviewed and updated after every assurance cycle, as part of a continuous improvement process.

ECONOMIC & FINANCIAL PERFORMANCE

GOALS AND PERFORMANCE 2016-2020

Based on the validity analysis of the megatrends relevant for Umicore's Vision 2015 strategy, we identified specific growth areas where Umicore can contribute to solve certain societal and environmental problems. These growth areas form the basis of the Horizon 2020 strategy and are expected to enable Umicore to double its recurring EBIT between 2014 and 2020.

OPERATIONAL RETURNS

Umicore seeks to generate economic value through our existing businesses and any acquisitions or organic growth initiatives that we undertake, in line with our Horizon 2020 strategy. This entails generating a return on capital employed (recurring pre-tax operating profit/average capital employed for the period) in excess of our overall pre-tax cost of capital. This cost of capital can vary over time in function of our risk profile and the state of the world's debt and equity markets. The return on capital employed (ROCE) targeted for the Group in our Horizon 2020 strategy is over 15%.

Investments are assessed on a case-by-case basis: acquisitions are expected to be earnings-enhancing in the early phase of their integration and value-enhancing shortly thereafter. Similar criteria exist for organic investments, although the pursuit of longer-term growth projects invariably requires a longer view on expected returns.

In terms of operational performance, emphasis is placed on ROCE. We deal with precious and other rare metals and we therefore have a relatively high working capital intensity. Management is therefore incentivised to optimise performance both from an earnings perspective and by minimising capital employed.

SHAREHOLDER RETURNS

Umicore aims to create value for its shareholders. This is achieved through the development of a compelling strategy and a strong track record of delivering a solid performance against the strategic objectives. We seek to grow our existing businesses while maintaining or establishing strong leadership positions on the back of innovative technologies (see below). Shareholder returns depend on the valuation of the Umicore stock and are supported by the payment of dividends.

FINANCIAL STRENGTH

Umicore aims to safeguard the business through sound financial management and by maintaining a strong balance sheet. While we have no fixed target regarding debt levels, we aim to maintain an investment grade status at all times. We also seek to maintain a healthy balance between short and longer-term debt and between debt secured at fixed and floating interest rates. This approach, coupled with strong cash flow generated from operations, allows us to self-fund the majority of our growth initiatives.

RESEARCH AND DEVELOPMENT

As a materials technology company, the future success and sustainability of our business depend on our ability to develop and market innovative products and services. We invest consistently in research and development (R&D), with the equivalent of 5% to 7% of revenues typically dedicated to R&D every year.

MARKET PRESENCE

As part of our Horizon 2020 strategy, Umicore seeks to maintain market leadership positions in recycling and clean mobility materials. The nature of our business, which consists of products for highly specific applications, means that we do not have a presence in any country or region which makes up a significant part of that country or region's economy. Our business is global in nature with 50 production sites in 33 countries.

ECONOMIC AND FINANCIAL PERFORMANCE POLICY

Our approach to financial and economic management derives from our vision, values and organisational principles as described in The Umicore Way. Specific internal policies have been developed to frame the Company's approach to specific financial and economic aspects including: Dividend, Financing and Funding, Transfer Pricing, Credit Management, Hedging, Capital Expenditure and Mergers & Acquisitions.

ECONOMIC AND FINANCIAL PERFORMANCE RESPONSIBILITY

Accountability for the overall economic and financial performance of Umicore lies with the Chief Executive Officer while each Executive Vice-President is responsible for the financial performance of his/her business group. The Chief Technology Officer and his/her organisation has oversight for the technology portfolio of the Group and the overall research and development activities. At business unit level, the head of the business unit is responsible for the operational and financial performance of the business unit. The Chief Financial Officer has overall oversight of Umicore's financial and economic performance and is supported by a Corporate Finance team that includes specific expertise centres covering aspects such as tax, treasury, accounting

& control, and the internal control environment. At business unit level, financial controllers are responsible for managing the financial and reporting aspects of the business unit.

ENVIRONMENTAL PERFORMANCE

GOALS AND PERFORMANCE 2016-2020

In The Umicore Way, Umicore commits to continually improve its environmental performance. As a materials technology company, we have defined energy efficiency and the reduction of metal emissions as core environment-related objectives in our Horizon 2020 strategy. These objectives represent what we believe to be the most material environmental aspect of our business and the ones that are most important to our various stakeholders (see Materiality, p. 68). The performance review of energy efficiency is reported in the Eco-Efficiency, p. 29.

While Umicore's environmental objectives through 2020 focus on energy efficiency and the reduction of metal emissions, we believe it is equally important to continuously monitor, control and report the performance of our organisation in relation to other environmental aspects. We do that using the same measurement tools indicated in our General Management Approach. These indicators monitor how we are building on the Vision 2015 achievements in terms of environmental performance. These underlying performance indicators, detailed in the Environmental Statements, include:

- Emission to water and air, note E2
- Greenhouse gases, note E3
- Water consumption, note E5
- Waste volumes, note E6
- Control and remediation of historical pollution, note E7
- Regulatory compliance and management systems, note E8

The following specific management approach applies to both material topics and the underlying performance indicators.

ENVIRONMENTAL PERFORMANCE POLICY

Our approach to environmental management derives from the vision, values and organizational principles found in The Umicore Way. An internal Group EHS Guidance Note details the approach to measuring and reporting on each relevant environmental indicator. A specific internal policy on energy efficiency was rolled out throughout the Group from 2011 to 2015 and created a high level of awareness and commitment at sites and within business units to strive for continual energy efficiency improvement. In addition, Umicore encouraged all business unit initiatives that increased recycling potential. On a global scale, metals recycling reduces the environmental impact related to the acquisition and transformation of metals into products.

ENVIRONMENTAL PERFORMANCE RESPONSIBILITY

Umicore's environmental performance and impact accountability lies with the executive committee. In the executive committee, the Chief Counsel is Executive Vice-President for Environment, Health and Safety, Corporate Security and Internal Audit and responsible for all environmental matters and is supported by the Senior Vice President Environment, Health & Safety. The Executive Vice-Presidents are responsible for the overall environmental performance of their business group. At business unit level, the head of the business unit is responsible for the overall environmental performance. The general manager of each site has a similar responsibility at site level.

ENVIRONMENTAL PERFORMANCE BOUNDARY

Energy efficiency performance and underlying performance indicators contribute to reducing our impact on the environment, for example through an expected reduction of our carbon footprint of lower impact or the metal emissions on air and water.

SOCIAL PERFORMANCE

GOALS AND PERFORMANCE 2016-2020

As set out in The Umicore Way, we strive to be a preferred employer for both current and potential employees and to act and operate in line with the expectations of society. We have defined three social objectives within the context of our Horizon 2020 strategy: reducing lost-time accidents to zero, further reducing occupational exposure to specific metals and increasing our diversity, talent attraction and retention and employability. We also have objectives which relate to our broader social impact and these can be found in our Management Approach to Value Chain and Society, later in this chapter.

These objectives were defined as material topics in the materiality assessment both by internal and external stakeholders. Talent management is key to reaching our desired business growth. Attracting, developing and retaining talent in competitive labour markets support the business units in their growth plans. In addition, while increasing the diversity of our workforce is in line with expectations from society, it should also increase our chance of success. Given the ageing population and the need for longer careers, we are also putting programmes in place to increase the employability of our workforce. The performance review of these material topics, including zero accident and reducing occupational exposure, is reported in the Great Place to Work, p. 49.

While Umicore's social objectives determine a special focus through 2020, we believe it is equally important to continuously monitor, control and report our social performance in other areas. We do that using the same measurement tools indicated in our General Management Approach. These underlying performance indicators, detailed in the Social Statements section, include:

- Monitoring of workforce demographics, note S2

- Monitoring of human rights, compliance and risk, note S4
- Monitoring of employee health aspects beyond metal exposure, notes S5-S6
- Monitoring of contractor safety, note S7

The following specific management approach applies to both materials topics and the underlying performance indicators.

SOCIAL PERFORMANCE POLICY

Our approach to social performance derives from the vision, values and organisational principles found in The Umicore Way. An internal Group Social Reporting Guidance Note provides detailed guidance on measuring and reporting on social performance. Specific internal policies have been developed to frame specific elements of our social management approach including Safety, Human Rights and Working Conditions and Training & Development. In addition, Umicore has a Global Framework Agreement on Sustainable Development in place with international trade unions.

SOCIAL PERFORMANCE RESPONSIBILITY

Umicore's social performance and impact accountability lies with the executive committee. In the executive committee, the CEO has oversight responsibilities for Umicore's Human Resources issues and is supported by the Senior Vice President Human Resources. The Executive Vice-Presidents are responsible for the social aspects of their business group. At business unit level, the head of the business unit is responsible for the overall social performance. The general manager of each site has a similar responsibility at site level. A regional Human Resources organisation exists to manage social aspects at regional and country level, and to provide structural support to the business units in all aspects of human resources management.

SOCIAL PERFORMANCE BOUNDARY

Social performance and the underlying performance indicators have a direct impact on Umicore's workforce (enhanced engagement and well-being at all levels and attracting and retaining the right skills).

VALUE CHAIN & SOCIETY PERFORMANCE

GOALS AND PERFORMANCE 2016-2020

The relationship between customers and suppliers is an essential element to building financial and economic value and plays a key role in the promotion of social and environmental best practices. The Umicore Way also covers the relationships with our various stakeholders.

The value chain and society objectives cover Umicore's presence and impact upstream with suppliers, and downstream contribution of our products and services to a better life.

The performance review of these material topics is reported in the Value Chain and Society, p. 36.

While Umicore's value chain and society objectives determine a special focus through 2020, we believe it is equally important to continuously monitor, control and report our relationship with all the other stakeholders. Information on our stakeholder groups is listed in the Stakeholder Engagement, p. 14. In addition, we report on the following topics in the Value Chain Statements section:

- Monitoring of the supplier assessment for indirect procurement, note V3
- Product regulatory compliance, note V4
- Monitoring of our donations, note V5

The following specific management approach applies to both materials topics and the underlying performance indicators.

VALUE CHAIN AND SOCIETY PERFORMANCE POLICY

Our approach to stakeholder engagement derives from the vision, values and organisational principles found in The Umicore Way. Specific charters/policies have been developed to frame specific elements of our approach to stakeholder engagement, including the Sustainable Procurement Charter, Responsible global supply chain of minerals from conflict-affected and high risk areas Policy, Human Rights & Working Conditions Policy and External Communications Policy.

VALUE CHAIN AND SOCIETY PERFORMANCE RESPONSIBILITY

Our presence and impact both upstream and downstream is based on a business-specific approach whereby all business units are required to identify and engage with their respective suppliers, customers and stakeholders. In addition, a team comprising members of various departments, including Corporate EHS, Corporate HR, Group Communications, Corporate Finance and Procurement & Transportation, meets regularly to map the overall stakeholder expectations and to convene, whenever necessary, internal or external stakeholder dialogue sessions.

VALUE CHAIN AND SOCIETY PERFORMANCE BOUNDARY

The value chain and society theme focuses on potential impacts on society incurred through our activities, products and services. For reporting, all entities are considered. While we focus primarily on those of our activities that are directly linked to clean mobility and recycling, other initiatives targeting suppliers, customers or society are tracked and appropriately reported, whether through communications such as this annual report or through other specific communication channels.

Governance statements

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G1 CORPORATE GOVERNANCE FRAMEWORK

During the financial year 2019, Umicore (also the "Company") was subject to the 2009 Belgian Code on Corporate Governance, which it had adopted as its reference code. From 1 January 2020 onwards, Umicore will be subject to the new Belgian Code on Corporate Governance 2020 pursuant to Article 1 of the Royal Decree of 12 May 2019 laying down the corporate governance code to be complied with by listed companies.

The English, Dutch and French versions of the 2009 and 2020 Codes on Corporate Governance can be found on the website of the Belgian Corporate Governance Committee.

CORPORATEGOVERNANCECOMMITTEE.BE

The Umicore Corporate Governance Charter describes in detail the governance structure of the Company and the policies and procedures of the Umicore group. The Charter is available on the Umicore website and may be obtained on request from Umicore's Group Communications Department.

UMICORE.COM/EN/GOVERNANCE/CORPORATE-GOVERNANCE-CHARTER

Umicore has articulated its mission, values and basic organizational philosophy in a document called "The Umicore Way". This document spells out how Umicore views its relationship with its customers, shareholders, employees and society. It is supplemented by detailed company codes and policies, the most significant of which is the Code of Conduct (see note G9).

In terms of organizational philosophy, Umicore believes in decentralization and in entrusting a large degree of autonomy to each of its business units. The business units in turn are accountable for their contribution to the group's value creation and for their adherence to group strategies, policies, standards and sustainable development approach.

In this context, Umicore is convinced that a sound corporate governance structure constitutes a necessary condition to ensure its long-term success. This implies an effective decision-making process based on a clear allocation of responsibilities. This approach must ensure an optimal balance between a culture of entrepreneurship at the level of the business units and effective steering and oversight processes. The Umicore Corporate Governance Charter deals in more detail with the responsibilities of the shareholders, the board of directors, the CEO, the executive committee and the specific role of the audit committee and of the nomination & remuneration committee. The present statements provide information on governance issues which relate primarily to the financial year 2019.

G2 CORPORATE STRUCTURE

The board of directors is the ultimate decision-making body of Umicore, subject to all matters specifically reserved to the shareholders' meeting by the Belgian Companies Code[1] or Umicore's articles of association. The board is assisted in its role by an audit committee and a nomination & remuneration committee. The day-to-day management of Umicore has been delegated to the CEO, who also chairs the executive committee. The executive committee is responsible for devising the overall strategy of Umicore and for submitting it to the board for review and approval. It is also entrusted with the implementation of this strategy and with the effective oversight of the business units and corporate functions. The executive committee is furthermore responsible for screening the various risks and opportunities that Umicore may encounter in the short, medium or longer term (see Risk Management section) and for ensuring that adequate systems are in place to address these. The executive committee is responsible for defining and applying Umicore's approach to sustainable development.

Umicore is organized in business groups which in turn comprise business units that share common characteristics in terms of products, technologies and end-user markets. Some business units are further subdivided into market-focused business lines. In order to provide a group-wide support structure, Umicore has regional management platforms in China, North America, Japan and South America. Umicore's corporate headquarters are based in Belgium. This center provides a number of corporate and support functions in the areas of finance, human resources, internal audit, legal, tax, and public and investor relations.

G3 SHAREHOLDERS

3.1 ISSUED SHARES – CAPITAL STRUCTURE

On 31 December 2019 there were 246,400,000 Umicore shares in issue.

The identity of shareholders having declared a participation of 3% or more as of 31 December 2019 can be found in the chapter "Parent Company Separate Summarized Financial Statements" p.164.

(1) From 1 January 2020 onwards, the new Belgian Code of companies and associations will replace the Belgian Companies Code as far its mandatory provisions are concerned; the same is true its other provisions, but only to the extent that the articles of association of the Company do not contain conflicting provisions. As announced in a press release dated 14 October 2019, Umicore will convene an extraordinary shareholders' meeting in the first half of 2020 in order to propose a full alignment of its articles of associations with the new Code of companies and associations and, in the same context, a shift to a genuine two-tier management structure with a supervisory board and a management board, in replacement of respectively the current board of directors and the executive committee. In the proposed two-tier governance structure, the management board would be vested with all powers not explicitly conferred to the supervisory board or the shareholders' meeting.

Also on 31 December 2019 Umicore owned 5,624,550 of its own shares representing 2.28% of its capital. Information concerning the shareholders' authorization for Umicore to buy back its own shares and the status of such buy-backs can be consulted in the Umicore Corporate Governance Charter and on Umicore's website.

During the year 936,604 own shares were used in the context of the exercise of employee stock options and 71,300 shares were used for share grants, of which 10,000 to the board members, 51,100 to the executive committee members and 10,200 following a partial conversion into shares of the bonus of the CEO.

3.2 DIVIDEND POLICY AND PAYMENT

Umicore's policy is to pay a stable or gradually increasing dividend. There is no fixed pay-out ratio. The dividend is proposed by the board at the ordinary (or annual) shareholders' meeting. No dividend will be paid which would endanger the financial stability of Umicore.

In 2019, Umicore paid a gross dividend of € 0,75 per share relating to the financial year 2018. This was an increase by € 0.05 compared to the gross dividend paid in 2018 in respect of the financial year 2017.

In July 2019 the board, in line with the Umicore dividend policy, decided to pay an interim dividend, equalling 50% of the total dividend declared for the previous financial year. As a result, a gross interim dividend of € 0.375 per share was paid on 27 August 2019.

3.3 SHAREHOLDERS' MEETINGS 2019

The annual shareholders' meeting was held on 25 April 2019. On this occasion, the shareholders approved the customary resolutions regarding the annual accounts, the appropriation of the results and the discharges to the directors and to the statutory auditor regarding their respective 2018 mandates. At the same meeting, the shareholders appointed Mr Laurent Raets as new director for a period of 3 years. Furthermore, the mandate of Mrs Françoise Chombar as director was renewed for 3 years. The annual shareholders' meeting also approved the remuneration of the board for 2019. Details of the fees paid to the directors in 2019 are disclosed in the remuneration report.

Also on 25 April 2019, a special shareholders' meeting was held, which approved a change of control clause in accordance with Article 556 of the Belgian Companies Code.

G4 BOARD OF DIRECTORS

4.1 COMPOSITION

The board of directors, whose members are appointed by the shareholders' meeting resolving by a simple majority of votes without any attendance requirement, is composed of at least 6 members. The directors' term of office may not exceed 4 years. In practice, directors are elected for a (renewable) period of 3 years.

Directors can be dismissed at any time following a resolution of a shareholders' meeting deciding by a simple majority of the votes cast. There are no attendance requirements for the dismissal of directors. The articles of association provide for the possibility for the board to appoint directors in the event of a vacancy. The next general meeting must decide on the definitive appointment of the above director. The new director completes the term of office of his or her predecessor.

On 31 December 2019, the board of directors was composed of 10 members: 9 non-executive directors and one executive director.

On the same date, 6 directors were independent in accordance with the criteria laid down in Article 526ter of the Belgian Companies Code and provision 2.3 of the 2009 Belgian Code on Corporate Governance.(2)

In terms of gender and cultural diversity, the Board counts 3 women and 5 different nationalities among its 10 members. Diversity also arises from the board members' educational backgrounds which include engineering, law, economics, finance and applied languages. The board's cumulative industry experience is broad, covering automotive, electronics, chemicals, metals, energy, finance and scientific/educational sectors. It also includes people experienced in the public and private sector and members with experience in the different regions in which Umicore is active. Collectively, the board possesses strong experience of managing industrial operations and counts 8 active or former CEOs in its ranks. The board also has collective experience in disciplines that are specifically relevant to Umicore's non-financial Horizon 2020 goals such as health and safety, talent attraction and retention and supply chain sustainability.

The composition of the board of directors underwent the following change in 2019:

- Mr Laurent Raets was appointed director for a period of three years at the annual shareholders' meeting held on 25 April 2019;
- Mr Colin Hall resigned as director with effective date 25 April 2019.
- Furthermore, the mandate of Mrs Françoise Chombar as independent director was renewed for three years in 2019.

4.2 MEETINGS AND TOPICS

The board of directors held seven regular meetings in 2019. On two occasions the board also took decisions by unanimous written consent.

The matters reviewed by the board in 2019 included:

- financial performance of the Umicore group;

(2) The provisions were replaced by provision 3.5 of the 2020 Belgian Code on Corporate Governance effective 1 January 2020.

- approval of the annual and half-year financial statements;
- adoption of the statutory and consolidated annual accounts and approval of the statutory and consolidated annual reports (including the remuneration report);
- approval of the agenda of an ordinary and a special shareholders' meeting and calling of these meetings;
- innovation strategy;
- investment and divestment projects;
- funding mandates;
- audit committee reports;
- strategic opportunities and operational challenges;
- business risk assessment;
- business and technology reviews, and market updates;
- corporate governance;
- mergers & acquisitions projects;
- IT security;
- annual performance review of the CEO and the other members of the executive committee;
- succession planning at the level of the board and the executive committee;
- litigation updates;
- interim dividend distribution.

The board also visited the Umicore Specialty Powders site in Grenoble (France).

4.3 PERFORMANCE REVIEW OF THE BOARD AND ITS COMMITTEES

Every two years, the chairman conducts a performance review of the board and its committees.

The last performance review took place in 2018.

4.4 AUDIT COMMITTEE

The audit committee's composition and the qualifications of its members are fully in line with the requirements of Article 526bis of the Belgian Companies Code and the 2009 Belgian Code on Corporate Governance.[3]

(3) As from 1 January 2020, these provisions were replaced by respectively Art. 7:99 of the Code of companies and associations and the 2020 Code on Corporate Governance.

The Audit Committee is composed of 3 non-executive directors, 2 of them being independent. It is chaired by Mrs Ines Kolmsee.

The composition of the Audit Committee underwent one change in 2019: Mr Colin Hall was replaced by Mr Laurent Raets with effective date 25 April 2019.

All the members of the Audit Committee have extensive experience in accounting and audit matters as demonstrated by their curriculum.

The committee met 5 times in 2019 and held 3 conference calls. Apart from the review of the 2018 full year and the 2019 half year accounts, the audit committee reviewed reports and discussed matters related to internal audit, financial reporting and related internal controls, cyber security and group auditor succession. The 2020 internal audit plan was validated. The committee met with the group's auditor and reviewed and approved provided non-audit services.

4.5 NOMINATION & REMUNERATION COMMITTEE

The Nomination & Remuneration Committee is composed of 3 members, who are all non-executive directors, 2 of them being independent. It is chaired by the chairman of the board.

The composition of the nomination & remuneration committee underwent no changes in 2019.

3 nomination & remuneration committee meetings were held in 2019. During the same period the committee discussed the remuneration policy for the board members, the board committee members and executive committee members, and the rules of the stock grant and option plans offered in 2019. The committee also discussed the succession planning at the level of the board and the executive committee.

G5 EXECUTIVE COMMITTEE

5.1 COMPOSITION

The executive committee has the form of a "comité de direction"/directiecomité" as defined under Article 524bis of the Belgian Companies Code[4].

The executive committee is composed of at least 4 members. It is chaired by the CEO, who is appointed by the board of directors. The members of the executive committee are appointed by the board of directors upon proposal by the CEO and upon recommendation of the Nomination & Remuneration Committee.

The composition of the executive committee underwent the following changes in 2019:

- Mr Pascal Reymondet, former EVP Catalysis, left the executive committee effective 1 February 2019;

(4) As previously indicated, an extraordinary shareholders' meeting will be convened in the first half of 2020 in order to propose, inter alia, the adoption of a genuine two-tier governance structure, which would entail the replacement of the executive committee by a management board.

– Mr Ralph Kiessling was appointed EVP Catalysis and member of the executive committee with effective date 1 February 2019.

On 31 December 2019 the executive committee was composed of 7 members including the CEO.

5.2 PERFORMANCE REVIEW

A review of the performance of each executive committee member is conducted annually by the CEO and discussed with the nomination & remuneration committee. The results are presented to and discussed by the board of directors.

The board also meets annually in a non-executive session (i.e. without the CEO being present) in order to discuss and review the performance of the CEO.

The above performance reviews took place on 7 February 2019.

G6 RELEVANT INFORMATION IN THE EVENT OF A TAKEOVER BID

6.1 RESTRICTIONS ON TRANSFERRING SECURITIES

Umicore's articles of association do not impose any restriction on the transfer of shares or other securities.

The Company is furthermore not aware of any restrictions imposed by law except in the context of the market abuse legislation and of the lock-up requirements imposed on some share grants by the Companies Code(5) .

The options on Umicore shares as granted to the CEO, to the members of the executive committee and to designated Umicore employees in execution of various Umicore incentive programs may not be transferred inter vivos.

6.2 HOLDERS OF SECURITIES WITH SPECIAL CONTROL RIGHTS

There are no such holders.

6.3 VOTING RIGHT RESTRICTIONS

Umicore's articles of association do not contain any restriction on the exercise of voting rights by shareholders, providing the shareholders concerned are admitted to the shareholders' meeting and their rights are not suspended. The admission rules to shareholders' meetings are articulated in Article 17 of the articles of association. According to Article 7 of the articles of association, the rights attached to shares held by several owners are suspended until one person is appointed as owner vis-à-vis the Company.

To the board's best knowledge none of the voting rights attached to the shares issued by the Company were suspended by law on 31 December 2019, save for the 5,624,550 shares held by the Company itself on that date (Article 622 §1 of the Belgian Companies Code(6)).

(5) Replaced by the Code of companies and associations as of 1 January 2020.
(6) Article 7:217 §1 of the Code of companies and associations as of 1 January 2020.

6.4 EMPLOYEE STOCK PLANS WHERE THE CONTROL RIGHTS ARE NOT EXERCISED DIRECTLY BY THE EMPLOYEES

Umicore has not issued any such employee stock plans.

6.5 SHAREHOLDERS' AGREEMENTS

To the board's best knowledge there are no shareholders' agreements which may result in restrictions on the transfer of securities and/or the exercise of voting rights.

6.6 AMENDMENTS TO THE ARTICLES OF ASSOCIATION

Save for capital increases decided by the board of directors within the limits of the authorized capital, only an extraordinary shareholders' meeting is authorized to amend Umicore's articles of association. A shareholders' meeting may only deliberate on amendments to the articles of association – including capital increases or reductions, mergers, de-mergers and a winding-up – if at least 50% of the subscribed capital is represented. If the above attendance quorum is not reached, a new extraordinary shareholders' meeting must be convened, which will deliberate regardless of the portion of the subscribed capital represented. As a general rule, amendments to the articles of association are only adopted if approved by 75% of the votes cast. The Companies Code(7) provides for more stringent majority requirements in specific instances, such as the modification of the corporate object or the company form.

The Company's articles of association were not amended in 2019.

6.7 AUTHORISED CAPITAL – BUY-BACK OF SHARES

The Company's share capital may be increased following a decision of the board within the limits of the so-called "authorized capital". The authorization must be granted by an extraordinary shareholders' meeting; it is limited in time and amount and is subject to specific justification and purpose requirements.

The extraordinary shareholders' meeting held on 26 April 2018 (resolutions published on 29 May 2018) renewed the authorization granted to the board to increase the Company's share capital. The board is now authorized to increase the capital in one or more times, now by a maximum amount of € 55,000,000. Up until 31 December 2019, the board had not used this renewed authorization. The authorization will lapse on 28 May 2023.

Following a resolution of the extraordinary shareholders' meeting held on 26 April 2018 the Company is authorized to acquire own shares on a regulated market within a limit of 10% of the subscribed capital, at a price per share comprised between € 4 and € 100 and until 31 May 2022 (included). The same authorization was also granted to the Company's direct subsidiaries. The Company acquired 1,275,871 own shares in 2019 in implementation of the above authorization.

(7) The Code of companies and associations, which has replaced the old Companies Code effective 1 January 2020, contains similar provisions on this subject.

6.8 AGREEMENTS BETWEEN THE COMPANY AND ITS BOARD MEMBERS OR EMPLOYEES PROVIDING FOR COMPENSATION IF THEY RESIGN, OR ARE MADE REDUNDANT WITHOUT VALID REASON, OR IF THEIR EMPLOYMENT CEASES BECAUSE OF A TAKE-OVER-BID

Some senior vice-presidents of the Umicore group are entitled to a compensation equivalent to 36 months' base salary in the event of a dismissal within 12 months after a change of control of the Company. As far as the members of the executive committee are concerned, reference is made to the Remuneration Report p.91.

G7 CONFLICTS OF INTERESTS (ART. 523 – 524TER COMPANIES CODE)

On 7 February 2019, prior to the board discussing or taking any decision, Marc Grynberg declared that he had a direct conflicting interest of a proprietary nature in the implementation of the decisions taken by the board relating to his performance assessment and to his remuneration (including the grant of shares and options). In accordance with Article 523 of the Belgian Companies Code, Marc Grynberg did not take part in the board's discussions concerning this decision and he did not take part in the voting.

The above decisions had/will have the following financial consequences:

A) FIXED AND VARIABLE REMUNERATION

The CEO received a fixed gross remuneration of € 700,000 in 2019. Also, in 2019, he received a gross variable cash remuneration totaling € 220,000 as non-deferred part of his variable cash remuneration for the reference year 2018.

Furthermore he received in 2019 a gross amount of € 144,450 as second half of the deferred payment of his variable remuneration for the reference year 2016 based on (1) the 3-year average Umicore group profitability criterion, i.e. the average return on capital employed (ROCE) for the reference years 2016, 2017 and 2018 (i.e. 15% giving rise to a percentage pay-out of 75%) and (2) the 3-year average EBIT growth for the same reference years 2016, 2017 and 2018 multiplied by 2 (i.e. 16.2% giving rise to a percentage pay-out of 32%).

The ROCE range is set between a minimum of 7.5% (= pay-out of 0%) and a maximum of 17.5% (= pay-out of 100% of the target). When the achieved ROCE percentage falls between the minimum and the maximum, the pay-out will be pro-rated. The impact of the EBIT growth is calculated by multiplying the average percentage of the EBIT growth for the reference years by 2. The Group EBIT growth incentive only applies for a minimum compounded average recurring EBIT growth of 10%.

B) GRANT OF SHARES AND STOCK OPTIONS

The financial consequences for Umicore consist of: either 1) as long as Umicore decides to keep the shares it holds today: the financing and opportunity cost of maintaining such shares in its portfolio until the delivery date of the shares granted or the option's exercise date, or 2) if and to the extent that Umicore sells such shares at a later date: the difference on the date of exercise of the options between the exercise price and the market value of the shares that Umicore would have to buy on that date.

During 2019, no specific transactions or contractual commitments occurred between a member of the board or of the executive committee on the one hand, and Umicore or one of its affiliated companies on the other hand.

G8 STATUTORY AUDITOR

At the annual shareholders' meeting held on 25 April 2017 the statutory auditor's mandate of PricewaterhouseCoopers Bedrijfsrevisoren/Réviseurs d'Entreprises BCVBA/SCCRL was renewed for a period of 3 years. The statutory auditor is represented by Mr. Kurt Cappoen for the exercise of this mandate.

Following the new applicable legislation on auditing services, the mandate of the current statutory auditor, who was initially appointed in 1993, will only be renewable once, i.e. in 2020 (the latter provided it occurs before 17 June 2020).

The Umicore policy detailing the independence criteria for the statutory auditor may be requested from Umicore.

G9 CODE OF CONDUCT

Umicore operates a Code of Conduct for all its employees, representatives and board members. This Code of Conduct is fundamental to the task of creating and maintaining a relation of trust and professionalism with its main stakeholders namely its employees, commercial partners, shareholders, government authorities and the public.

The main purpose of Umicore's Code of Conduct is to ensure that all persons acting on behalf of Umicore carry out their activities in an ethical way and in accordance with the laws and regulations and with the standards Umicore sets through its present and future policies, guidelines and rules. The Code of Conduct contains a specific section on complaints and expressions of concern by employees and "whistleblower" protection.

The Code of Conduct is published in Appendix 4 to the Umicore Corporate Governance Charter.

G10 MARKET MANIPULATION AND INSIDER TRADING

Umicore's policy related to market abuse including insider trading is spelled out in the Umicore Dealing Code, which can be found under Appendix 5 to the Umicore Corporate Governance Charter.

G11 COMPLIANCE WITH THE 2009 BELGIAN CODE ON CORPORATE GOVERNANCE

At all times during the financial year 2019, Umicore's corporate governance systems and procedures were in line with the 2009 Belgian Code on Corporate Governance.

G12 REMUNERATION POLICY

On 6 February 2020 the Nomination and Remuneration Committee presented the Remuneration Policy (the "Policy") to the Board of Directors for discussion and approval. This Policy outlines the remuneration principles for the Umicore's Non-Executive Directors and the members of the Executive Committee and is in accordance with the Belgian Code of companies and associations and the 2020 Belgian Code on corporate governance.

While consistent with the remuneration practice in 2019, this Policy is effective as of 1 January 2020 and will be submitted to Umicore's Annual Shareholders' Meeting on 30 April 2020.

The Nomination and Remuneration Committee is composed exclusively of members of the Board and a majority of its members qualify as independent members. This helps to prevent the occurrence of conflicts of interest regarding the setting up, amendments and implementation of this Policy in relation to the Chief Executive Officer ("CEO") and the other members of the Executive Committee – together "Members of the Executive Committee". The Members of the Executive Committee do not take part in any discussions of the Nomination and Remuneration Committee related to their remuneration. As regards the remuneration of the Non-Executive Directors, all decisions are adopted by the Shareholders' Meeting.

The Policy aims to ensure that the Company can attract, motivate and retain the right talent for the Board of Directors and the Executive Committee. It focuses on delivering competitive, fair and responsible remuneration driving the achievement of the Company's long-term interests, sustainability and strategic objectives.

The remuneration for the Non-Executive Directors and the Members of the Executive Committee is assessed annually by the Board of Directors on the basis of recommendations from the Nomination and Remuneration Committee. The remuneration components are benchmarked against companies which are part of the BEL20 index, as well as European companies of similar size operating in the Chemicals, Metals and Materials sectors.

The general principles for the remuneration of the Members of the Executive Committee are consistent with the overall remuneration philosophy of the Company.

REMUNERATION FOR THE NON-EXECUTIVE DIRECTORS

The remuneration for the Non-Executive Directors takes into account their responsibilities and commitment in time. They are rewarded for their services through cash and fixed share-based compensation.

All members of the Board receive an **annual fixed fee**. Members of the Audit Committee receive a supplementary fixed fee. The fixed fees can vary based on the specific mandate and are pro-rated in case of appointment or end of mandate in the course of the year.

In addition to the fixed fees, the Non-Executive Directors receive **an attendance fee** for each meeting of the Board of Directors and of its committees attended. A member of the Board residing outside Belgium receives an additional attendance fee for each meeting attended in person. All reasonable travel and other expenses incurred while performing their duties are reimbursed.

In addition to the cash compensation, the members of the Board of Directors receive a number of Umicore **shares** depending on their role in the Board. The shares granted as of 2020 have to be held until at least one year after the member leaves the Board and at least 3 years after the moment of grant. The number of shares is pro-rated in case of appointment or end of mandate in the course of the year. No performance criteria apply to the grant of the shares.

A company car is provided to the Chairman of the Board.

The remuneration of the Non-Executive Directors is approved by the shareholders at the Company's Annual Shareholders' Meeting.

REMUNERATION FOR THE CEO AND THE OTHER MEMBERS OF THE EXECUTIVE COMMITTEE

The remuneration of the Members of the Executive Committee comprises a base remuneration, a short-term and multi-year variable cash compensation, long-term share-based incentives and other usual benefits.

Fixed compensation

The fixed remuneration of the Members of the Executive Committee is determined annually by the Board of Directors upon recommendation of the Nomination and Remuneration Committee. In making its decision, the Board of Directors takes into account the scope and level of responsibility, the experience, prevailing market conditions, as well as the personal and Company performance.

Variable cash compensation

A strong focus on performance and achievements at Company and individual level is reflected in the variable compensation program. This program aims at aligning the interests of the Members of the Executive Committee with the sustainable value-creation objectives of the Company.

The annual variable cash remuneration potential for the Members of the Executive Committee amounts to at least 75% of their fixed compensation and is composed as follows:

- **A 50% undeferred part based on individual performance:**

  At the beginning of every performance year, the individual objectives of the CEO are discussed during a Nomination and Remuneration Committee, followed by a discussion and approval by the members of the Board. The annual individual objectives of each member of the Executive Committee are fixed by the CEO on basis of their areas of responsibility. The annual individual objectives take into account financial performance, the progress achieved against Company strategic and sustainable development objectives, and adherence to the values of the Company. Financial criteria include ROCE, recurring EBIT and EBITDA with budget and year-on-year progress being used as reference. Strategic and sustainable development objectives are tied to economic performance, value chain and society, eco-efficiency and great place to work. The annual performance of the CEO is assessed by the Nomination and Remuneration Committee and the results of this assessment are presented by the Chairman and discussed with the members of the Board. The annual performance of each member of the Executive Committee is initially assessed by the CEO. The results of the assessments and the individual variable cash remuneration proposals are presented by the CEO to the Nomination and Remuneration Committee before approval by the members of the Board.

- **A 50% deferred part based on multi-year Company performance,** to reward for the quality of the results (Group ROCE criterion) and to provide an incentive for growth (Group recurring EBIT growth criterion). This variable component applies a deferment of 3 years with a pay-out after 3 years, based upon a 3-year average ROCE and recurring EBIT growth. The Group EBIT growth incentive only applies for a minimum compounded average recurring EBIT growth of 10%. The ROCE range is set between a minimum of 7.5% (= pay-out of 0%) and a maximum of 17.5% (= pay-out of 100% of the target). When the achieved ROCE percentage falls between the minimum and the maximum, the pay-out will be pro-rated. In case the 10% compounded average recurring EBIT growth threshold is reached, the compounded average recurring EBIT growth percentage will be doubled and added to the ROCE pay-out percentage.

The Members of the Executive Committee have the possibility to receive their variable cash compensation, if any, partly or totally in the form of Umicore shares.

Share-based compensation

To ensure a direct correlation with the long-term value creation benefitting shareholders and stakeholders, a long-term incentive program consisting of Umicore shares and stock options has been put in place.

Umicore shares are granted annually to the Members of the Executive Committee at the discretion of the Board of Directors in recognition of services rendered in the previous year. The shares are subject to a 3-year lock-up and are not subject to forfeiture conditions.

The Members of the Executive Committee are also granted **stock options** for the ongoing year as part of the annual Umicore Incentive Stock Option Plan, subject to an annual approval of the Board of Directors. Each accepted option entitles the holder to acquire one existing share of the Company against payment of the exercise price. The Umicore Incentive Stock Option plan for the Members of the Executive Committee holds a duration of 7 years including a 3-year waiting period before exercise. Stock options that have not been exercised by the expiry of the exercise period will lapse automatically and without compensation. In case of dismissal for serious cause the non-exercised options become void (see section "Agreement related to the mandate of the CEO" regarding the CEO).

Should the Company carry out a corporate change having an impact on its capital and an adverse effect on the exercise price of the stock options and/or the number of shares to which the options give right, the Board of Directors, at its sole discretion, may adapt such price and/or the number of shares to which the stock options holders are entitled.

Pension and other benefits

The Members of the Executive Committee are entitled to retirement, death-in-service and disability benefits. The CEO and the other members of the Executive Committee appointed before 1 July 2018 are enrolled in a defined benefit plan and a supplementary defined contribution plan. For the Members of the Executive Committee joining as of 1 July 2018 a defined contribution plan applies.

In addition the Members of the Executive Committee are entitled to the usual benefits such as a company car, medical insurance and representation allowance. They also have the possibility to enroll in the Belgian Umicore mobility scheme such as the bike lease program.

Additional benefits

The Board of Directors may decide to grant Members of the Executive Committee individual additional fringe benefits where deemed appropriate, such as for instance a mobility premium or housing for cross-border assignments. Such additional remuneration will be disclosed in the annual remuneration report.

Summary of the remuneration for the Members of the Executive Committee

The below table provides a summary of the remuneration structure for the Members of the Executive Committee, showing also the cash time line.

TIME TO CASH CONVERSION	REMUNERATION COMPONENT	
Year of reference (y)	Fixed compensation	Based on the scope and level of responsibility, experience, prevailing market conditions, as well as the personal and Company performance. Annual review based on market practices BEL 20 and European peer companies.
y+1	Undeferred variable 50%	Based on individual performance.
y+3	Deferred variable 50%	Based on multi-year Company performance, taking into account a 3-year average Group ROCE and compounded average recurring EBIT growth% (y, y+1, y+2).
y+4	Shares	Grant in recognition of services rendered in the reference year (previous year) – not linked to individual or business performance criteria – subject to a 3 year lock-up.
y+3 to y+7	Stock options	Upfront grant for the reference year – not linked to individual or business performance criteria – subject to a 3 year lock-up.
Year of reference (y) – retirement age (pension)	Benefits	Retirement, death-in-service and disability benefits, and other market common benefits.

MINIMUM SHAREHOLDING REQUIREMENT

As per decision of the Board on 6 February 2020, the CEO is required to build up, within 3 years from the date of appointment, and to retain minimum 30,000 Umicore shares throughout his tenure. This requirement is also applicable to the other members of the Executive Committee, in respect of a minimum of 15,000 shares.

MALUS AND CLAW BACK PROVISIONS

The Nomination and Remuneration Committee has discretion to adjust (malus) or reclaim (claw back) performance related payments of the past 3 reference years, in the event of fraud or a misstatement of the results leading to undue paid variable compensation, insofar as enforceable by law.

This clause will be systematically applicable to contracts entered in with Members of the Executive Committee as of December 2019.

MAIN FEATURES OF THE AGREEMENTS WITH THE NON-EXECUTIVE DIRECTORS AND MEMBERS OF THE EXECUTIVE COMMITTEE

General features

All Non-Executive Directors and Members of the Executive Committee have self-employed status.

Agreements related to the mandate of the members of the Board

The maximum duration of the mandate of the members of the Board is 4 years. This mandate can be renewed. Members of the Board are not entitled to any notice period or severance indemnity in relation to the termination of their mandate.

Agreement related to the mandate of the CEO

Taking into account Marc Grynberg's seniority in the Company, the Company resolved as follows in 2008:

- In case of termination of the contract by the Company, a total compensation equivalent to 18 months of his annual base salary will be paid.
- A total compensation of 3 years of annual base salary as minimum indemnity will be paid to the CEO if his employment as CEO would be terminated within a 12 months period following a change of control due to a takeover bid (not cumulative with the previous provision).
- It is at the Board of Director's discretion to determine whether the variable cash remuneration would form part of any final indemnity.
- Stock options vest upon grant, subject to a 3-year waiting period for exercise.

Agreement related to the mandate of the other members of the Executive Committee

The agreements with the other members of the Executive Committee appointed before 1 July 2018 include a compensation equivalent to 18 months of the annual base salary in case of contract termination.

For the other members of the Executive Committee appointed after 1 July 2018, a 12 months compensation of the annual base salary will apply in case of contract termination.

It is at the Board of Director's discretion as to whether the variable cash remuneration would form part of any final indemnity.

DEVIATIONS TO THE REMUNERATION POLICY

In exceptional circumstances, the Board of Directors may decide to derogate from any items of the Policy if necessary to serve the long-term interests and sustainability of the Company. Any such deviation must be discussed at the Nomination and Remuneration Committee who will provide a substantiated recommendation to the Board of Directors. Any deviation from the Policy will be described and explained in the Company's annual remuneration report.

APPROVAL AND PUBLICATION

The Board of Directors, with support from the Nomination and Remuneration Committee, is responsible for the compliance with this Policy and for completing an annual review of this Policy.

This Policy is submitted to the Annual Shareholders' Meeting at least every fourth year and upon any proposed material change of the Policy.

The Policy has been approved by the Board of Directors on 6 February 2020 and will be submitted on the Annual Shareholders' Meeting of 30 April 2020. .

G13 REMUNERATION REPORT

REMUNERATION FOR THE NON-EXECUTIVE DIRECTORS

The remuneration of the Non-Executive Directors was as follows in 2019, in accordance with the 2019 remuneration principles and unchanged versus the previous year:

Board

- Chairman: annual fixed fee: € 60,000 + € 5,000 per meeting attended + 2,000 Umicore shares + company car
- Director: annual fixed fee: € 27,000 + € 2,500 per meeting attended + € 1,000 per meeting attended for foreign-based board members + 1,000 Umicore shares

Audit Committee

- Chairman: annual fixed fee: € 10,000 + € 5,000 per meeting attended
- Member: annual fixed fee: € 5,000 + € 3,000 per meeting attended

Nomination and Remuneration Committee

- Chairman: € 5,000 per meeting attended
- Member: € 3,000 per meeting attended

2019 Remuneration Overview Non-Executive Directors

All components of the Non-Executive Directors' remuneration for the reported year are detailed in the table below:

		(IN €)	MEETINGS ATTENDED
Thomas Leysen (Chairman) (non-executive director)	**Board**		
	Fixed annual fee Chairman	60,000	
	Fee per attended meeting	5,000	7/7
	Value of 2,000 granted shares	52,860	
	Nomination and Remuneration Committee		
	Fee per attended meeting Chairman	5,000	
	Total remuneration	**162,860**	3/3
	Benefit in kind company car	2,377	
Marc Grynberg (executive director)	**Board**		
	No remuneration as a director		7/7
	(see hereafter 2019 CEO remuneration)		
Liat Ben-Zur (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	3,500	
	Value of 1,000 granted shares	26,430	7/7
	Total remuneration	**77,930**	
Françoise Chombar (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	2,500	7/7
	Value of 1,000 granted shares	26,430	
	Nomination and Remuneration Committee		
	Fee per attended meeting	3,000	3/3
	Total remuneration	**79,930**	

		(IN €)	MEETINGS ATTENDED
Koenraad Debackere (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	2,500	7/7
	Value of 1,000 granted shares	26,430	
	Audit Committee		
	Fixed annual fee	5,000	
	Fee per attended meeting	3,000	8/8
	Total remuneration	**99,930**	
Mark Garrett (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	3,500	7/7
	Value of 1,000 granted shares	26,430	
	Nomination and Remuneration Committee		
	Fee per attended meeting	3,000	3/3
	Total remuneration	**86,930**	
Colin Hall (non-executive director) End of mandate: AGM of 25 April 2019	**Board**		
	Fixed annual fee	8,507	
	Fee per attended meeting	3,500	3/3
	Value of 315 granted shares retroceded to GBL	8,325	
	Audit Committee		
	Fixed annual fee	1,575	
	Fee per attended meeting	3,000	4/4
	Total remuneration	**40,908**	
Ines Kolmsee (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	3,500	7/7
	Value of 1,000 granted shares	26,430	
	Audit Committee		
	Fixed annual fee Chairman	10,000	
	Fee per attended meeting	5,000	8/8
	Total remuneration	**127,930**	

		(IN €)	MEETINGS ATTENDED
Gérard Lamarche (non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	3,500	7/7
	Value of 1,000 granted shares retroceded to GBL	26,430	
	Total remuneration	**77,930**	
Eric Meurice (independent, non-executive director)	**Board**		
	Fixed annual fee	27,000	
	Fee per attended meeting	3,500	7/7
	Value of 1,000 granted shares	26,430	
	Total remuneration	**77,930**	
Laurent Raets (non-executive director) Appointed by the AGM of 25 April 2019	**Board**		
	Fixed annual fee	18,493	
	Fee per attended meeting	2,500	4/4
	Value of 685 granted shares retroceded to GBL	18,105	
	Audit Committee		
	Fixed annual fee	3,425	
	Fee per attended meeting	3,000	4/4
	Total remuneration	**62,022**	

REMUNERATION FOR THE CEO AND OTHER MEMBERS OF THE EXECUTIVE COMMITTEE

The remuneration of the CEO and the other members of the Executive Committee was reviewed by the Board of Directors on 7 February 2019, on the basis of recommendations from the Nomination and Remuneration Committee following a comparison survey with BEL20 and European peer companies.

The remuneration for the CEO and other members of the Executive Committee included in 2019 the following components: fixed remuneration, variable compensation, share-based compensation, pension plans and other benefits.

Remuneration CEO

The Board of Directors of 7 February 2019 decided to increase the annual variable cash remuneration potential of the CEO by € 160,000 to € 700,000 as of 1 January 2019, half of which is deferred over 3 years, and to decrease the number of stock options from 150,000 to 140,000. The fixed remuneration was not adjusted.

The Board of Directors of 6 February 2020 decided to grant 10,000 Umicore shares for services rendered in the reported year. These shares are subject to a 3 year lock-up and are not subject to forfeiture conditions.

All components of the remuneration earned by the CEO for the reported year are detailed in the table below:

(IN €)	CEO 2018	CEO 2019
Fixed compensation	700,000	700,000
Undeferred Variable 50% (1)	220,000	87,500
Deferred Variable 50% (2)	144,450	256,500
Shares (3)	354,432	420,500
Stock options (4)	1,033,500	712,600
Pension		
Defined contribution plan	51,156	54,410
Defined benefits plan (service cost)	117,241	158,669
Other		
Representation allowance, benefit in kind company car, insurance benefits...	51,631	51,921
Total	**2,672,410**	**2,442,100**

(1) The undeferred variable 2019 relates to the reference year 2019, pay out in 2020.
(2) The deferred variable 2019 relates to the reference year 2017, pay out in 2020. This variable takes into account an average ROCE of 14,4%, resulting in a pay-out of 69% of the 2017 deferred target, and a compounded average EBIT growth% (over the years 2017-2018-2019) of 13,2%, resulting in a pay-out of 26% of the 2017 deferred target.
(3) The 2019 share grant relates to the reference year 2019, granted in 2020.
(4) The 2019 stock option grant relates to the reference year 2019, granted in 2019, and is based on a notional value of € 5,09 according to the Black & Scholes formula (notional value of € 6,89 in 2018).

Remuneration other members of the Executive Committee

The Board of Directors of 7 February 2019 decided to adjust the annual fixed remuneration by € 20,000 and to increase the annual variable cash remuneration potential by € 80,000 to € 380,000 as of 1 January 2019, half of which is deferred over 3 years. The number of stock options decreased from 35,000 to 30,000.

The Board of Directors of 6 February 2020 decided to grant 7,000 Umicore shares for services rendered in the reported year. These shares are subject to a 3 year lock-up and are not subject to forfeiture conditions.

All components of the remuneration earned by the other members of the Executive Committee for the reported year are detailed in the table below:

(IN €)	MEMBERS OF THE EXECUTIVE COMMITTEE 2018 (IN AGGREGATE)	MEMBERS OF THE EXECUTIVE COMMITTEE 2019 (IN AGGREGATE)
Fixed compensation	2,306,250	2,525,417
Undeferred Variable 50% (1)	662,500	570,000
Deferred Variable 50% (2)	481,500	855,000
Shares (3)	1,381,284	1,764,218
Stock options (4)	1,266,038	908,565
Pension		
Defined contribution plan	149,452	291,506
Defined benefits plan (service cost)	512,156	371,931
Other (5)		
Representation allowance, benefit in kind company car, insurance benefits...	123,293	209,223
Total	**6,882,473**	**7,495,860**

(1) The undeferred variable 2019 relates to the reference year 2019, pay-out in 2020.
(2) The deferred variable 2019 relates to the reference year 2017, pay-out in 2020. This variable takes into account an average ROCE of 14,4%, resulting in a pay-out of 69% of the 2017 deferred target, and a compounded average EBIT growth% (over the years 2017-2018-2019) of 13,2%, resulting in a pay-out of 26% of the 2017 deferred target.
(3) The 2019 share grant relates to the reference year 2019, granted in 2020.
(4) The 2019 stock option grant relates to the reference year 2019, granted in 2019, and is based on a notional value of € 5,09 according to the Black & Scholes formula (notional value of € 6,89 in 2018).
(5) Includes additional benefits for Denis Goffaux following his foreign assignment in Korea.

SHARE AND SHARE OPTION OWNERSHIP AND TRANSACTIONS 2019

Executive Committee share option ownership and transactions 2019

NAME	OPTIONS AT 31 DEC 2018	OPTIONS GRANTED IN 2019	NUMBER OF OPTIONS EXERCISED IN 2019	AVERAGE EXERCISE PRICE (IN €)	YEAR OF GRANT OF OPTIONS EXERCISED	NUMBER OF OPTIONS FORFEITED	OPTIONS AT 31 DEC 2019*
Marc Grynberg	870,000	140,000	120,000	18.187	2013	0	890,000
Stephan Csoma	105,000	30,000	35,000	16.632	2016	0	100,000
Denis Goffaux	140,000	30,000	27,500	17.289	2015	0	142,500
Géraldine Nolens	129,000	30,000	0	0	–	0	159,000
Filip Platteeuw	140,000	30,000	20,000	17.289	2015	0	150,000
An Steegen	0	30,000	0	0	–	0	30,000
Ralph Kiessling	47,000	28,500	5,000	16.143	2014	0	70,500

* These options can be exercised at strike prices between € 16,143 and € 40,90 (value after the share split on 16 October 2017)

Details of all options exercised and other share-related transactions can be found on the FSMA website.

Executive Committee share ownership 2019 (on 31 December 2019)

	SHARES OWNED AT 31/12/2018	SHARES OWNED AT 31/12/2019
Marc Grynberg	813,700	914,300
Stephan Csoma	36,600	22,200
Denis Goffaux	49,600	77,000
Géraldine Nolens	19,500	26,900
Filip Platteeuw	37,600	45,000
An Steegen	–	1,850
Ralph Kiessling	–	1,000
Total	**957,000**	**1,088,250**

Board of Directors share ownership 2019 (on 31 December 2019)

	SHARES OWNED AT 31/12/2018	SHARES OWNED AT 31/12/2019
Thomas Leysen	806,000	918,000
Liat Ben-Zur	1,688	2,688
Françoise Chombar	2,684	3,684
Mark Garrett	3,666	13,386
Ines Kolmsee	6,610	7,610
Gérard Lamarche	3,000	3,000
Eric Meurice	3,666	4,666
Koenraad Debackere	684	1,684
Laurent Raets	–	–
Total	**827,998**	**954,718**

CHANGES TO REMUNERATION SINCE THE END OF 2019

Remuneration for the Non-Executive Directors

Based on the review of the overall compensation of the members of the Board and of each element of the compensation, the Nomination and Remuneration Committee concluded that the compensation is appropriate, with exception of one small change in relation to the additional attendance fee for members of the Board residing outside Belgium. This additional attendance fee will apply also for the Committee meetings, attended in person and not combined with a Board meeting.

Remuneration for the CEO

On 5 February 2020, the Nomination and Remuneration committee reviewed the remuneration of the CEO based on a comparison survey with European peer companies and BEL20 index companies. On proposal of the Nomination and Remuneration committee, the Board of Directors of 6 February 2020 decided to increase the fixed remuneration of the CEO by € 20,000 to € 720,000 as of 1 January 2020, and to grant 10,000 shares for the services rendered in the reported year (versus 10,400 shares for the reference year 2018).

Remuneration for the other members of the Executive Committee

On 5 February 2020, the Nomination and Remuneration Committee reviewed the remuneration of the other members of the Executive Committee based on a comparison survey with European peer companies and BEL20 index companies. On proposal of the Nomination and Remuneration committee, the Board of Directors of 6 February 2020 decided to increase their fixed remuneration by € 20,000 as of 1 January 2020, and to grant 7,000 shares for the services rendered in the reported year (versus 7,400 shares for the reference year 2018).

Economic statements

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GROUP

KEY FIGURES

(in million Euros unless stated otherwise)	NOTE	2015	2016	2017	2018	2019
Turnover		10,442	11,086	12,277	13,717	17,485
Revenues (excluding metal)		2,629	2,667	2,916	3,271	3,361
Recurring EBITDA	F9	505	527	599	720	753
Recurring EBIT	F9	330	351	410	514	509
of which associates	F9	14	18	30	5	11
Non-recurring EBIT	F9	(75)	(110)	(46)	(14)	(30)
Total EBIT	F9	253	232	343	500	479
Recurring EBIT margin (in %)		12.0	12.5	13.1	15.5	14.8
Return on Capital Employed (ROCE) (in %)	F31	13.7	14.6	15.1	15.4	12.6
Effective recurring tax rate (in %)	F13	21.4	25	25.7	24.4	24.7
Recurring net profit, Group share	F9	246	233	267	326	312
Net profit, Group share	F9	169	131	212	317	288
R&D expenditure	F9	144	156	175	196	211
Capital expenditure	F34	240	287	365	478	553
Net cash flow before financing	F34	119	141.9	(381)	(604)	(271)
Total assets, end of period		4,030	4,146	5,116	6,053	7,023
Group shareholders' equity, end of period		1,732	1,790	1,803	2,609	2,593
Consolidated net financial debt of continued operations, end of period	F24	321	296	840	861	1,443
Gearing ratio, end of period (in %)	F24	15.3	13.8	31.1	24.4	35.2
Net debt/recurring EBITDA (in %)		64	56	140	119	192
Capital employed, end of period	F31	2,414	2,397	3,003	3,802	4,442
Capital employed, average	F31	2,402	2,399	2,710	3,344	4,048

DATA PER SHARE

(in Euros/share)	NOTE	2015	2016	2017	2018	2019
Earnings per share						
Recurring EPS	F39	1.13	1.07	1.22	1.36	1.30
EPS – basic	F39	0.78	0.60	0.97	1.33	1.20
EPS – diluted	F39	0.78	0.60	0.96	1.31	1.19
Gross dividend		0.60	0.65	0.70	0.75	0.375
Net cash flow before financing, basic	F34	0.55	0.65	(1.74)	(2.53)	(1.13)
Total assets of continued operations, end of period		18.65	18.96	23.31	25.11	29.17
Group shareholders' equity, end of period		8.01	8.18	8.21	10.83	10.77
Shareprice						
High		22.78	29.36	39.88	53.14	43.85
Low		15.91	16.19	24.28	34.17	25.11
Average		19.56	23.89	31.45	45.01	34.24
Close		19.34	27.08	39.46	34.86	43.36

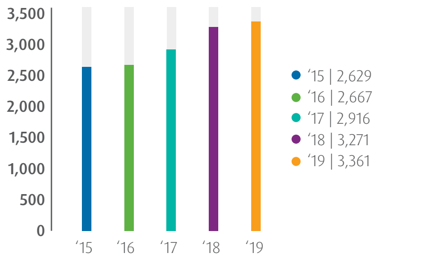
On 16 October 2017 each Umicore share was split into 2 new shares. On 8 February 2018 Umicore placed 22,400,000 new shares, admitted to trading on Euronext Brussels on 12 February 2018. As a result, as from that date, Umicore's capital is represented by 246,400,000 fully paid-up shares without nominal value, each representing 1/246,400,000 of the capital. All data in this table were updated accordingly.

NUMBER OF SHARES

	NOTE	2015	2016	2017	2018	2019
Total number of issued shares, end of period	F39	224,000,000	224,000,000	224,000,000	246,400,000	246,400,000
of which shares outstanding	F39	216,144,932	218,653,700	219,494,433	241,043,417	240,775,450
of which treasury shares	F39	7,855,068	5,346,300	4,505,567	5,356,583	5,624,550
Average number of shares outstanding, basic	F39	216,890,256	217,775,656	219,079,587	239,202,537	240,558,659
Average number of shares outstanding, diluted	F39	217,854,490	219,370,320	221,148,890	241,686,593	241,912,769

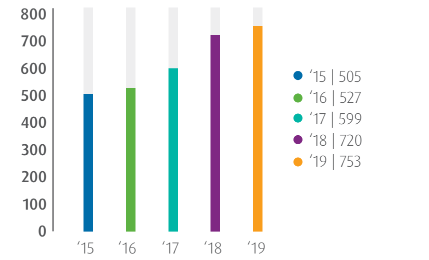
REVENUES (EXCLUDING METAL)

Million Euros



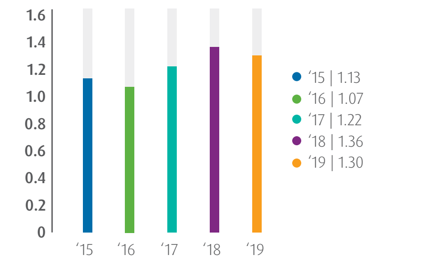
RECURRING EBITDA

Million Euros



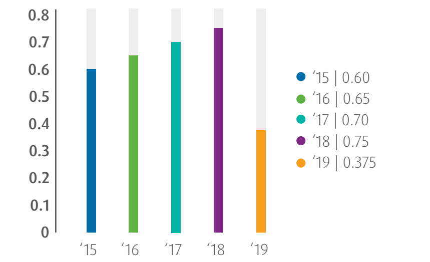
RECURRING EPS

Euros



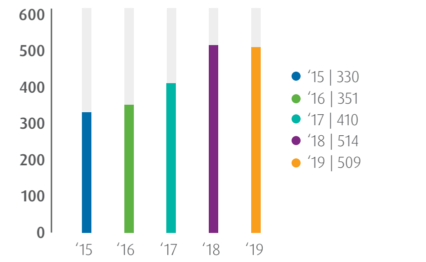
GROSS DIVIDEND

Euros



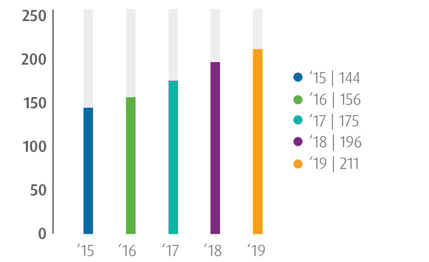
RECURRING EBIT

Million Euros



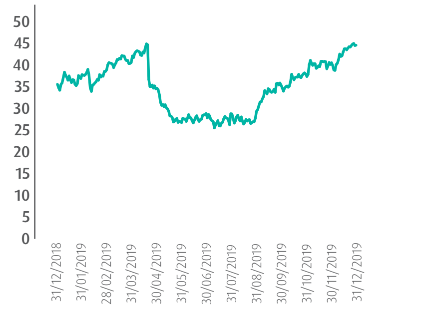
R&D EXPENDITURE

Million Euros



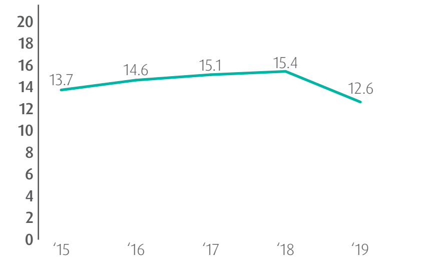
SHARE PRICE

Euros



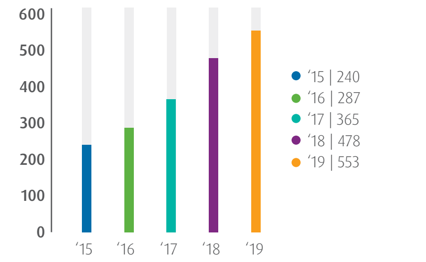
RETURN ON CAPITAL EMPLOYED (ROCE)

%



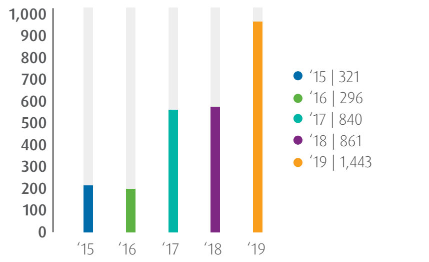
CAPITAL EXPENDITURE

Million Euros



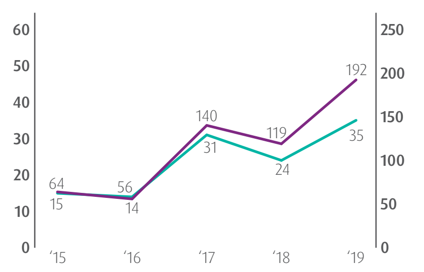
NET FINANCIAL DEBT

Million Euros



GEARING RATIO & AVERAGE NET DEBT/RECURRING EBITDA

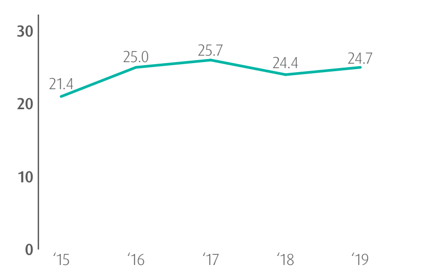
%



Gearing ratio of continued operations, end of period
Net debt/recurring EBITDA

RECURRING TAX RATE

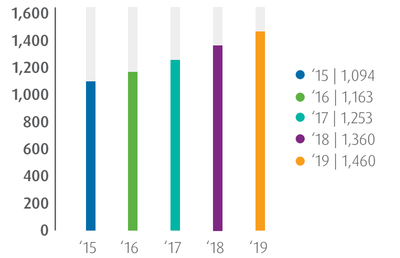
%



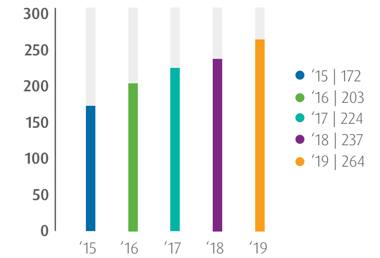
CATALYSIS

(in millions of Euros unless stated otherwise)	2015	2016	2017	2018	2019
Total turnover	2,749	2,779	3,091	3,311	4,539
Total revenues (excluding metal)	1,094	1,163	1,253	1,360	1,460
Recurring EBITDA	172	203	224	237	264
Recurring EBIT	124	152	165	168	185
of which associates	8.8	9.2	0.4	0	0
Total EBIT	116	126	161	162	185
Recurring EBIT margin (in %)	10.6	12.3	13.2	12.4	12.7
R&D expenditure	91	102	120	135	147
Capital expenditure	79	46	45	79	104
Capital employed, end of period	968	911	1,150	1,265	1,537
Capital employed, average	930	918	1,014	1,200	1,358
Return on Capital Employed (ROCE) (in %)	13.4	16.6	16.3	14	13.6
Workforce, end of period (fully consolidated)	2,443	2,464	2,952	3,070	3,190
Workforce, end of period (associates)	168	177	–	–	–

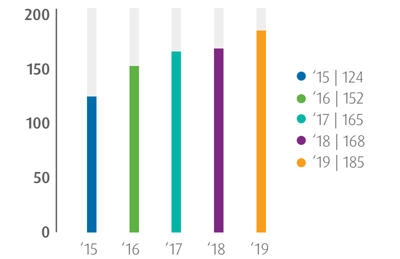
REVENUES (EXCLUDING METAL)
Million Euros



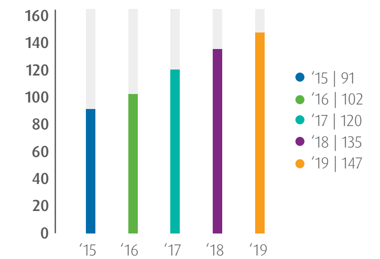
RECURRING EBITDA
Million Euros



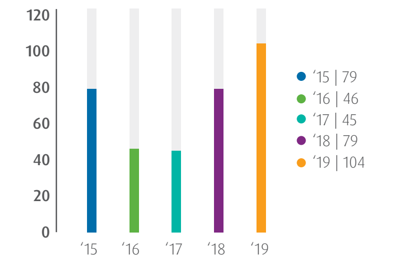
RECURRING EBIT
Million Euros



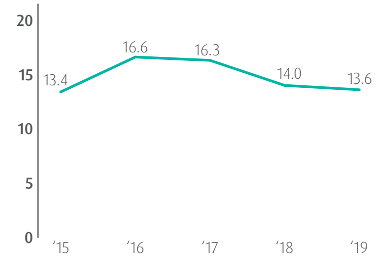
R&D EXPENDITURE
Million Euros



CAPITAL EXPENDITURE
Million Euros



RETURN ON CAPITAL EMPLOYED (ROCE)
%

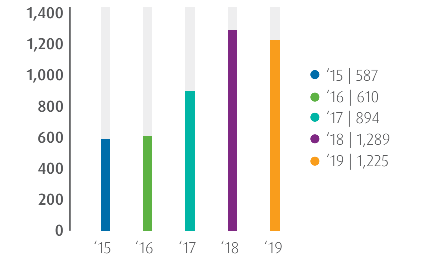


ENERGY & SURFACE TECHNOLOGIES

(in millions of Euros unless stated otherwise)	2015	2016	2017	2018	2019
Total turnover	1,475	1,469	2,392	3,650	2,938
Total revenues (excluding metal)	587	610	894	1,289	1,225
Recurring EBITDA	113	132	198	323	271
Recurring EBIT	70	82	141	257	183
of which associates	(3.5)	1.0	10.5	0.9	5
Total EBIT	37	74	110	251	154
Recurring EBIT margin (in %)	12.6	13.2	14.6	19.8	14.5
R&D expenditure	20	20	30	39	46
Capital expenditure	42	144	225	316	348
Capital employed, end of period	633	752	1,206	1,769	2,324
Capital employed, average	640	695	978	1,469	2,014
Return on Capital Employed (ROCE) (in %)	11.0	11.7	14.4	17.5	9.1
Workforce, end of period (fully consolidated)	2,258	2,357	2,716	3,447	3,997
Workforce, end of period (associates)	936	847	917	782	751

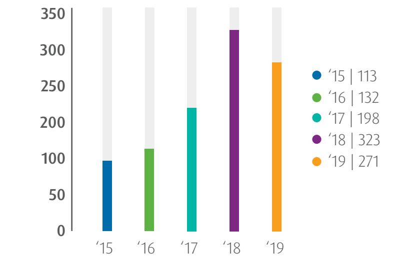
REVENUES (EXCLUDING METAL)

Million Euros



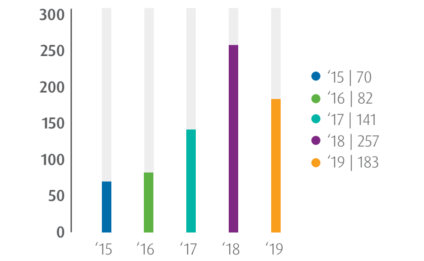
RECURRING EBITDA

Million Euros



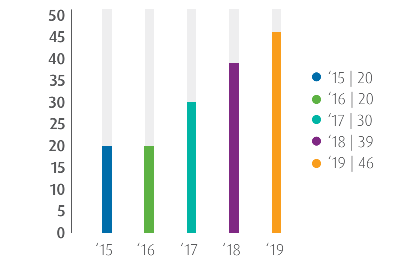
RECURRING EBIT

Million Euros



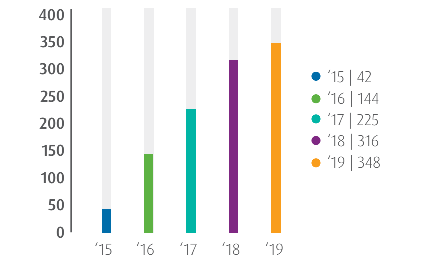
R&D EXPENDITURE

Million Euros



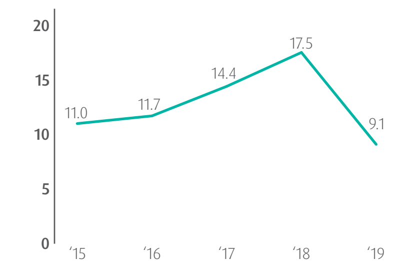
CAPITAL EXPENDITURE

Million Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%

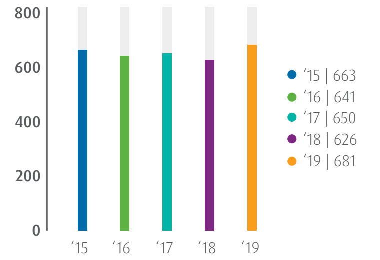


RECYCLING

(in millions of Euros unless stated otherwise)	2015	2016	2017	2018	2019
Total turnover	6,252	6,886	7,327	7,625	11,320
Total revenues (excluding metal)	663	641	650	626	681
Recurring EBITDA	204	187	189	195	250
Recurring EBIT	141	125	128	135	188
Total EBIT	132	115	121	126	190
Recurring EBIT margin (in %)	21.3	19.5	19.7	21.5	27.6
R&D expenditure	21	23	19	15	8
Capital expenditure	83	72	79	68	82
Capital employed, end of period	466	498	474	546	405
Capital employed, average	460	474	495	483	479
Return on Capital Employed (ROCE) (in %)	30.7	26.3	25.8	27.9	39.3
Workforce, end of period (fully consolidated)	3,211	3,170	3,092	2,832	2,849
Workforce, end of period (associates)	–	–	–	–	–

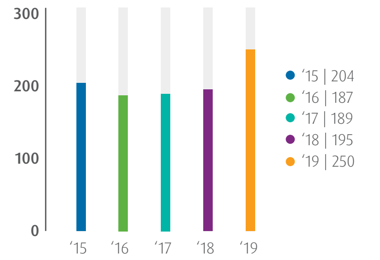
REVENUES (EXCLUDING METAL)

Million Euros



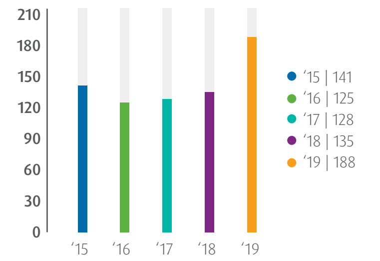
RECURRING EBITDA

Million Euros



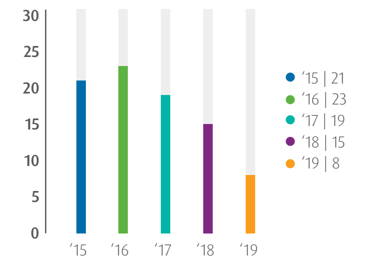
RECURRING EBIT

Million Euros



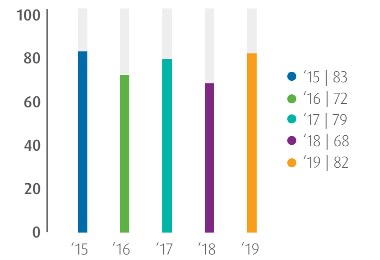
R&D EXPENDITURE

Million Euros



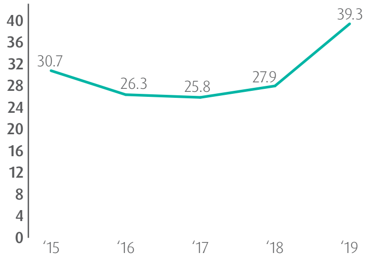
CAPITAL EXPENDITURE

Million Euros



RETURN ON CAPITAL EMPLOYED (ROCE)

%



DISTRIBUTION OF ECONOMIC BENEFITS

The most significant portion of Umicore's total income was used to secure the metal component of raw materials (the cost of which is passed on to the customer). After subtracting other raw materials costs, energy-related costs and depreciation, the remaining economic benefits available for distribution stood at € 1,234 million.

The biggest portion (€ 776 million) was distributed to employees. The bulk of employee benefits was in the form of salaries, with the balance going to national insurance contributions, pensions and other benefits.

Net interest to creditors was € 41 million, while taxes to the governments and authorities in the places where we operate, were € 117 million. The earnings attributed to minority shareholders were € 11 million.

As a matter of prudence and in light of the extreme unpredictability of the global situation due to COVID-19, Umicore's Board of Directors has decided to propose a dividend of € 0.375 per share in respect of the full year 2019. This proposal replaces the proposal initially made on 7 February 2020 of € 0.75 per share and corresponds to the amount of the interim dividend of € 0.375 per share which was already paid out on 27 August 2019. This decision is also to be seen as a way for Umicore's management and Board of Directors to share the efforts among its stakeholders. Umicore will assess the appropriate amount to be returned to shareholders in 2020 once it gains more clarity around the full impact of COVID-19.

In 2019, Umicore made charitable donations totalling € 1.51 million (excluding staff freed time, for more information see note V5).

MILLIONS OF EUROS	2019
Economic value distributed (including contribution from associates)	17,615
Raw materials cost (excluding water, gas & electricity)	15,539
Water, gas & electricity cost	100
Depreciation & impairments	307
Other costs (net)	434
Direct economic value generated	1,234

MILLIONS OF EUROS	2019
Direct economic value generated	1,234
Total taxes	117
Creditors	41
Minority shareholders	11
Shareholders (dividends only)	180
Retained by the Company	107
Charitable donations (excluding staff freed time)	1.5
Employee compensation & benefits	776

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CONSOLIDATED INCOME STATEMENT

Thousands of Euros	NOTES	2018	2019
Turnover	F9	13,716,737	17,485,080
Other operating income	F9	101,559	121,078
Operating income		**13,818,296**	**17,606,158**
Raw materials and consumables	F9	(11,855,284)	(15,639,139)
Payroll and related benefits	F10	(731,054)	(775,919)
Depreciation and impairments	F9	(227,162)	(307,567)
Other operating expenses	F9	(516,593)	(413,795)
Operating expenses		**(13,330,094)**	**(17,136,420)**
Income (loss) from other financial assets	F12	5,044	706
RESULT FROM OPERATING ACTIVITIES		**493,246**	**470,444**
Financial income	F11	5,805	4,808
Financial expenses	F11	(47,847)	(56,427)
Foreign exchange gains and losses	F11	(26,840)	(31,618)
Share in result of companies accounted for using the equity method	F17	6,720	8,705
Profit (loss) before income tax		**431,083**	**395,912**
Income taxes	F13	(103,240)	(96,692)
Profit (loss) from continuing operations		**327,843**	**299,220**
PROFIT (LOSS) OF THE PERIOD		**327,843**	**299,220**
of which minority share		10,860	11,429
of which Group share		316,984	287,791

			(EUR)
Basic earnings per share from continuing operations	F39	1.33	1.20
Total basic earnings per share	F39	1.33	1.20
Diluted earnings per share from continuing operations	F39	1.31	1.19
Total diluted earnings per share	F39	1.31	1.19
Dividend per share		0.75	0.375

The notes on pages 107 to 164 are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

Thousands of Euros	NOTES	2018	2019
Profit (loss) of the period from continuing operations		**327,843**	**299,220**
Items in other comprehensive income that will not be reclassified to P&L			
Changes due to remeasurements of post employment benefit obligations		(7,611)	(71,921)
Changes in deferred taxes directly recognized in other comprehensive income		583	19,869
Items in other comprehensive income that may be subsequently reclassified to P&L			
Changes in financial assets at FV through OCI reserves		(2,699)	(9)
Changes in cash flow hedge reserves		(30,180)	(27,958)
Changes in deferred taxes directly recognized in other comprehensive income		10,169	8,897
Changes in currency translation differences		(4,129)	9,444
Other comprehensive income from continuing operations	F23	**(33,868)**	**(61,678)**
Total comprehensive income for the period		**293,975**	**237,541**
of which Group share		283,454	225,312
of which minority share		10,521	12,230

The deferred tax impact on the consolidated statement of comprehensive income is due to the cash flow hedge reserves for € 8.9 million and to employee benefit reserves for € 19.9 million.

The notes on pages 107 to 164 are an integral part of these consolidated financial statements.

CONSOLIDATED BALANCE SHEET

Thousands of Euros	NOTES	31/12/2018	31/12/2019
Non-current assets		**2,246,215**	**2,810,228**
Intangible assets	F14, F15	337,305	370,859
Property, plant and equipment	F16	1,601,892	2,094,672
Investments accounted for using the equity method	F17	151,372	150,642
Financial assets at fair value through Other Comprehensive Income	F18	8,028	10,897
Loans granted	F18	2,627	2,192
Trade and other receivables	F20	12,134	12,038
Deferred tax assets	F21	132,855	168,927
Current assets		**3,807,095**	**4,213,162**
Loans granted	F18	6,270	2
Inventories	F19	2,308,094	2,462,330
Trade and other receivables	F20	1,145,980	1,433,659
Income tax receivables		61,672	45,447
Cash and cash equivalents	F22	285,079	271,724
TOTAL ASSETS		**6,053,310**	**7,023,390**

Thousands of Euros	NOTES	31/12/2018	31/12/2019
Equity of the Group		**2,659,336**	**2,660,464**
Group shareholders' equity		**2,609,408**	**2,593,467**
Share capital and premiums		1,384,273	1,384,273
Retained earnings		1,610,882	1,678,348
Currency translation differences and other reserves	F23	(227,644)	(284,453)
Treasury shares		**(158,103)**	**(184,701)**
Minority interest		**49,927**	**66,997**
Non-current liabilities		**1,185,381**	**1,686,801**
Provisions for employee benefits	F27	333,791	392,651
Financial debt	F24	708,846	1,151,083
Trade and other payables	F25	24,391	24,120
Deferred tax liabilities	F21	6,225	11,461
Provisions	F29, F30	112,128	107,487
Current liabilities		**2,208,593**	**2,676,124**
Financial debt	F24	436,760	564,063
Trade and other payables	F25	1,589,360	1,916,348
Income tax payable		74,500	131,483
Provisions	F29, F30	107,973	64,230
TOTAL EQUITY & LIABILITIES		**6,053,310**	**7,023,390**

The notes on pages 107 to 164 are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

Thousands of Euros	SHARE CAPITAL & PREMIUMS	RESERVES	CURRENCY TRANSLATION & OTHER RESERVES	TREASURY SHARES	MINORITY INTEREST	TOTAL FOR CONTINUING OPERATIONS
Balance at the beginning of 2018	**502,862**	**1,584,442**	**(202,517)**	**(81,754)**	**59,603**	**1,862,636**
Change in accounting policies	–	(2,369)	–	–	144	(2,225)
Restated balance at the beginning of 2018	**502,862**	**1,582,073**	**(202,517)**	**(81,754)**	**59,747**	**1,860,411**
Result of the period	–	316,984	–	–	10,860	327,844
Other comprehensive income for the period	–	–	(33,529)	–	(339)	(33,868)
Total comprehensive income for the period	**–**	**316,984**	**(33,529)**	**–**	**10,521**	**293,976**
Changes in share-based payment reserves	–	–	11,150	–	–	11,150
Capital increase	881,410	–	–	–	10,874	892,284
Dividends	–	(175,337)	–	–	(20,110)	(195,447)
Transfers	–	(20)	(2,981)	3,001	–	–
Changes in treasury shares	–	–	–	(79,350)	–	(79,350)
Changes in scope	–	(112,811)	233	–	(11,104)	(123,682)
Balance at the end of 2018	**1,384,273**	**1,610,882**	**(227,644)**	**(158,103)**	**49,927**	**2,659,336**
Change in accounting policies	–	(34,110)			544	(33,566)
Restated balance at the beginning of 2019	**1,384,273**	**1,576,772**	**(227,644)**	**(158,103)**	**50,471**	**2,625,770**
Result of the period	–	287,791	–	–	11,428	299,220
Other comprehensive income for the period	–	–	(62,480)	–	802	(61,678)
Total comprehensive income for the period	**–**	**287,791**	**(62,480)**	**–**	**12,231**	**237,543**
Changes in share-based payment reserves	–	–	8,211	–	–	8,211
Capital increase	–	–	–	–	15,541	15,541
Dividends	–	(186,394)	–	–	(11,246)	(197,640)
Transfers	–	179	(2,540)	2,361	–	–
Changes in treasury shares	–	–	–	(28,959)	–	(28,959)
Balance at the end of 2019	**1,384,273**	**1,678,348**	**(284,453)**	**(184,701)**	**66,997**	**2,660,464**

The legal reserve of € 55.0 million which is included in the retained earnings is not available for distribution.

The share capital of the Group as at 31 December 2019 was composed of 246,400,000 shares with no par value.

The capital increase in 2018 is the consequence of the increase of share capital during the first semester 2018 as a result of an equity placement through an accelerated bookbuild for a total gross amount of € 891.5 million (€ 881 million net of transaction costs)

The change in scope in 2018 for € 123.7 million is related to the increase of Umicore's interest in its Chinese cathode material production entity from 70% to 90%.

For the impact on changes in accounting policy, please refer to Note 2.23.

The notes on pages 107 to 164 are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF CASH FLOW

Thousands of Euros	NOTES	2018	2019
Profit (loss) from continuing operations		327,844	299,220
Adjustments for profit of equity companies		(6,720)	(8,705)
Adjustment for non-cash transactions	F34	348,280	207,302
Adjustments for items to disclose separately or under investing and financing cash flows	F34	130,369	129,568
Change in working capital requirement	F34	(708,017)	(78,441)
Cash flow generated from operations		**91,756**	**548,946**
Dividend received		8,392	11,454
Tax paid during the period		(127,446)	(86,661)
Government grants received		–	5,444
NET OPERATING CASH FLOW	F34	**(27,299)**	**479,182**
Acquisition of property, plant and equipment	F16	(465,989)	(529,487)
Acquisition of intangible assets	F14	(31,758)	(58,362)
Acquisition of new subsidiaries, net of cash acquired	F8	(24,188)	(188,138)
Acquisition in additional shareholdings in subsidiaries		(123,384)	–
Acquisition of financial assets	F18	(2,480)	(2,375)
New loans extended	F18	(2,524)	(126)
Sub-total acquisitions		**(650,324)**	**(778,489)**
Disposal of property, plant and equipment		6,182	11,777
Disposal of intangible assets		12,071	9,329
Disposal of subsidiaries and associates, net of cash disposed		35,701	910
Disposal of financial fixed assets		17,398	–
Repayment of loans	F18	3,634	6,442
Internal transfers	F34	(1,620)	(0)
Sub-total disposals		**73,366**	**28,457**
NET CASH FLOW GENERATED BY (USED IN) INVESTING ACTIVITIES	F34	**(576,958)**	**(750,032)**

Thousands of Euros	NOTES	2018	2019
Capital increase		881,364	–
Capital increase (decrease) minority		10,794	15,541
Own shares		(79,350)	(28,959)
Change in lease liability	F24	–	(16,536)
Interest received		5,936	4,608
Interest paid		(37,615)	(44,158)
New loans and repayments	F24	120,310	517,106
Dividends paid to Umicore shareholders		(175,347)	(186,387)
Dividends paid to minority shareholders		(20,110)	(11,246)
NET CASH FLOW GENERATED BY (USED IN) FINANCING ACTIVITIES	F34	**705,982**	**249,969**
Effect of exchange rate fluctuations		(508)	2,997
TOTAL NET CASH FLOW OF THE PERIOD		**101,217**	**(17,884)**
Net cash and cash equivalents at the beginning of the period for continuing operations	F22	**155,897**	**257,114**
Net cash and cash equivalents at the end of the period for continuing operations	F22	**257,114**	**239,230**
of which cash and cash equivalents		285,079	271,724
of which bank overdrafts		(27,965)	(32,493)

The notes on pages 107 to 164 are an integral part of these consolidated financial statements.

The company's consolidated financial statements and the management report prepared in accordance with article 119 of the Belgian Companies Code set forth on pages 1 to 166, for the year ended 31 December 2019 were authorized for issue by the Board of Directors on 26 March 2020. They have been prepared in accordance with the legal and regulatory requirements applicable to the consolidated financial statements of Belgian companies. They include those of the company, its subsidiaries and its interests in companies accounted for using the equity method.

F1 BASIS OF PREPARATION

The Group presents its annual consolidated financial statements in accordance with all International Financial Reporting Standards (IFRS) adopted by the European Union (EU).

The consolidated financial statements are presented in thousands of euros, rounded to the nearest thousand, and have been prepared on a historical cost basis, except for those items that are measured at fair value.

F2 ACCOUNTING POLICIES

2.1 PRINCIPLES OF CONSOLIDATION AND SEGMENTATION

2.1.1 SUBSIDIARIES

Subsidiaries are all entities (including structured entities) over which the group 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. Subsidiaries are fully consolidated from the date on which control is transferred to the group. They are deconsolidated from the date that control ceases.

Note F5 lists all significant subsidiaries of the company at the closing date.

The group applies the acquisition method to account for business combinations. The consideration transferred for the acquisition of a subsidiary is the fair values of the assets transferred, the liabilities incurred to the former owners of the acquiree and the equity interests issued by the group. The consideration transferred includes the fair value of any asset or liability resulting from a contingent consideration arrangement. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date. The group recognizes any minority interest in the acquiree on an acquisition-by-acquisition basis, either at fair value or at the minority interest's proportionate share of the recognized amounts of acquiree's identifiable net assets. Acquisition-related costs are expensed as incurred.

If the business combination is achieved in stages, the acquisition date carrying value of the acquirer's previously held equity interest in the acquiree is re-measured to fair value at the acquisition date; any gains or losses arising from such re-measurement are recognized in profit or loss.

Any contingent consideration to be transferred by the group is recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration that is deemed to be an asset or liability is recognized in profit or loss. Contingent consideration that is classified as equity is not re-measured, and its subsequent settlement is accounted for within equity.

Inter-company transactions, balances and unrealized gains on transactions between group companies are eliminated. Unrealized losses are also eliminated. When necessary, amounts reported by subsidiaries have been adjusted to conform with the group's accounting policies.

IFRS 5 (Non-current Assets Held for Sale and Discontinued Operations) does not specify the treatment for the elimination of inter-company transactions between discontinued and continued operations. As an accounting policy Umicore opts not to eliminate the intercompany transactions within the income statement between the discontinued and continued operations. For the balance sheet presentation however, IFRS 10 (Consolidated Financial Statements) overrides IFRS 5 and requires all intercompany balances to be eliminated including between the discontinued and continued operations.

2.1.2 CHANGES IN OWNERSHIP INTERESTS IN SUBSIDIARIES WITHOUT CHANGE OF CONTROL

Transactions with minority interests that do not result in loss of control are accounted for as equity transactions – that is, as transactions with the owners in their capacity as owners. The difference between fair value of any consideration paid and the relevant share acquired of the carrying value of net assets of the subsidiary is recorded in equity. Gains or losses on disposals to minority interests are also recorded in equity.

2.1.3 DISPOSAL OF SUBSIDIARIES

When the group ceases to have control, any retained interest in the entity is remeasured to its fair value at the date when control is lost, with the change in carrying amount recognized in profit or loss. The fair value is the initial carrying amount for the purposes of subsequently accounting for the retained interest as an associate, joint venture or financial asset. In addition, any amounts previously recognized in other comprehensive income in respect of that entity are accounted for as if the group had directly disposed of the related assets or liabilities. This may mean that amounts previously recognized in other comprehensive income are reclassified to profit or loss.

2.1.4 ASSOCIATES

Associates are all entities over which the group has significant influence but not control, generally accompanying a shareholding of between 20% and 50% of the voting rights. Investments in associates are accounted for using the equity method of accounting. Under the equity method, the investment is initially recognized at cost, and the carrying amount is increased or decreased to recognize the investor's share of the profit or loss of the investee after the date of acquisition. The group's investment in associates includes goodwill identified on acquisition. If the ownership interest in an associate is reduced but significant influence is retained, only a proportionate share of the amounts previously recognized in other comprehensive income is reclassified to profit or loss where appropriate. The group's share of post-acquisition profit or loss is recognized in the income statement, and its share of post-acquisition movements in other comprehensive income is recognized in other comprehensive income with a corresponding adjustment to the carrying amount of the investment. When the group's share of losses in an associate equals or exceeds its interest in the associate, including any other unsecured receivables, the group does not recognize further losses, unless it has incurred legal or constructive obligations or made payments on behalf of the associate. The group determines at each reporting date whether there is any objective evidence that the investment in the associate is impaired. If this is the case, the group calculates the amount of impairment as the difference between the recoverable amount of the associate and its carrying value and recognizes the amount adjacent to "share of profit/(loss) of associates" in the income statement.

Profits and losses resulting from upstream and downstream transactions between the group and its associate are recognized in the group's financial statements only to the extent of unrelated investor's interests in the associates. Unrealized losses are eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of associates have been changed where necessary to ensure consistency with the policies adopted by the group. Dilution gains and losses arising in investments in associates are recognized in the income statement.

2.1.5 JOINT ARRANGEMENTS

The group applies IFRS 11 to all joint arrangements. Under IFRS 11 investments in joint arrangements are classified as either joint operations or joint ventures depending on the contractual rights and obligations each investor. The group has assessed the nature of its joint arrangements and determined them to be joint ventures. Joint ventures are accounted for using the equity method. Under the equity method of accounting, interests in joint ventures are initially recognized at cost and adjusted thereafter to recognize the group's share of the post-acquisition profits or losses and movements in other comprehensive income.

When the group's share of losses in a joint venture equals or exceeds its interests in the joint ventures (which includes any long-term interests that, in substance, form part of the group's net investment in the joint ventures), the group does not recognize further losses, unless it has incurred obligations or made payments on behalf of the joint ventures.

Unrealized gains on transactions between the group and its joint ventures are eliminated to the extent of the group's interest in the joint ventures. Unrealized losses are also eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of the joint ventures have been changed where necessary to ensure consistency with the policies adopted by the group.

2.1.6 SEGMENT REPORTING

Note F7 provides the Company's segment information, in line with IFRS 8. Umicore is organized in business units. Operating segments under IFRS 8 at Umicore are differentiated by their growth drivers in the areas of Catalysis, Energy & Surface Technologies, and Recycling.

The Catalysis segment provides automotive catalysts for gasoline and diesel light and heavy-duty diesel applications, including on-road and non-road vehicles. The business group also offers stationary catalysis for industrial emissions control and produces precious metals-based compounds and catalysts for use in the pharmaceutical and fine chemicals industries. The Energy & Surface Technologies segment is focused on products that are found in applications used in the production and storage of clean energy and in a range of applications for surface technologies that bring specific properties and functionalities to end products. All the activities offer a closed loop service for the customers. The Recycling segment treats complex waste streams containing precious and other specialty metals. The operations can recover 20 of these metals from a wide range of input materials ranging from industrial residues to end-of-life materials. Other activities include production of precious metals-based materials that are essential for applications as diverse as high-tech glass production, electrics and electronics.

Corporate covers corporate activities, shared operational functions and the Group's Research, Development & Innovation unit. Umicore's minority share in Element Six Abrasives and Ieqsa is also included in Corporate.

Operating segments are reported in a manner consistent with the internal reporting provided to the Board and the Executive Committee.

The segment results, assets and liabilities include items directly attributable to the segment as well as those elements that can reasonably be allocated to a segment.

The pricing of inter-segment sales is based on an arm's length transfer pricing system. In the absence of relevant market price references, 'cost plus' mechanisms are used.

Associate companies are allocated to the business group with the closest fit from a market segment perspective.

2.2 INFLATION ACCOUNTING

For the reported period, there is one subsidiary in the Umicore Group having a functional currency belonging to a hyperinflationary economy in Argentina. However, in view of significance to the Group, this is not material for IAS 29 to be applied.

2.3 FOREIGN CURRENCY TRANSLATION

Functional currency: items included in the financial statements of each entity in the Group are measured using the currency that best reflects the economic substance of the underlying events and circumstances relevant to that entity. The consolidated financial statements are presented in euros which is the functional currency of the parent. To consolidate the Group and each of its subsidiaries, the financial statements are translated as follows:

- Assets and liabilities at the year-end rate as published by the European Central Bank.
- Income statements at the average exchange rate for the year.
- The components of shareholders' equity at the historical exchange rate.

Exchange differences arising from the translation of the net investment in foreign subsidiaries, joint ventures and associated entities at the period-end exchange rate are recorded as part of the shareholders' equity under "currency translation differences".

When a foreign operation is partially disposed of or sold, exchange differences that were recorded in equity are recognized in the income statement as part of the gain or loss on sale.

Goodwill and fair value adjustments arising on the acquisition of a foreign entity are treated as local currency assets and liabilities of the foreign entity and are translated at the closing rate.

2.4 FOREIGN CURRENCY TRANSACTIONS

Foreign currency transactions are recognized during the period in the functional currency of each entity at exchange rates prevailing at the date of transaction. The date of a transaction is the date at which the transaction first qualifies for recognition. For practical reasons a rate that approximates the actual rate at the date of the transaction is used at some operations, for example, an average rate for the week or the month in which the transactions occur.

Subsequently, monetary assets and liabilities denominated in foreign currencies are translated at the closing rate at the end of the reporting period.

Gains and losses resulting from the settlement of foreign currency transactions, and from the translation of monetary assets and liabilities denominated in foreign currencies, are recognized in the income statement as a financial result.

In order to hedge its exposure to certain foreign exchange risks, the Company has entered into certain forward contracts (see Note F2.21, Financial instruments).

2.5 PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment is recorded at historical cost, less accumulated depreciation and impairment losses. Cost includes all direct costs and appropriate allocation of indirect costs incurred to bring the asset to working condition for its intended use.

Borrowing costs that are directly attributable to investments are capitalized together with the costs of the assets in accordance with IAS 23. All borrowing costs that cannot be linked directly to an investment are recognized as expenses in the period when incurred.

The straight-line depreciation method is applied through the estimated useful life of the assets. Useful life is the period of time over which an asset is expected to be used by the company.

Repair and maintenance costs are expensed in the period in which they are incurred, if they do not increase the future economic benefits of the asset. Otherwise they are classified as separate components of items of property, plant and equipment. Those major components of items of property, plant and equipment that are replaced at regular intervals are accounted for as separate assets as they have useful lives different from those items of property, plant and equipment to which they relate. Umicore's PPE, being complex and highly customized industrial assets, typically do not have an individual resale value if put outside the overall context of the operations. Therefore, no residual value is taken into account when determining the depreciable value.

The typical useful life per main type of property, plant and equipment are as follows:

For material newly acquired or constructed assets, the useful life is separately assessed at the moment of the investment request and can deviate from the above standards.

Management determines the estimated useful lives and related depreciation charges for property, plant and equipment. Management uses standard estimates based on a combination of physical durability and projected product life or industry life cycles. These useful lives could change significantly as a result of technical innovations, market developments or competitor actions. Management will increase the depreciation charge where useful lives are shorter than previously estimated, or it will write-off or write-down technically obsolete or non-strategic assets that have been abandoned or sold.

Land use rights are part of the Property, Plant and Equipment and are typically amortized over the contractual period.

	YEARS
Land	Non-depreciable
Buildings	
Industrial buildings	20
Improvements to buildings	10
Other buildings such as offices and laboratories	40
Investment properties	40
Plant, machinery and equipment	10
Furnaces	7
Small equipment	5
Furniture and vehicles	
Vehicles	5
Mobile handling equipment	7
Computer equipment	3-5
Furniture and office equipment	5-10

2.6 INTANGIBLE ASSETS & EQUITY TRANSACTION EXPENSES

2.6.1 EQUITY TRANSACTION EXPENSES

Expenses for formation and capital increase are deducted from the share capital.

2.6.2 GOODWILL

Goodwill represents the excess of the cost of an acquisition of a subsidiary, associate or jointly controlled entity over the Group's share in the fair value of the identifiable assets and liabilities of the acquired entity at the date of acquisition. Goodwill is recognized at cost less any accumulated impairment losses.

Goodwill from associates and joint ventures is presented in the balance sheet on the line "Investments accounted for under the equity method", together with the investment itself.

To assess impairment, goodwill is allocated to a cash generating unit (CGU). At each balance sheet date, these CGUs are tested for impairment, meaning an analysis is performed to determine whether the carrying amount of goodwill allocated to the CGU is fully recoverable. If the carrying amount is not fully recoverable, an appropriate impairment loss is recognized in the income statement. These impairment losses are never reversed.

The excess of the Group's interest in the fair value of the net identifiable assets acquired over the cost of acquisition is recognized in the income statement immediately.

2.6.3 RESEARCH AND DEVELOPMENT

Research costs related to the prospect of gaining new scientific or technological knowledge and understanding are recognized in the income statement as an incurred expense.

Development costs are defined as costs incurred for the design of new or substantially improved products and for the processes prior to commercial production or use. They are capitalized if, among others, the following conditions are met:

- the intangible asset will give rise to future economic benefits, or in other words, the market potential has been clearly demonstrated.
- the expenditures related to the process or product can be clearly identified and reliably measured.

In case it is difficult to clearly distinguish between research or development costs, the costs are considered as being research. If development costs are capitalized they are amortized using a straight-line method over the period of their expected benefit, in general five years.

2.6.4 CO_2 EMISSION RIGHTS

Within the framework of the Kyoto protocol, a third emission trading period started, covering 2013-2020. Therefore, the Flemish Government granted emission rights to the Flemish sites of certain companies, including Umicore. Each year, at the end of February, one fifth of these emission rights is put on an official registry account. The release of emission rights to this registry account entails the capitalization in the intangible assets, which is in line with the guidance of the Belgian Accounting Standards Commission. Gains on the recognition of emission rights at fair value are deferred until the certificates are used. Emission rights owned are subject to impairment testing but are not depreciated. If, at a certain closing date, it appears that the closing market price is below the carrying value, a write-down is booked. At each closing date, the group estimates the actual use of rights for the period and recognizes a provision for the rights that will have to be restituted to the Government. The charge related to the impairment loss or the recognition of provisions are fully compensated in the income statement by the release of deferred revenue. Historically, Umicore owns the required rights to ensure its normal operating activities.

2.6.5 OTHER INTANGIBLE ASSETS

All the following types are recorded at historical cost, less accumulated amortization and impairment losses:

- Concessions, patents, licenses: are amortized over the period of their legal protection with a minimum of 5% (in general over 5 years).
- Customer portfolios: are typically amortized over a period of five years.
- ERP software is typically amortized over a period of ten years.

– Smaller software is typically amortized over a period of five years.

In case of an earn-out component, a remeasurement is foreseen, adapting the carrying amount of the asset and the amortization accordingly.

Umicore has currently no intangible asset with an indefinite useful live.

2.7 LEASE

IFRS 16 sets out the principles for the recognition, measurement, presentation, and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model, similar to the accounting for finance leases under IAS 17. At the commencement date of a lease, lessees recognize a lease liability (i.e. a liability to make lease payments), and a right-of-use asset (i.e. an asset representing the right to use the underlying asset over the lease term). The lease liabilities are recognized at the present value of the remaining lease payments. The right-of-use asset is depreciated over the term of the lease. Interest expense is recognized on the lease liability. The lease liability is remeasured upon the occurrence of certain events (e.g. a change in the lease term or a change in future lease payments resulting from a change in index). Such remeasurements of the lease liability will generally be recognized as an adjustment to the right-of-use asset.

The Group applies the lease recognition exemptions for short-term leases and leases for which the underlying asset is of low value. The Group elects, by class of underlying asset, not to separate non-lease components from lease components and instead accounts for each lease component and any associated non-lease component as one single lease component.

The group leases metals to and from third parties for specified periods for which the group receives or pays fees. Metal lease contracts are typically concluded for less than one year. The metal leases from and to third parties are still reported as off-balance sheet commitments, as not in the scope of IFRS 16.

2.8 FINANCIAL ASSETS AT FAIR VALUE THROUGH OCI, LOANS AND NON-CURRENT RECEIVABLES

All movements in financial assets at fair value through OCI, loans and receivables are accounted for at trade date.

Financial assets at fair value through OCI are carried at fair value. Unrealized gains and losses from changes in the fair value of such assets are recognized in equity as financial assets at fair value through OCI reserves (Other Comprehensive Income). When the assets are sold or impaired, the accumulated fair value adjustments are also included in the OCI. Financial assets are derecognized when the rights to receive cash flows from the investments have expired or have been transferred and the group has transferred substantially all risks and rewards of ownership.

Loans and receivables are carried at amortized cost less any impairment.

All write-downs are recorded on a separate account and are netted with the carrying amounts when all chances of recovery are depleted. Own shares are deducted from equity.

2.9 INVENTORY

Inventories are carried at the lower of cost or net realizable value, except for the permanently tied up metal inventories where the historical cost method is applied (see further). Cost comprises direct purchase or manufacturing costs and an appropriate allocation of overheads.

Inventories are classified as:

1. Base products eligible for metal hedging
2. Base products without metal hedging
3. Consumables
4. Advances paid
5. Contracts in progress

Base products eligible for metal hedging are metal-containing products on which Umicore is exposed to metal price fluctuation risks and where Umicore applies an active and structured risk management process to minimize the potential adverse effects of market price fluctuations on the financial performance of the Group.

Within this inventory class, the metal contents are classified in inventory categories that reflect their specific nature and business use: such as permanently tied up metal inventories and commercially available metal inventories amongst others. Depending on the metal inventory category, appropriate hedging mechanisms are applied.

A weighted average is applied per category of inventory.

In view of their permanent nature, Umicore opted to apply as from 1 January 2019 the measurement and recognition rules of Property, Plant and Equipment (IAS 16) and Impairment of Assets (IAS 36) to all of its permanently tied-up metal inventories category. As a consequence, the valuation principle for such inventories changed from LOCOM (lower of cost or net realizable value principle) to the “historical cost less any accumulated depreciation and accumulated impairment” principle. As the inventories are considered to have an unlimited useful life, no depreciations are applied. Instead they are subject to Umicore’s annual impairment testing of the CGUs carrying these inventories.

Base products without metal hedging and consumables are valued using the weighted-average cost method. Advances paid are down-payments on transactions with suppliers for which the physical delivery has not yet taken place and are booked at nominal value. Contracts in progress are valued using the percentage-of-completion method. Write-downs on inventories are recognized when turnover is slow or where the carrying amount is exceeding the net realizable value, meaning the estimated selling price less the estimated costs of completion and the estimated cost necessary to make the sale. Write-downs are presented separately.

2.10 TRADE AND OTHER RECEIVABLES

Trade and other receivables are measured at amortized cost, i.e. at the net present value of the receivable amount. Unless the impact of discounting is material, the nominal value is taken. Receivables are written down for irrecoverable amounts. All write-downs are recorded on a separate account and are netted with the carrying amounts when all chances of recovery are depleted.

Trade receivables of which substantially all the risks and rewards have been transferred are derecognized from the balance sheet. The positive fair value of derivative financial instruments is included under this heading.

Trade and other receivables are subject to a new impairment methodology, referred to as the Expected Credit Loss (ECL) model, measuring the expected credit losses based on shared credit risk characteristics. Umicore has established an allowance matrix based on different customer and sector ratings, ageing balances, macro-economic and regional factors and historical loss patterns.

2.11 CASH AND CASH EQUIVALENTS

Cash includes cash-in-hand and cash with banks. Cash equivalents are short-term, highly liquid investments that are readily convertible into known amounts of cash, have maturity dates of three months or less and are subject to an insignificant risk of change in value.

These items are carried in the balance sheet at nominal value or amortized cost. Bank overdrafts are included in the current liabilities on the balance sheet.

2.12 IMPAIRMENT OF NON-FINANCIAL ASSETS

Property, plant and equipment and other non-current assets, including intangible assets and financial assets not held for trading, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. If any such indication exists, the recoverable amount of the asset is estimated.

The recoverable amount is the higher of an asset's net selling price and value in use. To estimate the recoverable amount of individual assets the company often determines the recoverable amount of the cash-generating unit (CGU) to which the asset belongs.

Whenever the carrying amount of an asset exceeds its recoverable value, an impairment loss is recognized as an expense immediately.

A reversal of impairment losses is recognized when there is an indication that the impairment losses recognized for the asset or for the CGU no longer exist or have decreased. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

2.13 SHARE CAPITAL AND RETAINED EARNINGS

A. Repurchase of share capital
When the company purchases some of its own shares, the consideration paid, including any attributable transaction costs net of income taxes, is deducted from the total shareholders' equity as treasury shares. No gain or loss shall be recognized in profit or loss on the purchase, sale, issue or cancellation of own shares. When such shares are subsequently sold or reissued, any consideration received is included in shareholders' equity.

B. Incremental costs directly attributable to the issue of new shares are shown in equity as a deduction from the proceeds of the issue, net of tax.

C. Dividends of the parent company payable on ordinary shares are only recognized as a liability following approval by the shareholders.

2.14 MINORITY INTERESTS

Minority interests include a proportion of the fair value of identifiable assets and liabilities recognized upon acquisition of a subsidiary that is attributable to third parties, together with the appropriate proportion of subsequent profits and losses.

In the income statement, the minority share in the Group's profit or loss is presented separately from the Group's consolidated result.

2.15 PROVISIONS

Provisions are recognized in the balance sheet when:

- There is a present obligation (legal or constructive) as a result of a past event.
- It is probable that an outflow of resources will be required to settle the obligation.
- A reliable estimate can be made on the amount of the obligation.

A constructive obligation is an obligation that derives from company actions where, by an established pattern of past practice or published policies, the company has indicated that it will accept certain responsibilities and, as a result, the company has created a valid expectation that it will discharge those responsibilities.

The amount recognized as a provision is the best estimate of the expenditure required to settle the present obligation at the end of the reporting period and taking into account the probability of the possible outcome of the event. Where the effect of the time value of money is material, the amount of a provision is the present value of the expenditure expected to be required to settle the obligation. The result of the yearly discounting of the provision, if any, is accounted for as a financial result.

The main types of provision are the following:

1. PROVISIONS FOR EMPLOYEE BENEFITS (SEE NOTE F2.16, EMPLOYEE BENEFITS)

2. ENVIRONMENTAL OBLIGATIONS

Environmental provisions are based on legal and constructive obligations from past events, in accordance with the company's environmental approach and applicable legal requirements. The full amount of the estimated obligation is recognized at the moment the event occurs. When the obligation is production/activity related, the provision is recognized gradually depending on normal usage/production level.

3. OTHER PROVISIONS

These include provisions for litigation, onerous contracts, warranties, exposure to equity investments and restructuring. A provision for restructuring is recognized when the company has approved a detailed and formal restructuring plan and the restructuring has either commenced or has been announced publicly before the end of the reporting period. Any restructuring provision only includes the direct expenditure arising from the restructuring which is necessarily entailed and is not associated with the ongoing activities of the Company.

2.16 EMPLOYEE BENEFITS

2.16.1 SHORT-TERM EMPLOYEE BENEFITS

These include wages, salaries and social security contributions, paid annual leave and sick leave, bonuses and non-monetary benefits, and are taken as an expense in the relevant period. All company managers are eligible for bonuses that are based on indicators including personal performance and key financial targets. The amount of the bonus is recognized as an expense, based on an estimation made at the end of the reporting period.

2.16.2 POST-EMPLOYMENT BENEFITS (PENSIONS, MEDICAL CARE)

The company has various pension and medical care schemes in accordance with the conditions and practices of the countries it operates in. The schemes are generally funded through payments to insurance companies or trustee-administered funds.

2.16.2.1 DEFINED BENEFIT PLANS

The company has accounted for all legal and constructive obligations both under the formal terms of defined benefit plans and under the company's informal practices.

The amount presented in the balance sheet is based on actuarial calculations (using the projected unit credit method) and represents the present value of the defined benefit obligations and reduced by the fair value of the plan assets.

The past service costs are immediately recognized in the income statement since IAS 19 revised.

All remeasurements as a result of changes in the actuarial assumptions of post-employment defined benefit plans are recognized through other comprehensive income (OCI) in the period in which they occur and are disclosed in the statement of comprehensive income as post-employment benefit reserves.

2.16.2.2 DEFINED CONTRIBUTION PLANS

The company pays contributions to publicly or privately administered insurance plans. The payments are recognized as expenses as they fall due and as such are included in personnel costs.

2.16.3 OTHER LONG-TERM EMPLOYEE BENEFITS (JUBILEE PREMIUMS)

These benefits are accrued for their expected costs over the period of employment using an accounting methodology similar to that for defined benefit pension plans. These obligations are in general valued annually by independent qualified actuaries. All remeasurements as a result of changes in the actuarial assumptions are immediately recognized in the income statement.

2.16.4 TERMINATION BENEFITS (PRE-RETIREMENT PLANS, OTHER TERMINATION OBLIGATIONS)

These benefits arise as a result of the company's decision to terminate an employee's employment before the normal retirement date or of an employee's decision to accept voluntary redundancy in exchange for those benefits. When they are reasonably predictable in accordance with the conditions and practices of the countries the company operates in, future obligations are also recognized.

These benefits are accrued for their expected costs over the period of employment, using an accounting methodology similar to that for defined benefit pension plans. In general, these obligations are valued annually by independent qualified actuaries. All remeasurements as a result of changes in the actuarial assumptions are immediately recognized in the income statement.

2.16.5 EQUITY AND EQUITY-RELATED COMPENSATION BENEFITS (SHARE-BASED PAYMENTS IFRS 2)

Different stock option and share programs allow company employees and company senior management to acquire or obtain shares of the company.

The option or share exercise price equals the market price of the (underlying) shares at the date of the grant. When the options are exercised, shares are delivered to the beneficiaries from existing own shares. For the share programs, shares are delivered to the beneficiaries from existing own shares. In both cases, the equity is increased by the amount of the proceeds received corresponding to the exercise price.

The options and shares are typically vested at the moment of the grant and their fair value is recognized as an employee benefit expense with a corresponding increase in equity as share based payment reserves. For the options, the expense to be recognized is calculated by an actuary, using a valuation model which takes into account all features of the stock options, the volatility of the underlying stock and an assumed exercise pattern.

As long as the options granted have not been exercised, their value is reported in the Statement of Changes in Equity as 'share based payments reserve'. The value of the options exercised during the period is transferred to 'retained earnings'.

2.16.6 PRESENTATION

The impact of employee benefits on results is booked under operating results in the income statement, except for the interest and discount rate impacts which are classified under financial results.

2.17 FINANCIAL LIABILITIES

All movements in financial liabilities are accounted for at trade date.

Borrowings are initially recognized as proceeds received, net of transaction costs. Subsequently they are carried at amortized cost using the effective interest rate method. Amortized cost is calculated by taking into account any issue costs, and any discount or premium on issue. Any differences between cost and redemption value are recognized in the income statement upon redemption.

As from 2019, the financial debt also contains the lease liability as per IFRS 16 (see note F2.23.1).

2.18 TRADE AND OTHER PAYABLES

Trade payables are measured at amortized cost, i.e. at the net present value of the payable amount. Unless the impact of discounting is material, the nominal value is taken.

The negative fair value of derivative financial instruments is included under this heading.

2.19 INCOME TAXES

Taxes on profit or loss of the year include current and deferred tax. Such taxes are calculated in accordance with the tax regulations in effect in each country the company operates in.

Current tax is the expected tax payable on the taxable income of the year, using tax rates enacted at the end of the reporting period, and any adjustment to tax payable (or receivable) in respect of previous years.

The tax payable is determined based on tax laws and regulations that apply in each of the numerous jurisdictions in which the Group operates. The income tax positions taken are considered by the Group to be supportable and are intended to withstand challenge from tax authorities. However, it is accepted that some of the position can be uncertain and include interpretation of complex tax laws. Furthermore, some subsidiaries within the Group can be involved in tax audits, usually in relation to prior years, that can take time to conclude. The Group assesses its tax position individually and on a regular basis and if the tax payable differs from the amounts initially estimated then the difference is charged or credited in the accounts for the year in which it is determined.

Deferred taxes are calculated using the liability method on temporary differences arising between the tax base of assets and liabilities and their carrying amounts in the financial statements. These taxes are measured using the rate prevailing at the end of the reporting period or future applicable tax rates formally announced by the government of the country where the Company operates.

Deferred tax assets are only recognized to the extent that it is probable that future taxable profit will be available, against which the temporary differences can be utilized.

Deferred tax assets and liabilities are offset and presented net only if they relate to income taxes levied by the same taxation authority on the same taxable entity.

2.20 REVENUE RECOGNITION

2.20.1 REVENUE RECOGNITION FROM CONTRACTS WITH CUSTOMERS

Despite the complexity of several processes within each business unit, the performance obligations are rather straightforward, those being:

- Catalysis: the delivery of the goods in accordance with contract specifications. These specifications have been predefined and validated through samples. This latter is not considered as a significant stream for further analysis under IFRS 15.
- Recycling: the return of the refined metals back to the client in accordance with the contract either in their pure metal content or as part of a (semi)finished product and the sale of metal (including boni) towards the customers.
- Energy and Surface Technologies: the delivery of the products according to specification agreed in the sales order received.

Umicore has carefully considered the satisfaction of the performance obligation and concludes that for sales within Catalysis the revenue is recognized at a point of time when the control transfers to the customer. Despite the products being customized, the considerations for over time have not been met given that the customer does not control the production process nor has the Group the entitlement to be paid prior to delivery of the goods. The control is therefore transferred based upon the usual delivery terms (incoterms) and the customer accepting the goods upon delivery.

For sales within Recycling, the revenue is recognized at a point in time when the control of the refined products or metal is back in the hands of the customers (refinery) or in the hands of the customers (sale of metal, including boni), embarked by the delivery.

For sales within Energy and Surface Technologies the revenue is recognized at a point in time when the control is transferred to the customer, this moment being driven by the delivery of the products according to the incoterms.

Some of the contracts do contain commercial discounts and rebates, however frequency is relatively low, and magnitude is not significant. If applicable, these are recognized in the same period the sale is established.

There are no additional warranty agreements sold to clients on top of legal requirements, therefore these are not considered as a separate performance obligation.

Consequently, the transaction price identified within the agreement is allocated in full to the performance obligation.

There are no significant contract balances where either the Group has performed the performance obligation for which no billing occurred yet, or alternatively has received advance payments for which the performance obligation has not been satisfied.

The revenue from contracts with customers is further detailed in note F9.

The assessment in view of impairment losses is captured under the expected credit loss model as detailed in note F20.

2.20.2 GOVERNMENT GRANTS

A government grant is accounted for in the balance sheet initially as deferred income when there is reasonable assurance that it will be received and that the company will comply with the conditions attached to it. Grants are recognized in the income statement over the period necessary to match them with the costs they are intended to compensate.

2.21 FINANCIAL INSTRUMENTS

The company uses derivative financial and commodity instruments primarily to reduce the exposure to adverse fluctuations in foreign exchange rates, commodity prices, interest rates and other market risks. The company uses mainly spot and forward contracts to cover the metal and currency risk, and swaps to hedge the interest rate risk. The operations carried out on the futures markets are not of a speculative nature.

2.21.1 TRANSACTIONAL RISKS – FAIR VALUE HEDGING

Derivative financial and commodity instruments are used for the protection of the fair value of underlying hedged items (assets, liabilities and firm commitments) and are recognized initially at fair value at trade date. The hedged items (physical commitments and commercially available inventory, primarily) are valued at fair value when hedge accounting can be documented according to the criteria set out in IFRS 9.

The bottom layer or the net position approach for the fair value hedge on groups of closed portfolios of foreign exchange risk and commodity risk exposures are applied.

Under the bottom layer approach, a layer representing the nominal amount of an exposure that has historically been present on a constant and continuous basis is defined. This layer is further split into smaller unit of accounts, sublayers, which are designated as hedged items. The sublayers are then hedged by hedging instruments that are designated as hedging multiples of such sublayers

Under the net position approach, hedging is applied based on a group of items with offsetting risk positions, the net position being the hedged item hedged by a hedging instrument.

In both approaches, it regards closed hedged portfolios in which items cannot be added, removed or replaced without treating each change as the transition to a new portfolio.

In both approaches the exposures cover a group of both on balance and off balance foreign exchange and commodity positions, that is, either trade payables, inventories and purchase commitments or trade receivables and sales commitments exposed to the variability of foreign currencies or commodity prices.

For commodity risk exposures, IFRS 9 bottom layer or net position based fair value hedge accounting is applied to the extent there are market-based derivatives available for that commodity.

In the absence of reaching the IFRS 9 bottom layer criteria or the net position criteria for closed portfolios or in the absence of market-based derivatives and so obtaining fair value hedge accounting at inception as defined under IFRS 9, the hedged items are kept at cost and are submitted to the valuation rules applicable to similar non-hedged items, i.e. the recognition at the lower of cost or market (IAS 2) for inventories, or the recognition of provisions for onerous contracts (IAS 37) for physical commitments.

When there is a consistent practice of trading of commodities through the use of commodity contracts by a dedicated subsidiary or a cash generating unit (CGU) of the Group and by which the entity takes delivery of the underlying commodity to sell it within a short period after delivery for the purpose of generating a profit from short-term fluctuations in price or trading margins, the inventory is valued at fair value through the income statement and the related physical and/or commodity commitments are classified as derivatives and measured at fair value through the income statement.

2.21.2 STRUCTURAL RISKS – CASH FLOW HEDGING

Derivative financial and commodity instruments used for the protection of future cash flows are designated as hedges under cash-flow hedge accounting. The effective portion of changes in the fair value of hedging instruments which qualify as cash flow hedges are recognized in the shareholders equity as hedging reserves until the underlying forecasted or committed transactions occur (i.e. affect the income statement). At that time the recognized gains and losses on the hedging instruments are transferred from equity to the income statement.

When the underlying hedged transactions are no longer probable or the hedges become ineffective, the corresponding hedging instrument will immediately be terminated and all profits or losses including those which were deferred in equity, are immediately recognized in the income statement.

In the absence of obtaining cash-flow hedge accounting at inception as defined under IFRS 9, then the fair value of the related hedging instruments is recognized in the income statement instead of the equity and this prior to the occurrence of the underlying forecasted or committed transactions.

2.21.3 EMBEDDED DERIVATIVES

Executory contracts (the "host contract") may sometimes contain embedded derivatives. Embedded derivatives cause some or all of the cash flows that would otherwise be expected from the host contract, to be modified according to a specified interest rate, financial instrument price, commodity price, foreign exchange rate, or other variable. If it is concluded that such a derivative is not closely related to the host contract, it is separated from the host contract and accounted for under the rules of IFRS 9 (fair value through profit or loss). The host contract is accounted for using the rules applicable to executory contracts, which effectively means that such a contract is not recognized in the balance sheet or profit and loss before delivery on the contract takes place.

2.22 NON-RECURRING RESULTS

Non-recurring results relate primarily to restructuring measures, impairment of assets and other income or expenses arising from events or transactions that are clearly distinct from the ordinary activities of the company.

2.23 IMPACT OF CHANGES IN ACCOUNTING POLICIES ON THE OPENING OF FINANCIAL STATEMENTS

2.23.1 ADOPTION OF IFRS 16 – LEASE ACCOUNTING

IFRS 16 supersedes IAS 17 Leases, IFRIC 4 Determining whether an Arrangement contains a Lease, SIC-15 Operating Leases-Incentives and SIC-27 Evaluating the Substance of Transactions Involving the Legal Form of a Lease. The new standard sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for most leases under a single on-balance sheet model.

IFRS 16 impacts Umicore acting as a lessee under agreements previously classified as operating lease contracts and mainly consisting of car leases and a limited number of rental agreements of warehouses and offices.

Umicore adopted IFRS 16 on 1 January 2019, in accordance with its transitional provisions, using the modified retrospective approach. Hence, Umicore opted to measure the right-of-use asset at an amount equal to the lease liability at opening (no prepaid or accrued lease expenses), without restatement of the comparative figures.

The lease liabilities were measured at the present value of the remaining lease payments, discounted to 1 January 2019 using a weighted average incremental borrowing rate set at 1.8%.

Umicore has applied the following practical expedients, as permitted by IFRS 16, on the transition date:

- No reassessment of all contracts whether they are or contain a lease at the date of initial application. Instead, the Group applied IFRS 16 to contracts that were previously identified as leases applying IAS 17 and IFRIC 4.
- The Group applies a single discount rate to a portfolio of leases with reasonably similar characteristics (such as leases with a similar remaining lease term for a similar class of underlying asset in a similar economic environment).
- Reliance on previous assessments on whether leases are onerous instead of performing an impairment review at opening.

Umicore has applied the lease recognition exemptions for short-term leases and leases for which the underlying asset is of low value (mainly printers and underlying assets having a value of less than USD 5,000). Umicore elected, by class of underlying asset, not to separate non-lease components from lease components and instead accounts for each lease component and any associated non-lease component as one single lease component. There are no material intercompany subleases.

The effect of adopting IFRS 16 is as follows:

1. Effect on the consolidated balance sheet:

As per note F35 on rights and commitments in 2018, non-metal operating leases amounted to € 44.9 million in 2018, out of which € 6.9 million represented low value or short-term leases which are both recognized on a straight-line basis as expense in profit and loss. After discounting the impact is an increase of property, plant and equipment and (net) financial debt by € 37.3 million on 1 January 2019 and by € 46.2 million on 31 December 2019 (see Note F16 and F24 for the impacts on Property, plant and equipment and on Financial debt respectively).

2. Effect on the consolidated statement of comprehensive income

The net profit before tax has not been materially impacted. The other operating expenses decreased by € 17.5 million offset by an increase in the depreciations of the right-of-use assets and in interests for a total amount of respectively € 16.8 million and € 0.9 million. (see notes F9 and F10 respectively)

3. Effect on the cashflow statement

The interests and the reimbursement of the lease liability are both classified as financing cash flows (€ -16.5 million under Change in Liability and €-0.9 million as interests paid) whereas before the operating lease rents were part of the operating cash flows (positive impact on operating cash flow of € 17.5 million). (see Note F34)

2.23.2 ADOPTION OF IFRIC 23 – UNCERTAINTY OVER INCOME TAX TREATMENTS

The IFRIC 23 interpretation clarifies accounting for uncertainties in income taxes and is to be applied when determining taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates, in case of uncertainty over whether Umicore's position will be accepted by tax authorities. It is applicable to both current and deferred tax items.

Umicore made a detailed assessment of all tax uncertainties within the Group, thereby:

- considering uncertainties individually or collectively, based on which approach provided the best predictions of the resolution of the uncertainties with the tax authorities;
- assuming that the tax authority will examine the position (if entitled to do so) and will have full knowledge of all the relevant information;
- recognizing an Uncertain Tax Position or UTP (or group of UTPs) using either the most likely amount or the expected value, depending on which is thought to give a better prediction of the resolution of each (group of) UTP(s), to reflect the likelihood of an adjustment being realized on examination.

The Group applied IFRIC 23 retrospectively with the cumulative effect of initially applying the Interpretation recognized as an adjustment to the opening balance of the reserves on 1 January 2019. In accordance with the transitional provisions of IFRIC 23 it has opted not to restate comparative information.

The total impact of applying IFRIC 23 on Umicore's reserves as at 1 January 2019 amounted to € 42.2 million, as a result of the provisions recorded for tax uncertainties increasing from € 32.4 million to € 74.6 million. The impact on Umicore' income statement during the year of 2019 amounted to € -16.4 million. The total provisions for € 91 million are booked under the line "Income tax payable" of the balance sheet.

2.23.3 CHANGE IN ACCOUNTING POLICY WITH REGARDS TO PERMANENTLY TIED-UP METAL INVENTORIES

In line with Umicore's accounting policies related to inventories (note 2.9 "Inventory" in the 2018 annual report), metals are classified in inventory categories that reflect their specific nature and business use. As from its adoption of IFRS in 2003, Umicore classifies permanently tied-up metal inventories as a separate inventory category. These inventories consist of metal stocks required to run operations without business interruption ("Core Inventories" concept). As mentioned under note 3.2.3. "Metal inventory risk", Umicore faces metal price risks on its permanently tied-up metal inventories arising from a market price for a given permanently tied-up metal inventory potentially falling below its carrying value. Such risk is irrelevant to Umicore's cash flows or operational and commercial performance.

Until 31 December 2018, Umicore valued these permanently tied-up metal inventories following the lower of cost or net realizable value principle (LOCOM). This principle implied that a non-cash impairment charge is recognized in operating income in case the market price of such inventories on closing date falls below its carrying value. Such impairment was reversed in case of a subsequent recovery in the closing market price. Umicore consistently reported and disclosed these impairment movements under non-recurring items. In the past, such net impairments remained limited in size (since 2010 the largest reported net impairment amounted to € 26 million in 2015).

Umicore's permanently tied-up cobalt and nickel metal inventories increased substantially in recent years on the back of the expansion in battery materials. In addition, the recent market price of cobalt showed very strong volatility and dropped substantially since 1 January 2019. Applying the LOCOM principle on permanently tied-up metal inventories on 31 December 2019 would have given rise to a non-cash impairment charge of € 122 million for the Group, partly offset by a positive tax impact of € 30.5 million. Taking into account the permanent nature of such inventories, Umicore reviewed its related accounting policy aimed at reducing potential future non-recurring result volatility triggered by fluctuations in the market price of respective metals that do not reflect current or future underlying cash flows or commercial and operational performance.

While these permanently tied-up inventories are as such recoverable, as long as there is no structural change to the prevailing flowsheet or business set-up, they are expected to be used for an indefinite period of time. Consequently, their carrying amount is expected be recovered through the cash flows generated by the cash generating units ("CGUs") for which they are used, rather than through a sale.

In view of their permanent nature, Umicore opted to apply as from 1 January 2019 the measurement and recognition rules of Property, Plant and Equipment (IAS 16) and Impairment of Assets (IAS 36) to all of its permanently tied-up metal inventories. As a consequence, the valuation principle for such inventories changed from LOCOM to the "historical cost less any accumulated depreciation and accumulated impairment" principle. As the inventories are considered to have an unlimited useful life, no depreciations are applied. Instead they will be subject to Umicore's annual impairment testing of the CGUs carrying these inventories. In view of their physical characteristics and related processes and systems, these metals will remain classified under Inventories.

As of 1 January 2019, the cumulative "lower of cost or net realizable value" provision amounted to € 8.5 million. The change in accounting policy has been retrospectively applied as from 1 January 2019 representing the release of this cumulative "lower of cost or net realizable value" provision, to the opening balance sheet reserves. During 2018 this provision had been increased by € 6.0 million presented under non-recurring items. Due to the immaterial impact Umicore decided not to adjust the comparative financial information of prior periods.

As from the moment there are material changes in the prevailing business set-up due to which the related permanently tied-up metal inventories would no longer be required, such inventories will be reclassified from "held to carry" to "held for sale" assets. Any inventories held for sale are valued at the lower of the carrying amount and fair value less cost to sell.

The total gross book value of Umicore's permanently tied-up metal inventories at 31 December 2019 amounted to € 862 million (versus € 791 million on 1 January 2019) which compares to a value of € 2,135 million when applying the 31 December market prices.

F3 FINANCIAL RISK MANAGEMENT

Each of the Group's activities is exposed to a variety of risks, including changes in metal prices, foreign currency exchange rates, certain market-defined commercial conditions, and interest rates as well as credit and liquidity risks. The Group's overall risk management program seeks to minimize the adverse effects on the financial performance of the Group by hedging most of these risks through the use of financial and insurance instruments.

3.1 CURRENCY RISK

Umicore's currency risk can be split into three distinct categories: structural, transactional and translational risks.

3.1.1 STRUCTURAL RISK

A portion of Umicore's revenues are structurally denominated in US dollar (USD), while many of our related operations are located outside the USD zone (particularly in Europe and Asia). Any change in the USD exchange rate against the EUR or other currencies which are not pegged to the USD will have an impact on our results.

A large portion of such structural currency exposure derives from US dollar denominated metal prices linked to the recycling and refining operations.

An increasing portion of the structural risk exposure stems from non-metal related revenues denominated in USD such as product premiums and refining charges. This increase is particularly related to the accelerating growth in battery materials activities in Asia.

Next to the sensitivity USD vs EUR, there is also a structural and increasing sensitivity to certain other currency pairs such as the USD and EUR vs the Korean won (KRW), the Chinese yuan (CNY), the Canadian dollar (CAD) and the South African rand (ZAR).

Structural currency hedging

Umicore's hedging policy allows for hedging forward its structural currency exposure, either in conjunction with the hedging of structural metal price exposure or in isolation, typically when a currency exchange rate or a metal price denominated in EUR is above its historical average and at a level where attractive margins can be secured.

In relation to the structural risk, the Group assesses the hedge effectiveness through a critical terms match between the hedged item (future probable cash flows) and the hedging instrument including amount and maturity. The Group applies a prudent approach in the application of structural hedging, never up to 100 %, avoiding thereby ineffectiveness arising from difference in maturity between hedged item and hedging instrument or changes in exposure amounts.

At the end of 2019, Umicore had structural currency hedging in place relating to its non-metal related currency sensitivity including the following pairs of currencies: EUR/USD, USD/KRW, USD/CNY, EUR/CNY, EUR/ZAR and USD/CAD.

3.1.2 TRANSACTIONAL RISK

The company is also subject to transactional risks in respect of currencies, i.e. the risk of currency exchange rates fluctuating between the time the price is fixed with a customer or supplier and the time the transaction is settled. The Group's policy is to hedge the transactional risk to the maximum extent possible, primarily through forward contracts.

In relation to the transactional risk, the Group assesses the hedge effectiveness through a critical terms match between the hedged item (Balance sheet items and commitments) and the hedging instrument including amount and maturity. The Group hedges transactional risks to the maximum extent up to 100 %. Any ineffectiveness can arise from difference in maturity between hedged item and hedging instrument or changes in exposure amounts, but this will never be material.

3.1.3 TRANSLATIONAL RISK

Umicore is an international company and has foreign operations which do not have the EUR as their functional currency. When the results and the balance sheets of these operations are consolidated into Umicore's Group accounts the translated amount is exposed to variations in the value of such local currencies against the EUR, predominantly the KRW, CNY, USD, BRL and ZAR. While Umicore does not systematically hedge its translational currency exposures, it may enter into ad hoc translational hedges.

3.2 METAL PRICE RISK

Umicore's metal price risk can be split into three distinct categories: structural, transactional and inventory risks.

In relation to the structural and transactional risk, for the purpose of assessing our hedge effectiveness we apply a critical terms match between the hedged item and the hedging instrument including in terms of quantity and maturity. Hedge ratio is 100% whereby our sources of ineffectiveness could be a difference in maturity between hedged item and financial instrument or a change in exposure.

3.2.1 STRUCTURAL RISK

Umicore is exposed to structural metal related price risks. Those risks relate mainly to the impact that metal prices have on surplus metals recovered from materials supplied for treatment or any other revenue component that fluctuates with the metal price. Umicore's policy allows hedging of such metal price exposure, typically if forward metal prices expressed in the functional currency of the concerned businesses are above their historical average and at a level where attractive margins can be secured. The extent to which metal price risk can be hedged depends on the availability of hedging instruments and sufficient associated market liquidity.

The Recycling segment recycles platinum, palladium, rhodium, gold and silver and a wide range of other base and specialty metals. In this segment the short-term sensitivity of revenues and operating profits to metals prices is material. However, given the variability of the raw-material feed over time and the variable duration of the supply contracts negotiated, it is not suitable to provide a fixed sensitivity to any particular metal. In general terms, higher metals prices tend to be earnings enhancing for the Recycling business. Umicore also has a metal price sensitivity in its other business segments (Catalysis, Energy & Surface Technologies) linked primarily to the revenue components that are metal price related and depending the metals used in these segments. Also, in these cases a higher metal price tends to carry short term benefits for the profitability of each business. However, other commercial conditions which are largely independent of the metals price, such as product premiums, are also significant and independent drivers of revenues and profitability.

Structural metal price hedging

For some metals quoted on futures markets Umicore hedges part of its forward metal exposure. This hedging is based on documentation demonstrating a high probability of future metal price based cash flows originating from commercial contracts. Umicore hedged part of its forward metal exposure. At the end of 2019, the outstanding hedge contracts relate to some precious metals (i.e. gold, platinum and palladium) and some base metals (i.e. nickel, copper and lead).

In relation to the structural risk, the Group assesses the hedge effectiveness through a critical terms match between the hedged item (future probable cash flows) and the hedging instrument amongst others amount and maturity. The Group applies a prudent approach in the application of structural hedging, never up to 100 %, avoiding thereby ineffectiveness arising from difference in maturity between hedged item and hedging instrument or changes in exposure amounts.

3.2.2 TRANSACTIONAL RISK

The Group faces transactional price risks on metals. The majority of its metal-based transactions use global metal market references, such as the London Metal Exchange. If the underlying metal price were to be constant, the price Umicore pays for the metal contained in the raw materials purchased would be passed through to the customer as part of the price charged for the product. However, because of the lapse of time between the conversion of purchased raw materials into products and the sale of products, the volatility in the reference metal price creates differences between the price paid for the contained metal and the price received. Accordingly, there is a transactional exposure to any fluctuations in price between the moment raw materials are purchased (i.e., when the metal is "priced in") and the moment the products are sold (i.e. when the metal is "priced out").

The Group's policy is to hedge the transactional risk to the maximum extent possible, primarily through forward contracts.

In relation to the transactional risk, the Group assesses the hedge effectiveness through a critical terms match between the hedged item (Balance sheet items and commitments) and the hedging instrument amongst others amount and maturity. The Group hedges transactional risks to the maximum extent up to 100 %. Any ineffectiveness can arise from difference in maturity between hedged item and hedging instrument or changes in exposure amounts, but this will never be material.

The accelerating growth in battery materials in recent years substantially increased the exposure to specific related metals such as cobalt or nickel. Increasing volumes, the vulnerability to the associated price volatility and in the case of certain metals such as cobalt the absence of a liquid paper forward market result in increased metal risks. For cobalt, Umicore's transactional hedging policy aims to match to a maximum extent the pricing in and pricing out of the contracted metal. Such physical back-to-back hedging allows management of transactional risks related to cobalt in a volatile market.

3.2.3 METAL INVENTORY RISK

The group faces metal price risks on its permanently tied up metal inventories. This risk is related to the market metal price moving below the carrying value of these inventories. Umicore tends not to hedge against this risk.

3.3 INTEREST RATE RISK

The Group's exposure to changes in interest rates relates to the Group's financial debt obligations. At the end of December 2019, the Group's gross financial debt stood at € 1,715 million, of which € 1,061 million at fixed rate. The outstanding interest rate swaps totaled € 52 million at the end of the period and included a € 40 million contract that will expire in 2023.

3.4 CREDIT RISK

Credit risk and concentration of credit risk

Credit risk is the risk of non-payment by any counterparty in relation to sales of goods or metal lease operations. In order to manage its credit exposure, Umicore has determined a credit policy with credit limit requests, approval procedures, continuous monitoring of the credit exposure and dunning procedure in case of delays.

The credit risk resulting from sales is, to a certain extent, covered by credit insurance, letters of credit or similar secure payment means. Umicore entered into two credit insurance agreements with different insurers. One global credit insurance contract has been put in place on a world-wide basis. This contract protects the insured activities against insolvency, political and commercial risks with an individual deductible per invoice of 5% and foresees an indemnification cap set at regional or country levels. A second policy covers a more selective group of trade receivables and foresees an annual deductible of € 5 million and a maximum indemnity of € 70 million per annum.

Umicore has determined that in a certain number of cases where the cost of credit insurance is disproportionate in relation to the risk to be insured, no such global credit insurance coverage will be sought. For those businesses, characterized by a significant level of customer concentration or by a specific and close relationship with the customers, specific insurance contracts may be set up for a certain period.

It should be noted that some sizeable transactions, such as the sales of precious metals by Recycling, have a limited credit risk as payment before delivery is a widely accepted practice.

Regarding its risk exposure to financial institutions such as banks and brokers, Umicore is also establishing internal credit lines. Specific limits are set, per financial instrument, covering the various risks to which it is exposed when transacting with such counterparties.

3.5 LIQUIDITY RISK

Liquidity risk is addressed by maintaining a sufficient degree of diversification of funding sources. These include committed and uncommitted short-term bilateral bank facilities, two committed medium-term syndicated bank facilities, three committed long-term private placements and a commercial paper programme.

3.6 TAX RISK

The tax charge included in the financial statements is the Group's best estimate of its tax liability but, until such time as audits by tax authorities are concluded, there is a degree of uncertainty regarding the final tax liability for the period. The Group's policy is to submit tax returns within the statutory time limits and engage tax authorities to ensure that the Group's tax affairs are as current as possible and that any differences in the interpretation of tax legislation and regulation are resolved as quickly as possible. Given the scale and the international nature of the Group's business, VAT, sales tax and intra- Group transfer pricing are an inherent tax risk as it is for other international businesses. Changes in tax laws or in their application with respect to matters such as transfer pricing, VAT, foreign dividends, R&D tax credits and tax deductions, could increase the Group's effective tax rate and adversely affect its net results. Based on these tax risks described, management performed a detailed assessment for uncertain tax positions which resulted in provisions recorded for these uncertainties in line with IFRIC 23.

3.7 CAPITAL RISK MANAGEMENT

The Group's objectives when managing capital are to safeguard its ability to continue as a going concern, to provide returns for shareholders and benefits for other stakeholders, and to maintain an optimal capital structure to reduce the cost of capital.

In order to maintain or adjust the capital structure, the Group may for example adjust the amount of dividends paid to shareholders, return capital to shareholders, buy back its own shares or issue new shares.

The group monitors its capital structure primarily on the basis of the gearing ratio and the net financial debt over recurring EBITDA ratio. The gearing ratio is calculated as net financial debt divided by the sum of net financial debt and total Group equity. Net financial debt is calculated as non-current financial debt plus current financial debt less cash and cash equivalents. The figures for the presented periods are detailed under the note F24 on Financial Debt.

In an ordinary course of business operating environment, the group aims for a capital structure equivalent to investment-grade credit rating status. The group could consider temporarily exceeding the equivalent level of indebtedness in the case of an extraordinary event, such as for example a major acquisition.

3.8 STRATEGIC AND OPERATIONAL RISKS

Umicore faces certain strategic and operational risks that are not necessarily financial in nature but which have the potential to impact the financial performance of the Group. These include technology risk, supply risk and the risk of product substitution by customers. Please refer to the Risk Management pages of the Corporate Governance section (pages 83 to 88) for a description of these risks and an outline of Umicore's general approach to risk management.

Umicore does not expect a material direct financial impact from Brexit.

F4 CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS

Estimates and judgments used in developing and applying the consolidated entity's financial statements are continually evaluated and are based on historical experience and other factors, including the expectations of future events that may have a financial impact on the entity and that are believed to be reasonable under the circumstances. The resulting accounting estimates will, by definition, seldom equal the related actual results.

Assumptions and estimates are applied when:

- Assessing the need for and measurement of impairment losses.
- Accounting for pension obligations.
- Recognizing and measuring provisions for tax, environmental, warranty and litigation risks, product returns, onerous contracts and restructuring.
- Determining inventory write-downs.
- Assessing the extent to which deferred tax assets will be realized.
- Useful lives of Property, Plant and Equipment and Intangible assets excluding goodwill.

The critical estimates and judgments that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are listed below.

4.1 IMPAIRMENT OF GOODWILL

The recoverable amount of each cash generating unit is determined as the higher of the asset's fair value less costs to sell and its value in use in accordance with the accounting policy. These calculations, defined as impairment testing, require the use of estimates and assumptions such as discount rates, exchange rates, commodity prices, future capital requirements and future operating performance. Internal estimates of future business performance are based on an analysis of a combination of factors including: market growth projections, market share estimates, competitive landscape, pricing and cost evolution. Such analysis combines both internally-generated estimates and data from external sources. As at 31 December 2019, the carrying amount of the goodwill for the consolidated entity was € 156.7 million (€ 142.5 million in 2018).

4.2 REHABILITATION OBLIGATIONS

Provision is made for the anticipated costs of future rehabilitation of industrial sites and surrounding areas to the extent that a legal or constructive obligation exists in accordance with accounting policy 2.15. These provisions include future cost estimates associated with reclamation, plant closures, waste site closures, monitoring, demolition, decontamination, water purification and permanent storage of historical residues. These future cost estimates are discounted to their present value. The calculation of these provision estimates requires assumptions such as application of environmental legislation, plant closure dates, available technologies and engineering cost estimates. A change in any of the assumptions used may have a material impact on the carrying value of rehabilitation provisions. As at 31 December 2019, the carrying amount of rehabilitation provisions was € 58.0 million (€ 60.8 million in 2018).

4.3 DEFINED BENEFIT OBLIGATIONS

An asset or liability in respect of defined benefit plan is recognized on the balance sheet in accordance with accounting policy 2.16. The present value of a defined benefit obligation is dependent upon a number of factors that are determined on an actuarial basis. The consolidated entity determines the appropriate discount rate to be used at the end of each year. The consolidated entity's employee benefit obligations are discussed in more detail in Note F27. At 31 December 2019, a liability with respect to employee benefit obligations of € 392.6 million was recognized (€ 333.8 million in 2018).

4.4 RECOVERY OF DEFERRED TAX ASSETS

Deferred tax assets are recognized for deductible temporary differences, unused tax losses and fair value reserves entries only if it is probable that future taxable profits (based on Group operational plans) are available to use those temporary differences and losses. The actual tax results in future periods may differ from the estimate made at the time the deferred taxes are recognized.

Other assumptions and estimates are disclosed in the respective notes relevant to the item where the assumptions or estimates were used for measurement.

4.5 PROVISIONS FOR OTHER LIABILITIES AND CHARGES

As mentioned under notes 2.21.1 and 3.2.2., Umicore's policy is to hedge to the maximum extent possible its transactional metal price risk, applying IFRS 9 based fair value hedge accounting to the extent there are market-based derivatives available. In the absence of such market-based derivatives or in the absence of obtaining fair value hedge accounting at all, the hedged items, including physical metal commitments, are kept at cost and are subject to the IAS 37 principles for onerous contracts. The onerous contract provision decision is based on an assessment of the level of commitment expected from a third party to honor its contractual obligations towards Umicore (in the event the metal price at the close would be substantially higher (lower) than the contracted metal price in the case of Umicore purchases (sales)). Both in 2018 and in 2019, the market volatility in the cobalt price in particular triggered such risk assessments. If instead of IAS 37 principles, IFRS 9 based fair value hedge accounting would have applied, a significant portion of such provisions would be recognized as mark-to-markets under Other Receivables or Payables.

The fast growth of Umicore's battery materials sales for transport applications in particular is increasing the group's exposure to the automotive industry end market. This industry has a practice of applying warranty and recall settlements related to potential product quality events (irrespective of whether any legal obligation exists). In view thereof, Umicore continued in 2019 its dedicated provisioning model for battery materials as introduced in 2018.

As at 31 December 2019, the carrying amount of the provisions for other liabilities and charges amount to € 80.7 million (€ 119.9 million in 2018).

4.6 PROVISIONS FOR UNCERTAINTY OVER INCOME TAX TREATMENTS

As mentioned under note F2.23.2, Umicore made a detailed assessment of all tax uncertainties within the Group as per IFRIC 23. The total impact of applying IFRIC 23 on Umicore's reserves as at 1 January 2019 amounted to € 42.2 million, as a result of the provisions recorded for tax uncertainties increasing from € 32.4 million to € 74.6 million. The total provisions for € 91.4 million are booked under the line "Income tax payable" of the balance sheet.

F5 GROUP COMPANIES

Below is a list of the main operating companies included in the consolidated financial statements.

		% INTEREST IN 2018	% INTEREST IN 2019
For continuing operations			
Argentina	Umicore Argentina S.A.	100.00	100.00
Australia	Umicore Marketing Services Australia Pty Ltd.	100.00	100.00
Austria	Oegussa GmbH	91.29	91.29
Belgium	Todini (BE 0834.075.185)	100.00	100.00
	Umicore Financial Services (BE 0428.179.081)	100.00	100.00
	Umicore Marketing Services Belgium (BE 0402.964.625)	100.00	100.00
	Umicore Specialty Materials Brugge (BE 0405.150.984)	100.00	100.00
Brazil	Coimpa Industrial Ltda	100.00	100.00
	Umicore Brasil Ltda	100.00	100.00
	Clarex	100.00	100.00
	Umicore Shokubai Brasil Industrial Ltda	60.00	60.00
	Umicore Catalisadores Ltda.	100.00	100.00
Canada	Umicore Canada Inc.	100.00	100.00
	Umicore Autocat Canada Corp.	100.00	100.00
	Umicore Precious Metals Canada Inc.	100.00	100.00
China	Umicore Marketing Services (Shanghai) Co., Ltd.	100.00	100.00
	Umicore Marketing Services (Hong Kong) Ltd.	100.00	100.00
	Umicore Autocat (China) Co. Ltd.	100.00	100.00
	Umicore Changxin Surface Technology (Jiangmen) Co., Ltd.	80.00	80.00
	Jiangmen Umicore Changxin New Materials Co., Ltd.	90.00	90.00
	Umicore Jubo Thin Film Products (Beijing) Co., Ltd.	100.00	100.00
	Umicore Shokubai (China) Co Ltd	60.00	60.00
	Umicore Platinum Engineered Materials (Suzhou) Co., Ltd.	100.00	100.00
	Umicore Catalyst (China) Co., Ltd.	100.00	100.00
Denmark	Umicore Denmark ApS	100.00	100.00
Finland	Umicore Finland OY	0.00	100.00
France	Umicore France S.A.S.	100.00	100.00
	Umicore IR Glass S.A.S.	100.00	100.00
	Umicore Autocat France S.A.S.	100.00	100.00
	Umicore Specialty Powders France S.A.S.	100.00	100.00
	Umicore Marketing Services France	100.00	100.00
	Todini France S.A.S.	100.00	100.00
Germany	Umicore AG & Co. KG (*)	100.00	100.00
	Allgemeine Gold- und Silberscheideanstalt AG	91.21	91.21
	Umicore Galvanotechnik GmbH	91.21	91.21
	Todini Deutschland GmbH	100.00	100.00
	Umicore Shokubai Germany GmbH	60.00	60.00
Italy	Todini and CO. S.P.A.	100.00	100.00
India	Umicore Autocat India Pvt LTD	100.00	100.00
	Umicore India Private Limited	100.00	100.00
	Todini Metals and Chemicals India Private Limited	0.00	70.00
Japan	Umicore Japan KK	100.00	100.00
	Umicore Shokubai Japan Co Ltd	60.00	60.00
South Korea	Umicore Korea Ltd.	100.00	100.00
	Umicore Marketing Services Korea Co., Ltd.	100.00	100.00
	Umicore Materials Korea Ltd	100.00	100.00
	Ordeg Co.,Ltd.	100.00	100.00
Liechtenstein	Umicore Thin Film Products AG	100.00	100.00
Luxemburg	Umicore International	100.00	100.00
	Umicore Autocat Luxembourg	100.00	100.00
Mexico	Todini Atlántica S.A. de C.V.	70.00	70.00
Netherlands	Schöne Edelmetaal BV	91.21	91.21
Philippines	Umicore Specialty Chemicals Subic Inc.	78.20	78.20
Poland	Umicore Autocat Poland sp. z o.o.	100.00	100.00
	Todini Europe sp. z o.o.	70.00	70.00
	Umicore Poland Sp. z o.o.	100.00	100.00
Portugal	Umicore Marketing Services Lusitana Metais Lda	100.00	100.00
South Africa	Umicore Marketing Services Africa (Pty) Ltd.	100.00	100.00
	Umicore Catalyst South Africa (Pty) Ltd.	65.00	65.00
Spain	Todini Quimica Ibérica, S.L.	100.00	100.00
Sweden	Umicore Autocat Sweden AB	100.00	100.00
Switzerland	Allgemeine Suisse SA	91.21	91.21
Taiwan	Umicore Thin Film Products Taiwan Co Ltd	100.00	100.00
Thailand	Umicore Precious Metals Thailand Ltd.	91.21	91.21
	Umicore Autocat (Thailand) Co., Ltd.	100.00	100.00
	Umicore Shokubai (Thailand) Co., Ltd.	60.00	60.00
United Kingdom	Umicore Coating Services Ltd.	100.00	100.00

		% INTEREST IN 2018	% INTEREST IN 2019
	Umicore Marketing Services UK Ltd	100.00	100.00
USA	Umicore USA Inc.	100.00	100.00
	Umicore Autocat USA Inc.	100.00	100.00
	Umicore Precious Metals NJ LLC	100.00	100.00
	Umicore Precious Metal Chemistry USA LLC	100.00	100.00
	Umicore Precious Metals USA Inc.	100.00	100.00
	Umicore Optical Materials USA Inc.	100.00	100.00
	Umicore Shokubai USA Inc	60.00	60.00
	Palm Commodities International	100.00	100.00
	Umicore Electrical Materials USA Inc.	100.00	100.00
	Umicore Specialty Materials Recycling, LLC.	100.00	100.00
	Umicore Catalyst USA, LLC	100.00	100.00

(*) As a result of the integration of Umicore AG & Co. KG into the consolidated accounts of Umicore and the disclosure of the annual accounts according to § 325 HGB (German Commercial Code), Umicore AG & Co. KG is exempted from setting up, auditing and disclosing consolidated financial statements and financial management reports according to Article 264 b of the HGB (German Commercial Code).

F6 FOREIGN CURRENCY MEASUREMENT

For the main currencies applicable within the Group's consolidated entities and investments, the prevailing rates used for translation into the Group's presentation currency (€), are as set out below. All subsidiaries, associates and joint-ventures have as functional currency the currency of the country in which they operate, except for Element Six Abrasives (Ireland) where the functional currency is the US dollar.

		CLOSING RATES		AVERAGE RATES	
		2018	2019	2018	2019
American Dollar	USD	1.145	1.123	1.181	1.119
UK Pound Sterling	GBP	0.895	0.851	0.885	0.878
Canadian Dollar	CAD	1.561	1.460	1.529	1.485
Swiss Franc	CHF	1.127	1.085	1.155	1.112
Japanese Yen	JPY	125.850	121.940	130.396	122.006
Brazilian Real	BRL	4.437	4.528	4.316	4.416
South African Rand	ZAR	16.459	15.777	15.619	16.176
Chinese Yuan	CNY	7.875	7.821	7.808	7.735
Thai Baht	THB	37.052	33.415	38.164	34.757
Korean Won (100)	KRW	12.779	12.963	12.991	13.053

F7 SEGMENT INFORMATION

BUSINESS GROUP INFORMATION 2018

Thousands of Euros	NOTES	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE & UNALLOCATED	ELIMINATIONS	TOTAL CONTINUED	TOTAL
Total segment turnover		**3,310,960**	**3,650,170**	**7,625,440**	**46,067**	**(915,900)**	**13,716,737**	**13,716,737**
External turnover		3,272,660	3,592,840	6,805,170	46,067	-	13,716,737	**13,716,737**
Inter-segment turnover		38,300	57,330	820,270	-	(915,900)	-	**-**
Total segment revenues (excluding metals)		**1,360,400**	**1,289,300**	**626,200**	**-**	**(4,830)**	**3,271,070**	**3,271,070**
External revenues		1,359,220	1,288,870	622,980	-	-	3,271,070	**3,271,070**
Inter-segment revenues		1,180	430	3,220	-	(4,830)	-	**-**
Operating result	**F9**	**162,329**	**250,423**	**125,802**	**(45,307)**	**-**	**493,247**	**493,247**
Recurring operating result		168,157	255,781	134,807	(50,539)	-	508,206	**508,206**
Non-recurring operating result		(5,828)	(5,357)	(9,006)	5,232	-	(14,959)	**(14,959)**
Equity method companies	**F9**	**-**	**855**	**-**	**5,865**	**-**	**6,720**	**6,720**
Recurring		-	855	-	4,503	-	5,358	**5,358**
Non-recurring		-	-	-	1,362	-	1,362	**1,362**
EBIT	**F9**	**162,329**	**251,279**	**125,802**	**(39,442)**	**-**	**499,967**	**499,967**
Recurring EBIT		168,157	256,636	134,807	(46,036)	-	513,564	**513,564**
Non-recurring EBIT		(5,828)	(5,357)	(9,006)	6,594	-	(13,597)	**(13,597)**
Depreciation and amortisation	**F9**	**69,088**	**66,274**	**59,873**	**11,343**	**-**	**206,577**	**206,577**
Recurring		69,088	66,274	59,873	11,343	-	206,577	**206,577**
EBITDA	**F9**	**231,417**	**317,552**	**185,674**	**(28,099)**	**-**	**706,544**	**706,544**
Recurring EBITDA		237,245	322,910	194,680	(34,694)	-	720,141	**720,141**
Consolidated total assets		**2,031,404**	**3,741,418**	**1,132,969**	**478,013**	**(1,330,495)**	**6,053,310**	**6,053,310**
Segment assets		2,031,404	3,706,334	1,132,969	361,725	(1,330,495)	5,901,938	**5,901,938**
Investments in associates		-	35,084	-	116,288	-	151,372	**151,372**
Consolidated total liabilities		**814,036**	**1,948,071**	**593,408**	**1,368,954**	**(1,330,495)**	**3,393,974**	**3,393,974**
Capital Employed at 31/12 of previous year	F31	1,149,585	1,205,844	474,522	173,593	-	3,003,545	**3,003,545**
Capital Employed at 30/06	F31	1,193,144	1,451,330	455,680	185,221	-	3,285,375	**3,285,374**
Capital Employed at 31/12	F31	1,264,885	1,769,135	546,396	221,997	-	3,802,413	**3,802,414**
Average Capital Employed in first half year	F31	1,171,365	1,328,587	465,101	179,407	-	3,144,460	**3,144,459**
Average Capital Employed in second half year	F31	1,229,015	1,610,233	501,038	203,609	-	3,543,894	**3,543,894**
Average Capital Employed in the year	**F31**	**1,200,190**	**1,469,410**	**483,069**	**191,508**	**-**	**3,344,177**	**3,344,177**
ROCE	F31	14.01%	17.47%	27.91%	(24.04%)	0.00%	15.36%	**15.36%**
Capital expenditure	**F34**	**78,797**	**316,063**	**68,431**	**14,298**	**-**	**477,589**	**477,589**
Total R&D expenditure	**F9**	**135,523**	**38,845**	**15,196**	**6,875**	**-**	**196,440**	**196,440**
R&D recognized in operating expenses	F9	120,514	33,608	15,196	6,875	-	176,193	**176,193**
R&D capitalized as intangible assets	F34	15,010	5,237	-	-	-	20,247	**20,247**

BUSINESS GROUP INFORMATION 2019

Thousands of Euros	NOTES	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE & UNALLOCATED	ELIMINATIONS	TOTAL CONTINUED	TOTAL
Total segment turnover		**4,539,213**	**2,938,485**	**11,319,935**	**58,778**	**(1,371,330)**	**17,485,081**	**17,485,081**
External turnover		4,444,620	2,877,280	10,104,403	58,778	–	17,485,081	**17,485,081**
Inter-segment turnover		94,593	61,205	1,215,532	–	(1,371,330)	–	**–**
Total segment revenues (excluding metals)		**1,459,902**	**1,225,408**	**680,981**	**–**	**(5,667)**	**3,360,624**	**3,360,624**
External revenues		1,458,227	1,225,242	677,155	–	–	3,360,624	**3,360,624**
Inter-segment revenues		1,675	166	3,826	–	(5,667)	–	**–**
Operating result	**F9**	**184,884**	**149,065**	**190,086**	**(53,588)**	**–**	**470,447**	**470,447**
Recurring operating result		185,270	177,164	188,069	(52,371)	–	498,131	**498,131**
Non-recurring operating result		(386)	(28,099)	2,017	(1,217)	–	(27,684)	**(27,684)**
Equity method companies	**F9**	**–**	**5,382**	**–**	**3,323**	**–**	**8,705**	**8,705**
Recurring		–	5,382	–	5,407	–	10,789	**10,789**
Non-recurring		–	–	–	(2,084)	–	(2,084)	**(2,084)**
EBIT	**F9**	**184,884**	**154,447**	**190,086**	**(50,265)**	**–**	**479,152**	**479,152**
Recurring EBIT		185,270	182,546	188,069	(46,964)	–	508,920	**508,920**
Non-recurring EBIT		(386)	(28,099)	2,017	(3,301)	–	(29,768)	**(29,768)**
Depreciation and amortisation	**F9**	**78,507**	**88,300**	**62,313**	**14,918**	**–**	**244,038**	**244,038**
Recurring		78,507	88,300	62,313	14,918	–	244,038	**244,038**
EBITDA	**F9**	**263,390**	**242,747**	**252,399**	**(35,346)**	**–**	**723,190**	**723,190**
Recurring EBITDA		263,776	270,846	250,382	(32,045)	–	752,959	**752,959**
Consolidated total assets		**2,747,773**	**3,781,786**	**1,345,517**	**808,926**	**(1,660,612)**	**7,023,390**	**7,023,390**
Segment assets		2,747,773	3,747,271	1,345,517	692,799	(1,660,612)	6,872,748	**6,872,748**
Investments in associates		–	34,515	–	116,127	–	150,642	**150,642**
Consolidated total liabilities		**1,254,284**	**1,435,241**	**947,340**	**2,386,672**	**(1,660,612)**	**4,362,925**	**4,362,925**
Capital Employed at 31/12 of previous year	F31	1,264,885	1,769,135	546,396	221,997	–	3,802,413	**3,802,414**
Capital Employed at 30/06	F31	1,314,779	1,982,482	481,776	195,514	–	3,974,551	**3,974,551**
Capital Employed at 31/12	F31	1,536,950	2,323,770	405,422	175,849	–	4,441,991	**4,441,991**
Average Capital Employed in first half year	F31	1,289,832	1,875,809	514,086	208,756	–	3,888,482	**3,888,482**
Average Capital Employed in second half year	F31	1,425,864	2,153,126	443,599	185,682	–	4,208,271	**4,208,271**
Average Capital Employed in the year	**F31**	**1,357,848**	**2,014,467**	**478,842**	**197,219**	**–**	**4,048,377**	**4,048,377**
ROCE	F31	13.64%	9.06%	39.28%	(23.81%)	0.00%	12.57%	**12.57%**
Capital expenditure	**F34**	**103,960**	**348,217**	**82,023**	**18,990**	**–**	**553,189**	**553,189**
Total R&D expenditure	**F9**	**146,624**	**45,619**	**8,313**	**9,989**	**–**	**210,546**	**210,546**
R&D recognized in operating expenses	F9	132,011	30,687	8,313	4,875	–	175,885	**175,885**
R&D capitalized as intangible assets	F34	14,614	14,933	–	5,114	–	34,660	**34,660**

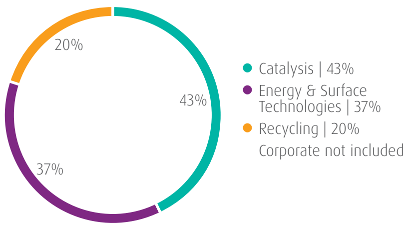
GEOGRAPHICAL INFORMATION 2018

Thousands of Euros	NOTES	EUROPE	OF WHICH BELGIUM	ASIA-PACIFIC	NORTH AMERICA	SOUTH AMERICA	AFRICA	TOTAL
Total segment turnover		6,443,219	117,143	4,140,094	2,528,858	441,024	163,541	**13,716,737**
Total non-current assets		1,036,033	506,347	863,947	151,709	42,894	6,949	**2,101,532**
Capital expenditure	F34	131,551	103,707	319,374	21,298	3,914	1,452	**477,589**

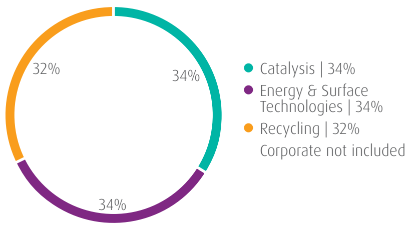
GEOGRAPHICAL INFORMATION 2019

Thousands of Euros	NOTES	EUROPE	OF WHICH BELGIUM	ASIA-PACIFIC	NORTH AMERICA	SOUTH AMERICA	AFRICA	TOTAL
Total segment turnover		8,061,295	149,183	4,850,973	3,862,500	528,751	181,563	**17,485,081**
Total non-current assets		1,311,600	576,778	1,115,273	144,541	48,186	7,438	**2,627,038**
Capital expenditure	F34	206,051	156,049	316,729	18,012	12,395	2	**553,189**

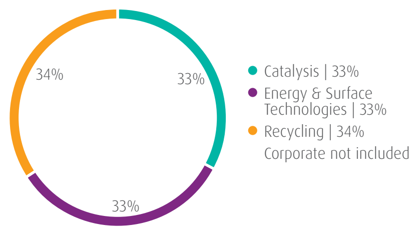
REVENUES (EXCLUDING METAL) PER BUSINESS GROUP



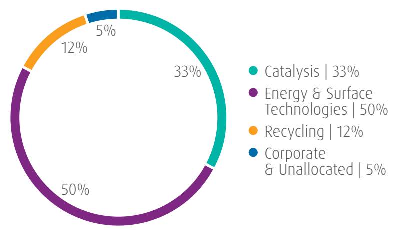
RECURRING EBITDA PER BUSINESS GROUP



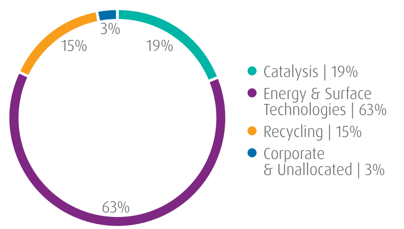
RECURRING EBIT PER BUSINESS GROUP



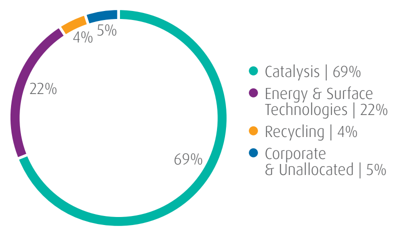
CAPITAL EMPLOYED, AVERAGE PER BUSINESS GROUP



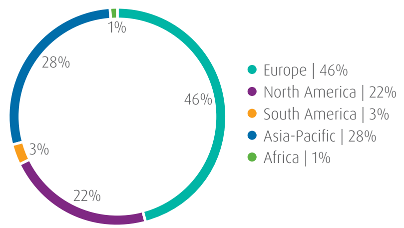
CAPITAL EXPENDITURE PER BUSINESS GROUP



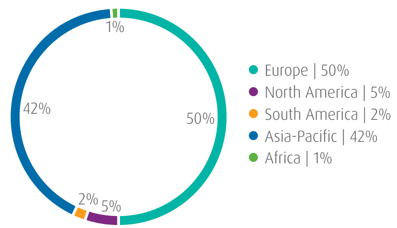
R&D EXPENDITURE PER BUSINESS GROUP



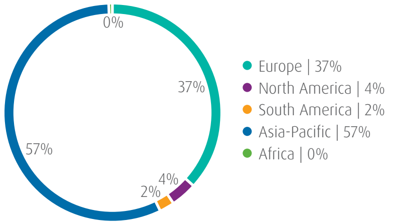
TURNOVER BY REGION



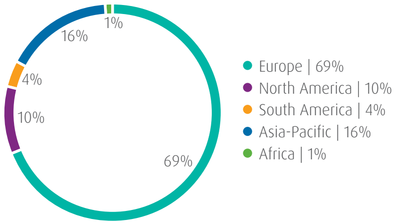
NON-CURRENT ASSETS BY REGION



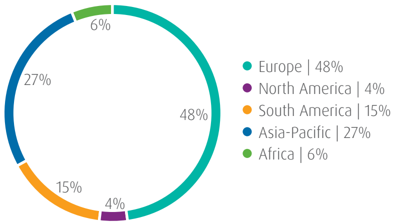
CAPITAL EXPENDITURE BY REGION



EMPLOYEE COMPENSATION & BENEFITS BY REGION



INCOME TAXES BY REGION



Segment information is presented in respect of the Group's business segments as defined below.

The segment results, assets and liabilities include items directly attributable to the segment as well as those elements that can reasonably be allocated to a segment.

The pricing of inter-segment sales is based on an arm's length transfer pricing system. In the absence of relevant market price references, 'cost plus' mechanisms are used. Segment turnover and revenue is taking into account intragroup operations. Those are mainly related to recycling services and sales of refined metal from the recycling segment to the other group segments and are important to assess the performance of the segments concerned.

Since these transactions cannot be considered as external operations, they are eliminated at the group level, to present a net view.

The Group's business segments have no single external customer that amounts to 10 per cent or more of the Group's revenue.

BUSINESS GROUPS

The Group is organized into the following reporting segments:

CATALYSIS

The segment includes the Automotive Catalysts and Precious Metals Chemistry business units. Catalysis provides automotive catalysts for gasoline and diesel light and heavy-duty diesel applications, including on-road and non-on road vehicles. The business group also offers stationary catalysis for industrial emissions control and produces precious metals-based compounds and catalysts for use in fuel cell applications and in the pharmaceutical and fine chemicals industries.

ENERGY & SURFACE TECHNOLOGIES

The segment includes the Cobalt & Specialty Materials, Electro-Optic Materials, Electroplating and Rechargeable Battery Materials business units. Energy & Surface Technologies' products are found in applications used in the production and storage of clean energy and in a range of applications for surface technologies that bring specific properties and functionalities to end products. All the activities offer a closed loop service for the customers. This segment includes the associates Ganzhou Yi Hao Umicore Industries and Jiangmen Chancsun Umicore Industry.

RECYCLING

The segment consists of the business units Precious Metals Refining, Jewelry & Industrial Metals and Precious Metals Management. Recycling treats complex waste streams containing precious and other specialty metals. The recycling operations can recover 20 of these metals from a wide range of input materials ranging from industrial residues to end-of-life materials. Other activities include production of precious metals-based materials that are essential for applications as diverse as high-tech glass production, electrics and electronics.

CORPORATE

Corporate covers corporate activities, shared operational functions and the Group's Research, Development & Innovation unit. Umicore's shareholdings in Element Six Abrasives and Ieqsa are also included in Corporate.

In the geographical segment information, the figures presented as non-current assets exclude the amounts for long-term investments, non-current loans granted, non-current receivables, deferred tax assets and assets for employee benefits as required by IFRS 8. Performance of the segments is reviewed by the chief operating decision maker based on the recurring EBIT/ operating result. As illustrated in the table above, the difference between the recurring operating result and the operating result as presented in the Income Statement consists of the non-recurring operating result for which definitions are given in the glossary.

Associate companies are allocated to the business group with the closest fit from a market segment perspective.

F8 BUSINESS COMBINATIONS AND ACQUISITIONS OF ASSOCIATES AND JOINT VENTURES

At the end of November 2019, Umicore completed the acquisition of the cobalt refining and cathode precursor activities in Kokkola, Finland, from Freeport Cobalt. The acquisition of the Kokkola refinery and cathode precursor production marks an important step in expanding Umicore's battery materials value chain. With R&D, refining, precursor production, cathode materials production and battery recycling operations located in Europe, Umicore will be ideally placed to serve the European operations of its battery cell and automotive customers with a fully integrated, sustainable and local battery materials supply chain. Through this European battery materials supply chain, Umicore will contribute significantly to the European Union's plans to create a competitive and sustainable battery ecosystem in Europe. This activity is integrated in Umicore's Rechargeable Battery Materials unit, within the segment "Energy & Surface Technologies".

The closing of the transaction was completed at the end of November 2019 and a preliminary opening balance sheet has been prepared as of 1 December but may still be subject to adjustments on a number of restatements (purchase price and fair value exercise of the non-current assets mainly) before end of November 2020. The main fair value adjustments in the opening balance sheet concerned the line Property, Plant and Equipment, Intangible assets, Inventories and deferred taxes. The total purchase price including the net cash position amounted to € 241.9 million, and the net value of the assets bought was € 227.3 million resulting in a goodwill of € 14.6 million. No result has been considered for the December closing, taking into account the materiality as the closing was made at year end.

Thousands of Euros	NOTES	FAIR VALUE 2019
Intangible assets		8,223
Property, plant & equipment		130,904
Non-current assets		**139,128**
Inventories		84,314
Accounts receivables		22,213
Cash and cash equivalent		53,742
Current assets		**160,269**
Non-current financial debt		3,181
Deferred tax liabilities		14,972
Environmental provisions		3,438
Non-current liabilities		**21,590**
Trade and other payables		50,477
Current liabilities		**50,477**
Net assets acquired		**227,330**
Goodwill	F15	14,549
Group share purchase price in cash		**(241,880)**
Net cash & cash equivalent acquired		**53,742**
Net cash out for acquisition of subsidiaries		**(188,138)**

F9 RESULT FROM OPERATING ACTIVITIES

Thousands of Euros	2018	2019
Sales	13,602,160	17,305,098
Services	114,576	179,983
Turnover (1)	**13,716,736**	**17,485,081**
Other operating income (2)	**101,559**	**121,078**
OPERATING INCOME OF CONTINUING OPERATIONS	**13,818,295**	**17,606,159**
Raw materials and consumables used (3)	**(11,855,284)**	**(15,639,139)**
Payroll and related benefits	**(731,054)**	**(775,919)**
Depreciation of fixed assets	(206,577)	(244,038)
Impairment loss on fixed assets	(6,780)	(23,602)
Inventory and bad debt provisions	(13,805)	(39,926)
Depreciation and impairment results (4)	**(227,162)**	**(307,567)**
Services and outsourced refining and production costs	(412,970)	(421,547)
Royalties, licence fees, consulting and commissions	(33,808)	(41,347)
Other operating expenses	(6,664)	(3,515)
Increase and decrease in provisions	(78,546)	28,458
Use of provisions	17,131	26,413
Capital losses on disposal of assets	(1,736)	(2,258)
Other operating expenses (5)	**(516,593)**	**(413,795)**
OPERATING EXPENSES OF CONTINUING OPERATIONS	**(13,330,093)**	**(17,136,420)**

Turnover refers to turnover from customers as per IFRS 15. The further disaggregation is detailed in note F7. As described in the accounting policy 2.20, the revenue from contracts with customers are recognized at a point in time.

1) Services mainly include the revenues from tolling contracts.
2) Other operating income for continuing operations mainly include re-invoicing of costs to third parties (€ 39.2 million in 2019 and € 44.9 million in 2018), operating grants (€ 10.3 million in 2019 and € 8.9 million in 2018), royalties and license fees (€ 9.0 million in 2019 and € 9.1 million in 2018), income linked to emission rights (€ 5.5 million in 2019 and € 2.8 million in 2018), insurance recovery (€ 27.0 million in 2019 and € 2.0 million in 2018), various interest and penalties for late payments (€ 1.2 million in 2019 and € 6.9 million in 2018) and gains on disposal of assets (€ 9.7 million in 2019 and € 2.8 million in 2018).
3) Raw materials and consumables used include water, gas and electricity for € 100.2 million in 2019 (€ 95.8 million in 2018) for continuing operations.
4) Depreciation increased mainly due to the depreciation related to the right of use asset accounted for lease as per IFRS 16 (€ 16.8 million in 2019) and to higher depreciation charges from recent investments in Energy and Surface Technologies. Impairments of fixed assets have been taken and transferred in non-recurring result. Those are mainly related to the discontinuation of the activities in Wickliffe (US). The movements in provisions are related to environmental provisions and provisions for other liabilities and charges as per notes F29 and F30.
5) The introduction of IFRS 16 (see note F2.23.1) resulted in a decrease of the rental expenses recognized in the other operating expenses (€ 17.5 million in 2019).

Taxes other than income taxes included in other operating expenses amount to € 20.8 million (€ 30.2 million in 2018) for continuing operations.

R&D EXPENDITURE

Thousands of Euros	NOTES	2018	2019
R&D recognized in Other operating expenses		176,193	175,885
R&D capitalized as intangible assets	F14	20,247	34,660
Total R&D expenditure for continuing operations		**196,440**	**210,546**

Total R&D expenditure for continuing operations was € 210.6 million in the fully consolidated companies. The part of the R&D expenditures that is directly recognized in the other operating expenses amounts to € 175.9 million.

NON-RECURRING ELEMENTS INCLUDED IN THE RESULT, INCLUDING DISCONTINUED OPERATIONS

				2018			2019
Thousands of Euros	NOTES	TOTAL	RECURRING	NON-RECURRING	TOTAL	RECURRING	NON-RECURRING
Turnover		**13,716,737**	13,716,737	-	**17,485,080**	17,485,080	-
Other operating income		**101,559**	93,759	7,800	**121,078**	118,217	2,861
Operating income		**13,818,296**	**13,810,496**	**7,800**	**17,606,158**	**17,603,297**	**2,861**
Raw materials and consumables used		**(11,855,284)**	(11,851,572)	(3,712)	**(15,639,139)**	(15,639,139)	-
Payroll and related benefits		**(731,054)**	(730,844)	(210)	**(775,919)**	(775,701)	(218)
Depreciation and impairment results		**(227,162)**	(216,195)	(10,966)	**(307,567)**	(283,690)	(23,877)
of which depreciation and amortisation		**(206,577)**	(206,577)	-	**(244,038)**	(244,038)	-
Other operating expenses		**(516,593)**	(503,826)	(12,767)	**(413,795)**	(407,708)	(6,087)
Operating expenses		**(13,330,094)**	**(13,302,438)**	**(27,655)**	**(17,136,420)**	**(17,106,238)**	**(30,182)**
Income from other financial investments		**5,044**	147	4,896	**706**	1,069	(363)
Result from operating activities		**493,246**	**508,205**	**(14,959)**	**470,444**	**498,129**	**(27,684)**
Net contribution from equity method companies		**6,720**	5,358	1,362	**8,705**	10,789	(2,084)
EBIT		**499,967**	**513,564**	**(13,597)**	**479,152**	**508,920**	**(29,768)**
EBITDA		**706,544**	**720,141**	**(13,597)**	**723,190**	**752,959**	**(29,768)**
Finance cost	F11	**(68,883)**	(68,883)	-	**(83,238)**	(83,238)	-
Income taxes	F13	**(103,240)**	(107,238)	3,998	**(96,692)**	(102,538)	5,846
Net result		**327,843**	**337,442**	**(9,599)**	**299,219**	**323,142**	**(23,923)**
of which minority shares		**10,860**	11,012	(152)	**11,428**	11,428	-
of which group shares		**316,984**	326,430	(9,447)	**287,791**	311,714	(23,923)

Non-recurring items had a negative impact of € 30 million on EBIT. Restructuring charges accounted for € 26 million and were mainly related to the discontinuation of the activities at the Wickliffe site in the business unit Cobalt & Specialty Materials. Umicore's definition of non-recurring items also includes impairments of permanently tied-up metal inventories. As mentioned in the accounting policies, Umicore applies as from 1 January 2019 the IAS 16 and IAS 36 principles to value its permanently tied-up metal inventories which implies that these inventories are part of Umicore's annual impairment testing of the business (cash generating units) that carry those inventories. The close of 31 December 2019 identified no need for impairments on the permanently tied-up metal inventories. The impact of non-recurring charges on the net result (Group share) amounted to € 24 million.

F10 PAYROLL AND RELATED BENEFITS

Thousands of Euros	2018	2019
Wages, salaries and direct social advantages	(538,855)	(576,097)
Other charges for personnel	(34,211)	(40,318)
Temporary staff	(13,058)	(10,781)
Share-based payments	(11,150)	(8,211)
Employee salaries	**(597,274)**	**(635,407)**
Employer's social security	**(101,028)**	**(102,364)**
Defined benefit contributions	(15,602)	(28,833)
Contribution to defined contribution plan	(15,781)	(19,664)
Employer's voluntary contributions (other)	(3,956)	(4,120)
Pensions paid directly to beneficiaries	(3,598)	(3,974)
Provisions for employee benefits (-increase / + use and reversals)	6,185	18,444
Pensions and other benefits	**(32,752)**	**(38,147)**
PAYROLL AND RELATED BENEFITS OF CONTINUING OPERATIONS	**(731,054)**	**(775,919)**

AVERAGE HEADCOUNT IN CONSOLIDATED COMPANIES	2018	2019
Executives and managerial staff	1,816	1,934
Non-managers	8,276	8,852
Total for continuing operations	10,092	10,786

The line "Provisions for employee benefits" also includes contribution of the employer to defined benefit plans, mainly in Belgium.

SHARE-BASED PAYMENTS

Thousands of Euros	NOTES	2018	2019
Number of stock options granted	F28	**1,182,625**	**1,221,000**
Valuation model		Present Economic Value	
Assumed volatility (% pa)		25.00	25.00
Risk-free interest rate (% pa)		0.120	(0.370)
Dividend increase (% pa)		10.00	10.00
Rate of pre-vesting forfeiture (%pa)		NA	NA
Rate of post-vesting leaving (%pa)		10.00	7.50
Minimum gain threshold (% pa)		30.00	15.00
Proportion who exercise given minimum gain achieved (% pa)		100.00	100.00
Fair value per granted instrument determined at the grant date (EUR)		6.89	5.09
Total fair value of options granted		**8,148**	**6,211**
54,800 shares granted at 40.90 EUR		2,241	-
10,002 shares granted at 49.84 EUR		498	-
5,700 shares granted at 45.87 EUR		261	-
43,700 shares granted at 34.08 EUR		-	1,489
7,400 shares granted at 33.30 EUR		-	246
10,000 shares granted at 26.43 EUR		-	264
Total fair value of shares granted		**3,001**	**2,000**
TOTAL SHARE-BASED PAYMENTS CONTINUING OPERATIONS		**11,150**	**8,211**

The Group recognized a share-based payment expense of € 8.2 million during the year for continuing operations.

The part of this expense related to stock options is calculated by an external actuary using the Present Economic Value model which takes into account all features of the stock option plans and the volatility of the underlying stock. This volatility has been determined using the historical volatility of the Group shareholders' return over different averaging periods and different terms. No other market condition has been included on the basis of calculation of fair market value.

The free share part of the expense is valued at the market price of the shares at the grant date. In 2019, shares have been granted to top management resulting in an extra charge of € 2.0 million for continuing operations.

The cash discounts that the authorities give back to Umicore Belgium on the social security contributions, relating to incentives regarding shift premiums, overtime and R&D, amongst others, are disclosed under the item "Employer's social security".

F11 FINANCE COST – NET

Thousands of Euros	2018	2019
Interest income	5,842	4,585
Interest expenses	(39,059)	(45,627)
Discounting of non-current provisions	(3,394)	(5,942)
Foreign exchange gains and losses	(26,840)	(31,618)
Other financial income	–	222
Other financial expenses	(5,432)	(4,858)
Total of continuing operations	**(68,883)**	**(83,238)**

The net interest charge in 2019 totaled € 41.0 million, in line with the increase of the indebtedness. The net interest charge contains € 0.8 million interest related to leases as per IFRS 16 (see note F2.23.1).

The discounting of non-current provisions relates mainly to employee benefits provisions and to environmental provisions. This amount is influenced by the present value of these liabilities, which in turn is influenced by changes in the discount rate, by the cash-out profile and by the recognition of new non-current liabilities. Most of the discounting results in 2019 were booked in Germany and to a lesser extent in Belgium and Brazil.

Foreign exchange results include realized exchange results and the unrealized translation adjustments on monetary items using the closing rate of the period. The accelerating growth in Asia results in higher forex costs including the cost of forward points in hedge instruments.

They also include fair value gains and losses on other currency financial instruments (see Note F33). Other financial expenses include payment discounts, bank expenses and other financial fees incurred.

F12 INCOME FROM OTHER FINANCIAL INVESTMENTS

Thousands of Euros	2018	2019
Capital gains and losses on disposal of financial investments	4,925	547
Dividend income	124	133
Interest income from financial assets	(6)	26
Total for continuing operations	**5,044**	**706**

F13 INCOME TAXES

Thousands of Euros	2018	2019
INCOME TAX EXPENSE		
Recognized in the Income Statement		
Current income tax	(112,599)	(113,229)
Deferred income tax	9,359	16,537
Total tax expense for continuing operations	**(103,240)**	**(96,692)**
RELATIONSHIP BETWEEN TAX EXPENSE (INCOME) AND ACCOUNTING PROFIT		
Result from operating activities	493,246	470,444
Financial result	(68,883)	(83,238)
Profit (loss) before income tax of consolidated companies for continuing operations	**424,363**	**387,206**
Weighted average theoretical tax rate (%)	(24.13)	(24.81)
Income tax calculated at the weighted average theoretical tax rate for continuing operations	**(102,385)**	**(96,076)**
Tax effect of:		
Expenses not deductible for tax purposes	(2,009)	(4,276)
Tax-exempted revenues	551	4,797
Dividends from consolidates companies & Associates	(1,798)	(1,596)
Tax incentives deductible from the taxable base	17,383	425
Tax computed on other basis	(799)	(1,377)
Utilisation of previously unrecognized tax losses	8,321	1,443
Write-down (or reverse of previous write-down) of DTA	(14,579)	(3,817)
Change in applicable tax rate	1,732	3,720
Tax holidays	13,675	15,333
Other tax credits (excluding R&D tax credits)	4,575	585
Non recoverable foreign withholding taxes	(10,325)	(11,552)
Previous years adjustments	(13,589)	(114)
Other	(3,993)	(4,187)
Tax expense at the effective tax rate for the year	**(103,240)**	**(96,692)**

The weighted average theoretical tax rate evolved from 24.1% in 2018 to 24.8% in 2019 for the continuing operations.

Excluding the impact of non-recurring items, the recurring effective tax rate for 2019 was 24.7%. This compares to the 24.4% in 2018.

F14 INTANGIBLE ASSETS OTHER THAN GOODWILL

Thousands of Euros	DEVELOPMENT EXPENSES CAPITALISED	CONCESSIONS, PATENTS, LICENCES, ETC.	SOFTWARE	CO_2 EMISSION RIGHTS	OTHER INTANGIBLE ASSETS	TOTAL
At the beginning of previous year						
Gross value	117,039	113,120	136,625	7,382	34,466	**408,632**
Accumulated amortisation	(74,152)	(28,402)	(106,874)	–	(13,081)	**(222,509)**
Net book value at the beginning of previous year	**42,887**	**84,718**	**29,751**	**7,382**	**21,385**	**186,122**
acquisition through business combinations	–	2,989	–	–	21,408	**24,397**
additions	20,247	5,007	1,997	2,929	1,577	**31,758**
disposals	–	(12,324)	–	–	–	**(12,324)**
amortisation charged (included in "Depreciation and impairments")	(10,801)	(10,709)	(9,027)	–	(6,341)	**(36,878)**
impairment losses recognized (included in "Depreciation and impairments")	(376)	–	(371)	–	–	**(747)**
emission rights allowances	–	–	–	795	–	**795**
translation differences	637	(1)	(32)	–	464	**1,069**
other movements	(5,241)	–	3,611	–	2,252	**621**
At the end of previous year	**47,353**	**69,680**	**25,930**	**11,106**	**40,745**	**194,814**
Gross value	131,273	107,319	140,054	11,106	60,584	**450,336**
Accumulated amortisation	(83,920)	(37,639)	(114,124)	–	(19,839)	**(255,522)**
Net book value at the end of previous year	**47,353**	**69,680**	**25,930**	**11,106**	**40,745**	**194,814**
acquisition through business combinations	–	–	–	–	8,223	**8,223**
additions	34,660	1,495	1,115	4,925	16,167	**58,362**
disposals	–	(6,483)	–	–	–	**(6,483)**
amortisation charged (included in "Depreciation and impairments")	(11,129)	(9,878)	(9,464)	–	(5,742)	**(36,214)**
impairment losses recognized (included in "Depreciation and impairments")	(2,771)	–	(497)	–	–	**(3,268)**
emission rights allowances	–	–	–	3,184	–	**3,184**
translation differences	282	5	82	(2)	251	**619**
other movements	(14,627)	(90)	9,783	0	(150)	**(5,085)**
At the end of the year	**53,768**	**54,730**	**26,949**	**19,213**	**59,494**	**214,154**
Gross value	151,880	101,229	149,792	19,213	85,216	**507,329**
Accumulated amortisation	(98,113)	(46,499)	(122,842)	–	(25,721)	**(293,176)**
Net book value for continuing operations	**53,768**	**54,730**	**26,949**	**19,213**	**59,494**	**214,154**

"Additions" are mainly explained by capitalized expenses in new information systems and internally generated developments. € 29.2 million are linked to own productions, of which € 19.3 million are development expenses. The acquisitions through business combination are related to the acquisition of cobalt refining and cathode precursor activities at Kokkola (Finland).

The line "disposals" includes the re-evaluation of the earnout related to the acquisition in 2016 of three NMC battery material patent families from 3M.

The line 'other movements' mainly includes the transfer between intangible assets in progress (included under "other intangible assets") and the other categories of intangible assets. The other intangible assets contain intangible assets in progress but also the IP and business portfolio acquired through business combinations (Materia in 2018, Kokkola in 2019).

There are no pledges on, or restrictions to, the title on intangible assets, other than disclosed in note F35.

F15 GOODWILL

Thousands of Euros	31/12/2018	31/12/2019
At the end of the previous year		
Gross value	158,536	158,457
Accumulated impairment losses	(15,851)	(15,966)
Net book value at the end of previous year	**142,685**	**142,491**
acquisition through business combinations	-	14,549
adjustment from subsequent identification of fair value of assets and liabilities	(1,701)	-
impairment losses (included in "Depreciation and impairment results")	-	(1,422)
translation differences	1,507	1,087
At the end of the year	**142,491**	**156,705**
Gross value	158,457	169,915
Accumulated impairment losses	(15,966)	(13,210)
Net book value for continuing operations	**142,491**	**156,705**

This table includes goodwill related to fully consolidated companies only. Goodwill relating to companies accounted for by the equity method is detailed in note F17.

The change of the period relates mainly to the goodwill booked on the acquisition in Finland (see Note F8).

The goodwill has been allocated to the primary segments as follows:

Thousands of Euros	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	TOTAL
31/12/2018	50,012	74,232	18,247	**142,491**
31/12/2019	50,037	88,357	18,311	**156,705**

Management tests annually whether goodwill has suffered any impairment in accordance with the accounting policy stated in note F2. The recoverable amounts of cash-generating units to which goodwill is allocated have been determined based on value-in-use calculations by means of discounted cash-flow modelling on the basis of the Group's operational plans which typically look forward 5 years. On macroeconomic indicators such as currency and metal prices, the testing uses typically prevailing market conditions. The rates used are typically the ones observed on international exchanges in the last quarter of the year.

The 2019 modelling used an average tax rate of 25.0% (in 2018 average tax rate of 25.5% was used) and a weighted average cost of capital post-tax of 8.5% (same as in 2018). Terminal values were determined on the basis of a perpetual growth rate of on average 2% (same as in 2018). Inflation rates were based on guidance from national and international institutes such as the NBB or ECB.

F16 PROPERTY, PLANT AND EQUIPMENT

Thousands of Euros	LAND AND BUILDINGS	PLANT, MACHINERY AND EQUIPMENT	FURNITURE AND VEHICLES	OTHER TANGIBLE ASSETS	CONSTRUCTION IN PROGRESS AND ADVANCE PAYMENTS	TOTAL
At the beginning of previous year						
Gross value	859,433	1,817,170	212,731	15,305	300,874	**3,205,515**
Accumulated depreciation	(452,186)	(1,281,251)	(156,368)	(14,298)	–	**(1,904,103)**
Net book value at the beginning of previous year	**407,247**	**535,919**	**56,363**	**1,007**	**300,874**	**1,301,411**
acquisition through business combinations	16,282	8,840	20	548	149	**25,838**
additions	4,418	21,958	10,313	142	429,158	**465,989**
disposals	(1,276)	(2,684)	(300)	(13)	(604)	**(4,877)**
depreciations (included in "Depreciation and impairments")	(32,772)	(120,434)	(16,082)	(163)	–	**(169,452)**
net impairment losses recognized (included in "Depreciation and impairments")	(1,513)	(4,192)	(273)	(1)	–	**(5,980)**
translation differences	1,465	(1,196)	(158)	22	(1,060)	**(928)**
other movements	91,501	220,937	17,755	(577)	(339,726)	**(10,111)**
At the end of previous year	**485,351**	**659,148**	**67,638**	**964**	**388,791**	**1,601,891**
of which leasing						
Gross value	3,300	43	31	–	–	**3,374**
Accumulated depreciation	(399)	(20)	(31)	–	–	**(450)**
Net book value at the end of previous year for leases	**2,901**	**23**	**–**	**–**	**–**	**2,924**
At begin of the year without leases						
Gross value	973,873	2,090,262	226,496	14,678	388,791	**3,694,100**
Accumulated depreciation	(491,424)	(1,431,137)	(158,858)	(13,715)	–	**(2,095,133)**
Net book value at the end of previous year without leases	**482,450**	**659,125**	**67,638**	**964**	**388,791**	**1,598,967**
acquisition through business combinations	31,638	75,142	517	–	20,426	**127,724**
additions	16,393	36,164	9,535	69	467,326	**529,487**
disposals	(1,509)	(2,772)	(419)	(10)	(2,369)	**(7,079)**
depreciations (included in "Depreciation and impairments")	(37,030)	(135,690)	(18,086)	(228)	–	**(191,035)**
net impairment losses recognized (included in "Depreciation and impairments")	(2,454)	(16,169)	(289)	–	–	**(18,911)**
translation differences	1,642	944	71	12	(1,844)	**825**
other movements	168,212	231,710	16,534	314	(410,962)	**5,809**
At the end of the financial year	**659,342**	**848,457**	**75,500**	**1,120**	**461,368**	**2,045,788**
Gross value	1,189,490	2,402,378	242,362	15,070	461,369	**4,310,669**
Accumulated depreciation	(530,148)	(1,553,922)	(166,862)	(13,950)	–	**(2,264,881)**
Net book value for continuing operations without lease	**659,343**	**848,457**	**75,500**	**1,120**	**461,369**	**2,045,788**
Leasing at begining of the year						
Gross value	3,300	43	31	–	–	**3,374**
Accumulated amortisation	(399)	(20)	(31)	–	–	**(450)**
Net book value for leasing	**2,901**	**23**	**–**	**–**	**–**	**2,924**
change in accounting policies	25,788	77	11,396	–	–	**37,262**
acquisition through business combinations	2,681	–	–	500	–	**3,181**
additions	15,466	21	6,780	–	–	**22,266**
depreciations (included in "Depreciation and impairments")	(11,063)	(44)	(5,722)	–	–	**(16,829)**
translation differences	72	–	8	–	–	**80**
At the end of the financial year for leasing	**35,845**	**77**	**12,462**	**500**	**–**	**48,884**
Gross value	47,341	135	18,175	500	–	**66,152**
Accumulated amortisation	(11,496)	(58)	(5,713)	–	–	**(17,268)**
Net book value for leasing	**35,845**	**77**	**12,462**	**500**	**–**	**48,884**
Tangible asset including leasing						
Gross value	1,236,831	2,402,514	260,537	15,570	461,369	**4,376,821**
Accumulated amortisation	(541,644)	(1,553,980)	(172,575)	(13,950)	–	**(2,282,149)**
Net book value for continuing operations including leasing	**695,188**	**848,534**	**87,962**	**1,620**	**461,369**	**2,094,672**

The higher additions to property plant and equipment reflect higher investments in all business groups. The business group Energy & Surface Technologies accounted for close to two thirds of the amount, with investments primarily linked to the ongoing major greenfield expansion programs in cathode materials in China and Poland. The higher investments in Catalysis reflect the capacity expansions in China, Poland and India as well as the expansion of fuel cell catalyst capacity in Korea. In Recycling, capital expenditures comprise the investments carried out during the extended maintenance shutdown of the Hoboken plant as well as the investments to further improve the environmental performance of the plant.

The acquisitions through business combination are related to the opening balance sheet of the acquired cobalt refining and cathode precursor activities at Kokkola (Finland) (see note F8).

The changes in accounting policies are related to the introduction of IFRS 16 as explained in Note F2.23.

Impairments on fixed assets are mainly related to the discontinuation of the activities in Wickliffe (US).

The line 'other movements' mainly includes the transfer between tangible assets in progress and the other categories.

There are no pledges on, or restrictions to, the title on property, plant and equipment, other than disclosed in note F35.

F17 INVESTMENTS ACCOUNTED FOR USING THE EQUITY METHOD

The investments in companies accounted for using the equity method are composed mainly of the following associates and joint ventures:

	COUNTRY	MEASUREMENT CURRENCY	PERCENTAGE	PERCENTAGE
			2018	2019
For continuing operations				
ASSOCIATES				
IEQSA	Peru	PEN	40.00	40.00
Ganzhou Yi Hao Umicore Industries	China	CNY	40.00	40.00
Element Six Abrasives	United Kingdom	USD	40.22	40.22
Jiangmen Chancsun Umicore Industry Co.,LTD	China	CNY	40.00	40.00

The elements recognized in Other Comprehensive Income for investments accounted for using the equity method are mainly related to employee benefits reserves and translation reserves.

Investments in associates are accounted for in accordance with the equity method and represent approximately 2.1% of Umicore's consolidated balance sheet total. Umicore has no individual material investments in associates. Considering the objectives of the IFRS 12 disclosure requirements, the most significant associate is Element Six Abrasives, in which Umicore holds 40.22%. Element Six Abrasives is a synthetic diamond supermaterials group, part of De Beers Group, its majority shareholder. The group operates worldwide with primary manufacturing facilities in China, Ireland, Germany, the UK, the US and South Africa. Element Six Abrasives is a profitable group, generating positive cash flow. The group's functional currency is USD. Umicore is represented in the Board of Directors and the audit committee of Element Six Abrasives, which enables sufficient protection of its interest in this associate. Besides its equity share in this company, Umicore has no other commitments, guarantees or obligations arising from its involvement in this associate. Non-recurring results and material contingencies, if any, in respect of the financial statements of Element Six Abrasives, are separately disclosed under the relevant captions of Umicore's consolidated financial statements (see note F36 for new pending file qualified as contingent liability at Element Six Abrasives).

Thousands of Euros	NET BOOK VALUE	GOODWILL	TOTAL
At the end of previous year	**105,580**	**45,793**	**151,372**
profit for the year	8,705	-	**8,705**
dividends	(11,321)	-	**(11,321)**
change in other reserves	1,049	-	**1,049**
translation differences	642	196	**837**
At the end of the year for continuing operations	**104,653**	**45,989**	**150,642**

Umicore's share in the aggregated balance sheet and profit and loss items of the associates and joint ventures would have been as follows:

Thousands of Euros	31/12/2018	31/12/2019
Assets	249,274	231,747
Liabilities	125,299	108,620
Turnover	279,920	251,313
Net result	6,720	8,705

In the above table, they are no more assets and liabilities related to joint ventures.

F18 FINANCIAL ASSETS AT FAIR VALUE THROUGH OCI AND LOANS GRANTED

Thousands of Euros	FINANCIAL ASSETS AT FV THROUGH OCI	LOANS GRANTED
NON-CURRENT FINANCIAL ASSETS		
At the beginning of previous year	**22,331**	**11,285**
acquisition through business combinations	233	–
increase	2,481	1,738
decrease	(17,461)	(126)
translation differences	(7)	(7)
fair value recognized in equity	(2,699)	–
other movements	3,150	(10,263)
At the end of previous year	**8,028**	**2,627**
increase	2,375	126
decrease	–	(114)
translation differences	3	72
fair value recognized in equity	(9)	–
other movements	500	(520)
At the end of the financial year for continuing operations	**10,897**	**2,192**
CURRENT FINANCIAL ASSETS		
At the end of the preceding financial year	**–**	**6,270**
decrease	–	(6,328)
translation differences	–	58
At the end of the financial year for continuing operations	**–**	**–**

The movements in the current loans granted are mainly related to repayment of loans granted in the context of the sale of Umicore Vital Thin Film Technologies in China.

F19 INVENTORIES

Thousands of Euros	31/12/2018	31/12/2019
ANALYSIS OF INVENTORIES		
Base product eligible for metal hedging – gross value	2,088,873	2,293,070
Base product without metal hedging – gross value	199,410	176,562
Consumables – gross value	79,025	87,030
Write-downs	(69,771)	(101,960)
Advances paid	7,983	6,173
Contracts in progress	2,573	1,454
Total inventories for continuing operations	**2,308,094**	**2,462,330**

Inventories have increased by € 154.2 million compared with December 2018. This increase is mainly due to higher metal prices.

Base product eligible for metal hedging contains the permanently tied up metal inventories.

As per the change in accounting policy with regards to permanently tied-up metal inventories (see note F2.23.3), the permanently tied-up metal inventories are considered to have an unlimited useful life (no depreciations are applied) and are instead subject to Umicore's annual impairment testing of the CGUs carrying these inventories. No impairment has been taken in 2019.

The total gross book value of Umicore's permanently tied-up metal inventories at 31 December 2019 amounted to € 862 million (versus € 791 million on 1 January 2019) which compares to a value of € 2,135 million when applying the 31 December market prices.

The expenses are recognized in Raw Materials and Consumables in the income statement amounts as disclosed in note F9.

There are no pledges on, or restrictions to, the title on inventories.

F20 TRADE AND OTHER RECEIVABLES

Thousands of Euros	NOTES	31/12/2018	31/12/2019
NON-CURRENT			
Cash guarantees and deposits		9,912	8,893
Other receivables maturing > 1 year		1,049	1,972
Assets employee benefits		1,172	1,173
Total for continuing operations		**12,133**	**12,038**
CURRENT			
Trade receivables (at cost)		893,621	1,171,835
Trade receivables (write-down)		(22,576)	(22,983)
Other receivables (at cost)		221,162	180,336
Other receivables (write-down)		(246)	(207)
Interest receivable		177	156
Fair value receivable financial instruments held for cash flow hedging	F33	17,184	19,699
Fair value receivable – financial instruments related to FV hedging	F33	18,844	47,495
Deferred charges and accrued income		17,813	37,327
Total for continuing operations		**1,145,979**	**1,433,658**

			OVERDUE BETWEEN			
Thousands of Euros	TOTAL	NOT DUE	0-30 DAYS	30-60 DAYS	60-90 DAYS	> 90 DAYS
AGEING BALANCE ANALYSIS AT THE BEGINNING OF THE YEAR						
Trade receivables (w/o doubtful and securitized receivables) – at cost	**859,577**	615,298	166,279	55,650	14,320	8,029
Other receivables – at cost	**221,162**	216,234	51	3,147	67	1,663
Loss allowance	**13,948**	8,076	1,195	685	–	3,992
Expected loss rate	**1.29%**	0.97%	0.72%	1.17%	0.00%	41.19%
AGEING BALANCE ANALYSIS AT THE END OF YEAR						
Trade receivables (w/o doubtful and securitized receivables) – at cost	**1,131,666**	928,369	160,856	22,261	5,549	14,632
Other receivables – at cost	**180,336**	179,925	595	(340)	–	157
Loss allowance	**12,794**	5,431	901	17	1,497	4,948
Expected loss rate	**0.98%**	0.49%	0.56%	0.08%	26.98%	33.46%

CREDIT RISK – TRADE RECEIVABLES

Thousands of Euros	TRADE RECEIVABLES (WRITE-DOWN)	OTHER RECEIVABLES (WRITE-DOWN)	TOTAL
AT THE BEGINNING OF PREVIOUS YEAR	(7,509)	(4,514)	**(12,023)**
Change in accounting policies	(10,782)	–	**(10,782)**
Acquisition through business combination	(814)	–	**(814)**
Change in scope	(141)	–	**(141)**
Impairment losses recognized in P&L	(4,515)	–	**(4,515)**
Reversal of impairment losses	168	1,324	**1,492**
Impairment written off against asset carrying amount	71	2,939	**3,010**
Other movements	909	–	**909**
Translation differences	35	5	**40**
At the end of previous year	**(22,577)**	**(247)**	**(22,824)**
AT THE BEGINNING OF THE FINANCIAL YEAR	(22,577)	(247)	**(22,824)**
Impairment losses recognized in P&L	(9,373)	–	**(9,373)**
Reversal of impairment losses	9,705	39	**9,744**
Impairment written off against asset carrying amount	83	–	**83**
Other movements	(850)	–	**(850)**
Translation differences	30	1	**31**
At the end of the financial year for continuing operations	**(22,983)**	**(207)**	**(23,190)**

The group applies the IFRS 9 simplified approach to measure expected credit losses which uses a lifetime expected loss allowance for all trade receivables. To measure the expected credit losses, trade receivables have been grouped based on shared credit risk characteristics and the days past due. The expected loss rates are based on the payment profiles of sales over a period of 60 months before 31 December 2019 or 1 January 2019 respectively and the corresponding historical credit losses experienced within this period. The historical loss rates are adjusted to reflect current and forward-looking information on macro-economic factors affecting the ability of the customers to settle the receivables. The group has identified macro-economic factors, Probability of Default (PD) and Loss given Default (LGD) to be the most relevant factors, and accordingly adjusts the historical loss rates based on expected changes in these factors.

In principle, Umicore uses credit insurance as a means to mitigate the credit risk related to trade receivables. In 2019, two credit policies with two different insurers were in place. At closing, € 407 million of the group trade receivables of the continuing operations were covered by a policy where indemnification in case of non-payment amounts to 95% with an indemnification cap set at regional or country level. The other policy covered € 168 million of trade receivables with a global annual deductible of € 5 million, a maximum indemnity per year of € 70 million and an indemnification in case of non-payment of 90%. This specific insurance policy is linked to a sales without recourse of trade accounts receivable program in Europe.

Specifically related to the use of bank acceptance drafts as payment instrument in China, Umicore mitigates the payment risk on receivables covered by such drafts by entering into discounting arrangements with selected banks for certain received bank acceptance drafts.

Finally, some of our businesses function without credit insurance and instead internal credit limits are set based on available financial information and business knowledge. These limits are duly reviewed and approved by management.

F21 DEFERRED TAX ASSETS AND LIABILITIES

Thousands of Euros	31/12/2018	31/12/2019
Tax assets and liabilities		
Income tax receivables	61,672	45,447
Deferred tax assets	132,855	168,927
Income tax payable	(74,500)	(131,483)
Deferred tax liabilities	(6,225)	(11,461)

	ASSETS		LIABILITIES		NET	
Thousands of Euros	2018	2019	2018	2019	2018	2019
At the end of preceding financial year	**114,686**	**132,855**	**(3,540)**	**(6,225)**	**111,146**	**126,630**
Change in accounting policies	1,313	–	(1,077)	–	236	–
Deferred tax recognized in the P&L	15,722	15,207	(6,363)	1,330	9,359	16,537
Deferred tax recognized in equity	12,057	21,502	(1,201)	7,276	10,856	28,778
Acquisitions through business combination	(348)	–	(832)	(14,972)	(1,181)	(14,972)
Change in scope	(3,605)	–	108	–	(3,496)	–
Translation adjustments	(633)	142	(122)	(152)	(755)	(10)
Transfer	(5,896)	(1,201)	6,802	1,201	905	–
Other movements	(440)	421	–	82	(440)	503
At the end of financial year for continuing operations	**132,855**	**168,927**	**(6,225)**	**(11,461)**	**126,630**	**157,466**

	ASSETS		LIABILITIES		NET	
Thousands of Euros	2018	2019	2018	2019	2018	2019
DEFERRED TAX IN RESPECT OF EACH TYPE OF TEMPORARY DIFFERENCE						
Intangible assets	15,541	16,412	(16,425)	(17,894)	(884)	(1,482)
Goodwill on fully consolidated companies	–	–	(605)	(561)	(605)	(561)
Property, plant and equipment	7,793	11,554	(16,926)	(33,516)	(9,133)	(21,962)
Long-term receivables	747	1,087	(135)	(31)	612	1,056
Inventories	47,629	72,552	(18,983)	(37,403)	28,646	35,149
Trade and other receivables	9,820	8,424	(10,163)	(11,930)	(343)	(3,506)
Group Shareholder's equity	–	–	(4,234)	(4,032)	(4,234)	(4,032)
Long-Term Financial Debt and other payable	5,446	9,109	(1,446)	(5,172)	4,000	3,937
Provisions Employee Benefits	60,121	81,392	(2,624)	(8,245)	57,497	73,147
Provisions for Environment	12,169	12,697	(461)	(384)	11,708	12,313
Provisions for other liabilities and charges	12,062	9,480	(3,195)	(463)	8,867	9,017
Current Financial Debt	1,039	539	(29)	(344)	1,010	195
Current Provisions for Environment	2,990	2,323	–	–	2,990	2,323
Current Provisions for Other Liabilities & Charges	12,247	9,079	(8)	(8)	12,239	9,071
Trade and other payables	24,040	36,431	(9,906)	(5,262)	14,134	31,169
Total deferred tax due to temporary differences	**211,644**	**271,079**	**(85,140)**	**(125,245)**	**126,504**	**145,834**
Tax losses to carry forward	**40,323**	**56,598**	**–**	**–**	**40,323**	**56,598**
Investments deductions	1,889	1,156	–	–	1,889	1,156
Other	2,957	5,002	–	–	2,957	5,002
Deferred tax assets not recognized	(45,043)	(51,124)	–	–	(45,043)	(51,124)
Total tax assets/liabilities	**211,770**	**282,711**	**(85,140)**	**(125,245)**	**126,630**	**157,466**
Compensation of assets and liabilities within same entity	(78,915)	(113,784)	78,915	113,784	–	
Net amount	**132,855**	**168,927**	**(6,225)**	**(11,461)**	**126,630**	**157,466**

Thousands of Euros	2018 BASE	2019 BASE	2018 TAX	2019 TAX
Amount of deductible temporary differences, unused tax losses or tax credits for which no deferred tax asset is recognized in the balance sheet				
Expiration date with no time limit	163,421	187,883	45,043	51,124

The changes of the period in temporary differences are charged to the income statement except those arising from events that were recognized directly in the other comprehensive income.

The main movements in deferred tax recognized directly in the other comprehensive income are deferred taxes generated by temporary differences included within the lines "Trade and other receivables" (negative by € 0.8 million), "Provisions for employee benefits" (positive by € 20.4 million) and "Trade and other payables" (positive by € 9.2 million).

Deferred tax assets are only recognized to the extent that their utilization is probable, i.e. if a tax benefit is expected in future periods. The Group assesses a recoverability in a range of 5 to 10 years. The actual tax results in future periods may differ from the estimate made at the time the deferred taxes are recognized.

Unrecognized deferred tax assets of € 51.1 million mainly arise from tax losses (€ 44.0 million), deductions for investments (€ 1.2 million), and temporary differences on property, plant and equipment (€ 5.2 million).

In accordance with IAS 12, a deferred tax liability on untaxed reserves of the Belgian companies, amounting potentially to € 37.5 million, has not been recognized as management anticipates that this liability will not be incurred in a foreseeable future.

The IFRIC 23 interpretation clarifies accounting for uncertainties in income taxes and is to be applied when determining taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates, in case of uncertainty over whether Umicore's position will be accepted by tax authorities. It is applicable to both current and deferred tax items. The impact of IFRIC 23 is developed under the Note F2.23.2.

F22 NET CASH AND CASH EQUIVALENTS

Thousands of Euros	31/12/2018	31/12/2019
CASH AND CASH EQUIVALENTS		
Short-term investments: bank term deposits	13,687	25,524
Short-term investments: term deposits (other)	–	7
Cash-in-hands and bank current accounts	271,392	246,192
Total cash and cash equivalents	**285,079**	**271,724**
Bank overdrafts	27,965	32,493
Net cash as in Cash Flow Statement for continuing operations	**257,114**	**239,231**

All cash and cash equivalents are fully available for the Group.

Liquidity risk management implies maintaining sufficient cash and marketable securities, the availability of funding through an adequate amount of committed and uncommitted credit facilities and the ability to close out market positions.

Due to the dynamic nature of the underlying businesses, the group aims to maintain funding flexibility through committed credit lines. Excess liquidities are invested for very short periods and are spread over a limited number of banks, all enjoying a satisfactory credit rating.

F23 CURRENCY TRANSLATION DIFFERENCES AND OTHER RESERVES

The detail of the Group's share in currency translation differences and other reserves is as follows:

Thousands of Euros	FINANCIAL ASSETS AT FV THROUGH OCI RESERVES	CASH FLOW HEDGE RESERVES – COMMODITIES	CASH FLOW HEDGE RESERVES – CURRENCIES	CASH FLOW HEDGE RESERVES – IRS	DEFERRED TAXES DIRECTLY RECOGNIZED IN OCI	CHANGES IN POST EMPLOYMENT BENEFITS, ARISING FROM CHANGES IN ACTUARIAL ASSUMPTIONS	SHARE-BASED PAYMENT RESERVES	CURRENCY TRANSLATION DIFFERENCES	TOTAL
Balance at the beginning of previous year	**3,849**	**10,456**	**19,675**	**(625)**	**47,862**	**(219,923)**	**23,432**	**(87,242)**	**(202,517)**
Remeasurements recognized in other comprehensive income	(2,699)	(18,395)	4,650	39	7,876	(6,390)	11,150	–	**(3,769)**
Remeasurements derecognized out of other comprehensive income	–	4,441	(20,736)	–	2,930	–	–	–	**(13,365)**
Transfer from/to retained earnings	–	–	–	–	–	–	(2,981)	–	**(2,981)**
Change in scope	–	(426)	–	–	(38)	697	–	–	**233**
Exchange differences	–	–	(179)	–	32	(1,268)	–	(3,831)	**(5,245)**
Balance at the end of previous year	**1,150**	**(3,925)**	**3,411**	**(586)**	**58,663**	**(226,884)**	**31,600**	**(91,073)**	**(227,644)**
Balance at the beginning of the year	**1,150**	**(3,925)**	**3,411**	**(586)**	**58,663**	**(226,884)**	**31,600**	**(91,073)**	**(227,644)**
Remeasurements recognized in other comprehensive income	(129)	(28,728)	1,937	(101)	28,587	(70,605)	8,211	–	**(60,828)**
Remeasurements derecognized out of other comprehensive income	–	(1,212)	174	–	(145)	–	–	–	**(1,182)**
Transfer from/to retained earnings	–	–	–	–	–	–	(2,540)	–	**(2,540)**
Other movements	120	–	–	–	–	–	–	–	**120**
Exchange differences	–	–	(29)	–	(11)	(539)	–	8,200	**7,622**
Balance at the end of the year	**1,141**	**(33,865)**	**5,492**	**(686)**	**87,093**	**(298,028)**	**37,272**	**(82,873)**	**(284,452)**

The net losses recognized in the OCI regarding cash flow hedges (€ 26.9 million) are the changes in fair value of new cash flow hedging instruments or existing ones at opening but which have not yet expired at year end. The net gains derecognized from OCI (€ 1.0 million) are the fair values of the cash-flow hedging instruments existing at the opening which expired during the year. A loss of € 10.8 million was recognized in the income statement, as a result of expired cash-flow hedges.

New net remeasurements as a result of changes in the actuarial assumptions on the defined post-employment benefit plans have been recognized in OCI for € -70.6 million.

The 2019 shares and stock option plans have led to a share-based payment reserve increase of € 8.2 million (refer to note F10 on employee benefits). € 2.5 million, linked to exercised options and free shares plans, have been transferred to retained earnings.

F24 FINANCIAL DEBT

Thousands of Euros	BANK LOANS	LEASE LIABILITY	OTHER LOANS	TOTAL
NON-CURRENT				
At the beginning of previous year	**690,000**		**4,106**	**694,104**
Increase	55,133		–	**55,133**
Decrease	–		(258)	**(258)**
Translation differences	(129)		(2)	**(131)**
Transfers	(40,000)		(3)	**(40,003)**
At the end of previous year	**705,004**	**–**	**3,843**	**708,846**
Change in accounting policies	–	37,262	–	**37,262**
Acquisition through business combinations	–	3,181	–	**3,181**
Increase	400,579	22,266	6	**422,852**
Decrease	–	(16,536)	(291)	**(16,827)**
Translation differences	37	89	1	**127**
Transfers	(4,354)	–	(4)	**(4,358)**
At the end of the financial year for continuing operations	**1,101,266**	**46,262**	**3,555**	**1,151,083**
CURRENT PORTION OF LONG-TERM FINANCIAL DEBTS				
At the end of the preceding financial year	**–**	**–**	**56**	**56**
Increase/decrease	(770)	–	–	**(770)**
Translation differences	4,354	–	4	**4,358**
Transfers	(39)	–	95	**56**
At the end of the financial year for continuing operations	**3,545**	**–**	**154**	**3,700**

Thousands of Euros	SHORT-TERM BANK LOANS	BANK OVERDRAFTS	SHORT-TERM LOAN: COMMERCIAL PAPER	TOTAL
CURRENT				
At the end of the preceding financial year	**367,723**	**27,965**	**41,016**	**436,704**
Increase/decrease (including CTD's)	(125,479)	4,943	241,920	121,384
Translation differences	2,689	(415)	–	2,274
At the end of the financial year for continuing operations	**244,933**	**32,493**	**282,936**	**560,363**

Net financial debt at 31 December 2019 stood at € 1,443.4 million, up from € 860.6 million at the start of the year and largely driven by Umicore's capital expenditures and the Kokkola acquisition. The recognition of operating leases in financial debt following the application of the new IFRS 16 lease standard (see F2.23 Impact of changes in accounting policies and F2.7 Lease) had an impact of € 46.3 million on net debt at the end of December 2019.

The net financial debt includes the € 390 million long-term US private debt placements issued in June 2019, which was drawn upon in September 2019 (fair value of € 397 million). It complements the existing long-term private debt placements which were issued in 2017 for a total amount of € 690 million (fair value of € 721 million), two undrawn Syndicated Bank Credit Facilities of a total amount of € 795 million and substantial additional shorter-term funding instruments.

On 31 December 2019, there were no outstanding advances under the € 300 million Syndicated Bank Credit Facility maturing in October 2022 and no outstanding advances under the € 495 million Syndicated Bank Credit Facility maturing in April 2025.

The aforementioned Syndicated Bank Credit Facilities and the three long-term private debt placements require the Company to comply with certain financial covenants. Umicore has not faced any breach of those covenants in 2019 or in previous years.

The long-term debts mainly include debts in EUR.

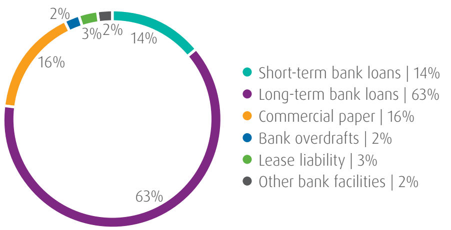
The line "new loans and repayment of loans" in the consolidated statement of cash flow does not include the movements on bank overdrafts and the currency translation differences.

The net gearing ratio end of 2019 of 35.2% (24.4% in 2018) is well within the group's targeted capital structure limits.

Thousands of Euros	EUROS	OTHER CURRENCIES	TOTAL
Analysis of long-term debts by currencies (including current portion)			
Bank loans	1,080,000	24,811	**1,104,811**
Other loans	3,710	–	**3,710**
Non-current financial debts (including current portion)	**1,083,710**	**24,811**	**1,108,521**

Thousands of Euros	2018	2019
Non-current financial debt	708,846	1,151,083
Current portion of non-current financial debt	56	3,700
Current financial debt	436,704	560,363
Cash and cash equivalents	(285,079)	(271,724)
Net financial debt	**860,527**	**1,443,422**

GROSS OUTSTANDING DEBT



Millions of Euros	2018	2019
Net financial debt including discontinued operations	860.5	**1,443.4**
Equity	2,659.3	**2,660.5**
Total	3,519.9	**4,103.9**
Gearing ratio (%)	24.4	**35.2**

F25 TRADE DEBT AND OTHER PAYABLES

Thousands of Euros	NOTES	31/12/2018	31/12/2019
NON-CURRENT			
Long-term trade payables		9,653	2,579
Other long-term debts		3,768	5,520
Investment grants and deferred income from grants		10,971	16,021
Total for continuing operations		**24,392**	**24,120**
CURRENT			
Trade payables		1,102,383	1,466,140
Advances received on contracts in progress		46,383	15,448
Tax payable (other than income tax)		37,005	26,190
Payroll and related charges		122,762	125,252
Other amounts payable		80,845	56,399
Dividends payable		11,655	11,657
Accrued interest payable		6,497	7,856
Fair value payable financial instrument held for cash flow hedging	F33	16,844	48,829
Fair value payable – financial instruments related to FV hedging	F33	11,844	18,670
Accrued charges and deferred income		153,140	139,907
Total for continuing operations		**1,589,360**	**1,916,348**

The tax payables (other than income tax) mainly include VAT payables.

F26 LIQUIDITY OF THE FINANCIAL LIABILITIES

PREVIOUS FINANCIAL YEAR

	EARLIEST CONTRACTUAL MATURITY					
Thousands of Euros	< 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	> 5 YEARS	TOTAL
FINANCIAL DEBT	**288,938**	**46,566**	**101,256**	**708,828**	**18**	**1,145,607**
Current	**288,938**	**46,566**	**101,256**	**–**	**–**	**436,760**
Short-term bank loans	265,390	46,541	55,791	–	–	**367,723**
Bank overdrafts	23,535	–	4,430	–	–	**27,965**
Short-term loan: commercial paper	–	–	41,016	–	–	**41,016**
Current portion of other long-term loans	13	25	18	–	–	**56**
Non-current	**–**	**–**	**–**	**708,828**	**18**	**708,846**
Bank loans	–	–	–	705,005	–	**705,005**
Other loans	–	–	–	3,823	18	**3,841**
TRADE AND OTHER PAYABLES	**1,028,453**	**384,302**	**168,779**	**13,008**	**19,211**	**1,613,754**
Current	**1,028,453**	**384,302**	**168,779**	**7,828**	**–**	**1,589,362**
Trade payables	767,995	295,217	39,172	–	–	**1,102,383**
Advances received on contracts in progress	10,885	19,292	16,206	–	–	**46,383**
Tax payable (other than income tax)	24,756	4,151	8,098	–	–	**37,005**
Payroll and related charges	35,653	30,823	56,286	–	–	**122,762**
Other amounts payable	52,150	9,869	18,826	–	–	**80,845**
Dividends payable	11,655	–	–	–	–	**11,655**
Accrued interest payable, third parties	5,095	1,166	235	–	–	**6,497**
Fair value payable financial instrument held for cash flow hedging	434	1,951	6,631	7,828	–	**16,844**
Fair value payable – financial instruments related to FV hedging	4,695	4,698	2,452	–	–	**11,844**
Accrued charges and deferred income	115,133	17,134	20,873	–	–	**153,140**
Non-current	**–**	**–**	**–**	**5,180**	**19,211**	**24,392**
Long-term trade payables	–	–	–	–	9,653	**9,653**
Other long-term debts	–	–	–	–	3,768	**3,768**
Investment grants and deferred income from grants	–	–	–	5,180	5,791	**10,971**

FINANCIAL YEAR

	EARLIEST CONTRACTUAL MATURITY					
Thousands of Euros	< 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	> 5 YEARS	TOTAL
FINANCIAL DEBT	**153,186**	**192,344**	**218,525**	**349,908**	**801,174**	**1,715,137**
Current	**153,186**	**192,344**	**218,525**	**–**	**–**	**564,055**
Short-term bank loans	130,764	56,370	57,799	–	–	**244,933**
Bank overdrafts	21,188	–	11,305	–	–	**32,493**
Short-term loan: commercial paper	–	134,155	148,781	–	–	**282,936**
Other loans	(7)	–	–	–	–	**(7)**
Current portion of other long-term loans	1,229	1,793	523	–	–	**3,545**
Current portion of other long-term loans	13	26	116	–	–	**154**
Non-current	**–**	**–**	**–**	**349,908**	**801,174**	**1,151,082**
Bank loans	–	–	–	308,267	793,000	**1,101,267**
Lease liability	–	–	–	38,087	8,174	**46,261**
Other loans	–	–	–	3,555	–	**3,555**
TRADE AND OTHER PAYABLES	**1,343,059**	**323,292**	**231,717**	**29,510**	**12,891**	**1,940,469**
Current	**1,343,059**	**323,292**	**231,717**	**18,281**	**–**	**1,916,349**
Trade payables	1,113,438	216,335	136,367	–	–	**1,466,140**
Advances received on contracts in progress	5,092	8,720	1,636	–	–	**15,448**
Tax payable (other than income tax)	22,491	3,700	–	–	–	**26,190**
Payroll and related charges	43,063	26,409	55,780	–	–	**125,252**
Other amounts payable	25,106	16,656	14,638	–	–	**56,400**
Dividends payable	11,657	–	–	–	–	**11,657**
Accrued interest payable, third parties	6,165	1,390	300	–	–	**7,856**
Fair value payable financial instrument held for cash flow hedging	399	9,372	20,778	18,281	–	**48,829**
Fair value payable – financial instruments related to FV hedging	8,198	8,252	2,219	–	–	**18,670**
Accrued charges and deferred income	107,450	32,457	–	–	–	**139,907**
Non-current	**–**	**–**	**–**	**11,229**	**12,891**	**24,120**
Long-term trade payables	**–**	**–**	**–**	**–**	**2,579**	**2,579**
Other long-term debts	–	–	–	1,192	4,328	**5,520**
Investment grants and deferred income from grants	–	–	–	10,037	5,984	**16,021**

F27 PROVISIONS FOR EMPLOYEE BENEFITS

The Group has various legal and constructive defined benefit obligations, the vast majority of them being "final pay" plans linked to the Belgian and German operations.

Thousands of Euros	POST-EMPLOYMENT BENEFITS, PENSIONS & SIMILAR	POST-EMPLOYMENT BENEFITS – OTHER	TERMINATION BENEFITS EARLY RETIREMENT & SIMILAR	OTHER LONG-TERM EMPLOYEE BENEFITS	TOTAL
At the end of the previous year	**289,124**	**3,788**	**27,324**	**13,554**	**333,790**
Increase (included in "Payroll and related benefits")	25,129	251	4,130	1,638	**31,148**
Reversal (included in "Payroll and related benefits")	124	-	-	(163)	**(39)**
Use (included in "Payroll and related benefits")	(41,956)	(83)	(7,125)	(390)	**(49,555)**
Interest and discount rate impacts (included in "Finance cost – Net")	5,267	25	121	197	**5,610**
Translation differences	162	98	(120)	(2)	**138**
Transfers	(1,610)	(272)	2,217	(308)	**643**
Recognized in other comprehensive income	70,883	-	-	-	**70,882**
Other movements	37	-	-	(4)	**33**
At the end of the financial year for continuing operations	**347,160**	**3,806**	**26,546**	**15,137**	**392,650**

Thousands of Euros	31/12/2018	MOVEMENTS 2019	31/12/2019
Belgium	62,964	4,514	67,478
Germany	245,548	52,105	297,653
Subtotal	**308,512**	**56,619**	**365,131**
Other entities	25,278	2,240	27,519
Total for continuing operations	**333,790**	**58,859**	**392,650**

The first table shows the balances and the movements in provisions for employee benefits of the fully consolidated subsidiaries only. There is a difference in the line "Recognized in OCI" compared to what is shown in note F23 as that note also includes associates and joint ventures that are accounted for according to the equity method.

The following disclosure requirements under IAS 19 amended were derived from the reports obtained from external actuaries.

Umicore defined benefit pension schemes for the 2 major countries are the following:

BELGIUM

Characteristics of the Defined Benefit plans

Umicore companies in Belgium operate defined benefit plans that provide retirement benefits which are related to salary and age or length of service. These retirement plans represent a defined benefit obligation of € 227.9 million and assets for € 210.4 million. They foresee a lump sum payment upon retirement and benefits in case of death or disability prior to retirement.

Funding

The plans are externally funded through either insurance companies or a self-administrated institution for occupational retirement provision ("IORP"). For the IORP, the necessary governance processes for risk management are in place. One of the risk measures is to perform on a regular basis a "Continuity Test" in which the consequences of strategic investment policies are analyzed in terms of risk-and-return profiles and solvency measures. A statement of investment principles and funding policy are derived from this. The purpose is to have a well-diversified asset allocation to control the risk.

Fair values of plan assets

The fair values of the equity and debt instruments are determined based on quoted market prices in active markets (level 1 fair value classification). The plans hold no direct positions in Umicore shares or bonds, nor do they own any property used by an Umicore entity. Investments are well diversified so that the failure of any single investment would not have a material impact on the overall level of assets.

GERMANY

Characteristics of the Defined Benefit plans

The post-employment benefits are mainly unfunded pension plans of defined benefit type providing retirement, disability and death benefits. All benefit plans are based on final or final average pay beside the deferred compensation plan. The benefits of the deferred compensation plan are based on annual converted salary and provide a guaranteed interest of 3.0% p.a. (6.0% p.a. for salary conversions before 2014). All retirement plans represent a defined benefit obligation of € 305.3 million and assets for € 7.6 million.

Funding

As mentioned above, the post-employment benefits are mainly unfunded plans. A minor part is funded by pledged reinsurance contracts.

Fair values of plan assets

All plan assets relate to pledged insurance contracts and have no quoted market price.

The most significant risks related to the defined benefit plans are:

- **Asset volatility:** The plan liabilities are calculated using a discount rate set with reference to corporate bond yields; if plan assets underperform this yield, this will create a deficit.
- **Changes in bond yields:** A decrease in corporate bond yields will increase plan liabilities, although this will be partially offset by an increase in the value of the plan's bond holdings.
- **Salary risk:** The majority of the plans' benefit obligations are calculated by reference to the future salaries of plan members. As such, any salary increase of plan members higher than expected will lead to higher liabilities.
- **Longevity risk:** All pension plans beside the new deferred compensation plan as from 2014 provide life annuities which involve the risk of longevity i.e. the risk that the payment period of the pension increases due to the increase in life expectancy. The company uses mortality rates which depend on the year of birth to include this risk in the pension obligation.
- **Risk of cash outflow:** Since death as active and disability benefits are provided there is a risk of cash outflow before retirement.
- **Legislation risks:** If the law which define the benefit changes, it can result in a change of the obligations.

Some additional risks are related to Germany only:

- There is a risk that adjustments of pensions paid by the "Pensionskasse Degussa" are not fully borne by the "Pensionskasse" and therefore can result in an additional unfunded pension obligation due to a guaranteed interest rate of 3.5%. As it is not possible to apply the full IAS19 calculation method, the fund is evaluated as a Defined Contribution plan. The risk of the additional obligation expected until end of 2022 has been included in the pension obligation.
- The old deferred compensation plan provides a guaranteed interest rate of 6% which increases the risk for a pension cost in addition to the converted salary. The plan was closed on 31 December 2013 and replaced by a plan with no significant risk in this respect.

And some risks are related to Belgium only:

- Because of the Belgian legislation applicable to 2nd pillar pension plans (so-called "Law Vandenbroucke"), all Belgian Defined Contribution plans have to be considered under IFRS as Defined Benefit plans. Law Vandenbroucke states that in the context of defined contribution plans, the employer must guarantee a minimum return of 3.75% on employee contributions and 3.25% on employer contributions. However, shortly before year-end 2015, a change in the Belgian Law was enacted resulting in a decrease of the guaranteed return from 3.25 % to a minimum interest rate defined based upon the Belgian 10-year interest rate but within the range 1.75% – 3.25%. The new rate (currently 1.75%) applies for the years after 2015 on future contributions and also on the accumulated past contributions as at 31 December 2015 if the financing organization does not guarantee a certain result on contributions until retirement age. If the organization does guarantee such a result, the rates 3.25/3.75% still apply.

Because of this minimum guaranteed return, the employer is exposed to a financial risk: further contributions could be required if the return on assets would not be sufficient to reach the minimum benefits to be paid. The group has plans that are financed through insurance contract as well as one plan financed through an IORP. The related defined benefit obligations have been aggregated with the other obligations for defined benefit plans. The Projected Unit Credit (PUC) methodology has been used.

Total defined benefit obligations related to those plans amounts to € 120.6 million as at the end of December 2019 and related plan assets to € 114.9 million.

Thousands of Euros	2018	2019
CHANGE IN BENEFIT OBLIGATION		
Benefit obligation at beginning of the year	**552,021**	**549,052**
Current service cost	28,920	32,958
Interest cost	9,359	9,908
Plan Participants' Contributions	861	946
Remeasurements – changes in demographic assumptions	4,678	1,133
Remeasurements – changes in financial assumptions	(7,727)	81,769
Remeasurements – experience adjustments	5,967	3,032
Benefits paid from plan/Company	(28,913)	(24,272)
Expenses paid	(2,101)	(3,773)
Plan combinations	(14,915)	74
Exchange rate changes	902	858
Benefit obligation at end of the year	**549,052**	**651,685**

Thousands of Euros	2018	2019
CHANGE IN PLAN ASSETS		
Fair value of plan assets at the beginning of the year	**209,774**	**216,101**
Expected return on plan assets	3,668	3,740
Remeasurements on plan assets	(4,410)	17,138
Employer contributions	34,671	49,291
Member contributions	861	946
Benefits paid from plan/Company	(28,913)	(24,272)
Expenses paid	(2,151)	(3,823)
Net transfer in/(out) (including the effect of any business combinations/divestitures)	1,630	87
Exchange rate changes	971	744
Fair value of plan assets at the end of the year	**216,101**	**259,952**

Pension plans mainly in Belgium, Korean, Liechtenstein, Germany and Japan are wholly or partly funded with assets covering a substantial part of the obligations. All other plans have no material funding or are unfunded.

Thousands of Euros	2018	2019
AMOUNT RECOGNIZED IN THE BALANCE SHEET		
Defined benefit obligations	549,052	651,685
Fair value of plan assets	216,101	259,952
Funded Status	**332,951**	**391,733**
Effect of asset ceiling/onerous liability	–	–
Net liability (asset)	**332,951**	**391,733**
COMPONENTS OF PENSION COSTS		
Amounts recognized in profit and loss statement		
Current service cost	28,920	32,958
Interest cost	9,359	9,908
Interest income on plan assets	(3,668)	(3,740)
Remeasurement of Other Long-Term Benefits	1,099	(1,890)
Administrative expenses and taxes	50	51
Total pension cost recognized in P&L account	**35,760**	**37,287**

Thousands of Euros	2018	2019
Amounts recognized in other comprehensive income		
Cumulative remeasurements at opening	**194,314**	**199,949**
Change in scope	(697)	–
Remeasurements of the year	6,225	70,882
Minorities	57	(772)
Exchange differences	50	23
Total recognized in the OCI at subsidiaries	**199,949**	**270,082**
Remeasurements at associates and joint ventures	26,932	27,944
Total recognized in the OCI	**226,882**	**298,027**
Remeasurements (recognized in other comprehensive income)		
Effect of changes in demographic assumptions	4,358	1,070
Effect of changes in financial assumptions	(7,579)	80,772
Effect of experience adjustments	5,121	5,859
(Return) on plan assets (excluding interest income)	4,329	(17,015)
Total remeasurements included in Other Comprehensive Income	**6,229**	**70,686**

The interest cost and return on plan assets as well as the discount rate impact on the non-post-employment benefit plans, are recognized under the finance cost in the income statement (see note F11). All other elements of the expense of the year are classified under the operating result in the “wages, salaries and direct social advantages”.

Remeasurements of the year recognized in OCI originate mainly from a change in discount rates on the pension plans and differences between the expected and actual return on plan assets.

	2018	2019
PRINCIPAL ACTUARIAL ASSUMPTIONS		
Weighted average assumptions to determine benefit obligations at year end		
Discount rate (%)	1.85	0.95
Rate of compensation increase (%)	2.85	2.60
Rate of price inflation (%)	1.78	1.78
Rate of pension increase (%)	1.36	1.30
Weighted average assumptions used to determine net cost		
Discount rate (%)	1.73	1.85
Rate of compensation increase (%)	2.81	2.85
Rate of price inflation (%)	1.79	1.78
Rate of pension increase (%)	1.38	1.36

Thousands of Euros	2019 FAIR VALUE OF ALL PLAN ASSETS	2019 FAIR VALUE OF PLAN ASSETS WITH QUOTED MARKET PRICE
Plan assets		
Cash and cash equivalents	8,830	8,825
Equity instruments	43,456	43,445
Debt instruments	109,432	109,318
Real estate	8,961	8,956
Assets held by insurance company	85,724	73,154
Other	3,548	2,329
Total plan assets	**259,951**	**246,027**

Assumptions are recommended by the local actuaries in line with the IAS19 revised. The standard reference for the Eurozone is iBOXX AA Index yield and similar indexes are used for the other regions. Mortality tables used are country specific.

Other plan assets are predominantly invested in insurance contracts and bank term deposits. The expected long-term rate of return on assets assumptions is documented for the individual plans as recommended by the local actuaries.

Thousands of Euros	2019 VALUATION TREND +0.25%	2019 VALUATION TREND -0.25%
Sensitivity to trend rate assumptions on discount rate		
Present value of defined benefit obligation	613,630	660,862
Weighted average duration of benefit obligation (in years)	12.86	13.92
Sensitivity to trend rate assumptions on inflation rate		
Present value of defined benefit obligation	624,950	597,359
Sensitivity to trend rate assumptions on salary increase rate		
Present value of defined benefit obligation	643,294	626,388

Thousands of Euros	2018	2019
BALANCE SHEET RECONCILIATION		
Balance sheet liability (asset) as of previous year	**342,247**	**332,951**
Pension expense recognized in P&L in the financial year	35,760	37,287
Amounts recognized in SoCI	6,229	70,686
Employer contributions via funds in the financial year	(23,174)	(37,964)
Employer contributions paid directly in the financial year	(11,497)	(11,327)
Amounts recognized due to plan combinations	(16,545)	(13)
Exchange rate adjustment – (gain)/loss	(69)	114
Balance sheet liability (asset) as of end of the year	**332,951**	**391,734**

AT 31 DECEMBER

Thousands of Euros	2015	2016	2017	2018	2019
Present value of defined benefit obligation	469,027	521,153	552,021	549,052	651,685
Fair value of plan assets	156,670	183,246	209,774	216,101	259,952
Deficit (surplus) in the plan	**312,357**	**337,907**	**342,247**	**332,951**	**391,733**
Experience adjustments on plan assets	(3,320)	(16,036)	(5,286)	4,410	(17,138)
Experience adjustments on plan liabilities	5,399	14,861	4,611	5,967	3,032

Thousands of Euros	2019
EXPECTED CASH FLOWS FOR FOLLOWING YEAR	
Expected employer contributions	34,899
Expected total benefit payments	
Year 1	27,057
Year 2	29,402
Year 3	25,658
Year 4	26,556
Year 5	19,423
Next 5 years	136,523

F28 STOCK OPTION PLANS GRANTED BY THE COMPANY

PLAN	EXPIRY DATE	EXERCISE	EXERCISE PRICE EUR (THE EXERCISE PRICE MAY BE HIGHER IN CERTAIN COUNTRIES)	NUMBER OF OPTIONS STILL TO BE EXERCISED
ISOP 2013	12/02/2020	all working days of Euronext Brussels	18.19	61,500
			19.34	–
				61,500
ISOP 2014	10/02/2021	all working days of Euronext Brussels	16.14	394,250
			15.80	24,000
			16.49	10,000
				428,250
ISOP 2015	09/02/2022	all working days of Euronext Brussels	17.29	596,000
			18.90	10,000
			19.50	29,875
				635,875
ISOP 2016	04/02/2023	all working days of Euronext Brussels	16.63	942,000
				942,000
ISOP 2017	13/02/2024	all working days of Euronext Brussels	25.50	1,122,250
			27.04	47,750
				1,170,000
ISOP 2018	08/02/2025	all working days of Euronext Brussels	40.90	1,182,625
				1,182,625
ISOP 2019	10/02/2026	all working days of Euronext Brussels	34.08	1,216,000
			36.78	5,000
				1,221,000
Total				**5,641,250**

ISOP refers to "Incentive Stock Option Plan" (worldwide plan for managers).

The stock options, which are typically vested at the time of the grant, are foreseen to be settled with treasury shares. Options which have not been exercised before the expiry date elapse automatically.

	2018		2019	
	NUMBER OF SHARE OPTIONS	WEIGHTED AVERAGE EXERCISE PRICE	NUMBER OF SHARE OPTIONS	WEIGHTED AVERAGE EXERCISE PRICE
DETAILS OF THE SHARE OPTIONS OUTSTANDING DURING THE YEAR				
Outstanding at the beginning of the year	**5,218,199**	**18.98**	**5,356,854**	**24.14**
Granted during the year	1,182,625	40.90	1,221,000	34.09
Exercised during the year	1,037,470	17.31	936,604	17.37
Expired during the year	6,500	–	–	–
Outstanding at the end of the year	**5,356,854**	**24.14**	**5,641,250**	**27.42**
Exercisable at the end of the year	5,356,854	24.14	5,641,250	27.42

The options outstanding at the end of the year have a weighted average contractual life until January 2024.

The details concerning the calculation of the fair value of the options granted are detailed under note F10 on Payroll and related Benefits.

F29 ENVIRONMENTAL PROVISIONS

Thousands of Euros	PROVISIONS FOR SOIL CLEAN-UP & SITE REHABILITATION	OTHER ENVIRONMENTAL PROVISIONS	TOTAL
At the end of previous year	**60,755**	**3,481**	**64,236**
Acquisition through business combinations	–	3,438	**3,438**
Increase	6,637	5,465	**12,102**
Reversal	(2,645)	–	**(2,645)**
Use (included in "Other operating expenses")	(8,052)	(2,294)	**(10,346)**
Discounting (included in "Finance cost – Net")	1,333	–	**1,333**
Translation differences	(36)	–	**(36)**
At the end of the financial year for continuing operations	**57,992**	**10,089**	**68,081**
Of which – Non-current	54,032	3,518	**57,550**
– Current	3,960	6,572	**10,532**

Provisions for environmental legal and constructive obligations are recognized and measured by reference to an estimate of the probability of future cash outflows as well as to historical data based on the facts and circumstances known at the end of the reporting period. The actual liability may differ from the amounts recognized.

Provisions increased overall by € 3.8 million, with additional provisions which are higher than the uses and reversals of existing provisions.

The acquisitions through business combinations are related to the acquisition in Finland (note F8).

The new provisions for soil and groundwater remediation are mainly related to new provisions taken in France and in Brazil. In Brazil, new provisions were foreseen for the closure costs of the industrial activities in Guarulhos and the related costs for demolition and remediation. Most of the uses of provisions for soil and groundwater remediation for the period are linked to the realization of site remediation programs in Brazil, in the USA and in Belgium. Most of the reversals of provisions for soil and groundwater remediation for the period are taken in Belgium.

No major movements occurred in 2019 on the provisions that were taken to address the historical radioactive waste material in Belgium (Olen). Further negotiation with all competent authorities to find a sustainable and acceptable storage solution are on-going, however, at a slow pace.

The movements of the other environmental provisions are mainly related to the need for and adjustment of CO_2 emission rights in Belgium.

Management expects the most significant cash outflows on these projects for non-current elements to take place within 10 years.

F30 PROVISIONS FOR OTHER LIABILITIES AND CHARGES

Thousands of Euros	PROVISIONS FOR REORGANISATION & RESTRUCTURING	PROVISIONS FOR OTHER LIABILITIES AND CHARGES	TOTAL
At the end of the previous year	**35,928**	**119,936**	**155,859**
Increase	2,683	11,992	**14,675**
Reversal	(2,946)	(40,859)	**(43,805)**
Use (included in "Other operating expenses")	(12,011)	(12,864)	**(24,875)**
Discounting (included in "Finance cost -Net")	–	(299)	**(299)**
Translation differences	(66)	(143)	**(209)**
Transfers	(643)	2,988	**2,345**
Other movements	–	(60)	**(60)**
At the end of the financial year for continuing operations	**22,945**	**80,691**	**103,631**
Of which – Non-current	17,623	32,314	**49,937**
– Current	5,321	48,377	**53,698**

Provisions for reorganization and restructuring and other liabilities and charges (mainly covering tax, warranty and litigation risks, onerous contract risks and product returns) are recognized and measured by reference to an estimate of the probability of future outflow of cash as well as to historical data based on the facts and circumstances known at the end of the reporting period. The actual liability may differ from the amounts recognized.

Provisions decreased overall by € 52.2 million.

Additional provisions for reorganization and restructuring have been taken in the US, related to the discontinuation of the activities at the Wickliffe site in the business unit Cobalt & Specialty Materials. The uses and reversals of provisions for reorganization and restructuring relate to the execution of previously announced restructurings in Brazil and Germany.

€ 25.5 million of the decrease of the provisions for other liabilities and charges are related to the introduction of IFRS 9 for fair value hedging where under the revised standard for some commodities no fair value hedge accounting could be obtained and consequently, IAS 37 principles for onerous contracts were applied (see Note F4.5). This decrease represents movements stemming from the underlying realization or recalculation of mark to markets on commercial commitments. Some uses of the provisions relate to onerous contract events occurring.

Other increases, reversals and uses of the provisions for other liabilities and charges relate to warranty (see Note F4.5 as well) and litigation risks in Belgium, Germany, Denmark, Korea and China.

No reliable estimation could be made regarding the expected timing of cash outflows related to the non-current part of the provisions for other liabilities and charges.

F31 CAPITAL EMPLOYED

Thousands of Euros	NOTES	31/12/2018	30/06/2019	31/12/2019
Intangible assets	F14, F15	337,305	345,000	370,859
Property, plant and equipment	F16	1,601,892	1,770,931	2,094,672
Investments accounted for under the equity method	F17	151,372	156,517	150,642
Financial assets at FV through OCI	F18	8,028	9,160	10,897
Inventories	F19	2,308,094	2,102,222	2,462,330
Non-current receivable (excluding assets employee benefits)	F20	10,962	10,269	10,865
Adjusted current accounts receivable		1,123,503	1,276,802	1,405,810
Income tax receivable		61,672	36,654	45,447
Assets included in capital employed		**5,602,829**	**5,707,555**	**6,551,521**
Non-current trade and other payables	F25	24,391	25,245	24,120
Adjusted current accounts payable		1,572,515	1,507,144	1,867,518
Translation reserves	F23	(91,075)	(92,770)	(82,870)
Non-current provisions	F29, F30	112,128	115,484	107,487
Current provisions	F29, F30	107,973	86,445	64,230
Income tax payable		74,500	95,589	131,483
Liabilities included in capital employed		**1,800,432**	**1,737,137**	**2,111,969**
Capital employed		**3,802,397**	**3,970,418**	**4,439,552**
Eliminations		16	4,133	2,439
Capital employed as published		**3,802,413**	**3,974,551**	**4,441,991**
Average Capital Employed in half year preceding closing date		3,543,894		4,208,271
Average Capital Employed in year preceding closing date		**3,344,176**		**4,048,377**
Recurring EBIT in year preceding closing date	F9	513,564		508,920
ROCE in year preceding closing date		**15.36%**		**12.57%**

Current account receivable and payable included in "Capital Employed" do not take into account margin calls and gains and losses booked on the mark-to-market value of strategic hedging instruments.

Average capital employed for the half years is calculated as the average of the capital employed at the end of the period and at the end of the preceding period. Average capital employed for the year is calculated as the average of the capital employed of both half years.

F32 FINANCIAL INSTRUMENTS BY CATEGORY

AS AT THE END OF PREVIOUS YEAR

			CARRYING AMOUNT			
Thousands of Euros	LEVEL	FAIR VALUE	HELD FOR TRADING – FV HEDGING	CASH FLOW HEDGING	LOANS, RECEIVABLES AND PAYABLES	FINANCIAL ASSETS AT FV THROUGH OCI
ASSETS						
Financial assets at fair value through Other Comprehensive Income		**8,028**	**–**	**–**	**–**	**8,028**
Financial assets at fair value through Other Comprehensive Income – Shares	1	8,028	–	–	–	8,028
Loans granted		**8,897**	**–**	**–**	**8,897**	**–**
Loans to associates and non-consolidated affiliates		8,897	–	–	8,897	–
Trade and other receivables		**1,158,112**	**18,844**	**17,184**	**1,122,084**	**–**
Non-current						
Cash guarantees and deposits		9,912	–	–	9,912	–
Other receivables maturing in more than 1 year		1,049	–	–	1,049	–
Assets employee benefits		1,172	–	–	1,172	–
Current						
Trade receivables (at cost)		893,621	–	–	893,621	–
Trade receivables (write-down)		(22,576)	–	–	(22,576)	–
Other receivables (at cost)		221,162	–	–	221,162	–
Other receivables (write-down)		(246)	–	–	(246)	–
Interest receivable	2	177	–	–	177	–
Fair value of financial instruments held for cash-flow hedging	2	17,184	–	17,184	–	–
Fair value receivable – financial instruments related to FV hedging		18,844	18,844	–	–	–
Deferred charges and accrued income		17,813	–	–	17,813	–
Cash and cash equivalents		**285,079**	**–**	**–**	**285,079**	**–**
Short-term investments: bank term deposits		13,687	–	–	13,687	–
Cash-in-hand and bank current accounts		271,392	–	–	271,392	–
TOTAL OF FINANCIAL INSTRUMENTS (ASSETS)		**1,460,116**	**18,844**	**17,184**	**1,416,060**	**8,028**
LIABILITIES						

AS AT THE END OF PREVIOUS YEAR

Thousands of Euros	LEVEL	FAIR VALUE	CARRYING AMOUNT HELD FOR TRADING – FV HEDGING	CASH FLOW HEDGING	LOANS, RECEIVABLES AND PAYABLES	FINANCIAL ASSETS AT FV THROUGH OCI
Financial debt		**1,151,608**	**–**	**–**	**1,145,607**	**–**
Non-current						
Bank loans		711,005	–	–	705,005	–
Other loans		3,842	–	–	3,842	–
Current						
Short-term bank loans		367,723	–	–	367,723	–
Bank overdrafts		27,965	–	–	27,965	–
Short-term loan: commercial paper		41,016	–	–	41,016	–
Other loans		56	–	–	56	–
Trade and other payables		**1,613,750**	**11,844**	**16,844**	**1,585,062**	**–**
Non-current						
Long-term trade payables		9,653	–	–	9,653	–
Other long-term debts		3,768	–	–	3,768	–
Investments grants and deferred income from grants		10,971	–	–	10,971	–
Current						
Trade payables		1,102,383	–	–	1,102,383	–
Advances received on contracts in progress		46,383	–	–	46,383	–
Tax – other than income tax – payable		37,005	–	–	37,005	–
Payroll and related charges		122,762	–	–	122,762	–
Other amounts payable		80,845	–	–	80,845	–
Dividends payable		11,655	–	–	11,655	–
Accrued interest payable		6,497	–	–	6,497	–
Fair value financial instrument held for cash flow hedging	2	16,844	–	16,844	–	–
Fair value payable – financial instruments related to FV hedging	2	11,844	11,844	–	–	–
Accrued charges and deferred income		153,140	–	–	153,140	–
TOTAL OF FINANCIAL INSTRUMENTS (LIABILITIES)		**2,765,358**	**11,844**	**16,844**	**2,730,669**	**–**

AS AT THE END OF THE FINANCIAL YEAR

Thousands of Euros	LEVEL	FAIR VALUE	CARRYING AMOUNT HELD FOR TRADING – FV HEDGING	CASH FLOW HEDGING	LOANS, RECEIVABLES AND PAYABLES	FINANCIAL ASSETS AT FV THROUGH OCI
ASSETS						
Financial assets at fair value through Other Comprehensive Income		**10,897**	**–**	**–**	**–**	**10,897**
Financial assets at fair value through Other Comprehensive Income – Shares	1	10,897	–	–	–	10,897
Loans granted		**2,192**	**–**	**–**	**2,192**	**–**
Loans to associates and non-consolidated affiliates		2,192	–	–	2,192	–
Trade and other receivables		**1,445,696**	**47,495**	**19,699**	**1,378,502**	**–**
Non-current						
Cash guarantees and deposits		8,893	–	–	8,893	–
Other receivables maturing in more than 1 year		1,972	–	–	1,972	–
Assets employee benefits		1,173	–	–	1,173	–
Current						
Trade receivables (at cost)		1,171,835	–	–	1,171,835	–
Trade receivables (write-down)		(22,983)	–	–	(22,983)	–
Other receivables (at cost)		180,336	–	–	180,336	–
Other receivables (write-down)		(207)	–	–	(207)	–
Interest receivable		156	–	–	156	–
Fair value of financial instruments held for cash flow hedging	2	19,699	–	19,699	–	–
Fair value receivable – financial instruments related to FV hedging	2	47,495	47,495	–	–	–
Deferred charges and accrued income		37,327	–	–	37,327	–
Cash and cash equivalents		**271,723**	**–**	**–**	**271,723**	**–**
Short-term investments: bank term deposits		25,524	–	–	25,524	–
Short-term investments: term deposits (other)		7	–	–	7	–
Cash-in-hand and bank current accounts		246,192	–	–	246,192	–
TOTAL OF FINANCIAL INSTRUMENTS (ASSETS)		**1,730,508**	**47,495**	**19,699**	**1,652,417**	**10,897**
LIABILITIES						

AS AT THE END OF THE FINANCIAL YEAR

Thousands of Euros	LEVEL	FAIR VALUE	CARRYING AMOUNT HELD FOR TRADING – FV HEDGING	CASH FLOW HEDGING	LOANS, RECEIVABLES AND PAYABLES	FINANCIAL ASSETS AT FV THROUGH OCI
Financial debt		**1,753,145**	**–**	**–**	**1,715,146**	**–**
Non-current						
Bank loans		1,139,266	–	–	1,101,266	–
Lease liability		46,262	–	–	46,262	–
Other loans		3,555	–	–	3,555	–
Current						
Short-term bank loans		248,478	–	–	248,478	–
Bank overdrafts		32,493	–	–	32,493	–
Short-term loan: commercial paper		282,936	–	–	282,936	–
Other loans		155	–	–	155	–
Trade and other payables		**1,940,468**	**18,670**	**48,829**	**1,872,969**	**–**
Non-current						
Long-term trade payables		2,579	–	–	2,579	–
Other long-term debts		5,520	–	–	5,520	–
Investments grants and deferred income from grants		16,021	–	–	16,021	–
Current						
Trade payables		1,466,140	–	–	1,466,140	–
Advances received on contracts in progress		15,448	–	–	15,448	–
Tax – other than income tax – payable		26,190	–	–	26,190	–
Payroll and related charges		125,252	–	–	125,252	–
Other amounts payable		56,399	–	–	56,399	–
Dividends payable		11,657	–	–	11,657	–
Accrued interest payable		7,856	–	–	7,856	–
Fair value financial instrument held for cash flow hedging	2	48,829	–	48,829	–	–
Fair value payable – financial instruments related to FV hedging	2	18,670	18,670	–	–	–
Accrued charges and deferred income		139,907	–	–	139,907	–
Total of financial instruments (Liabilities)		**3,693,613**	**18,670**	**48,829**	**3,588,115**	**–**

Loans and debt have been issued at market rates which would not create any major differences with effective interest expenses. All categories of financial instruments of Umicore are at fair value except the non-current bank and other loans for which the carrying amounts differ from the fair value (see note F24).

The fair value of financial instruments traded in active markets is based on quoted market prices at the end of the reporting period.

The fair value of financial instruments that are not traded in an active market is determined using valuation techniques, mainly discounted cash-flow, using market assumptions prevailing at the end of the reporting period.

In particular, the fair value of interest rate swaps is calculated as the present value of the estimated future cash flows. The fair value of forward foreign exchange, metal and energy contracts is determined using quoted forward exchange, metal and energy rates at the end of the reporting period.

The fair value of quoted financial assets held by the Group is their quoted market price at the end of the reporting period. The fair value of financial liabilities is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the Group for similar financial instruments.

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values.

32.1 FAIR VALUE HIERARCHY

The Group adopted the amendment to IFRS 7 for financial instruments which are measured in the balance sheet at fair value, with effect from January 2009. This amendment requires disclosures of fair value measurements by level, based on the following fair value measurement hierarchy:

- Level 1: fair value based on quoted prices in active markets for identical assets or liabilities.
- Level 2: fair value based on inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly.
- Level 3: fair value for the asset or liability valuation are based on unobservable inputs.

In the Group, the fair values on financial assets at fair value through OCI are measured as level 1. All the metal, energy and foreign currency derivatives are measured as level 2.

32.2 SENSITIVITY ANALYSIS ON FINANCIAL INSTRUMENTS

Umicore is sensitive to commodity prices, foreign currency and interest rate risk on its financial instruments.

32.2.1 COMMODITY PRICES

The fair value on financial instruments related to cash flow hedging sales would have been € 22.8 million lower/higher if the metal prices would strengthen/weaken by 10%.

The fair value on financial instruments related to cash flow hedging purchases would have been € 1.7 million higher/lower if the energy prices would strengthen/weaken by 10%. The fair value on financial instruments related to cash flow hedging purchases would have been € 7.4 million higher/lower if the metal prices would strengthen/weaken by 10%.

The fair value on other commodity sales financial instruments would have been € 38.3 million lower/higher and the fair value on other commodity purchases financial instruments would have been € 38.6 million higher/lower if the metal prices would strengthen/weaken by 10%.

32.2.2 FOREIGN CURRENCY

The fair value of forward currency contracts related to cash flow hedging would have been € 2.0 million lower if the EUR would strengthen against USD by 10% and would have been € 2.4 million higher if the EUR would weaken against USD by 10%.

The fair value of forward currency contracts related to cash flow hedging would have been € 1.9 million lower if the EUR would strengthen against ZAR by 10% and would have been € 2.3 million higher if the EUR would weaken against ZAR by 10%.

The fair value of forward currency contracts related to cash flow hedging would have been € 8.0 million lower if the USD would strengthen against KRW by 10% and would have been € 9.7 million higher if the USD would weaken against KRW by 10%.

The fair value of forward currency contracts related to cash flow hedging would have been € 2.3 million higher if the EUR would strengthen against CNY by 10% and would have been € 2.8 million lower if EUR would weaken against CNY by 10%.

The fair value of forward currency contracts related to cash flow hedging would have been € 4.8 million lower if the USD would strengthen against CNY by 10% and would have been € 5.9 million higher if USD would weaken against CNY by 10%.

The fair value of other forward currency contracts sold would have been € 69.7 million higher if the EUR would strengthen against USD by 10% and would have € 85.2 million lower if the EUR would weaken against USD by 10%.

The fair value of other forward currency contracts bought would have been € 26.3 million lower if the EUR would strengthen against USD by 10% and would have been € 32.2 million higher if the EUR would weaken against USD by 10%.

The fair value of net position of current assets and liabilities exposed to USD would have been € 15.2 million lower if the EUR would strengthen against USD by 10% and would have been € 18.5 million higher if the EUR would weaken against USD by 10%.

F33 FAIR VALUE OF FINANCIAL INSTRUMENTS

Umicore hedges its structural and transactional commodity (metal and energy), currency and interest rate risks using respectively commodity derivatives (mainly quoted on the London Metal Exchange), currency derivatives and Interest Rate Swaps with reputable brokers and banks.

33.1 FINANCIAL INSTRUMENTS RELATED TO CASH-FLOW HEDGING

Thousands of Euros	NOTIONAL OR CONTRACTUAL AMOUNT 31/12/2018	31/12/2019	FAIR VALUE 31/12/2018	31/12/2019
Forward commodities sales	22,498	186,117	(5,779)	(41,403)
Forward commodities purchases	(101,452)	(76,930)	1,854	7,538
Forward currency contracts sales	486,796	319,897	1,060	(829)
Forward currency contracts purchases	(89,545)	(64,264)	3,790	6,250
Forward IRS contracts	64,290	40,000	(586)	(687)
Total fair value impact subsidiaries			**340**	**(29,130)**
Recognized under trade and other receivables			17,184	19,699
Recognized under trade and other payables			(16,844)	(48,829)
Total fair value impact associates and joint ventures			(1,440)	72
Total			**(1,100)**	**(29,058)**

The principles and documentation on the hedged risks as well as the timing related to the Group's cash flow hedging operations are included in note F3 Financial risk management.

The fair values of the effective hedging instruments are in the first instance recognized in the fair value reserves recorded in equity and are derecognized when the underlying forecasted or committed transactions occur (see note F23).

The forward commodities sales contracts are set up to hedge primarily the following commodities: gold, silver, palladium, platinum nickel, lead and copper. The forward commodity purchase contracts are set up to hedge primarily the electricity, gas and fuel oil price risks and the commodity nickel. The forward currency contracts are set up to hedge USD towards EUR, KRW, CNY, BRL and CAD as well as EUR towards ZAR and CNY. The terms and conditions of the forward contracts are common market conditions. In those circumstances whereby the hedge accounting documentation as defined under IFRS 9 is not available, financial instruments used to hedge structural risks for metals and currencies are measured as if they were held for trading. However, such instruments are being used to hedge future probable cash-flows and are not speculative in nature. Umicore did not face any ineffectiveness on cash flow hedging in P&L in 2018 and 2019.

The fair values of the hedging instruments reflect the difference between the contract rates and the closing rates. The total fair value of financial instruments for cash-flow hedging has a negative impact on the fair value reserves in equity at end of 2019. Most of the fair values of the hedging instruments are not significant as the closing rates do not materially differ from the strike rates. Only for the commodities sold the fair values are significant. These concern metal hedging instruments of which most have their maturity within the next two years.

33.2 FINANCIAL INSTRUMENTS RELATED TO FAIR VALUE HEDGING

Thousands of Euros	NOTIONAL OR CONTRACTUAL AMOUNT 31/12/2018	31/12/2019	FAIR VALUE 31/12/2018	31/12/2019
Forward commodities sales	194,909	389,955	3,101	28,666
Forward commodities purchases	(234,618)	(390,761)	4,861	(937)
Forward currency contracts sales	1,350,314	1,346,766	(3,741)	2,818
Forward currency contracts purchases	(669,549)	(613,466)	2,779	(1,723)
Total fair value impact subsidiaries			**7,000**	**28,824**
Recognized under trade and other receivables			18,844	47,495
Recognized under trade and other payables			(11,844)	(18,670)
Total			**7,000**	**28,824**

The fair values of the hedging instruments reflect the difference between the contract rates and the closing rates. The booking of the fair value movements on financial instruments under fair value hedging had a positive impact on the operating income at the end of 2019. Most of the fair values of the hedging instruments are not significant as the closing rates do not materially differ from the strike rates. Only for the commodities sold the fair values are significant. These concern metal hedging instruments of which most have their maturity within the next year. However, in view of the intent of the Group policy on hedging, the net impact on operating income of fair value movements on both hedging instruments and hedged items is neutral. The forward commodities sales contracts are set up to hedge primarily the following commodities: gold, silver, palladium, platinum, rhodium, nickel, lead and copper. The forward commodity purchase contracts are set up to hedge primarily gold nickel and copper. The forward currency contracts are set up to hedge USD towards EUR, KRW, CNY, BRL and CAD as well as EUR towards CNY, ZAR, CAD, CHF, JPY, THB, DKK and PLN. The principles and documentation related to the Group's transactional hedging are included in note F3 "Financial risk management". The Group's fair value hedging of currencies and commodities comply with IFRS 9 fair value hedge accounting rules (see also note F2.21.1). In the absence of hedge accounting documentation as defined under IFRS 9, financial instruments used to hedge transactional risks for metals and currencies are measured as if they were held for trading. However, such instruments are being used to cover existing transactions and firm commitments and are not speculative in nature.

The fair values are immediately recognized in the income statement under Other operating income for the commodity instruments and the Net Finance cost for the currency instruments.

AS AT THE END OF PREVIOUS YEAR

Thousands of Euros	EARLIEST CONTRACTUAL MATURITY (UNDISCOUNTED) – NOTIONAL AMOUNTS					EARLIEST CONTRACTUAL MATURITY (UNDISCOUNTED) – FAIR VALUE				
	< 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	TOTAL	< 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	TOTAL
FINANCIAL INSTRUMENTS ASSETS (FAIR VALUE)										
Commodity risk										
Total forward sales (CFH)	373	384	2,177	–	**2,934**	21	42	162	–	**225**
Total forward purchases (CFH)	–	–	11,907	–	**11,907**	–	–	7,244	–	**7,244**
Total forward sales (FV Hedging)	29,812	53,330	32,724	–	**115,866**	2,867	4,066	1,035	–	**7,968**
Total forward purchases (FV Hedging)	7,939	188,556	175	–	**196,670**	417	5,202	5	–	**5,624**
FX Risk										
Forward currency contracts sales (CFH)	20,905	42,216	187,937	–	**251,058**	404	867	4,654	–	**5,925**
Forward currency contracts purchases (CFH)	276	610	5,460	83,199	**89,545**	15	33	264	3,478	**3,790**
Forward currency contracts sales (FV Hedging)	643,282	64,923	60,945	2,162	**771,312**	1,540	(104)	142	–	**1,578**
Forward currency contracts purchases (FV Hedging)	427,440	158,318	39,515	–	**625,273**	1,960	1,524	190	–	**3,674**
FINANCIAL INSTRUMENTS LIABILITIES (FAIR VALUE)										
Interest Rate Risk										
Interest rate swaps	24,290	–	–	40,000	**64,290**	(277)	–	–	(309)	**(586)**
Commodity risk										
Total forward sales (CFH)	–	3,660	15,904	–	**19,564**	–	(1,546)	(4,457)	–	**(6,003)**
Total forward purchases (CFH)	276	610	5,460	83,199	**89,545**	2	5	60	(5,458)	**(5,391)**
Total forward sales (FV Hedging)	7,252	53,095	18,697	–	**79,044**	(312)	(4,147)	(408)	–	**(4,867)**
Total forward purchases (FV Hedging)	20,319	10,188	7,441	–	**37,948**	(415)	(188)	(160)	–	**(763)**
FX Risk										
Forward currency contracts sales (CFH)	9,505	19,010	85,933	121,290	**235,738**	(159)	(410)	(2,234)	(2,061)	**(4,864)**
Forward currency contracts sales (FV Hedging)	397,094	78,235	103,674	–	**579,003**	(3,494)	11	(1,837)	–	**(5,320)**
Forward currency contracts purchases (FV Hedging)	25,086	15,541	3,649	–	**44,276**	(475)	(374)	(47)	–	**(896)**

AS AT THE END OF THE FINANCIAL YEAR

Thousands of Euros	EARLIEST CONTRACTUAL MATURITY (UNDISCOUNTED) – NOTIONAL AMOUNTS < 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	TOTAL	EARLIEST CONTRACTUAL MATURITY (UNDISCOUNTED) – FAIR VALUE < 1 MONTH	1 TO 3 MONTHS	3 MONTHS – 1 YEAR	1 TO 5 YEARS	TOTAL
FINANCIAL INSTRUMENTS ASSETS										
Commodity risk										
Total forward sales (CFH)	1,099	2,078	9,231	2,286	**14,694**	119	245	1,002	25	**1,391**
Total forward purchases (CFH)	–	–	–	64,264	**64,264**	–	–	–	9,764	**9,764**
Total forward sales (FV Hedging)	49,076	59,043	131,159	–	**239,279**	8,620	10,327	14,812	–	**33,760**
Total forward purchases (FV Hedging)	16,865	270,499	–	–	**287,364**	233	7,370	–	–	**7,603**
FX Risk										
Forward currency contracts sales (CFH)	3,828	7,480	33,933	67,372	**112,613**	77	153	680	1,383	**2,294**
Forward currency contracts purchases (CFH)	–	–	–	64,264	**64,264**	–	–	–	6,250	**6,250**
Forward currency contracts sales (FV Hedging)	621,600	85,064	170,640	–	**877,304**	3,608	760	1,053	–	**5,421**
Forward currency contracts purchases (FV Hedging)	244,968	9,171	593	–	**254,732**	567	140	4	–	**711**
FINANCIAL INSTRUMENTS LIABILITIES										
Interest Rate Risk										
Interest rate swaps	–	–	–	40,000	**40,000**	–	–	–	(687)	**(687)**
Commodity risk										
Total forward sales (CFH)	–	26,944	53,907	90,572	**171,423**	–	(8,634)	(16,467)	(17,694)	**(42,795)**
Total forward purchases (CFH)	–	–	10,372	2,295	**12,667**	–	–	(2,125)	(101)	**(2,226)**
Total forward sales (FV Hedging)	20,221	82,057	48,397	–	**150,676**	(372)	(3,303)	(1,418)	–	**(5,094)**
Total forward purchases (FV Hedging)	45,294	38,073	20,030	–	**103,397**	(4,700)	(3,849)	9	–	**(8,540)**
FX Risk										
Forward currency contracts sales (CFH)	15,419	30,481	125,662	35,723	**207,284**	(399)	(738)	(2,186)	200	**(3,123)**
Forward currency contracts sales (FV Hedging)	313,853	145,539	10,071	–	**469,462**	(1,543)	(949)	(110)	–	**(2,603)**
Forward currency contracts purchases (FV Hedging)	237,483	22,170	98,779	301	**358,733**	(1,582)	(151)	(701)	–	**(2,434)**

F34 NOTES TO THE CASH FLOW STATEMENT

34.1 DEFINITIONS

The cash flow statement identifies operating, investing and financing activities for the period. Umicore uses the indirect method for the operating cash flows. The net profit and loss is adjusted for:

- the effects of non-cash transactions such as provisions, impairment losses, mark to market, etc., and the variance in operating capital requirements.
- items of income or expense associated with investing or financing cash flows.

Thousands of Euros	2018	2019
Adjustments for non-cash transactions		
Depreciations	206,577	244,038
(Reversal) Impairment charges	6,780	23,602
Mark to market of inventories and commitments	53,081	(38,277)
Exchange difference on long-term loans	(395)	(1,946)
Inventories and bad debt provisions	13,805	39,926
Depreciation on government grants	(1,236)	(904)
Share-based payments	11,150	8,211
Change in provisions	58,518	(67,349)
Total	**348,280**	**207,302**
ADJUSTMENTS FOR ITEMS TO DISCLOSE SEPARATELY OR UNDER INVESTING AND FINANCING CASH FLOWS		
Tax charge of the period	103,240	96,691
Interest (income) charges	33,217	41,042
(Gain) loss on disposal of fixed assets	(5,963)	(8,033)
Dividend income	(124)	(133)
Total	**130,369**	**129,568**
CHANGE IN WORKING CAPITAL REQUIREMENT ANALYSIS		
Inventories	(679,671)	(154,236)
Trade and other receivables	166,200	(271,357)
Trade and other payables	(54,837)	383,700
As in the consolidated balance sheet	**(568,308)**	**(41,893)**
Non-cash items (*)	(133,286)	(10,329)
Items disclosed elsewhere (**)	12,451	(79,639)
Impact of business combination	(6,885)	56,050
Currency translation differences	(11,991)	(2,630)
As in the consolidated cash flow statement	**(708,017)**	**(78,441)**

(*) Non-cash items are mainly linked to mark to market of inventories and commitments, strategic and transactional hedging and inventories, impairments in inventories and bad debt provisions.

(**) Item disclosed elsewhere are mainly due to changes in interest, dividend and tax receivable and payable and government grants.

Thousands of Euros	NET CASH AND CASH EQUIVALENT	LOANS (W/O BANK OVERDRAFTS)	NET FINANCIAL DEBT
At the end of previous year	**257,114**	**1,117,641**	**860,527**
Cash flow of the period	(17,883)	565,012	582,895
At the end of the financial year	**239,231**	**1,682,653**	**1,443,422**

34.2 NET CASH FLOW GENERATED BY OPERATING ACTIVITIES

Operating cash flow after tax from continuing operations is € 479.2 million. The net working capital requirements for continuing operations increased with € 78.4 million in 2019 compared to 2018, reflecting a pronounced increase in working capital needs in the Catalysis business group in the second half of the year due to higher PGM prices, partly offset by a release of working capital in the Recycling business group.

34.3 NET CASH FLOW USED IN INVESTING ACTIVITIES

Net cash used in investing activities for continuing operations increased by € 173.0 million in 2019. Capital expenditure for continuing operations reached € 553.2 million if capitalized R&D costs are excluded as per Umicore's definition of capital expenditures (refer to Glossary). The higher capital expenditure spending reflects higher investments in all business groups. The business group Energy & Surface Technologies accounted for close of two thirds of the amount, with investments primarily linked to the ongoing major greenfield expansion programs in cathode materials in China and Poland. The higher investments in Catalysis reflect the capacity expansions in China, Poland and India as well as the expansion of fuel cell catalyst capacity in Korea. In Recycling, capital expenditures comprise the investments carried out during the extended maintenance shutdown of the Hoboken plant as well as the investments to further improve the environmental performance of the plant.

The acquisition in additional shareholdings in subsidiaries for € 188.1 million is related to the acquisition of the cobalt refining and cathode precursor activities at Kokkola (Finland) completed early December (see note F8).

34.4 NET CASH FLOW USED IN FINANCING ACTIVITIES

The cash generated in financing activities is mainly the consequence of the capital increase from minorities (€ 15.5 million) and the net increase of the indebtedness (€ 517.1 million). The cash used in financing activities is mainly related to the purchase and use of own shares to cover the exercise of options (€ 29.0 million), and the payment of dividends (€ 197.6 million) and of interest (€ 39.6 million).

Since the introduction of IFRS 16 on leases, the interests and the reimbursement of the lease liability are both classified as financing cash flows (€ -16.5 million under the line Change in lease liability and € -0.9 million under the line interests paid) whereas before the operating lease rents (€ 17.5 million) were part of the operating cash flows.

Thousands of Euros	2018	2019
Acquisition of tangible assets	466,078	529,487
Acquisition of intangible assets	31,758	58,362
Acquisitions of assets	**497,836**	**587,849**
Capitalized R&D	20,247	34,660
Capital expenditure for continuing operations	**477,589**	**553,189**

F35 RIGHTS AND COMMITMENTS

Thousands of Euros	2018	2019
Guarantees constituted by third parties on behalf of the Group	85,289	24,802
Guarantees constituted by the Group on behalf of third parties	551	10,903
Guarantees received	127,423	130,005
Goods and titles held by third parties in their own names but at the Group's risk	474,563	515,254
Commercial commitments for commodities purchased (to be received)	582,971	679,569
Commercial commitments for commodities sold (to be delivered)	1,112,482	1,213,465
Goods and titles of third parties held by the Group	2,650,255	3,635,638
Miscellaneous rights and commitments	4,814	567
Total	**5,038,348**	**6,210,203**

35.1 GUARANTEES CONSTITUTED BY THIRD PARTIES ON BEHALF OF THE GROUP

These are secured and unsecured guarantees given by third parties to the creditors of the group guaranteeing that the Group's debts and commitments, actual and potential, will be satisfactorily discharged.

35.2 GUARANTEES CONSTITUTED BY THE GROUP ON BEHALF OF THIRD PARTIES

These are guarantees or irrevocable undertakings given by the Group in favor of third parties guaranteeing the satisfactory discharge of debts or of existing or potential commitments by the third party to its creditors.

There are no loan commitments given to third parties.

35.3 GUARANTEES RECEIVED

These are pledges and guarantees received guaranteeing the satisfactory discharge of debts and existing and potential commitments of third parties towards the Group, with the exception of guarantees and security in cash.

The guarantees received are mainly related to supplier guarantees backed by bank institutions. Those guarantees are set up to cover the good execution of work by the supplier. Some guarantees received are related to customer guarantees, received mainly from a customer's mother company on behalf of one of its subsidiaries. A minor part of the received guarantees is related to rent guarantees.

All guarantees are taken at normal market conditions and their fair value is equivalent to the carrying amount. No re-pledge has been done on any of those guarantees.

35.4 GOODS AND TITLES HELD BY THIRD PARTIES IN THEIR OWN NAMES BUT AT THE GROUP'S RISK

These represent goods and titles included in the Group balance sheet for which the Group bears the risk and takes the profit, but where these goods and titles are not present on the premises of the Group. It concerns mainly inventories leased out to third parties or held under consignment or under tolling agreement by third parties.

35.5 COMMERCIAL COMMITMENTS

These are firm commitments to deliver or receive metals to customers or from suppliers at fixed prices.

35.6 GOODS AND TITLES OF THIRD PARTIES HELD BY THE GROUP

These are goods and titles held by the group, but which are not owned by the Group. It concerns mainly third-party inventories leased in or held under consignment or tolling agreements with third parties. It also includes in a much lesser extent some non-metal leases that are not in the scope of IFRS 16 because of lower values or short-term.

The Group leases metals (particularly gold, silver, platinum and palladium) from and to banks and other third parties for specified, mostly short term, periods and for which the group pays or receives fees. As at 31 December 2019, there was a net lease-in position of € 1,088 million vs. € 1,121 million at end of 2018. This decrease is mainly caused by lower volumes compensating higher metal prices. As detailed in Note F2.7, those metal leases are not under the scope of IFRS 16.

F36 CONTINGENCIES

The Group has a pending file that can be qualified as a contingent liability according to the definition of IFRS. A subsidiary of Element Six Abrasives received notice of a local tax assessment for USD 29 million. Having taken expert advice, its management has submitted an appeal contesting the assessment and recognized this as a contingent liability. Umicore retains 40.22% interest in Element Six Abrasives and accounts for the company using the equity method.

The Group is the also subject of a number of other claims and legal proceedings incidental to the normal conduct of its business. Management does not believe that such claims and proceedings are likely to have a material adverse effect on the financial condition of Umicore.

F37 RELATED PARTIES

Thousands of Euros	2018	2019
TRANSACTIONS WITH JOINT VENTURES AND ASSOCIATES		
Operating income	263,197	109,636
Operating expenses	(290,356)	(208,746)
Financial income	180	–
Dividends received	(8,366)	(11,321)

Thousands of Euros	2018	2019
OUTSTANDING BALANCES WITH JOINT VENTURES AND ASSOCIATES		
Current trade and other receivables	48,939	24,457
Current trade and other payables	78,493	34,855

The transactions with associates and joint ventures are mainly commercial transactions, sales and purchases of goods and services.

There are no transaction with entities held by key management personnel.

Thousands of Euros	2018	2019
BOARD OF DIRECTORS		
Salaries and other compensation	**1,036,151**	**896,677**
Fixed portion	296,088	296,000
Variable portion (based on attended meetings)	239,000	334,000
Value of the share grant	498,500	264,300
Benefit in kind company car chairman	2,563	2,377

No variable or other compensation element (apart from attendance-related fees) is associated with directorship. No loan or guarantees have been granted by the company to members of the Board.

Thousands of Euros	2018	2019
EXECUTIVE COMMITTEE		
Salaries and other benefits	**10,996,814**	**11,565,086**
Short-term employee benefits	3,766,440	5,071,742
Post-employment benefits	1,167,807	1,002,259
Other long-term benefits	1,260,250	1,773,124
Share-based payments	4,802,317	3,717,961

The data above shows the accounting view of the Board and Executive Committee remuneration and differs somewhat from the information provided in the Remuneration Report in the Corporate Governance section.

In the tables above, the employer social security contributions, if applicable, are included in the short-term employee benefits. These do not feature in the Remuneration Report.

With regards to share-based incentives the share grant figures included in share-based payments above represent the value of the shares granted in 2019 for services rendered in 2018. The remuneration Report shows the value of the shares granted in 2020 or services rendered in the reporting year i.e. 2019.

The figures related to the undeferred part of the variable cash remuneration linked to the individual performance for the reference year 2019, included in short-term employee benefits, represent the level of accruals at the end of reporting period. The Remuneration Report features the actual amounts paid with respect to the reference year 2019.

Accruals booked for the deferred parts of the variable cash remuneration for the reference year 2019 are included in the other long-term benefits. The amounts to be paid in 2022 will depend on long-term performance measures and the exact amounts paid will be included in the Remuneration Report of 2021.

F38 EVENTS AFTER THE REPORTING PERIOD

In its full year results 2019 press release of February 7 2020, Umicore highlighted the risks related to the impact of the coronavirus outbreak on its 2020 outlook. Umicore provided an update of the impact, including on its operations, on 26 March 2020 through a press release, stating that the magnitude and the duration of the impact of COVID-19 make it impossible to predict its full impact on Umicore's market and activities. Umicore therefore withdraws the outlook given on 7 February 2020 which guided for growth in revenues and earnings for the full year 2020 as it assumed at that time that the virus outbreak would not result in a protracted or material effect on the economy in 2020. The COVID-19 outbreak is a non-adjusting subsequent event only having an impact on the balance sheet and income statement of 2020 without having any impact on the financial statements of 2019.

As a matter of prudence and in light of the extreme unpredictability of the global situation, Umicore's Board of Directors has decided to propose a dividend of € 0.375 per share in respect of the full year 2019. This proposal replaces the proposal initially made on 7 February 2020 of € 0.75 per share and corresponds to the amount of the interim dividend of € 0.375 per share which was already paid out on 27 August 2019. This decision is also to be seen as a way for Umicore's management and Board of Directors to share the efforts among its stakeholders. Umicore will assess the appropriate amount to be returned to shareholders in 2020 once it gains more clarity around the full impact of COVID-19.

F39 EARNINGS PER SHARE

Euros	2018	2019
Excluding discontinued operations		
EPS – basic	1.33	1.2
EPS – diluted	1.31	1.19
Including discontinued operations		
EPS – basic	1.33	1.20
EPS – diluted	1.31	1.19
Recurring EPS	**1.36**	**1.3**

The following earnings figures have been used as the numerator in the calculation of basic and diluted earnings per share:

NUMERATOR ELEMENTS

Thousands of Euros	NOTES	2018	2019
Net consolidated profit, Group share	F9		
Without discontinued operations		316,984	287,791
With discontinued operations		316,984	287,791
Recurring net consolidated profit, Group share	F9	**326,430**	**311,714**

The following numbers of shares have been used as the denominator in the calculation of basic and diluted earnings per share:

DENOMINATOR ELEMENTS

	2018	2019
Total shares issued as at 31 December	**246,400,000**	**246,400,000**
of which treasury shares	5,356,583	5,624,550
of which shares outstanding	241,043,417	240,775,450
Weighted average number of outstanding shares	**239,202,537**	**240,558,659**
Potential dilution due to stock option plans	2,484,056	1,354,110
Adjusted weighted average number of outstanding shares	241,686,593	241,912,769

Total outstanding shares are after deduction of treasury shares, which are held to cover existing stock option plans or are available for resale. The denominator for the calculation of diluted earnings per share takes into account an adjustment for stock options.

During 2019, no new shares were created as a result of the exercise of stock options with linked subscriptions rights. During the year Umicore used 936,604 of its treasury shares in the context of the exercise of stock and 71,300 for shares granted. In the course of 2019, Umicore bought back 1,275,871 own shares. On 31 December 2019, Umicore owned 5,624,550 of its own shares representing 2.28 % of the total number of shares issued as at that date.

F40 IFRS DEVELOPMENTS

The following new standards, amendments and interpretation to standards have been issued, and are **mandatory** for the first time for the financial year beginning 1 January 2019. Those **have been endorsed by the European Union**:

- **IFRS 16** 'Leases'. This standard replaces the current guidance in IAS 17 and is a far-reaching change in accounting by lessees in particular. Under IAS 17, lessees were required to make a distinction between a finance lease (on balance sheet) and an operating lease (off balance sheet). IFRS 16 requires lessees to recognize a lease liability reflecting future lease payments and a 'right-of-use asset' for virtually all lease contracts. For lessors, the accounting stays almost the same. However, as the IASB has updated the guidance on the definition of a lease (as well as the guidance on the combination and separation of contracts), lessors will also be affected by the new standard. Under IFRS 16, a contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

- **IFRIC 23** 'Uncertainty over income tax treatments'. This interpretation clarifies the accounting for uncertainties in income taxes. The interpretation is to be applied to the determination of taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates, when there is uncertainty over income tax treatments under IAS 12.

For both standards, the impacts are developed in the Note F2.23 Impact of changes in accounting policies.

For all other new interpretations and standards not yet mandatory as from 1 January 2019, management has no indications that this will result in a material impact on the Group's consolidated financial statements.

F41 AUDITORS' REMUNERATION

The world-wide remuneration for the statutory auditor and its affiliated companies totaled € 2.4 million, including an amount of € 1.7 million for the statutory audit missions (€ 0.5 million for the audit of the mother company) and € 0.7 million for non-statutory audit services including audit-related and other attestation services (€ 0.4 million) and other non-audit related services (€ 0.3 million).

PARENT COMPANY SEPARATE SUMMARIZED FINANCIAL STATEMENTS

The annual accounts of Umicore are given below in summarized form.

In accordance with the Companies code, the annual accounts of Umicore, together with the management report and the statutory auditor's report will be deposited with the National Bank of Belgium.

UMICORE
Rue du Marais 31
B-1000 Brussels (Belgium)

The statutory auditor did not express any reservations in respect of the annual accounts of Umicore.

The legal reserve of € 55.0 million which is included in the retained earnings is not available for distribution.

Thousands of Euros	31/12/2017	31/12/2018	31/12/2019
SUMMARIZED BALANCE SHEET AT 31 DECEMBER			
1. ASSETS			
Fixed assets	**4,117,701**	**2,121,852**	**2,885,295**
I. Formation expenses	–	8,256	6,066
II. Intangible assets	110,018	114,447	114,726
III. Tangible assets	398,464	425,814	467,458
IV. Financial assets	3,609,219	1,573,335	2,297,045
Current assets	**950,746**	**1,696,083**	**1,748,153**
V. Amounts receivable after more than one year	373	362,679	449,366
VI. Stocks and contracts in progress	339,484	641,452	534,771
VII. Amounts receivable within one year	381,570	502,354	519,135
VIII. Investments	200,213	158,103	184,701
IX. Cash at bank and in hand	780	3,937	2,190
X. Deferred charges and accrued income	28,326	27,558	57,990
Total assets	**5,068,447**	**3,817,935**	**4,633,448**
2. LIABILITIES AND SHAREHOLDERS' EQUITY			
Capital and reserves	**1,210,824**	**2,148,879**	**2,268,310**
I. Capital	500,000	550,000	550,000
II. Share premium account	6,610	848,130	848,130
III. Revaluation surplus	91	91	91
IV. Reserves	281,908	363,257	389,855
V. Result carried forward	264,486	152,409	262,604
Vbis. Result for the period	149,816	227,001	209,258
VI. Investments grants	7,913	7,991	8,372
Provisions and deferred taxation			
VII.A. Provisions for liabilities and charges	117,426	125,326	123,600
Creditors	**3,740,197**	**1,543,730**	**2,241,539**
VIII. Amounts payable after more than one year	1,693,125	692,996	1,082,864
IX. Amounts payable within one year	1,973,777	758,721	1,076,244
X. Accrued charges and deferred income	73,295	92,013	82,431
Total liabilities and shareholders' equity	**5,068,447**	**3,817,935**	**4,633,449**

Thousands of Euros	31/12/2017	31/12/2018	31/12/2019
INCOME STATEMENT			
I. Operating income	2,960,635	3,628,486	3,489,297
II. Operating charges	(2,900,861)	(3,532,944)	(3,494,693)
III. Operating result	**59,774**	**95,542**	**(5,396)**
IV. Financial income	161,063	193,305	259,275
V. Financial charges	(69,747)	(59,393)	(41,210)
VI. Result on ordinary activities before taxes	**151,090**	**229,454**	**212,669**
X. Income taxes	(1,274)	(2,453)	(3,411)
XI. Result for the period	**149,816**	**227,001**	**209,258**
XII. Result for the period available	**149,816**	**227,001**	**209,258**

Thousands of Euros	2017	2018	2019
APPROPRIATION ACCOUNT			
A. Profit (loss) to be appropriated	**568,719**	**641,302**	**588,668**
1. Profit (loss) for the financial year	149,816	227,001	209,258
2. Profit (loss) carried forward	418,903	414,301	379,410
C. Appropriation to equity	**7,862**	**(81,349)**	**(26,598)**
2. To the legal reserve	-	(5,000)	-
3. To the reserve for own shares	7,862	(76,349)	(26,598)
D. Profit (loss) to be carried forward[1]	**414,301**	**379,410**	**471,861**
2. Profit (loss) to be carried forward	414,301	379,410	471,861
F. Profit to be distributed[1]	**(162,280)**	**(180,543)**	**(90,209)**
1. Dividends			
Ordinary shares	**(162,280)**	**(180,543)**	**(90,209)**

(1) The total amount of these two items will be amended to allow for the amount of the company's own shares held by Umicore on the date of the Annual General Meeting of Shareholders on 30 April 2020; the gross dividend of EUR 0.375 will not change.

	THOUSANDS OF EUROS	NUMBER OF SHARES
STATEMENT OF CAPITAL		
A. Share capital		
1. Issued capital		
At the end of the preceding financial year	550,000	246,400,000
At the end of the financial year	550,000	246,400,000
2. Structure of the capital		
2.1. Categories of shares		
Ordinary shares	550,000	246,400,000
2.2. Registered shares or bearer shares		
Registered		48,472,816
Bearer		197,927,184
E. Authorized unissued capital	**55,000**	

	% CAPITAL	NUMBER OF SHARES	NOTIFICATION DATE
G. SHAREHOLDER BASE[1]			
Family Trust Desmarais, Albert Frère and Groupe Bruxelles Lambert S.A.	18.62	45,871,052	07/12/2018
BlackRock Investment Management	5.33	13,131,678	30/12/2019
Baillie Gifford & Co and Baillie Gifford Overseas Ltd.	6.46	15,918,969	07/10/2019
Others	67.31	165,853,751	31/12/2019
Own shares held by Umicore	2.28	5,624,550	31/12/2019
	100.00	246,400,000	
of which free float	100.00	246,400,000	

(1) At 31 December 2019, 5,641,250 options on Umicore shares are still to be exercized. This amount includes 5,641,250 acquisition rights of existing shares held by Umicore.

MANAGEMENT RESPONSIBILITY STATEMENT

We hereby certify that, to the best of our knowledge, the Consolidated Financial Statements as of 31 December 2019, prepared in accordance with the International Financial Reporting Standards (IFRS) as adopted by the European Union, and with legal requirements applicable in Belgium, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group and the undertakings included in the consolidation taken as a whole, and that the management report includes a fair review of the development and performance of the business and the position of the group and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face.

26 March 2020,

MARC GRYNBERG
CHIEF EXECUTIVE OFFICER

Environmental statements

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ENVIRONMENTAL KEY FIGURES*

	UNIT	NOTES	2015	2016	2017	2018	2019
Metal emissions to water (load)	kg	E2	4,459	3,738	1,437	1,861	**2,052**
Metal emissions to water (impact units)		E2	328,013	339,001	125,688	144,657	**174,725**
Metal emissions to air (load)	kg	E2	14,544	1,761	1,829	1,564	**864**
Metal emissions to air (impact units)		E2	135,660	86,098	84,463	88,044	**52,492**
SO_x emissions	tonne	E2	1,197	892	661	657	**531**
NO_x emissions	tonne	E2	452	365	320	304	**280**
CO_2e emissions (scope1+2) – Market-based**	tonne	E3	710,143	662,059	633,704	767,702	**791,816**
CO_2e emissions (scope1+2) – Location-based**	tonne	E3	–	735,065	663,307	785,789	**815,175**
Energy consumption	terajoules	E4	7,742	6,737	6,532	7,458	**7,476**
Renewable energy	%	E4	–	–	–	–	14
Water use	thousand m^3	E5	4,904	4,851	4,755	5,885	**6,208**
Total waste produced	tonne	E7	72,663	77,625	72,804	78,778	**68,317**
Hazardous waste	tonne	E7	51,525	59,437	55,442	58,759	**47,589**
of which recycled	%	E7	7.8	3.8	4.3	5.3	**7.9**
Non-hazardous waste	tonne	E7	21,138	18,188	17,373	20,018	**20,728**
of which recycled	%	E7	56.3	57.8	58.2	62.2	**59.4**
Compliance excess rate	%	E9	0.8	0.9	0.1	0.1	**0.1**
Environmental complaints	N°	E9	25	19	34	29	**33**
Sites ISO 14001 certified	%	E9	92	88	92	91	**95**

* Data for 2015 includes the divested business unit Zinc Chemicals, while data for 2016-2019 does not. Data for 2016 and previous years includes the divested business unit Building Products, while data for 2017-2019 does not.

** CO_2e emissions' data for 2015 is an aggregation of market-based and location-based scope 2 emissions. A direct comparison to 2016-2019 data is not possible. If such comparison were to be made, the most meaningful approximation is to use the market-based 2016-2019 figures (see section E3 for details).

NOTES TO THE ENVIRONMENTAL KEY FIGURES

E1 SCOPE OF ENVIRONMENTAL STATEMENTS

The environmental key figures include data from consolidated industrial sites where Umicore has operational control. The site of Kobe (Japan, Automotive Catalysts) was added to the reporting scope in 2019. This brings the total number of consolidated industrial sites that report environmental data to 55, up from 54 in 2018.

Within the scope of Umicore's reporting framework, most of the sites report their environmental data at the end of the third quarter together with a forecast for the fourth quarter. In January, the forecasted values are checked by the sites for significant deviations and, if needed, corrected. The 6 sites with the largest environmental impact for 2019 are: Hanau (Germany; Catalysis, Recycling), Olen (Belgium; Energy & Surface Technologies, Corporate R&D), Hoboken (Belgium; Recycling), Jiangmen (China; Energy & Surface Technologies), Cheonan UMK and Cheonan UMAK (both Korea; Energy & Surface Technologies). They report their full year figures. A sensitivity analysis, undertaken for the 2019 data on energy consumption data, indicates that the potential deviation of the Group environmental performance would be less than 2% in case of a 20% error in the forecasted data.

Please note that due to improved analytical and reporting methods, some of the data published in the 2018 annual report has been restated in the 2019 report. Unless mentioned otherwise, environmental key performance indicators (KPIs) for 2015 include the business unit Zinc Chemicals that was divested during 2016, while 2016-2019 KPIs do not include Zinc Chemicals. Likewise, environmental KPIs for 2015-2016 include the business unit Building Products that was divested during 2017, while 2017-2019 KPIs do not include Building Products.

E2 EMISSIONS TO WATER AND AIR

Umicore's Vision 2015 achievements of reducing our metal emissions to water and air in terms of impact by 26% and 37%, respectively, marked a great step towards sustainable operations. We consider the emission levels achieved in 2015 as our frame of reference in the context of sustainable operations that include the management of the emissions to water and air.

The aim for Horizon 2020 is to build on the Vision 2015 achievements by reducing the impact of metal emissions while considering growing volumes of production. In practice, this means that we aim to at least maintain the level of metals emitted to water and air in terms of impact that we achieved as part of Vision 2015.

Metal emissions to water are defined as the total amount of metals emitted after treatment to surface water from effluent(s) expressed in kg/year. If sites make use of an external waste water treatment plant, the efficiency of that treatment is considered if known to the site.

Metal emissions to air are defined as the total amount of metals emitted to air in solid fraction by all point sources expressed in kg/year. For mercury and arsenic, additional vapor/fume fractions are counted as well.

For each of the metals emitted to water and air, an impact factor is applied to account for the different toxicity and ecotoxicity levels of the various metals when they are emitted to the environment. The higher the impact factor, the higher the toxicity is to the receiving water body (for water emissions) or to human health (for air emissions).

The impact factors for water emissions are based upon scientific data generated ("predicted no effect concentrations" or PNECs) for the REACH regulation. An impact factor of 1 was attributed to the antimony PNEC of 113 µg/l. The impact factors for emissions to air are based upon the occupational exposure limits (OEL) (reference: American Conference of Industrial and Governmental Hygienists, 2011). An impact factor of 1 was attributed to the zinc (oxide) OEL of 2 mg/m^3. Subsequently, an impact factor for all relevant metals was calculated based upon these references. The metal impact to air and to water is expressed as "impact units/year".

We identified the sites that contribute at least 95% in terms of load (for SOx and NOx) or impact units (for metals emissions to water and air) of the total 2015 Group figures (excluding the divested business unit Zinc Chemicals). For emissions to water and air, data collection for 2019 was restricted to the identified material sites (10 or fewer). All other sites were requested to only submit data in case of significant upward deviations from the 2015 baseline for the site.

The improvement on 2015 levels of metal emissions to water and air is measured by comparing emissions of the current reporting year (i.e. 2019) with those of the reference year 2015 and using the same scope of activities as 2015 for the material sites.

To calculate the change in metal emissions to water and air in comparison with the reference year 2015, a baseline has been established for each site in scope. The baseline is established by multiplying the actual activity level of the current reporting year (i.e. 2019) by the 2015 emission intensity (see example below). The baseline 2015 is then calculated by adding up all site-level baselines for the sites in scope. Examples of activity parameters at sites are: tonnes produced per year, machine hours per year, tonnes of input material in recycling process per year.

Example

In 2015, site A produced 20 t of product X and emitted 5 kg of metal Y (impact factor of Y = 8 impact units/kg) to air, resulting in a metal emissions intensity of 2 impact units/t of product X. In 2019, site A produced 22 t of product X and emitted 5 kg of metal Y, resulting in a metal emissions intensity of 1.8 impact units/ton of product X.

The 2015 baseline reported in 2019 is then: activity level of 2019 (22 t) x 2015 emissions' intensity (2 impact units/t) = 44 impact units.

Therefore, the measured 5 kg – equivalent to 40 impact units – emitted in 2019 represents a reduction of 10% compared to what it would have been under 2015 operating conditions.

The 2015 baseline is recalculated yearly (2016-2019 and the following years). It is defined as the metal emissions that would have been expected with the activity volumes of the reporting year (i.e. 2019), but with the metal emissions intensity of the reference year 2015. The performance for each year is expressed as a percentage in comparison to the calculated 2015 Group baseline applicable to each year.

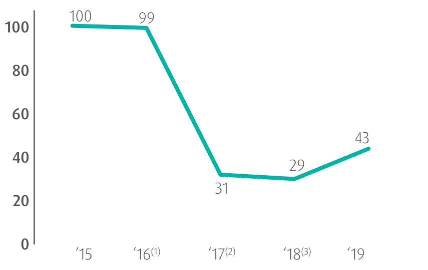
The calculation of metal emissions to water and air covers fully consolidated operations and activities that are part of the Group during the reporting year (2016-2019 and the following years) and that were also part of the Group in 2015. Performance is reported only for the total of the material sites for each KPI.

SO_x and NO_x emissions are expressed in absolute numbers in tonnes/year.

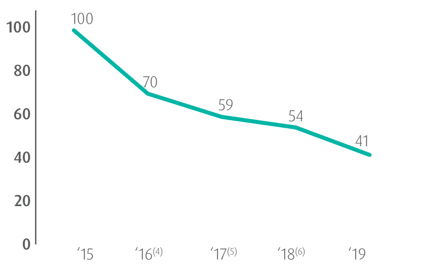
GROUP DATA – EMISSION SCOPE METAL EMISSIONS TO AIR AND WATER

	UNIT	BASELINE 2015 IN RELATION TO 2019	2016	2017	2018	2019
Metal emissions to water	impact units	356,940	339,001	125,688	131,723	**152,105**
Metal emissions to air	impact units	124,403	86,098	84,463	87,664	**51,541**

METAL EMISSION REDUCTION PERFORMANCE (TO WATER)



METAL EMISSION REDUCTION PERFORMANCE (TO AIR)



(1) Baseline 2015 in relation to 2016 was 343,649, leading to a reduction of 1% in 2016 in comparison with 2015
(2) Baseline 2015 in relation to 2017 was 409,691, leading to a reduction of 69% in 2017 in comparison with 2015
(3) Baseline 2015 in relation to 2018 was 453,075, leading to a reduction of 71% in 2018 in comparison with 2015
(4) Baseline 2015 in relation to 2016 was 123,831, leading to a reduction of 30% in 2016 in comparison with 2015
(5) Baseline 2015 in relation to 2017 was 144,049, leading to a reduction of 41% in 2017 in comparison with 2015
(6) Baseline 2015 in relation to 2018 was 163,101, leading to a reduction of 46% in 2018 in comparison with 2015

METAL EMISSIONS TO WATER

The metal emissions to water in 2019, using the defined scope, resulted in 152,105 impact units. Metal emissions to water in 2015, using the defined scope, resulted in 290,714 impact units. To assess progress on our commitment, this 2015 metal emissions level normalized for 2019 activity levels was 356,940 impact units. In 2019, we have therefore achieved a 57% reduction of metal emissions to water in terms of impact for the defined scope compared to 2015.

This evolution between 2015 and 2019 can be largely attributed to our Hoboken plant (Belgium, Recycling), where the increased efficiency of the waste water treatment plant at the site, due to investments in improvement projects over the last years, is paying off. In addition, some efficiency improvements and scale-effects – after further capacity increase of precursor production at our Cheonan UMAK site (Korea, Energy & Surface Technologies) – have contributed to the decrease of the emission intensity in terms of impact by metals emissions to water.

When comparing the impact of our metals emissions to water with 2018, a short-term and temporary lowered efficiency at the Hoboken water treatment plant in 2019 is the main contributing reason for the observed increase year-on-year, while the 43% reduction between 2015 and 2019 shows that we continue to be well on track to meet our Horizon 2020 goal of maintaining and improving on our 2015 emissions levels.

METAL EMISSIONS TO AIR

The metal emissions to air in 2019, using the defined scope, resulted in 51,541 impact units. Metal emissions to air in 2015, using the defined scope, resulted in 117,918 impact units. To assess progress on our commitment, this 2015 metal emissions' level normalized for 2019 activity was 124,403 impact units. In 2019, we have therefore achieved a 59% reduction of metal emissions to air in terms of impact for the defined scope.

The reductions are observed across many sites in scope to a varying degree and can be ascribed for the most part to further efforts that improved air filter efficiency and to improvements in overall process efficiency.

LEAD EMISSIONS AT HOBOKEN (BELGIUM, RECYCLING)

In 2015, infrastructure works at the roof of the lead refinery led to increased lead deposition in the surrounding residential area of Moretusburg. Consequently, the biological monitoring results showed an increased number of children with levels of lead in blood above the recommended reference level of 5 microgram/dl blood (Center for Disease Control and Prevention, USA). This biological monitoring campaign is conducted twice a year by the local authorities.

During the 2019 fall blood sampling campaign, the average lead levels among children in the neighborhood decreased to 3.37 microgram/dl blood. 18% of the children still had levels of lead in blood above the reference value of 5 µg/dl, compared to 23% in 2018 and 32% in 2017. The site continues its emission reduction action plan to further reduce the number of children who show levels of lead in blood above the reference value.

GROUP DATA – OTHER EMISSIONS

	UNIT	2015	2016	2017	2018	2019
SO_x emissions	tonne	1,197	892	661	657	**531**
NO_x emissions	tonne	452	365	320	304	**280**

The SO_x emissions for the Group reduced by 19% from 657 t in 2018 to 531 t in 2019, mainly due to changes to input materials at Hoboken (Belgium, Recycling). The NO_x emissions decreased from 304 t in 2018 to 280 t in 2019, an 8% reduction.

E3 GREENHOUSE GASES

The introduction of our energy efficiency and carbon footprint policy in 2011 guided us to a 26% reduction in CO_2 equivalent (CO_2e) emissions within the defined scope in Vision 2015 and to permanent attention and awareness of energy efficiency at the sites and in the business units' management processes.

Under Horizon 2020, Umicore's improvement focus is on energy efficiency. The efforts to increase energy efficiency are expected to contribute to further reducing our carbon footprint.

Umicore reports its absolute CO_2e emissions as per the scope outlined in E1. The absolute CO_2e emission volumes are calculated using the Greenhouse Gas Protocol definition and reporting methodology for scope 1 and 2 (WBCSD and WRI 2004 and amendment for scope 2 of 2015). Scope 2 for Umicore includes not only purchased electricity but also steam and compressed air purchased from third parties (e.g. from industrial parks). CO_2e includes the greenhouse gases CO_2, CH4 and N2O for scope 1 and major process emissions. Other greenhouse gases are not relevant in Umicore's operations. The scope 2 emissions take only CO_2 into account.

The calculation of scope 2 emissions for each site is done in 2 ways: once using market-based CO_2 emission factors and once using location-based CO_2 emission factors. The market-based emission factors allow calculating the CO_2 emissions based on the specific contracts that sites have in place with their energy suppliers, considering the relevant energy mix for these contracts (including green energy attributes, where applicable). The location-based CO_2 emission factors facilitate calculating the CO_2 emissions based on the residual energy mix in a country/region (where this data is available), thus explicitly excluding green energy attributes that are sold by the power producers in dedicated supply contracts. The total CO_2 emissions for the Group are then presented as 2 separate values based on this differentiation and the metrics are abbreviated as: CO_2e market-based and CO_2e location-based.

The WBCSD Chemical Sector Working Group on GHG Measurement and Reporting established additional guidance to cope with observed anomalies in GHG reporting. Umicore has implemented these guidelines already since the 2012 reporting. The publication of the sector guidelines can be found on their website.

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
CO_2e emissions (scope1+2) – Market-based	tonne	710,143	662,059	633,704	767,702	**791,816**
CO_2e emissions (scope1+2) – Location-based	tonne	–	735,065	663,307	785,789	**815,175**

Total CO_2e market-based emissions in 2019 were 791,816 t. Total CO_2e location-based emissions were 815,175 t. The difference between these 2 figures, 23,359 t, is due to specific energy contracts with a favorable energy mix that our sites have in place, which result in a lower carbon footprint than the residual energy mix for the country/region that the site is located in.

Total CO_2e market-based emissions in 2018 were 767,702 t, and total CO_2e location-based emissions in 2018 were 785,789 t.

For market-based CO_2e emissions, the 2019 emission levels are comparable to those of 2018, showing a slight increase year-on-year of 3%. Various changes in production capacity, activity levels and process setup have led to a net balancing of increasing and decreasing emissions trends at several sites.

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	UMICORE GROUP(1)
CO_2e emissions (scope1+2) – Market-based	tonne	142,680	332,731	315,836	**791,816**
CO_2e emissions (scope1+2) – Location-based	tonne	161,093	347,437	306,175	**815,175**

(1) Umicore Group data includes the data for Corporate Headquarters in Brussels, Belgium.

E4 ENERGY

Umicore is committed under Horizon 2020 to an even more efficient use of energy in its operations. In practice, this means that we aim to further increase the energy efficiency level that we achieved as part of Vision 2015.

The WBCSD Chemical Sector Working Group on GHG Measurement and Reporting established additional guidance to cope with observed anomalies in GHG and energy reporting. Umicore has implemented these guidelines already since the 2012 reporting. Publication of the sector guidelines can be found on the WBCSD website.

In the scope of Horizon 2020, a greater emphasis is on those sites that are contributing the most to Umicore's total energy consumption, and certain parameters, such as activity indicators, have been thoroughly reviewed for those sites and updated where required. Monitoring and reporting of the energy consumption continue to be done at all sites. The larger contributors are additionally encouraged and required to report on their energy efficiency projects.

An analysis of the contributions of the sites to the energy consumption at Group level identified 27 sites that contributed more than 95% to the 2019 total.

GROUP DATA – IN THE CONTEXT OF THE ENERGY EFFICIENCY OBJECTIVE

The aim of improving on 2015 levels of energy efficiency is measured by way of comparing the energy consumption of the current reporting year (i.e. 2019) with the energy consumption of the reference year 2015 and using the same scope of activities as 2015.

To calculate the change in energy consumption in comparison with the reference year 2015, a baseline has been established for each site in scope. The baseline is established by multiplying the actual activity level of the current reporting year (i.e. 2019) by the 2015 energy intensity (see example below). The baseline 2015 is then calculated by adding up all site-level baselines for the sites in scope. Examples of activity parameters at sites are: tonnes produced per year, machine hours per year, tonnes of input material in recycling process per year.

Example

In 2015, site A produced 200 t of product X and consumed 80,000 GJ, resulting in an energy intensity of 400 GJ/t of product X. In 2019, site A produced 220 t of product X and consumed 80,000 GJ, resulting in an energy intensity of 364 GJ/t of product X.

The 2015 baseline reported in 2019 is then: activity level of 2019 (220 t) x 2015 energy intensity (400 GJ/t) = 88,000 GJ.

Therefore, the 80,000 GJ consumed in 2019 represents an improvement of 10% compared to what it would have been under 2015 operating conditions.

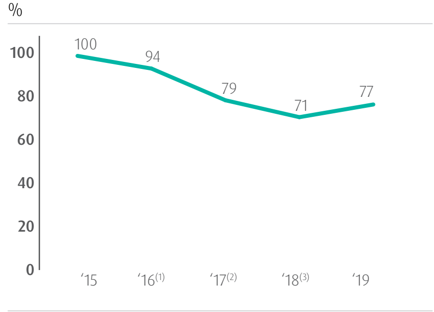
The baseline 2015 is recalculated yearly (2016-2019 and the following years). It is defined as the energy consumption that would have been expected with the activity volumes of the reporting year (i.e. 2019), but with the energy intensity of the reference year 2015. The performance for each year is expressed as a percentage in comparison to the calculated 2015 Group baseline applicable to each year.

The calculation of this KPI covers fully consolidated operations and activities that are part of the Group during the reporting year (2016-2019 and the following years) and that were also part of the Group in 2015. Therefore, the sites of the former business units Zinc Chemicals and Building Products and a few other individual sites, none of which are with Umicore anymore, are not in the reporting scope of this KPI. Likewise, several sites that joined Umicore in 2016-2019 are therefore also not included in the reporting scope for this KPI. The energy consumption data also include our corporate headquarters in Brussels (Belgium).

ENERGY EFFICIENCY OBJECTIVE

	UNIT	BASELINE 2015 IN RELATION TO 2019	2016	2017	2018	2019
Energy consumption	terajoules	7,946	6,241	6,082	6,183	**6,138**

NORMALISED ENERGY CONSUMPTION



(1) Baseline 2015 in relation to 2016 was 6,664 TJ, leading to a reduction of 6% in 2016 in comparison with 2015
(2) Baseline 2015 in relation to 2017 was 7,720 TJ, leading to a reduction of 21% in 2017 in comparison with 2015
(3) Baseline 2015 in relation to 2018 was 8,692 TJ, leading to a reduction of 29% in 2018 in comparison with 2015

The energy consumption in 2019, using the defined scope, was 6,138 TJ. The energy consumption in 2015, using the defined scope, was 5,487 TJ. To assess progress on our commitment, this 2015 energy consumption level normalized for 2019 activity was 7,946 TJ. This means that for equivalent production levels, we consumed 23% less energy. In other words, the energy efficiency has improved by 23% in 2019 compared to the reference year 2015.

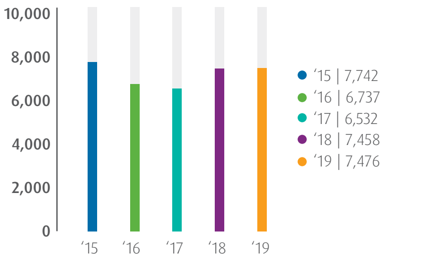
This improvement is mainly due to scale effects in connection with the ongoing capacity increase at our Rechargeable Battery Materials' sites in Korea and China. Further efficiency improvements and consolidations at other sites also contributed to the overall decrease in energy intensity.

Energy efficiency projects have been implemented at the most important sites in line with foregoing sustainable development objectives since 2006. In 2019, 27 sites represented more than 95% of the Group's energy consumption. At 15 of these sites, 34 energy efficiency projects have been reported as being implemented during 2019 and contributed significant energy savings.

ABSOLUTE ENERGY CONSUMPTION

ENERGY CONSUMPTION (ABSOLUTE)

terajoules



Total energy consumption remained stable at 7,476 TJ in 2019, compared to 7,458 TJ in 2018. Various changes in production capacity, activity levels and process setup have led to a net balancing of increasing and decreasing energy consumption trends at several sites.

Indirect energy consumption by primary energy source (purchased electricity, steam and compressed air) for production sites and office buildings in 2019 was 3,621 TJ. Direct energy consumption by primary energy source (fuel, gas oil, natural gas, LPG, coal and cokes) was 3,855 TJ.

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	UMICORE GROUP (1)
Energy consumption	terajoules	1,327	3,466	2,674	**7,476**

(1) Umicore Group data includes the data for Corporate Headquarters in Brussels, Belgium.

RENEWABLE ENERGY

As part of Umicore's drive to reduce our environmental footprint in the light of continuously striving for more sustainable operations, Umicore is tracking the contribution of renewable energy sources in purchased energy. While some indicators for renewable energy have been used in recent years for internal evaluation, 2019 marks the first year in which we have systematically obtained information from our sites on the percentage of renewable energy in the energy mix used for purchased electricity, based on the particular purchase agreement in place at each reporting entity.

The definition of renewable energy as given in the Greenhouse Gas Protocol Scope 2 Guidance (2015 amendment) has guided us in defining the scope of this indicator. Only the following energy sources are considered in scope for this KPI: wind energy, solar energy, energy from biomass (including bio- and other naturally produced gas), hydropower (including marine hydro) and geothermal energy.

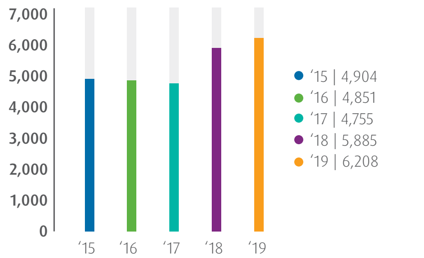
In 2019, the share of renewable energies for purchased electricity was 14%. We will track and report on this KPI in 2020 and beyond.

E5 WATER USE

GROUP DATA

WATER USE

thousand m^3



Water use is defined as the total volume of water expressed in thousand m^3/year from domestic water supply, groundwater wells, surface water and rainwater. Groundwater extraction for remediation purposes and cooling water returned to its original water body are not counted.

The total water use for the Group increased from 5,885 thousand m^3 in 2018 to 6,208 thousand m^3 in 2019, an increase of 5%. The increase in water use is mainly due to new capacity being added and higher production levels, mostly in Energy & Surface Technologies.

BUSINESS GROUP DATA

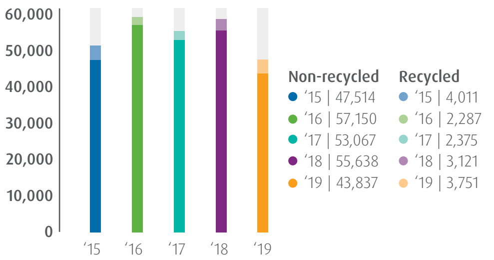
	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	UMICORE GROUP
Water use	thousand m^3	573	3,941	1,694	**6,208**

E6 WASTE

GROUP DATA

HAZARDOUS WASTE

tonne



Waste is defined as the total volume of generated waste expressed in tonnes/year.

The waste recycling rate is the ratio of the waste recovered by third parties (including waste recovered as energy through incineration) and the total waste.

The distinction between hazardous and non-hazardous waste is made based on the local regulation for the region where the reporting entity is located.

In 2019, a total of 68,317 tonnes of waste were generated compared to 78,778 tonnes in 2018, a decrease of 13%. This decrease is due to a combination of improved process conditions and lower material throughput at various sites.

The total volume of hazardous waste decreased from 58,759 tonnes in 2018 to 47,589 tonnes in 2019, a decrease of 19%. The recycling rate of hazardous waste has slightly increased from 5% in 2018 to 8% in 2019.

The total volume of non-hazardous waste slightly increased from 20,018 tonnes in 2018 to 20,728 tonnes in 2019, an increase of 4%.

The recycling rate of non-hazardous waste has slightly decreased from 62% in 2018 to 59% in 2019.

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	UMICORE GROUP
Total waste produced	**tonne**	**8,113**	**29,546**	**30,658**	**68,317**
Hazardous waste	tonne	5,180	18,706	23,702	**47,589**
of which recycled	%	15.56	5.92	7.75	**7.88**
Non-hazardous waste	tonne	2,933	10,840	6,955	**20,728**
of which recycled	%	40.17	46.80	87.21	**59.42**

E7 HISTORICAL POLLUTION

The history of Umicore goes back more than 200 years. It all started with the coming together of a number of mining and smelting companies, which gradually evolved into the materials technology and recycling company Umicore is today. In the mid-1990s, Umicore started a process of divesting its remaining mining rights as part of its strategic reorientation towards added-value materials and recycling.

Umicore's predecessor companies operated within the boundaries of national mining legislation and in compliance with the environmental standards valid at the time these mines were operational. The closure of the mines and the restitution of mining concessions to the relevant state authorities has consistently been carried out in collaboration with the competent authorities and local stakeholders. This process takes into account the specific circumstances of each site. Regarding the downstream industrial smelting and refining installations, remediation projects have been developed in close consultation with other stakeholders to reduce any risks to an acceptable level as defined by the authorities.

Active participation in the management and remediation of risks that have resulted from historical operations, is an integral part of the Umicore Way. Umicore's proactive program for assessing and, where necessary, remediating soil and groundwater contamination has made significant progress. The following section illustrates the main ongoing programs and the progress made during 2019.

BELGIUM

The mining sites in Belgium laid the foundation of our oldest predecessor company, Vieille Montagne. The mining concession of the same name was granted by Emperor Napoleon Bonaparte in 1805 and 5 more concessions were added over time, all located in eastern Wallonia. The mining activities in Belgium ceased in the 1950s and extensive rehabilitation work to secure the site was carried out at all concessions in close consultation with the competent authorities. Four concessions were officially transferred back to the Government, the retrocession of the others is being processed.

In addition, over a century of non-ferrous metals production in Hoboken, Olen, Balen and Overpelt impacted soil and groundwater on the industrial sites and on neighboring lands. In November 1997, Umicore concluded a voluntary agreement with the Flemish Region of Belgium to address this historical contamination. On 23 April 2004, Umicore signed an addendum to the 1997 Covenant with the regional waste authorities (OVAM) and the Regional Minister of the Environment in the Flemish Region of Belgium, in which Umicore committed to spend € 62 million over 15 years for historical pollution remediation on four sites, 2 of which – Balen and Overpelt – now belong to Nyrstar, a business that was divested by Umicore in 2007. In addition, OVAM and Umicore joined forces to remediate historical pollution in the additional areas surrounding the industrial sites, defined as a 9 km perimeter, over 10 years. Both parties contributed €15 million to a new fund for the remediation works. In 2014, OVAM and Umicore agreed to extend the program an additional 5 years. The covenant came to an end in 2019. While the remedial efforts at the Umicore sites will continue as long as necessary, Umicore signed a final agreement whereby it is released from all duties and liabilities, including potential future third party claims.

In Hoboken, what started as a lead and silver refining operation in 1887 grew to a large industrial plant extracting precious metals from waste. Over the years, Umicore has replaced contaminated topsoil by clean soil and remediated the historical contamination in the adjacent residential area. In 2017, an agreement was reached with the local authorities to extend the on-site storage facility, so that on-site topsoil remediation works could restart. A new groundwater remediation system is planned for 2020.

In Olen, the pollution in and around the site is the result of historical production activities of mainly copper and cobalt. As soon as the Covenant was signed, the remediation works on the Olen site began. An on-site groundwater remediation program started in 2007 and is still ongoing. In 2019, contaminated soil and buried waste were further excavated at various locations where infrastructure works were needed.

Between 1922 and 1980, radium and uranium were also produced in Olen. Some of the radium that was produced for cancer treatment purposes at this site was offered to Nobel laureate Marie Curie for her first experiments with radioactive material. The radium production plant was demolished during the 1970s, and the radium production waste was confined to an aboveground storage facility, as was the norm at the time. Since no dedicated legislation for final disposal is in place, Umicore is carrying out safety and monitoring works to guarantee that no risks are emanating from those remnants, neither for the workers on site, nor for the surrounding population.

FRANCE

Umicore's predecessor companies operated mines in France from the mid-1800s. The last remaining mining activities were terminated in the late 1960s to early 1970s, and extensive rehabilitation works were carried out at the former mining sites, all located in Southern France, during the 1990s. All former mining concessions in France have been returned to the French government, the last being confirmed by ministerial decree in 2005.

Mining activities in Saint-Félix-de-Pallières started in the 19th century to exploit a subsoil rich in zinc and zinc-derived metals. The former mining concession was closed in 1971 and was secured in full compliance with the applicable legislation. The concession was waived in 2004 after the French authorities acknowledged that all the measures prescribed had been complied with. Despite ending its mining activities, Umicore never left the area and regularly monitors the state of a landfill containing flotation residue, which is still Umicore's property. To guarantee safe and stable conditions of the landfill on a long-term basis, Umicore will start extensive refurbishment works to be carried out in 2020. In recent years, more attention has been focused by certain stakeholder groups on the potential health effects linked to the former mining activities. Despite having complied with all the requirements of the administration at the time of the termination of the mining activities, in 2019 Umicore received official notices to tackle 3 other areas at Saint-Félix, which are not under the ownership of Umicore. Although Umicore appealed against the notices, at the end of November 2019 we presented a feasibility study to address the 3 areas as requested.

In Viviez, the pollution in and around the site is the result of historical production activities related to zinc production that started in 1855. Umicore invested € 40 million in completing a large-scale decontamination program from 2011 to the end of 2016 and has transferred the post-remedial obligations to a third party. Although soil contamination results from various sources, Umicore, together with other partners, joined a voluntary program in 2017 to address the soil contamination identified in the private gardens around the Viviez site. Data collection was performed in 2017 and 2018 and appropriate measures have been defined by a dedicated expert panel that was put in place by the competent authorities. Umicore is currently preparing the works that will be executed in 2021.

USA

In 1980, Umicore's predecessor company acquired an abandoned silver-gold mine at Platoro in the Rocky Mountains in Colorado. Subsequent exploration drillings were unsuccessful and any attempts to further exploit the mine were stopped.

Remedial work started in the 1990s, consisting of capping and landscaping waste rock piles and installing a water treatment plant to capture and treat the acid mine drainage that continuously flows out of the mine. The mining site is in a nature recreation area. Umicore continues to manage the site and treats drainage water to meet the stringent environmental requirements. Umicore built a new modern waste water treatment facility in 2018 to further decrease the metal concentrations in the discharge and decrease the volume of solid waste produced. In 2019 Umicore/Union Gold received a proposal for a new effluent permit, including very stringent limits for arsenic, to be attained in 2024. Union Gold took immediate action to contest the proposal arguing that reaching such limits is not technically feasible. The competent authorities accepted the arguments and recommended a permit variance. At the same time, Union Gold tested extra polishing steps in the waste water treatment plant in preparation for the application of a permit variance by 2023.

From 1980 to 2010, Umicore operated a cobalt-producing facility in Maxton, North Carolina. After the closing and the demolition of the Maxton plant, soil and groundwater contamination was identified. Umicore entered a voluntary decontamination program with the authorities to fully address the issue by 2033. A comprehensive groundwater remediation scheme through pump and treat has been put in place and is showing its effectiveness to reach the forecasted end date.

BRAZIL

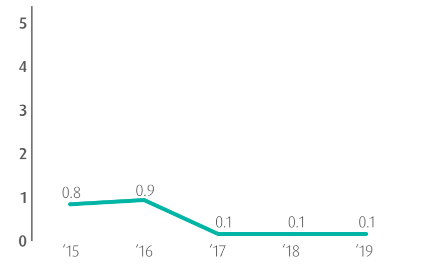
Umicore acquired industrial units in the cities of Americana (SP), Guarulhos (SP) and Manaus (AM) in Brazil in 2003. During an environmental assessment that was performed following the acquisition, groundwater pollution was detected at the Guarulhos site. This historical pollution dates from before Umicore's purchase of the operations. Umicore took immediate measures to stop the spreading of this contamination to the neighboring areas by installing a hydraulic barrier that has been in full operation since 2011. Targeted extraction systems were put in place on site to speed up the remediation. The future closure of the industrial activities and the partial demolition of the buildings at the Guarulhos site will allow the core of the contamination to be tackled even better.

E8 REGULATORY COMPLIANCE AND MANAGEMENT SYSTEM

GROUP DATA

COMPLIANCE EXCESS RATE

%



The compliance excess rate is the ratio between the total number of excess results and the total number of compliance measurements. An excess result is a monitoring result that violates a limit value defined in a permit, regulation or other relevant regulatory standard.

The total number of measurements is the total number of environmental impact measurements as required by the operational permit, environmental permit, or comparable standard in the region where the reporting entity is operating. The total number means the number of measurement events multiplied by the number of parameters per measurement event.

In 2019, about 49,000 environmental measurements were carried out at all of Umicore's industrial sites compared to about 48,000 the year before.

The number of measurements that did not meet the regulatory or permit requirements is very low at 0.13% for the Group, compared to 0.14% in 2018.

Of the 55 consolidated industrial sites, 52 have put in place an environmental management system certified against ISO 14001. The remaining 3 sites are acquisitions and new sites that joined Umicore reporting between 2014-19, and all 3 sites are planning the implementation of an environmental management system during 2020. All major sites with significant environmental impacts are certified against the ISO 14001 management system.

In total, 33 environmental complaints were received in 2019, most of which were related to noise, agent release and odor. 17 of the complaints are ongoing.

Social statements

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SOCIAL KEY FIGURES

	UNIT	NOTES	2015	2016	2017	2018	2019
Workforce (fully consolidated companies)	N°	S2	10,429	9,921	9,769	10,420	**11,152**
Temporary contracts	% of workforce	S2	3.91	3.45	3.86	3.13	**3.31**
Women amongst all employees	% of workforce	S2	21.72	21.6	21.92	21.30	**20.88**
Women amongst all managers	% of workforce	S2	22.18	22.11	22.37	22.98	**23.13**
Women amongst senior management	% of workforce	S2	9.49	9.09	6.77	9.70	**10.96**
Women in "business operations" management functions	%	S2	–	14.27	15.55	15.08	**14.90**
Non-European representation in senior management functions	%	S2	–	16.67	18.05	17.91	**18.49**
Average training hours per employee	hours/ employee	S3	45.06	41.49	45.33	43.10	**48.73**
Employees having a yearly appraisal	% of workforce	S3	95.97	96.03	98.29	96.15	**94.00**
Voluntary leavers – ratio	% of workforce	S3	3.35	4.10	5.03	7.18	**5.99**
Employees represented by union or Collective Labour Agreement (CLA)	% of workforce	S4	71.11	69.41	65.41	64.49	**65.60**
Exposure ratio "all biomarkers aggregated" (1)	%	S6	2.3	3.2	2.7	2.8	**1.8**
Number of occupational linked diseases	N°	S6	12	12	11	12	**18**
People with platinum sensitisation	N°	S6	0	1	1	3	**1**
Fatal accidents	N°	S7	0	1	0	0	**0**
Fatal accidents for sub-contractors	N°	S7	0	0	0	1	**0**
Lost Time Accidents (LTA)	N°	S7	47	59	51	61	**90**
Lost Time Accidents (LTA) for sub-contractors	N°	S7	9	15	22	21	**25**
LTA frequency rate	LTA/million hours worked	S7	2.66	3.34	3.01	3.36	**4.6**
LTA severity rate	lost days/ thousand hours worked	S7	0.12	0.56	0.09	0.10	**0.2**

(1) Ratio between the number of monitoring results exceeding the Umicore target value, defined for relevant hazardous substances, and the total number of monitoring results.

NOTES TO THE SOCIAL KEY FIGURES

S1 SCOPE OF SOCIAL STATEMENTS

In total, 90 consolidated sites are included in the HR related notes of the social reporting (S2 to S5). This is an increase of 1 site from 2018, and attributed to the addition of 3 sites, Nysa, Mumbai (Todini), and the acquisition of Kokkola in December 2019, as well as 2 site closures: Yverdon-Les-Bains and Seoul (Ordeg) which relocated to active site Songdo. The sites report full year data for the social indicators. The indicators presented are based on data from fully consolidated companies.

S2 WORKFORCE

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
Workforce (fully consolidated companies)	N°	10,429	9,921	9,769	10,420	**11,152**
Workforce from associated companies	N°	3,301	3,196	3,360	3,180	**2,976**
Employees men	N°	8,164	7,778	7,628	8,201	**8,823**
Employees women	N°	2,265	2,143	2,141	2,219	**2,329**
Full-time equivalent	N°	–	9,716	9,574	10,224	**10,956**
Employees < 30 years	N°	–	1,620	1,697	1,980	**2,141**
Employees between 30 and 50 years	N°	–	5,605	5,504	5,939	**6,363**
Employees > 50 years	N°	–	2,696	2,568	2,501	**2,648**
Temporary contracts	% of workforce	3.91	3.45	3.86	3.13	**3.31**
Women amongst all employees	% of workforce	21.72	21.60	21.92	21.30	**20.88**
Women amongst all managers	% of workforce	22.18	22.11	22.37	22.98	**23.13**
Women amongst senior management	% of workforce	9.49	9.09	6.77	9.70	**10.96**
Women in "business operations" management functions	%	–	14.27	15.55	15.08	**14.90**
Non-European representation in senior management functions	%	–	16.67	18.05	17.91	**18.49**

Workforce: Number of employees on Umicore payroll at the end of the period in fully consolidated companies. The number includes part-time and temporary employees but excludes employees with a dormant contract, employees on long-term illness and sub-contracted employees.

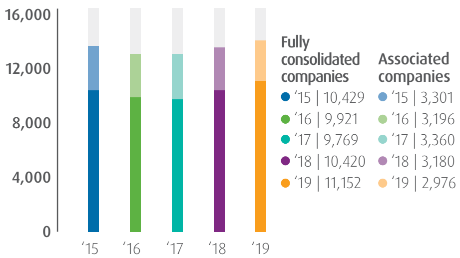
Temporary contract: Umicore employees with a temporary contract, included in the workforce of fully consolidated companies.

Full time equivalent: The FTE of a worker is calculated by dividing the actual working regime, hours, shifts by the regime, hours, shifts of a full-time worker at the end of the period in fully consolidated companies.

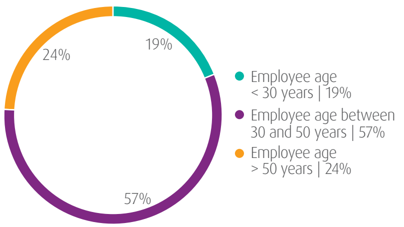
This applies to all hourly paid, monthly paid, managers and interns on Umicore's payroll at the end of the reported semester including part-time and temporary employees but excludes employees with a dormant contract (career interruption, maternity leave, parental leave, etc.), employees on long-term illness (country specific length of continuous absence) and early retirees.

TOTAL WORKFORCE

N°

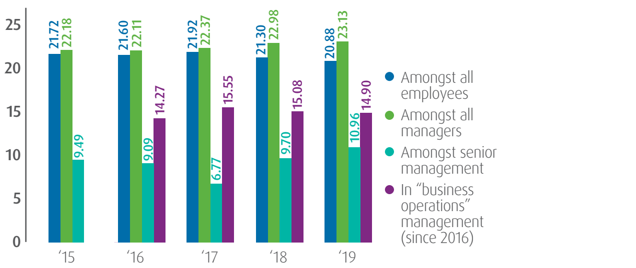


WORKFORCE – AGE SPLIT



WOMEN REPRESENTATION

%



TOTAL WORKFORCE

The total workforce increased by 528 employees to a total of 14,128. For the fully consolidated companies, the workforce increased by 732 people to 11,152, mainly due to the growth in China, Korea, Belgium, and acquisition of a new site in Kokkola, Finland.

Amongst the associated companies there was a decrease of 204 employees due to the reductions in personnel at a few sites in Ireland and South Africa in Element Six and Peru in IEQSA.

The FTE of 10,956 (consolidated) comes very close to the reported headcount of 11,152, illustrating that most of Umicore employees are working on a full-time basis.

TEMPORARY CONTRACTS

Temporary contracts as a percentage of the workforce of fully consolidated companies decreased slightly to 3.31% in 2019.

GENDER SPLIT

The percentage of women was 20.88% as a proportion of the workforce of fully consolidated companies. It has dropped slightly from 2018. This is attributed to our growth in industrial operations where typically candidates are predominantly male. Women continue to be more prevalent in administrative, support and commercial functions than in industrial operation functions.

GENDER SPLIT – SENIOR MANAGERS

While the total percentage of women employees has remained rather stable (see above), the percentage of women managers has shown a steady increase from 18.65% in 2010 to 23.13% in 2019. The percentage of women in senior management increased to 10.96%, a good gain from 9.7% in 2018. We have set the ambition to reach 15% of women in senior management functions by end of 2020.

WOMEN IN "BUSINESS OPERATIONS" MANAGEMENT FUNCTIONS

To monitor career development, we have defined the notion of "business operations" management functions, referring to those in the fields of operations, sales and general management. These are functions that present a pipeline of talent to senior management. Within the senior management group, the business operation functions represent 54% of the group in 2019.

We have monitored the share of women managers in "business operations" functions since 2016. In 2019, the share of women within this management group employed in business operations functions decreased slightly to 14.9% compared to 15.08% in 2018. While there was an increase in the number of women managers in these "business operations" functions, with the growth of the Company the number of male counterparts also grew more in these functions.

NON-EUROPEAN REPRESENTATION IN SENIOR MANAGEMENT FUNCTIONS

Since 2016 we have also monitored the share of non-European representation in senior management functions, as an indicator for diversity. In 2019, this share increased to 18.49%, from 2018 at 17.91%.

REGIONAL DATA

	UNIT	EUROPE	NORTH AMERICA	SOUTH AMERICA	ASIA-PACIFIC	AFRICA	UMICORE GROUP
Total workforce	N°	7,232	842	983	4,159	912	**14,128**
Workforce (fully consolidated companies)	N°	6,159	826	617	3,306	244	**11,152**
Workforce from associated companies	N°	1,073	16	366	853	668	**2,976**
Employees men	N°	4,897	638	469	2,663	156	**8,823**
Employees women	N°	1,262	188	148	643	88	**2,329**
Full-time equivalent	N°	5,972.71	819.50	617	3,302.79	244	**10,956**
Temporary contracts	% of workforce	3.82	1.33	1.78	3.39	0	**3.31**

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE	UMICORE GROUP
Total workforce	N°	3,190	4,748	2,849	3,341	**14,128**
Workforce (fully consolidated companies)	N°	3,190	3,997	2,849	1,116	**11,152**
Workforce from associated companies	N°		751		2,225	**2,976**
Employees men	N°	2,540	3,223	2,411	649	**8,823**
Employees women	N°	650	774	438	467	**2,329**
Full-time equivalent	N°	3,164.20	3,988.97	2,809.80	993.03	**10,956**
Temporary contracts	% of workforce	6.02	2.75	1.65	1.79	**3.31**

GENERAL OVERVIEW OF SITES AND EMPLOYEES

	PRODUCTION SITES	R&D | TECHNICAL CENTRES	OTHER SITES	EMPLOYEES
Europe				
Austria	1			142
Belgium	3	1	1	3,284
Denmark	1	1		111
Finland	1	1		255
France	3		2	254
Germany	5(1)	2	1	1,696(371)
Ireland	(1)			(516)
Italy			2	34
Liechtenstein	1	1		77
Luxembourg			1	10
Netherlands			1	7
Poland	2		1	188
Portugal			1	6
Russia			1	6
Spain			1	6
Sweden	1		(1)	35 (3)
Switzerland				
United Kingdom	1	(1)	3(1)	48(183)
Asia-Pacific				
Australia				8
China	5 (3)	1	5 (1)	1,547(841)
India	1		2	86
Japan	2	3	2(1)	186(8)
Philippines	1			84
South Korea	3	2	2	1,191
Taiwan			2	27
Thailand	2		1	177
United Arab Emirates			(1)	(4)
North America				
Canada	3			236
Mexico			1	1
United States	8	2	3(1)	589(16)
South America				
Argentina	1			62
Brazil	4	1		555
Peru	(1)			(366)
Africa				
South Africa	1 (1)		1	244(668)
Total	**50(7)**	**15(1)**	**34(6)**	**11,152(2,976)**

Figures in brackets denotes "of which associates and joint venture companies". Where a site has both production facilities and offices (eg Hanau, Germany), it is classified as a production site only. Some of our production sites and R&D/technical centers are located on the same site but are counted separately.

S3 PEOPLE ENGAGEMENT

GROUP DATA

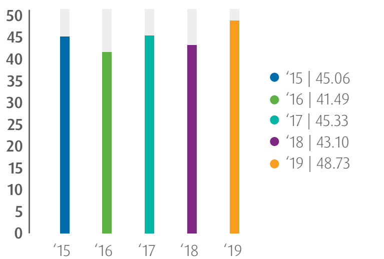
	UNIT	2015	2016	2017	2018	2019
Employees having a yearly appraisal	% of workforce	95.97	96.03	98.39	96.15	**94**
Average number of training hours per employee	hours/ employee	45.06	41.49	45.33	43.10	**48.73**
Average number of training hours per employee – Men	hours/ employee	45.32	42.38	46.53	44.68	**48.26**
Average number of training hours per employee – Women	hours/ employee	47.39	38.28	41.01	37.29	**50.48**
Average number of training hours per employee – Managers	hours/ employee	34.24	41.03	38.54	37.59	**43.01**
Average number of training hours per employee – Other employee categories	hours/ employee	46.09	41.52	46.44	42.94	**49.51**
Voluntary leavers ratio	% of workforce	3.35	4.10	5.03	7.18	**5.99**
Voluntary leavers men	N°	280	309	404	619	**521**
Voluntary leavers women	N°	69	97	70	110	**126**

Training hours: Average number of training hours per employee, including all types of training (formal, training on the job, E-learning, etc.) in which the Company provides support, and which are relevant to the business unit or the Company. The total number of training hours is divided by the total workforce of fully consolidated companies.

Voluntary leavers: Number of employees leaving the Company of their own will (excluding retirement and the expiry of a fixed-term contract). This figure is related to the workforce from fully consolidated companies.

AVERAGE NUMBER OF TRAINING HOURS PER EMPLOYEE

Hours/employee

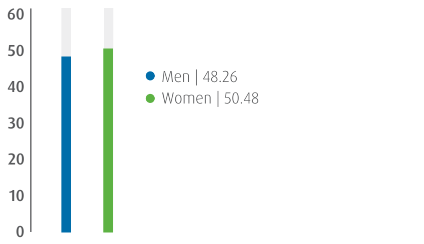


AVERAGE NUMBER OF TRAINING HOURS PER EMPLOYEE CATEGORY

Hours/employee

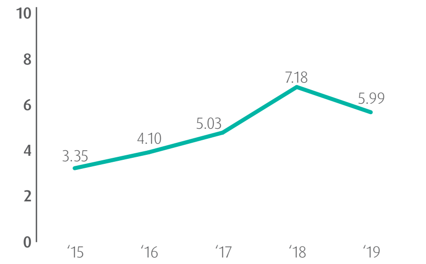
AVERAGE NUMBER OF TRAINING HOURS PER EMPLOYEE – GENDER SPLIT

Hours/employee



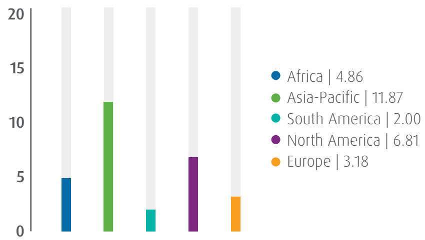
VOLUNTARY LEAVERS RATIO

%



VOLUNTARY LEAVERS RATIO, BY REGION

% of workforce



REGIONAL DATA

	UNIT	EUROPE	NORTH AMERICA	SOUTH AMERICA	ASIA-PACIFIC	AFRICA	UMICORE GROUP
Average number of training hours per employee	hours/ employee	42.05	54.6	72.32	56.80	21.83	**48.73**
Employees having a yearly appraisal	% of workforce	92.66	98.57	94.46	94.85	98.38	**94**
Voluntary leavers ratio	% of workforce	3.18	6.81	2	11.87	4.86	**5.99**

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE	UMICORE GROUP
Average number of training hours per employee	hours/ employee	42.24	63.31	40.24	41.51	**48.73**
Employees having a yearly appraisal	% of workforce	95.52	94.2	92.56	92.76	**94**
Voluntary leavers ratio	% of workforce	5.84	9.15	3.15	3.44	**5.99**

TRAINING HOURS

In 2019, the average training hours per employee increased to 48.73 hours from the previous year. The training hours for "on the job learning" are not consistently captured or registered in all sites. The Kokkola, Finland site is not in scope for 2019.

Data shows that managers training hours (43.01 hours) are lower than for other employees (49.51 hours).

YEARLY APPRAISAL

In 2019, almost all employees (94%) from fully consolidated companies have an appraisal interview to discuss their development at least once a year. The Kokkola, Finland site is not in scope for 2019.

VOLUNTARY LEAVERS

In 2019, after 3 years of increased voluntary leaver rates, the rate has decreased to 5.99% from 7.18% in 2018. Significant regional differences can be observed with Asia Pacific reporting the highest voluntary leaver rate (11.87%) and South America (2%) the lowest. The high voluntary leaver rate in Asia Pacific is not unique to Umicore and can be explained by a highly competitive and fluid labor market. The Kokkola, Finland site is not in scope for 2019.

VOLUNTARY LEAVERS – GENDER

Of the 5.99% of voluntary leavers worldwide, 19.47% were women, up from 15.09% in 2018. While the overall voluntary leaver rate decreased overall, 2 industrial sites (Jiangmen and Port Elizabeth) contributed the most to the increased female leaver rate and mainly operators in both cases. The shiftwork and physical demands of operator work mean that the share of female employees in these functions is already low. Umicore strives to continuously improve the work environment to reduce heavy work and, in the case of Jiangmen, is encouraging female operators to retrain for other operation occupations, such as shift leaders, as an alternative solution.

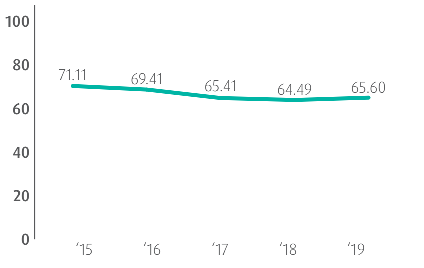
S4 EMPLOYEE RELATIONS

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
Employees represented by union or Collective Labour Agreement (CLA)	% of workforce	71.11	69.41	65.41	64.49	**65.60**

EMPLOYEES REPRESENTED BY UNION OR COLLECTIVE LABOUR AGREEMENT (CLA)

% of workforce



REGIONAL DATA

	UNIT	EUROPE	NORTH AMERICA	SOUTH AMERICA	ASIA-PACIFIC	AFRICA	UMICORE GROUP
Employees represented by union or Collective Labour Agreement (CLA)	% of workforce	85.68	8.96	91.73	39.66	36.07	**65.60**

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE	UMICORE GROUP
Employees represented by union or Collective Labour Agreement (CLA)	% of workforce	46.99	61.35	87.68	77.69	**65.6**

UNION AND COLLECTIVE LABOR AGREEMENT

In total, 65.6% of Umicore employees belong to a trade union organization and/or the level of their wages are negotiated through a collective bargaining agreement. On a regional basis, there are significant differences in union representation, with the highest representation in South America and Europe and the lowest in North America.

SUSTAINABLE DEVELOPMENT AGREEMENT

In 2007, Umicore signed a Sustainable Development Agreement with the International union IndustriALL, which was renewed for 4 years in 2015 and in 2019. In this agreement, Umicore commits to a number of principles including: the banning of child labor and forced labor, recognizing the right to its employees to organize themselves and to participate in collective bargaining.

All sites are screened internally each year. This screening showed that none of Umicore's sites demonstrated a particular risk of infringement in any of the principles of the agreement.

S5 CODE OF CONDUCT

Umicore has a systematic Group-wide internal reporting on Code of Conduct issues since 2011. In 2019 a total of 22 cases were reported, involving a total of 24 employees. The type of action taken varies from a warning letter to dismissal.

S6 OCCUPATIONAL HEALTH

All consolidated industrial sites where Umicore has operational control, are included in the scope of the occupational health reporting. Compared to 2018, 1 site was added to the scope: Kobe (Japan, Automotive Catalysts). This brings the total number of reporting sites to 55.

The information in this note only relates to Umicore employees. Data on subcontractors' occupational health are not included. Additional information on Umicore's approach to occupational health can be found in the corresponding section of Management Approach, p.78.

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
Exposure ratio "all biomarkers aggregated" (1)	%	2.3	3.2	2.7	2.8	**1.8**
Exposure ratio lead (blood) (2)	%	0.8	0.5	0.5	2.0	**0.9**
Exposure ratio arsenic (urine) (2)	%	1.3	2.0	1.0	1.2	**0.8**
Exposure ratio cobalt (urine) (2)	%	8.7	9.0	6.0	5.0	**3.4**
Exposure ratio cadmium (urine) (2)	%	1.1	1.4	0.7	0.5	**0.2**
Exposure ratio nickel (urine) (2)	%	1.3	2.0	1.4	2.6	**1.8**
Exposure ratio indium (blood) (2)	%	–	11.3	14.2	2.8	**1.9**
People with platinum salts sensitisation	N°	0	1	1	3	**1**
People with noise induced hearing loss	N°	2	4	0	0	**5**
People with contact dermatitis	N°	3	0	2	3	**4**
People with occupational asthma other than Pt-salts	N°	1	0	0	0	**0**
People with musculoskeletal ailments	N°	7	7	8	6	**8**

(1) Ratio between the number of monitoring results exceeding the Umicore target value, defined for relevant hazardous substances, and the total number of monitoring results.

(2) The exposure ratio of a specific metal is defined as the ratio between the number of employees with a biological monitoring result exceeding the Umicore target value for that specific metal and the total number of employees exposed to that metal. The Umicore target values are based upon recent peer reviewed scientific data and regularly re-evaluated in the context of new evidence.

By 2020, it is Umicore's objective to have no exceedance for the biomarkers of exposure for the metals listed below. The following target values have been defined:

- **Cadmium:** 2 micrograms per gram of creatinine in urine
- **Lead:** 30 micrograms per 100 ml of blood
- **Cobalt:** 15 micrograms per gram of creatinine
- **Indium:** 1 microgram per liter of plasma
- **Arsenic and nickel:** 30 micrograms per gram of creatinine in urine
- **Platinum salts:** no new cases of platinum salt sensitization

The number of occupational diseases is the number of employees with a newly diagnosed occupational disease or occupationally linked symptoms during the reporting year.

In 2019, a total of 7,481 biological sampling procedures took place from employees with an occupational exposure to at least one of the metals mentioned above (platinum salts excluded). 135 readings showed a result in excess of the internal target value. This brings the total excess rate to 1.8%, comparable to the 2.8% excess rate of 2018. All occupationally exposed employees are regularly monitored by an occupational health physician.

LEAD

Occupational lead exposure represents a potential health risk, mainly in the business group Recycling. In total, 13 of the 1,441 occupationally exposed employees exceeded the target value of 30µg/100ml, decreasing as such the excess rate for lead exposure to 0.9% compared to 2% in 2018.

The decrease in excess readings is the result of improved workplace hygiene measures at the lead refinery at the Hoboken site (Belgium, Recycling). The site improved its ventilation systems, while instructions and training resulted in better compliance with personal protective equipment requirements.

ARSENIC

Occupational exposure to arsenic is possible in the business groups Energy & Surface Technologies and Recycling. In total, 9 employees or 0.8% of the 1,110 occupationally exposed workers had an excess reading during 2019 compared to 1.2% in 2018.

All workers occupationally exposed to arsenic are submitted to a medical surveillance program to closely monitor their health condition.

COBALT

In total, 1,948 employees are occupationally exposed to cobalt, mainly in the business group Energy & Surface Technologies. The number of employees exceeding the target value was 66, resulting in an excess rate of 3.4%, down from 5% in 2018.

In the business unit Rechargeable Battery Materials we noticed a further decrease in excess readings from 2.6% in 2018 to 1.2% in 2019.

The excess readings in the business unit Cobalt & Specialty Materials decreased from 12.7% in 2018 to 11.1% in 2019.

The sites in Cheonan (Korea, Rechargeable Battery Materials) and Jiangmen (China, Rechargeable Battery Materials) continued to implement a comprehensive dust abatement program as part of their operational excellence approach. This 'zero dust' program focuses on equipment improvements and workers' behavior. Concrete actions include awareness programs, regular industrial hygiene campaigns, excellent housekeeping and improved maintenance of critical equipment.

The business unit Cobalt & Specialty Materials has implemented a dust reduction program with focus on equipment improvement, personal behavior and intensified workplace sampling. Regular workshops among the sites are organized to evaluate progress and to share ideas and experiences. While a decrease in the number of excess readings has been observed, additional actions are being pursued in the sites in Olen (Belgium, Energy & Surface Technologies), Fort Saskatchewan (Canada, Energy & Surface Technologies) and Grenoble (France, Energy & Surface Technologies),

For workers exposed to cobalt, both business units Cobalt & Specialty Materials and Rechargeable Battery Materials have implemented Umicore's occupational health guidance for cobalt, including biological monitoring and medical surveillance. For the site in Jiangmen (China, Energy & Surface Technologies), a dedicated occupational health center has been set up in line with Umicore's internal guidelines and compliant with Chinese regulatory requirements.

CADMIUM

Occupational exposure to cadmium represents a potential health risk in the business groups Energy & Surface Technologies and Recycling. Cadmium in urine is an excellent biomarker for lifetime exposure. In 2019, a total of 463 employees had an occupational exposure to cadmium.

Only 1 employee recorded a cadmium in urine reading in excess of the target value, compared to 2 in 2018. This resulted in an excess rate of 0.2% compared to 0.5 % in 2018.

NICKEL

The business groups Energy & Surface Technologies and Recycling have occupational exposure to nickel. In 2019, a total of 2,309 employees were exposed to nickel. In 2019, 42 of the exposed workers exceeded the target level resulting in an excess level of 1.8% compared to 2.6% in 2018.

In the business unit Rechargeable Battery Materials, we noticed a decrease in excess readings from 2.2% in 2018 to 0.9% in 2019, mainly related to a decreased exposure at the site in Jiangmen (China, Energy & Surface Technologies). The measures to reduce cobalt exposure (see above) obviously also apply to nickel.

The excess readings in the business unit Cobalt & Specialty Materials increased from 11.1% in 2018 to 12.2 % in 2019, mainly due to a higher exposure at the site in Subic (Philippines, Energy & Surface Technologies). The site is further implementing its dust management programs including ventilation systems' improvements and personal protective equipment programs. Also, the site in Wickliffe (USA, Energy & Surface Technologies) has a high number of excess readings. The operations at this sites are being discontinued.

For workers exposed to nickel, both business units Cobalt & Specialty Materials and Rechargeable Battery Materials have implemented Umicore's occupational health guidance for nickel, including biological monitoring and medical surveillance.

INDIUM

The business group Energy & Surface Technologies has exposure to indium. Indium in plasma is an excellent biomarker for lifetime exposure.

In 2019, 210 employees were exposed to indium. 4 employees had an excess reading for indium in plasma, at the site in Balzers (Liechtenstein, Energy & Surface Technologies). All these workers had a current or former exposure at the bonding workplace. The working conditions at this workplace have been improved and an extensive medical surveillance program, in line with Umicore occupational health guidelines, has been implemented.

PLATINUM SALTS

The business groups Catalysis and Recycling have workplaces with exposure to platinum salts.

In 2019, we had 1 newly diagnosed employee with a platinum salt sensitization at the site in Tulsa (USA, Catalysis). The worker has been removed from the workplace. All workers exposed to platinum salts are being monitored through an occupational health program, following a Umicore health guideline and are being regularly checked for platinum salt sensitization.

OTHER OCCUPATIONAL RELATED DISEASES

In 2019, 4 employees were diagnosed with an occupationally induced contact dermatitis and 8 developed a musculoskeletal disorder due to their occupation. 5 employees developed a noise-induced hearing loss. All people concerned are being followed-up by an occupational health physician.

Over the past years, Umicore has been confronted with several burn-out cases that led to long-term sickness with impact on both the individual and the organization. The Umicore sites in Belgium have implemented a program consisting of primary prevention of burn-out combined with early recognition of symptoms and case management support. Concrete actions included awareness campaigns via leaflets, e-learning, workshops, training for supervisors and individual coaching in case of burn-out symptoms. Similar programs have been implemented at Umicore sites in other countries such as Germany.

S7 OCCUPATIONAL SAFETY

In 2019, 90 consolidated sites, of which 57 are industrial sites, are included in the safety reporting. This number also includes commercial offices.

Additional information on Umicore's approach to safety can be retrieved in the corresponding section of Management Approach, p. 78.

The Umicore information in this note only relates to Umicore employees. Data on subcontractors' occupational safety are being reported separately. Umicore strives towards an accident-free workplace.

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
Fatal accidents	N°	0	1	0	0	**0**
Fatal accidents sub-contractors	N°	0	0	0	1	**0**
Lost Time Accidents (LTA)	N°	47	59	51	61	**90**
Lost Time Accidents (LTA) sub-contractors	N°	9	15	22	21	**25**
LTA frequency rate		2.66	3.34	3.01	3.36	**4.6**
Calendar days lost	N°	2,134	9,848	1,590	1,830	**3,893**
LTA severity rate		0.12	0.56	0.09	0,10	**0.2**
Recordable Injuries (RI)	N°	148	127	138	158	**158**
Recordable Injuries frequency rate		8.38	6.78	8.15	8.7	**8.07**
Ratio N° of sites with no LTA/total N° of sites reporting	%	84	84	84	84	**83**
Sites OHSAS 18001 certified	%	36.6	41.7	51	51.9	**52.6**

Umicore employee: a person belonging to Umicore's total workforce. A Umicore employee can be a full-time, part-time or temporary employee

Sub-contractor: a person not belonging to Umicore's total workforce, providing services to Umicore in one of its premises under terms specified in a contract

Fatal accident: a work-related accident with fatal outcome

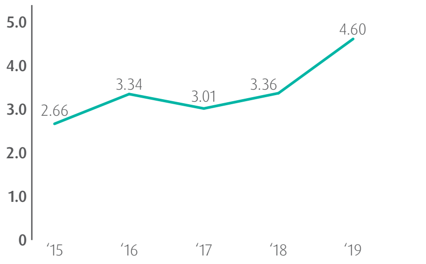
Lost time accident (LTA): a work-related injury resulting in more than one shift being lost from work

Recordable injury (RI): a work-related injury resulting in more than one first aid treatment or in a modified working program but excluding lost time accidents

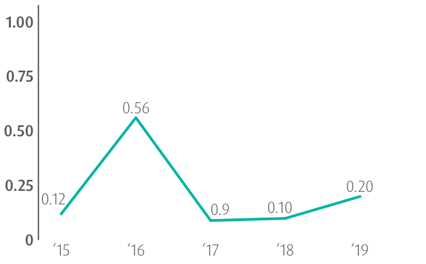
Frequency rate: number of lost time accidents per million hours worked

Severity rate: number of lost calendar days due to a lost time accident per thousand hours worked. Accidents to and from work are not part of the scope of the safety data

FREQUENCY RATE



SEVERITY RATE



REGIONAL DATA

	UNIT	EUROPE	NORTH AMERICA	SOUTH AMERICA	ASIA-PACIFIC	AFRICA	UMICORE GROUP
Lost Time Accidents (LTA)	N°	82	3	0	5	0	**90**

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE	UMICORE GROUP
Fatal accidents	N°	0	0	0	0	**0**
Lost Time Accidents (LTA)	N°	11	14	62	3	**90**
Calendar days lost	N°	229	561	3,009	94	**3,893**

In 2019, 90 lost time accidents have been recorded, compared to 61 in 2018. This resulted in a frequency rate of 4.6, up from 3.36 in 2018. In total 3,893 calendar days were lost due to lost time accidents, resulting in a severity rate of 0.2, a doubling compared to 2018. There were 158 reported recordable injuries, the same number as in 2018. The RI frequency rate for 2019 was 8.07 compared to 8.7 in 2018. 25 lost time accidents were registered for contractors compared to 21 in 2018.

During 2019, 83% of the reporting sites that were operational throughout the year operated without a lost time accident, a slight decrease compared to 2018 (84%). 52% of the sites were certified using the occupational health and safety management system OHSAS 18001, of which 6 had already transitioned to the new ISO 45001 health and safety management system.

82 lost time accidents, or 91% of lost time accidents, occurred in Europe. Of these, 67 lost time accidents occurred at Belgian sites and 8 at German sites. The Asia-Pacific sites accounted for 5 accidents, while the American sites counted 3.

In 2019, the business group Catalysis recorded 11 lost time accidents compared to 10 in 2018. At the end of 2019, the business unit Automotive Catalysts has conducted a safety culture survey in selected European sites. The results will serve as basis for improvement actions in the course of 2020. All Automotive Catalysts production plants are required to be certified against the ISO 45001 or OHSAS 18001 management system. At year-end, the sites in Port Elizabeth (South-Africa), Tsukuba, Himeji (Japan) and Rayong (Thailand), had operated over 5 years without lost time accident or recordable injury to Umicore staff and no lost time accident to contractors on site. The sites in Americana (Brazil), Auburn Hills (USA), Manaus (Brazil) and Tokoname (Japan) recorded more than 3 years without a lost time accident or recordable injury to Umicore staff and no lost time accident to contractors on site.

The business group Energy & Surface Technologies recorded 14 lost time accidents compared to 8 in 2018. The business units continue their actions to reinforce their safety programs with focus on safety behavior, technical, organizational and administrative improvement. The site in Dundee (UK) has been recognized for its excellent and sustained safety performance, recording over 10 years without any lost time accident or recordable injury to Umicore staff and no lost time accident to contractors. Beijing (China), Balzers (Liechtenstein) and Tsukuba (Japan) operated more than 5 years without any lost time accident or recordable injury to Umicore staff and no lost time accidents to contractors. The site in Manaus operated more than 3 years without any lost time accident or recordable injury to Umicore staff and no lost time accidents to contractors.

The business group Recycling had 62 lost time accidents. The site in Hoboken (Belgium, Recycling) recorded a disappointing safety performance with 57 lost time accidents and contributes heavily to the poor Group safety performance. The site management continues its "Safety@ Precious Metals Refining" campaign. The campaign's main pillars consist of passion for safety, caring for each other and teamwork. In addition, the site has implemented "8 cardinal safety rules" to be complied with at all times by all employees. A safety steering committee under the leadership of senior site management has been put in place to follow up on the safety actions and performance. Concrete actions for 2020 include enhanced safety observation tours and intensified ergonomic programs.

3 lost time accidents occurred in general services and corporate offices, including Corporate Research & Development.

S8 PROCESS SAFETY

In 2019, the Umicore Group process safety activities focused on executing process risk assessment studies to ensure that all our processes are being operated in the acceptable risk zone. At year end, over 60% of the production processes had received specific process hazard and risk assessments compliant with Umicore standards, compared to 50% in 2018. A detailed timeline has been reviewed for completion of the remaining studies in the coming years, giving priority to the processes with high risk profiles.

To ensure sufficient quality of the process risk assessment studies, experts conducted detailed technical process risk assessment reviews of processes with major risk scenarios. Actions have been identified to improve the quality of the process risk assessments. These reviews are being conducted in addition to the Group Environment, Health and Safety audit program, which includes an evaluation of the sites' compliance with the process safety management system.

Umicore continues its internal HAZOP leader training program to increase and secure process safety knowledge.

Value chain statements

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V1 SCOPE OF THE VALUE CHAIN STATEMENTS

The value chain and society theme focuses on potential impacts on society that we experience as a company through our activities, products and services. For reporting matters, all entities of the Group are considered.

V2 CRITICAL RAW MATERIALS

Securing adequate volumes of raw materials is an essential factor in the ongoing viability of our product and service offering and in achieving our Horizon 2020 growth objectives. The risks and opportunities vary considerably from one business unit to another and for this reason, we have taken a decentralized approach to risk and opportunity management. We have determined to seek a competitive edge in terms of our access to critical raw materials and in our ability to secure these raw materials in an ethical and sustainable manner.

In 2016, each business unit was asked to identify the raw materials that are critical in achieving the Horizon 2020 objectives using a 3-step process. The process consisted of the following elements:

1. Definition of the criteria applicable to the raw materials specific to the business unit's activity
2. Identification of the raw materials with a high probability of restrictions in supply, considering the selected criteria
3. Calculation of the impact of the supply risk identified on the Horizon 2020 objectives

21 supply criteria, covering various aspects of sustainability, have been offered to the business units as input for the mapping. The criteria can be clustered into the following themes:

- EHS or regulatory aspects of the raw materials
- Concentration in the market or restrictions in the country of origin
- Ethical aspects and potential conflicts with the Code of Conduct linked to the raw materials
- Unavailability due to end-of-life of the mineral source
- Physical constraints at origin

As supply risks and opportunities can change, the identification of the critical raw materials is a dynamic process. In 2019 all business units updated their mapping. Business units purchasing 1 of the 4 conflict minerals to manufacture their products, use the Conflict Mineral Reporting Template from the Responsible Minerals Initiative for their due diligence on the purchased raw materials.

It is particularly important to define actions to mitigate the risk of critical materials supply disruption. Mitigation actions can vary depending on the materials and the position of the business unit in the market. Action plans and dedicated mitigation measures must be in line with the identified risks and opportunities and are therefore updated regularly. The reviewing frequency and process vary from business unit to business unit depending on the specific supply conditions. Mitigation measures beyond responsible sourcing include ensuring critical materials can be supplied from several reliable suppliers, looking for secondary raw materials sources and ensuring the responsible and conflict-free status of the raw materials.

On 1 January 2021, the Conflict Minerals Regulation will come into full force across the EU. This law is similar in scope to the US Dodd Frank Act of 2012. The new law aims to help stem the trade in 4 minerals – tin, tantalum, tungsten and gold (also known as 3TG)– that sometimes finance armed conflict, are mined in unacceptable conditions and/or using forced labor.

In addition to existing policies and charters, such as the Umicore Code of Conduct, Human Rights Policy and Sustainable Procurement Charter, Umicore also has a specific policy regarding Responsible global supply chain of minerals from conflict-affected and high-risk areas.

UMICORE.COM/RESPONSIBLESUPPLYCHAIN-POLICY

Today, responsible mineral sourcing goes beyond conflict minerals. Umicore pursues responsible sourcing certification wherever appropriate to highlight our best practices and to provide the necessary documentation to the increasing number of customers seeking assurance on our products. The Umicore internal "Metals and Minerals" working group streamlines and optimizes the efforts required for this increasing customer demand through best practices sharing.

The London Bullion Market Association (LBMA) manages the accreditation process for all Good Delivery listed refiners for gold and silver. The Responsible Jewelry Council's (RJC) Chain of Custody (CoC) Standard is applicable to gold and platinum group metals (platinum, palladium and rhodium).

The Responsible Minerals Initiative is used by many customers to streamline the process to guarantee conflict-free products in complex supply chains. A typical example is the automotive industry, where a structure has been created to assure that all individual elements of a car can be certified as not containing conflict minerals sourced from non-certified origins. This procedure is not a ban on those materials (tin, tantalum, tungsten and gold), but a process to create transparency in the supply chain to ensure conflict-free minerals can be sourced. Other industries, such as the electronics industry, implement the same or similar processes.

In May 2019, Umicore Olen was approved as the first Responsible Minerals Initiative-conformant cobalt refinery worldwide. Umicore's newly acquired Kokkola's cobalt operations were the second recognized refinery. The refineries must undergo a yearly certification process.

	LBMA GOLD	LBMA SILVER	RJC CHAIN OF CUSTODY RECYCLED GOLD, PLATINUM, PALLADIUM AND/OR RHODIUM	RMI-CONFORMANT COBALT REFINERS	RMI-CONFORMANT GOLD SMELTERS AND REFINERS
Bangkok		✔	✔		✔
Guarulhos	✔				✔
Hoboken	✔	✔			✔
Kokkola				✔	
Olen				✔	
Pforzheim	✔	✔	✔		✔
Vienna			✔		✔

Both the RJC Chain of Custody and LBMA Good Delivery accreditations qualify the accredited sites for listing in the Responsible Minerals Initiative conformant smelters and refiners.

For more information, please visit:

LBMA.ORG.UK/GOOD-DELIVERY-LIST-REFINERS-GOLD-CURRENT

LBMA.ORG.UK/GOOD-DELIVERY-LIST-REFINERS-SILVER-CURRENT

RESPONSIBLEJEWELLERY.COM/MEMBERS/CHAIN-OF-CUSTODY-CERTIFIED-ENTITIES

RESPONSIBLEMINERALSINITIATIVE.ORG/GOLD-REFINERS-LIST

RESPONSIBLEMINERALSINITIATIVE.ORG/RESPONSIBLE-MINERALS-ASSURANCE-PROCESS/SMELTER-REFINER-LISTS/COBALT-REFINERS-LIST/CONFORMANT-COBALT-REFINERS

COBALT

Umicore uses cobalt in materials that are used in rechargeable batteries, tools, catalysts and several other applications. The Sustainable Procurement Framework for Cobalt covers Umicore's cobalt purchases worldwide. The Framework is aligned with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Umicore obtained, for the fifth year in a row, third party assurance from PwC that its cobalt purchases in 2019 are carried out in line with the conditions set out in the framework. The share of cobalt from recycled origin was also reviewed by PwC as part of the assurance process and was 9.2% for 2019. The figure is reported in the compliance report.

A dedicated cobalt sourcing committee, referred to as the Approval Committee, is responsible for the principles and guidelines in the framework and has overall control and decision-making power. The Approval Committee includes a member of the Umicore Executive Committee and the Senior Vice-Presidents Sustainability and Supply.

In 2019, Umicore performed a third-party audit at one of its cobalt suppliers based on an internally developed EHS and Social protocol. The report findings will lead to the definition of mitigation actions by the supplier and follow-up by Umicore.

Umicore supported the development of the Cobalt Industry Responsible Assessment Framework (CIRAF) within the Cobalt Institute. The CIRAF is a management framework for risk assessment and mitigation aiming at ensuring responsible cobalt production and sourcing. As part of the CIRAF, risks regarding own operations and supply chain must be analyzed. 2019 was the first year for implementing the Framework by the member companies. Following the recommendations of the framework, Umicore performed a risk analysis of its 8 cobalt-related operations considering the risks identified by the CIRAF and the results of our own materiality analysis and of our internal Business Risk Assessment. The material risks for our operations are (1) Air-water-soil pollution & energy efficiency; (2) OHS and working conditions; (3) Conflict & financial crime; (4) Human rights abuses. Umicore has policies and measures in place covering these risk areas (see Management Approach). Key performance indicators are reported yearly (see Environmental and Social statements). With respect to "supply chain", Umicore's approach is aligned with the level 2 requirements of the CIRAF.

The compliance report for 2019, the CIRAF report, and the due diligence report for the 2019 activities of the Kokkola, Finland refinery acquired in December 2019 are all available online.

UMICORE.COM/SUSTAINABLE-COBALT

Umicore contributed to the Global Battery Alliance report on "A Vision for a Sustainable Battery Value Chain in 2030. Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation" that was published in September 2019. The report identified 3 ways for batteries to empower social, environmental and economic change in the world by 2030.

UMICORE.COM/GLOBALBATTERYALLIANCE-REPORT-2019

In May 2019 Umicore and Glencore announced a long-term revolving agreement for the supply of cobalt hydroxide (cobalt) to Umicore's battery materials value chain. The agreement guarantees Umicore's security of supply for a substantial part of its longer-term cobalt needs for its expanding global battery materials value chain. The agreement also provides Glencore long-term market access for its cobalt raw materials in line with Umicore's growing cathode materials sales.

Besides its continued engagement in sustainable cobalt sourcing, in 2018 Umicore implemented due diligence in the supply of the other raw materials for batteries, i.e. nickel, manganese and lithium. The approach is directly inspired by the experience with cobalt and follows the basic steps of the Sustainable Procurement Framework for Cobalt. Specific mitigation actions have been defined for these metals depending on the identified risk.

GOLD AND SILVER

In 2019, Umicore continued to ensure that operations with a production of gold are certified as conflict-free. Umicore operations in Hoboken, and Guarulhos and Pforzheim are certified as conflict-free smelters for gold by the London Bullion Market Association (LBMA). The LBMA also provides certification for responsible silver and the sites of Hoboken, Pforzheim and Bangkok are accredited refiners by the LBMA. The Jewelry & Industrial Metals operations in Pforzheim, Vienna and Bangkok are certified as part of the Responsible Jewelry Council's (RJC) Chain of Custody program for gold.

PLATINUM, PALLADIUM & RHODIUM

In 2019, UMPR Hoboken operations successfully passed the voluntary LBMA audit for compliance against the Responsible Platinum and Palladium Guidance. This audit does not lead to any specific certification. Such audits are voluntary for 2018 but will be mandatory in the future for the London Platinum and Palladium Market (LPPM) accredited platinum and palladium refiners. The Jewelry & Industrial Metals operations in Pforzheim, Vienna and Bangkok are certified as part of the Responsible Jewelry Council's (RJC) Chain of Custody program for recycled platinum, palladium and/or rhodium.

V3 INDIRECT PROCUREMENT

While the metal-bearing raw materials are purchased directly by the business units (direct procurement, see note V2 for specific sustainable supply related actions), Umicore's worldwide purchasing and transportation teams take care of the energy and other goods and services which are referred to as indirect procurement. Indirect procurement represents roughly 10% of the total spend, half of which is handled by the Procurement & Transportation teams in Belgium and Germany.

SCOPE

The indicators presented are based on 2019 data from our Procurement & Transportation teams in Belgium and Germany and, since November 2019, also including Poland. EcoVadis, a well-known collaborative platform providing Supplier Sustainability Ratings, is now also used by the local procurement team in Brazil.

ASSESSMENT OF SUPPLIERS

Since 2017, a quick scan based on criteria such as size, geographical location and type of product or service provided is systematically used for the assessment of new suppliers. This tool determines the need for an EcoVadis assessment. This tool was first implemented by the teams in Belgium and Germany. The team in Poland started using it in November 2019. In 2019, 562 quick scans have been initiated. The goal is a roll-out to more teams worldwide in the future.

Sustainability performance of specific suppliers is assessed by EcoVadis.

79 assessment scores were made available to the teams in 2019, including the requests from the Procurement & Transportation teams in Brazil. A total of 386 scores have been received since the start of our collaboration with EcoVadis. This represents the number of unique suppliers that have been assessed and does not consider the regular re-assessment of a supplier.

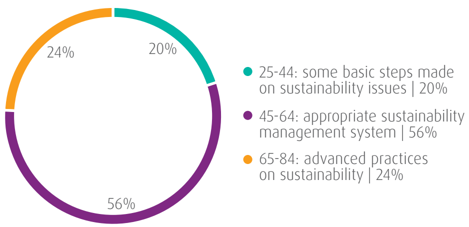
AVERAGE SCORE OF SUPPLIERS BY TOPIC IN 2019

80% of the assessed suppliers in 2019 reached a score of 45 or higher, suppliers "engaged in CSR" (Corporate Social Responsibility).

None of the scores received in 2019 indicates a "high risk".

The Umicore Group was re-evaluated by EcoVadis and was scored 70 which confirms the gold recognition level. This result includes our company among the top 5% performers evaluated by EcoVadis.

SUPPLIERS' SCORE IN ECOVADIS ASSESSMENT



	AVERAGE SCORE
Environment	57.5
Labour & human rights	55.8
Ethics	51.1
Sustainable procurement	48
Overall	**54.5**

The overall score is a weighted average of the 4 theme scores.

More information on Umicore's relationship with suppliers can be found in the Stakeholder Engagement, p. 15 and in the Value Chain and Society performance review, p.36.

V4 PRODUCTS AND SERVICES

RESOURCE EFFICIENCY

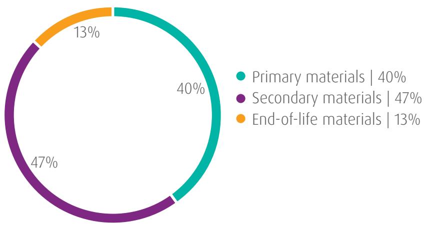
Primary raw materials: are materials that have a direct relation to their first lifetime hereby excluding streams of by-products

Secondary raw materials: are by-products of primary material streams

End-of-life materials: are materials that have ended at least a first life cycle and will be re-processed through recycling leading to a second, third... life of the substance

Incoming materials are regarded as primary by default if their origin is unknown. The collected data are expressed in terms of total tonnage of incoming material.

RESOURCE EFFICIENCY



In 2019, 60% of the materials were from end-of-life or secondary origin while 40% were of primary origin, respectively, compared to 58% and 42% in 2018.

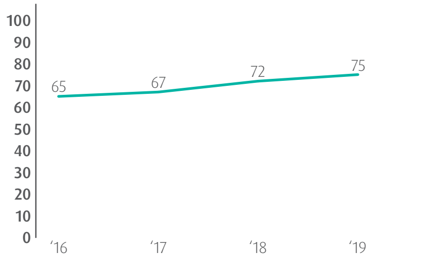
PRODUCTS AND SERVICES CONTRIBUTING TO SPECIFIC SUSTAINABILITY ASPECTS

Our primary focus in terms of sustainable products and services is to leverage activities that provide solutions to the megatrends of clean mobility and resource scarcity. For more information, please refer to Value chain and society, p. 36.

We developed an indicator to underline our focus on clean mobility and recycling.

REVENUES FROM CLEAN MOBILITY AND RECYCLING

%



Business units continue to develop specific solutions for sustainability aspects of our products and their applications in close relationship with customers. Typical subjects dealt with in such developments are the reduction of risks related to the use of products, reduction of the hazard of products or a higher material efficiency in the delivery or the use of our products.

MANAGEMENT OF PRODUCT REGULATION

Worldwide, Umicore ensures regulatory compliance for the products it puts on the market. Changes to existing product related legislation as well as the introduction of new legislation, might impact our business. In terms of the REACH legislation in the EU, Umicore closely monitors all changes in interpretation as well as guidance documents that might affect its REACH implementation strategy. Umicore is actively involved in industry association working groups to ensure a consistent approach is followed and the metal specifics are understood by the regulators and the companies.

Umicore actively supports the engagement of the metals sector with ECHA in the Metals/inorganics sectorial approach (MISA).

Umicore engaged with the cobalt industry in managing two specific processes under REACH: the cobalt metal harmonized classification and labelling and the Annex XV proposal on the restriction of 5 cobalt salts. These processes have no final outcome yet and continue into 2020.

In 2019, we submitted 28 additional substances for registration under REACH due to new business developments.

As part of regular maintenance, we updated 47 REACH dossiers among others to increase the tonnage band, to reply to ECHA requests and to include new information.

The Korean REACH alike regulation was significantly amended in 2018 and has introduced an obligatory pre-notification phase which ran until 30/06/2019 to pre-notify existing substances > 1 t/a in order to profit from the transition phases for the registration. Deadlines depend on the tonnage band and CMR classification and vary between end 2021 and end 2030. Umicore will prepare itself accordingly.

Umicore has submitted 5 registrations in Korea in 2019 for priority chemical substances and has submitted 2 new substance registrations.

V5 DONATIONS

SCOPE

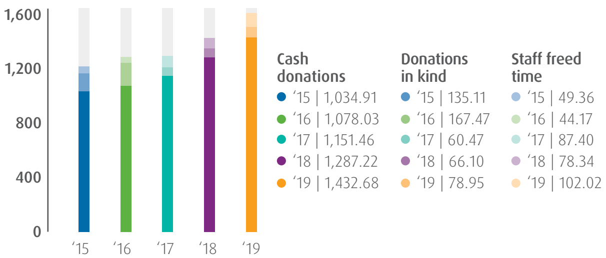
The indicators presented are based on data from fully consolidated companies. The historical numbers (2016 and before) were not restated.

GROUP DATA

	UNIT	2015	2016	2017	2018	2019
Cash donations	Thousands of Euros	1,034.91	1,078.03	1,151.46	1,287.22	1432.68
Donations in kind	Thousands of Euros	135.11	167.47	60.47	66.10	78.95
Staff freed time	Thousands of Euros	49.36	44.17	87.40	78.34	102.02
Total donations	**Thousands of Euros**	**1,219.38**	**1,289.68**	**1,299.34**	**1,431.66**	**1,613.65**

DONATIONS

Thousands of Euros



Donations are subdivided into cash donations, donations in kind and staff time. Group level donations are coordinated by a committee reporting to the CEO.

Each business unit is expected to allocate an annual budget that provides sufficient donations and sponsorship support to each site's community engagement program. By way of guidance, this budget should equal to an amount corresponding to one third of 1% of the business unit's average annual consolidated recurring EBIT (i.e. excluding associates) for the 3 previous years. The Kokkola, Finland site is not in scope for 2019.

REGIONAL DATA

	UNIT	EUROPE	NORTH AMERICA	SOUTH AMERICA	ASIA-PACIFIC	AFRICA	UMICORE GROUP
Total donations	Thousands of Euros	1,311.03	125.86	77.72	78.24	20.81	1,613.65

BUSINESS GROUP DATA

	UNIT	CATALYSIS	ENERGY & SURFACE TECHNOLOGIES	RECYCLING	CORPORATE	UMICORE GROUP
Total donations	Thousands of Euros	211.19	369.29	229.72	803.45	1,613.65

In 2019, Umicore contributed € 1.6 million in donations. For the business units, the total amount of € 810,200 is in line with our guidance. Additional Group level donations of € 803,454 were made.

Most of the donations from the business units go to charity events close to their sites, in support of the local community. However, some business unit headquarters also support charity projects on other continents.

At Group level, the donations have a global reach. The main areas for Group level donations in 2019 included support for 2 major UNICEF educational projects in Madagascar and in India, 3 projects coordinated by Entrepreneurs for Entrepreneurs (in Mali, Ecuador and Bolivia) and support for student sustainable mobility projects.

UMICORE.COM/EN/MEDIA/PRESS/GIVING-BACK-TO-SOCIETY-IN-MADAGASCAR

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THE UMICORE ANNUAL REPORT OFFERS A COMPREHENSIVE AND INTEGRATED VIEW OF OUR ECONOMIC, FINANCIAL, ENVIRONMENTAL, VALUE CHAIN AND SOCIAL PERFORMANCE FOR 2019

This report is divided in 2 parts: an annual review of key performance aspects as they relate to our Horizon 2020 strategy, followed by the full financial, environmental, value chain, social and governance statements and notes. All elements of the Annual Report can be consulted at annualreport.umicore.com

AN INTEGRATED APPROACH

One of the key objectives of this report is to reflect our integrated strategic approach which combines economic, environmental, value chain and social performance targets. This report further refines the approach based on elements from the "International Integrated Reporting Framework" developed by the International Integrated Reporting Council, which requires a more complete disclosure and discussion of the material factors influencing our business and the risks and opportunities linked to our Horizon 2020 strategy.

REPORTING SCOPE

This report covers our operations for the 2019 calendar year which is also the Umicore fiscal year, and reports on the progress towards our Horizon 2020 objectives. The scope of all objectives and a brief description of the methodology behind all performance indicators are included in the statements section of the report. Where data are available, the performance indicators in the document are reported with a comparison base going back 5 years.

The economic scope of this report covers all fully consolidated operations and the financial contributions of all associate and joint venture companies.

The environmental and social scope is limited to all fully consolidated – any divergence from this scope is explained in the relevant chapter or note in the report.

DATA

The economic and financial data are collected through our financial management and consolidation process. The environmental and social data are collected through environmental and social data management systems and integrated into a central reporting tool, along with the economic and financial data.

ASSURANCE

This report has been independently verified by PwC Bedrijfsrevisoren/Réviseurs d'Entreprises (PwC).

PwC's audit of financial information is based on full set of IFRS consolidated financial statements on which it has expressed an unqualified opinion. This full set of IFRS consolidated financial statements and the auditor's report thereon, can be found on pp. 103 – 166 and p. 195

The social, value chain and environmental information included in this report has been prepared on the basis of the same recognition and measurement principles that have been used to prepare the social, environmental and value chain statements, pp. 167 – 192. PwC's report on the social, value chain and environmental statements can be found on p.199.

This report has been prepared in accordance with the GRI Standards: Core option. A full GRI index can be found on pp. 200 – 202. The Global Reporting Initiative (GRI) is a network-based organization that pioneered the world's most widely used sustainability reporting framework. The GRI Standards, launched in October 2016, are the first global standards for sustainability reporting.

Umicore has aligned the corporate reporting to the non-financial reporting requirements set out in the Belgium Companies Code.

PRESENTATION & FEEDBACK

Umicore seeks to improve its reporting through a continuous process of stakeholder engagement and dialogue. The key social elements of the report are presented to the international trade unions during the joint monitoring committee in March, while the entire document is presented to shareholders at the Annual General Meeting in April.

Umicore also commits to consider all improvement points recommended by the independent auditor (PwC) in its subsequent reporting cycles. General reader feedback is encouraged on both the print and online versions of the report. Feedback received on our previous reports has been considered in the preparation of this report.

STATUTORY AUDITOR'S REPORT TO THE GENERAL SHAREHOLDERS' MEETING ON THE CONSOLIDATED ACCOUNTS FOR THE YEAR ENDED 31 DECEMBER 2019

We present to you our statutory auditor's report in the context of our statutory audit of the consolidated accounts of Umicore (the "Company") and its subsidiaries (jointly "the Group"). This report includes our report on the consolidated accounts, as well as the other legal and regulatory requirements. This forms part of an integrated whole and is indivisible.

We have been appointed as statutory auditor by the general shareholders' meeting of 25 April 2017, following the proposal formulated by the board of directors and following the recommendation by the audit committee and the proposal formulated by the works' council. Our mandate will expire on the date of the general meeting which will deliberate on the annual accounts for the year ended 31 December 2019. We started the statutory audit of the consolidated accounts of Umicore before 1993.

REPORT ON THE CONSOLIDATED ACCOUNTS

UNQUALIFIED OPINION

We have performed the statutory audit of the Group's consolidated accounts, which comprise the consolidated balance sheet as at 31 December 2019, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flow for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies and other explanatory information, and which is characterised by a consolidated balance sheet total of EUR 7.023,4 million and a profit for the year (Group share) of EUR 287,8 million.

In our opinion, the consolidated accounts give a true and fair view of the Group's net equity and consolidated balance sheet as at 31 December 2019, and of its consolidated financial performance and its consolidated cash flows for the year then ended, in accordance with International Financial Reporting Standards as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium.

BASIS FOR UNQUALIFIED OPINION

We conducted our audit in accordance with International Standards on Auditing (ISAs) as applicable in Belgium. Furthermore, we have applied the International Standards on Auditing (ISAs) as approved by the IAASB which are applicable to the year-end and which are not yet approved at the national level. Our responsibilities under those standards are further described in the "Statutory auditor's responsibilities for the audit of the consolidated accounts" section of our report. We have fulfilled our ethical responsibilities in accordance with the ethical requirements that are relevant to our audit of the consolidated accounts in Belgium, including the requirements related to independence.

We have obtained from the board of directors and Company officials the explanations and information necessary for performing our audit.

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

EMPHASIS OF MATTER – SUBSEQUENT EVENT

As far as the outbreak of COVID 19 is concerned, we draw your attention to Note F38 ("Events after the reporting period") of the consolidated accounts in which the board of directors expresses their view that, although the consequences thereof may have a significant impact on the Group's operations in 2020, such consequences do not have a material impact on the Group's financial position for the year ended 31 December 2019. Our opinion is not qualified in respect of this matter.

KEY AUDIT MATTERS

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

ACCOUNTING TREATMENT OF HEDGING TRANSACTIONS

DESCRIPTION OF THE KEY AUDIT MATTER

Umicore uses a number of different derivative financial instruments to hedge against currency and commodity price risks associated with ordinary business activities. Management's hedging policy is documented in corresponding internal guidelines and serves as the basis for these transactions. Currency and commodity price risks arise primarily from revenue, sales and procurement transactions (in particular commodities).

The cash flow hedges (also labelled as strategic hedges in the annual report) do meet the criteria for hedge accounting under IFRS 9, consequently the effective portion of the changes in fair value of the underlying derivative financial instruments are recognized directly in equity until the underlying hedged cash flows realise. As of the balance sheet date, a cumulative EUR 29 million were recognized in the fair value reserves in equity as disclosed in note F 33.1.

A part of the fair value hedges (also labelled as transactional hedges in the annual report) do meet the criteria for fair value hedge accounting under IFRS 9 as disclosed in the accounting policies under note F 2.21.1. The hedged item and the underlying instruments are both recognized at fair value through the income statement.

There is still a part of the transactional hedging for commodities for which under IFRS 9 no fair value hedge accounting can be applied, consisting mainly of physical back-to-back hedging set-ups without any derivative financial instruments involved. As disclosed under note F 2.21.1, a "lower of cost or market" approach is applied on the physical future sales and purchase commitments with customers and suppliers.

We believe that these matters were of most significance in our audit due to the high complexity and number of transactions as well as the extensive accounting and reporting requirements under IFRS 9.

HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER

As part of our audit and with the help of our internal treasury experts, we assessed the contractual and financial parameters and reviewed the accounting treatment, including the effects on equity and profit or loss, of the various hedging transactions. Together with these experts, we also assessed Umicore's internal control system with regard to derivative financial instruments, including the internal activities to monitor compliance with the hedging policy. Furthermore, we used market data to review the method applied to measure the fair value of the financial instruments. In addition, we obtained bank and broker confirmations in order to assess the completeness and accuracy of the fair values of the recorded hedging transactions. With regard to the expected cash flows and the assessment of the effectiveness of hedges, we essentially reviewed the prospective testing. We verified that hedges were accounted for and measured in accordance with IFRS 9. In view of the transactional hedges we audited the accuracy and completeness of the related derivative financial instruments via external confirmations and the review of the method applied to measure the fair value via market data. Moreover, for the part on which no fair value hedge accounting can be applied, the "lower of cost or market" approach applied on the physical future sales and purchase commitments with customers and suppliers have been audited on a sample basis.

OUR FINDINGS

Key assumptions and hedge accounting documentation were supported by available evidence. The measurement methods applied for the fair value determination and the disclosures in notes F 33.1 and F. 33.2 are appropriate.

UNCERTAIN (DEFERRED) TAX POSITIONS

DESCRIPTION OF THE KEY AUDIT MATTER

Umicore has extensive international operations and is present in many different tax and legal jurisdictions where amongst others transfer pricing assessments could be challenged by the tax authorities in the different countries. The accounting for these uncertain tax positions comprise significant judgement by management mainly in the area whether to recognise these uncertain tax positions and to adequately determine (deferred) tax assets and liabilities. Referring to note F 3.6 and F.2.23.2 management performed a detailed assessment of the uncertain tax positions which resulted in appropriate provisions for these uncertainties.

The accounting treatment of uncertain tax positions was a topic of most significance in our audit due to the introduction of IFRIC 23 in 2019.

HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER

We assessed the process of Umicore to gather the tax exposures of all the legal entities of the Umicore Group. Together with our tax experts we also assessed the probability assessment prepared by Umicore for every exposure identified. Moreover we have analysed the methods applied by management, being the most likely amount or the expected value of the tax treatment when determining taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates if it's not probable that an uncertain tax position will be sustained in full. In this context we have evaluated tax memorandums of management's experts on the respective cases and exposures together with our tax experts. Moreover we have analysed the consistency of tax treatments between subsidiaries and based on experiences of Umicore in the past. We have also tested the completeness and accuracy of the amounts reported for current and deferred tax, including the assessment of audits by tax authorities. In this area our audit procedures included, amongst others, an assessment of correspondence with the relevant tax authorities. In respect of deferred tax assets, we analysed and tested management's assumptions used to determine the probability that deferred tax assets recognized in the balance sheet will be recovered through taxable income in the countries where the deferred tax assets originated and during the periods when the deferred tax assets become deductible.

OUR FINDINGS

Uncertain tax positions have been properly taken into account when assessing the (deferred) tax liabilities and assets positions in the consolidated accounts, in accordance with the requirements of IFRIC 23.

CHANGE IN ACCOUNTING POLICY ON PERMANENTLY TIED UP METAL INVENTORIES

DESCRIPTION OF THE KEY AUDIT MATTER

Umicore faces metal price risks on its permanently tied up metal inventories (non current inventory or "NCI"). The risk is related to the market metal price moving below the carrying value of these inventories. Until 31 December 2018, NCI was valued at a separate historical weighted average cost, applying a lower of cost or market ("LOCOM") adjustment when necessary. As from 2019, the accounting for NCI follows the measurement and recognition rules of IAS 16 on property, plant and equipment, since these metals are constantly held for use in the production and logistic flows, and are not expected to be sold or consumed. Due to the fact that permanently tied up materials are considered as indefinite life assets, these assets are subject to Umicore's annual impairment analysis as part of the cash generating units to which they belong. As from the moment there are changes in the prevailing business set-up and the NCI can no longer be substantiated, these inventories will be treated as assets held for sale at the lower of the carrying amount and fair value less cost to sell. The change in accounting policy was approved by the board of directors in 2019.

We believe this change in accounting policy is of most significance in our audit due to the significant impact on the consolidated accounts. Note 2.23.3 of the consolidated accounts explains that the non-cash impairment charge would be EUR 122 million in the income statement if the previous accounting policy would still have been applied as of 31 December 2019. Referring to the same note as of 1 January 2019, the cumulative "lower of cost or net realizable value" provision amounted to EUR 8,5 million. The change in accounting policy has been retrospectively applied as from 1 January 2019 representing the release of this cumulative "lower of cost or net realizable value provision", to the opening balance sheet reserves. During 2018 this provision had been increased by EUR 6,0 million presented under non-recurring items. Due to the immaterial impact Umicore decided not to adjust the comparative financial information of prior periods.

HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER

Together with our IFRS specialists we have analysed whether this change in accounting policy is compliant with IAS 16, general IFRS principles and the IFRS Interpretation Committee ("IFRIC") staff paper issued in July 2014. We verified that the LOCOM adjustments of the past, detailed above, have been appropriately reversed and that all NCI was valued at its carrying value at 31 December 2019. Furthermore, we have also assessed the adequacy and completeness of the disclosures in the consolidated accounts on this change in accounting policy in accordance with IAS 8.

OUR FINDINGS

The new accounting policy is compliant with IAS 16, IFRS principles and the IFRIC staff paper. The disclosures on this change in accounting policy included in note 2.23.3 are appropriate.

RESPONSIBILITIES OF THE BOARD OF DIRECTORS FOR THE PREPARATION OF THE CONSOLIDATED ACCOUNTS

The board of directors is responsible for the preparation of consolidated accounts that give a true and fair view in accordance with International Financial Reporting Standards as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium, and for such internal control as the board of directors determines is necessary to enable the preparation of consolidated accounts that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated accounts, the board of directors 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 the board of directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

STATUTORY AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE CONSOLIDATED ACCOUNTS

Our objectives are to obtain reasonable assurance about whether the consolidated accounts 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 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 accounts.

In performing our audit, we comply with the legal, regulatory and normative framework applicable to the audit of the consolidated accounts in Belgium. A statutory audit does not provide any assurance as to the Company's future viability nor as to the efficiency or effectiveness of the board of directors' current or future business management.

As part of an audit in accordance with 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 accounts, 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 risk 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.
- 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 the board of directors.

- Conclude on the appropriateness of the board of directors' 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 statutory auditor's report to the related disclosures in the consolidated accounts 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 statutory 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 accounts, including the disclosures, and whether the consolidated accounts represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient and 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 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 accounts 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.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

RESPONSIBILITIES OF THE BOARD OF DIRECTORS

The board of directors is responsible for the preparation and the content of the directors' report on the consolidated accounts.

STATUTORY AUDITOR'S RESPONSIBILITIES

In the context of our mandate and in accordance with the Belgian standard which is complementary to the International Standards on Auditing (ISAs) as applicable in Belgium, our responsibility is to verify, in all material respects, the directors' report on the consolidated accounts and to report on these matters.

ASPECTS RELATED TO THE DIRECTORS' REPORT ON THE CONSOLIDATED ACCOUNTS

In our opinion, after having performed specific procedures in relation to the directors' report on the consolidated accounts, this report is consistent with the consolidated accounts for the year under audit, and it is prepared in accordance with article 3:32 of the Companies' and Associations' Code.

In the context of our audit of the consolidated accounts, we are also responsible for considering, in particular based on the knowledge acquired resulting from the audit, whether the directors' report is materially misstated or contains information which is inadequately disclosed or otherwise misleading. In light of the procedures we have performed, there are no material misstatements we have to report to you.

The non-financial information required by virtue of article 3:32, §2 of the Companies' and Associations' Code is included in the directors' report on the consolidated accounts. The Company has prepared the non-financial information, based on the reference framework Global Reporting Initiative (GRI) Standards. However, in accordance with article 3:80, §1, 5° of the Companies' and Associations' Code, we do not express an opinion as to whether the non-financial information has been prepared in accordance with the Global Reporting initiative (GRI) Standards as disclosed in the consolidated accounts.

STATEMENT RELATED TO INDEPENDENCE

- Our registered audit firm and our network did not provide services which are incompatible with the statutory audit of the consolidated accounts, and our registered audit firm remained independent of the Group in the course of our mandate.
- The fees for additional services which are compatible with the statutory audit of the consolidated accounts referred to in article 3:65 of the Companies' and Associations' Code are correctly disclosed and itemized in the notes to the consolidated accounts.

OTHER STATEMENTS

This report is consistent with the additional report to the audit committee referred to in article 7:99 §6, 4° of the Companies' and Associations' Code referring to article 11 of Regulation (EU) N° 537/2014.

SINT-STEVENS-WOLUWE, 27 March 2020
The statutory auditor

PwC Bedrijfsrevisoren BV / PwC Reviseurs d'Entreprises SRL Represented by

KURT CAPPOEN
Bedrijfsrevisor/Réviseur d'Entreprises

INDEPENDENT LIMITED ASSURANCE REPORT ON THE ENVIRONMENTAL, SOCIAL AND VALUE CHAIN STATEMENTS OF THE INTEGRATED ANNUAL REPORT 2019 OF UMICORE AND ITS SUBSIDIARIES

This report has been prepared in accordance with the terms of our three year engagement contract dated 29 June 2017, whereby we have been engaged to issue an independent limited assurance report in connection with the Environmental, Social and Value Chain Statements in the accompanying Integrated Annual Report 2019 of Umicore and its subsidiaries (the "Company") as of and for the year ended 31 December 2019 (the "Report").

RESPONSIBILITY OF BOARD OF DIRECTORS

The Board of Directors of the Company is responsible for the preparation of the information and data in the Environmental, Social and Value Chain Statements set forth in the Integrated Annual Report 2019 of Umicore and its subsidiaries and the declaration that its reporting meets the requirements of the Global Reporting Initiative (GRI) Standards – Core as set out on pages 167 to 192 ("the Subject Matter Information"), in accordance with the criteria stated in the Environmental, Social and Value Chain Statements and with the recommendations of GRI Standards ("the Criteria").

This responsibility includes the selection and application of appropriate methods for the preparation of the Subject Matter Information, for ensuring the reliability of the underlying information and for the use of assumptions and estimates for individual sustainability disclosures, which are reasonable in the circumstances. Furthermore, the responsibility of the Board of Directors includes the design, implementation and maintenance of systems and processes relevant for the preparation of the Subject Matter Information that is free from material misstatement, whether due to fraud or error.

AUDITOR'S RESPONSIBILITY

Our responsibility is to express an independent conclusion about the Subject Matter Information based on the procedures we have performed and the evidence we have obtained. Our assurance report has been prepared in accordance with the terms of our engagement contract.

We conducted our work in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised) "Assurance Engagements other than Audits or Reviews of Historical Financial Information". This standard requires that we comply with ethical requirements and that we plan and perform the engagement to obtain limited assurance as to whether nothing has come to our attention that causes us to believe that the Subject Matter Information is not fairly stated, in all material respects, in accordance with the Criteria issued by the Company.

The objective of a limited-assurance engagement is to perform the procedures we consider necessary to provide us with sufficient appropriate evidence to support the expression of a conclusion in the negative form on the Subject Matter Information.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

The selection of such procedures depends on our professional judgment, including the assessment of the risks of management's assertion being materially misstated. The scope of our work comprised the following procedures:

- assessing and testing the design and functioning of the systems and processes used for data-gathering, collation, consolidation and validation, including the methods used for calculating and estimating the Subject Matter Information as of and for the year ended 31 December 2019 presented on pages 167 to 192 of the Report;
- conducting interviews with responsible officers including site visits;
- inspecting internal and external documents.

We have evaluated the Subject Matter Information against the Criteria. The accuracy and completeness of the Subject Matter Information are subject to inherent limitations given their nature and the methods for determining, calculating or estimating such information. Our Limited Assurance Report should therefore be read in connection with the Criteria.

OUR INDEPENDENCE AND QUALITY CONTROL

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants (IESBA), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

Our audit firm applies International Standard on Quality Control (ISQC) n° 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

CONCLUSION

Based on the procedures performed, as described in this Independent Limited Assurance Report, and the evidence obtained, nothing has come to our attention that causes us to believe that the information and data presented in the Environmental, Social and Value Chain Statements as of and for the year ended 31 December 2019 on pages 167 to 192 of the Integrated Annual Report of Umicore and its subsidiaries, and Umicore's assertion that the Report meets the requirements of GRI Standards – Core, is not fairly stated, in all material respects, in accordance with the Criteria.

RESTRICTION ON USE AND DISTRIBUTION OF OUR REPORT

Our assurance report has been made in accordance with the terms of our engagement contract. Our report is intended solely for the use of the members of board of directors of Umicore, in connection with their Environmental, Social and Value Chain Statements as of and for the year ended 31 December 2019 and should not be used for any other purpose. We do not accept or assume and deny any liability or duty of care to any other party to whom this report may be shown or into whose hands it may come.

SINT-STEVENS-WOLUWE, 20 March 2020,

PwC Bedrijfsrevisoren BV Represented by

MARC DAELMAN
Registered auditor

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
GRI 102: GENERAL DISCLOSURES		
ORGANISATIONAL PROFILE		
102-1	Name of the organisation	Front cover
102-2	Activities, brands, products, and services	2-3 (About us); 6 (Umicore at a glance); 12 (Business model)
102-3	Location of headquarters	Inside back cover; back cover
102-4	Location of operations	6 (Umicore at a glance); 178-180 (Social statements: S2);
102-5	Ownership and legal form	Back cover
102-6	Markets served	2-3 (About us); 6 (Umicore at a glance); 26-35 (Economic review)
102-7	Scale of the organisation	6 (Umicore at a glance); 178-180 (Social statements: S2); 104 (Financial statements: consolidated balance sheet)
102-8	Information on employees and other workers	178-180 (Social statements: S2)
102-9	Supply chain	36-41 (Value chain and society review), 188-191 (Value chain statements: V2-V4)
102-10	Significant changes to the organisation and its supply chain	26-35 (Economic review), 191 (Value chain statements: V4)
102-11	Precautionary principle or approach	57-58 (Risk management and internal control); 59-66 (Key risks and opportunities)
102-12	External initiatives	COSO; OECD Guidelines; ILO Human Rights; SRI, FTSE; PACI; GRI; IIRC
102-13	Membership of associations	14-19 (Stakeholder engagement)
STRATEGY		
102-14	A statement from the most senior decision-maker of the organisation	7-9 (CEO and Chairman's review)
102-15	Key impacts, risks, and opportunities	59-66 (Key risks and opportunities)
ETHICS AND INTEGRITY		
102-16	Values, principles, standards, and norms of behaviour	The Umicore Way; Code of Conduct; 57-58 (Risk management and internal control); 14-19 (Stakeholder engagement); 83,87 (Corporate governance statements: G1, G9); 183 (Social statements: S5)
102-17	Mechanisms for advice and concerns about ethics	Code of Conduct; 183 (Social statements: S5)
GOVERNANCE		
102-18	Governance structure	82-85(Corporate governance statements: G2, G4, G5); 78-81 (Management approach)
102-19	Delegating authority	78-81 (Management approach)
102-20	Executive-level responsibility for economic, environmental, and social and societal topics	73-75 (Executive Committee); 78-81 (Management approach)

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
102-21	Consulting stakeholders on economic, environmental, and social and societal topics	14-19 (Stakeholder engagement); 21-24 (Materiality)
102-22	Composition of the highest governance body and its committees	68-72 (Board of Directors); 82 (Corporate governance statements: G2)
102-23	Chair of the highest governance body	68-72 (Board of Directors); 82 (Corporate governance statements: G2)
102-24	Nominating and selecting the highest governance body	84 (Corporate governance statements: G4)
102-25	Conflicts of interest	87-88 (Corporate governance statements :G7, G9-G11); Corporate Governance Charter; Code of Conduct
102-26	Role of highest governance body in setting purpose, values, and strategy	82 (Corporate governance statements: G2)
102-27	Collective knowledge of highest governance body	84 (Corporate governance statements: G4)
102-28	Evaluating the highest governance body's performance	84 (Corporate governance statements: G4)
102-29	Identifying and managing economic, environmental, and social and societal impacts	14-19 (Stakeholder engagement); 21-24 (Materiality); 57-58 (Risk management and internal control); 59-66 (Key risks and opportunities); 78-81 (Management approach)
102-30	Effectiveness of risk management processes	57-58 (Risk management and internal control)
102-31	Review of economic, environmental, and Social and societal topics	59-66 (Key risks and opportunities); 78-81 (Management approach); 84 (Corporate governance statements: G4)
102-32	Highest governance body's role in sustainability reporting	78-81 (Management approach)
102-33	Communicating critical concerns	14-19 (Stakeholder engagement); 83-88 (Corporate governance statements: G1, G3, G9, G10, G11); Corporate Governance Charter; Code of Conduct
102-34	Nature and total number of critical concerns	not reported
102-35	Remuneration policies	91-94 (Remuneration report); Corporate Governance Charter; Code of Conduct
102-36	Process for determining remuneration	91-94 (Remuneration report); Corporate Governance Charter; Code of Conduct
102-37	Stakeholders' involvement in remuneration	91-94 (Remuneration report); Corporate Governance Charter; Code of Conduct
102-38	Annual total compensation ratio	not reported
102-39	Percentage increase in annual total compensation ratio	not reported

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
STAKEHOLDER ENGAGEMENT		
102-40	List of stakeholder groups	14-19 (Stakeholder engagement)
102-41	Collective bargaining agreements	182 (Social statements: S4)
102-42	Identifying and selecting stakeholders	14-19 (Stakeholder engagement)
102-43	Approach to stakeholder engagement	14-19 (Stakeholder engagement)
102-44	Key topics and concerns raised	14-19 (Stakeholder engagement); 21-24 (Materiality)
REPORTING PRACTICE		
102-45	Entities included in the consolidated financial statements	2-3 (About us); 6 (Umicore at a glance); 26-55 (Performance review); 82 (Corporate governance statements: G2); 122,136 (Financial statements: F5, F17)
102-46	Defining report content and topic boundaries	21-24 (Materiality); 78-81 (Management approach)
102-47	List of material topics	21-24 (Materiality); 78-81 (Management approach)
102-48	Restatements of information	78-81 (Management approach); 168 (Environmental statements: E1); 178, 183-186 (Social statements: S1, S6, S7); 190 (Value chain statements: V4); 188 (About this report)
102-49	Changes in reporting	2-3 (About us); 6 (Umicore at a glance); 168-171 (Environmental statements: E1, E2, E3); 188-191 (Value chain statements: V1, V2, V4); 194 (About this report)
102-50	Reporting period	Front cover; Inside front cover; 194 (About this report)
102-51	Date of most recent report	Annual report website
102-52	Reporting cycle	Front cover; Inside front cover; Annual report website
102-53	Contact point for questions regarding the report	Inside back cover; natalia.agueros@eu.umicore.com
102-54	Claims of reporting in accordance with the GRI Standards	Inside front cover; 194 (About this report)
102-55	GRI content index	This section; 194 (About this report)
102-56	External assurance	195-199 (Assurance reports)
GRI 103: MANAGEMENT APPROACH		
103-1	Explanation of the material topic and its boundary	78-81 (Management approach)
103-2	The management approach and its components	78-81 (Management approach)
103-3	Evaluation of the management approach	78-81 (Management approach)

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
GRI 201: ECONOMIC PERFORMANCE		
201-1	Direct economic value generated and distributed	6 (Umicore at a glance); 14-19 (Stakeholder engagement); 101 (Distribution of economic benefits) 128-130,163 (Financial statements: F8, F9, F39); 204 (Key figures)
201-3	Defined benefit plan obligations and other retirement plans	145-148 (Financial statements: F27)
201-4	Financial assistance received from government	106 (Consolidated statement of cash flow)
GRI 202: MARKET PRESENCE		
202-2	Proportion of senior management hired from the local community	Similar scope covered in 178-180 (Social statements: S2)
GRI 203: INDIRECT ECONOMIC IMPACTS		
203-1	Infrastructure investments and services supported	14-19 (Stakeholder engagement); 174-176 (Environmental statements: E7); 192 (Value chain statements: V5); 204 (Key figures)
GRI 205: ANTI-CORRUPTION		
205-1	Operations assessed for risks related to corruption	57-58 (Risk management and internal control)
205-2	Communication and training about anti-corruption policies and procedures	All employees receive informal training on the Code of Conduct when joining the company
GRI 206: ANTI-COMPETITIVE BEHAVIOR		
206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	161 (Financial statements: F36)
GRI 301: MATERIALS		
301-2	Recycled input materials used	6 (Umicore at a glance); 191-192 (Value chain statements: V4)
GRI 302: ENERGY		
302-1	Energy consumption within the organisation	171-173 (Environmental statements: E4)
302-3	Energy intensity	171-173 (Environmental statements: E4)
302-4	Reduction of energy consumption	171-173 (Environmental statements: E4)
GRI 305: EMISSIONS		
305-1	Direct (Scope 1) GHG emissions	171 (Environmental statements: E3)
305-2	Energy indirect (Scope 2) GHG emissions	171 (Environmental statements: E3)
305-7	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	169-170 (Environmental statements: E2)

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
GRI 308: SUPPLIER ENVIRONMENTAL ASSESSMENT		
308-2	Negative environmental impacts in the supply chain and actions taken	36-41 (Value chain and society review), 188-191 (Value chain statements: V2-V4)
GRI 401: EMPLOYMENT		
401-1	New employee hires and employee turnover	6 (Umicore at a glance); 49-55 (Great place to work review); 178-181 (Social statements: S2; S3); 204 (Key figures)
GRI 403: OCCUPATIONAL HEALTH AND SAFETY		
403-1	Workers representation in formal joint management-worker health and safety committees	182 (Social statements: S4)
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	49-55 (Great place to work review) 183-185 (Social statements: S6, S7); 204 (Key figures)
403-4	Health and safety topics covered in formal agreements with trade unions	182 (Social statements: S4); Global framework Agreement on Sustainable Development
GRI 404: TRAINING AND EDUCATION		
404-1	Average hours of training per year per employee	49-55 (Great place to work review); 181-182 (Social statements: S3); 204 (Key figures)
404-2	Programmes for upgrading employee skills and transition assistance programmes	49-55 (Great place to work review); 181-182 (Social statements: S3);
404-3	Percentage of employees receiving regular performance and career development reviews	181-182 (Social statements: S3)
GRI 405: DIVERSITY AND EQUAL OPPORTUNITY		
405-1	Diversity of governance bodies and employees	49-55 (Great place to work review); 84 (Corporate governance statements: G4); 178-180 (Social statements: S2)
GRI 408: CHILD LABOR		
408-1	Operations and suppliers at significant risk for incidents of child labour	This element is taken into account as part of the objective on "Sustainable supply"; see 236-41 (Value chain and society review), 188-191 (Value chain statements: V2-V4); Ensuring sustainable cobalt sourcing online case study
GRI 409: FORCED OR COMPULSORY LABOR		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labour	This element is taken into account as part of the objective on "Sustainable supply"; see 236-41 (Value chain and society review), 188-191 (Value chain statements: V2-V4); Ensuring sustainable cobalt sourcing online case study

GRI STANDARDS REFERENCE	DISCLOSURE	PAGE REFERENCE IN ANNUAL REPORT 2019
GRI 414: SUPPLIER SOCIAL ASSESSMENT		
414-2	Negative Social and societal impacts in the supply chain and actions taken	36-41 (Value chain and society review), 188-191 (Value chain statements: V2-V4)
GRI 416: CUSTOMER HEALTH AND SAFETY		
416-1	Assessment of the health and safety impacts of product and service categories	191-192 (Value chain statements: V4)
GRI 417: MARKETING AND LABELLING		
417-1	Requirements for product and service information and labelling	191-192 (Value chain statements: V4)
OTHER MATERIAL TOPICS REPORTED		
	Criticality of raw materials	To complement the reporting on GRI 308: Supplier Environmental Assessment and GRI 414: Supplier Social Assessment. See 36-41 (Value chain and society review), 188-191 (Value chain statements: V2-V3)
	Sustainable products and services	To complement reporting on GRI 301: Materials see 36-41 (Value chain and society); 191-192 (Value chain statements: V4)
	Process safety	To complement reporting on GRI 403: Occupational Health and Safety see 186 (Social statements: S8)
	Metal emissions to air and water	To complement reporting on GRI 305: Emissions see 169-170 (Environmental statements: E2)

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ANNUAL REPORT annualreport.umicore.com

ANNUAL REPORT GLOSSARY annualreport.umicore.com/glossary

ANNUAL REPORT STORIES annualreport.umicore.com/stories

THE UMICORE WAY umicore.com/en/about/the-umicore-way

CODE OF CONDUCT umicore.com/en/governance/code-of-conduct

HORIZON 2020 umicore.com/en/cases/horizon-2020

GLOBAL FRAMEWORK AGREEMENT ON SUSTAINABLE DEVELOPMENT umicore.com/industriALL

SUSTAINABLE PROCUREMENT CHARTER umicore.com/sustainableprocurement-charter

RESPONSIBLE GLOBAL SUPPLY CHAIN OF MINERALS FROM CONFLICT-AFFECTED AND HIGH-RISK AREAS umicore.com/responsiblesupplychain-policy

SUSTAINABLE PROCUREMENT FRAMEWORK FOR COBALT umicore.com/sustainableprocurementcharter-cobalt

DUE DILIGENCE COMPLIANCE REPORT COBALT PROCUREMENT umicore.com/sustainable-cobalt

CORPORATE GOVERNANCE CHARTER umicore.com/en/governance/corporate-governance-charter

UMICORE CAREERS umicore.com/careers

INVESTOR RELATIONS umicore.com/investors

SHAREHOLDER RIGHTS umicore.com/en/governance/shareholder-rights

UMICORE NEWS umicore.com/en/investors/news-results/press-releases

GIVING BACK TO SOCIETY umicore.com/giving-back-to-society
umicore.com/en/media/press/giving-back-to-society-in-madagascar

OTHER REFERENCES & LINKS

BELGIAN CORPORATE GOVERNANCE COMMITTEE www.corporategovernancecommittee.be

ECOVADIS www.ecovadis.com

FINANCIAL SERVICES AND MARKETS AUTHORITY www.fsma.be

OECD DUE DILIGENCE GUIDANCE FOR RESPONSIBLE SUPPLY CHAINS OF MINERALS FROM CONFLICT-AFFECTED AND HIGH-RISK AREAS
www.oecd.org/daf/inv/mne/OECD-Due-Diligence-Guidance-Minerals-Edition3.pdf

RESPONSIBLE MINERALS INITIATIVE, FORMERLY CONFLICT-FREE SOURCING INITIATIVE
www.responsiblemineralsinitiative.org
www.responsiblemineralsinitiative.org/gold-refiners-list
www.responsiblemineralsinitiative.org/responsible-minerals-assurance-process/smelterrefiner-lists/cobalt-refiners-list/conformant-cobalt-refiners

WBCSD GUIDANCE FOR ACCOUNTING AND REPORTING CORPORATE GHG EMISSIONS IN THE CHEMICAL SECTOR VALUE CHAIN www.wbcsd.org/contentwbc/download/2831/35596

GLOBAL BATTERY ALLIANCE : A VISION FOR A SUSTAINABLE BATTERY VALUE CHAIN IN 2030 umicore.com/globalbatteryalliance-report-2019

THE PRIMARY AND SECONDARY PRODUCTION OF GERMANIUM : A LIFE-CYCLE ASSESSMENT OF DIFFERENT PROCESS ALTERNATIVES doi.org/10.1007/s11837-014-1267-6

LONDON BULLION MARKET ASSOCIATION (LBMA)
www.lbma.org.uk/good-delivery-list-refiners-gold-current
www.lbma.org.uk/good-delivery-list-refiners-silver-current

RESPONSIBLE JEWELLERY COUNCIL
www.responsiblejewellery.com/members/chain-of-custody-certified-entities

ENTREPENEURS FOR ENTREPENEURS ondernemersvoorondernemers.be

Key figures

	2015	2016	2017	2018	2019
ECONOMIC PERFORMANCE (in millions of Euros unless stated otherwise)					
Revenues (excluding metal)	2,629.0	2,667.5	2,915.6	3,271	**3,361**
Recurring EBIT	330.3	350.7	410.3	514	**509**
Return on Capital Employed (ROCE) (in %)	13.7	14.6	15.1	15.4	**12.6**
R&D expenditure	144.5	155.9	175.2	196	**211**
Capital expenditure	240.3	287.3	365.3	478	**553**
Recurring EPS (in €/share)	1.13	1.07	1.22	1.36	**1.30**
Gross dividend (in €/share)	0.60	0.65	0.70	0.75	**0.375**
SOCIAL, ENVIRONMENTAL AND VALUE CHAIN PERFORMANCE					
Revenues from clean mobility and recycling (in %)	–	65	67	72	**75**
Total donations, including staff freed time (in thousands of Euros)	1,219	1,290	1,299	1,432	**1,614**
CO_2e emissions (scope 1+2) – Market based (in tonne)	710,143	662,059	633,704	767,702	**791,816**
CO_2e emissions (scope 1+2) – Location based (in tonne)	–	735,065	663,307	785,789	**815,175**
Energy consumption (in terajoules)	7,742	6,737	6,532	7,458	**7,476**
Workforce (fully consolidated companies)	10,429	9,921	9,769	10,420	**11,152**
Lost Time Accidents (LTA)	47	59	51	61	**90**
LTA frequency rate	2.66	3.34	3.01	3.36	**4.60**
LTA severity rate	0.12	0.56	0.09	0.10	**0.20**
Exposure ratio ‘all biomarkers aggregated’ (in %)	2.3	3.2	2.7	2.8	**1.8**
Average number of training hours per employee	45.06	41.49	45.33	43.10	**48.73**
Voluntary leavers ratio	3.35	4.10	5.03	7.18	**5.99**


umicore

FINANCIAL CALENDAR[1]

30 APRIL 2020
General meeting of shareholders (financial year 2019)

31 JULY 2020
Half year results 2020

UMICORE.COM/INVESTORS

ADDITIONAL INFORMATION

STOCK
Euronext Brussels

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