

Here

⁺Integrated Report
2019

We

Go

The Clariant Integrated Report 2019 offers a detailed overview of the company's multidimensional approach to value creation, covering both tangible and intangible, and financial and nonfinancial aspects of the business.

Comprehensive details regarding the company's performance are published in several online reports: Financial information can be accessed in the online Financial Report; governance and compensation details are available in the online Corporate Governance Report and the Compensation Report; and further information on the company's commitment to sustainable value creation can be found in the online GRI Report.



THE FOLLOWING REPORTS ARE AVAILABLE ONLINE AND AS PDFS FOR DOWNLOAD:

Integrated Report
reports.clariant.com

Corporate Governance Report
[reports.clariant.com/
2019/corporategovernance](https://reports.clariant.com/2019/corporategovernance)

Compensation Report
[reports.clariant.com/
2019/compensation](https://reports.clariant.com/2019/compensation)

Financial Report
[reports.clariant.com/
2019/financialreport](https://reports.clariant.com/2019/financialreport)

GRI Report
[reports.clariant.com/
2019/gri](https://reports.clariant.com/2019/gri)

In 2019, Clariant decided to dispose the Business Units Masterbatches and Pigments. The two Business Units concerned have been reclassified to discontinued operations in the financial reporting. Clariant's Integrated Report 2019 follows this structure for selected figures and separately reports on continuing and discontinued operations.

Performance

FINANCIAL CAPITAL in CHF m

	Continuing operations	Discontinued operations	Total 2019	2018
Sales	4 399	2 127	6 526	6 623
EBITDA before exceptional items	740	203	943	1 018
EBITDA after exceptional items	461	158	619	871
EBITDA margin before exceptional items (%)	16.8	9.5	14.4	15.4
EBITDA margin after exceptional items (%)	10.5	7.4	9.5	13.2
EBIT before exceptional items	444	168	612	693
EBIT after exceptional items	165	124	289	546
Net income	- 34	72	38	356
Basic earnings per share (in CHF)	-0.17	0.20	0.03	1.02
Adjusted earnings per share (in CHF)	0.87			1.50
Operating cash flow			509	530
Investment in property, plant, and equipment			273	237
Research & Development expenditures			207	209
Growth through innovation (%) ¹	> 3.5	< 0.5	< 3.0	> 3.0
Personnel expenditures ²	1 068	410	1 478	1 518
Raw material procurement	1 758	884	2 642	2 948
Total assets	6 681	1 298	7 979	7 981
Equity			2 677	2 970
Equity ratio (%)			33.6	37.2
Net debt			1 372	1 374
Gearing ratio (%)			51	46

¹ Contains the contribution to growth of the innovation portfolio from both Top Line Innovation and Life Cycle Innovation. Potential cannibalization of existing sales by Life Cycle Innovation has not been excluded.

² Including own employees and external staff

INTELLECTUAL CAPITAL

	Continuing operations	Discontinued operations	Total 2019	2018
Patents (year-end)	> 5 400	> 1 100	> 6 500	6 700
Active innovation projects	> 315	> 60	> 375	> 375
Of which Class 1 Projects with double-digit million sales potential or of strategic relevance	> 60	> 5	> 65	> 70
Scientific collaborations			> 125	> 125

MANUFACTURED CAPITAL

	Continuing operations	Discontinued operations	Total 2019	2018
Research & Development Centers			8	8
Technical Centers			> 50	> 50
Production sites	66	52	118	125
Countries with production facilities			38	39
Raw materials procured (in m t)	2.79	0.34	3.13	3.57
Production (in m t) ¹	3.99	0.26	4.25	4.34

¹ For 2018 and 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.

People

HUMAN CAPITAL in FTE (Full-time Equivalents)

	Continuing operations	Discontinued operations	Total 2019	2018
Total staff	11 941	5 282	17 223	17 901
Employees	7 510	2 649	10 159	10 405
Of which male	4 939	1 955	6 894 (68%)	7 115 (68%)
Of which female	2 571	694	3 265 (32%)	3 290 (32%)
Workers	4 431	2 633	7 064	7 496
Of which male	4 065	2 538	6 603 (93%)	6 890 (92%)
Of which female	366	95	461 (7%)	606 (8%)
Total training hours	167 150	38 711	205 861	234 240
Training hours (Ø per participant)	16.7	10.0	14.8	15
Staff in Research & Development	> 960	> 90	> 1 050	> 1100
Lost Time Accident Rate (LTAR: accidents with at least 1 day lost/200 000 work hours)	0.15	0.13	0.15	0.14 ¹

¹ Restated due to one reclassified injury, which was not considered by the statutory insurer as an incident but determined to be a personal health issue.

RELATIONSHIP CAPITAL

	Continuing operations	Discontinued operations	Total 2019	2018
Employee participation in engagement survey			n.a.¹	2 466
Raw material suppliers ²	3 503	3 896	6 805	7 000
Raw material supply base by spend covered by sustainability evaluations (%)	80	74	78	74
Survey responses obtained from customer contacts			n.a.¹	2 791
Customers who want to continue doing business with Clariant (%)			n.a.¹	90

¹ Survey is conducted every two years.

² Duplicate counts possible. One supplier may supply to continuing and discontinued operations.

Planet

NATURAL CAPITAL¹

	Continuing operations	Discontinued operations	Total 2019 ²	2018
Total energy consumption (in m kWh)	2 400	652	3 058	3 209
Energy consumption (in kWh/t production)	601	2 547	720	739
Total water consumption (in m m ³)	25.7	17.3	44.3	49.0
Total wastewater generation (in m m ³)	6.7	3.7	11.9	12.6
Total greenhouse gas emissions (Scope 1 & 2 CO ₂ equivalents) (in m t)	0.68	0.16	0.84	0.93
Total indirect greenhouse gas emissions (Scope 3 CO ₂ equivalents) (in m t)			4.99	5.69
Greenhouse gas emissions (Scope 1 & 2 CO ₂ equivalents) (in kg/t production)	171	609	198	215
Total quantity of waste (in thousand t)	215.7	32.6	250.2	232

¹ Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017.

In the interim years, including 2018 and 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.

² The difference in the sum of continued and discontinued operations compared to the group total is due to the resource consumption of non-production sites.

+ Integrated Report
2019

Clariant’s integrated reporting is based on a framework developed by the International Integrated Reporting Council (IIRC). The IIRC promotes sustainable change through a holistic approach to corporate reporting that focuses on both financial and nonfinancial value creation.



Integrated Reporting extends traditional formats of corporate disclosure in order to communicate the full range of factors that significantly affect a company’s ability to create value through its business model. In this fourth annual report published in the form of an Integrated Report, Clariant provides a comprehensive overview of its value-creation process. The resources Clariant uses and affects are categorized into the following six »capitals«: financial, intellectual, manufactured, human, relationship, and natural.



Financial capital

The pool of funds available to the company for use in the production of goods or the provision of services. This can include funds obtained through financing, such as debt, equity, or grants, and funds generated by the company, for example, through sales or investments.



Intellectual capital

Knowledge-based intangibles used and created by the company, often in collaboration with partners. This can include intellectual property, such as patents, trademarks, copyrights, software, rights, and licenses, and »organizational capital,« such as tacit knowledge, systems, procedures, and protocols.



Manufactured capital

Manufactured physical objects, such as buildings, equipment, and products. These can include objects that are available to the company for use in the production of goods or the provision of services, or that the company produces for sale to customers or for its own use.



Human capital

The company’s staff and its composition, competencies, capabilities, experience, and motivation to innovate. This can include employees’ alignment with corporate values and their ability to understand and implement the company’s strategy.



Relationship capital

Key relationships, including those with significant groups of stakeholders and other networks. This can include shared values, the trust and willingness to engage, and related intangibles associated with the company’s brand and reputation.



Natural capital

Renewable and nonrenewable environmental resources and processes that support the past, current, or future prosperity of the company or are affected by it. Examples can include resources related to air, water, and land that are utilized or impacted by emissions.

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Improving Performance by Focusing on Sustainability and Innovation

Mr. Kottmann, how did Clariant perform this past financial year? Are you satisfied?

The fact that we improved profitability and increased sales by 3 % in a difficult economic environment clearly demonstrates our company's ability to perform. We are in a very good position relative to our competition. In my opinion, this is proof that we are on the right track with our long-term strategy. At the same time, we have made significant progress in transforming Clariant in order to continue to increase sales, achieve higher profitability, and a stronger cash flow.

But were there other surprising developments at Clariant in the past financial year?

Absolutely. In the middle of the year, we had to announce Ernesto Occhiello's departure as CEO and a provision for a possible antitrust fine from the EU Competition Commission. Added to this were the expanded sales plans for the entire Masterbatches business, the separation of continuing and discontinued operations, as well as the suspension of negotiations with SABIC regarding a merger of the businesses.

The failure of the joint venture with SABIC was a surprise to many. How did it happen and how is Clariant doing now?

After the announcement of the planned joint venture with SABIC in 2018, we conducted extensive discussions and carefully reviewed the project once again based on current information. Unfortunately, we were unable to reach an agreement on the value based on this. This was not least due to the fact that, from our point of view, there were far fewer synergies than were originally identified. Pushing the matter through at all costs with the motto »Close your eyes and press forward« would

definitely have been the wrong way to go. We have therefore ended these discussions for the benefit of all shareholders. It was simply a business decision.

In response to the second part of your question:

We continue to focus even more on the higher-margin specialty chemicals business. We already have this type of portfolio with Care Chemicals, Catalysis, and Natural Resources. And we are separating ourselves from businesses with more standardized products, such as Masterbatches and Pigments. We already announced this intention in 2015/2016. At the same time, we will adjust our cost structures to the new company size. We are working to change the organization accordingly. So we will first get smaller, but much more profitable by doing so. This focus leads to additional value creation for Clariant, its employees, customers, and shareholders.

How is Clariant progressing with the announced divestments? Other competitors also want to sell their businesses.

With the sale of Healthcare Packaging to Arsenal Capital Partners, which was completed in October, we made a successful start to the planned divestments. Shortly before the end of the year, we signed an agreement with the American company PolyOne, who would like to take over our Masterbatches business. We were able to achieve very good sales prices for both transactions, so we expect an inflow of around CHF 1.8 billion. This is in addition to the proceeds for the Pigments business, for which we are currently looking for a buyer. I am very confident that we will be successful with this in 2020.



Executive Committee

Patrick Jany (Chief Financial Officer, CFO), Hariolf Kottmann (Executive Chairman), Bernd Hoegemann (Member of the Executive Committee), Hans Bohnen (Chief Operating Officer, COO)

What will be done with the proceeds from the sales?

We want to continue to invest in the innovative strength of our remaining core Business Areas and continue to deleverage, that is, strengthen our balance sheet. We also want to pass on a large part of the proceeds to our shareholders as an extraordinary distribution of CHF 3.00 per share, provided the Annual General Meeting agrees to this. In addition, we want to share our business success with our shareholders and pay out a distribution of CHF 0.55 per share through capital reduction by way of par value reduction.

What other topics were on the agenda in the past financial year?

The focus of our actions is always on our customers and their needs. And not just in day-to-day business, but also at events and trade shows such as inCosmetics, the European Coatings Show, or the K Show, the leading trade fair for the plastics industry.

The topic of sustainability in particular continues to gain more importance. It was not a matter of chance that »Add value with sustainability« has been an essential element of our strategy since 2014. In the past year, we assessed our business activities against the United Nations' Sustainable Development Goals (SDGs), which we very much welcome. In doing so, we were able to demonstrate how the implementation of our strategy makes a positive contribution to achieving the SDGs. This includes the provision of innovative and sustainable products or initiatives such as the »Alliance to End Plastic Waste,« of which we are a founding member. We also support the Responsible Care™ Charter, which is important for our industry, and commit to the United Nations Global Compact. In 2019, we also joined the World Business Council for Sustainable Development (WBCSD).

What successes are there to report in terms of sustainability?

One of the many positive results of our commitment is that we have been a member of the Dow Jones Sustainability Index, an equity index for sustainable investment, for the seventh time in a row. We are proud to be among the top 5 % in the industry worldwide. We recently received a Bronze Class award in the SAM Sustainability Yearbook 2020 for this.

For me personally, when it comes to sustainability, it is particularly important that we do not take our leading role for granted. We have to strive every day to defend and maintain this position. Being able to offer products that not only perform well, but also stand out in the three sustainability dimensions of social responsibility, environmental protection, and profitability is a competitive edge. And the competition doesn't sleep.

Another important issue is compliance. What role does that play for a company like Clariant?

The company's and its employees' adherence to laws and voluntary obligations, which is what compliance is, is a matter of course. It is based on strict compliance management, meaning a structured framework of internal rules and guidelines, and is the basis for risk minimization as well as the preservation of our reputation. Compliance ultimately ensures our license to operate. Just like with the topic of sustainability, you cannot let go of the reins here. The threat of a cartel fine shows how the misconduct of a single employee can cause significant damage to the company. This only serves to justify the high level of importance that is placed on compliance in the company. We launched an internal campaign in 2019 because we do not tolerate any violation of our compliance rules. We also want to introduce a new, updated Code of Conduct this year. We will therefore continue to deal with the issues of sustainability and compliance intensively in 2020.

How do you assess the general conditions for 2020?

The business and economic environment will remain difficult in 2020. The geopolitical risks in the Middle East, for example, the ongoing trade conflicts, and the UK's exit from the European Union continue to create uncertain conditions for specialty chemicals companies like Clariant. We also have to expect that the spread of the coronavirus will have a negative impact on global economic growth. Our industry is therefore facing the growing challenges of climate protection and sustainability in a difficult economic environment.

What are the challenges specific to Clariant in 2020?

For Clariant, I see 2020 as a year of transition on the way to significantly improved profitability. Our main tasks are to successfully complete the divestments, to achieve the expected very good results in our core Business Areas, and to consistently implement our efficiency program with regard to the cost structures in order to prepare for the new company size. In addition, the search for a suitable CEO will take priority. We have clear goals for 2020 and 2021. In order to achieve these goals, we will focus on the proven corporate strategy. That means we continue to concentrate on innovation and sustainability, on portfolio management, as well as on growth in existing businesses and on further increasing our profitability.

Clariant celebrates its 25th anniversary with the motto »Change: on.« Why this motto?

Our world is characterized by constant change. Just think of digitalization, the energy sector, or what is happening in the field of mobility. Of course, this also has an impact on companies. For Clariant, change has always been a normal part of our work. Change also means progress. New solutions and new products for our customers' problems. A company that is not actively and continuously changing and transforming will sooner or later become irrelevant.

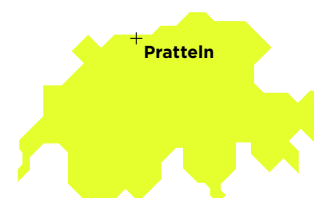
I would therefore like to take this opportunity to thank our customers, employees, and shareholders for their commitment and trust, especially against the backdrop of our diverse history of the past 25 years. At Clariant, things will never get boring. Change will always be part of us.

What will Clariant 2021 look like?

Based on the current objectives, in 2021, Clariant will be a company with around CHF 1.5 billion less in sales than in 2019. However, the portfolio will contain a significantly higher proportion of businesses focused on specialty chemicals. This will make this new company stronger in terms of growth and profitability. This is the basis of our considerations and plans today.

However, we should never forget that Clariant – like most other companies – still has all the basic strategic options available, even in the current phase – be it a transformative acquisition or a merger. As I said: the change continues!

SWITZERLAND



Complying with Best Practice in Corporate Governance

Dear Shareholders

Good corporate governance is very important to Clariant. The Clariant Board of Directors has therefore decided to establish the formal role of an Independent Lead Director as long as the Chairman of the Board of Directors simultaneously serves as Executive Chairman. Clariant thereby follows the guidelines of the Swiss Code of Best Practice for Corporate Governance. This stipulates that, in the event of such a dual role, the company must ensure adequate control mechanisms by the Board of Directors appointing a non-executive, experienced member as Lead Director.

The role and responsibility of an Independent Lead Director is to ensure the independence of the Board of Directors from the Chairman, the CEO, and the Group's management, and to support the Chairman and CEO. The tasks also include supervising Group management, particularly with regard to compliance with the law, the articles of association, regulations, and instructions. The Lead Director becomes the mediator between the Chairman and the Board of Directors as needed. The Lead Director ensures communication by convening and chairing a Board of Directors meeting at the request of a member of the Board of Directors or the CEO. In the absence of the Chairman, the Independent Lead Director chairs meetings of the Board of Directors. Furthermore, the Independent Lead Director is available to members of the Board of Directors to discuss matters they would like to raise in the absence of the Chairman.

My role as Lead Director will end as soon as a new CEO has been appointed and Clariant once again has two people for the positions of CEO and Chairman.

On behalf of the Board of Directors, I would like to take this opportunity to thank you, our shareholders, for the trust you have placed in us.

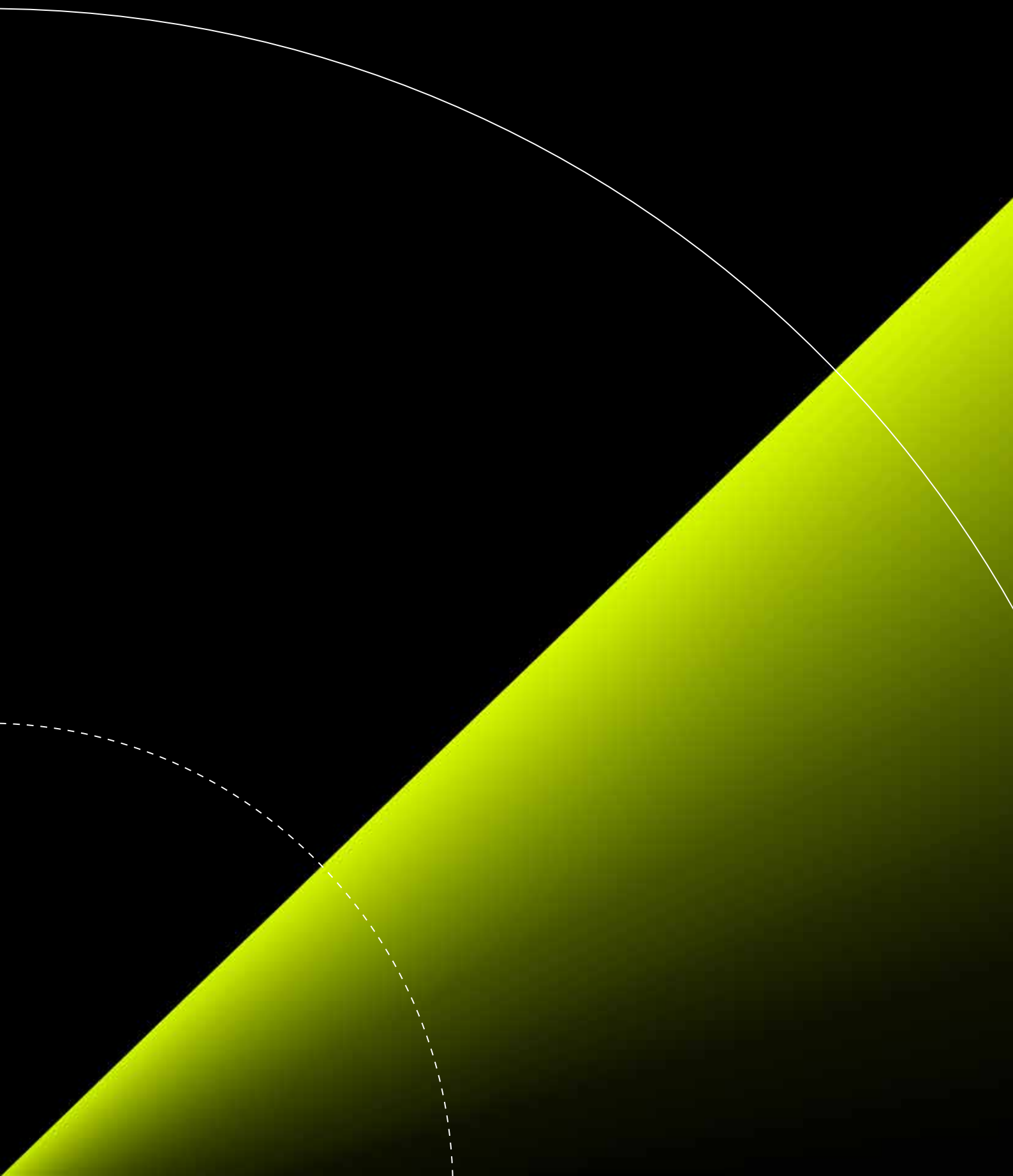
Sincerely,



Eveline Saupper
Independent Lead Director



Eveline Saupper
Independent Lead
Director



Here We Go

In this Integrated Report we take our time to review our position in all the areas we are active in. We explore trends that can guide our progress. We examine new developments that show up on our radar. How close are they to what truly matters to us? And are we trendsetters or followers? This report provides answers. It shows where we stand today and where we want to go from here regarding the most material topics of our Materiality Matrix. → PAGE 27

- Innovation and Technological Advances
- 032 **Make Use of Nature's Design Process**
- Talent Attraction and Development
- 048 **Find Skills for the Digital Age**
- Digitalization
- 064 **Manage Risks Faster and Smarter**
- Product Stewardship/Sustainable Chemistry
- 080 **Advance Natural Ingredients**
- Customer Relationships
- 094 **Be a Local Partner**
- Environmental Protection and Resources
- 108 **Help Cities Move Forward**
- Growth and Profitability
- 134 **Focus on the Core Businesses**
- Occupational Health, Safety, and Well-being
- 170 **Keep the Team Safe**
- Circular Economy
- 186 **Drive Change in the Industry**

+ Product Stewardship/
Sustainable Chemistry
080

+ Innovation and
Technological
Advances
032

+ Occupational Health,
Safety, and Well-being
170

+ Customer
Relationships
094

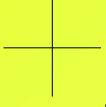
+ Environmental Protection
and Resources
108

+ Circular
Economy
186

+ Growth and Profitability
134

+ Talent Attraction
and Development
048

+ Digitalization
064



The Foundation of Success

The »Foundation of Success« chapter provides an in-depth overview of Clariant's holistic approach to creating added value. It delves into each layer of Clariant's integrated business model, from the external business environment to the three internal value-creation processes, and details how each supports the Business Areas in achieving key outcomes for the company and its stakeholders.

- 014** Trends in the Specialty Chemicals Value Chain
- 016** Operating an Integrated Business Model
- 020** Building on Vision, Mission, and Values
- 022** Internal and External Stakeholder Engagement
- 024** Addressing Societal Needs
- 026** Materiality Assessment
- 028** Becoming a More Focused Specialty Chemicals Company
- 032 Make Use of Nature's Design Process
- 042** Overview on Corporate Governance
- 046** Leadership in Times of Change
- 048 Find Skills for the Digital Age
- 054** Overview on the Compensation Policy
- 056** Core Processes for Value Creation
- 064 Manage Risks Faster and Smarter

Whether short-term or long-term, value creation depends on a combination of assets, whether financial or nonfinancial, tangible or intangible. A company must be attuned to the needs of its customers, shareholders, and other stakeholders in order to provide valuable differentiation from its competition.

Clariant's success is founded on its ability to operate with efficiency and integrity while providing innovative and sustainable solutions for its customers. Clariant's business model perfectly illustrates how the company's Business Areas transform financial and nonfinancial inputs into valuable outputs by applying the three main value-creation processes to all of its corporate activities.

Clariant's ambition to create sustainable value is guided not only by its vision, mission, and corporate values, but also by its corporate governance principles, strong leadership culture, and compensation principles.

Clariant stays attuned to the needs of its customers, employees, shareholders, and society by assessing market trends, engaging in dialog with stakeholders, and embracing their feedback to improve its business.

Trends in the Specialty Chemicals Value Chain

To create value for all stakeholders and ensure long-term success, Clariant must be agile and resilient in the dynamic specialty chemicals market environment. This is achieved by collaborating with partners to capture opportunities that mitigate the effects of the economic downturn, address the market need for sustainable solutions, and enhance differentiation with products that benefit end consumers.

1. A high-value position in an industry with great responsibilities

Chemistry is the science of transforming matter. Through chemical reactions, the chemical industry converts raw materials into more than 70 000 different products used in all sectors of the economy. The specialty chemicals industry, in which Clariant is a major global player, provides high-value and often custom-manufactured materials with specific performance and functionality and is thus a particularly customer-centric part of the chemical industry. → **FIGURE 001**

In the global industrial sector, chemical manufacturing is one of the largest consumers of energy, making it a significant contributor to greenhouse gas emissions. It also uses significant amounts of oil and gas as feedstock. In addition, the industry handles many hazardous materials. Although this confers great responsibility, it creates opportunities for companies to become industry leaders in sustainable development and thereby capture competitive advantage.

2. Trends concerning raw materials and basic chemical inputs

The chemical industry uses raw materials derived from crude oil, natural gas, metals, minerals, and, increasingly, biomass as a renewable organic feedstock. Basic

chemical companies use these materials to make products such as polymers, bulk petrochemicals, and intermediates in large quantities, often in single-product, continuous processing plants.

Currently, these companies are facing lower prices and margins due to the global economic downturn combined with recent increases in basic chemical production capacity. As a result, after higher raw material prices in 2017 and 2018, Clariant as a buyer of these chemicals experienced lower cost pressure in 2019. This trend is expected to continue in 2020.

3. Developments in the specialty chemicals industry

Specialty chemical manufacturing is an entrepreneurial, innovative, and customer-driven part of the chemical industry value chain. To cater to customers' needs for specific chemical performance or function, specialty chemicals are often manufactured by batch processes, requiring regular changes in raw materials, operating conditions, and equipment. Compared to the continuous processing in basic chemical production, these batch processes tend to be less capital-intensive, require less energy, and result in lower CO₂ emissions.

Like Clariant, many specialty chemicals companies are divesting the parts of their businesses that are most impacted by commoditization. In addition, the industry is working to balance the need for cost control to respond to cyclical economic impacts with the necessity to engage in long-term, strategically focused innovation to develop products that meet customers' sustainability and performance needs.

4. Trends in customer markets

In general, the global economic slowdown is affecting durable products more strongly than consumer products, but customer demand develops differently for each application and market. As Clariant serves a broad mix of industries, the company has a good natural hedge against pronounced cyclical economic impacts. In addition, time-lag effects, such as the increased demand for catalysts due to investments in capacity made by customers several years ago, also decrease Clariant's exposure to the current economic cycle.

While some customers respond to current market dynamics by focusing on costs, others strengthen their position through differentiation. Whether Clariant products save customers money or differentiate their offerings, value-based pricing helps the company capture part of that benefit. Clariant also works closely with customers, scientists, and other partners to develop more sustainable products in response to increased awareness of climate change, plastic waste, sustainable chemistry, and overall circular economy needs.

5. Changing needs in end-consumer markets

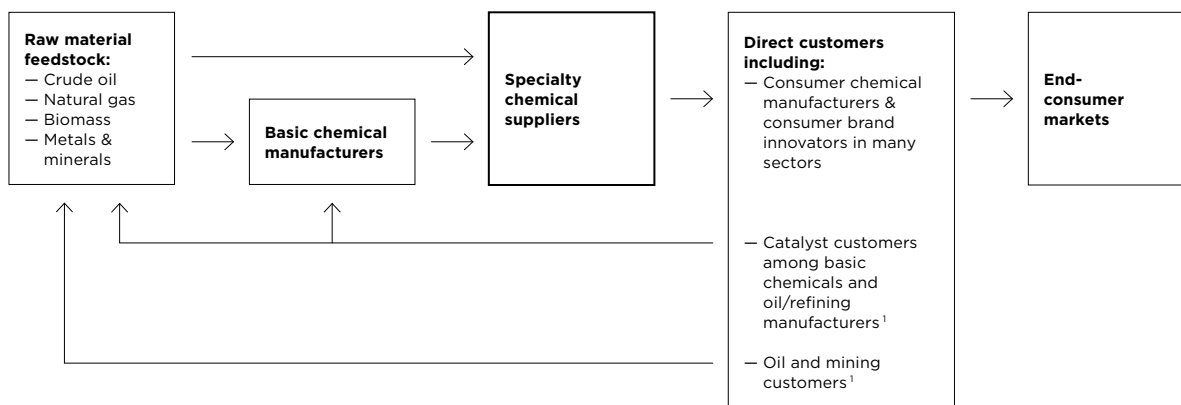
Clariant customers include producers of consumer goods who manufacture the products that end consumers use in their daily lives, such as electronic gadgets, home construction materials, and cosmetics. These end consumers are increasingly seeking more sustainable solutions (such as naturally derived cosmetics or recyclable plastics), convenience products (such as quick-dry home care formulations), or more individualized solutions (such as vegan or ethnic beauty products). These evolving demands are also changing Clariant's customers' markets.

6. A strong foundation to navigate dynamic markets

Changes in the business environment create risk, but also opportunity. Responding to such shifts allows companies to differentiate themselves and reduce the danger of margin erosion from commoditization, which is more pronounced in slow-changing industries.

Clariant's integrated business model, with its emphasis on sustainable innovation, customer collaboration, and excellence in execution, provides a strong foundation for the company to navigate the current market dynamics successfully. → [PAGE 16](#)

001 THE ROLE OF SPECIALTY CHEMICALS FIRMS IN THE CHEMICAL INDUSTRY VALUE CHAIN



¹ Contribute to raw material feedstock availability

Operating an Integrated Business Model

By transforming various resources into innovative, sustainable solutions, Clariant meets the evolving needs of its customers while also creating value for shareholders, employees, and the environment. In 2019, Clariant adapted its business model to reflect its focus on three core Business Areas.

1. Pursuing a strong corporate strategy

Based on a clear vision, mission, and strong corporate values, Clariant fulfills its five-pillar strategy to achieve ambitious corporate objectives and financial targets. In 2019, Clariant successfully closed the divestment of its Healthcare Packaging business and agreed to sell its entire Masterbatches business to PolyOne, a leading global provider of specialized polymer materials, services, and solutions. The divestment of the Masterbatches business is expected to be closed by the third quarter of 2020. As part of the portfolio repositioning announced in 2018, Clariant also continued with the divestment of its Pigments business, which it expects to conclude by the end of 2020. This will allow Clariant to focus more intently on the three core Business Areas that offer differentiated products and services with above-average growth potential. → PAGE 28

2. Creating value by transforming six kinds of capital

Clariant's business model is designed to create innovative, sustainable solutions that benefit all stakeholders – customers, employees, shareholders, and the environment – by drawing on six kinds of capital: financial, intellectual, manufactured, human, relationship, and natural. Clariant categorizes these six different capitals under its brand values of Performance (financial, intellectual, and manufactured capital), People (human and relationship capital), and Planet (natural capital).

- Financial capital is the pool of funds available to produce goods or provide services. This includes funds obtained through financing, such as debt, equity, or grants, and funds generated through sales or investments. According to Clariant's Business Model, these are, for example, raw material spend as an input and the EBITDA margin as an output.
- Intellectual capital is the knowledge-based intangibles used and created by the company and its partners. This can include intellectual property, such as patents, trademarks, copyrights, software, rights, and licenses, as well as »organizational capital,« such as tacit knowledge, systems, procedures, and protocols. Examples of Clariant's intellectual capital include active innovation projects as an input and the resulting growth as an output.
- Manufactured capital includes physical objects owned by the company, such as buildings, equipment, and products. These can include objects that are used to produce goods or provide services, or materials that the company produces for internal use or sale to customers. In Clariant's business model, production facilities are an example of an input, and products awarded with Clariant's EcoTain® label are an output.

- Human capital is the company’s employees, including their competencies, capabilities, experience, and drive to innovate. This form of capital includes the employees’ alignment with corporate values and their ability to understand and implement the company’s strategy. At Clariant, inputs include new employees hired, while outputs are, for example, a successful employee health and safety record.
- Relationship capital refers to key relationships, such as those with significant stakeholders and network partners. This capital can include shared values, trust, engagement, and related intangibles associated with its brand and reputation. For Clariant, client interviews are an input, and customer satisfaction is an output.
- Natural capital includes the renewable and non-renewable environmental resources and processes that support or affect the prosperity of the company. Examples include air, water, and land resources that are utilized or impacted by emissions. In the Clariant business model, water consumption is an example of an input, while wastewater is an output.

3. Ensuring excellence in execution with three value-creation phases

To ensure excellence in execution throughout all business activities and realize the goals of above-market growth, high profitability, and strong cash generation, Clariant’s Business Areas follow three value-creation phases:

- Idea to Market
- Market to Customer
- Customer to Cash

The Idea-to-Market process comprises all innovation-related activities that contribute to a strong innovation pipeline and subsequent output. Market to Customer covers Clariant’s thrust to achieve true customer centrality in all marketing and sales processes. The Customer-to-Cash process ensures Clariant’s safe, efficient production and reliable delivery of finished products and services.

Reading the report along three thematic »focus routes«

In addition to a sequential read-through, the Integrated Report 2019 can also be explored along three »focus routes« that follow the themes of innovation, customer experience, and operational excellence. To simplify navigation, the content of each focus route is highlighted with a specific color, icon, and vertical line.



IDEA TO MARKET

The Idea-to-Market focus route encompasses the innovation-themed parts of the Integrated Report. Starting with the »Idea to Market« chapter, this focus route takes readers through the Business Areas’ innovation projects and an evaluation of the results achieved regarding innovation-related topics. → **PAGE 56**

MARKET TO CUSTOMER

The Market-to-Customer focus route ties together the sections that detail Clariant’s customer-centric approach. Launching from the »Market to Customer« chapter, this focus route examines the evolution of the Business Areas’ marketing and sales practices to achieve true customer centrality as well as the results achieved regarding customer-related topics. → **PAGE 60**

CUSTOMER TO CASH

The Customer-to-Cash focus route includes the portions of the Integrated Report that focus on Clariant’s efforts to guarantee safe, reliable, and efficient operations. Starting with the »Customer to Cash« chapter, this route delves into how the Business Areas optimize procurement, planning, production, and delivery, and details the results regarding operations- and procurement-related topics. → **PAGE 62**

Business Model

External Environment

Societal trends and market drivers

Input (Total Group)

Resources and relationships that Clariant draws upon for its business activities.

PERFORMANCE

\$ 207

R&D spend in CHF m

\$ 2642

Raw material procurement in CHF m

> 375

Active innovation projects

> 125

Scientific collaborations

118

Production facilities

3.13

Raw material procured in m t

PEOPLE

1570

New employees hired

205 861

Training hours

404

Client interviews

78%

Raw material supply base by spend covered by sustainability evaluation

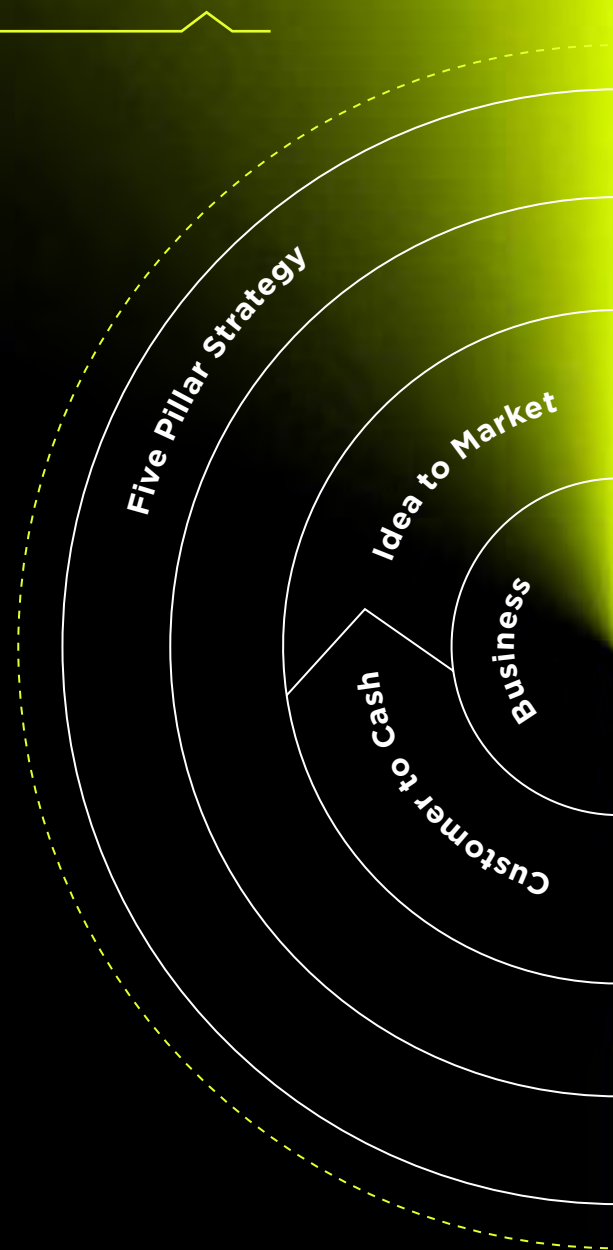
PLANET

3 058³

Energy consumption in m kWh

44.3³

Water consumption in m m³



Financial capital

Intellectual capital

Human capital

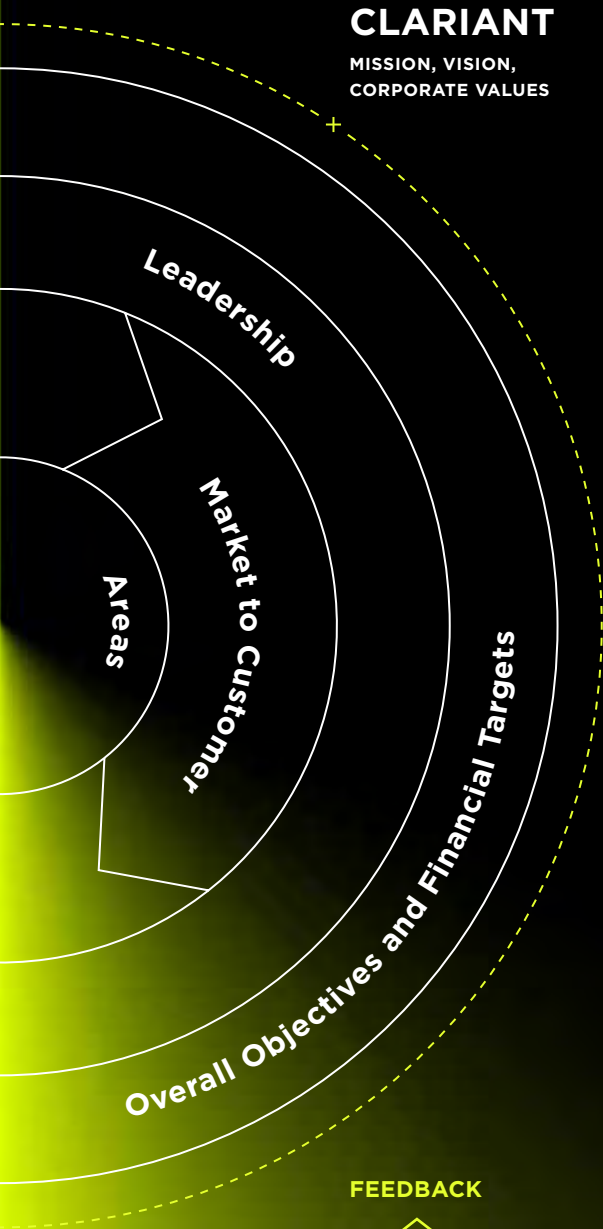
Manufactured capital

Relationship capital

Natural capital

CLARIANT

MISSION, VISION,
CORPORATE VALUES



FEEDBACK

Stakeholders

Clariant constantly engages with its stakeholders to stay attuned to their needs and gain feedback on how to best create value for them.

OUTCOME ACHIEVED FOR

Output (Total Group)

Results from Clariant's business activities.

PERFORMANCE

\$ 6 526

Sales in CHF m

\$ 9.5 %

EBITDA margin after exceptional items

< 3 %¹

Growth through innovation

> 6 500

Patents at year-end

4.25²

Production volume in m t

27

Products awarded the EcoTain® label

PEOPLE

17 223

Staff in FTE at year-end

0.15

Lost time accident rate (LTAR)

PLANET

0.84³

Greenhouse gas emissions (scope 1 & 2) in m t

11.9³

Waste water in m m³

¹ Contains the contribution to growth of the innovation portfolio from both Top Line Innovation and Life Cycle Innovation. Potential cannibalization of existing sales by Life Cycle Innovation has not been excluded.

² For 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.

³ Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017. In the interim years, including 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.

Building on Vision, Mission, and Values

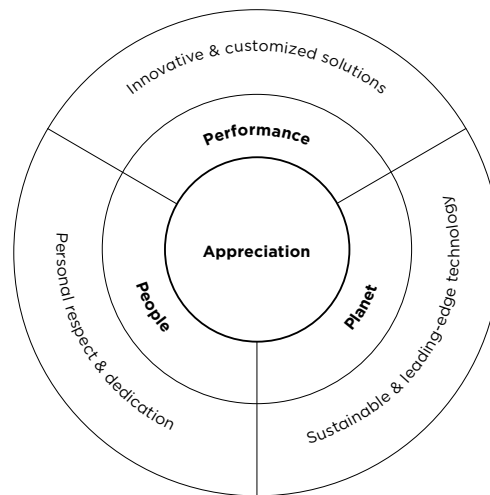
Clariant is defined by a guiding vision, well-defined mission, and a culture that encourages every employee to capitalize on their ability to create value for all stakeholders.

1. Vision and mission focused on value creation

Clariant is focused on becoming the globally leading company for specialty chemicals and standing out by achieving above-average value creation for its stakeholders. To bring this vision to fruition, the company builds and maintains leading positions in all its businesses and strives for functional excellence in innovation, commercialization, and operations as a defining part of its corporate culture. Clariant's vision is supported by its mission to create value by appreciating the needs of

- customers, by providing competitive and innovative solutions;
- employees, by adhering to corporate values;
- shareholders, by achieving above-average returns;
- the environment, by acting sustainably.

001 BRAND VALUES WITH A FOCUS ON PERFORMANCE, PEOPLE, AND PLANET



2. Appreciation, culture, and reputation as drivers for success

Clariant believes strongly that its brand essence of appreciation is a key driver for successful value creation. For Clariant, appreciation means putting values at the center of everything the company does in each area where it has an influence: performance, people, and the planet. → **FIGURE 001**

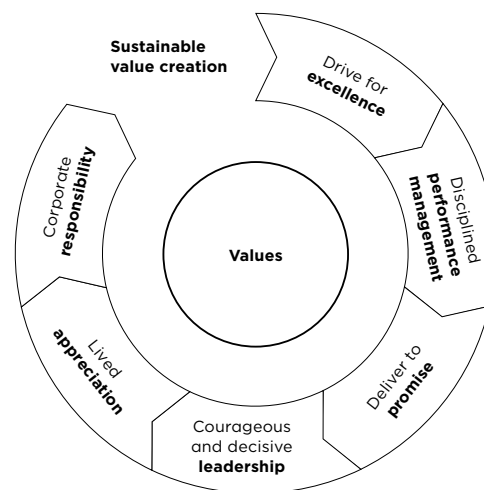
- Performance: Clariant appreciates its customers by striving for exceptional performance and offering innovative, customized, high-quality solutions.
- People: Clariant expresses appreciation of its stakeholders and employees with an unflinching commitment to transparency and integrity, and by fostering a culture of dialog and mutual respect.
- Planet: Clariant embodies appreciation of the planet by protecting the environment and safeguarding natural resources. By using sustainable, cutting-edge technologies, Clariant meets the most stringent standards and sets new industry benchmarks.

Cultivating a corporate culture that balances business performance, social commitments, and environmental targets while also supporting stakeholder priorities is essential to generate value and sustainable growth. Therefore, appreciation is embedded throughout the company's culture and corporate values, defining the expectations of employee behavior and building the company's reputation and brand. → **FIGURE 002**

These values include:

1. Drive for Excellence: Clariant establishes the highest standards to profitably meet customer needs while aspiring to achieve even more.
2. Disciplined Performance Management: People at Clariant set, and ask for, clear direction and challenging but achievable targets. They give, and invite, open feedback on measured progress.
3. Deliver to Promise: Clariant counts on motivated employees who fully leverage their capabilities and do not over-promise or under-deliver.

002 CORPORATE VALUES FOR SUSTAINABLE VALUE CREATION



4. Courageous and Decisive Leadership: Clariant chooses the right people for the right jobs, supporting risk-taking and accepting failure while learning from results.
5. Lived Appreciation: People at Clariant acknowledge strength, advise on areas for improvement, acknowledge outstanding contributions, and celebrate success.
6. Corporate Responsibility: People at Clariant attend to the welfare of all stakeholders, protect the environment, and respect communities. They live Clariant's Code of Conduct and never shortcut a safety procedure.

Internal and External Stakeholder Engagement

Continuous dialog with key stakeholders allows Clariant to stay attuned to their needs and gain insight into changing market requirements, future trends, and global developments. This helps Clariant understand the value stakeholders are seeking and to respond quickly with corresponding solutions.

1. Appreciation lies at the core of Clariant's stakeholder engagement

Clariant's key stakeholders are its customers, employees, and shareholders, as well as the environment. Clariant shows its appreciation to all its stakeholders by fostering a culture of dialog and mutual respect, dedicating itself to sustainable, innovative technologies, and unflaggingly committing to transparency and integrity. Appreciating stakeholders' needs and developing corresponding solutions that meet stringent standards and set new industry benchmarks lie at the core of Clariant's holistic approach to value creation.

2. Gaining valuable insights for value creation from ongoing stakeholder engagement

Clariant constantly engages with its stakeholders in multiple ways to stay attuned to their needs, understand their concerns, and gain valuable insights for sustainable value creation. → **FIGURE 001**

To understand customer needs and develop the respective solutions, Clariant focuses on building strong customer relationships. Besides daily interactions, Clariant engages with its customers in various forms, such as trade fairs, customer interviews, innovation workshops, and its biennial customer satisfaction survey. → **PAGE 60**
→ **PAGE 163**

Clariant is committed to creating a collaborative working environment that focuses on its core value of appreciation. As Clariant's people are an invaluable competitive factor, the company engages with all its employees on all levels to realize the full potential of its diverse workforce. → **PAGE 46** → **PAGE 154**

As a publicly listed company, Clariant strives to maintain a broad shareholder base and reliable long-term-oriented anchor shareholders. The company emphasizes achieving above-average returns and transparently communicating its financial and nonfinancial performance, for example, through its annual Integrated Report and regular investor updates. → **PAGE 124**

Protecting the environment by providing safer and more sustainable solutions is one of Clariant's top priorities. Clariant also minimizes the impacts of its operations on the environment and safeguards natural resources. → **PAGE 149** → **PAGE 178**

As suppliers are critically important to Clariant's value creation and impact the company's overall sustainability performance, Clariant continuously analyzes spend effectiveness, reduces procurement risks, and engages with its suppliers through performance assessment reviews, the Together for Sustainability initiative (TfS), and yearly procurement events, for example. → **PAGE 62**
→ **PAGE 167** → **PAGE 63**

Participating in relevant public policy developments is an important aspect of Clariant's corporate responsibility. The engagement in trade associations and other platforms brings forward Clariant's views and positions on various policy areas and supports strategic alignment

001 EXAMPLES OF STAKEHOLDER ENGAGEMENT

Stakeholder Group	Examples of engagement formats	Key needs and concerns
Customers → PAGE 60 → PAGE 163	<ul style="list-style-type: none"> – Daily interactions – Marketing and Innovation Excellence Initiatives: Customer interviews, innovation workshops, joint ideation, iGarage – Best practice exchange sessions – Co-branding EcoTain® – Biennial customer satisfaction survey – Trade fairs and international conferences 	<ul style="list-style-type: none"> – On-time, in-full: quality, reliability of supply, prices – Innovative solutions – Achieving sustainability goals – Circular economy
Employees → PAGE 46 → PAGE 154	<ul style="list-style-type: none"> – Personal dialog – Intranet, newsletters, town halls – Biennial company-wide »Pulse Survey« – Annual Performance Dialogs/360-Degree Feedbacks – MySuccess platform – Special recognition awards – »Speak-up Campaign« and »Safety Moments« – Integrity Line – Evaluation of training and development programs 	<ul style="list-style-type: none"> – Wages, salaries, and benefits – Competence building – Leadership skills – Occupational health, safety, and well-being – Integrity – Diversity – Digitalization
Shareholders → PAGE 45 → PAGE 132	<ul style="list-style-type: none"> – Integrated Report – Annual General Meeting and regular investor updates – Investor relations iPad application – Presentations at analyst conferences and roadshows 	<ul style="list-style-type: none"> – Growth and profitability – Impact of climate change
Environment → PAGE 63 → PAGE 178	<ul style="list-style-type: none"> – Corporate culture that prioritizes environmental stewardship – Innovative and sustainable products and solutions – Environmental management tools and programs – Low-Carbon Emitting Technologies in the Chemical Industry initiative of the World Economic Forum – Alliance to End Plastic Waste (AEPW) 	<ul style="list-style-type: none"> – Minimizing impacts on the environment – Safeguarding natural resources
Suppliers → PAGE 62 → PAGE 167	<ul style="list-style-type: none"> – Together for Sustainability initiative (TFS) – Supplier performance assessment reviews – Chemberry™ – Regularly communicating updated standard information package – Yearly procurement events – EcoTain® and other partnerships – Open Innovation initiative 	<ul style="list-style-type: none"> – Prices, payment practice – Leadtime – Supplier Code of Conduct – Safety – Circular economy – Digitalization
Policy-makers and Civil Society → PAGE 166	<ul style="list-style-type: none"> – Engagement in trade associations, interest groups, sectorial associations, and scientific and research associations – Community dialogs – Sustainability dialog 	<ul style="list-style-type: none"> – Governance and compliance – Sustainable chemistry – Circular economy – Bio economy

across the industry. → PAGE 166 Clariant recognizes the opportunity offered by the United Nations Sustainable Development Goals to share a common framework of action and language when communicating with stakeholders about its sustainability performance. → PAGE 24

3. Stakeholder views are an integral part of Clariant's materiality assessment

Stakeholder perspectives are also an integral part of Clariant's materiality assessment. A systematic process ensures that their views are thoroughly reflected when

identifying the economic, social, and environmental topics that offer the highest value-creation potential for stakeholders and Clariant. The prioritization of the topics related to performance, people, and planet helps Clariant further develop its integrated management approach. → PAGE 26

Addressing Societal Needs

Clariant actively contributes to advancing the Sustainable Development Goals (SDGs) adopted by the United Nations member states in 2015. These 17 goals marked a milestone on the global path to a more sustainable future, and they present a strong business opportunity for the company.

1. Tapping into market potential

There is a growing understanding among businesses that the SDGs have the potential to unleash innovation and growth. This potential was captured by the Business & Sustainable Development Commission’s »Better Business, Better World« report, which outlined USD 12 trillion of additional market value that could be unlocked by 2030 if the SDGs are achieved.

→ FIGURE 001

The goals provide a global framework to translate the most pressing societal and environmental needs into a common language and a defined set of actions for all stakeholders. Clariant is committed to delivering on this ambitious and transformative agenda with its innovative and sustainable products and services, sound environmental management, and by respecting human rights in its operations and supply chain.

2. Evaluating and prioritizing impact on the SDGs

In 2019, Clariant further evaluated its business activities in relation to the SDGs – including the underlying 169 targets and the corresponding indicators – by reviewing the positive and negative impacts of its products and services, operations, value chain, corporate citizenship activities, and collaborations.

001 THE 17 SUSTAINABLE DEVELOPMENT GOALS



Source: United Nations Department of Public Information

The analysis was done centrally by Corporate Sustainability and Regulatory Affairs, and the outcome was reviewed and validated by Clariant’s Business Units, Group Technology & Innovation, and Corporate Planning & Strategy.

While Clariant contributes to all 17 SDGs in varying degrees, five priority SDGs were identified:

- SDG 3 »Good Health and Well-being« and SDG 12 »Responsible Consumption and Production«
- SDG 7 »Affordable and Clean Energy« and SDG 13 »Climate Action«
- SDG 9 »Industry, Innovation, and Infrastructure«

The five goals are clustered in three groups because SDGs 3 and 12 and SDGs 7 and 13 cannot be seen in isolation in relation to their relevance for Clariant. In addition, certain Business Units also contribute to SDG 2 »Zero Hunger,« SDG 6 »Clean Water and Sanitation,« and SDG 15 »Life on Land.«

3. Addressing the SDGs in practice

Clariant’s strategy execution will result in positive progress toward the SDGs. For example, Clariant has set clear 2025 environmental targets for its operations that

drive toward continuous improvements in energy reduction, climate action, and responsible consumption and production. These targets support SDG 7 »Affordable and Clean Energy,« SDG 13 »Climate Action,« and SDG 12 »Responsible Consumption and Production.«
→ **PAGE 178**

The company also helps its markets and customers advance sustainability with its EcoTain® products and the Portfolio Value Program. With its strong product stewardship and innovation capabilities, Clariant continuously develops products and solutions that support the sound management of chemicals and waste, reduce resource consumption, and improve production efficiency. Through these efforts, Clariant supports SDG 12 »Responsible Consumption and Production.« → **PAGE 149**
Clariant's sunliquid® technology directly supports SDG 7 »Affordable and Clean Energy« and SDG 13 »Climate Action.« → **PAGE 89**

Clariant's contribution to the SDGs is further illustrated with practical examples throughout the Integrated Report. The company's holistic approach to risk management, its high-performing catalysts, and its natural clay bentonite all address SDG 9 »Industry, Innovation and Infrastructure« and SDG 12 »Responsible Consumption and Production.« → **PAGE 108** → **PAGE 94** → **PAGE 64** With its EcoCircle initiative, which tackles the plastic waste problem, Clariant supports SDG 12 »Responsible Consumption and Production« and links to SDG 17 »Partnerships.« → **PAGE 186** By developing new business in the biotechnology and biofuel sector, the company contributes to SDG 12 »Responsible Consumption and Production.« → **PAGE 32** In addition, its natural active ingredients support SDG 3 »Good Health and Well-being« and are linked to SDG 15 »Life on Land.« → **PAGE 80** By making the delivery of materials safer, Clariant tackles SDG 3 »Good Health and Well-being« and SDG 9 »Industry,

Innovation, and Infrastructure.« → **PAGE 170** The company also contributes to SDG 8 »Decent Work and Economic Growth« and SDG 9 »Industry, Innovation, and Infrastructure« by providing fair working conditions and continuous learning opportunities, by upholding growth and profitability, and by investing in digitalization. → **PAGE 48** → **PAGE 134**

Clariant's priority Sustainable Development Goals



Materiality Assessment

Clariant regularly conducts comprehensive materiality assessments in order to assess which material topics have the greatest impact on long-term value creation. The prioritization of material topics related to performance, people, and planet is well aligned with Clariant's strategic pillars.

1. Ongoing assessment of material topics

Clariant continually assesses the materiality of economic, environmental, and social topics. In 2017, a comprehensive materiality assessment identified and prioritized the issues that were most relevant to Clariant and its stakeholders. In 2018, discussions with stakeholders and management indicated that the topics of Circular Economy and Digitalization were increasing in importance, and consequently, the materiality matrix was updated. The materiality assessment review in 2019, however, did not reveal any change in relevance of any particular topic.

2. Based on recognized standards and procedures

The 2017 comprehensive materiality assessment was based on two internationally recognized frameworks: the Integrated Reporting <IR> framework issued by the International Integrated Reporting Council (IIRC) and the sustainability reporting standards of the Global Reporting Initiative (GRI). First, Clariant compiled an extensive list of economic, environmental, and social topics that are included in these frameworks as well as in others, such as those of the Sustainability Accounting Standards Board (SASB), the UN Global Compact, and the UN Sustainable Development Goals. The list was supplemented with Clariant's previously determined material topics and topics defined by peers. The resulting list of over 400 topics was then consolidated to less than 50.

Second, the materiality of each topic was evaluated by stakeholders who provided feedback on the relevance for Clariant from their point of view and senior Clariant managers who assessed the importance for Clariant's value creation. The latter assessment included the possible influence of each topic on strategy development and achievement, market positioning and growth opportunities, risk and reputation management, and compliance. By considering the risks and opportunities, Clariant indirectly accounted for impacts on sustainable development.

3. Broad stakeholder inclusion

As part of the 2017 assessment, external and internal stakeholders were asked to share which topics they deemed most relevant to future value creation. Clariant applied carefully defined selection criteria in order to ensure a balanced representation of interests. World-wide surveys of management and stakeholders were conducted with the latter offered in English, German, Spanish, Portuguese, and Mandarin.

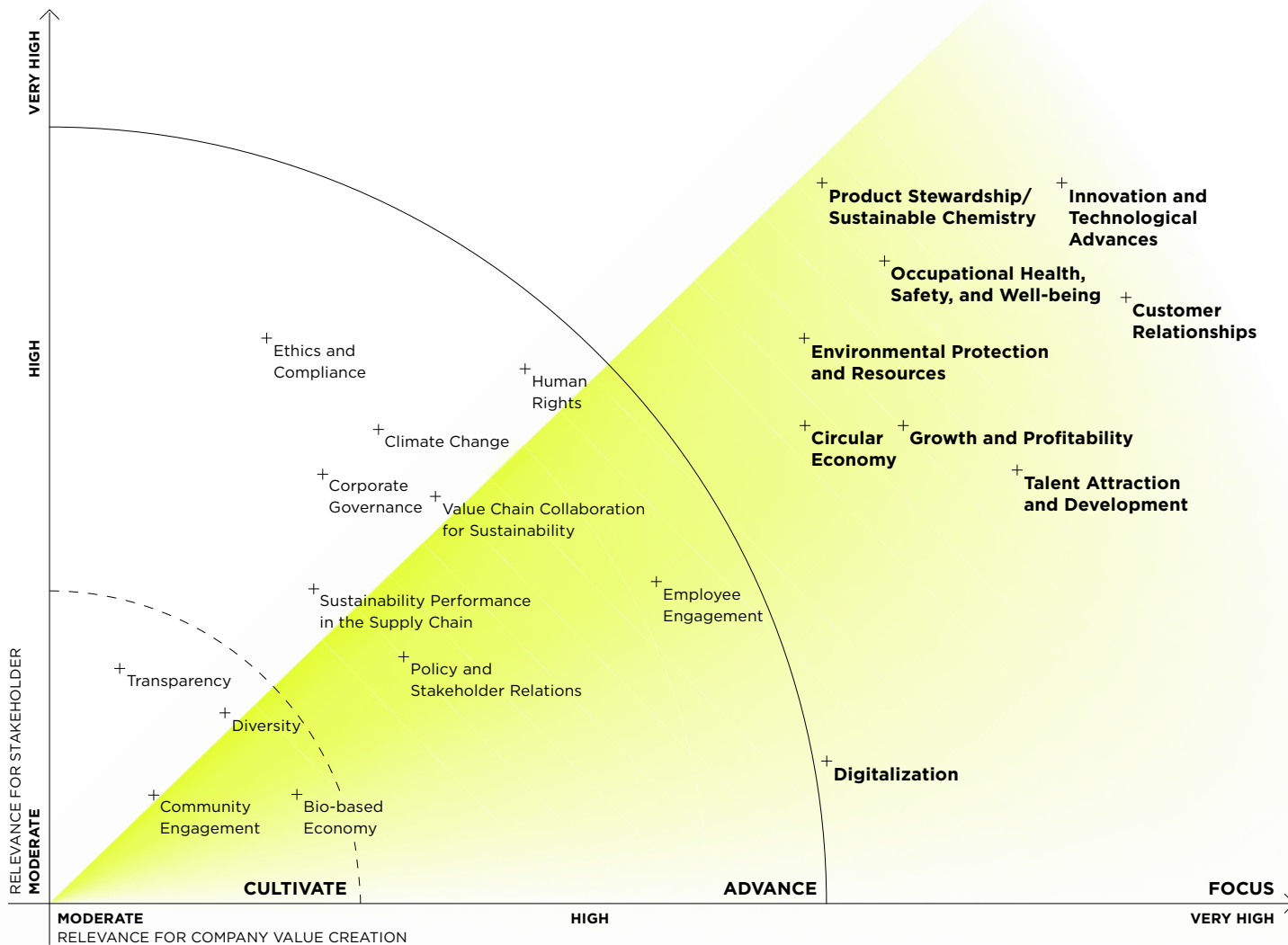
Overall, 131 external stakeholders, 69 employees, and 36 managers gave feedback. External stakeholder respondents included customers, non-governmental organization representatives, sustainability experts, scientists, and suppliers. Senior management evaluated and validated outcomes in a workshop.

4. Materiality Matrix

The Clariant Materiality Matrix summarizes the results of the materiality assessment. → **FIGURE 001** Topics considered moderately to highly relevant for Clariant’s value creation are shown on the horizontal axis, while the relevance of the topics for stakeholders are depicted on the vertical axis.

The topics fall into three categories: Cultivate, Advance, and Focus. Focus topics are at the core of Clariant’s ability to create long-term value; further improvements regarding Advance topics will allow Clariant to better meet expectations; Cultivate topics support successful value creation in the future.

001 CLARIANT MATERIALITY MATRIX



Current developments, activities, and achievements for each material topic can be found throughout the Integrated Report, especially in the Multicapital Review. → **PAGE 122**

For Focus topics as well as for Advance topics, Clariant has formulated dedicated management approaches that can be found in the GRI Report. → **REPORTS.CLARIANT.COM/2019/GRI**

Focus topics are further illustrated with practical examples: Customer Relationships → **PAGE 94**, Circular Economy → **PAGE 186**, Digitalization → **PAGE 64**, Environmental Protection and Resources → **PAGE 108**, Growth and Profitability → **PAGE 134**, Innovation and Technological Advances → **PAGE 32**, Occupational Health, Safety, and Well-being → **PAGE 170**, Product Stewardship/Sustainable Chemistry → **PAGE 80**, Talent Attraction and Development → **PAGE 48**

Becoming a More Focused Specialty Chemicals Company

In its three core Business Areas, Clariant focuses on developing differentiated, customer-specific products and offerings that have attractive growth prospects and above-average value potential. The alignment of Clariant's five-pillar corporate strategy with most material topics, must-win battles, and the company's excellence program supports the achievement of these goals.

1. Same goal, different means

Given current market conditions, Clariant and SABIC decided in 2019 to suspend discussions on creating a joint High Performance Materials (HPM) Business Area in order to protect the best interests of the respective shareholders of both companies. Consequently and as announced in 2015, Clariant continued focusing on its high-value specialty portfolio and decided to divest one third of its activities.

Clariant successfully divested its Healthcare Packaging business in 2019 and continued the divestments of its Pigments business and entire Masterbatches business. In the latter case, Clariant agreed to sell the business to PolyOne, a leading global provider of specialized polymer materials, services, and solutions. This divestment is expected to be closed by the third quarter of 2020. In addition to strengthening the company's balance sheet and returning capital to shareholders, the proceeds from the divestments will be used to invest in innovations and technological applications within Clariant's core Business Areas.

2. Guiding objectives underpin Clariant's vision and mission

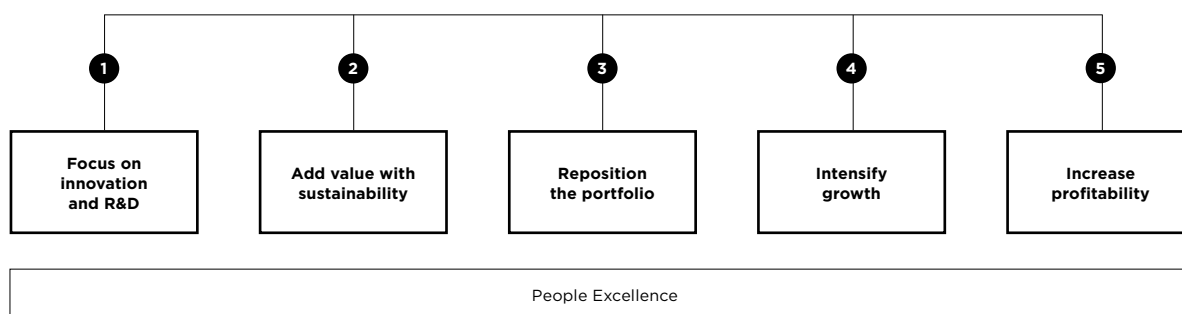
Clariant focuses on guiding objectives related to its different stakeholder groups. The company strives to

- be known as a powerhouse for R&D and innovation and increase value by applying a forward-looking sustainability lens to operations and market offerings;
- serve markets with future perspectives and strong growth rates and focus on businesses with good competitive positions;
- be a publicly listed company with a broad shareholder base, reliable long-term anchor shareholders, and a strong reputation for above industry-average profitability, growth, and Total Return to Shareholders (TRS); and
- be a preferred employer.

3. Staying the course on the five-pillar strategy

Clariant continues to be guided by its five-pillar strategy. With the ongoing divestment of the Business Units Pigments and Masterbatches, the company focused on the reposition the portfolio pillar in 2019. With the resulting, more streamlined portfolio structure, Clariant will be able to intensify its focus on customer experience and fast, reliable customer fulfillment, as well as on the development of innovative and sustainable products and applications. This will further support the first two strategic pillars, focus on innovation and R&D and add value with sustainability. With cutting-edge innovation formats, such as the iEngine and the iGarage, and the introduction of a strategic innovation process, Clariant strengthened the first pillar, focus on innovation and R&D, considerably in 2019. With 68 % of the screened

001 THE FIVE-PILLAR STRATEGY



continuing operations' product portfolio meeting the company's sustainability definition, the launch of new sustainability designators, its EcoCircle initiative, and being listed in the top 5 % of companies in the Dow Jones Sustainability index, Clariant's efforts in 2019 regarding the second pillar, add value with sustainability, were highlighted. Regional growth initiatives in China and North America, as well as the ongoing Clariant Excellence programs, further strengthened the two strategic pillars, intensify growth and increase profitability. → **FIGURE 001**

4. Strategic pillars well aligned with most material topics

The strategic pillars are well aligned with the topics deemed most material for Clariant and its stakeholders. The material topic Innovation and Technological Advances corresponds to the first strategic pillar, focus on innovation and R&D. The topics of Product Stewardship/Sustainable Chemistry, Circular Economy, Environmental Protection and Resources, Occupational Health,

Safety, and Well-being, and Customer Relationships are all essential aspects of the second strategic pillar, add value with sustainability. The pillar portfolio repositioning toward high-value specialties is linked to multiple material topics. The fourth strategic pillar, intensify growth, and the fifth strategic pillar, increase profitability, correspond primarily to the material topic Growth and Profitability. All five strategic pillars are underpinned by Clariant's People Excellence initiative, for which the material topic of Talent Attraction and Development is important. By capturing digital business model opportunities and digitally enabled operating models, the material topic Digitalization supports all five pillars with new business models, data science, robotics and automation, and digital operating models. → **PAGE 26**

5. Strategic Management Process underpins must-win battles

Clariant's Strategic Management Process (SMP), conducted by the Business Units in collaboration with Corporate Planning & Strategy, ensures that overall strategy development is an iterative process at the Group level as well as for the Business Units. Each Business Unit addressed the megatrends observed by Clariant – Digitalization, Future of Oil, Future of Plastics, Future of Transportation, and Circular Economy – contributing to the Business Units' strategy development. The strategy

update for each Business Unit was presented to the Board of Directors in December 2019. In the course of the SMP, must-win battles for each Business Unit were also developed. Overall, 31 must-win battles in line with the five strategic pillars were identified. → **FIGURE 002**

Must-win battles are the focus areas for the Business Units' strategy implementation and are aligned with strategic investment activities, such as enhancing investments in China and North America, which both present significant growth potential.

002 EXAMPLES OF MUST-WIN BATTLES OF ONE OR SEVERAL BUSINESS UNITS

Corporate strategic pillars

High-level sample content of must-win battles 2019 – 2021

<p>Focus on innovation and R&D</p>	<ul style="list-style-type: none"> – Enhance focus and accelerate innovation process execution – Innovate through digitally enhanced business models and customer interfaces
<p>Add value with sustainability</p>	<ul style="list-style-type: none"> – Differentiate with EcoTain® products; sustainable manufacturing with renewable raw materials – Accelerate solutions to circular economy/recycling through product and/or formulation innovations
<p>Reposition the portfolio</p>	<ul style="list-style-type: none"> – Strengthen portfolio in existing and adjacent markets through cost-effective investments – Review portfolio mix by focusing on high-value-added products
<p>Intensify growth</p>	<ul style="list-style-type: none"> – Grow above markets and strengthen presence in Asia and North America – Become a leading solution provider and preferred partner for customers through geographical expansion, diversification of customer base, and new business development
<p>Increase profitability</p>	<ul style="list-style-type: none"> – Enhance customer orientation by creating customer value proposition – Increase collaboration with key accounts and local heroes – Optimize operating model according to market needs – Optimize spend effectiveness and asset utilization

6. Investments in growth regions

China is the largest chemical-producing global region and is expected to also become the largest chemical market. Trends such as urbanization, mobility, stricter environmental regulations, and the industry and market shift toward specialty chemicals create opportunities for Clariant with its focus on safety, compliance, customer experience, excellence in execution, and sustainability. Clariant's new head of Region China, together with the Region China top management team, will ensure the »Fringe to Core« strategy to bring Clariant's China business to the fore, which includes investment in the One Clariant Campus, an integrated regional headquarters and innovation facility being built in Shanghai.

In North America, following significant investment in its Midland, Texas, and Clinton, Oklahoma, facilities, Clariant opened two new facilities in 2019. With its new High-Throughput Experimentation (HTE) laboratory in Houston, Texas, Clariant is the first company to adopt HTE technology, which achieves optimized formulations in a rapid time frame, as a standard tool for the Oil and Gas industry. → PAGE 142

The new Clariant Consumer Care Innovation Center (CCIC) near New York strengthens collaborative innovation with North America's consumer care brands by focusing on trends impacting North American consumers, where the need for convenient products for busy lifestyles overlaps with the demand for more sustainable products. → PAGE 76

7. Financial targets and overall objectives

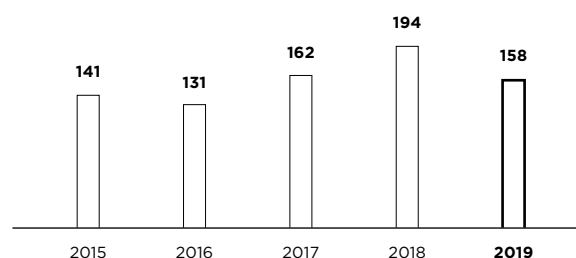
Plans for executing the Business Unit strategies and must-win battles underpin the development of financial plans for each Business Unit, which are refined alongside the Group financial targets. Regarding growth, the Business Areas Care Chemicals and Natural Resources are expected to deliver an annual sales growth of 5–7%, while Catalysis is expected to deliver a 6–9% sales growth per year. With respect to EBITDA margin ambitions, expectations are 18–20% for Natural Resources, 19–21% for Care Chemicals, and 26–30% for Catalysis.

EXPECTED SALES GROWTH AND EBITDA MARGIN AFTER EXCEPTIONAL ITEMS

	Care Chemicals	Catalysis	Natural Resources
Sales growth expectations p.a.	5–7%	6–9%	5–7%
EBITDA margin ambition	19–21%	26–30%	18–20%

With respect to Group financial targets, Clariant expects its continuing businesses to achieve above-market growth, higher profitability, and stronger cash generation based on its focused, high-value specialty portfolio.

003 NET BENEFIT BY CLARIANT EXCELLENCE in CHF m



8. Clariant Excellence supports value creation

Clariant Excellence (CLNX), the company's Business Excellence program, supports the Business Units in their strategy execution. Over the last decade, the program evolved from focusing on operational efficiency to becoming a holistic driver for profitable growth. The program comprises Clariant Innovation Excellence (CIX), Commercial Excellence (CCE), and Operational Excellence (COX), which includes excellence in Procurement, Production, and Supply Chain, as well as Clariant People Excellence. In total, CLNX projects delivered estimated net benefits of CHF 158 million in 2019, of which CHF 112 million were cost savings. → FIGURE 003 → PAGE 56

→ PAGE 60 → PAGE 62



Make + Innovation and Technological Advances Use of Nature's Design Process

Engineering serendipity

Clariant's Biotechnology Center in Planegg near Munich uses nature's playbook to find powerful biochemicals and new business opportunities.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 12. Read more on → PAGE 24



The history of scientific discovery is full of happy accidents. From X-rays to penicillin and from rubber tires to Velcro – some of humanity's most consequential discoveries and inventions were to some degree hard-

earned flukes. Purposefully engineering the right conditions for serendipity to strike may then be the best way to drive innovation. This is exactly what Clariant does at its biotechnology research facility – by using a Nobel Prize-winning mix of high tech and natural diversity.

»You're looking at the first step in scaling up our fermentation,« says Lina Tubes, a scientist in the fermentation and downstream team at the Clariant Biotech Center (CBC) near Munich, as she points to a row of small glass containers filled with a bubbly brownish fluid and entangled in a seemingly chaotic mess of tubes, cables, valves, and displays. The air is filled with the whirr of countless pumps and fans as well as a distinctly yeasty smell. Lina Tubes works on industrializing fermentation and downstream processes. »A process that works in a glass bottle is one thing,« she says as she leads us along another row of ever larger stainless-steel reactors.

»Getting the same fermentation to work in an industrial fermenter measuring many cubic meters poses a whole range of challenges every time,« she says. For a start, there are inevitable differences in temperature and pressure throughout such a large vessel that the fickle micro-organisms need to cope with.

Precision fermentation – the art of getting micro-organisms to produce specific and often complex organic molecules such as proteins – lies at the heart of most biotechnological productions. And it is the core driver in the CBC's efforts to develop new business in the biotechnology and biofuel sector. The CBC was established in 2015 to bundle and intensify all of Clariant's endeavors in industrial biotechnology. There are currently over 100 people working at the CBC. It is located in Planegg. The small suburb of Munich is home to an impressive cluster of biotech firms. Both the biotech campus of the Ludwig Maximilian university and the renowned Max Planck Institute of Biochemistry are just a few minutes away. In fact, the Max Planck cafeteria is a lunchtime hot-spot for biotech professionals. »Being on the head chef's menu mailing list is a must for anyone who works around here,« says Michael Zavrel, who heads Development and Biomanufacturing at the CBC.

001 Going strong

The CBC was established in 2015 to intensify Clariant's endeavors in industrial biotechnology.

002 Starting small

Scaling up biotechnological processes for industrial use is an important part of the work at CBC.

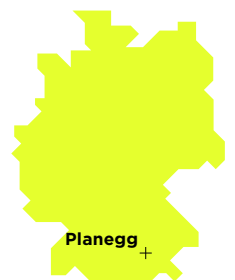


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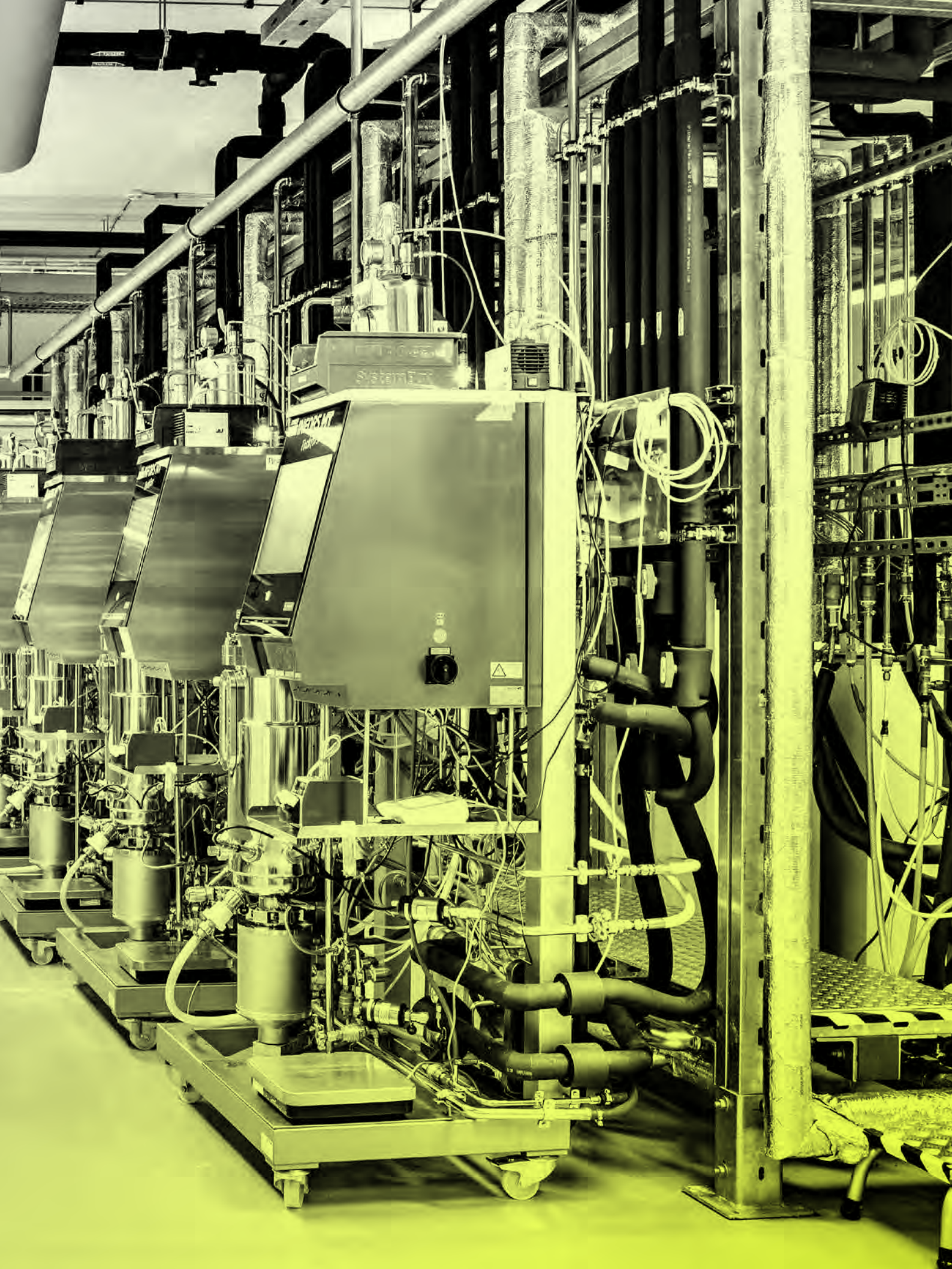
GERMANY





Hard at work

These bioreactors at the CBC contain billions of specifically tailored microorganisms that churn out desired compounds.



Zavrel is one of many at the CBC initially hired to work on a novel process for converting agricultural waste into biofuel. »That project was what essentially sparked the whole biotech group for Clariant and established our impressive expertise in second-generation biofuels based on non-food biomass,« says Markus Rarbach, who was an integral member of the research team at the time and today heads up Clariant's Business Line Biofuels & Derivatives. »It is an exemplary success story that came out of the CBC.« The final process has since been brought to market as sunliquid® technology. Clariant broke ground on its first-of-its-kind full-scale commercial ethanol plant in Romania in 2018, and the company is licensing the technology to others. Nonetheless, Lina Tubes and others at the CBC are still working on future process improvements to increase the efficiency of the technology for feedstocks which are abundant in different parts of the world, including wheat straw in Europe, rice straw in Asia, sugar cane bagasse in South America, and corn stover in the USA.

A key component of the sunliquid® process, as in most industrial biotech, are enzymes. They convert indigestible parts of wheat, rice, and other biomass into a form of sugar that microorganisms can only then convert into biofuel. Such enzymes, or »biological catalysts,« are highly complex protein molecules that can induce and speed up chemical reactions. They serve a wide range of functions in any living organism. But they can also do nifty tricks for a host of industries by promoting reactions that are otherwise very difficult to achieve.

For millennia, enzymes have played a role in making bread, cheese, and beer. More recently, they have found applications in anything from personal care and pharmaceuticals to industrial processes and household products. Enzymes help modern laundry detergents dissolve stains at lower temperatures. Others can stop what's called »pilling.« »We program these enzymes to essentially nibble away those tiny ugly knots that form on

Asking an expert

»At the very heart of sustainable chemistry«



Ling Hua

Head of Group Biotechnology, on the impact of »directed evolution« and the overall benefits of industrial biotech

Ling, you've worked with Nobel Prize laureate Frances Arnold, haven't you?

Yes, about 20 years ago. In fact, she was influential in getting me my first job. I was looking for a post-doc position in her lab and she forwarded my CV to a friend of hers, who was building a biotech start-up. I was one of their first hires and later collaborated with Frances and her lab to work on enzymes for the bioconversion of active pharmaceutical ingredients.

How has »directed evolution« impacted your own work?

It is a powerful tool for any of us playing in the field of industrial biotechnology. Without directed evolution, we only can look for whatever enzymes or microorganisms are out there in nature, most of which obviously have not evolved to fit industrial

applications. Frances' contribution in directed evolution changed that and now allows us to evolve enzymes specifically to fit any industrial application and to enable chemical conversions through biocatalysis that were impossible before.

How can this concept and industrial biotechnology in general benefit mankind?

By creating diversity in the lab and then selecting for desired properties via High-Throughput Screening we are using nature's algorithm to find powerful enzymes quickly and reliably. Those can open up opportunities for industrial enzymes in various applications. Anything from efficient detergents that help washing machines and dishwashers save energy and water to the use of biocatalysis for more sustainable transformation pathways in chemical and pharmaceutical productions.

Speaking of the environment, what can the Clariant Biotech Center (CBC) contribute to a sustainable future?

Research at CBC has brought us the sunliquid® technology to breakdown biomass into sugars and then ferment them into ethanol with a high yield. This alone contributes tremendously to the circular economy and reduces CO₂ footprints. In addition, microorganisms allow us to produce even the most complex compounds very energy-efficiently and using natural renewable resources. At the CBC, we also focus on the development of biobased and fully biodegradable materials. So I see our work at the very heart of Clariant's efforts towards sustainable chemistry. And keep in mind, industrial biotech as a discipline is still fairly young. So is the CBC. We're only getting started!



»We run thousands of samples per week to select them for specific properties.«

Katja Kirsch

Scientist, Group Biotechnology

synthetic and woolen fabrics,« says Timothy O’Connell, who heads Research and Application at Clariant Biotechnology. O’Connell joined Clariant in 2016 from one of the world’s largest household care companies.

»I’ve spent much of my professional life battling food stains,« is how he puts it. While the right enzymes can make life a lot easier, »programming« them is extremely difficult.

Copying nature’s design process

That’s where a method called »directed evolution« comes in. It was pioneered in the early 1990s by an American chemical engineer named Frances H. Arnold at the California Institute of Technology (Caltech). In 2018, it won her the Nobel Prize in Chemistry. Arnold herself has called it a way of »copying nature’s design process.« The idea is to take any microorganism, such as a bacterium or fungus, that has the potential to produce a certain type of enzyme. The next step is to then spawn thousands upon thousands of new varieties of that organism by inducing random mutations. This can today be done easily and reliably with certain chemicals, radiation, or even just with UV light. After that, it’s a matter of selecting which, if any, of those new organisms produce an enzyme that fits the task at hand.

Clariant uses proprietary technology to carry out protein engineering and directed evolution. That involves first creating diversity both at the protein and the organism level and then selecting for the specific properties that fit the desired industrial application. However, testing thousands upon thousands of individual organisms and proteins is both hard and tedious. Luckily, Katja Kirsch has two untiring robotic arms at her disposal, bulky metal contraptions that rotate and jerk at all kinds of unnatural angles. Kirsch is a scientist at the CBC and her robotic arms are part of a High-Throughput Screening (HTS) system. Clariant runs two of these at the CBC. The robots slide up and down a lab bench taking every variant sample through various tests to determine which one fits the intended process best. It is Kirsch’s job to design the specific sequences of steps and tests. To speed things up, each sample occupies a position in a microplate, a plastic rectangle with up to 1536 wells or tiny test tubes, arranged like boxes in a crossword puzzle. »For size reference: An individual well holds only a fraction of a raindrop,« says Kirsch.

Once the robots have taken the microplates through the tests, they store them in a fridge. »With this setup, we are able to process many thousands of samples per week,« says Kirsch, as she points to a display next to the fridge.

It shows results for each and every well on any of the microplates in the fridge. Those results can be the concentration of a specific enzyme or any of its useful properties needed in an industrial process. They can even be the result of thousands of tiny washing cycles. For that, Kirsch will have put a minuscule piece of purposefully stained cloth into each of the wells before she lets a scanner determine how effective each enzyme was in removing the stain. »Then it's just a matter of defining which variants give the results that we find promising, and the robots will select the corresponding samples from all the plates in the fridge for further tests or as starting point for a new cycle of evolution,« explains Kirsch. That's the beauty of directed evolution: The CBC uses nature's toolbox to come up with new solutions to a problem and then has robots select the best fit for an industrial process, which is then developed for production.

One of the latest innovations using directed evolution to come out of Clariant's Biotechnology is a brand new biopolymer. »The term gets thrown around a lot,« says Zavrel. »For us, a biopolymer is both derived from a natural, renewable resource and is also fully biodegradable.« He and his team were able to develop such a material with the help of a microorganism. »It produces the polymer as a defense mechanism using natural sugars,« says Zavrel. What's even more interesting, the biopolymer does not pollute the ocean with microplastics because natural microorganisms can completely break down and digest any leaked product just like a

regular sugar. »This could be a great sustainable alternative for traditional polymers in many different industries,« Zavrel says.

A new solution to an old problem

Another recent innovation connects the CBC with one of mankind's oldest uses for fermentation: brewing beer. While working on sunliquid® in its earliest stages, Zavrel developed an entirely new process to extract the alcohol from a fermentation. He stumbled upon the solution by accident when he stored a sample of the brew together with one of Clariant's own products. What he found was that the material soaked up alcohol like a sponge. In a small room next to the main laboratory, Zavrel assembled an apparatus, which is about the size of a small car, and tried it with a case of lager beer that he bought from the shop across the street. Without much tinkering, he was able to reduce the alcohol level by 90 %. That left him with a beer that qualifies as »alcohol-free« but still has all its complex flavor compounds intact. »This technology fits perfectly the unmet needs in the non-alcoholic beer or wine market,« says Zavrel. He is not alone in seeing the potential. According to market research performed by external partners as well as internal market intelligence, sales of non-alcoholic and low-alcohol drinks are growing steadily in most industrial countries, in line with other health-conscious trends. Even in beer-thirsty Germany, non-alcoholic brews are the only kind that have seen substantial growth in recent years. And then there are new markets in the Middle East and parts of Asia, where people abstain from alcohol for religious reasons.

As with any of its innovations, Clariant's Biotechnology team has intensively evaluated the market potential early on. But unlike most new technologies coming out of the CBC, dealcoholizing beer is a completely new business for Clariant. »That's why we've put resources for commercialization in place ourselves and want to act as an incubator in this development phase,« says Andreas Reindl, who heads Business Development at Clariant Biotechnology. »The key is to now bring this true innovation to market quickly, ideally starting with strong mid-sized brewing companies.« This means that Clariant Biotechnology is breaking new ground for the company. Then again, being open to new opportunities seems essential to Clariant's Biotechnology. Or as Louis Pasteur, one of the fathers of microbiology, once famously said: »Chance favors only the prepared mind.«

Hold the booze

How Clariant's new way of dealcoholization works

Clariant's unique process for dealcoholization uses a method called gas stripping. A pump streams the mixture of carbon dioxide, water vapor, alcohol, and esters accumulating atop the brew through a bed of zeolite. This specific type of microporous aluminosilicate is produced by Clariant's Business Unit Catalysts. Its microscopic pores capture only the alcohol. That is because water molecules are too small and the complex esters responsible for distinct beer aroma are too large to get stuck. Both can simply be pumped back into the beer. Once the zeolite is saturated with pure alcohol, it's then easily emptied out with a vacuum pump, and the cycle continues.

001 Michael Zavrel

Head of Development & Biomanufacturing, Group Biotechnology

002 Harnessing diversity

With the help of state-of-the-art automation, the CBC screens microorganisms by the thousands.



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Overview on Corporate Governance

Clariant is committed to international compliance standards, ensuring checks and balances between the Board and Management, as well as a sustainable approach to value creation.

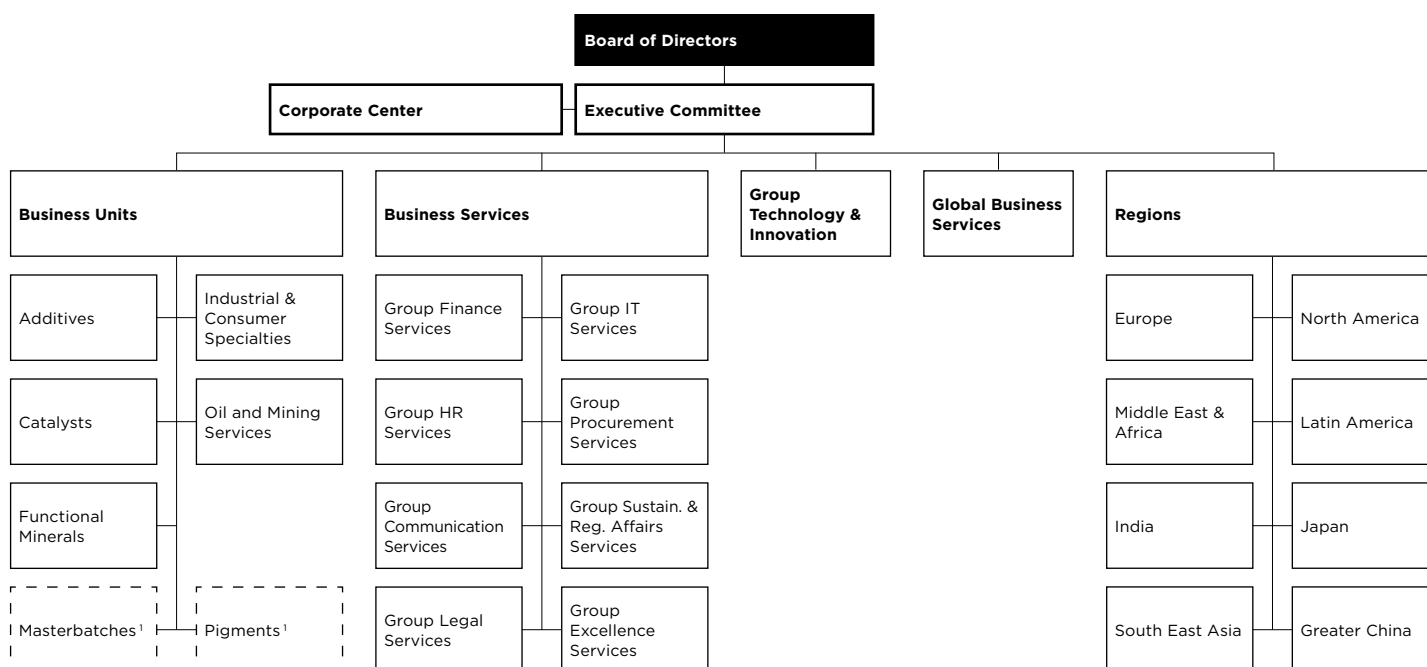
1. Principles of Corporate Governance

The Group commits to Swiss and international standards of corporate governance by following the respective statutory provisions and the rules issued by the SIX Swiss Exchange and by implementing the principles of the Swiss Code of Best Practices for Corporate Governance.

2. Organizational overview

Clariant is headquartered in Muttenz, Switzerland. The Group's continuing operations comprise five Business Units (Additives; Catalysts; Functional Minerals; Industrial & Consumer Specialties; Oil and Mining Services), which are reported in the three Business Areas Care Chemicals, Catalysis, and Natural Resources. The Business Units Masterbatches and Pigments are held for sale and report under discontinued operations.

001 CLARIANT ORGANIZATIONAL STRUCTURE AS OF 31 DECEMBER 2019



¹ In 2019, Clariant decided to dispose the Business Units Masterbatches and Pigments. The two Business Units concerned have been reclassified to discontinued operations.

The organizational structure → **FIGURE 001** is further comprised of eight Business Services, Group Technology & Innovation (GTI), Global Business Services, the Regions, and the Corporate Center, which centralizes key corporate functions. The Executive Committee is responsible for the management of the Group.

3. The Board of Directors

The members of the Board of Directors of Clariant Ltd, the Chairman of the Board of Directors as well as the members of the Compensation Committee, are elected individually for a term of one year by the Annual General Meeting.

At the end of 2019, the **Board of Directors** of Clariant Ltd comprised of 12 members: Hariolf Kottmann (Chairman and, since 24 July 2019, Executive Chairman), Dr. Khaled Homza A. Nahas (Vice-Chairman), Abdullah Mohammed Alissa, Günter von Au, Calum MacLean, Geoffery Merszei, Eveline Saupper (independent Lead Director since 24 July 2019), Carlo G. Soave, Peter Steiner, Claudia Suessmuth Dyckerhoff, Susanne Wamsler, and Konstantin Winterstein. All members of the Board of Directors, except for Hariolf Kottmann, who held the position of CEO until 15 October 2018 and who has been serving as Executive Chairman since 24 July 2019, are considered to be independent in accordance with best-practice standards.

Of the nine male and three female members of the Board of Directors, five have German citizenship, two Saudi Arabian, two British, one Swiss, one Canadian and Swiss, and one US citizenship. Concerning education, Board members hold PhDs or other degrees in the following fields: four in economics, political economy, languages and economics, or law; three in chemistry; three in industrial engineering, production engineering, engineering management, mining and engineering, or engineering and economic systems; and two in business administration. With regard to age, one member of the Board is 50 years or younger, one is 51 – 55 years, four are 56 – 60 years, three are 61 – 65 years, and three are 65 – 70 years of age. Concerning the first year of election to the Board, two Board members were first elected in 2008, two in 2011, one in 2015, three in 2016, and four in 2018.

Corporate Governance Report

This short overview summarizes some aspects of corporate governance that are particularly relevant for integrated value creation at Clariant. For more detailed information, see the separate Corporate Governance Report → reports.clariant.com/2019/corporategovernance

4. The Board of Directors' responsibilities and committees

The Board of Directors is the ultimate decision-making authority for Clariant Ltd in all matters except those decisions reserved by law or the Articles of Association for the shareholders. The Board also provides the strategic direction for the Group and reviews and further develops the company's strategy annually during a two-day Board of Directors' meeting.

Further duties of the Board include ensuring a management and corporate culture that is appropriate for the company's objectives, as well as an internal control system and adequate risk and compliance management, particularly regarding financial, corporate governance and citizenship, personnel, and environmental protection matters.

Members of the Board of Directors constitute the following committees: the Nomination Committee, whose duties include drawing up principles for the selection of candidates for election and reelection to the Board of Directors, the CEO and the other members of the Executive Committee, and preparing the corresponding recommendations; the Compensation Committee, which reviews and proposes to the Board of Directors the compensation and benefits policies and programs, evaluates the performance criteria relevant to compensation, and determines individual executive compensation and benefits of the members of the Board of Directors and the Executive Committee, subject to the approvals of the total compensations by the Annual General Meeting; and the Audit Committee, whose duties include

»The Board of Directors has reviewed the 2019 Integrated Report and proposes its approval to the Annual General Meeting.«

Hariolf Kottmann

Executive Chairman



Hariolf Kottmann
Executive Chairman



Hans Bohnen
Chief Operating Officer (COO)



Bernd Hoegemann
Member of the Executive Committee



Patrick Jany
Chief Financial Officer (CFO)

reviewing the activities of the external auditors, their collaboration with the internal auditors, and their organizational adequacy. Furthermore, the Audit Committee reviews the company's internal control and risk management systems and reviews compliance with the law and internal regulations, particularly regarding the Code of Conduct.

5. Management of the Group

The Board of Directors has delegated the executive management of the Clariant Group to the CEO and the other members of the Executive Committee. The members of the Executive Committee are appointed by the Board of Directors on the recommendation of the Nomination Committee.

At the end of 2019, in addition to Hariolf Kottmann, who acts as Executive Chairman until the position of Chief Executive Officer is newly filled, the Executive Committee consisted of Chief Financial Officer Patrick Jany, Chief Operating Officer Hans Bohnen, and Bernd Hoegemann.

Not counting Hariolf Kottmann, whose background is already included in the summary of the composition of the Board of Directors, the other three male members of the Executive Committee have German citizenship. Concerning education, Executive Committee members hold PhDs or other degrees in the following fields: one in chemistry and business administration; one in economics, psychology, and business administration; and one in economics. With regard to age, one of the members is 50 years or younger, and two are 51 – 55 years. The first year of membership in the Executive Committee was 2006 for one member, 2018 for one member, and 2019 for one member.

The Executive Committee is primarily responsible for the implementation and monitoring of the Group strategy, the financial and operational management of the Group, and the efficiency of the Group's structure and organization.

6. Enterprise risk management

In the framework of Enterprise Risk Management Policy, risk assessments are prepared by Business Units, Service Units, Corporate Functions, and Regions to assess threats that will impact the achievement of Clariant's objectives. These objectives are a result of the overall strategy of the Group as set by the Board of Directors and implemented by the Executive Committee. The Executive Committee is responsible for monitoring the risk assessments for relevance and consistency.

The Executive Committee has formed an Ethics and Risk Management subcommittee, which maintains an up-to-date understanding of areas where Clariant is, or may be, exposed to risk issues, and seeks to ensure that management is effectively addressing those issues. The Ethics and Risk Management Committee meets on a quarterly basis.

A summary risk assessment is submitted annually to the Executive Committee, Audit Committee, and Board of Directors for review. In the event of new or changed risks, reporting is accelerated.

To support functional responsibility, certain functions have access to risk assessments to assist them in their roles. Examples of such functions are Environmental Safety & Health Affairs (ESHA), to identify key sites for their property risk survey program, or Group Procurement, to ensure reliable and compliant supply of raw materials.

7. Significant shareholdings and shareholders' participation rights

At 31 December 2019, the following shareholders held 3% or more of voting rights in Clariant Ltd: SABIC International Holdings B.V., 25.77%¹; APG Asset Management N.V., 5.01%; Blue Beteiligungsgesellschaft mbH, 3.49%; Citadel Multi-Strategy Equities Master Fund Ltd, 3.285%; and Millennium Partners LP, 3.04%.

Subject to certain limitations on voting by nominees, each registered share entitles the holder to one vote at the Annual General Meeting. Shareholders have the right to receive dividends and such other rights as are granted by the Swiss Code of Obligations. However, only shareholders entered in the Clariant share register may exercise their voting rights.

Shareholders representing shares with a total par value of CHF 1 million have the right to submit written requests that an item be included on the agenda at least 45 days prior to the 26th Annual General Meeting on 7 April 2021.

¹ SABIC acquired 24.99% of the shares of Clariant Ltd on 17 September 2018. The difference between this figure and the above-mentioned 25.77% corresponds to the amount of treasury shares held by Clariant Ltd, which have to be aggregated to the shares held by SABIC solely for regulatory disclosure purposes due to the Governance Agreement entered into by SABIC and Clariant on 17 September 2018.

Leadership in Times of Change

Strong leadership and a commitment to continuous development drive value creation at Clariant. The company believes that creating a collaborative working environment based on trust and appreciation is vital, particularly in times of change. This inspires and motivates teams to continuously learn and cultivates a high-performance culture.

1. Leading people in transformative times

People at Clariant are working in a fast-paced environment. In the midst of a rapidly changing market and advancing digitalization in the industry, the company is adjusting its portfolio and redirecting its strategy. These developments require flexibility and willingness from every employee to continuously develop their skills. For leaders, empathy, change management competencies, and end-to-end thinking are now a prerequisite to motivate and inspire people in times of change and uncertainty.

These developments also impact how people work together and require adjustments in leadership. For example, as employee location loses importance, remote leadership skills become more crucial; as digitalization increases the availability of information, organizations must promote collaboration and skill-building. In addition, Clariant's focus on innovation and the ambition to grow the continuing operations requires advanced competencies and an upgrade of commercial skills. Clariant's leaders need to identify each employee's potential to contribute to these goals and support them to turn these capabilities into strong performance.

2. Implementing the People Excellence strategy at the regional level

Clariant rolled out its People Excellence strategy in 2017 to promote an organizational culture of learning and development and ensure high performance in times of fundamental change. Since 2018, Clariant has cascaded this strategy down to the Business Units and the regional level. This included identifying key opportunities and challenges in people-related processes, such as recruiting or skills development, as well as supporting key leaders in the Business Units to develop organizational change and customized support measures, from recruiting to building competencies.

At Clariant, strong leadership and sophisticated human resources processes go hand in hand. Different human resource functions thus play a key role in implementing the identified measures, such as a new talent management initiative, an innovative recruitment campaign, or improvements to the performance management system.

3. Fostering continuous learning and promoting internal talent

For Clariant, continuous learning and development is crucial to maintain a high level of competitiveness and advance employees on their career path. The company helps employees cultivate interpersonal as well as technical skills at all levels and focuses on shaping new leaders to ensure continuity and build organizational knowledge. To do so, Clariant relies on a well-developed talent management program, which includes structured talent identification and review processes, diverse formal and informal talent development measures, and career management.

To make it easier for high-potential candidates to evaluate their future career opportunities, Clariant launched the Capability Development Program in 2018. It provides leaders with clarity on competence requirements for various job levels and offers an assessment process to identify development opportunities based on transparent criteria. In 2019, leaders of three additional functional areas were incorporated into the program: finance (pilot project in Asia), operations, and human resources. This contributed to a high success rate regarding internal talent development. In 2019, Clariant promoted internal candidates into 87 % of senior management positions and filled 90 % of group management positions from the internal population. → **PAGE 155**

4. Advancing efforts in employer branding

Positioning Clariant as a preferred employer and retaining employees are business imperatives, given the global hunt for talent and the rapidly evolving skill requirements. Clariant thus aims to provide challenging positions across functions, foster individual learning and development, and recognize the efforts of its employees through appreciation programs. → **PAGE 157**

For Clariant, being a preferred employer means offering a fair and healthy work environment and promoting team collaboration. Clariant also encourages and values diversity of thinking and acting. By hiring and promot-

ing people of different genders, ages, cultural backgrounds, and career paths into key positions, Clariant lays the foundation for long-term success.

To secure a strong position in business-critical segments of the talent market, which include digital talents and talents with skills in social entrepreneurship, Clariant expanded its partner network in 2019 to include the Impact Hub in Basel and renowned universities. Clariant also revised its job ads and careers portal to be brand-consistent, adding a new company description and links to additional sources about the company. These measures helped increase the share of internal applications by 30 %. In addition, Clariant recorded a very high talent retention rate of 93 % in 2019.

»In times of change, empathy and change management skills are prerequisites of strong leadership.«

Klementina Pejic
Head of Group Human Resources



Find Skills for the Digital Age

+ Talent Attraction
and Development

»Techies love solving problems«

Kimberley McCall talks about her work as Clariant's first Digital & IT Talent Acquisition Specialist and why new job profiles call for new ways of recruiting.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 8 and SDG 9.

Read more on → PAGE 24



Kimberley, your job is recruiting tech talent. What are the profiles that Clariant looks for?

The chemical industry as a whole has championed automation and the use of digital equipment since very

early on. But when it comes to new digital business models and leveraging big data or even artificial intelligence, we still have a way to go. And those areas are where we at Clariant are now looking for new kinds of tech talent. Data scientists, full-stack software developers, and user experience (UX) designers are just some of the job profiles a typical chemical company would not have had that much use for ten or even five years ago. Not to mention the need for even more complex »hybrid« profiles, which require a combination of tech and specific business acumen.

Why do these profiles need a specific recruiter like yourself?

Make no mistake, when I joined a little less than two years ago, my colleagues in Talent Acquisition were already hiring these specialists. But with so many new

and highly specific profiles, there was a need for someone to really dive deep and learn exactly what we need and where to find it.

How did you learn that?

I did a lot of reading and googling at first. But more importantly, I went out to conferences, expos, and other events to meet people and talk to them about what they do and why.

Is the »why« important?

Absolutely. What motivates techies was one of the key things for me to understand. I learned that they generally have a few things in common: they love solving problems, the more challenging and meaningful, the better. They share a need to have a positive impact. They want the ability to make decisions and implement changes effectively and efficiently. These key insights help me highlight why Clariant and its digital start-ups are such interesting places to work.

You joined Clariant less than two years ago yourself. What drew you to the company?

I have spent most of my professional life in the chemical industry and have always appreciated the opportunities



»It takes time to build a network and create a name for yourself.«

Kimberley McCall

Digital & IT Talent Acquisition Specialist

and positive challenges I was given, even though I don't have a science background. I moved into recruiting a couple of years before joining Clariant. Some of that work was as a consultant in London for a range of industries. There, I gathered invaluable experience working in a fast-paced, competitive agency environment, but realized that I would, at some point, want to continue my work internally. It would allow me to deep dive into a specific company to make sense of its intricacies and stay connected and closely follow the progress of those I had helped hire. So when Clariant offered me the opportunity to recruit for them and to actually help establish a new approach to their tech hiring process, that really appealed to me.

What's your role today?

I'm responsible for digital & IT recruitment for Clariant and all vacancies related to our digital start-ups, most notably Chemberry™ and Navigance™. I play a consultative role for Business Units and departments that are looking to hire people with tech-related skill sets or to staff upcoming digital ventures.

Where do you find a data scientist or a software developer?

You mostly find them where these skills are taught, developed, and engaged, so in university towns and technology hotspots. Then, it's a question of identifying and engaging the most suitable candidates for

Corporate learning

What to teach and how

Clariant's corporate learning strategy is reshaping how the company trains and develops professionals.

Technology is transforming the workplace. With digitalization seeping into more and more jobs, there is a growing need for what some are calling hybrid skill sets. From marketing managers who work with chatbots to chemists who delve into big data – Clariant increasingly needs people who can straddle those fading lines between different domains. »Some of these very specific skill combinations are almost impossible to find on the market. That's why systematically up-skilling the experts you have makes a lot of business sense,« says Kirsten Neumann, Head of Clariant's Center of Excellence »Learning & Academy.« That is one reason why Clariant recently reshaped its corporate learning strategy. One of its pillars is to provide best-in-class learning formats.

Neumann and her team, who are all consultants for personal development and instructional designers, use their knowledge to tailor every course to fit Clariant's needs. That starts with first going out to all businesses and actually asking what a department or team wants to achieve in the short and medium term. »A nice side effect of involving supervisors this way is that it makes them more likely to later encourage our participants to actually apply what they have learned,« says Neumann.

Neumann also found that every course benefits from incorporating interactive or even playful exercises, preferably based on a practical case study. Another rule is to keep those courses short and focused on the defined key competencies. That's in keeping with Clariant's special emphasis on what's called social learning: »We set up learning communities where the participants meet in moderated classes and share their experiences – both good and bad – with applying new skills in their day-to-day work,« Neumann explains. »That helps a lot more than any formal training ever would.« Additional virtual briefings both before and after each training session provide for a better preparation, help to transfer knowledge, and encourage the group to connect with their new network across regions.

Unsurprisingly, Clariant aims to increase the impact of each and every training. To monitor this, Neumann and her team survey participants and their supervisors after a few months. One thing they ask is how much of the

curriculum participants were actually able to apply. »And we're already getting really good scores here, which tells us we're on the right track,« says Neumann.

Another shift involves the Clariant Academy, the company's global framework for courses mainly on leadership, personal development, and change. »While most of our courses are still face-to-face, we are moving into online learning and also test what recognized business schools can offer here,« says Neumann. »And we are incorporating more offerings on, for example, virtual leadership and online collaboration as well as self-directed learning elements, such as peer coaching groups. All of these can be conducted remotely.«

Additionally, Clariant is running a pilot for its IT department on LinkedIn Learning. The popular online platform features a vast library of technical and business training courses, mostly in the form of online instructional videos. »If you look at IT, it's not just about new technology, but also about business acumen and new ways of collaborating – agile work, Scrum, working in sprints, and so on,« Neumann explains.

For Clariant as a company, using new ways of learning has become crucial to achieving its business goals. And for everyone individually, it helps to grow further, to stay motivated, and to ensure lifelong employability. While digitalization may put pressure on people and businesses to change, it also offers new ways to do so.



Kirsten Neumann
Head of Center of Excellence
»Learning & Academy«

our vacancies. It takes time to build a network and create a name for yourself, which is what I've been doing for almost two years now by attending after-work events and meet-ups. And it will remain a crucial element for continued success. Referrals and suggestions from current Clariant employees are also a highly valuable source for suitable applicants.

With whom does Clariant compete for this kind of tech talent?

The skills these specialists have and the tools they employ are applicable in a wide range of industries. So we're naturally competing with a lot more companies and organizations than we would, say, for a chemist.

And everybody wants to work for well-known tech giants...

Not necessarily! People are generally motivated in different ways and will pursue the employer that they feel will help them fulfill their individual needs and aspirations. I would, however, dare to say that somebody who really dreams of working for the known tech giants would likely not thrive in our work environment.

How so?

Working for one of those data giants has its allure and its perks. But these companies employ hundreds, if not thousands, of tech specialists, and for some, this may seem as though they are a small fish in a big pond. When you join a company that is still building up its data and tech acumen, I'd argue that you get a lot more in terms of exposure, responsibility, and creative freedom.

Are you yourself using tech to recruit people?

Yes. We work closely with Clariant's Employer Branding to make use of digital channels a lot more professionally. We're also interviewing people via video chat. That helps a lot. Candidates may be based anywhere in the world and they simply expect that sort of flexibility from an employer. It is also a great

way of getting candidates in touch with our tech experts on the inside early on. That's something that works extremely well. It's important for digital talent to see that their employer understands what they do, speaks their language, and offers interesting projects.

How do you »sell« Clariant to a prospective hire?

I don't. Or rather, I don't try to portray Clariant as anything different than what it is. I don't believe that would be a sustainable way of engaging employees. I let the facts speak for themselves. We offer interesting and diverse greenfield projects and provide a space to develop ideas and create a significant impact – in addition to other great perks. But although we have a good value proposition as an employer and strive for continuous improvement, there are areas where we could do even better.

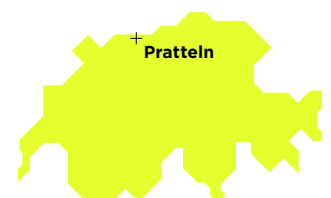
Where do you see a need for Clariant to improve?

This is a rapidly changing world, and we need to continue to adapt to maintain our strong position in the market. Corporate culture, flexible work models, incentive options, innovation, and the utilization of the newest technologies as well as a positive social impact are key to both attracting and retaining our tech workforce. We are working on these things, but there's still a way to go.

Do you notice a difference between recruiting for Clariant's core business and for its digital start-ups?

Yes, recruiting for a start-up is different than recruiting for a big corporation. The good thing about us is that we offer the best of both worlds and can leverage our synergies. The different sides of the business have very different pros and cons, so they attract applicants with varied needs and motivations. There are those that thrive in a less developed working environment with all its uncertainties, and then there are those that value the more established structures of a big corporation. At the end of the day, it all comes down to establishing the best possible fit at the right point in time.

SWITZERLAND



Overview on the Compensation Policy

Clariant’s compensation policy supports its ambition to be an employer of choice and strives to attract, motivate, and retain committed employees.

1. Compensation concept

To attract, motivate, and retain qualified and committed employees throughout the organization, Clariant’s remuneration policy is based on the following main principles: remuneration components are aligned with and designed to support the Clariant business strategy; regular benchmarking studies are conducted to ensure compensation levels are competitive and in line with

market practices; compensation practices always comply with local regulations, such as laws and collective union agreements; compensation policy and practices ensure consistency and a fair treatment of employees working for Clariant; remuneration components incentivize

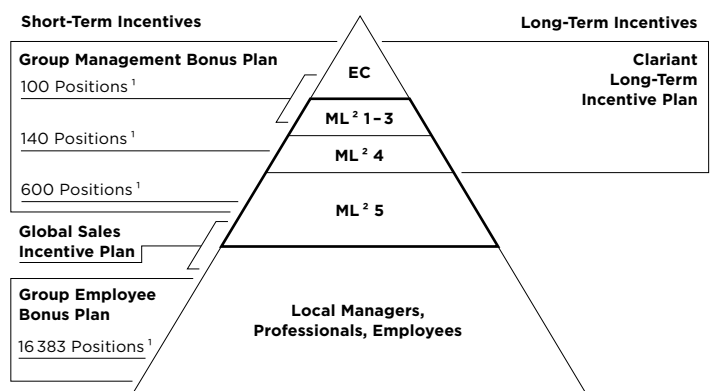
Clariant considers six main remuneration principles

- Alignment with business strategy
- Competitiveness
- Compliance
- Internal fairness
- Performance-based pay
- Transparency

business and individual performance through performance-based pay; and remuneration components are made transparent to the individual and the organization.

The structure of total remuneration is highly performance and success-oriented to ensure that shareholder and management interests are aligned. While Long-Term and Short-Term Incentives for management are based on Group Performance Indicators only, individual performance – measured through a consistent, global Performance Management system – is a determining factor in career development and the annual salary review process. Within the Global Performance Management System, each manager’s or employee’s performance is assessed and discussed on a yearly basis. This process includes regular 360-degree feedback for all management levels (ML).

001 CLARIANT INCENTIVE SCHEME LANDSCAPE



¹ Number of positions as of 31 December 2019

² ML: Management Level

2. Linking compensation to sustainable value creation

Short-term incentive plans (cash bonus) include the Group Management Bonus Plan, the Group Employee Bonus Plan, and the Global Sales Incentive Plan. Long-term incentive plans offer equity-based compensation for approximately 240 senior managers worldwide (Executive Committee and Management Level 1 – 4). → **FIGURE 001**

The Group Management Bonus Plan (GMBP) is anchored in the overall Performance Cycle at Clariant, which ensures a challenging business-specific target agreement for each Business Unit and Service Unit.

The individual GMBP amount of bonus payments generated in a year is determined by the results achieved by the Clariant Group measured against defined objectives. The achievement is calculated based on three elements: financial result of the Group; financial results of the Business Unit or Service Unit; and defined top priorities (Group Performance Indicators and strategic projects). In addition to financial indicators, the Group Performance Indicators include, for example, inventory targets, Clariant Excellence (CLNX) benefits, innovation sales, and occupational health and safety (lost time accident rate).

The Group Employee Bonus Plan (GEBP) is a globally aligned and standardized bonus plan for non-management levels for all legal entities around the world that apply (where legally compliant and possible) the global Group Achievement or a combination of Group Achievement and local Top Priorities as the basis for bonus payouts. For the sales force, the Global Sales Incentive Plan incentivizes premier sales performance and growth by focusing on the individual sales performance in the areas of sales, margin, and trade receivables.

After five years without any plan changes, the Compensation Committee decided to amend the Long-Term Incentive Plans for senior management starting in 2019 to better reflect Clariant's strategic targets, more closely align shareholder and management interests, and to ensure the remuneration package for senior management is competitive and reflects market best practices. Based on intensive benchmarking, this revised Long-Term Incentive is now based on the two key performance indicators relative shareholder return and economic profit reflecting both the external and internal view. The new Clariant Long-Term Incentive Plan (CLIP) was granted for the first time in April 2019. Participation

in the CLIP is limited to the Executive Committee and senior managers of Management Level 1 – 4 (approximately 1.4 % of employees). The CLIP implementation eliminated the bonus deferral with matching shares and resulted in a shift from short-term incentive remuneration to long-term incentive remuneration.

The two previous Long-Term Incentive Plans, the Performance Share Unit (PSU) Plan and the Group Senior Management-Long-Term Incentive Plan (GSM-LTIP/ Matching Share Plan), were discontinued and granted in 2018 for the last time.

3. Compensation of members of the Executive Committee

The Executive Committee participates in the same compensation elements as Clariant's senior managers, receiving a fixed annual base salary, an annual cash bonus, and Long-Term Incentives. The annual bonus is based on achieved results for the particular financial year according to the criteria mentioned above with respect to the Group Management Bonus Plan. For further information on the compensation of the Executive Committee and the Board of Directors, see the separate Compensation Report.

Compensation Report

This short overview summarizes some aspects of compensation that are particularly relevant for integrated value creation at Clariant. For more detailed information, see the separate Compensation Report → reports.clariant.com/2019/compensation

Core Processes for Value Creation

Idea to Market, Market to Customer, and Customer to Cash are key value-creation processes at the core of Clariant's business model. Underpinned by Clariant's Innovation Excellence, Commercial Excellence, and Operational Excellence initiatives, these processes turn customer needs into innovative and sustainable solutions that create value for all stakeholders.

The Idea-to-Market process involves scouting global trends, identifying business opportunities, exploring unmet customer needs, developing products, and commercializing and monitoring business performance. This process is essential for developing a well-filled product and service pipeline that delivers marketable innovations.

The Market-to-Customer process includes assessing market attractiveness, developing clear value propositions, and capturing the value created through the relationship-building and sales processes. To achieve a seamless customer experience, these steps are well connected and focused on customer needs.

The Customer-to-Cash process comprises balancing supply and demand, optimizing sourcing for spend effectiveness, monitoring production efficiency, and delivering finished goods to customers on-time and in-full in order to achieve safe, reliable, and efficient operations that support profitable growth.



IDEA TO MARKET

1. Idea to Market

Developing market-ready solutions that satisfy unmet customer needs requires a strong focus on innovation and technology. With its extensive Research & Development resources and a strategic innovation approach, Clariant is well-equipped to exploit opportunities presented by emerging trends and to stay ahead of the competition.

1.1. Supporting the transition to a sustainable economy

Sustainability and the circular economy continued to dominate the innovation agenda in 2019. The circular economy challenges the chemical sector to better understand end-to-end material flows and find new ways to reuse products at the end of their life cycle. Driven by stricter regulatory requirements and increased ecological sensitivity to issues such as the persistence of plastics in the environment, Clariant set out to create high-performing solutions with distinct environmental benefits and support the transition to a system with closed material loops. The latter is important for Business Units that are working on products that are recyclable or supporting their customers' recycling objectives, particularly the Business Units Additives, Masterbatches, and Pigments. The transition to a sustainable, circular economy is also supported by Business Unit Functional Minerals through its adsorbent products, for example, as well as by Business Units Industrial & Consumer Specialties (ICS) and Catalysts through their use of agricultural waste streams, as another example. → **PAGE 72**

»The new innovation unit combining Innovation Excellence and Clariant's Business Incubator will drive strategic innovation focusing on discovery, incubation and acceleration and help Clariant to create bigger, more strategic innovation projects and ensure a healthy innovation pipeline for the coming five years and beyond.«

Martin Vollmer

Chief Technology Officer and Head of Group Technology & Innovation

Clariant also focused on advancing the use of renewable and natural raw materials, particularly within its consumer goods and additives businesses. Given the strong demand for plant-based ingredients, Clariant unveiled its new »Envisioning Beauty« brand in 2019 and introduced an active ingredients platform that allows customers to discover the entire portfolio of natural ingredients in order to label their own products as »natural.« → **PAGE 74** → **PAGE 80** → **PAGE 184**

1.2. New innovation governance fosters strategic innovation management

In 2019, Clariant restructured its innovation organization by establishing an Innovation Committee, which immediately began to oversee all innovation activities at Clariant. This committee reviews and shapes Clariant's innovation strategy and ensures best practice application in innovation to maximize the value and delivery of the innovation pipeline.

At the operational level, Clariant Innovation Excellence (CIX) and New Business Development (NBD) were merged into the new unit »Innovation Excellence & Business Incubator,« belonging to Group Technology & Innovation (GTI). The reorganization expands Clariant's innovation capabilities and enables more strategic innovation management in order to commercialize innovative products faster and more reliably.

Going beyond the current Idea-to-Market approach, the new strategic innovation process consists of three phases: Discovery, Incubation, and Acceleration (DIA). The underlying idea of this approach is to increase the speed and impact of innovations by

applying agile project management and lean start-up methodologies, helping the innovation teams to adopt entrepreneurial behaviors and mindsets. → **PAGE 141** Innovation Excellence continues to provide state-of-the-art innovation and capacity-building tools, including Innovation Green Belt and Innovation Black Belt trainings, innovation workshops, and innovation portfolio management support.

1.3. Gaining innovation efficiency through digitalization

Increasing efficiency in the innovation process by exploiting the potential of digitalization is imperative to Clariant's competitiveness. Therefore, Clariant enhanced the capacities for High-Throughput Experimentation (HTE) by opening a new laboratory in Houston, Texas, USA. By applying automation and robotics, HTE enables Clariant to synthesize a vast variety of new molecules and test large numbers of formulations in parallel, discovering and delivering value-adding solutions to its customers at an unprecedented speed. → **PAGE 142** Further, an Electronic Lab Notebook (ELN) was introduced to gain efficiency in the R&D system. The cloud-based tool works as a digital knowledge base that captures all relevant information along the innovation chain. → **PAGE 143**

1.4. Driving research with a strong innovation network

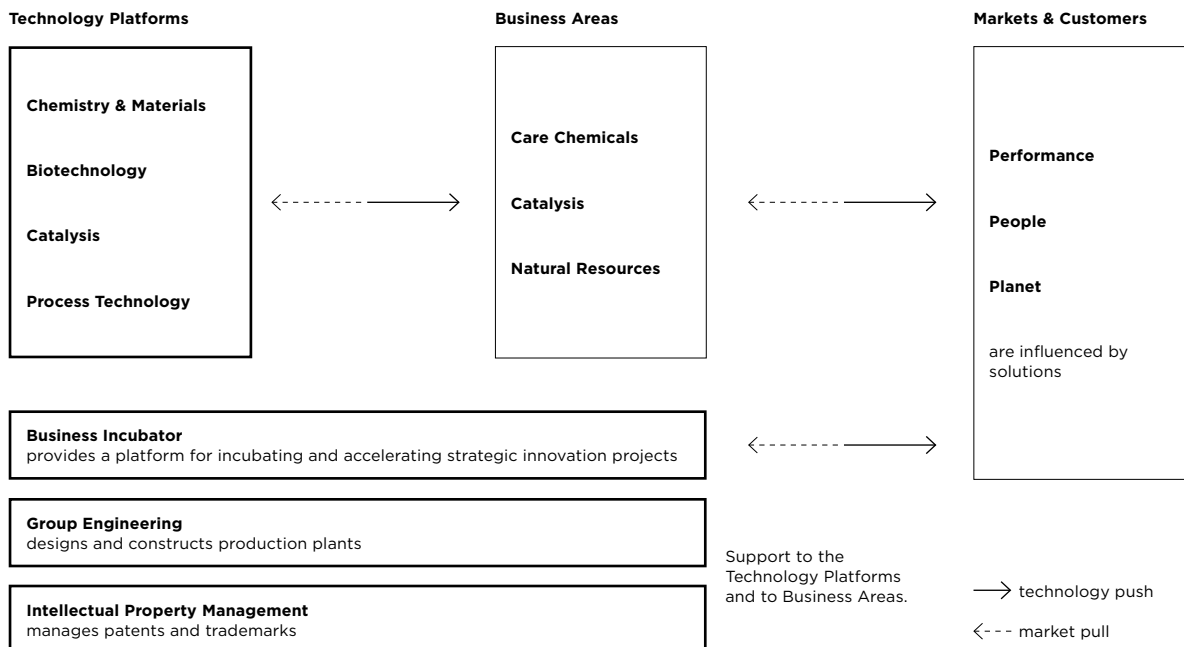
Clariant's Research & Development network consists of eight Research & Development Centers, more than 50 Technical Centers, and over 1000 employees. Under the umbrella of Group Technology & Innovation, research activities are structured along four Technology Platforms: Chemistry & Materials,

Biotechnology, Catalysis, and Process Technology. These work closely with the Business Units to ensure that technology push and market pull go hand in hand.

In 2019, the Technology Platform Chemistry & Materials focused, among other things, on computational chemistry as a new technology focus field – including a collaboration with the Barcelona Super-computer Center (BSC). This opens a new dimension in chemical product design deploying in-silico chemistry. → PAGE 144

The Technology Platform Biotechnology uses cutting-edge technology, such as molecular biology, bio-informatics, and High-Throughput Screening, to further develop improved enzyme solutions for biomass degradation and to continuously support the Business Line Biofuels & Derivatives in further developing the sunliquid® technology. This includes research on a new yeast strain, which showed very high ethanol yields in the fermentation step of the sunliquid® process. By applying Lean Six Sigma tools as part of the LabX program → PAGE 142, it was possible to quickly and reliably set up many small-scale bioreactors, which are necessary to identify improved strains that deliver superior performance under industrial-scale conditions.

001 CLARIANT INNOVATION CHAIN



In 2019, R&D in the Technology Platform Catalysis has developed a number of new products, including new catalyst generations for the production of styrene, formaldehyde, and on-purpose propylene. These catalysts significantly enhance the efficiency of the customers' chemical processes and improve their environmental footprint. In addition, the R&D team has increased its capacities in China to optimally serve local customers and to further strengthen the presence of Business Unit Catalysts in this important market.

One of the technology focus fields for Technology Platform Process Technology is data science and artificial intelligence. In 2019, Clariant's Data Science Competence Center further supported Clariant's ambition to speed up product development by capitalizing on the large amounts of data that are collected every day by applying data mining and simulation methodologies. The team supports the Business Units in developing digital tools and applications to speed up product development, improve production processes, and intensify customer interaction. → **PAGE 147**

The four Technology Platforms are complemented by the new unit Innovation Excellence & Business Incubator, as well as Group Engineering and Group Intellectual Property Management. In 2019, Group Engineering, which is responsible for the management and execution of capital investment projects, focused on the integration of a database system that facilitates the adjustment of technical specifications of factory components across a large number of connected documents. This allows Clariant to create a digital twin of a plant and facilitates building similar plants in different regions. The tool is already partially deployed to support the licensing of the sunliquid® technology. In the near term, it will enable the quick transfer of technical modifications and learnings from one licensing project to another.

Group Intellectual Property (IP) Management, which secures the generated value through intellectual property protection and enforcement, actively engaged in all Digital4Clariant projects in 2019 to ensure that Clariant's digital knowledge is well protected in the future. Further, it drove the digitalization of Clariant's IP management by establishing the Digital Patent File, which improves efficiency and supports better collaboration between innovation teams across sites.

1.5. Fostering innovation through new internal collaboration formats and scientific partnerships

Clariant runs several initiatives to strengthen collaboration across functions and businesses, as well as with external partners. The Open Innovation initiative identifies collaboration partners ranging from large corporations to start-ups, universities, and other research institutions. In 2019, Clariant received more than 400 technology proposals through the initiative. Launched in 2015, the Open Innovation approach is now well embedded in most strategic innovation projects and has led to many promising partnerships across all businesses. → **PAGE 144**

The innovation potential within Clariant's workforce is leveraged by innovation formats such as the iEngine (Innovation Engine) and the iGarage (Innovation Garage). In 2019, Clariant started several iGarages to explore new business opportunities, including one in the field of hydrogenation technology. → **PAGE 88** Six iEngines were conducted, and the identified potential technology solutions are now being pursued as part of various Idea-to-Market projects. → **PAGE 141**

Cutting-edge innovation formats iEngine and iGarage

iENGINE

The format consists of an elaborate sequence of virtual and face-to-face workshops to collect, prioritize, and refine potential high-quality technology solutions for unmet customer needs. The goal is to identify less obvious solutions. Since iEngines are conducted at a very early stage, and the development of viable technology options could take several years, the challenge is to sort out unfeasible options as early as possible.

iGARAGE

By using agile design thinking and lean start-up methodologies, a cross-functional team supported by external experts and innovation coaches convenes off-site over two to six months to develop business options through constant interaction with prospective customers and other stakeholders. The objective is to develop market-validated innovations through discovery and incubation, which will be further scaled in the market by a Business Unit.



MARKET TO CUSTOMER

2. Market to Customer

Clariant's success relies on its ability to understand customer needs along the entire value chain, develop solutions to address those needs, and capture the value created for profitable growth. To attain these goals, Clariant focuses on building strong customer relationships and strengthening its marketing and sales capabilities.

2.1. Addressing new market opportunities and customer demands

Customer demand for sustainable products and solutions continued to increase in 2019. To meet this demand, Clariant is continuously bringing forward new solutions that are more sustainable without compromising on performance or the company's commitment to fulfilling customer needs. Using 36 sustainability criteria to screen products across their entire life cycle as part of its Portfolio Value Program (PVP), Clariant awarded 27 new products the EcoTain® label in 2019 to recognize their outstanding sustainability profile. → **PAGE 149**

The continuing commoditization trend in the chemical markets has required Clariant to increasingly provide innovative products and services to meet customer-specific needs, while also maintaining cost-efficient operations in order to stay competitive. Clariant addresses these challenges by leveraging digitalization capabilities in its operations and services in order to improve production efficiency and customer service.

Clariant plans to further incorporate customer needs into the definition of customer segments to refine value propositions and further focus marketing and sales activities.

Ongoing consolidation in the chemical sector intensified competition for Clariant in 2019. This trend was particularly apparent in Clariant's customer base, where upstream and downstream processes are increasingly integrated within the supply chain. By better linking business forecasts to production planning, Clariant helped its customers continue to build more integrated end-to-end supply chains.

2.2. Understanding the customer journey

Looking through a »customer lens« allows Clariant to understand changing product and service needs, as well as discern how the customer perceives the company. Clariant manifests its customer centricity through the Commercial Excellence initiative established in 2011, which facilitates dialog with customers, partners, and prospects to evaluate and improve commercial strategies, customer engagement, and sales and marketing operations. In 2019, Clariant continued to implement the Marketing Excellence Find & Win process to systematically understand each touchpoint along the customer journey. This allows the company to develop tailored products and solutions and maintain long-term relationships with customers. In 2019, 404 structured interviews with customers and 144 with industry experts were conducted to gain insights. Clariant also launched a strategic key account management program aimed at more effectively transforming market opportunities into sales.

Marketing Excellence Find & Win

Find & Win maps a market's value chain and customer needs by interviewing customers and industry experts.

To leverage customer feedback, Clariant conducts biennial customer satisfaction surveys, which provide insights into how Clariant's operational, commercial, and innovation performance is perceived. Customers of all Business Units in all regions were surveyed in 2018.

2.3. Sharpening value propositions with a holistic approach

The volatility of raw material prices over the last several years requires Clariant to closely monitor costs and supply chain competitiveness while also focusing on sales growth.

In 2019, Clariant initiated additional holistic pricing projects to maximize long-term value. By applying new online tools and practices that furthered transparency of costs, Clariant was able to pass cost increases on to customers. Simultaneously, Clariant evaluated several software providers to develop procurement forecasts for raw materials and margin scenarios. In addition, Clariant continued to refine its value-based and transactional pricing with software improvements and new applications to gain better insights into extraordinary price points, for example.

By carving out the savings or revenue upside in terms of total cost of ownership at a mutually beneficial price point, Clariant's commercial organization transforms value created for customers into profitable growth. Clariant's value calculators are a helpful tool to demonstrate a product's value to customers, as they quantify and visualize the financial benefits of using Clariant's products as compared to the next best competing alternative.

To develop solutions that create value for both the customer and Clariant, cross-functional teams are formed that combine expertise and training in innovation, marketing, sales, procurement, and operations. With this holistic approach, Clariant is able to detect optimization potentials in pricing and commercialization that ultimately lead to a compelling value proposition.

2.4. Enhancing commercial capabilities through the Leading Marketing Organization

In 2017, Clariant launched the Leading Marketing Organization, an initiative that further integrates marketing within the Business Units. In 2018, all key positions of the redefined marketing organizations were filled, and a training program that reinforces marketing skills was piloted. In 2019, an advanced strategic management program was launched to strengthen the commercial competencies across Clariant. Extensive internal and external training increased the quality and visibility of Clariant's marketing experts.

The Marketing Advisory Board, comprised of the Marketing Heads of Business Units, Head of Marketing Communications, and Head of Sustainability, continued to share best practices and drive further development of marketing processes, tools, and capabilities. In 2019, emphasis was placed on solving commercial challenges by developing best-in-class practices. By looking deeper into portfolio management, the customer journey, and commercial data analytics, Clariant will focus on the priorities defined as must-win battles of the Business Units in 2020. → **PAGE 30**



CUSTOMER TO CASH

3. Customer to Cash

Clariant continually optimizes planning, procurement, production, and delivery with a holistic and cross-functional approach. Operational Excellence balances supply and demand, resulting in improved product availability, reduced supplier cost, and lower risk. This results in shortened lead times and deliveries that are on-time and in-full, raising both customer satisfaction and Clariant's profitability.

3.1. Advancing end-to-end supply chains and operational excellence

Clariant's customers express continual interest in moving forward and connecting their supply chains. Thus, Clariant is building integrated end-to-end supply chains, enabled by digital dexterity, technology, and an agile mindset. The aim is to translate customer requirements into rigorous demand planning, facilitated by statistics, machine learning, and demand sensing. This ensures continuous interlinkage of the commercial with the operational value chain.

In 2019, Clariant implemented tactical sales and operations planning cycles under the leadership of profit and loss owners to ensure profitable and proactive balancing of demand and supply. The company further developed and implemented an end-to-end supply chain management dashboard using the

Gartner Hierarchy of Supply Chain Metrics framework. The dashboard offers quick focus diagnostics while enabling deep dives for root cause analysis and solution definition, taking into account the delicate balance between service, cost, and net working capital. Clariant aims to further strengthen business planning to allow proactive monetized scenarios for business steering. The use of advanced analytics and tools in the organization will also help detect demand outliers and supply constraints in order to optimize network and logistics costs.

The Integrated Planning Landscape (IPL) and Inventory Health Checks optimized organization, capabilities, and IT tools and improved inventory performance throughout Clariant's operations. The Manufacturing Execution System (MES), rolled out in 2017, is a powerful tool that provides a real-time view of production status and enables continuous improvement.

3.2. Converting data into seamless processes

Digitalization offers plenty of opportunities to enhance operations. For example, in 2019, Business Unit Catalysts set up data infrastructure to gather information from different sources such as the SAP warehouse, the supply chain, the quality system, and production sensors and machines. By recording, cleaning, extracting, and modeling data, as well as connecting it with other information such as financial data, throughput, yield, and energy efficiency can be increased. Furthermore, the conversion costs of individual elements may be quantified. This big data analytics approach will be rolled out company-wide in 2020.

3.3. Nurturing agility

Customers across all markets are becoming ever more agile and expect the same from Clariant. In the past, large volumes with long lead times were the norm, while today small volumes and short lead times dominate business. By focusing on systematic demand and supply planning and the technology required to anticipate, detect, and directly react to production bottlenecks, Clariant is able to significantly reduce lead times. Projects to improve the operational chain are always run with a customer approach and divided into weekly work packages. Periodic feedback from users in the different Business Units, for example, in controlling, procurement, and production functions, is gathered, resulting in process adaptations where necessary. Clariant's efforts substantiate its reputation as a fast and reliable supplier.

3.4. Continuous cost saving and risk reduction in procurement

Clariant is embedded in an extensive global supply chain. In 2019, more than 6 800 vendors delivered raw materials worth CHF 2.6 billion to Clariant. Careful procurement is therefore vital in overall cost savings. In 2019, Clariant analyzed spend effectiveness in areas such as direct spend for chemicals, IT, site services and maintenance, and energy. The company identified a long-term savings potential of around CHF 135 million, of which CHF 50 million were already realized by 2019. Further, the company is developing the category strategies in alignment with the Business Units for direct spend.

In 2019, Clariant's efforts to reduce supplier risks was recognized externally. The company's integrative approach helps to select and manage suppliers meeting strict sustainability and risk expectations. Thus, Clariant received the World Procurement Award 2019 for the implementation of a holistic risk management process. Among other elements, the jury was impressed by Clariant having real-time information available to assess its supply chain. → **PAGE 64**

3.5. Sustainability supports operational efficiency

Sustainability topics are also gaining in importance for Clariant's operations. Clariant has continually embraced sustainable production as a driver for cost savings not only by increasing yield and reducing emissions, but also to save energy. The Production System Yield, Energy, Environment (YEE) and the eWATCH™ program both support these efforts. Through YEE, production processes and units are analyzed in order to optimize energy use, while eWATCH™ creates opportunities for savings by analyzing energy consumption across Clariant's entire operations. The environmental targets 2025 quantify Clariant's ambition to reduce energy consumption, greenhouse gas emissions, waste production, and water use, and drive environmental protection and operational efficiency. → **PAGE 178**

3.6. Safe and healthy operations

Running a safe operational chain is not only a stipulation of a responsible employer; it also minimizes disruptions in production. Clariant's ambitious health and safety target of zero accidents reflects both of these factors and is a top priority in operations. In 2018, »Safety Moments« – brief documents containing safety messages – were rolled out internally and used at the beginning of meetings to raise safety awareness. The lost time accident rate (LTAR) remained stable at 0.15 days lost per 200 000 hours of work in 2019.

→ **PAGE 160**



Manage Risks Faster and Smarter

⁺ Digitalization

»No more guesswork«

Artur Kulawiński, Market and Risk Manager at Clariant, talks about the company's holistic approach to digital risk management along the entire supply chain.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 9 and SDG 12.

Read more on → PAGE 24



Artur, Clariant won two awards in 2019 for its procurement. What is it you're doing so well?

Both those awards essentially recognize the way we look at sustainability and risk along our entire supply chain – what we call modern holistic risk management.

Why is there a need for that?

Supply chain risk management has never been more important. That is especially true for the chemical industry. Ever tighter regulation and increasing awareness of sustainability are reshaping our industry. Managing the risks that can jeopardize compliance with these requirements throughout a global supply chain is hard. But it is vital to our business. So Clariant established a system that looks at risks across all Business Units, involves everyone in procurement, gives deeper and more useful insights, and leverages all the best digital tools available today.

What makes Clariant's risk management »holistic«?

The new emphasis on supply chain risk was initially driven by our efforts towards sustainability. But we decided to actually take a broader view. Our system very methodically monitors all the different kinds of risks. Plus, it not only aggregates information in real time but also actively works to eliminate or mitigate those risks together with our Business Units.

What are some of those risks?

First, there are production and supply risks, anything and everything that can disrupt our ability to deliver products. That can be natural disasters, strikes, or accidents – either at a plant or in transport. Then, there are environmental risks. Those are issues our suppliers may have in terms of environmental protection at their sites, for example. That can be a question of where their sites are located, but also of how committed they are to environmental safety and protection. There are also financial risks that can arise from bankruptcy or just generally poor financial health of a supplier. And finally, there are reputational risks, if any of our suppliers were accused of, say, bribery or child labor. That risk has increased significantly with the advent of social media.



001

001 Artur Kulawiński
Market and Risk Manager

002 New premises
The new headquarters for Clariant's
Global Business Service in Lodz,
Poland



002

Awards in 2019

Acclaimed procurement



Markus Mirgeler
Head of Group
Procurement
Services

In 2019, Clariant earned two awards for its novel approach to supply chain risk management. The first was the EcoVadis sustainable procurement leadership award for having the »Best Internal Stakeholder Engagement.« The second was the World Procurement Award 2019 in the »Supplier Risk Management« category. In both cases, the awarding organizations highlighted Clariant's efforts to go beyond its procurement team and instead involve multiple internal and external stakeholders for a more integrated supply chain process. »Integrating sustainability and risk management along our supply chains is a cross-departmental responsibility and requires a broad commitment in order to be a success,« says Markus Mirgeler, Head of Clariant's Group Procurement Services. »So we are very proud of getting this great recognition and see it as an inspiration to keep pushing ourselves.«

Are all of Clariant's Business Units equally affected by those risks?

That depends on the materials and the markets they deal with. Some face more environmental, others more financial risks. Some industries are prone to force majeure incidents like natural disasters simply because of where their raw materials come from. And some, such as our Business Unit Industrial & Consumer Specialties, are particularly close to consumer brands, which are very sensitive to reputational risks.

What role does regulation play?

We are a chemical company, and we work with a wide range of highly regulated industries, including food, automotive, cosmetics, pharmaceuticals, consumer goods, and agriculture. So we need to be compliant with hundreds of thousands of regulations, which are also constantly evolving. Every quarter sees a significant increase and tightening in regulations.

How has that impacted Clariant in the past?

In China, for example, we've lost suppliers literally overnight. I remember a case where a plant was closed because, according to new regulations, the site was now too close to a river. We were basically informed that our supplier didn't exist anymore – or would at least need a couple of years to relocate production.

How did you respond?

In that case, Clariant had to discontinue the product in question. The material we needed involved protected intellectual property, and there was no alternative and no other source to turn to. That shows how immediate and far-reaching the impact can be. And this kind of thing has happened more than once.

Is that a problem specific to China?

No. The regulatory environment is different everywhere. But each country has its own risks. We have long-standing relationships with suppliers in Germany, for example. That can backfire just as well.

When you're relying on a supplier via pipeline, all it takes is one small incident for production to grind to a halt. Or think of the Rhine. Droughts and low water levels have in the past made parts of it unnavigable for weeks at a time, crippling parts of the chemical industry concentrated along its banks because they rely on it for cooling and transportation.

Single sourcing is an obvious risk. Is Clariant working on that?

Absolutely. And not just for risk mitigation. It's also hard to cut costs and increase competitiveness when you are locked in like that. So we work to combat single sourcing, most importantly by helping and challenging our Business Units to find alternatives. But that is a long-term process. It can take up to two years to qualify an alternative. And sometimes there simply isn't one. Then, all you can do is build a stock and prepare to react to any disruption as fast as possible.

How does speed help?

If we are the first to know about a potential disruption, we might be able to very quickly acquire any available stock before it runs out or the price goes up.

Has that happened?

Yes. Not too long ago, we had a case where a procurement manager received an alert about a fire at a facility of one of our suppliers. He wasn't able to contact his key account manager, so he took mitigating measures into his own hands and acquired a safety stock just before the price jumped by more than 20 %.

How do you prepare for these kinds of events?

That is where our holistic approach comes in. Identifying risks is one thing. Managing them is another. We prepare for specific scenarios by establishing action plans together with our procurement managers.

What helps you predict risks?

The traditional and most thorough way to know your vendors is to audit them. And that is something we do. But with about 66 000 listed suppliers, there is no way of covering them all. And an audit only gives you a snapshot anyway. It doesn't tell you much about what might happen next week or next month. That's why we rely on digital technology and artificial intelligence, AI, to gather a lot more information in real time. We use a digital tool that lets us monitor more than 300 000 online sources – anything from news outlets and social media channels, to insurers and credit information providers, to government agencies and NGOs.

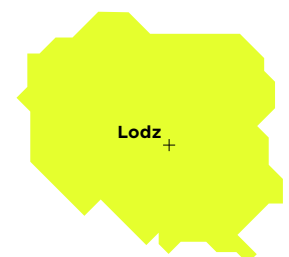
How does artificial intelligence help?

The tool uses about 100 indicators to screen those 300 000 sources for information on around 8 000 of our direct, indirect, and logistics vendors. Without the use of AI, there is simply no way of cutting through the noise and filtering relevant information. AI also helps eliminate trolls and misinformation. That way, we get relevant alerts in real time about any event that may impact our supply chain, and I make sure that information – along with a link to the source – reaches the right person to create an action plan.

What other tools are you using?

At the most basic level, we've established a process of self-assessment for our vendors with the help of Integrity Next. This service allowed us to check more than 12 000 of our medium- and low-spend vendors within the first few weeks. We found that 6 % of those required further auditing, and we're currently extending this check to all our suppliers where assessment is needed.

POLAND



**Instant alerts**

Artur Kulawiński is able to monitor thousands of suppliers across the globe.

»Mitigating the impact of a single major event easily covers the cost of the entire program for a year.«

What about those vendors that are especially critical to Clariant's business?

For our most critical vendors, we have a complete system in place that provides an individual risk scorecard. We aggregate all the information we can gather from our digital tools, from external evaluations by tools such as EcoVadis and the Together for Sustainability initiative, as well as from our own audits. We add the input of anyone at Clariant who's ever dealt with the company subject to the assessment. That gives us about 100 different risk indicators and an aggregated risk score for each of those critical vendors.

Who works with that information?

We have about 200 active users. As a kind of gatekeeper, I manage the database and ensure that all collected information and the scorecards are made available to anyone within procurement. For the most part, it's procurement managers, tactical buyers, regional heads, and category managers who use the information on a regular basis.

What does that risk score look like?

We boil it all down to a score between 0 and 100, where 100 represents a disrupting event happening right now. The score is updated in real time. So while a disruption brings up the score immediately, it will also revert back to its previous level as soon as we hear the issue has been dealt with adequately.

What's the average score?

The average score is in the mid-50s. Anything below 40 is considered good or very good. The best scores are in the low 20s. But there is no business without risk, so there is no supplier scoring anywhere near zero.

How does this holistic risk management affect Clariant's bottom line?

That is not easy to measure. We obviously can't tally a number of yearly disruptions to avoid. But we confidently estimate that every dollar spent on prevention or mitigation will save roughly five dollars in damage. Or look at it this way: A single major event, like the one we had with the fire, easily covers the cost of the entire program for a year.

What are your goals?

There is always room for improvement. For example, by fine-tuning what we monitor, what is relevant, and to whom. We're working to cover even more of our spend and to identify further critical suppliers. Another aim is to bring down the average risk score to around 35 – 40 by the year 2022 and to significantly decrease our rate of single sourcing. In a way, that is the real beauty of the system: having those numbers to work with. Risk has always been something you had to take into account in procurement. What we've done is take out a lot of the guesswork. We're relying on data rather than a gut feeling.



Value Creation in the Business Areas

In the chapter »Value Creation in the Business Areas,« Clariant illustrates how each Business Area contributes to the company's overall success. By implementing the three value-creation processes - Idea to Market, Market to Customer, and Customer to Cash - Clariant's Business Areas secure opportunities for sustainable market success. They capture major societal trends and market developments, leading to the creation of customer-oriented products and solutions that enhance Clariant's growth and profitability.

074	How Care Chemicals Creates Value
080	Advance Natural Ingredients
088	How Catalysis Creates Value
094	Be a Local Partner
102	How Natural Resources Creates Value
108	Help Cities Move Forward
118	Discontinued Operations

The high-value product range of Clariant's Business Areas serves multiple industries around the world. With innovative and sustainable solutions, Clariant responds to changing customer and market needs.

In 2019, despite challenging economic conditions and modest demand for industrial applications, Clariant's sales increased in local currency. Growing demand for environmentally friendly and need-focused products provided business opportunities in all Business Areas.

In order to stay ahead of the competition, Clariant unveiled the »Innovation Excellence & Business Incubator« unit in 2019, emphasizing the company's commitment to strong innovation management. With a well-filled innovation pipeline, a more digitalized R&D system, enhanced laboratory capacity, strategic partnerships, and close collaboration between the four Technology Platforms and the Business Units, Clariant is well positioned to develop value-adding solutions at unprecedented speed.

Further strengthening commercial and operational capabilities allowed the Business Areas to provide customers with improved value propositions at the best cost-performance ratio. Through cross-functional collaboration, data-driven customer segmentation, and the implementation of new digital tools, Clariant attained a holistic picture of the customer journey and was able to offer tailored solutions, thereby increasing sales effectiveness.

To shorten lead times and systematically match supply with demand, the Business Areas focused on optimizing planning, procurement, production, and delivery. This makes Clariant an agile and reliable supplier that provides a safe and healthy working atmosphere while also protecting the environment.

Business Area Care Chemicals

comprises the Business Unit Industrial & Consumer Specialties (ICS) as well as New Businesses, which encompass Electronic Materials and Additive Manufacturing/3D Printing. These businesses focus on high-margin and low-cyclicality segments. Care Chemicals provides specialty chemicals and application solutions for the

consumer care market, industrial applications, base products, food ingredients, and encapsulation technologies. The Business Area follows lifestyle-driven megatrends and strengthens Clariant's position as a supplier of sustainable products.

Business Area Catalysis

comprises the Business Unit Catalysts and the Business Line Biofuels & Derivatives. It develops, manufactures, and sells a wide range of catalyst products for the chemical and fuel industries, which contribute significantly to value creation in customers' operations, ensuring finite raw materials and energy are used efficiently. In addition, Catalysis is at the forefront of new market developments for bio-ethanol.

Business Area Natural Resources

comprises the Business Units Oil and Mining Services, Functional Minerals, and Additives. It is characterized by high growth and a strong megatrend orientation. Main drivers are the rising demand for high-value-added specialty chemicals used in the oil, mining, food, and packaging industries and the increased consumption of oil, gas, and base metals, driven by fast-growing economies. Additives provides highly customized solutions for the plastics and coatings as well as for consumer industries serving megatrends such as mobility, digitalization and sustainability.

Discontinued Operations

Since July 2019, the Business Units Pigments and Masterbatches are reported under Discontinued Operations, as they are intended to be sold by the end of 2020. Closely tied to GDP growth, they provide highly diversified end applications to the construction, automotive, electronics, and health care industries. With their innovative applications for biodegradable, compostable, and recyclable plastics, they contribute to the transition to a circular economy.

How Care Chemicals Creates Value

The Business Area Care Chemicals encompasses Industrial & Consumer Specialties (ICS) and New Businesses. With high-performing ingredients, formulation expertise, and an integrated value chain, Care Chemicals concentrates on markets with high margins and short cyclicity and responds quickly to consumer-driven trends.

1. Addressing market developments and changing consumer behavior

Growing consumer demand for sustainable, safe, and convenient ingredients creates a favorable business environment for Business Area Care Chemicals. With its high-performing, sustainable products and customized solutions, Clariant meets global market expectations while also addressing the rising importance of fulfilling local customer needs. → **FIGURE 001**

001 CARE CHEMICALS

OVERVIEW

The Business Area Care Chemicals comprises the Business Unit Industrial & Consumer Specialties (ICS), which serves customers in the personal care, home care, paints and coatings, and crop solutions markets, and New Businesses.

APPLICATIONS

Business Unit Industrial & Consumer Specialties

- Automotive fluids
- Aviation
- Construction
- Crop solutions
- Gas treatment
- Heat transfer fluids
- Industrial and home care

New Businesses

- Industrial lubricants
- Paints and coatings
- Personal care
- Special solvents

- Additive Manufacturing/3D Printing
- Electronic Materials

PRIORITY SDGs

- SDG 2 Zero Hunger
- SDG 3 Good Health and Well-being;
- SDG 12 Responsible Consumption and Production
- SDG 6 Clean Water and Sanitation
- SDG 15 Life on Land

The Personal Care market is confronted with a dynamic and demanding marketplace as end-consumers increasingly challenge brand owners to create positive social and environmental impacts. By developing new solutions for an increasingly diverse population, Clariant is helping to transform the beauty industry into a more innovative and multifaceted industry.

In the Industrial and Home Care market, the rise of e-commerce has increased demand for easy-to-use solutions that balance customers' concerns about size and weight to ship such end products while maintaining the added benefits. In the industrial lubricant area, despite new tariffs and their impact on the global manufacturing industry, Clariant was able to respond to the sustainability and electrification trends by providing environmentally friendly solutions at the best cost-benefit ratio.

With increasing regulatory requirements regarding eco-label criteria and discerning consumer preferences, the Paints and Coatings business capitalized on the demand for safer and more ecological ingredients by offering an extensive portfolio of neutralizing additives, wetting and dispersing agents, emulsifiers, and products to formulate biocide-free paints, which contribute to a healthier indoor environment.

The Crop Solutions business has been affected by new technologies, regulations, trade tensions, and increasing demand for bio-based solutions. Thanks to digitalization, farming practices now require new and adapted solutions, such as drone technologies. With specialized adjuvants, Clariant aims to exploit the full potential of drone application and reduce dose rates and water volumes, leading to considerable cost savings for farmers

and optimized yields in the harvest season. Further, with its previous investment in a modern crop greenhouse, Clariant is now in a strong position to benefit from the continuing global trend toward sustainable crop protection for the world's increasing nutrition requirements.



2. Combining innovation and sustainability

Care Chemicals is striving for innovations in the sustainability field by finding new solutions based on renewable resources and developing more environmentally friendly substitutes. Creating disruptive innovation requires a diversified toolset, the use of new technologies, and close collaboration among different corporate functions.

Business Area Care Chemicals aims to increase the use of renewable raw materials and achieve an innovation pipeline that is predominantly based on renewable feedstock coming from agricultural waste streams. In 2019, this share was increased again.

As customization and sustainability became predominant in the Personal Care sector, Clariant developed a set of substantiated, naturally active ingredients with scientifically proven high performance. This includes the award-winning B-Circadin™ and Epseama®. → PAGE 80

Epseama® for skin rejuvenation

The new active ingredient Epseama® pioneers the targeting of long non-coding RNA nc886 to rejuvenate skin self-renewal and self-defense abilities and preserve skin youth. It is extracted from the seaweed *Laminaria japonica* (Kelp or Kombu), known as the »super-food of the sea.«

Through its worldwide network of local partners, Business Area Care Chemicals has access to age-old plant knowledge and exotic biomes around the globe. Complemented by transparent sourcing, responsible cultivation, and advanced formulation expertise, Clariant has developed solutions that combine sustainability and performance.

In the paints and coatings business, as trends are shifting from solvent- to water-borne systems, Clariant continued to reformulate and develop dispersants for products that are free from ingredients under scrutiny, such as biocides and alkylphenol ethoxylates (APEO)/nonylphenol ethoxylates (NPEO). Dispersogen® PLF 100, for instance, is APEO/NPEO-free, low in semi-volatile and volatile organic compounds ((S)VOCs), and free of biocides. It further improves performance and efficiency by suppressing leaching effects in paints.

3. Becoming a preferred innovation partner

To increase the speed and quality of innovation, Business Area Care Chemicals expanded its pilot of the Innovation Garage (iGarage) to develop new products and solutions according to customer needs. Two new iGarages were completed while one iGarage was conducted in collaboration with a customer from the Industrial and Home Care business. → PAGE 141 Within a short time, the combined team created early-stage prototypes using concepts and technologies from both companies and tested them with real customers. Based on the exciting outcome, the companies will investigate next steps to further develop the concepts into new products. The successful collaborations significantly enhanced trust in the developing relationships between Business Area Care Chemicals and major consumer care brand owners.

»By monitoring and anticipating consumer trends, we develop sustainable solutions that do not compromise on performance and place our customers ahead of the market.«

Vincent Gass

Head of Global Marketing, Business Unit Industrial & Consumer Specialties



MARKET TO CUSTOMER

4. Launching high-performing and eco-friendly solutions

Product launches in 2019 included a number of solutions that meet customer needs for safe and natural products.

Clariant launched its new »Envisioning Beauty« platform in 2019. Based on market and customer insights, Clariant defined five product clusters – Actives, Functional Claims, Sensorial Effects, Preservation, and Naturals – to help customers differentiate their cosmetics as sustainable, inspiring, and easy to use.

In 2019, Clariant introduced its new plant-based Plantasens® Flash 80 and Flash 100. The two ingredi-

ents represent a major milestone for formulations as they are not only eco-friendly and affordable, but also high-performing market alternatives for silicone. Another highlight was the launch of the new CareMag™ D, which draws on Dead Sea salts and is a suitable replacement for alu-

minium derivatives in deodorants. The product enables aluminum-free, alcohol-free, and paraben-free deodorant formulations. Moreover, NeutroTain® DMG was launched. The 75 % sugar-based, renewable, and readily biodegradable neutralizing agent is used for hair and skin products. In the Home Care business, Clariant unveiled the new concept CleanJoyable, which is comprised of TexCare® SRN 260 and EcoTain®-labeled GlucoPure® Sense and Aristocare® Smart. GlucoPure® consists of 95 % renewable raw materials.

→ PAGE 149

Clariant Naturals

The flagship platform enables manufacturers to create even 100 % natural formulations. The definition of »natural« is, for example, based on the ISO standard 16128, which uses the widely accepted Renewable Carbon Index (RCI) as its main metric to reflect the degree of naturalness.

5. Capturing regional trends to strengthen customer centricity

In 2019, customer events and innovation workshops across the globe helped Business Area Care Chemicals develop client-specific solutions. The Business Area intensified its focus on the life cycle of substances that are or will be under public concern or scrutiny, to develop substitutes that will ensure its customers are ahead of their competitors. The cosmetics industry, for instance, is focusing on products that are preservative-free and use minimal water. To address this major trend, Clariant launched ReMAGINE, a water-free platform containing six formulations for daily personal care routines. The formulations contain little or no water and are a successful follow-up to last year's »Essence« initiative, which delivered 15 formulations without questionable ingredients that achieved the same performance and sensorial benefits as conventional ones.

Through the trend-monitoring platform BeautyForward®, Business Area Care Chemicals can respond quickly to market trends and customer needs in the personal care sector. For the third edition of BeautyForward®, Clariant went from a global to a more local perspective, concentrating on regional formulations. In 2019, Clariant identified five regional trends and provided illustrative full formulations.

The presence of sales, technical, and marketing expertise across the globe allows Business Area Care Chemicals to reveal regional and local market insights. In 2019, a Consumer Care Innovation Center in the New York City area, United States, was inaugurated to develop solutions derived from customer needs in North America. In the testing center, lab results can be correlated with actual consumer testing, and

the collaboration space allows interactive and creative thinking. This center enhances Clariant's innovation capabilities to leverage customer formulations and reinforces beneficial relationships in North America.



CUSTOMER TO CASH

6. Connecting the supply chain

In 2019, Clariant's Manufacturing Execution System was further rolled out to provide a real-time view of the production status. By applying analytical methods and data-driven tools, Business Area Care Chemicals further optimized the production processes. For example, it conducted a pilot project to increase efficiency in the supply chain by applying Radio Frequency Identification technology (RFID). Also, Business Area Care Chemicals explored the possibilities of automation and digitalization for its supply chain activities in order to optimize process control, reduce wait time in production, and minimize the risk of errors by better connecting and integrating its planning tools. In addition, the newly established global Supply Chain Team supported the harmonization and optimization of supply chain processes around the globe.

To improve traceability and transparency in the supply chain, Business Area Care Chemicals is looking into integrated tracking system solutions that provide customers with timely information about orders and shipments. This supports Clariant's efforts to connect suppliers with end customers.

Translating five regional beauty trends into concrete formulations

USA - BLUE GOLD

Due to increasing water scarcity in North America and demand for water saving products, Clariant designed an exceptionally gentle Polish Powder Cleanser with no sulphates, betaines or fragrances that uses up to 60% less water compared to liquid cleanser.

BRAZIL - #CONSCIOUSBEAUTY

The Peace & Love Mineral Sunscreen SPF 30 is free from chemical UV filters, silicones, and fragrances and adapts to all skin types. Being vegan and 75% plant-based, this sunscreen is COSMO-certified and enables natural beauty care routines.

CHINA - GUARDIAN ANGEL

To protect the skin against sun, environmental pollutants, and oxidative stress, Clariant developed Urban Skin Age Defense Lotion Broad Spectrum SPF 50 PA+++.

FRANCE - REDEFINING EDEN

Clariant's My Synchronizer Face Roll On is an anti-fatigue face roll-on characterized by a watery and silky sensory that is targeted to all genders, thereby countering conventional gender stereotypes in skin care.

INDONESIA - BLUE GOLD

To respond to Indonesia's lacking water infrastructure, Clariant designed the Beautiful Days Perfume Body & Hair Balm from 100% natural ingredients. With 0% alcohol, it uses 90% less water when compared to a regular liquid splash.

7. Enhancing capabilities and increasing capacities

To further improve product quality and quantity at its ethylene oxide production plant in Gendorf, Germany, Business Area Care Chemicals added a production line of alkoxyates and installed a new distillation column that will operate from 2020 onward. In addition, Clariant and Saudi Kayan are currently evaluating the potential of an alkoxyates joint venture.

8. Improving the environmental footprint in operations

Business Area Care Chemicals continues to ensure sustainability and environmental protection alongside Clariant's growth strategy. In 2019, individual sites implemented several measures to improve their environmental footprint. Through improved chilled water systems and compressed air systems, as well as the installation of LED technology for illumination, Business Area Care Chemicals was able to decrease its electricity consumption. Steam consumption was also reduced by optimizing the seasonal control and temperature level of water systems as well as improving the integration of steam condensate. To reduce water and wastewater, the recovery rate of water demineralization units and waste gas treatment were optimized through a better separation of rainwater.

9. Enhancing safety along the entire supply chain

Business Area Care Chemicals places a high priority on safety. Frequent audits at all plants contributed to rigorous improvements in product quality, environmental protection, health and safety precautions, and reduced accident risk. In 2019, the Business Area undertook important steps toward Clariant's goal of zero accidents. The AvoidingAccidents program was implemented at all sites while refresher trainings were conducted at all sites that had already implemented the program. The newly inaugurated wastewater treatment plant in Bonthapally, India, also successfully launched the Avoiding-Accidents program, which will be completed at the beginning of 2020. At the sites in Suzano, Brazil, and Gendorf, Germany, the Business Area implemented the Clariant Global Operational Discipline initiative. The initiative consists of safety trainings and an awareness-raising campaign. Other sites will follow over the course of 2020.

To ensure that safety is also a priority in the supply chain, the site in Suzano, Brazil, developed a new contractor management procedure to safeguard the occupational health and safety of its contractors' employees. The system will be implemented at the beginning of 2020. Additionally, Business Area Care Chemicals continued to equip its ethylene oxide transportation units, which carry potentially harmful substances, with real-time information on safety conditions such as temperature and location.

Targets

5-7%

Growth potential per year

19-21%

EBITDA target margin

Performance

INPUT

 **2.9%**

R&D spend of sales

 **857**

Raw material procured in CHF m

 **> 70**

Active innovation projects

 **13**

Production sites

 **2714**

Number of raw materials procured

OUTPUT

 **1600**

Sales in CHF m

 **-1%**

Growth in local currencies

 **17.6%**


EBITDA margin after exceptional items

 **0.96¹**

Production volume in m t

People

INPUT

 **32172**

Training hours

 **1672**

Raw material suppliers

OUTPUT

 **2614**

Staff in FTE at year-end (2018: 2541)

Planet

INPUT

 **757.2²**

Energy consumption in m kWh







OUTPUT

 **65.4²**

Waste in thousand t

 **209²**

Greenhouse gas emissions in kg/t production

-  Financial capital
-  Intellectual capital
-  Manufactured capital
-  Human capital
-  Relationship capital
-  Natural capital

¹ For 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.
² Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017. In the interim years, including 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.



Advance Natural Ingre- dients

+ Product Stewardship/
Sustainable Chemistry

Decoding Chinese beauty

The Chinese beauty market is growing and evolving. Brands vying for a share need to understand both natural actives and the consumers that buy them.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 3 and SDG 15.

Read more on → PAGE 24



The video is shaky, obviously filmed on a smartphone. But what Fang Junping lacks in production value, he easily makes up for in confident charm. His lab coat lends an additional air of scientific authority as he explains to a giggling woman

off camera what goes into her whitening cream. It's one of Fang's early videos that went viral on Weibo, China's answer to Twitter. And it's what kick-started his career as a KOL, or »key opinion leader,« as China's internet influencers are called.

Today, Fang (better known by his online alias »Junping Big Devil«) has over 8.7 million followers on Weibo. His videos are snappy and better lit these days but their premise is unchanged. Fang is part of a movement of self-proclaimed chen fen dang (成分党), which loosely translates to »ingredient geeks.« They claim to scientifically decode the ingredient lists of popular cosmetics and to let consumers in on what really works and why. Their audience is huge and eager to learn. And the industry itself is paying attention.

The Chinese cosmetics market is the world's second largest, topped only by the United States. And it just keeps on growing. According to Euromonitor, a market

research firm, Chinese consumers spent over 212 billion yuan, or around CHF 30 billion, on skincare products in 2018. That is a year-on-year growth of more than 13%. What's more, Euromonitor sees unmet potential worth over CHF 133 billion in retail sales for beauty and personal care overall. No wonder the industry and most global brands have turned to China for growth. However, Chinese consumers are very particular about what they want. And, as ingredient geeks will tell you, they won't be fooled by simple marketing jargon.

According to a 2018 study by Clear, a global marketing strategy consultancy, 69% of Chinese skincare consumers are willing to pay a premium for natural ingredients. At the same time, other studies show that effectiveness is their top priority. »Ten years ago, Chinese consumers might have gone for a product, say a skin cream, because it contained some floral extract that appealed to them on an emotional level,« says Christoph Yu, Head of Marketing for China and Asia-Pacific for the Business Unit Industrial & Consumer Specialties (ICS) in Shanghai. »Today, they want to know exactly what it promises to do to their skin on a cellular or even a molecular level. They still want natural ingredients. But they want science and high tech on top of that.« Clariant's Active Ingredients business, a subdivision of ICS, caters to those tastes. Its claim: »Powered by nature. Advanced with science.«

001 Christoph Yu

Head of Marketing China and
Asia-Pacific, Business Unit Industrial &
Consumer Specialties

002 Shanghai

Urbanization is reshaping Chinese
society. It also drives new trends
in personal care.



001



002

New markets

Going beyond China



Sophia Kim

Business Development Manager Asia-Pacific for Active Ingredients, Business Unit Industrial & Consumer Specialties on expanding Chinese brands and some specific needs in South Asia

Sophia, with the Chinese beauty industry growing and innovating so fast, do you see its domestic brands going global?

It is definitely possible to see trends coming from China in the future. Today, Chinese consumers still very much look to South Korea and Japan for trends, and I don't see K-Beauty and J-Beauty being replaced by »C-Beauty« anytime soon. However, that doesn't mean Chinese brands aren't expanding abroad.

Where else are Chinese brands making their mark?

We see them doing well in India, for example. That's a sizeable emerging market where the Chinese are very competitive. And Chinese brands are strong in countries like Malaysia and Indonesia. These countries are promising if you can adapt and cater to their unique requirements.

What are some of the different needs in these countries?

Price is one thing, obviously. But take Indonesia, the world's most populous Muslim country. Here, it's vital to address specific consumer needs. When wearing a hijab, for example, you need to treat your hair and scalp very differently. And brands have to document that all their ingredients and production processes meet local halal requirements. That's another thing Clariant can help its customers with.

Unique natural extracts

Active Ingredients was only established in 2017. It specializes in natural extracts that tackle very specific cosmetic issues. The offices of the business are located in the French city of Toulouse. That's also where it does most of its research to establish and substantiate product claims. But ever since Clariant joined forces with BioSpectrum, a Korean manufacturer of active ingredients, the company has had a strong foothold in East Asia too. That has proven especially helpful in finding naturally occurring molecules that not only show the desired effect but will also resonate with Asian consumers.

Many of the natural extracts Active Ingredients sells are sourced on Jeju, a volcanic island off the coast of the South Korean mainland. It is home to several world heritage sites and more than 1800 different plant species – many of which don't grow anywhere else. »The plant extracts we find on Jeju are very unique in their composition, but the plant species themselves are also well known in Traditional Chinese Medicine,« says Sophia Kim. »Add to that our highly scientific approach to establishing and substantiating their beneficial effects on the skin, and you have a package that chimes well with Asian and especially Chinese consumers.« Kim recently joined Clariant's Active Ingredients team as a Business Development Manager for Asia-Pacific. She has close to a decade of experience in the actives industry as well as degrees from Korean, Chinese, and American universities. Bridging cultures is part of her job for Clariant too. She works closely with Yu and the ICS marketing team in Shanghai but is herself based in Seoul.

South Korea has in recent years emerged as one of the most innovative cosmetics markets worldwide, alongside Japan and France. K-Beauty, as it's widely known, has garnered huge attention with »a certain gentle, nature-meets-technology ethos,« as the Wall Street Journal once described it. Women – and some men – all over the world have adopted elaborate multi-step K-Beauty skincare routines. The idea being that the right treatment can create a complexion so healthy, even, and beautiful that there is no need to hide anything with concealers and foundations.

»China is really close to South Korea, and not just geographically,« says Kim. »We're dealing with very similar skin types and hair structures. Consumers in both our countries are deeply familiar with Traditional Chinese Medicine, and they're concerned about some of the same environmental factors that cause skin irritation and premature aging.«

Wary of air pollution

One traditional concern particular to China and some of its surrounding countries is protection against UV rays, but not just because they are a major cause of skin damage and premature aging. A pale, white complexion is seen as the hallmark of a glamorous woman in China. Darker-skinned women can even feel stigmatized. As a result, lightening and whitening products are a huge market. And Clariant's Active Ingredients does offer natural products that help repair the damage done by UV light and can even lighten the skin naturally by, for example, reducing the synthesis of pigment in the skin's melanocytes. However, the business has recently focused on skin issues that are more specific to modern life in urban China.

»Anti-pollution skincare is a big trend,« says Christoph Yu. »People are very much aware of the impact that airborne pollutants have on their health and their skin in particular.« Clariant's answer to this is called RedSnow®. It's a natural active ingredient derived from floral extracts of Camellia Japonica, the common camellia. »We use a very unique variety grown on Jeju Island,« says Kim. »It's not just a beautiful red flower that actually blooms in winter, hence the trademarked name. It's also especially rich in the type of molecule we look for.« To put that in ingredient geek terms: RedSnow® contains protocatechuic acid, a type of phenolic acid with strong antioxidant properties. It also blocks the cell's aryl hydrocarbon receptors, or AhR, which are triggered by pollutants such as particulate matter and heavy metals in the air. In short, RedSnow® helps if bad air makes your face red and itchy. Another active ingredient, called Eosidin®, specifically targets the negative effects of indoor pollution. It's derived from a certain variety of unripe citrus. These are gathered during pruning and previously went unused, which makes Clariant's product especially sustainable.

»These products have gotten a lot of attention because they are highly effective, but also because they tell a great story,« says Alexandre Lapeyre, Global Technical Marketing Manager for Active Ingredients. Stories matter. They help brands stand out. That's especially important to up-and-coming local brands in China. »There's a huge difference between today and when I was visiting Chinese trade shows eight or even five years ago,« says Lapeyre. »They're teeming with emerging local companies that have great booths and very professional marketing. They're really inspiring to talk to.« The top three global players in China, Procter & Gamble from the United States, L'Oréal from France, and Shiseido from Japan, together take up a signifi-

cantly smaller share of the market in China than they do globally. Homegrown and small brands are strong. Yu sees these »local heroes,« as he calls them, as especially nimble and open to new consumer needs. »They are our main customer base in China, and they're extremely agile. These companies really have their ear to the ground,« he says. The fact that Chinese consumers tend to be less loyal to brands in general and more open to innovation works in their favor.

Never too young for antiaging

Digitalization is another reason why smaller brands are making their mark. Social media and e-commerce are huge in China. Here, the battle is not about shelf space, but more about attention. The role of department stores and traditional advertising is shrinking. And that's true not just for the young generation. The silver economy of affluent consumers is growing, and seniors are surprisingly tech-savvy. According to Daxue Consulting, around 64% of seniors on JD.com, China's second largest online retailer, do their shopping on mobile devices. Meanwhile, China's young and mostly less affluent »skintellectuals« invest a significant proportion of their salary in skincare. But they pour even larger chunks of their free time into researching the most effective ingredients and the best deals – relying on KOLs to guide the way. Most recently, highly concentrated active ingredients have been creating a buzz on Chinese search engines like Baidu.

CHINA & SOUTH KOREA



New technology

Milking plants

Growing plants in aeroponic conditions allows PAT to harvest active natural compounds directly from their roots.

A new collaboration helps Clariant discover new active ingredients and makes harvesting them more sustainable.

Plants absorb and store vital nutrients in their roots. So it is no surprise that these roots often are also especially rich in some of the biochemical compounds that can prove valuable in cosmetics and pharmaceuticals. Even so, roots are often overlooked as a source for active ingredients. One reason is that they are harder to harvest than stems, leaves, and fruits. And they are almost impossible to obtain without destroying the whole plant, which makes their harvest less sustainable. Clariant's latest strategic collaboration in research and development is set to change that.

In 2019, Clariant joined forces with Plant Advanced Technologies (PAT) based in Nancy, France. As a university spin-off, PAT has perfected technologies to harvest plant extracts directly from the root. For one, PAT cultivates its plants in aeroponic conditions without the use of soil or any other substrate. That way, the roots stay easily accessible. PAT's proprietary milking technology then encourages the roots to synthesize the desired phytochemicals directly. This not only yields especially high concentrations and more active extracts than any other method, but it is also nondestructive and thus allows for several harvests per year. That way, PAT is able to produce natural extracts with a substantially smaller ecological footprint and does not compete with agricultural food production.

One thing that apparently never goes out of fashion in China is antiaging. While some parts of the Western world proclaimed »the end of antiaging,« with brands adopting age-positive messages, China is still obsessed with eternal youth. A common refrain is that Chinese women are never too young for antiaging. The hope is to maintain a youthful appearance by starting young and investing early.

Clariant's most recent innovation, called Epseama[®], ties all these trends together. It's the first active ingredient to directly target a long non-coding RNA in order to fight three main causes of aging: photoaging, chronoaging, and inflammaging. And of course it's derived from natural sources. In this case, it's *Laminaria japonica*, a brown seaweed or kelp. As »kombu,« it's a staple in Traditional Chinese Medicine as well as in many cuisines across East Asia. »It's sometimes referred to as »the superfood of the sea« because it's so full of vitamins and minerals,« says Kim. Clariant uses sustainable »ugly-food« sourcing by purchasing only the cuts that aren't square and regular enough for the food market. »Looks don't matter to us because, in Epseama[®], we use an extract that works on a much deeper level,« says Kim. »It contributes to boost the expression of a certain long non-coding RNA called nc886, which in women commonly decreases significantly after the age of 40.«

RNA, or ribonucleic acid, is central to any cellular activity, and nc886 has been found to play a role in collagen production, which is vital for smooth and supple skin. Or as the Epseama[®] brochure puts it, »the expression of nc886 inhibits the production of MMP-9, a collagenase that degrades collagen IV and increases the production of collagen IV, VII, and XVII, which are key components of the dermis-epidermis junction.« Now, there's something for »Junping Big Devil« and his fellow ingredient geeks to decode!

001 Alexandre Lapeyre

Global Technical Marketing Manager
for Active Ingredients, Business Unit
Industrial & Consumer Specialties

002 Superfood of the sea

Laminaria japonica is a staple both
in Traditional Chinese Medicine and
in many cuisines across East Asia.



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002

How Catalysis Creates Value

As sustainability becomes an imperative for businesses around the globe, Business Area Catalysis, which comprises the Business Unit Catalysts and the Business Line Biofuels & Derivatives, is thriving. With a clear focus on innovation and partnerships, the Business Area is underlining its commitment to offer high-performing catalytic and biofuel solutions to its customers.

1. Profiting from rising awareness for sustainability

With its innovative catalysts and adsorbents, Business Unit Catalysts delivers significant and sustainable customer value by driving higher production throughput, lowering energy consumption, and reducing hazardous emissions from industrial processes and combustion engines. → **FIGURE 001** Population growth and the rising standard of living in emerging countries are expected to double the demand for chemicals by 2030, simultane-

ously increasing the associated energy consumption. Thus, chemical production will have to be more efficient to achieve sustainable energy consumption. Business Unit Catalysts is confident in its ability to capitalize on these developments as its main products – catalysts – enhance sustainable and energy-efficient production.

For Business Line Biofuels & Derivatives, the world's growing efforts to fight climate change are paramount. To limit global warming, action to reduce greenhouse gas emissions is necessary, particularly in the transportation sector, where greenhouse gas emissions are increasing. Advanced biofuels present a low-emissions solution, and legislation around the world is fostering their proliferation. Advanced biofuels, also referred to as second-generation biofuels, are extracted from non-food crops, crop waste, or other residues. In over 70 countries, regulatory mandates for biofuels have

001 CATALYSIS

OVERVIEW

Business Area Catalysis comprises Business Unit Catalysts, which runs 14 production sites globally, and Business Line Biofuels & Derivatives. The applications for its product portfolio include chemical production, fuel processing, as well as custom catalysts. Business Line Biofuels &

Derivatives complements the offering with sunliquid®, a groundbreaking technology to produce biofuels and renewable raw materials from agricultural residues.

APPLICATIONS

Business Unit Catalysts

- Ammonia
- Custom catalysts
- Ethylene derivatives
- Fischer-Tropsch
- Fuel cell
- Fuel upgrading
- Gas processing
- Hydrogen
- Hydrogenation
- Methanol
- Off-gas treatment for chemical plants and stationary engines
- Oxidation

Business Line Biofuels & Derivatives

- Polypropylene
- On-purpose propylene, methanol-to-propylene (MTP)
- Refinery stream purification
- Olefin purification
- Styrene
- Zeolite powders
- Biocatalysis
- Cellulosic ethanol
- Cellulosic sugars
- Low-carbon advanced biofuels
- Residue-derived biomaterials

PRIORITY SDGs

- SDG 7 Affordable and Clean Energy
- SDG 13 Climate Action
- SDG 9 Industry, Innovation, and Infrastructure
- SDG 12 Responsible Consumption and Production

been established. In the European Union, for example, the Renewable Energy Directive (RED) II foresees a 3.5 % advanced biofuels use by 2030. India's administration mandated twelve second-generation ethanol plants to be built by 2022. In China, a nationwide mandate to achieve a 10 % renewable ethanol content in transportation fuels should be established with strong governmental support for non-food-based biofuels and second-generation ethanol plants. These legislation mechanisms are expected to drive demand for advanced biofuels, offering significant growth potential.



2. Advancing through innovation and collaboration

Investment in innovation is the cornerstone of success in the catalyst business. Business Unit Catalysts focuses its innovation activities on continuously increasing the efficiency, performance, and sustainability of its products. In recent years, a pronounced focus on research and innovation in China led Clariant to implement a new Research and Development initiative for catalysts in the country. As its

Supporting innovation and talent in China

In 2019, Clariant sponsored the »Young Scientist Award« at the National Congress on Catalysis of China. The prize recognizes researchers under the age of 45 for their outstanding contributions to catalyst technology.

production capacity and innovation efforts grow in the region, the company's local footprint continues to expand.

As an innovation leader and an independent catalyst supplier, Business Unit Catalysts forms partnerships

with leading process licensors and engineering partners globally. The combination of outstanding catalytic solutions and independent process technologies offers customers a convenient all-in-one package. An example of such a partnership is the collaboration with the engineering partner Wuxi Xiyuan to supply a joint production technology to formaldehyde plant operators. By 2019, the innovative solution based on Clariant's FAMAX® 200 DS catalyst is installed in six formaldehyde plants with an annual capacity of 825 kilotons of formaldehyde in China and India. Clariant and Wuxi Xiyuan also joined forces in innovative off-gas treatment solutions enabled by Clariant EnviCat® VOC catalysts and Wuxi Xiyuan technology for silver-based formaldehyde plants in China.

3. Maturing and modulating sunliquid®

Business Line Biofuels & Derivatives focused innovation activities on its flagship technology sunliquid®. In 2019, Clariant and ORLEN Południe signed a license agreement on sunliquid® cellulosic ethanol technology. ORLEN Południe is a member of the ORLEN Group, a leader in the fuels and energy markets in Central and Eastern Europe. This license agreement is another successful step toward the commercialization of the sunliquid® technology for advanced biofuels in Europe. ORLEN Południe plans to use the innovative and sustainable technology for project development and plant operation at its Jedlicze site in southeastern Poland, utilizing available land and the potential for integration with its existing petroleum refinery. Once inaugurated, the annual production capacity is planned to be 25 000 tons of bioethanol.

In 2019, Clariant also signed a Memorandum of Understanding (MoU) with the Chinese companies Anhui Guozhen Group and Chemtex Chemical Engineering on its sunliquid® technology. The MoU was followed by a license agreement at the beginning of 2020. The Chinese companies have agreed to form a joint venture with the aim to realize a full-scale commercial cellulosic ethanol production plant in Fuyang, China, which will have a 50 000 ton capacity with an option to double this output in a second phase. The cellulosic ethanol produced will be utilized in the Chinese regional fuels market as a gasoline additive to fulfill the national blending mandate.

FAMAX® 200 DS - a next-generation formaldehyde catalyst

The iron-molybdenum catalyst allows producers to achieve considerably higher productivity and profitability with increased efficiency and selectivity compared to traditional silver-based production methods. The catalyst's hollow, cylindrical shape reduces pressure drop over the catalyst bed by 10 - 15 % compared to conventional catalysts. This special design gives producers the flexibility to reduce energy consumption when operating at the same plant capacity or to increase production capacity at the same energy costs.

At the pre-commercial plant in Straubing, Germany, Business Line Biofuels & Derivatives successfully tested the energy crop miscanthus as a feedstock for bioethanol production. INA, Croatia's leading oil and gas company, has chosen sunliquid® to assess usability of miscanthus for conversion into cellulosic sugars and ethanol within the EU-funded GRACE project. These tests constitute an important milestone for upscaling sunliquid®, as they prove the flexibility of the technology platform regarding different lignocellulosic feedstock, including dedicated energy crops.

The Business Line also signed a joint research agreement with ExxonMobil and REG Life Sciences, which was acquired by Genomatica over the course of the project. The research agreement evaluates the potential use of cellulosic sugars from sources such as agricultural waste and residues to produce biodiesel. The main objective of the collaboration is to combine processes into a seamless biomass-to-biodiesel technology. In 2019, different types of cellulosic feedstock were converted into sugars under different process conditions at the plant in Straubing, Germany. Genomatica then turned these sugars into high-quality, low-carbon biodiesel in laboratory and pilot experiments. In addition, Clariant will provide a conceptual engineering study for the biomass-to-sugars portion of the project.



MARKET TO CUSTOMER

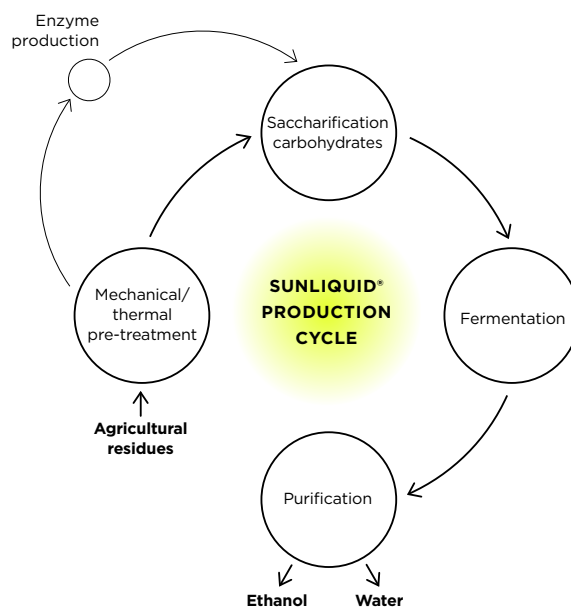
4. Creating value with innovative products and services

Another year of successful product launches for Business Unit Catalysts was experienced in 2019. The new propane dehydrogenation catalyst CATOFIN™ 311 further enhances selectivity and longevity of previous CATOFIN™ generations. Customers with typical plants could benefit from up to USD 20 million

Converting straw to biofuel with sunliquid®

sunliquid® is an innovative process to produce biofuels and biomaterials from agricultural residues. First, an agricultural residue, such as wheat straw, is treated with steam, followed by a subsequent sudden drop in pressure, which causes the straw to break down. Second, the straw remnants enter a series of reactors in which they are liquified through specific enzymes produced on-site. These enzymes break down the straw into simple sugars. Then, the sugars are fermented to create an ethanol-water mixture. In the last step, the ethanol is purified, so it can serve as biofuel or as a feedstock for biomaterials. The sunliquid® process is energy self-sufficient as it uses lignin, the insoluble part of the straw, obtained as residue in the biomass.

Clariant completed a report on the carbon footprint of sunliquid®, which revealed that the carbon intensity of ethanol produced with sunliquid® is up to six times lower compared to conventional fuels.



»Our mission is to develop and supply high-performing catalysts that create value for our partners and the planet.«

Stefan Heuser

Head of Business Unit Catalysts

in savings due to increased productivity over the lifetime of the catalyst. CATOFIN™ is a highly reliable and productive method for light paraffin dehydrogenation that operates at optimum reactor pressure and temperature, maximizing the conversion of propane to propylene, a starting product for the petrochemical industry and an important base chemical. Clariant further announced the successful start-up of the CATOFIN™ catalyst at Hengli Group's new dehydrogenation plant in Dalian, China. With a production capacity of over one million tons of olefins per year, this will become one of the world's largest plants using CATOFIN™ catalyst technology.

With OxyMax® PA 690, Clariant launched a next-generation phthalic anhydride catalyst that greatly increases yield and provides excellent product quality. The catalyst is produced using Clariant's proprietary fluid-bed coating technology, in which ceramic rings are coated with a thin shell of catalytically active materials and special promoters. This enhances mass and heat transport and reduces over-oxidation as well as formation of unwanted by-products such as carbon oxides and maleic anhydride. The OxyMax® PA 600 catalyst series has been granted two patent families due to its unique composition and formulation. The catalysts offer great flexibility as they can be tailored to individual operating and feedstock conditions.

Another example of Clariant's value-creating approach is StyroMax™ UL3. The catalyst achieves high activity and selectivity in styrene monomer production and requires less steam and associated energy consumption due to very low steam-to-oil operating conditions. Its high activity increases styrene monomer yields, while its improved selectivity minimizes the formation of by-products, such as toluene and benzene, which are typically less valuable than styrene monomer. As with most of its products and applications, Business Unit Catalysts provides engineering support with StyroMax™ UL3. The offering includes start-up services, subsequent assistance to maintain optimum operation performance, and, if required, on-site troubleshooting services. → PAGE 94

5. Strengthening customer support and increasing presence

Proximity to customers is paramount. To enhance its presence in the Asia-Pacific region, Business Unit Catalysts inaugurated its third Engineering Services office in the region to complement the offices in Singapore and Tokyo. Located near Jakarta, Indonesia, the new office focuses on technical support for ethylene, styrene, and syngas production, as well as fuel upgrading, hydrogenation, and oxidation. The office is based at Clariant's Tangerang site and relies on close collaboration with regional colleagues. Customers profit from Clariant's reduced response time and increased ability to work more closely on their challenges.

In 2019, Business Line Biofuels & Derivatives enhanced proximity to customers by establishing and extending its footprint, with team members now also based in Shanghai, China; Mumbai, India; and Jakarta, Indonesia. With a dedicated team in Romania, the Business Line offers customer support for feedstock value chain operations regarding feedstock availability and assessment, value chain contract systems, and complete value chain analyses, covering everything from baling to storage. As sunliquid® can be used with different feedstock materials, these services are crucial to carry out new, successful projects.

Business Line Biofuels & Derivatives also continued relationship-building with political stakeholders and active engagement in biofuel industry associations such as ePURE and Leaders of Sustainable Biofuels (LSB). The latter is a coalition Clariant has chaired since June 2019.



CUSTOMER TO CASH

6. Improving supply chain management

In 2019, Business Unit Catalysts made progress in streamlining supply chain handling and institutionalizing Clariant's end-to-end supply chain management dashboard. Business Line Biofuels & Derivatives has taken important measures for the successful implementation and execution of its supply chain at the sunliquid® plant in Romania. The dedicated feedstock team established long-term contracts with more than 200 farmers so far to ensure stable and reliable straw supply for the operational phase of the plant. In 2019, over 20 000 tons of straw were harvested in order to test and adjust supply chain performance. The trials

were centered on efficient straw collection, transportation, and storage. The ramp-up of the supply chain will continue to work toward more than 250 000 tons for full-scale plant capacity. As of 2019, Biofuels & Derivatives features a digital application that supports supply chain operations with regard to coordinating, managing, and monitoring straw harvest operations. In addition, network systems for straw storage and just-in-time delivery were implemented.

7. Assuring safe and sustainable operations

In its production plant in Romania, Business Line Biofuels & Derivatives built up the country and site organizations for the management of Occupational Health, Safety, and Well-being. An Environmental Safety and Health Affairs (ESHA) manager was hired and intensively trained at Clariant's sites in Straubing, Pratteln, Sulzbach, and Frankfurt. The training supported the implementation of Clariant's guidelines in the newly founded organization and turned Clariant's safety culture into an industry standard in Romania. In the pre-commercial plant in Straubing, Germany, around 30 safety trainings have been performed, led by either Clariant personnel or third parties, including trainings for explosion protection, pressurized vessels, and fire extinguishing.

In 2019, Business Unit Catalysts was able to significantly improve operations in Panjin, China. As part of the extension of catalysts production capacities for maleic anhydride applications, operational processes were improved. In addition, water consumption and wastewater generation continued to decline, compared to 2013.

Targets

6-9%

Growth potential per year

26-30%

EBITDA target margin

Performance

INPUT

6.4%

R&D spend of sales

272

Raw material procured in CHF m

>100

Active innovation projects

14

Production sites (50:50 or minority joint ventures not included)

1174

Number of raw materials procured

OUTPUT

925

Sales in CHF m

9%

Growth in local currencies

22.9%

EBITDA margin after exceptional items

0.06¹

Production volume in m t

People

INPUT

29 721

Training hours

538

Raw material suppliers

OUTPUT

2 113

Staff in FTE at year-end (2018: 2 061)

Planet

INPUT

609.9²

Energy consumption in m kWh







OUTPUT

15.5²

Waste in thousand t

2 746²

Greenhouse gas emissions in kg/t production

-  Financial capital
-  Intellectual capital
-  Manufactured capital
-  Human capital
-  Relationship capital
-  Natural capital

¹ For 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.
² Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017. In the interim years, including 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.



Be a

+ Customer Relationships

Local Partner

Service succeeds

How a specialist team of engineers at Clariant's Business Unit Catalysts provides game-changing technical service all across mainland China.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 9 and SDG 12.

Read more on → PAGE 24



When Donny Yuan joined Clariant in 2015, he had already spent more than twelve years working in different petrochemical productions, mostly for styrene producers, including some of the biggest names in China. But even though catalytic

dehydrogenation is at the heart of this type of industrial chemistry, Yuan still had a lot to learn about catalysts themselves. »So when Clariant hired me to provide technical service for their entire range of catalysts, I delved deep into Catalysts' technology,« Yuan says.

Fast forward five years and Yuan now heads Clariant's regional Catalysts Engineering Services in China, a team of ten technical engineers spread over four locations across mainland China. Donny Yuan himself sits in Shanghai. Although, as he explains, he spends most of his time neither sitting nor in Shanghai. »About 60 % of my work involves meeting customers, checking in on sites, and troubleshooting production issues out in the field.« His business trips take him all around China. The sheer size of the country means that visiting one such business can easily involve a five-hour flight followed by another couple of hours on trains or in the car. »Petro-

chemical production centers are often located far away from major cities. And we've had cases where some of our guys have stayed at a customer site for more than a month,« Yuan says. But to him and everyone on his team, going the extra mile is part of Clariant's approach to providing its technical service.

Clariant's Business Unit Catalysts operates globally but stresses its regional focus. Close to 1 800 people worldwide work for the Business Unit. It runs a total of 14 production sites, 20 sales offices, and just as many offices for Engineering Services around the world. Proximity matters. »Each region has very different needs,« says Roger Long, Clariant's Regional Marketing Manager for Catalysts in China and Asia-Pacific. Take feedstocks, for instance. While chemical production in Europe and the Middle East relies mostly on natural gas or petroleum, and the USA are heavy on shale gas, most of China's producers use derivatives from coal. »The applications are similar, but the processes are totally different,« Long explains. »So our Engineering Service here in China deals with catalysts that are tailor-made specifically for this type of feedstock.«



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001 Donny Yuan

Head of Engineering Services China,
Business Unit Catalysts

002 Creating value

Plants using Clariant's CATOFIN™
process prove reliable and efficient.



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»You really get to know and understand how your customers operate.«

Donny Yuan

Head of Engineering Services China, Business Unit Catalysts

New offices

Help is just around the corner

A new Engineering Services office in Jakarta, Indonesia, brings Clariant's Business Unit Catalysts even closer to its regional customers.

In the second half of 2019, Clariant's Business Unit Catalysts opened a brand-new office for engineering services in Indonesia. It follows on the heels of similar new offices in Singapore and Japan, bringing the total to 20 worldwide. The expansion is aimed at enhancing regional support, particularly in southern countries of Asia-Pacific. Technical services here has a strong focus on catalysts for ethylene and styrene as well as syngas applications, distillate upgrading, hydrogenation, and oxidation. Inaugurated in September, the new Indonesian office is based at Clariant's site in Tangerang, near the capital Jakarta. Clariant already operates a joint-venture catalyst production facility near Jakarta, in Cikampek. The catalyst specialists appointed for the new service office will work closely with their regional colleagues.

Service helps seal the deal

Yuan and his team of technical engineers serve more than 100 current customers at any given time. Additionally, they are called upon whenever their expertise is needed elsewhere in the world. They themselves can rely on the rest of the global network for backup too. Engineers like Yuan are involved early on in any commercial bidding. »We attend all the initial technical meetings with the customer and, for example, help select the right catalyst for their needs,« Yuan explains. More often than not, these technical discussions are actually what helps seal the deal. Yuan, his fellow engineers, and the service they provide over the entire lifetime of a catalyst are an essential part of the product offering.

Catalysts are crucial to almost every chemical production. By reducing the energy required for a certain reaction or helping to achieve higher yields with fewer by-products, catalysts are a key to both productivity and efficiency. In fact, many of the reactions used industrially today would be either uneconomical or physically impossible without specialized catalysts. »For producers, getting the optimal performance out of a catalyst can have a massive impact on their bottom line,« says Long. »Still, not too many companies provide our level of service. We are one of the few catalyst providers among our peers to have as many as four Engineering Service offices in mainland China. And today, we are the only one with such an office in Yinchuan in the Northwest, the very heart of China's coal-to-chemicals industry.«

Whenever Clariant wins a commercial bidding, that's usually when Yuan and his team really jump into action. »Loading the reactor and starting the process is the most crucial phase for any catalytic process,« Yuan explains. His team advises and trains the production crew on how to first get the catalyst into the reactor.

Some of that happens in an actual classroom setting, and some of it on the job. »Customers will arrange for field operators, production crew management, and engineers to take part in these training courses,« says Yuan. »Even the engineers, who are absolute experts in their field, can't always know how they need to handle our product and why.« That is why Clariant provides a manual on how to load and use its catalysts and has developed a patented loading system together with the necessary equipment.

»Getting the distribution right and making sure the catalyst isn't damaged determines how efficiently you'll be able to run your production for the next couple of years,« Yuan explains. For example, Clariant puts a lot of effort into maximizing the performance of its catalysts, not least by producing them in specific shapes such as pellets, tables, or extrusions that optimize the available catalytic geometric surface area (GSA). For certain kinds of catalysts, dropping these from the top of a tall reactor would wreak havoc on those surfaces. »That's why we make sure the catalyst is loaded layer by layer and its integrity is protected at all times,« says Yuan. The whole start-up process can take up to three weeks depending on the application.

What process data reveals

Once production is up and running, Yuan and his team transition into operational support and ongoing performance evaluation. They visit key customer sites every few months but call each and every customer at least once a month to talk shop. Using specialized analytic programs, they review the data provided by the customers, which allows them to draw conclusions about how the catalyst is performing and whether the whole setup is working within the parameters the customer prescribed.

Yuan remembers one incident where a customer notified him about a sudden drop in performance, or rather a growing disparity between input and product yield. He and his team immediately got to work analyzing the latest data. »We used heat balance and material balance calculations and were eventually able to pinpoint that there had to be a mechanical failure, a leak in hydrocarbon supply,« Yuan remembers. In other words, the customer was losing input but, as the data showed, not in the process itself. The customer chose to wait for scheduled maintenance and to proceed with production. »We helped him optimize the feed and process parameters for the changed conditions. That way, we could ensure the stability of the plant operation and also secure the service life of the catalyst,« Yuan says. »In the end, it saved our customer at least another 10 % in capacity.« When the customer eventually stopped production and went in to check, sure enough, they found the leak that Clariant's team had suspected.

CHINA



When troubleshooting catalytic processes, time is of the essence. Unforeseen changes in the feed or even a complete stop in production can do irreversible damage to the catalyst unless the operators take protective measures. »For some processes, if the feed or the steam cut out, you need to move quickly and protect the catalyst from water or air,« Yuan explains. »Otherwise, you risk poisoning your catalyst within a matter of hours.«

A business like no other

Yuan, like many in the industry, talks of catalysts as if they were living, breathing things. That comes with the trade: Catalysts can be fickle. Treating them right helps them excel at their job, while neglecting them can shorten their lifespan. They can be »poisoned« and »die.« That is not the only way in which the catalyst business differs from others that deal in commodities or raw materials.

Pleased customer

»Fast, smooth, and successful«

Clariant helped its customer Chinese Hengli Group to initiate its latest groundbreaking production.

Some major start-ups of catalytic productions make headlines in the industry. Like when, in the summer of 2019, Clariant announced the successful start-up of its CATOFIN™ catalyst for the Hengli Group, one of China's largest petrochemical suppliers. Their new mixed-feed dehydrogenation plant in Dalian is designed to process 500 000 annual tons of propane and 800 000 annual tons of isobutane to produce over a million tons of propylene and isobutylene. That makes it the world's largest plant to use Clariant's CATOFIN™ catalyst technology and a major milestone for the industry. »We are very proud of our achievements with respect to this groundbreaking project,« says Guangqin Peng, Chief Engineer of Hengli Petrochemical (Dalian) Refinery Co Ltd. »The fast, smooth, and successful start-up of this unit would not have been possible without reliable and experienced partners like Clariant.«

»A typical catalyst stays in service for two or three years, but there are a lot that run for five to six, some even for ten and up to 15 years,« Yuan explains. Clariant guarantees technical support throughout the entire service life of a catalyst. »Those are very long-standing customer relationships built both on trust and experience,« Yuan says. He has worked with some of his counterparts on the customer side for years. »You really get to know and understand how they operate. That allows us to anticipate what they might need, and having worked together for such a long time also helps you get to the point very fast.«

Each phase of a catalyst's service life has its own set of rules. Towards the end of its life, for example, a catalyst will usually achieve lower yields but will run especially stable. »That is if you run it correctly,« says Yuan. »But in some very competitive markets, for example, companies might be pushed to run the plant very hard: They change their schedules a lot, or run an aging catalyst at a higher feed while business is good,« says Yuan. That's when he gets 3 AM phone calls, saying: »You need to come in right away!«

Having the necessary know-how to deal with many different emergency scenarios, the commitment to maintaining optimal performance over the entire service life, and the manpower to do all that for every customer anywhere in China – those are some of the attributes that make Clariant's work exceptional. But an important factor is not just what Yuan and his fellow engineers do at Clariant but also what they did before. Every one of them has at least five years of experience working in chemical production. »They can talk to customers in their language,« says Yuan. And it shows. »When I was in production and dealt with catalyst suppliers, they would go on and on about their product. We don't do that. We talk about the process and what the customer needs. We understand what they're dealing with and help them achieve what they're trying to do.«

**Crucial delivery**

Processes for the chemical industry revolve around catalysts. In some cases, that means they need to be lifted into reactors at the heart of production facilities.

How Natural Resources Creates Value

Business Area Natural Resources, which comprises the Business Units Oil and Mining Services, Functional Minerals, and Additives, offers high-performing solutions for mineral, oil, and gas extraction businesses, as well as for plastics, coatings, and inks applications. Driven by growing consumption of oil, metals, and food, and increased electrification around the globe, the Business Area addresses challenges in multiple industries while also capturing emerging trends.

1. Capturing positive market dynamics to drive business growth

In 2019, Business Unit Functional Minerals benefited from increased edible oil use in emerging countries, changing food consumption patterns, and stricter food quality standards. These developments provided growth

opportunities for purification products and increased demand for Clariant's products that bleach edible oil and reduce concentrations of harmful substances in end products.

The global automotive industry is undergoing significant changes, with increasing pressure to reduce emissions in foundries and to decrease fossil energy consumption for transportation. This trend supported Clariant's sales of low-emission foundry additives and increased demand for specialty adsorbents based on second-generation biofuels made from agricultural residues and other waste.

Business Unit Oil and Mining Services improves efficiencies in aging mines, thereby increasing the demand for solutions such as FLOTIGAM™ 7100, HOSTAFLOT™ 7257, and MONTANOL™ 800. Despite the slowdown of Chinese mining activities and reduced chemical expenditure, Clariant registered increased demand for its high-quality products that improve efficiency. Business Unit Oil and Mining Services also captured the trend of rising demand for solutions that ensure production efficiency with oil and refinery customers.

Sustainability prevails being the main transformation for the portfolio of Business Unit Additives in 2019. For example, Clariant's wood-coating solutions, such as Ceridust® 8090 Vita, a surface modifier based on renewable raw materials, have become more popular as the use of wood in the building sector has increased. Clariant's portfolio of sustainable and safe solutions for the electronics and electronics industry, including Exolit® flame retardants and Nylostab® S-EED®, is sought after as the age of digitalization generates further demand for materials that support new electrification, electronic equipment, and smart devices.

Electromobility provides new business opportunities

Electromobility is expected to reduce carbon emissions from road transportation. This presents opportunities for Clariant's nonhalogenated flame retardants as electric vehicles have their specific material and safety requirements. Because of the high energy content of the battery and the high voltages and currents employed, not only flammability is a risk but also electrical arcing, which can in turn lead to a fire. Being phosphorus-based and halogen-free, choosing Exolit® OP as a flame retardant is not only a safer and an environmentally superior option compared to legacy brominated flame retardants, but it also helps reduce the weight of automotive parts as well. Exolit® OP continues to deliver the same high-level fire protection throughout many recycling and reuse cycles, and provides manufacturers with a genuine alternative to the use of new material.



2. Innovating for sustainability and increased efficiency

In 2019, Business Unit Functional Minerals addressed circular economy concerns by enhancing its mineral-based performance dewatering system Invoque®. Invoque® improves liquid-solid separation for operational processes, tailing circuits, and reprocessing in mines. This enables the mining industry to decrease costs, increase yield, and reduce water usage and dependency on tailing dams. Clariant also focused on the development of Tonsil® grades for the edible oil industry, which remove harmful substances and reduce the risk of their formation, thereby increasing food safety.

Additionally, Low Emissions (LE+) products in the Ecosil™ and Geko® LE+ range were optimized for the foundry industry. Development projects focused on preventing the creation of volatile organic compounds (VOCs), allowing customers to reduce harmful emissions and overall costs while increasing quality. A substantial amount of development effort was also spent on second-generation green diesel to supply high-performing adsorbents and provide superior technical support.

With regard to digitalization, Clariant’s Electronic Lab Notebook and Laboratory Information Management System improved the use of data analytics to customize products in an economically viable way. For example, data on variations of bentonite revealed unknown correlations for potential customer applications and helped Clariant fulfill specific customer needs faster and more economically. → PAGE 143

Business Unit Oil and Mining Services invested in several innovation activities to enhance infrastructure and supply security in new regions across Asia, Africa, and the Americas. In North America, Clariant Oil Services opened a High-Throughput Experimentation (HTE) laboratory in Houston, Texas, a first for the Oil and Gas industry. The HTE laboratory is a fast-response unit for application, discovery, and development of optimized formulations for customers. → PAGE 142

Making Additives fit for re- and upcycling

The Fraunhofer Institute confirmed that Clariant’s Exolit® OP 1400 flame retardant fully supports the demanding recycling conditions for PA6 and PA66 engineering plastics used in the transportation and electronics industries.

001 NATURAL RESOURCES

OVERVIEW

The Business Area Natural Resources is comprised of Functional Minerals, Oil and Mining Services, and Additives. Functional Minerals operates a fully integrated value chain, from the exploration and mining of bentonites to the processing of finished products to the application of technical know-how at the customer’s operations. Oil and Mining Services provides innovative chemistry, technology,

and service solutions for the oil, mining, and refinery industries. Additives serves markets for plastics, coatings, inks, and consumer applications ranging across transportation, packaging, electrical and electronics, consumer goods, medical, textile, building and construction, as well as agriculture industries.

APPLICATIONS

Business Unit Functional Minerals

- Oil purification
- Foundry additives
- Cargo and device protection
- Filtration and separation solutions
- Civil engineering
- Wastewater treatment
- Clay specialties
- Paper additives
- Detergent additives
- PVC stabilizers
- BTX catalysts
- Kerosene and jet fuel purification

Business Unit Oil and Mining Services

- Pour point depressants
- Cold flow improvers
- Froth flotation chemistries
- Chemical delivery and data management systems

Business Unit Additives

- Antifouling agents
- Antistatic agents
- Acid scavengers
- Antioxidants
- Heat stabilizers
- Light stabilizers
- Processing stabilizers
- Lubricants
- Processing aids
- Release agents
- Slip control agents
- Surface modifiers
- Surfactants
- Halogen-free flame retardants

PRIORITY SDGs

- SDG 2 Zero Hunger
- SDG 3 Good Health and Well-being;
- SDG 12 Responsible Consumption and Production

- SDG 7 Affordable and Clean Energy;
- SDG 13 Climate Action



MARKET TO CUSTOMER

Business Unit Oil and Mining Services has expanded infrastructure in new regions such as Western and Sub-Saharan Africa, enabling copper, gold, and oil development activities. This supports the oil and mining industries in Algeria, Angola, Mozambique, South Africa, and Zambia.

Business Unit Additives focused on translating sustainability and performance requirements into innovative solutions for customers. In particular, Clariant is enhancing the circularity of plastics by developing additives that improve recyclability. Furthermore, solutions using renewable, bio-based additives to boost resource efficiency are being developed. For example, bio-based additives derived from rice bran wax, a non-food-competing by-product of rice bran oil production, support high performance processing and enhance surface properties of plastics and coatings. Another example are the new Licocene® solutions used in adhesion applications to bond or de-bond challenging materials.

A safer, better alternative to Xanthates

HOSTAFLOT™ 7257 and HOSTAFLOT™ 7800 allow operators in mining to discontinue the use of sodium isopropyl xanthate and potassium amyl xanthate. Xanthate is a hazardous material typically used in sulfide flotation that is liable to spontaneous combustion and produces decomposition products that are toxic for humans and the environment. In the form of a copper flotation and disposal solution, Clariant developed alternatives that enable safer handling and disposal solutions for mines, lower capital expenditure, and a longer shelf life than solid xanthate.

3. Addressing customer needs with new products and solutions

In 2019, Clariant brought to market a number of products that combine innovation and sustainability. The mineral filler Opazil™ controls migration of mineral-oil-based impurities present in recycled paper pulp and thus enables producers to safely use recycled paper and cardboard fiber for food packaging.

The Humitector® Type 2 Humidity Indicator Card was launched to provide a fully compliant, yet more environmentally friendly, non-reversible humidity indicator for electronic components. The indicator is used in dry pack environments for moisture sensitive products such as surface mount devices (SMD), and is halogen- and cobalt dichloride-free.

Business Unit Oil and Mining Services introduced WAXTREAT™ SubZero Pour Point Depressant technology for cold climate regions. The innovative product received the EcoTain® label and helps oil production customers increase operational efficiency by improving the flow properties of oils while mitigating paraffin buildup in crude oil pipeline systems.

Additionally, the Business Unit has invested in expanding the application field beyond iron ore flotation to leverage mining expertise into dewatering, filtering, and tailings treatment, following environmental pressure on mining companies to grow flotation operations.

Business Unit Oil and Mining Services also expanded its overall services to customers by implementing the hardware and software application VERITRAX™ 3.0 SAP across North America. The improved digital chemical management system eases communication between Clariant and oil producers with real-time information on the entire chemical management process, thereby increasing efficiency.

To enable recycling in combination with low resource consumption as the basis of a circular economy, Business Unit Additives, for example, developed AddWorks® PKG 906 Circle. A proprietary recycling aid, which enables manufacturers of polyolefin film, such as food packaging film, to incorporate recycled content by up to 30 % without loss in quality and while improving process efficiency.

»Customers are at the heart of what we do. We take individual input very seriously and come up with customized solutions.«

Sven Schultheis

Head of Business Unit Functional Minerals

Clariant teamed up with renewable hydrocarbon producer Neste to offer a wide range of additives based on mass balance-certified ethylene and propylene from renewable feedstock. These additives include the adhesives and plastic additives Licocene® Terra and the flame retardants Exolit® OP Terra. Other new products brought to market include rice bran wax-based Licocare® RBW Vita, a renewable processing aid for formulators of engineering plastic and bioplastic compounds. Terra, Vita, and Circle represent three of four sustainability designators that Clariant introduced in 2019. → **PAGE 184**

Sustainability efforts are also exemplified by the fast development of EcoTain®-labeled products, which made up a significant percentage of sales volume in Business Unit Additives in 2019. Clariant is committed to further grow the share of EcoTain®-labelled products through innovation and strategic partnerships.

→ **PAGE 149**

4. Strengthening customer centricity

Customer centricity is an integral part of the strategic objectives of the Business Units Functional Minerals and Oil and Mining Services, and customer-oriented targets are a key element of the leadership performance objectives. In 2019, Business Unit Additives further strengthened customer centricity by refining the customer segmentation and undertaking a Value-to-Customer (V2C) initiative. With need-based segmentation, Clariant better addresses customer requirements and creates the basis for systematic value-based pricing and selling. In addition, it allows careful matching between Clariant's technical expertise and portfolio with selective growth opportunities.

In 2019, Business Unit Additives carried out two marketing excellence projects in China to accelerate business development in new market areas and better respond to customer needs. It also began collaborating with key brand owners to advance sustainability and performance. Together with Neste, Clariant started to develop state-of-the-art solutions based on renewable olefins from used cooking oils and other waste oils. Other industries such as electronics were also proactively approached with ideas on applying new technologies and solutions that benefit the entire value chain.

Increased interactions with customers and regular feedback amplifies Clariant's focus on customers. The 2018 customer satisfaction survey underscored the importance of »Technical Services,« which was rated as the second most important buying criterion, right after »Products and Packaging« in the Business Unit Additives.



CUSTOMER TO CASH

5. Increasing global capabilities

In 2019, Business Unit Functional Minerals continued to debottleneck its production in Spain, Germany, Mexico, and Indonesia to improve efficiency and flexibility. Business Unit Oil and Mining Services successfully opened a state-of-the-art laboratory in South Africa as a regional hub for mining operators in 2019. In addition, Clariant entered a partnership with ChemQuest in South Africa, which is now a distributor of Clariant products for mining operations, to increase metallurgical efficiencies and provide tailored chemical solutions to the mining sector. In Bojone-

goro, Indonesia, Clariant inaugurated a new supply base for regional oil production customers. The investment demonstrates Clariant's customer focus and will enhance accessibility of products and services for major customers in the region.

In line with the goal of becoming an industry leader in China, Business Unit Additives achieved full operational capacity of its new Zhenjiang, China, plant for the production of AddWorks® and Ceridust® products. In addition, the project to expand capacity for Lico-cene® production in Germany and the plan for a new light stabilizer plant in Cangzhou, China, were advanced.

6. Emphasizing the importance of health and safety

In 2019, Clariant emphasized safety awareness, the identification of workplace hazards, and improved

flow of communication. Functional Minerals rolled out its Environmental Safety and Health Affairs (ESHA) strategy to enhance its safety performance. The strategy is based on continuous improvement of its safety culture, systematic identification, evaluation, and elimination of risks,

and reasonable and sustainable use of natural resources. The rollout included the reinforcement of the safety policy across all levels, leader's safety awareness trainings, and the development and implementation of safety concepts for the specific risks on the site level.

Business Unit Oil and Mining Services concentrated its health and safety improvement activities mainly on the North American region. Among other initiatives, the Business Unit implemented SmartDrive, a video-assisted safety program that helps truck drivers prevent accidents. → PAGE 170

Business Unit Additives focused on stringent safety in all plants by intensifying its awareness program with trainings, safety checks, and accident-avoidance projects.

24 years without a lost time accident

Clariant's Mining site Lara in Australia celebrated its 24th year without a lost time accident (LTA). This accomplishment gave the Lara site the record among Clariant's entire worldwide network for the longest LTA-free period.

7. Achieving environmental protection in operations

In 2019, Clariant focused on optimizing its environmental footprint and further investigated how to support customers and the chemical industry overall to overcome potential waste and emissions issues along the entire value chain.

Business Unit Functional Minerals achieved emission reductions thanks to leveraging its dense network of production sites. With shorter transport distances and more reliable supply chains, Functional Minerals is closer to its customers now. Moreover, it increased the Sardinian sun-drying operation of bentonite. By using solar energy to dry bentonite, it can be transported with a significantly lower percentage of liquid, thereby reducing weight, costs, and environmental impact. Additionally, the sun drying method allows to keep higher proportions of the active product than any other heating process.

To assess the environmental performance in the supply chain, Business Unit Oil and Mining Services uses individualized review processes for suppliers. Active supplier communication and regular interactions help Clariant raise awareness on sustainability requirements.

Business Unit Additives began transitioning the production plant in Knapsack, Germany, entirely to renewable energy in 2019. This plant also achieved a significant reduction in water and energy consumption while simultaneously increasing capacity. Production processes and workflows are constantly reviewed and optimized for improved environmental performance.

Targets

5-7%

Growth potential per year

18-20%

EBITDA target margin

Performance

INPUT

2.0%

R&D spend of sales

629

Raw material procured in CHF m

>145

Active innovation projects

39

Production sites

3697

Number of raw materials procured

OUTPUT

1874

Sales in CHF m

4%

Growth in local currencies

16.3%

EBITDA margin after exceptional items

2.97¹

Production volume in m t

People

INPUT

47 993

Training hours

1776

Raw material suppliers

OUTPUT

3948

Staff in FTE at year-end (2018: 3276; excl. Business Unit Additives)

Planet

INPUT

1033.3²

Energy consumption in m kWh







OUTPUT

134.8²

Waste in thousand t

107²

Greenhouse gas emissions in kg/t production

-  Financial capital
-  Intellectual capital
-  Manufactured capital
-  Human capital
-  Relationship capital
-  Natural capital

¹ For 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.
² Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017. In the interim years, including 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.



Help Cities Move Forward

+ Environmental Protection
and Resources

Natural clay for Paris Metro

By 2030, the Grand Paris Express will bring sustainable mobility and a new quality of life to the French metropolis. Clariant is doing its part to make it a reality.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 9 and SDG 12.

Read more on → PAGE 24



It has been called a parallel city underground and »as deeply embedded in the French psyche as it is in the limestone and gypsum of Paris itself«: the Paris Metro. With its Art Nouveau entrances, this 120-year-old subway system is a postcard

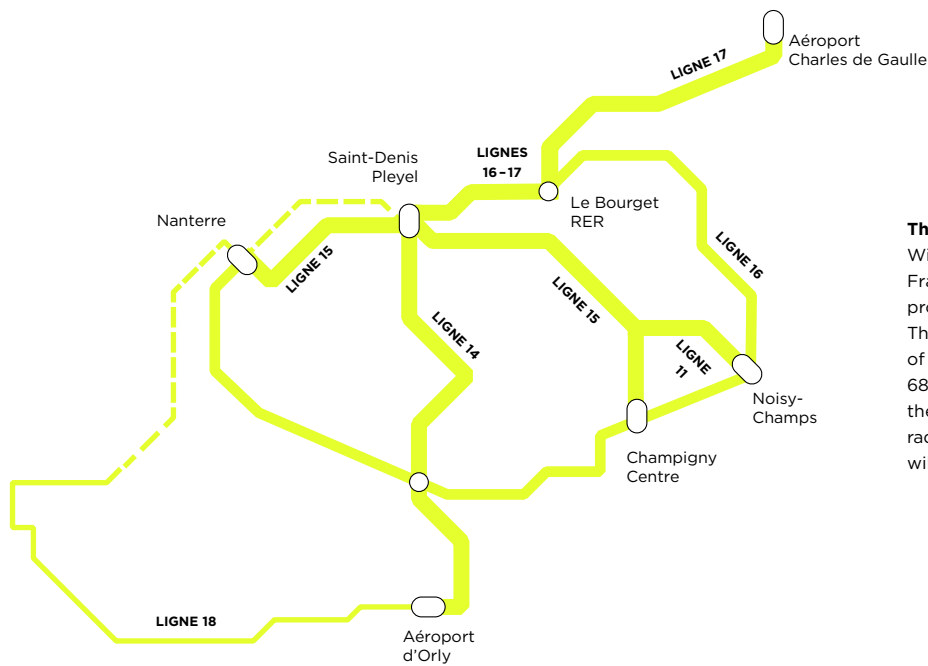
icon of the French capital. But unlike other icons, say the Eiffel Tower or the Arc de Triomphe, this one is extremely useful to the roughly two million residents of Paris. And come 2030, it will serve even more people, as it turns into one of the largest and arguably most modern metro networks in Europe. The Paris Metro gets a long-overdue update – with a little help from Clariant and a natural clay that is mined not far from the city.

With its 245 stations within the historic center, the Paris Metro is one of the densest metro systems in the world today. But its layout has not kept up with the growth and sprawl of more than a century. Not even one in five of the metropolitan region's residents lives in the city's core itself – a lower ratio than in most of Europe's large capitals. The historic cores of Berlin, Rome, and Madrid all house more than half of their respective metropolitan populations. In London, it is close to a quarter.

La Défense, one of the largest business districts of Paris, and indeed Europe, lies outside the well-connected center, as do some of the city's universities and most of the region's public housing.

Connecting millions more

To remedy this, Paris is expanding its metro system with what it calls the »Grand Paris Express« – a new automated transit network for the entire capital region. It will add four new lines, a total of 68 interconnected stations, and about 200 kilometers of additional tracks – 90% of which will run underground. Grand Paris Express will add a ring route around Paris as well as new lines and line extensions going outward to connect a host of developing neighborhoods, business districts, and research clusters as well as three of the city's airports. This will in some cases cut travel times to less than a third, hopefully relieving congestion and reducing motor traffic overall. According to some estimates, Grand Paris Express will help save up to 27.6 million tons of CO₂ emissions by 2050. Once completed, the fully automated system will transport two million additional commuters per day, with some lines running every 85 seconds. It's no wonder why Grand Paris Express has been called »the most ambitious new subway project in the Western world.« And as if that weren't



Source: Société du Grand Paris
(www.societedugrandparis.fr/gpe/carte)

enough, France's regional commuter system Réseau Express Régional (RER) is simultaneously tunneling its own new express link, called Est Ouest Liaison Express, or EOLE, right through the heart of Paris.

»There is a lot of digging going on,« says Laurent Nicolas, Head of the Civil Engineering group for Clariant's Business Unit Functional Minerals. »Grand Paris Express alone will involve removing a volume of soil equivalent to eight times that of the Great Pyramid of Giza.« And it's not just digging the tunnels, which run at an average depth of around 30 meters. Boreholes for safety access and ventilation shafts go down to around 80 meters, as do the excavations for some of the almost stadium-sized stations.

Clariant's Business Unit Functional Minerals and the team around Laurent Nicolas play a supporting role in these excavations – quite literally. When building any of the underground structures, construction companies first establish so-called diaphragm walls. That involves drilling deep rectangular trenches with the help of drilling fluids around the area that needs to be excavated. These trenches are then filled with reinforced concrete, essentially creating a submerged concrete box, which can then be emptied out to house anything from a stairwell to an entire multi-level metro station.

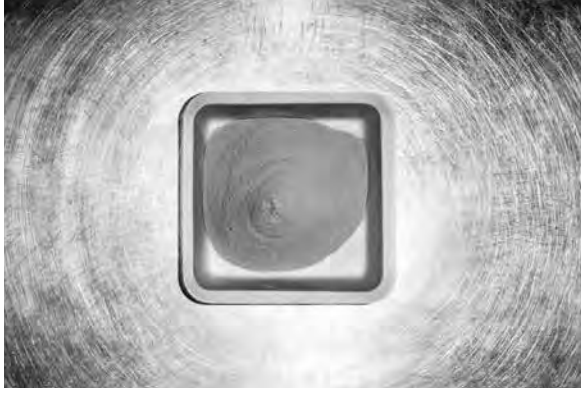
The largest transport project in Europe

With an eye on the Olympic Games in 2024, France has launched a massive infrastructure project, known as the Grand Paris Express. This ambitious project aims to double the size of the existing metro system by adding 68 new stations and 200 km of new track. Unlike the existing metro, which generally runs radially from the centre of Paris, the new lines will mostly form a loop around the city.

It's for drilling these trenches that Clariant delivers an essential ingredient: bentonite. The naturally occurring clay forms over eons when volcanic ash is trapped underground and chemically altered under immense heat and pressure. Clariant's Business Unit Functional Minerals is one of the world's leading bentonite providers. Every year the company mines close to two million tons of raw clay at its 25 sites in 14 countries all over the world. Clariant is especially committed to sustainable mining practices and takes great care when renaturalizing its bentonite mines, sometimes even achieving higher levels of biodiversity than before exploitation. Bentonite can be tailored for use in a whole range of industries and applications – from metal casting to paper production, and from packaging desiccant to edible oil refining. It even helps with purifying drinking water.

FRANCE





Remarkable material

Bentonite is a naturally occurring clay used in many different industries.

Acting as solid or liquid

In construction and other drilling applications, such as oil and gas production, bentonite is widely used to form drilling fluids, also known as drilling muds. When mixed with water, the bentonite powder swells and forms a slurry with extraordinary properties: Left still and unstirred, the slurry acts almost like a solid or a thick gel. But once it's moved with enough energy, it turns fluid again and is as easy to pump as chocolate milk through a straw. The technical term for this kind of behavior is thixotropy, and it is immensely useful. »There are basically two main things the drilling slurry does,« Nicolas explains. »It stabilizes the excavation and, depending on the digging technique, ensures an efficient removal of the excavated material, for example, by pumping it.«

To prevent their trenches from collapsing before they can be filled with concrete, the construction company keeps the borehole flooded with drilling slurry. »Otherwise, once you hit groundwater or loose ground conditions, the soil surrounding your borehole becomes so unstable that it would just collapse to fill the void,« Nicolas explains. Once the excavation has reached its targeted depth and the rebar cages are installed, the slurry is then replaced by simply filling the hole with concrete from the ground up.

However, getting the slurry just right for each and every borehole is a science in itself. »It all depends on the ground conditions,« says Nicolas. In order to avoid having to turn to polymer modifications, Clariant has mastered the art of gently coaxing ever more performance out of the natural and eco-friendly clay to fit almost any

ground. »The deeper you go, the more complicated the geology can get, at least here in central Europe. And you can never be a 100 % certain what to expect.« Especially gypsum, which is particularly prevalent underneath Paris, can be tricky. »It can react chemically with the bentonite and degrade the properties of the slurry if you don't know what you're doing,« says Nicolas. That in turn can result in leakages and imperfections in the diaphragm walls, which spells trouble further on in the construction process.

Luckily, Nicolas and his team know how to handle almost any ground condition and adapt the use of bentonite to get the best results. A self-described »old warhorse,« Nicolas has been with Clariant for two and a half decades and has worked on some of the largest construction sites in the world. Nicolas also regularly gives workshops and helps write guidelines for industry bodies, such as the European Federation of Foundation Contractors (EFFC), on drilling techniques, support fluids, and the use of bentonite.

Still, Grand Paris Express is a one-of-a-kind project even to Nicolas. And not just because it's so vital to his home capital. »The scale of the project, the depth involved, the geology, the tight spaces in a metropolis, or the strict regulations – those are nothing new to us in and of themselves,« he says. »But with Grand Paris Express you have all these challenges coming together, which makes work on any of the more than 200 lots very complex.« And then there's the time frame. While the entire project is set to be completed in 2030, large sections of the new metro system will actually have to be running by 2024, when Paris hosts the Summer Olympics. »That is a challenge to everyone involved,« says Nicolas. However, helping drilling contractors deal with almost any challenge that mother nature or their customers might throw at them, is what Nicolas and his team do all the time.

LEFT Jérémy Prud'Homme

Technical Service Manager,
Business Unit Functional Minerals

MIDDLE Laurent Nicolas

Head of Business Group Civil
Engineering Europe, Business Unit
Functional Minerals

RIGHT Jocelyn Ranc

Civil Engineering Product
Manager, Business Unit Functional
Minerals



Jérémy Prud'Homme is part of that team as a Technical Service Manager. »He is my eyes and ears on-site,« as Nicolas puts it. Prud'Homme checks in on several lots for Grand Paris Express almost every day. Like Nicolas, Prud'Homme has a background in material science and has worked as an engineer in the oil and gas industry. He is exactly half Nicolas' age. »Most of the civil engineers I talk to on the contractor's site are of my generation,« Prud'Homme says. »That helps to build a rapport.« However, unlike his contemporaries at construction or drilling companies, Prud'Homme doesn't spend months or even years working on just one site. He sees about a hundred project sites a year. This wealth of experience often helps

him to identify problems and come up with a solution on the spot. If not, he gets Laurent Nicolas and the third man in their trio involved: Jocelyn Ranc. Ranc is as senior an expert as Nicolas. He is a chemist at Clariant's application lab in Portes-lès-Valence. »In the lab, we can recreate almost any ground condition in order to test and adapt the composition of a slurry,« Ranc explains. However, he not only keeps in close contact with both Prud'Homme and Nicolas but also personally visits construction sites on a regular basis. »Being that close to what you're dealing with helps a lot,« he says. »If a contractor runs into any issues, most of the time we can come up with and test a practical solution within a day or two.«



Tight spaces

Large excavations, like the one at this construction site in Paris, rely on copious amounts of drilling slurry to stabilize trenches.



Jean-Michel Dumay can attest to that. He is a site superintendent for Soletanche Bachy, a global industry leader in foundations and soil technology. After 35 years of doing these kinds of jobs all over the world, he considers Grand Paris Express the highlight of his career:

»I am sure that everyone who's worked on this will come out taller and proud of what we've accomplished,« he says. »Clariant will have earned its share of this success. Laurent is our advisor in choosing the right products, and Jérémy helps us implement them once they're delivered. The project would not have advanced the way it has without this close cooperation.«

A smaller ecological footprint

Proximity matters in other ways too. The bentonite used in Paris is mined and refined at two French Clariant sites. One is located just two hundred kilometers north of Paris, in the coastal town of Le Tréport. The other lies to the south, in Portes-lès-Valence, midway between Lyon and Avignon. Not having to ship the clay halfway around the world further improves its ecological footprint. That matters with Grand Paris Express. By design, the project will not only make the city's transportation system a lot more sustainable, it

also contractually obliges each and every company involved to minimize their ecological impact. In order to reduce the number of trucks on the city's streets, for example, some of the required materials and as much excavated soil as possible is moved with barges on the River Seine or even pipelines. »Contractors also commit to reusing as much water, gravel, and sand as possible – preferably on-site,« says Nicolas.

Besides providing a level of technical service that, today, is exceptional in the industry, Clariant also delivers an especially effective product. »There are cheaper options on the market,« says Nicolas. »But using our highly tailored premium bentonite allows reducing the required amount by up to half. Additionally, the increased performance allows for a longer lifetime of the drilling fluids. That again translates to fewer trucks on the road and less space taken up on an already cramped construction site.«

Tunneling for EOLE

At the forefront of innovation

Clariant delivers bentonite for yet another groundbreaking Paris project in urban mobility.

While Grand Paris Express circles central Paris and extends lines outwards, another megaproject is tunneling its way right into the heart of the French capital. EOLE, or the Est Ouest Liaison Express, is a new commuter train project by SNCF Réseau, the infrastructure division of France's national railway company. EOLE connects, as the name suggests, communities to the east and west of Paris. It will add three new stations and eight kilometers of underground tracks to connect another 47 kilometers of modernized tracks to the existing line E. Parts of the tunnel, which is due to be finished as early as 2022, run underneath the eighth arrondissement and even just a few hundred meters away from the Arc de Triomphe. Upon completion in 2024, EOLE is expected to carry over 650 000 passengers every day. Clariant is once again involved as the key supplier for bentonite. In this case, however, the material is used as a sup-

port fluid for a new type of fully automated slurry shield boring machine. The consortium for the tunnel section (GC-TUN) is made up of Bouygues Travaux Publics, Eiffage Génie Civil, Eiffage Fondations, Razel-Bec, and Sefi-Intrafor. It uses a slurry shield tunneling machine that excavates the tunnel and installs concrete rings to make up the walls. This machine, measuring over eleven meters in diameter, uses a bentonite-based drilling slurry to stabilize the front face of the borehole and to pump the excavated soil to an impressive regeneration unit located on the surface. The soil is transported via a temporary pipeline from the construction site to the banks of the River Seine, from where it is then shipped away. The bentonite slurry is sent the other direction right up to the head of the boring machine. This reduces the number of truck movements by about 75%. Over the course of the entire project, Clariant will have delivered several thousand tons of bentonite to help excavate a total of about 1.3 million tons of soil.

001 Proximity matters

Clariant mines and refines its bentonite for Grand Paris Express at two sites in France.

002 A new traffic artery

The longest stretch of the new tunnel for EOLE runs underneath the historic heart of Paris.



001



002

Discontinued Operations

Through continuous innovation, the Business Units Masterbatches and Pigments fulfill an increasing demand for sustainable products and contribute to the global transition to a circular economy. They engage in intensive dialog and collaboration with customers, which facilitate tailored solutions for specific customer needs. In addition, their ongoing efforts to optimize the supply chain ensure a reliable, steady supply of raw materials, supporting a high rate of On-Time, In-Full deliveries.

1. Divestment of Business Units Masterbatches and Pigments

In 2019, Clariant continued with the divestments of its Business Units Masterbatches and Pigments. The company has agreed to sell its Masterbatches business to PolyOne in December 2019. The divestment is expected to be closed by the third quarter of 2020. The divestment of the Business Unit Pigments is expected to be concluded by the end of 2020. → [PAGE 28](#)

2. Benefitting from the demand for sustainable and recyclable products

The plastics industry is undergoing a profound transformation. Environmental awareness of the persistence of plastics in the environment is rising, and corresponding regulations are becoming stricter. The European Union adopted new targets for plastics recycling, prescribing a gradual increase in recycling rates, which should reach 65% by 2035. In addition, many brand owners have pledged to achieve high recycling rates for their packaging well before the required deadlines.

Business Units Masterbatches and Pigments address the persistence of plastics by promoting improved recyclability and increased usage of biomaterial. When designing a new product, they not only consider how to use recycled plastics, but also incorporate the ability to recycle the product as part of the original design. To underscore the commitment to advancing plastics recycling, the Business Unit Masterbatches is a member of the Plastics Recyclers Europe Association (PRE), an industry working group engaged in efforts to increase recycling rates.

001 DISCONTINUED OPERATIONS

OVERVIEW

The discontinued Business Units Masterbatches and Pigments serve markets ranging from packaging, electrical and electronics, consumer goods, medical, textile, transportation, building and construction, as

well as agriculture. They deliver to local and regional customers as well as multinationals.

APPLICATIONS

Business Unit Masterbatches

- Packaging
- Consumer goods
- Fibers
- Healthcare polymer solutions
- Consumer electronics and electrical
- Automotive and transportation

Business Unit Pigments

- Applications for conventional printing inks, inkjet inks, and electrophotographic toners
- Coloration of plastic applications
- Decorative, industrial, and automotive coatings
- Special applications for, e.g., home and personal care, aluminum, seed coatings, stationery, viscose, latex, and leather

The sustainability trend is further propelled by the requirements of the automotive industry to reduce the weight of plastic components, which helps improve the fuel economy of their vehicles and reduce overall material usage. This weight reduction is an important element of the overall light-weighting strategy vehicle producers need to have in place to meet the stringent emission reduction targets required by legislation. Business Unit Masterbatches has responded to this demand by developing chemical foaming agents (CFAs), such as HYDROCEROL®, for use in automotive components.

Despite these beneficial trends, Business Units Masterbatches and Pigments were challenged by the global economic slowdown. The softer demand in China and Europe, as well as the weakness of the automotive industry, negatively impacted sales volumes in 2019.

3. Innovating for a circular economy

In 2019, the primary innovation driver was the circular economy megatrend. With regard to plastics, switching to a circular model requires adapting product formula-

Near-infrared (NIR)

NIR spectroscopy is used in plastics recycling. Typically, black-colored plastic blocks NIR and thus hinders the recycling process. Clariant developed an NIR-transparent black color to avoid the contamination of waste streams.

tions and designs to improve recyclability. In particular, customers are demanding solutions to enhance the quality of degraded polymers in the recycling process since the use of post-consumer recycling plastics is expected to become mandatory. To become a leading

player in recycling, Business Unit Masterbatches focused its innovation activities in this area. It advanced the development of near-infrared-detectable (NIR) compounds with black pigments and dyes, which address the challenge of sorting high-appeal black packaging at recovery and recycling facilities, and invested in new solutions to improve the handling of post-consumer recycling plastics. These include color management tools that help customers utilize imperfectly colored starting materials and still achieve a constant coloration of finished products.

Overall, Business Unit Masterbatches continued investing in its technical capabilities and innovation resources. For example, a new Center of Excellence on »Design for Recyclability« was built in Pogliano, Italy, in 2019. To fully support »Design for Recyclability,« the center will contain a small recycling plant and recruit external polymer and recycling experts to support the development of innovative applications in collaboration with customers. The Center of Excellence will be labeled »Cycle Works.« → PAGE 186

HYDROCEROL®

HYDROCEROL® chemical foaming and nucleating agents are commonly used in consumer goods and automotive components to reduce part weight without compromising stiffness or mechanical properties.

Through its Digital Innovation Office in Singapore, the Business Unit also advanced research in digital solutions, such as InstaColr™, a cloud-based tool for on-the-spot colormatching at the customer via an iPad based app. → PAGE 147

Given the scale of the challenge the circular economy poses for the chemical industry, Business Unit Masterbatches started leading innovation projects with several brand owners and plastic converters. It entered a partnership with Polymateria, a London-based start-up that developed a technology to biodegrade polyolefins without leaving microplastics. Another collaboration was launched with Merck and SABIC to develop laser marking solutions for flexible packaging, which improves the recyclability of polyethylene films.

Innovation in Business Unit Pigments continued with a focus on delivering powerful solutions to customer challenges and problems as well as solutions to improve the cost structure of the product portfolio. The Business Unit investigated areas closely linked to circular economy, automation, and enhanced product performance. This supports the delivery of the business growth ambitions while simultaneously increasing sustainability of products and production processes.

In addition, trends such as autonomous driving and sustainability in industrial inkjet printing influenced Pigment's innovation activities. Since autonomous vehicles can typically not recognize standard black colors, Clariant's new detectable black pigments can be used not only in the recycling of black polymers, but also to support the detection of black autonomous vehicles.

The trends toward individualization and sustainability continued driving the digital inkjet printing market. Pigments intensified its engagement in this area and is developing water-based inks, which will be presented as an environmentally sound solution at the DRUPA trade show in 2020.

4. Successful product launches

As part of Clariant's »Design for Recycling« program, Business Unit Masterbatches launched a new range of CESA® IR additive masterbatches that make dark-colored plastics visible in automated polymer sorting systems. While black-colored articles typically blind the NIR detectors, potentially contaminating waste streams, these new solutions will help increase recycling rates

by making black plastic items recyclable. Specific CESA® IR formulations have been developed to enable NIR-detectability of black high-density and low-density polyethylene in injection and blow-molded products, black polypropylene in films and

injection-molded products, and different types of black polyethylene terephthalate (PET) in sheets and film.

CESA® ProTect

The oxygen scavenger is suited for monolayer polyethylene terephthalate (PET) and protects oxygen-sensitive food and beverages by absorbing oxygen molecules.

At the K Show, the world's leading trade fair for plastics and rubber, Business Unit Masterbatches presented the patent-protected, high-performing oxygen scavenger additive masterbatch CESA® ProTect. This new product enhances the shelf life of food and beverages and helps reduce food waste.

The product launches of Business Unit Pigments will also make the creation of recycling streams for black plastics more viable. The Business Unit developed the first range of NIR-detectable black pigments and dyes, including: the polymer-soluble dye Solvaperm® Black

PCR for the black and gray coloration of PET, polystyrene (PS), and polycarbonate (PC); the new Graphtol® Black CLN pigment, which is tailored to polyolefins and is food contact-approved in various countries worldwide; and the polymer-soluble dye Polysynthren® Black H, one of very few colorants suitable for polyamides (PA), the largest family of engineering plastics.

In 2019, Business Unit Pigments focused on introducing products that are compliant with the latest regulatory requirements. With its Cosmenyl™ 100 product range, it launched optimized cosmetic grades of pigment preparations with a new preservation system. The modified Cosmenyl™ range fulfills the new European preservative regulations for cosmetic products, meeting strict requirements regarding heavy metal content, aromatic amine components, and microbiological purity. Business Unit Pigments also enhanced its Agrocere® product range, which consists of pigments and pigment preparations for the coloration of seed, with several products customized to the global and regional seed coatings market needs. The coloration of seeds that are treated with pesticides is mandatory in most countries to avoid misuse. In addition to this safety feature, Agrocere® pigments also enable individual colors and color shades for branding purposes, identifying a specific treatment between different seed varieties and allowing for easy monitoring of uniformity and consistency of seed treatments.

5. Strengthening commercial competences

Business Unit Masterbatches further implemented its functional excellence program in 2019 by establishing a competence center for sales force effectiveness. The primary objective of the competence center is to create a high-performing commercial organization by ensuring the systematic measurement and monitoring of sales force productivity through the development of a clear measuring methodology, embedding a consistent application of the Customer Relationship Management system, and by offering training programs to strengthen commercial skills within the sales force.

Business Unit Pigments continued to implement the Leading Marketing Organization, a process that started in 2018. In 2019, a Global Marketing & Innovation group was set up as a new function. In addition, as part of the same initiative, a new Key Account Management group was also created. These activities led to a better understanding of market trends and customer needs and supported the Business Unit in improving its pricing and growing with key accounts.

»New CESA® IR Masterbatches have been developed to achieve a persuasive black color on plastics without compromising on the essential detectability during the recycling process.«

Alessandro Dulli

Head of Segment Packaging, Business Unit Masterbatches

6. Optimizing operational and procurement efficiency

The ability to react quickly to changing customer choices is a prerequisite for competitiveness. Thus, optimizing the operational chain is the key to success. To do so, Business Unit Masterbatches focused on three pillars. First, it started reducing the range of raw materials sourced, concentrating on those with an optimal price-performance ratio. Second, it improved lead times and reliability by

Responsible Mica Initiative

Business Unit Masterbatches joined the Responsible Mica Initiative, an association that aims to improve the control and trackability of the extracted mica to ensure decent working conditions for the workers involved and to avoid child labor.

introducing a dashboard that provides transparency on the status of all current orders, enabling the Business Unit to meet the lead times requested by its customers. Third, by better coordinating the different production sites within each region, Business Unit Masterbatches

intends to further increase production volumes without investing in additional capacities, making it possible to serve customers with very short lead times.

In order to become more independent and flexible in the sourcing of raw material, Business Unit Pigments took a new approach regarding procurement. It identified additional suppliers and decided to insource the production of certain intermediate products that had previously been procured. In addition, it continued the implementation of project »Clockwork« in order to improve effectiveness and efficiency of the end-to-end supply chain, which will lead to optimized transparency, reliability, and predictability as well as improved inventory levels and lead times. In 2019, Pigments improved its On-Time, In-Full (OTIF) performance by 10%. To expand the production capacity for the automotive industry, it opened a facility for high-end blue pigments in Cuddalore, India.

6.1. Ensuring safe operations

Both Business Units are committed to protecting employee safety, health, and well-being and work toward the goal of zero accidents. All employees are continuously trained to optimize safety behavior and culture to reduce accidents. After significantly improving the safety performance in recent years, Business Unit Masterbatches plans to further harmonize local, regional, and global standards in order to apply the strictest safety regulations in all of its plants.

Business Unit Pigments improved accident and incident rates by conducting site-specific fitness and awareness programs and implementing a near-miss recording system in all sites. In addition, it conducted several refresher trainings and offered »Safety Moments« – brief documents containing safety messages – at the beginning of each meeting.

6.2. Improving environmental performance

Business Units Masterbatches and Pigments focus on improving environmental performance by reviewing and optimizing production processes. Both Business Units apply three layers of environmental protection. First, strict compliance with all local regulations, laws, and permits of the production sites is ensured. Second, ESHA guidelines, which typically go beyond local regulations, are followed at all sites. Third, all sites operate along ISO 9001/14001 standards.

In 2019, the Business Unit Masterbatches started an initiative to use recycled resins for the coloration of masterbatches. This will allow customers to use recycled materials while achieving the desired coloration results. It also began implementing a »zero loss pellet« approach as part of its production system. The approach minimizes the loss of plastic particles during various handling processes, thus contributing to higher yields. Blueprints for optimized processes are rolled out globally and will be audited on a regular basis.



Multicapital Review

Structured around Clariant's brand values of Performance, People, and Planet, the »Multicapital Review« outlines Clariant's progress over the reporting year on the topics deemed material for the company's long-term business success. Key performance indicators that cover economic, social, and environmental topics are explained and discussed.

124	Performance
134	Focus on the Core Businesses
154	People
170	Keep the Team Safe
178	Planet
186	Drive Change in the Industry

By drawing on various tangible and intangible, financial and nonfinancial resources, Clariant creates value for its stakeholders. Six different forms of capital – financial, intellectual, manufactured, human, relationship, and natural – all factor into the company’s business performance, its support of societal needs, and its commitment to environmental stewardship. Each form of capital feeds into one of Clariant’s brand values:

Performance

Clariant combines financial, intellectual, and manufactured capital into the brand value of Performance. In addition to financial performance, progress is measured regarding the most material topics of Innovation and Technological Advances, Digitalization, Product Stewardship/Sustainable Chemistry, as well as procurement, and production.

People

Human and relationship capital fall under the brand value of People. Employee-related topics, including the most material topics of Talent Attraction and Development, Employee Engagement, and Occupational Health, Safety, and Well-being, are grouped under human capital. Topics regarding customers, policy-makers, suppliers, and society at large are considered as relationship capital.

Planet

Clariant reports on natural capital as part of its brand value of Planet. This reporting includes Clariant’s progress on its ambitious environmental targets and the most material topic of Circular Economy. In addition, it covers topics related to environmental stewardship, such as safeguarding resources and mitigating climate change.

Performance

Performance – Clariant’s first brand value – encompasses value creation regarding financial, intellectual, and manufactured capital. By reporting achievements not only with regard to the most material topic of Growth and Profitability but also reporting progress on Innovation and Technological Advances, Digitalization, Product Stewardship and Sustainable Chemistry, procurement, and production, Clariant broadens its review of results, underscoring its holistic understanding of value creation.

1. Financial Capital

In 2019, Clariant increased its sales and improved underlying profitability despite the challenging global economic environment.

1.1. Business performance summary for 2019

Clariant reported continuing operations sales of CHF 4.399 billion in 2019 compared to CHF 4.404 billion in 2018. This corresponds to an organic growth of 3 % in local currency and a stable development in Swiss francs due to unfavorable currency fluctuations. The sales increase in local currency was driven by a progression in the Business Areas Catalysis and Natural Resources and was supported by both higher volumes and pricing.

Almost all regions contributed to the sales growth in local currency. The expansion was most pronounced in Latin America. Sales in Asia also increased, bolstered by a particularly positive development in India. Sales in the Middle East & Africa rose solidly while Europe grew slightly. Only North America reported a slight contraction.

Continuing operations EBITDA after exceptional items was negatively impacted by the one-off CHF 231 million provision, which was booked in the second quarter as a result of further developments in an ongoing competition law investigation by the European Commission into the ethylene purchasing market. Therefore, the full year 2019 EBITDA after exceptional items decreased significantly to CHF 461 million, compared to CHF 607 million in the previous year.

Excluding the effect of this provision, the continuing operations EBITDA after exceptional items rose by 14 % to CHF 692 million, supported by strong profitability improvements in both Catalysis and Natural Resources, which more than offset the softer margins in Care Chemicals. The corresponding continuing operations EBITDA margin after exceptional items, excluding this provision, increased to 15.7 % versus 13.8 % in the previous year.

In 2019, operating cash flow for the total Group declined to CHF 509 million from CHF 530 million in the previous year. This decrease was primarily attributable to a lower net result, the net working capital development, and slightly higher capital expenditures.

GRI Online Report
Management Approach Growth and Profitability
 → reports.clariant.com/2019/gri

CONTINUING OPERATIONS KEY FIGURES in CHF m

	2019	2018	Change in %
Sales	4 399	4 404	0
Gross profit on sales	1 375	1 362	1
EBITDA b.e.i. ¹	740	739	0
EBITDA margin b.e.i. ¹ (%)	16.8	16.8	-
EBITDA a.e.i. ²	461³	607	-24
EBITDA margin a.e.i. ² (%)	10.5³	13.8	-
EBIT b.e.i. ¹	444	480	-8
EBIT margin b.e.i. ¹ (%)	10.1	10.9	-
EBIT a.e.i. ²	165³	348	-53
EBIT margin a.e.i. ² (%)	3.9³	7.8	-
Income before taxes	71	281	-75
Net result	-34	213	-
Basic earnings per share (CHF/share)	-0.17	0.59	-
Adjusted earnings per share	0.87	1.03	-16

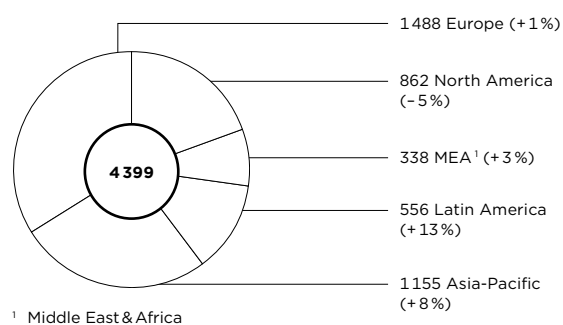
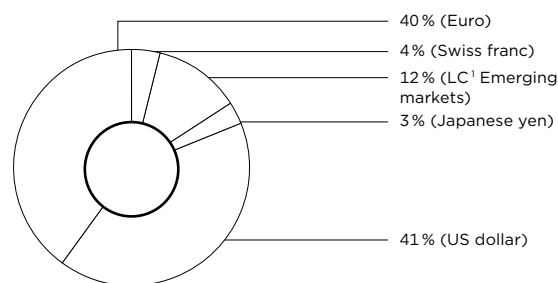
¹ Before exceptional items

² After exceptional items

³ Including a CHF 231 million provision for an ongoing competition law investigation by the European Commission; Excluding provision: EBITDA at CHF 692 million (+14%), EBITDA margin 15.7% EBIT at CHF 396 million (+14%), EBIT margin 9.0%

1.1.1. Solid local currency sales progression in a challenging economic environment

In 2019, continuing operations sales rose organically by 3% in local currency and remained flat in Swiss francs at CHF 4.399 billion (2018: CHF 4.404 billion). The sales development was underpinned by 1% volume growth and by 2% higher prices.

001 SALES BY REGION in CHF m**002 GLOBAL COST DISTRIBUTION**

¹ LC = Local currency

SALES BY BUSINESS AREA in CHF m

	2019	2018	Change in %	Change in LC ¹ in %
Care Chemicals	1 600	1 665	-4	-1
Catalysis	925	861	7	9
Natural Resources ²	1 874	1 878	0	4
Total Continuing Operations	4 399	4 404	0	3

¹ LC = Local currency

² Including Additives

Care Chemicals sales declined a minor 1% in local currency and by 4% in Swiss francs. The good sales progression in Consumer Care could not fully absorb the softened development in Industrial Applications, which primarily resulted from a continued cautious end-market demand environment and a weaker aviation business. Sales in the Business Area Catalysis improved by 9% in local currency and 7% in Swiss francs as a result of positive contributions in both Petrochemicals and Syngas. Natural Resources sales rose by 4% in local currency and remained stable in Swiss francs, underpinned by the strong progression in Oil and Mining Services and a slight improvement in Functional Minerals. Additives sales were negatively impacted by the softer electrical and electronics sectors as well as the weak automotive markets.

1.1.2. Clearly improved underlying EBITDA after exceptional items in 2019

Clariant's continuing operations gross margin improved to 31.3% in 2019 from 30.9% in 2018. This development is largely the result of a more favorable product mix.

Continuing operations EBITDA after exceptional items was negatively impacted by the one-off CHF 231 million provision, which was booked in the second quarter as a result of further developments in an ongoing competition law investigation by the European Commission into the ethylene purchasing market. As a result, the full year 2019 EBITDA after exceptional items decreased significantly to CHF 461 million compared to CHF 607 million in the previous year.

Excluding the effect of the one-off provision, the continuing operations EBITDA after exceptional items rose by 14% in Swiss francs to CHF 692 million compared to CHF 607 million in the previous year.

The increase in underlying continuing operations EBITDA after exceptional items reflects the enhanced profitability in most Business Areas, with a pronounced improvement in Catalysis at 15% in Swiss francs and 13% in Natural Resources. In Care Chemicals, the EBITDA after exceptional items contracted by 10%.

EBITDA¹ BY BUSINESS AREA in CHF m

	2019	2018	Change in %
Care Chemicals	282	314	-10
Catalysis	212	185	15
Natural Resources ²	305	271	13
Business Areas total	799	770	4
Corporate ³	-338	-163	-
Total Continuing Operations	461	607	-24

¹ After exceptional items

² Including Additives

³ Includes a CHF 231 million provision for an ongoing competition law investigation by the European Commission

The improvement in the underlying continuing operations EBITDA margin after exceptional items, excluding the one-off provision, to 15.7% from 13.8% was primarily attributable to strong profitability improvements in both Catalysis and Natural Resources. Growth in Catalysis was attributable to solid sales expansion throughout 2019 and an improved product mix while Natural Resources benefited from local currency sales growth and a continued focus on more value-added applications in Oil Services. One-off effects in the second quarter and lower Industrial Applications sales were the primary reasons for the decline at Care Chemicals.

EBITDA¹ MARGIN BY BUSINESS AREA in %

	2019	2018
Care Chemicals	17.6	18.9
Catalysis	22.9	21.5
Natural Resources	16.3	14.4
Total Continuing Operations	10.5²	13.8

¹ After exceptional items

² Total Continuing Operations EBITDA margin excluding a CHF 231 million provision for an ongoing competition law investigation by the European Commission was 15.7%

Clariant's exceptional items for continuing operations in 2019 amounted to CHF 279 million (2018: CHF 132 million). Restructuring-, impairment-, and transaction-related costs (CHF 281 million) include restructuring expenses pertaining to its continuing operations in the amount of CHF 4 million, mainly pertaining to projects in Europe and transaction-related costs in the amount of CHF 46 million. Exceptional items include a gain from the disposal of activities not qualifying as discontinued operations (CHF 2 million). Additionally, a one-off provision of CHF 231 million was made for an ongoing competition law investigation by the European Commission.

In 2019, the continuing operations operating income (EBIT) decreased to CHF 165 million (2018: CHF 348 million) as a result of the provision of CHF 231 million. Excluding this effect, the continuing operations operating income (EBIT) increased to CHF 396 million.

The net result for the total Group declined to CHF 38 million from CHF 356 million in full year 2018. This decrease is largely attributable to the CHF 231 million one-off provision, the weaker operational performance in the discontinued operations, the carve-out costs of the discontinued operations, and higher income taxes.

Clariant's Board of Directors has decided to propose an unchanged distribution of CHF 0.55 per share for 2019 to the general assembly. The corresponding proposal will be presented at the 25th Annual General Meeting on 30 March 2020.

1.1.3. Business Areas

1.1.3.1. Care Chemicals

CARE CHEMICALS KEY FIGURES

 in CHF m

	2019	2018
Sales	1 600	1 665
EBITDA ¹	282	314
Margin ¹ (%)	17.6	18.9
EBIT ¹	211	251
Margin ¹ (%)	13.2	15.1
Full-time equivalents (FTE)	2 614	2 541

¹ After exceptional items

Care Chemicals sales slightly decreased by 1% in local currency and were 4% lower in Swiss francs. Consumer Care sales increased due to a solid progression in Personal Care with a notable expansion in Crop Solutions. Industrial Applications sales developed less favorably due to continued cautious end-market demand and softer Aviation business.

Sales in Asia and Latin America reflected solid progress in local currency while sales in Europe also grew slightly. The development in North America was negatively affected by the force majeure of a key supplier in the second quarter, which has since been resolved.

The EBITDA margin after exceptional items for the full year 2019 softened to 17.6% from 18.9% due in part to the temporary negative impact from the raw material disruptions in North America and volume reductions in Industrial Applications resulting from weaker end-market demand.

For developments and achievements in 2019 concerning Care Chemicals, see the chapter on »How Care Chemicals Creates Value«. → **PAGE 74**

1.1.3.2. Catalysis

CATALYSIS KEY FIGURES in CHF m

	2019	2018
Sales	925	861
EBITDA ¹	212	185
Margin ¹ (%)	22.9	21.5
EBIT ¹	140	111
Margin ¹ (%)	15.1	12.9
Full-time equivalents (FTE)	2113	2061

¹ After exceptional items

In 2019, sales in Catalysis rose by a substantial 9% in local currency and by 7% in Swiss francs. Sales expansion was driven by a very good progression in Petrochemicals and a solid increase in Syngas.

The sales development benefited from double-digit growth in Asia and Europe and resilient demand in North America. Sales in the Middle East & Africa were comparatively volatile in 2019.

The EBITDA margin after exceptional items for the full year 2019 increased to 22.9% from 21.5%. Solid top-line growth throughout the year and the more significant sales contribution from Petrochemicals underpinned this improvement.

For developments and achievements in 2019 concerning Catalysis, see the chapter on »How Catalysis Creates Value«. → **PAGE 88**

1.1.3.3. Natural Resources

NATURAL RESOURCES¹ KEY FIGURES in CHF m

	2019	2018
Sales	1874	1878
EBITDA ²	305	271
Margin ² (%)	16.3	14.4
EBIT ²	208	194
Margin ² (%)	11.1	10.3
Full-time equivalent (FTE)	3948	4092

¹ Including Additives

² After exceptional items

Sales in the Business Area Natural Resources increased by 4% in local currency and remained unchanged in Swiss francs for the full year 2019.

The Oil and Mining Services business delivered low double-digit sales growth in local currency. Sales in Functional Minerals grew at a low single-digit rate in local currency, driven by the Purification business. Sales in Additives decreased at a high single-digit rate in local currency against a record 2018, owing to softer end-market demand.

In 2019, the EBITDA margin after exceptional items rose to 16.3% from 14.4% due to sales growth in local currency in tandem with a continued focus on more value-added applications in Oil Services as well as a more streamlined cost base in Oil and Mining Services. Additives largely mitigated the negative margin impact from lower volumes due to rapid and stringent cost control measures.

For developments and achievements in 2019 concerning Natural Resources, see the chapter on »How Natural Resources Creates Value«. → **PAGE 102**

1.1.3.4. Discontinued Operations

DISCONTINUED OPERATIONS KEY FIGURES in CHF m		
	2019	2018
Sales	2 127	2 219
EBITDA ¹	158	264
Margin ¹ (%)	7.4	11.9
Full-time equivalents (FTE)	5 282	5 978

¹ After exceptional items

As part of Clariant's portfolio optimization, the Business Units Pigments and Masterbatches and the Business Line Healthcare Packaging, which operated as a part of the Business Unit Masterbatches, were restated for 2018 and reclassified to discontinued operations beginning with the First Half-Year Results 2019.

On 31 October 2019, Clariant sold its Healthcare Packaging business to Arsenal Capital Partners. The final total consideration of the sale amounted to CHF 310 million and the proceeds net of cash amounted to CHF 295 million. On 19 December 2019, Clariant announced that it had agreed to sell its entire Masterbatches business for USD 1.56 billion. This deal is expected to be closed by Q3 2020.

In the full year 2019, sales in discontinued operations (Masterbatches and Pigments) decreased by 2% in local currency and by 4% in Swiss francs. The businesses were negatively impacted by the global economic slowdown, mainly by softer demand in China and Europe as well as the weakness in the automotive industry.

For the full year 2019, the EBITDA after exceptional items decreased in absolute value year-on-year due to the sales contraction and higher one-time costs required by the carve-out of the discontinued operations.

1.2. Balance sheet, liability structure, liquidity, and cash flow

1.2.1. Continued solid balance sheet

As of 31 December 2019, total assets changed only minimally to CHF 7.990 billion from CHF 7.979 billion at the end of 2018 mainly due to the introduction of IFRS 16 Leases, the reclassification to assets held for sale of the Masterbatches and Pigments businesses and the sale of Healthcare Packaging business on 31 October 2019.

Assets held for sale and liabilities directly associated with assets held for sale amounted to CHF 1.305 billion and CHF 559 million, respectively, as of 31 December 2019. This mainly impacts the assets and liabilities pertaining to the activities of the discontinued operations.

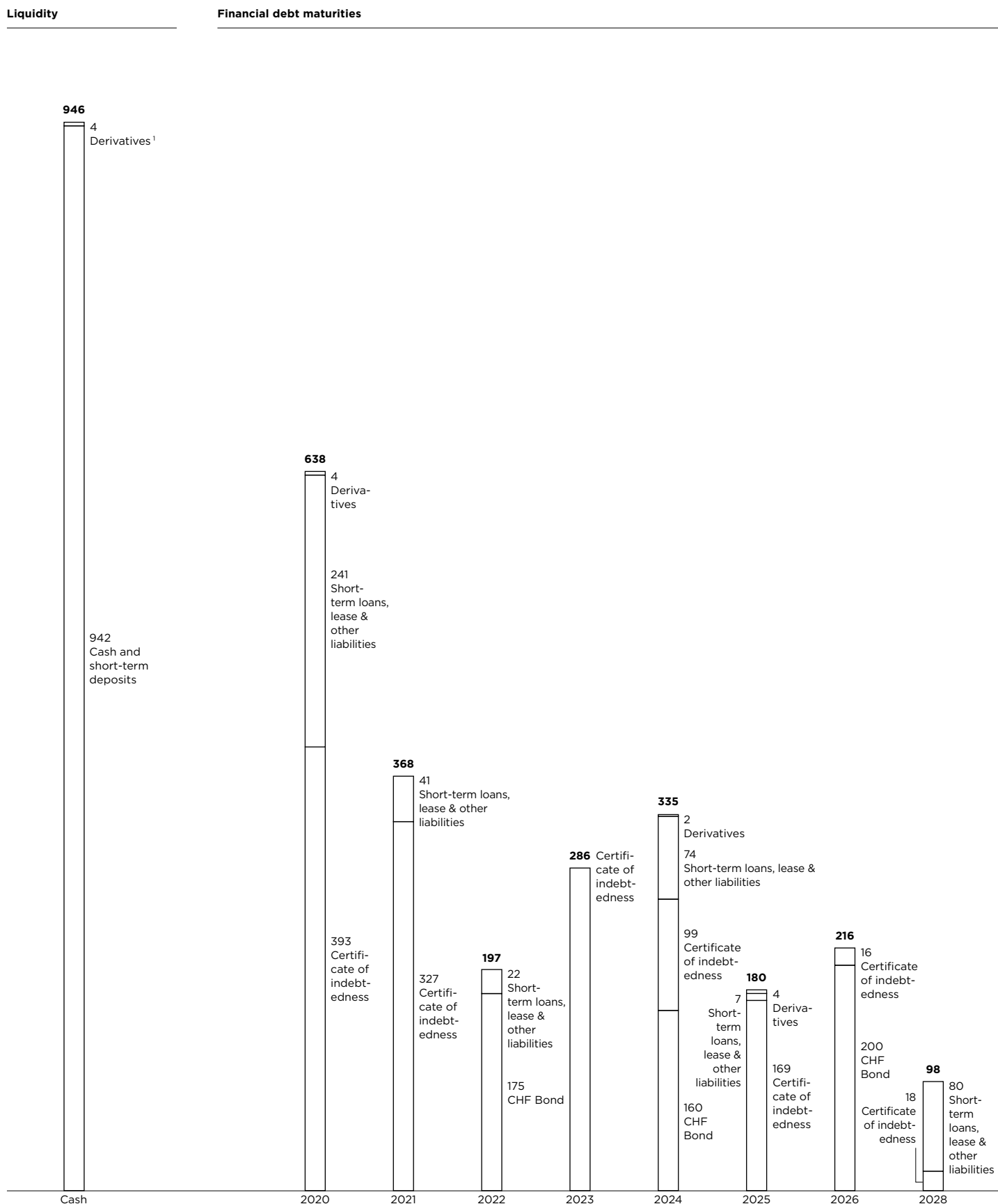
Net debt remained almost unchanged at CHF 1.372 billion at the end of December 2019 compared to CHF 1.374 billion at the end of 2018. This figure includes current and noncurrent financial debts, lease liabilities (2019, in accordance with IFRS 16, CHF 246 million; 2018, in accordance with IAS 17, CHF 17 million), cash and cash equivalents, short-term deposits, and financial instruments with positive fair values reported under other current assets, including the part reported under assets held for sale and liabilities directly associated with assets held for sale.

1.2.2. Long-term structured maturity profile secures solid liquidity structure

In the year 2019, Clariant's financing structure persisted at a very sound level. The Group maintains a broadly diversified maturity structure of financial liabilities with a long-term focus reaching until 2028. This funding has been secured on favorable terms.

Noncurrent financial debts decreased to CHF 1.485 billion at the end of December 2019 from CHF 1.711 billion at the end of December 2018, and current financial debts increased to CHF 587 million at the end of December 2019 from CHF 529 million at the end of December 2018. The decrease in noncurrent financial debts and the increase in current financial debts are mainly due to the combined effect of the reclassification to current financial debts of the EUR 150 million certificate of indebtedness maturing in April 2020, of the EUR 212 million

003 DEBT MATURITY PROFILE PER 31 DECEMBER 2019 in CHF m



¹ Financial derivatives with positive fair values reported under other current assets

certificate of indebtedness maturing in October 2020, and new bonds totaling CHF 200 million which were launched in April 2019. Additionally, a bond amounting to CHF 285 million issued in 2012 reached maturity on 24 April 2019 and was repaid. Due to the implementation of IFRS 16, finance lease liabilities presented as part of financial debts at the end of December 2018 were reclassified to separate lines in the balance sheet.

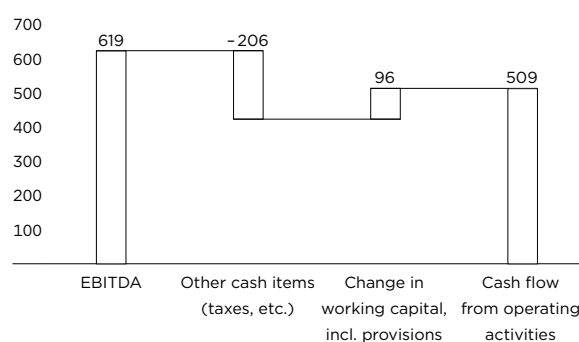
1.2.3. Operating cash flow hampered by working capital development and one-time carve-out costs of discontinued operations

Cash flow from operating activities before changes in net working capital and provisions for 2019 was CHF 534 million, compared to CHF 802 million for 2018.

Net working capital, including provisions decreased by CHF 96 million in 2019 (2018: CHF – 55 million). The ratio of net working capital to sales slightly decreased from 17.3 % to 17.2 %.

Cash flow from operating activities decreased to CHF 509 million compared to CHF 530 million in the previous year.

004 TOTAL GROUP CASH FLOW 2019 in CHF m



Cash flow from investing activities declined to CHF – 254 million (2018: CHF – 132 million). Capital expenditures increased to CHF 273 million (2018: CHF 237 million). Free cash flow, which equates to operating cash flow after capital expenditures and investments in intangible assets, decreased to CHF 220 million (2018: CHF 273 million).

Net cash flow after investing and financing activities was negative at CHF – 195 million (2018: CHF 132 million).

EXTRACT OF CASH FLOW STATEMENT (Total Group) in CHF m

	31.12.2019	31.12.2018
Net income	38	356
Reversal of non-cash items	483	438
Cash flow before changes in net working capital and provisions	534	802
Operating cash flow	509	530
Cash flow from investing activities	-254	-132
Cash flow from financing activities	-440	-246
Net Change in cash and cash equivalents	-195	132
Cash and cash equivalents at the beginning of the period	833	701
Cash and cash equivalents at the end of the period	638	833

1.3. Outlook

1.3.1. Focused portfolio to achieve above-market growth, higher profitability, and stronger cash generation

Clariant is a focused and innovative specialty chemical company that aims to grow above the market and to achieve higher profitability through innovation and sustainability. Clariant has significantly reshaped its portfolio through the divestment of Healthcare Packaging in 2019, the announced sale of Masterbatches, and the planned divestment of Pigments in 2020.

Clariant expects its continuing operations to achieve above-market growth, higher profitability, and stronger cash generation based on a focused, high-value specialty portfolio. For 2020, given the current sluggish economic environment and continued adverse foreign exchange conditions, growth will be more limited, and additional efficiency measures have been defined for each of the businesses to support the margin increase. These measures will lead to a workforce reduction of approximately 500 to 600 positions over the next two years and imply a cost base reduction of approximately CHF 50 million.

1.4. Stock market 2019

1.4.1. Clariant share price development 2019

In 2019, Clariant's share price development largely followed general market trends, political events and uncertainties as well as corporate announcements. In January, Clariant's share price started the year at CHF 17.90 and continuously improved throughout the month, reflecting the general market trend.

On 13 February, Clariant released the full year 2018 results and confirmed the mid-term guidance. The results were broadly in line with expectations, and the share price remained largely unchanged, moving from CHF 20.00 to CHF 19.75.

Clariant's Annual General Meeting on 1 April was well attended, and all proposed agenda items and resolutions were approved. Clariant's share price reacted positively and increased to CHF 21.35. On 23 April, the share price advanced to its highest level in 2019 of CHF 22.40.

The first quarter 2019 results, which were published on 30 April, missed market expectations due to lower profitability in the Natural Resources and Plastics & Coatings Business Areas. Consequently, the share price decreased from CHF 21.55 to CHF 20.95 on reporting day. After decreasing to CHF 18.20 at the beginning of June, the share price gradually started recovering again throughout the month. On 23 July, as a consequence of the announcement of the agreement to sell Clariant's Healthcare Packaging business the prior day, the share price reached CHF 20.20.

On 25 July, the first half year 2019 results and the announcement of the suspension of the potential High Performance Materials cooperation with SABIC resulted in a share price drop. The numbers came in below the consensus, which was disappointed primarily by the profitability in Care Chemicals and Catalysis. The share price dropped to CHF 18.00 on reporting day from CHF 19.90, a negative reaction that was more pronounced than the overall subdued sentiment in the chemical sector. The sector weakness was primarily attributable to the continued global economic slowdown and persistent political risk around global trade uncertainties.

The Clariant share price also came under pressure from repeated profit warnings and forecast downgrades within the chemical industry, which unsettled investors and led to the sale of chemical shares on a broad front during the summer months. Consequently, Clariant's share price decreased to its low point in 2019 of CHF 17.10 on 15 August.

Beginning in September, the general market sentiment began to gradually improve due to increasing signs of easing in the trade relations between China and the USA. In mid-October, positive signals for an improvement in the trade relations between China and the USA fueled market optimism and drove Clariant's share price back up to CHF 21.45, its highest level in the second half of 2019.

On 30 October, the third quarter results 2019 were below market expectations in the Care Chemicals Business Area but broadly in line with the chemical sector trend. Clariant's share price dropped to CHF 20.80 from CHF 21.10 on reporting day but recovered again shortly thereafter.

Throughout November, Clariant's share price fluctuated between a range of CHF 20.20 to CHF 20.90, tracking the global stock market and reflecting the changing status of trade negotiations between China and the USA.

The share price increased to CHF 21.35 on 19 December, following the announcement of the agreement to sell Clariant's Masterbatches business. In tandem with the generally positive stock market trend, Clariant's share price rose further and closed the year at CHF 21.60.

Clariant has been included in several notable indices, such as the MSCI Equity Switzerland Index. Clariant's inclusion for the seventh consecutive year in the Dow Jones Sustainability Index, which benchmarks the sustainability performance of leading companies in environmental, social, and economic terms is a recognition of Clariant's best-in-class achievements in these fields. In 2019, Clariant was awarded the SAM Bronze Class award for its sustainability performance. The repeated listings in other sustainability indices, such as the SIX Switzerland Sustainability 25 Index, FTSE-4Good Index Series, Euronext Vigeo Europe 120 Index and Ethibel Sustainability Indices (ESI), further validate Clariant's commitment to create value through sustainability and innovation.

1.4.2. Distribution

Since 2014, Clariant increased the distribution per share by an average of 7% per annum. Despite the difficult economic environment, the solid performance allows the Board of Directors to propose an unchanged distribution of CHF 0.55 per share to the Annual General Meeting, following a 10% increase the year earlier. This distribution is proposed to be made from a capital decrease by way of a par value reduction.

This distribution is in addition to the proposal of an extraordinary cash distribution of CHF 3.00 per share linked to the completion of the divestment of Masterbatches as announced on 19 December 2019.

005 CLARIANT SHARE PRICE DEVELOPMENT 1 JANUARY - 31 DECEMBER 2019 in CHF





Focus on the Core Busi- nesses

+ Growth and Profitability

Becoming a pure specialty chemicals player

Chief Financial Officer Patrick Jany on the company's results of the past financial year and its way forward.

Contribution to SDGs

This interview is an example of Clariant's contribution to SDG 8. Read more on → PAGE 24



Mr. Jany, in 2019, Clariant performed well despite a relatively difficult economic environment. To what do you attribute this?

That's correct. With 3 % growth in local currency and an

EBITDA margin of 15.7 % we showed good progress compared to the previous year and in relation to our peers. We have been able to demonstrate the resilience of our innovative and growth-oriented portfolio. Even more impressive is that we managed this despite headwinds from trade conflicts, the general politically tense situation in many regions, and some difficulties in our businesses.

The net result was negatively impacted by a provision for a competition law investigation by the EU Commission. How did this come about?

The investigation itself started in July 2017. In early July last year, we received additional information that allowed us to quantify the risk for the first time. That's all we can say about the investigation at this moment. The next logical step is that the EU will finalize its investigation and communicate to the involved companies. We cannot guide on a precise moment, but it probably will be this year.

You mention some difficulties. What happened and how satisfied are you with the performance of the businesses?

In general, the performance of the businesses was good. Catalysis and Natural Resources in particular grew continuously throughout the year, with an excellent fourth quarter. In Oil and Mining Services, we were able to continuously catch up after a more difficult phase a couple of years ago. We shrank our less profitable land-based business, where the market is very competitive, and moved into more promising areas, for instance, Offshore. Functional Minerals, while delivering good results in the oil purification business, suffered like Additives from a weakness in the automotive and electric/electronics sectors. Our biggest business, Care Chemicals, had a minor decrease in 2020 as Personal Care and Crop Solutions, which reported good progress, could not absorb the lower demand in the aviation business and the effects of a force majeure in the second quarter, which did have repercussions into the third quarter. This was a very unfortunate event that deteriorated our numbers, but we were able to rebound in the fourth quarter.

And how did the two businesses held for sale perform in the previous year?

In 2019, Pigments and Masterbatches were negatively impacted by the global economic slowdown and a weakness in the automotive sector, especially in China and Europe. But in general, both businesses are doing well. They have established very good market positions and are leading in their respective areas, which allowed them to weather the storm.



Patrick Jany
Chief Financial
Officer (CFO)

The decision to consider divesting both of them dates back as early as to 2015, when we separated Plastics & Coatings from the growth businesses. The purpose was to explicitly focus those businesses on efficiency, harvesting their excellent market positions to reallocate resources into our growth businesses, where we believe that innovation and sustainability will allow us to grow at rates above the market average. Today, we are executing on this plan by focusing on Care Chemicals, Catalysis, and Natural Resources and freeing up resources to be able to grow and concentrate our efforts to succeed in those areas rather than maintaining too broad a portfolio.

Following the divestment of Healthcare Packaging and the signing of an agreement with PolyOne, Clariant intends to propose a special dividend of CHF 3.00 per share to the shareholders at the 2020 Annual General Meeting. Why now? Why not wait until the Pigments business is also successfully sold?

The one-time dividend we are proposing to the Annual General Meeting is actually the one and only capital return to shareholders linked to the whole divestment program of all three businesses: Healthcare Packaging, Masterbatches, and Pigments. We will simply use the proceeds of the divestment of Masterbatches to pay out this extraordinary return while the proceeds of the other divestments will be used to reduce our debt level and allow for organic and external growth. As we are confident that the divestment of Pigments will be done as successfully as Healthcare Packaging and Masterbatches, we can time the payment with the Masterbatches sale and therefore avoid having too much cash on the balance sheet, which is never a good thing with negative interest rates!

Clariant announced job cuts at its full-year press conference, and this was welcomed by the financial markets. Why is this reduction necessary?

We are talking about two different sets of measures. The one we announced at our full-year press conference is a set of very granular measures defined by the businesses to be able to increase profitability in this difficult environment. In 2018, when we defined our 2021 strategy, the economic environment and growth expectations were very different. It is only logical that we need to adapt our cost structure and rethink our resource allocation in order to cope with the lack of growth and still be able to progress towards our targets.

And what is the second program about?

It's about Clariant 2021, the new Clariant. Through the divestments of Pigments and Masterbatches, we are repositioning the company as a focused specialty chemicals company. But we are also shrinking and need to rethink the way we are structured, both at a corporate and at a regional level. This is not a simple cost-cutting exercise but an opportunity to reinvent ourselves: to remove complexity, avoid remnant costs, and increase efficiency. As a next step, we will determine what this will look like in concrete terms.

Since 2018, Clariant has had a new anchor shareholder on board. How would you describe the relationship to SABIC?

It's a very steady and stable relationship. SABIC has owned 24.99% of the company since January 2018 and nominates four board members to be elected to our Board of Directors by all shareholders. On the business side, we continue to have good cooperation as well, with joint research and development efforts. SABIC is one of the world's leading petrochemical companies, and we are a leader in catalysts, which means that they are one of our largest customers in this area.

With regard to the strategy, was the suspension of the planned joint venture with SABIC not a deviation from your strategic path?

No, definitely not. Our path is to focus and grow the company to be a pure specialty chemicals player in the industry, thereby creating value for all our stakeholders. After exploring the option to grow in the area of High Performance Materials, we decided to suspend our plans in the best interest of all our shareholders. Additional information showed that the business performance was more volatile than we thought and that there would be less synergies than expected. Taking this into account, we were unable to agree on a reasonable price in a difficult market environment.

From the outside, the strategy implementation is sometimes perceived as a zigzag course...

I believe that focusing on your strength to create value is the right strategy. We need to have the right balance between the focus on performance and allowing the businesses to develop by dedicating resources for the long term. Take, for example, Care Chemicals. We spent a lot of resources since 2008, but we achieved a very nice position now. Personal Care and Crop Solutions are very rewarding to us. We have been outpacing our competitors regularly for the last four to five years.

What is crucial for success here?

Ultimately, it is about combining innovation and proximity to our customers, by bringing our R&D and technology to them. Our new Consumer Care Innovation Center in New Jersey, USA, and our Hair Care Competence Center in São Paulo, Brazil, are good examples. We are also building an innovation center in Shanghai to develop more locally tailor-made products with benefits for Chinese customers.

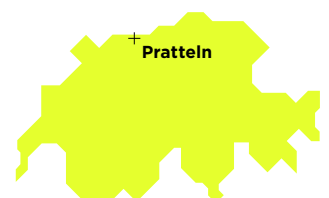
What concrete goals has Clariant set for itself next?

Through the successful divestments, the resilience of the portfolio, and some important additional efficiency measures, we are becoming one of the best-positioned specialty chemical companies in the world. Together with a deleveraged balance sheet, we are in the best position to grow the company as a next step.

Finally, a personal question. You recently announced that you would be leaving Clariant to take up a new professional challenge. Is now the right time, while the company is in a transformation process?

When is the right moment? I look back on 14 years as CFO – and 29 years in the company – with a great sense of pride and serenity. Clariant has established itself as a core player in the industry and is now on a very interesting course of specializing in businesses where it is strong and where it can grow by innovation and sustainability. We have great momentum, and the people are very motivated. It has been exciting to work in and shape this environment, and I have met tremendous people along the way. After all those years, I made the decision to accept a new challenge but will continue to look at the future success of Clariant.

SWITZERLAND





2. Intellectual capital

With a new organizational structure, cutting-edge innovation formats such as the Innovation Engine (iEngine) and the Innovation Garage (iGarage), and the introduction of a strategic innovation process, Clariant considerably strengthened its innovation capabilities in 2019. In addition, Clariant continued to leverage digitalization to create innovative business models and gain efficiency.

OVERVIEW INTELLECTUAL CAPITAL

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Patents (year-end)	> 5 400	> 1 100	> 6 500	6 700	-
Trademarks (year-end)	> 6 900	> 2 100	> 9 000	8 900	-
Active innovation projects	> 315	> 60	> 375	> 375	-
Of which Class 1 projects with double-digit million sales potential or of strategic relevance	> 60	> 5	> 65	> 70	-
Scientific collaborations			> 125	> 125	-

2.1. Innovation and technological advances

Clariant achieves its growth targets by developing innovative and sustainable products based on state-of-the-art technologies. → PAGE 56

In 2019, Clariant grew slightly below 3% through innovation projects, achieving its 2 – 3% target and realizing 1 – 2% sales growth from Top Line Innovation alone. For continuing operations only, the young and innovative products of Clariant grew by more than 3.5%. This is the result of a continuous commitment and effort to understand the challenges that customers are facing and apply Clariant's expertise to deliver better and more sustainable solutions. Research & Development spending in 2019 was CHF 207 million, compared to CHF 209 million in 2018. As a share of sales, R&D spending was 3.2%, maintaining the level of 2018. The overall number of active projects in the innovation pipeline remained stable, compared to 2018. The innovation formats iEngine and iGarage both contributed to maintaining continuous and stringent innovation portfolio management.

INNOVATION AND TECHNOLOGICAL ADVANCES

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Growth through innovation (%) ¹	> 3.5	< 0.5	< 3.0	> 3.0	-
Research & Development expenditures (CHF m)			207	209	-1
Research & Development expenditures as share of sales (%)			3.2	3.2	-

¹ Contains the contribution to growth of the innovation portfolio from both Top Line Innovation and Life Cycle Innovation. Potential cannibalization of existing sales by Life Cycle Innovation has not been excluded.

State-of-the-art equipment and infrastructure in eight R&D Centers and over fifty Technical Centers formed the basis for successful innovation. In 2019, Clariant increased the number of employees who were trained as innovation belts from 290 in 2018 to over 325 – a key factor in ensuring a well-filled project pipeline and maintaining the high number of Class 1 projects (those with a double-digit million sales potential).

In 2019, Clariant lost some patents, due to the divestment of Healthcare Packaging, leading to a total number of more than 6 500 patents at year-end. The

Innovation Project Classes

Class 1 projects have an estimated annual market value of CHF 10 million or more and are managed by Innovation Black Belts. Class 2 and Class 3 projects are led by Innovation Green Belts or trained Class 3 project leaders.

number of trademarks increased from 8 900 in 2018 to over 9 000 in 2019, despite the divestment of Healthcare Packaging. This was mainly due to the filling of gaps in certain countries and the creation of new trademarks.

2.1.1. New organizational structure fosters strategic innovation

In 2019, Clariant restructured its Group Technology & innovation organization by integrating Clariant Innovation Excellence (CIX) and New Business Development (NBD) into the new unit, »Innovation Excellence & Business Incubator.« The unit will continue to provide state-of-the-art innovation and capacity-

building tools, including Innovation Green Belt and Innovation Black Belt trainings, innovation workshops, and portfolio management support. The Business Incubator provides a platform for incubating and accelerating innovations before they are integrated into a Business Unit.

2.1.2. Innovation formats support discovery and incubation

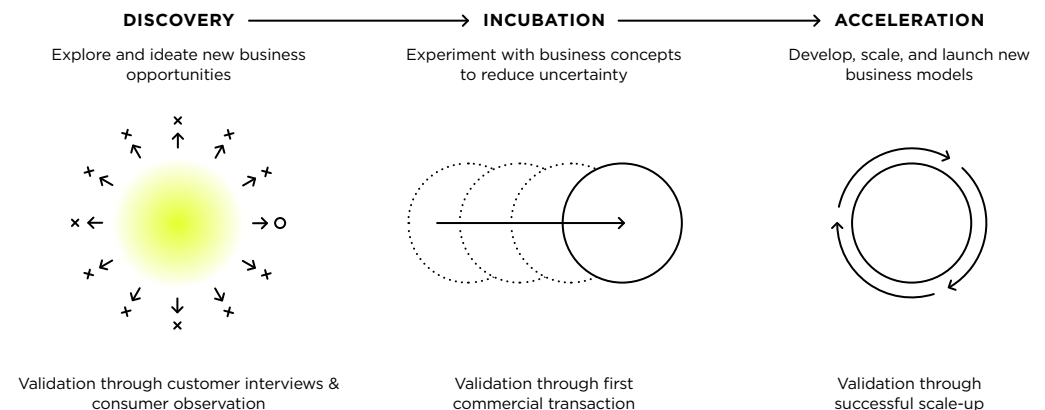
As part of the Business Incubator, Clariant conducts iGarages to develop innovative growth options that are adjacent to already served markets but cannot be addressed with the existing Idea-to-Market toolbox.

→ PAGE 59

New strategic innovation process: Discovery, incubation, acceleration (DIA)

Clariant's newly established strategic innovation process goes beyond the current Idea-to-Market process and consists of three phases: discovery, incubation, and acceleration. The DIA process aims to increase speed and establish new business in environments full of unknowns. Specialized teams with different mind-

sets, agile project management, and lean start-up methodologies help to generate fast learnings and to either confirm assumptions or change the business idea. Once an idea proves viable, Clariant can draw on its production network and market access to commercialize the product with short lead times.



In 2019, Clariant completed four iGarages based on market opportunities from various Business Units. The iGarage project for the Business Unit Catalysts focused on a specific market segment with significant growth potential, but that was difficult to access. The iGarage team consisted of R&D, marketing, and sales experts from the Business Unit as well as two members of the Business Incubator. In a first step, the team explored the targeted ecosystem, technological requirements, and the needs of potential customers and partners. Then, market-tested business models were designed, including differentiated value propositions, viable technical concepts, and go-to-market strategies that will allow the Business Unit to tap into opportunities for further growth. Finally, the team defined and started the R&D activities, developing new solutions for identified white spots.

While the iGarage develops strategic innovation growth options at the discovery and early incubation stages, the iEngine is used in the scout phase. Since the start of the iEngine in 2018, the format has been well received by employees and actively used whenever obvious solutions to technical challenges do not exist or have proven unsatisfactory. iEngine workshops are generally well attended and usually generate more than 30 ideas per session. In 2019, six iEngines were conducted, and the identified technology options are being pursued as part of various Idea-to-Market projects.

2.1.3. Gaining efficiency and speed with High-Throughput Experimentation (HTE)

In 2019, Clariant continued to focus on accelerating the innovation process by exploiting the potential of the High-Throughput Experimentation (HTE) method.

Due to the large number of requests from Business Units received by the HTE laboratory in Frankfurt, Germany, Clariant opened another facility in Houston, Texas, USA, in 2019. The new laboratory will enhance the innovation capabilities in North and South America. Initial work with the Business Unit Oil and Mining Services focused on applications such as pour point depressants, hydrate inhibitors, asphaltene inhibitors, corrosion inhibitors, and scale inhibitors used in the oil and gas industry. In 2020, the existing laboratory in Frankfurt will be enhanced, and another facility in Shanghai is planned to be operational by 2021.

2.1.4. Lab Excellence program

In 2019, the Lab Excellence program (LabX) was successfully implemented in the Biotechnology, Chemistry & Materials, and Process Technology Platforms. In these areas, project lead times from discovery to scale were reduced by 25%; the number of lab trials per week increased up to several 100%, and the average waiting time before the start of an experiment decreased by more than 80%, while maintaining an acceptable workload for the team. Introducing agile working methods has helped to enhance the operational performance of the R&D laboratories.

High-Throughput Experimentation (HTE)

HTE uses automation and robotics, miniaturization, as well as parallelization to plan and execute experiments at increased speed and optimized resource consumption. It makes use of intelligent design and enables Clariant to find correlations that are undetectable using traditional methods.

After successful demonstration of the power of LabX through the pilot projects, Business Unit Catalysts launched LabX in its major R&D sites in Louisville, USA, and Heufeld, Germany, supported by the LabX core team. After analyzing their processes in a cross-functional value stream design workshop, R&D teams identified substantial areas for improvement, which will be addressed by Kaizen events at the sites. One

Kaizen event

Kaizen is Japanese for »improvement« or »change for the better.« A kaizen event is a mini LeanSigma project completed over a short period of three to five days.

of the goals is to reduce the cycle time from sample preparation, characterization, and performance testing. Having a shorter cycle time leads to quicker development and commercialization of new products. »Waste« in processes is eliminated; resources are utilized more effectively; and the overall innovation process is accelerated. The LabX program supports Clariant's strategy of profitable growth.

In 2020, Clariant plans for its R&D laboratories to contribute even more to value creation, by continuing the LabX program and rolling out an optimized end-to-end process in Idea to Market to other Business Units.

2.1.5. Electronic Lab Notebook

Clariant leverages the potential of digitalization to gain efficiency in the R&D and innovation system with the Electronic Lab Notebook (ELN) – a cloud-based, digital knowledge repository that stores Clariant's scientific know-how by capturing all relevant information along the innovation chain. It consists of three core elements: a chemical inventory management system to backtrack and manage reagents used in laboratories; a study notebook with templates to enter R&D data; and analysis and visualization tools to analyze and correlate experimental data.

The ELN was developed in partnership with the scientific informatics company Dotmatics. In 2019, Clariant introduced the chemical inventory management system and the study notebook application at seven German facilities across all Business Units (excluding discontinued operations) and Group

Turning R&D into a lean organization with LabX

Clariant initiated the Lab Excellence (LabX) program in 2017 to turn R&D into a lean organization. The first step in implementing the LabX approach was to understand how the laboratories work and how projects are executed in order to identify areas of improvement. This was done in an end-to-end value stream design workshop in which issues that decrease efficiency were identified. »End-to-end« entails focusing on the entire Idea-to-Market chain, starting with the demand from a customer and ending with the fulfillment of their requirements. Identified pain points are addressed in several Kaizen events – five-day workshops that involve a Kaizen Champion, a leader, and a dedicated team that offers all the expertise needed to develop and implement improvement measures. This approach heavily involves employees, thus creating ownership for identified improvement measures.

Technology & Innovation. At the end of 2019, the chemical inventory management system was also introduced at five North American sites. For 2020, Clariant plans to roll out all modules to sites in Brazil, USA, China, Japan, and India.

2.1.6. Open Innovation initiative

The Open Innovation (OI) initiative supports the Business Units in identifying collaboration partners around the world, ranging from large corporations to start-ups, universities, and other research institutions. Important elements of OI are engaging technology scouts, promoting scientific partnerships, crowdsourcing technology solutions through commercial OI portals, and pitch days.

OI, which is managed by the new unit »Innovation Excellence & Business Incubator,« generated more than 300 technology proposals in 2018. In 2019, the

total number of proposals grew to over 400. This increase is due to the fact that many strategic projects, such as iGarages, the technology screening for Class 1 projects, and the plastics recycling initiative, started using OI. The

number of leads became so large that many proposals from 2018 are still pending consideration within the responsible Business Units. Some of the proposals did not materialize due to negative proof of concepts, problems with intellectual property, mismatching business models, or suboptimal cost perspectives. However, by facing these hurdles, Clariant learned how to better identify and select potential partners.

Clariant's objective for OI is to create better innovations and accelerate time to market by collaborating with outside partners with market-leading technologies. In 2019, along with facilitating more scouting activities across regions, OI focused on executing the best concepts through a series of testing, development, and implementation processes, aiming to increase the number of success stories.

2.1.7. External collaborations

For Clariant, partnerships with external parties are vital to stimulate innovation. From the numerous external collaborations Clariant was involved in, in 2019, Clariant engaged in more than 125 scientific partnerships, which is comparable to the number in the previous year. The OI initiative contributes significantly to these partnerships and has led to success stories such as Clariant's collaboration with the Barcelona Supercomputing Center (BSC).

BSC specializes in high-performance computing (HPC) and hosts MareNostrum, one of the most powerful supercomputers in Europe. In 2018, Business Unit Oil and Mining Services and Group Technology & Innovation started a collaboration with BSC to conduct molecular modelling studies that support the development of high-performing anti-agglomerants that are used to prevent gas hydrate formation, which is a huge risk to pipeline flow assurance in deepwater oil and gas exploration. There is a growing need to innovate high-performance solutions that allow the oil and gas industry to push the boundaries into reserves that are deeper, hotter, more saline, and under higher pressure. After the successful establishment of computational methods, the collaboration will be used to screen new chemical formulations that can then be tested in the new HTE laboratory in Houston, Texas. Other examples of successful external collaborations that materialized in 2019 are the partnership with the British start-up Polymateria regarding biodegradable and compostable plastics → **PAGE 186** and the partnership between Clariant, ExxonMobil, and REG Life Sciences (acquired by Genomatica over the course of the project) to evaluate the potential use of cellulosic sugars from sources such as agricultural waste and residues to produce biodiesel.

Pitch Day

More than 15 start-ups participated in Clariant's first »Pitch Day.« They pitched their ideas to Business Unit Industrial & Consumer Specialties. Collaborations with two start-up companies are ongoing for further technology testing.

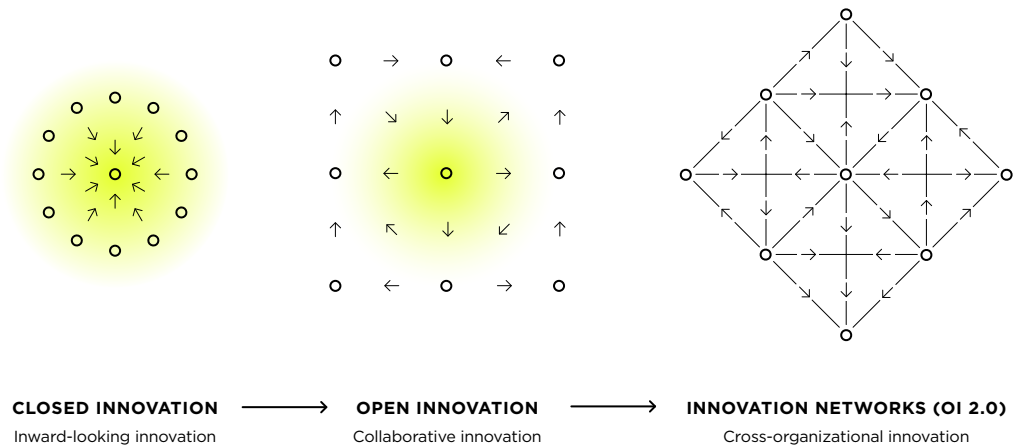
To benefit more systematically from partnerships with external parties in the future, Clariant is convinced that collaboration needs to be extended along and across value chains. The goal is to create innovation ecosystems that include suppliers, academia and research institutes, technology providers, industry

partners, and regulators, as well as public funding agencies and NGOs. Clariant considers its OI initiative to be the right vehicle to further pursue this goal in the future.

Innovation networks: Overcoming internal and external boundaries¹

With the advancement of communication technologies (e.g. cloud computing, internet of things, big data, social media) Open Innovation entered a new paradigm known as OI 2.0. This enriched the innovation ecosystems and fostered co-creative collaboration between all actors in a quadruple helix system (governments,

academics, companies, and citizens), spanning organizational boundaries well beyond normal licensing and collaboration schemes. To keep up with OI 2.0, Clariant is introducing pragmatic approaches to accelerate in-house innovation efforts.



¹ EU Open Innovation Strategy and Policy Group (OISPG), 2013: Open Innovation 2.0: A New Paradigm

● Internal boundary for innovation → Flow of information
○ Idea/innovation/inspiration — Connection e.g., digital data

2.1.8. Sustainability screenings

Sustainability is an integral part of the innovation process and a fundamental prerequisite for all new major product developments. Corporate Sustainability Assessments, as defined under Clariant's Portfolio Value Program (PVP) and known as PVP screenings, are systematically carried out not only for the entire product portfolio but also for Clariant's innovation project pipeline. → PAGE 149

GRI Online Report

Management Approach Innovation and Technological Advances → reports.clariant.com/2019/gri

2.2. Digitalization

2.2.1. A two-way approach

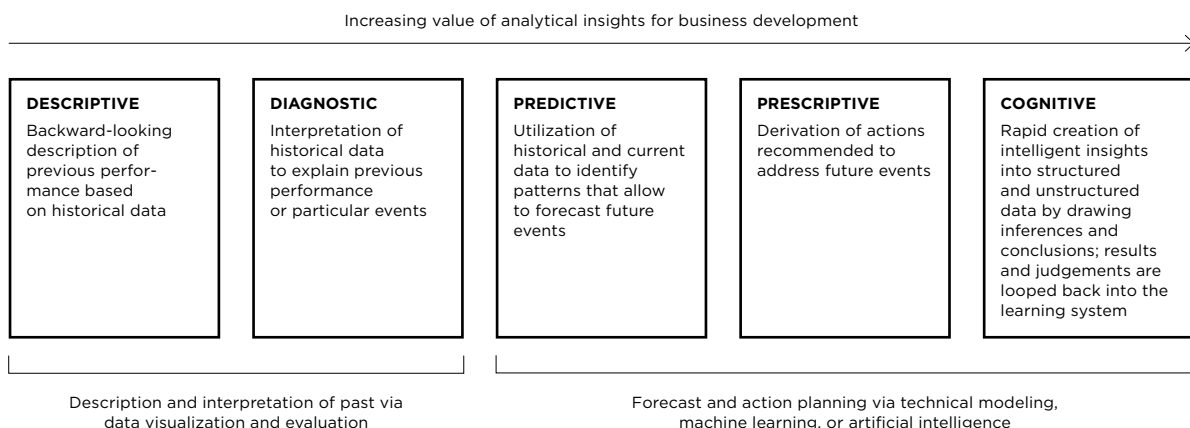
Digitalization is a megatrend reshaping many areas of the chemical industry. Competitive pressure, investments in R&D, and digitizing operations are on the rise, requiring that Clariant also leverage digitalization to gain efficiency and create innovative business models. Clariant's cross-functional digital program, Digital4Clariant, helps the company keep up with the speed of this transition. In 2019, Clariant further developed the program's three core workstreams: »New Business Models,« »Big Data and Advanced Analytics,« and »Digital@Operations.« By implementing internal projects as well as customer-facing ser-

vices, Clariant is leveraging all three workstreams to support the five pillars of its corporate strategy by improving decision-making with data-driven mathematical models and algorithms. → PAGE 28

2.2.2. New digital business models

In 2019, the workstream »New Business Models« incubated several minimal viable products and brought new services into the market progressively for testing. For example, Navigance™, Clariant's Munich-based start-up, offers a cloud-based solution for providing real-time recommendations for optimal control parameters to help producers optimize chem-

001 ANALYTIC DISCIPLINES IN DATA SCIENCE



ical processes. Navigance™ uses artificial intelligence to combine data from customer plants with the expertise of chemical process experts. Rolled out in 2019, the service increases production volume and efficiency of formaldehyde production plants and serves methanol producers.

Chemberry™, the online ingredient-sourcing platform launched in 2018, continued its impressive growth in 2019. With over 35 000 ingredients listed from more than 550 suppliers, Chemberry™ has

Chemberry™

The online platform enables customers to easily find chemical ingredients. It includes products from all relevant chemical suppliers and is operated independently to ensure confidentiality and neutrality. → chemberry.com/ourSolution

become one of the most comprehensive ingredient platforms in the Personal Care market. In 2019, Chemberry™ expanded its coverage by including ingredients for the Home Care market and entered several strategic partnerships that will help the platform become the central

node of the chemical industry ecosystem and the go-to platform for Consumer Care brands and suppliers.

In 2019, Clariant also launched InstaColr™, a backward-integrated color-matching solution based on digital formulation algorithms that completely changes the value proposition and go-to-market approach of Business Unit Masterbatches. Digital formulation solutions pave the way to seamlessly link the front end to Clariant customers with the support services in R&D and Business Units. In the years to come, integrated solutions will combine digital formulation and application development, data science, High-Throughput Experimentation, and lab robots to capture efficiency and growth potential.

2.2.3. Using data science at scale

The workstream »Big Data and Advanced Analytics« uses data science methodologies to complement Clariant's chemical competencies and offers process improvement potential. While the use of descriptive and diagnostic analytics is already widespread

There's an app for that – InstaColr™

Digitalization has fundamentally changed the way we shop. A combination of intuitive apps, reliable e-commerce, and ultra-fast delivery have come to be the norm in online retail. In the chemical industry, it's anything but. However, Clariant's Business Unit Masterbatches is set to change that with InstaColr™, an entirely new service coming out of its Digital@Masterbatches initiative. InstaColr™ enables on-the-spot color-matching for customers. The first Minimal Viable Product (MVP) was developed and brought to market in about six months by Clariant's dedicated digital team in Singapore. The front-end is an app that runs on the Apple iPad, which Clariant's sales representatives use in talks with customers. It allows for the matching of desired colors and the specification of technical and business requirements on the spot via an intuitive interface. The cloud-based InstaColr™ engine immediately calculates optimized product formulations, taking into consideration the customer's specific application needs and local regulatory requirements. InstaColr™ then returns several alternatives from »best match« to »most economical match« from which the customers can choose. With a streamlined process running in the background, InstaColr™ immediately gives a binding quotation and all the relevant product stewardship data. Lab and sample logistics are linked in the background to InstaColr™, which ensures that the customer receives the corresponding color chips and samples within just a couple of days. InstaColr™ is already active throughout Southeast Asia, where more than 25 sales representatives have been trained and certified as InstaColr™ consultants. Customers provide overwhelmingly positive feedback, especially related to the on-the-spot adjustment opportunities, immediate pricing, and fast sample shipment. InstaColr™ will continue to be developed and rolled out gradually to the other regions over the course of 2020 and 2021.

throughout the company, Clariant also embarked on systematically using data science for predictive, prescriptive, and even cognitive analytics. In 2018, Clariant inaugurated a Competence Center for Data Science within Group Technology & Innovation (GTI) that focuses on data intelligence and process simulations. The Competence Center increases the speed and quality of digital and non-digital product and service developments, as well as process improvements, by improving evidence-based decision-making on inventory levels, cash management, or production-line operations. In 2019, Clariant continued to build the technical foundation for the use of data science at scale by implementing a data lake – a central data repository that facilitates access to data and information across the organization – and data science software.

2.2.4. Developing the digital operating model

In 2019, Clariant continued enhancing its Clariant Excellence approach with digital solutions, for example, by upgrading the Clariant Production System with a tailor-made digital assessment entirely run on internal resources. This enables production sites to systematically identify and implement measures that improve productivity.

As part of the »Digital@Operations« workstream, Clariant started developing and using robots to digitize transactional processes. For example, the monitoring of contract expiration dates in procurement is now handled automatically, and customer service was upgraded with chatbots that can answer the most frequent customer queries autonomously. In the future, Clariant plans to use robots for more intelligent tasks, such as the review of legal contracts.

2.2.5. Enhancing digital skills

Many of Clariant's job profiles increasingly require advanced digital skills. Therefore, the company is developing upskilling and reskilling measures in the area of data science and advanced data analytics. To enable more data-driven decisions, employee trainings now go beyond the general introduction to new tools and involve innovative training formats such as self-organizing learning groups and learning games, which encourage self-learning. Clariant also intensified the education of employees on agile project management methods and tools as part of both formal and on-the-job training programs.

Thanks to its collaboration with leading educational institutions and improvements made in the recruitment process, in 2019, Clariant attracted new employees with expertise in data science and digital business development, strengthening the digital skills of its workforce. → **PAGE 48**

To underscore its commitment to continuous learning, particularly in digital skills, Clariant joined the »Lifelong Learning Pledge« initiated by DigitalSwitzerland. This initiative offers every member of the Swiss workforce opportunities to enhance their existing skills with digital competences in order to stay competitive in the increasingly digitalized labor market.

GRI Online Report
Management Approach Digitalization
→ reports.clariant.com/2019/gri

 MARKET TO CUSTOMER

3. Manufactured capital

Protecting customers, consumers, and the environment by providing safer and more sustainable solutions is one of Clariant’s top priorities. In 2019, Clariant continued screening products as part of the Portfolio Value Program and further promoted its EcoTain® label. In addition, Clariant prioritized responsible procurement of raw materials and solidified its role as a sustainability leader by promoting the production of bio-based chemicals and biofuels.

OVERVIEW MANUFACTURED CAPITAL

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
EcoTain®- awarded products	24	3	27	24	12.5
Research & Development Centers			8	8	0
Technical Centers			> 50	> 50	0
Countries with production facilities			38	39	-2.6
Production sites	66	52	118	125	-5.6
Raw materials procured (in m t)	2.79	0.34	3.13	3.57	-12.3
Production (in m t) ¹	3.99	0.26	4.25	4.34	-2.1

¹ For 2018 and 2019, the production volume is based on a reduced reporting scope, which includes sites that are responsible for 95% of total production.

3.1. Product stewardship/sustainable chemistry

Clariant puts customer safety and the environment at the forefront of its solutions.

3.1.1. Global regulations and EU REACH

Product Stewardship enables compliance with global regulations and ensures compliant communication across the supply chain through efficient information and document management. To ensure the company

The Portfolio Value Program (PVP) and the EcoTain® Label



In 2012, Clariant developed the Portfolio Value Program (PVP) in cooperation with the Collaborating Centre on Sustainable Consumption and Production (CSCP), founded by the United Nations Environment Program (UNEP) and the Wuppertal Institute. The program is based on a thorough analysis of sustainability trends and needs, as well as on the input and views of external stakeholders. The PVP provides the overarching framework to develop Clariant’s product and innovation project portfolio toward more innovative and sustainable products. At the heart of the PVP lies Clariant’s ambition to steer the product portfolio toward solutions that add value through sustainability for customers and society, while also ensuring long-term profitable growth. Clariant continues to be inspired by the opportunities to raise the bar with respect to sustainability, which are brought about by societal changes, market trends, existing and future regulations, customer preferences, and stakeholder expectations.

Clariant uses the comprehensive screening of the PVP to further clarify the sustainability performance of its product portfolio with its distinguishing EcoTain® label. Products awarded the EcoTain® label must have best-in-class sustainability performance in at least one of the 36 criteria, offer benefits in several product life cycle phases, and not have any significant adverse environmental or social impacts. A corporate panel of experts challenges and awards flagship products with the EcoTain® label. By the end of 2019, 76% of the product portfolio of the continuing operations had been screened for its sustainability profile and 220 products were awarded the distinguishing label.



SUSTAINABILITY CRITERIA

36 criteria grouped into six categories are considered in the Portfolio Value Program (PVP) when screening the product portfolio for sustainability.



Performance

 Integrated sustainable business  Performance

People

 Safe use, transparency, and information  Addressing megatrends and societal needs

Planet

 Resource efficiency and environmental protection  Raw materials and sustainable sourcing

complies with all relevant regulations and raises awareness on emerging regulations, Clariant monitors global regulatory developments, runs impact assessments, reviews its product portfolio, and supports business preparedness. Clariant's business compliance was confirmed in 2019 by several REACH enforcement and regulatory bodies in Belgium, Spain, and Germany.

Once all REACH registrations for existing chemicals are completed, Clariant will continue to register newly manufactured or imported chemicals in accordance with the EU REACH regulations and ensure that all product dossiers are kept up to date. Since the adoption of EU REACH in 2007, Clariant has submitted and updated more than 1 200 dossiers for chemical substances. With the focus of EU REACH regulation shifting toward dossier evaluation, Clariant is proactively reviewing all submitted dossiers and responding to potential requests for additional information from the European Chemicals Agency (ECHA).

Clariant is represented in various trade associations, such as the European Chemical Industry Council (Cefic) and the German Chemicals Industry Association

(VCI), and has taken leadership roles in workstreams relating to chemical management. For example, Clariant contributed to the preparation of the Cefic REACH Dossier Improvement Action Plan launched in 2019, which provides a framework for REACH registrants to evaluate safety data previously submitted in REACH registration dossiers in steps.

3.1.2. Portfolio Value Program (PVP)

As part of the PVP, Clariant continued to screen innovative products before commercialization and revise existing product screenings to ensure high screening coverage.

PRODUCT STEWARDSHIP/SUSTAINABLE CHEMISTRY

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
EcoTain®-awarded products	24	3	27	24	12.5
Cumulative number of EcoTain® products	171	49	220	193	14.0
Product portfolio screened for sustainability performance (sales %)	76			76 ¹	-
Screened products meeting internal sustainability definition (%)	68			68 ¹	-
Screened products not meeting internal sustainability definition (%)	8			8 ¹	-
Product portfolio not screened for sustainability performance (sales %)	24			24 ¹	-

¹ Figure restated for continuing businesses

In 2019, the total number of EcoTain® products increased, demonstrating how innovation fuels sustainability excellence and vice versa. The screening coverage of the continuing operations' portfolio was maintained at 76 %, reflecting Clariant's efforts to assess new products.

Clariant maintains roadmaps to uncover sustainability improvement opportunities in the product portfolio and drive innovation. Currently, these focus on reducing the use of certain hazardous substances in Clariant's product portfolio. The roadmaps typically promote alternatives that go beyond relevant regulations, which is particularly important in regions where regulatory action is lagging.

EU REACH

REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) is a regulation of the European Union adopted in 2007 to protect human health and the environment from potential risks posed by chemicals, while enhancing the competitiveness of the European chemical industry.

In 2019, Clariant further strengthened its reporting capabilities to better link the financial performance of products with its sustainability performance. The results of the PVP financial reporting support decision-making that enhances both sustainability and financial performance.

Additionally, Clariant introduced sustainability designators that enable customers to identify products with key advantages, for example, for water savings or enabling circularity. Promoted products are identified based on the outcome of the product screenings and meeting the thresholds for each of the sustainability designators. → PAGE 184

3.1.3. EcoTain®

During 2019, the EcoTain® label was further promoted through the rollout of EcoTain® Partnerships – a standard for establishing value chain collaborations on sustainability that highlights the importance of partnerships to solve sustainability challenges. It also draws attention to outstanding collaborations on sustainability and shows appreciation to the employees who go the extra mile to deliver sustainable value. Moreover, Clariant advanced the development of possible EcoTain® Partnerships across its markets and value chains and further refined the concept. Clariant awarded 27 products the EcoTain® label, increasing the total number of products with proven sustainability excellence to 220.

GRI Online Report

Management Approach Product Stewardship/
Sustainable Chemistry → reports.clariant.com/2019/gri



CUSTOMER TO CASH

3.2. Production volume

In 2019, the reported production volume decreased by 2.1% to 4.25 million tons. Business Area Natural Resources continues to provide the largest share, with 2.97 million tons of produced goods, representing an increase of 0.7 million tons. This is mainly due to the different reporting scope that includes Business Unit Additives as of 2019. Production volume of Business Area Care Chemicals decreased by 0.02 million tons to 0.96 million tons. The production volume of Business Area Catalysis remained stable at 0.06 million tons. Overall, more than 39% of the production volume is manufactured in plants with a certified ISO 50001 energy management system.

3.3. Raw material procurement

Due to growing demand from customers and consumers, an evolving regulatory environment, and increasing interest in the circular economy, renewable raw materials are gaining importance. Clariant supports the shift to renewable raw materials by promoting innovation in biofuels, bio-based chemicals, and feedstock. By doing so, Clariant strengthens its role as a sustainability leader in the chemical industry.

Clariant spent about CHF 4.2 billion on goods and services in 2019. Roughly CHF 2.6 billion were disbursed for raw materials from approximately 6 800 suppliers. Across all Business Areas, more than 20 000 different raw materials were procured, although 93% of the purchase volume was made up of around 200 raw materials. In 2019, 24% of purchased raw materials stemmed directly or indirectly from crude oil; about 21% were derived from natural raw materials such as bentonite; and 6% were made of renewable raw materials. The remaining materials were either base or specialty chemicals or non-chemicals.

In addition to promoting renewable raw materials, Clariant prefers to procure goods and services from local suppliers in order to support the economic development of the respective regions. That said, in order to opt for local raw materials, impeccable quality as well as technical and economic feasibility must be guaranteed.

RAW MATERIAL PROCUREMENT ACCORDING TO REGION¹ in CHF m					
	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Asia-Pacific	283	314	597	672	-11.2
Of which with local suppliers ²	270	294	564	641	-12.0
Number of local suppliers ³	1061	1539	2422	2527	-4.2
Europe	886	346	1232	1340	-8.1
Of which with local suppliers ²	853	264	1117	1228	-9.0
Number of local suppliers ³	795	788	1416	1514	-6.5
Latin America	202	60	262	320	-18.1
Of which with local suppliers ²	149	26	176	213	-17.4
Number of local suppliers ³	657	556	1088	1085	0.3
Middle East & Africa	49	50	99	106	-6.6
Of which with local suppliers ²	28	26	55	57	-3.5
Number of local suppliers ³	162	253	395	378	4.5
North America	338	114	453	510	-11.2
Of which with local suppliers ²	320	99	419	464	-9.7
Number of local suppliers ³	538	483	979	930	5.3
Grand Total	1758	884	2642	2948	-10.4
Of which with local suppliers ²	1620	710	2330	2603	-10.5
Number of local suppliers ³	3213	3619	6300	6434	-2.1

¹ Duplicate counts possible. One supplier may supply to continuing and discontinued operations.

² Raw material spending of Clariant production sites in this region

³ Regional suppliers that supplied Clariant (production) sites

3.4. Production sites and innovation facilities

3.4.1. Developments in the production site network

By the end of 2019, Clariant operated 118 production sites in 38 countries around the world.

– Care Chemicals: To further enhance product quality, enable higher production yields, and improve process reliability at its ethylene oxide production plant in Gendorf, Germany, Business Unit Industrial & Consumer Specialties added a production line of alkoxyates and installed a new distillation column that will operate from 2020 onward. At its site in Bonthapally, India, the Business Unit inaugurated a new state-of-the-art wastewater treatment plant. → **PAGE 181** Further, the Business Unit started plant upgrade work at its site in Mount Holly, USA. A plant at the site in Santa Clara, Mexico, was divested.

- Catalysis: Business Unit Catalysts announced a plan for significant expansion of the capacity of its maleic anhydride catalysts production facility in Panjin, China. The investment will further optimize the existing facility and enable the creation of a new state-of-the-art production line for Clariant's SynDane™ maleic anhydride catalyst.
- Natural Resources: Business Unit Oil and Mining Services expanded its infrastructure in Western and Sub-Saharan Africa, enabling copper, gold, and oil development activities. This supports the oil and mining industries in Algeria, Angola, Mozambique, South Africa, and Zambia. It also opened a new supply base in Bojonegoro, Indonesia, which enhanced operational efficiency and increased service levels for customers while providing improved safety, sustainability, and optimized supply chain performance. Business Unit Functional Minerals added a new production line for activated bleaching earth at its site in Yuncos, Spain. After opening two new facilities at its site in Zhenjiang, China, Business Unit Additives achieved full operational capacity for its additives AddWorks® and Ceridust® in 2019. In addition, the Business Unit advanced a new light stabilizer plant in Cangzhou, China, and capacity expansion of its Licocene® production in Frankfurt, Germany.
- Discontinued Operations: Business Unit Pigments opened a facility for high-end blue pigments for the automotive industry in Cuddalore, India. At its site in Pogliano, Italy, Business Unit Masterbatches launched a competence center for recycling by constructing a recycling miniplant that will become operational in 2020. → **PAGE 186**

3.4.2. Research & Development and Technical Centers

Clariant's strong innovation infrastructure consists of eight Research & Development Centers and more than fifty Technical Centers. The centers are distributed around the world, with locations in Europe, North and Latin America, China, and India.

In 2019, Clariant inaugurated a new Consumer Care Innovation Center in the New York City area, USA, to strengthen collaborative innovation with North America's consumer care brands. → **PAGE 76** In addition, Clariant opened its third High-Throughput Experimentation (HTE) Laboratory in Houston, Texas, USA. The location is key as the new facility is the first of its kind supporting the Oil & Gas industry, offering new and sophisticated solutions for customers.

→ **PAGE 103**

People

Clariant's brand value People represents value creation that stems from human and relationship capital. This includes progress on the material topics of Talent Attraction and Development; Employee Engagement; Occupational Health, Safety, and Well-Being; Customer Relationships; Ethics and Compliance; Policy and Stakeholder Relations; Sustainability Performance in the Supply Chain; and Human Rights.

1. Human capital

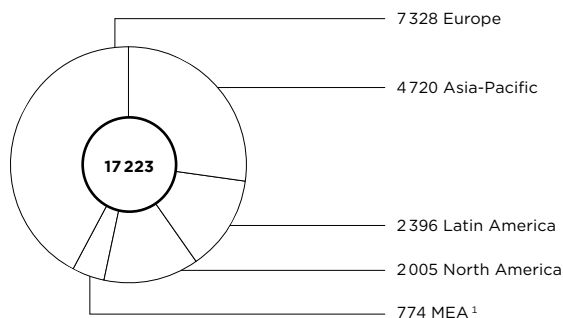
Clariant is committed to creating a collaborative working environment that focuses on its core value of appreciation. The company strives to attract and develop talents central to its future success and is committed to engaging with all its employees to realize the full potential of its diverse workforce.

Compared to 2018, the distribution of the workforce between regions remained almost unchanged, with minor increases in Europe (0.1 percentage points), Asia-Pacific (0.1 percentage points), Latin America (0.8 percentage points), and Middle East & Africa (0.1 percentage points), while in North America, the regional share of total FTE decreased by 1.2 percentage points. → **FIGURE 001**

The age and gender structure of Clariant employees also remained constant. In 2019, 14 % of employees were younger than 30 years, 59 % were 30 – 50 years old, and 27 % were older than 50 years. → **FIGURE 002** The total workforce consisted of 78 % men and 22 % women. The number of full-time equivalents declined by 3.8 % to 17 223 in 2019.

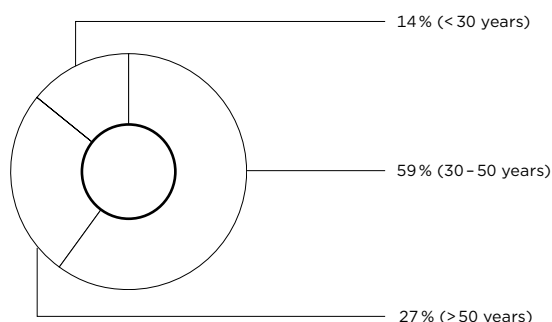
In 2019, Clariant strengthened its safety-oriented leadership culture and worked towards its goal of zero accidents through its multifaceted health and safety programs. This continuous focus resulted in a relatively stable lost time accident rate.

001 FTE BY REGION



¹ Middle East & Africa

002 AGE DIVERSITY



OVERVIEW HUMAN CAPITAL					
	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Total staff (in FTE)	11 941	5 282	17 223	17 901	-3.8
Employees (in FTE)	7 510	2 649	10 159	10 405	-2.4
Male	4 939	1 955	6 894	7 115	-3.1
Female	2 571	694	3 265	3 290	-0.7
Workers (in FTE)	4 431	2 633	7 064	7 496	-5.8
Male	4 065	2 538	6 603	6 890	-4.2
Female	366	95	461	606	-23.9
Number of people hired	1 303	267	1 570	2 142	-26.7
Male	870	210	1 080	1 453	-25.7
Female	433	57	490	689	-28.9
Number of people who left the company	1 374	443	1 817	2 047	-11.2
Male	961	361	1 322	1 515	-12.7
Female	413	82	495	532	-7.0
Turnover rate (%)			10.3	11.1	-
Number of em- ployees in the local, regional, and glob- al talent pools	949	242	1 191	>1000	-
Global manage- ment positions (ML 1-5) filled with internal candidates (%)	84	96	87	84	-
Total training hours	167 150	38 711	205 861	234 240	-12.1
Number of training participants	10 034	3 857	13 891	15 791	-12.0
Training hours (Ø per participant)	16.7	10.0	14.8	15	-1.3
Number of em- ployees with standardized per- formance manage- ment process	7 458	2 605	10 063	10 350	-2.8
Staff in Research & Development	>960	>90	>1 050	>1 100	-
Lost time accident rate (LTAR; acci- dents with at least 1 day lost/ 200 000 work hours)	0.15	0.13	0.15	0.14 ¹	7.1

¹ Restated due to one reclassified injury, which was not considered by the statutory insurer as an incident but determined to be a personal health issue.

1.1. Talent attraction and development

Clariant considers talent attraction and development a central factor in future business success. To support this priority, the company follows a structured approach, using its MySuccess platform to integrate all Human Resources processes from recruitment and onboarding to learning, talent and performance management. In 2019, Clariant implemented a broad range of projects along the entire employee journey to realize the full potential of its workforce.

TALENT ATTRACTION AND DEVELOPMENT

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Number of people hired	1 303	267	1 570	2 142	-26.7
Male	870	210	1 080	1 453	-25.7
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Clariant strives to attract people who not only meet the defined role requirements, but also fit with its values. In 2019, Clariant hired 1 570 new employees (490 women and 1 080 men) to support its profitable growth strategy. With 34.6 % of new hires, Europe accounted for the largest share of new employees, followed by North America, which accounted for 27.6 % of new hires.

Clariant's performance management process ensures that strategic business objectives are translated into the employee's day-to-day activities. In 2019, 10 063 employees followed a standardized performance management process.

Overall, 13 891 employees participated in a training recorded in the central learning management system, for a total of 205 861 training hours. This represents a reduction of around 12 % compared to 2018 and can mainly be attributed to the global data privacy training conducted in 2018, which led to an extraordinary number of training participants and hours. The average hours per employee that engaged in training remained stable at 15 hours per employee.

More than 1 600 talents were discussed in 60 talent reviews across the organization, and concrete development steps and career measures were defined and will be implemented in 2020. The reward for Clariant's systematic talent management activities is a very high talent retention rate of 93 % in 2019, which is 2 percentage points lower than in 2018. Clariant promoted internal candidates into 87 % of senior management positions and filled 90 % of group management positions with the internal population.

1.1.1. Employer branding and recruiting

Since 2018, Clariant has enhanced its recruiting of highly skilled people that can support the company into its digital future. It hired a Digital & IT Talent Acquisition Specialist whose primary mission is to engage in the business-critical hunt for digital talents. → PAGE 48

Clariant also rolled out a targeted digital campaign via the Asian social network WeChat. In 2019, Clariant increased its follower base by building a network of potential candidates and regularly received spontaneous applications from people with diverse skillsets and backgrounds. In 2020, Clariant will further define its brand identity on WeChat and enhance the integration between the social network, Chinese job boards, and the internal performance management platform in order to improve the user experience.

WeChat

The Chinese messaging, social media, and mobile payment app has more than one billion active users per month.

In 2019, Clariant also expanded the rollout of its digital interviewing platform, which was introduced in 2018. The platform facilitates the application process for candidates from around the world, allowing them to record and upload their video interview anytime and anywhere, saving time and travel expenses. In the pilot region Asia-Pacific, more than 70 % of hiring managers used the tool to conduct interviews and virtually meet candidates. Feedback collected over the course of 2019 revealed that the platform was perceived as beneficial and user-friendly, prompting Clariant to further promote its adoption in Europe and North America.

1.1.2. Key position placement and succession planning

Clariant maintains a strong talent pipeline and a robust succession planning system in order to fill key roles according to a transparent set of criteria. In 2019, this system was complemented with clearly defined criteria for senior management position placements and the establishment of succession planning committees. In addition, Clariant's performance management tool was further enhanced, allowing the Business and Service Units to access better statistics about their talent pools in order to predict future gaps and take measures accordingly.

Another important element in strengthening Clariant's talent management approach was the launch of »Talent Management Fundamentals« – a new training program for people working in Human Resources across all regions that provides knowledge of talent management topics, such as succession planning, capability development, or performance assessment, and assures global talent management standards.

Clariant's assessment center and capability development program provides aspiring leaders with clarity on competence requirements for various job levels and offer an assessment to identify development opportunities at organizational and individual levels. In 2019, around 90 employees from operational functions, Human Resources, and Finance attended a competency assessment.

To secure a stable talent pipeline for positions in the innovation organization, Clariant launched the Innovation Talent Management Review (ITMR) initiative in 2018. It is assigned to identify talents, develop key innovation skills, and assign innovation professionals to suitable Business Units. Since the inception of the initiative, 80 talents have been reviewed in this forum. As part of the program, Clariant also defined career paths for its innovation professionals and developed a learning curriculum focused on innovation-specific topics. So far, 50 roles were mapped and more than 60 proposals for learning measures, such as trainings and on-the-job learnings, were collected. The second ITMR was concluded at the end of 2019.

1.1.3. Strengthening commercial competencies

To strengthen commercial competencies, Clariant developed an advanced marketing e-learning module in 2018, which was rolled out in 2019. The three waves of the training that were implemented received very positive feedback, encouraging Clariant to continue this course offering in the future.

The advanced marketing module is complemented by »Manage for Growth,« a three-day program targeted at senior sales managers, which aims to strengthen their competencies for driving growth within their teams. After its rollout in 2018, Clariant conducted three editions of the program in 2019 in Europe, Asia-Pacific, and Latin America.

1.1.4. Training and development programs to enhance leadership skills

Clariant offers a wide range of formal and informal programs for high-potential employees. One example is the »Pioneer Program,« which was successfully concluded in 2019 for the third year in a row. A key element of the program is the presentation of a new business project, which can be further pursued as part of the program upon approval of the management committee of a Business or Service Unit. Based on the positive feedback from Business and Service Units to these presentations, four new projects were initiated in 2019.

In 2019, the Mentoring Program was revamped, and more than 50 managers were included in the pool of certified mentors. By the end of the reporting year, these mentors coached 30 employees. Other informal learning and development initiatives include learning communities, peer coaching sessions, and a coaching program led by an externally certified consultant that focuses on behavioral change.

Leadership trainings at Clariant

PIONEER PROGRAM

The Pioneer Program was established in 2017 to enhance organizational understanding as well as leadership and communication skills of aspiring leaders by exposing them to short-term assignments outside their area of responsibility.

MENTORING PROGRAM

In the Mentoring Program, younger professionals get the opportunity to team up with experienced leaders to strengthen leadership skills and encourage knowledge transfer across functions and age-groups. Since the inception of the program, more than 120 mentees participated in the program.

LICENSE TO HIRE

This training provides a toolkit for efficient recruiting and supports line managers in making the right hiring decisions. The program is offered to all hiring managers.

FRONTLINE LEADERSHIP TRAINING

This training is designed for production managers and shift leaders. It covers basic leadership instruments that enable managers to effectively lead and motivate teams and manage change. The interactive training is facilitated by a dedicated Learning Manager and repeatedly receives outstanding reviews from participants.

AUTHENTIC LEADERSHIP TRAINING

This intensive course focuses on communication skills necessary to be a successful and inspiring leader. The participants either attend the Executive Performance Training, which is designed for cross-functional groups of six people, or the Inspirational Leadership Creative Communication Program, which is open to larger groups.

TEAM EFFECTIVENESS PROGRAM

This program helps leaders apply measures that enhance trust within their team, improve the quality of decision-making, and strengthen the execution of commitments. The program was specifically designed to help leaders build high-performing teams.

These informal development initiatives are complemented by formal learning programs delivered by business schools, specialized training companies, and Clariant's internal experts. In 2019, a range of new formal learning programs was launched, including a »First-Time Leaders« coaching program for leaders and a »Clariant Excellence Manufacturing« program for managers in operational functions.

Clariant also continued to offer various well-established leadership trainings. These include, for example, the »License to Hire« program, which is offered to all hiring managers, and the »Authentic Leadership Training.« The »Frontline Leadership Training« was again conducted with more than 150 employees. Three modules were rolled out in Asia-Pacific and a brushup module was created to keep people engaged with the topics.

GRI Online Report

Management Approach Talent Attraction and Development
→ reports.clariant.com/2019/gri

1.2. Employee engagement

Clariant's people are at the core of the company's sustainable value creation. In developing, improving, protecting, and delivering Clariant's products and services, they are an invaluable competitive factor. Therefore, Clariant is committed to engaging with its employees on all levels, focusing on its core value of appreciation.

Clariant believes that diverse perspectives enable the company to capture market opportunities faster and foster a corporate culture that is conducive to innovation and growth. Thus, cultivating an inclusive work environment that values differences in experience, culture, nationality, ethnicity, age, gender, sexual orientation, and physical ability is vital for Clariant's business success. It also contributes to keeping the turnover rate at a stable level.

1.2.1. Supporting employees in times of change

After conducting the »Pulse Survey« for the first time in 2018, Clariant's Business Units thoroughly analyzed the results in 2019 and identified improvement areas through so-called »Team Barometers.« Team Barometers are short focus group surveys that allow for insights regarding the satisfaction with specific actions taken following the Pulse Survey, such as global team meetings to improve collaboration or a new newsletter that strengthens the communication between management and

employees. This process, which was supported by employee engagement committees in several countries, will enable Clariant to better tailor the support and resources that employees need to achieve their goals.

Pulse Survey

In 2018, a representative and randomly selected sample of almost 2500 employees was surveyed on topics as change, strategy, and collaboration. The company-wide survey will be conducted biennially.

Engaging and supporting employees is particularly important in the case of Business Units that are divested from the Clariant Group. Communicating openly and transparently with the employees from discontinued operations assures that they are well-informed of all developments. For example, Business Unit Pigments specifically focused on analyzing cultural aspects of their employee group and used the findings from the Pulse Survey to create insights that supported the development of a set of new business values.

1.2.2. Streamlining working conditions across the organization

Clariant ensures that the company stays open to new ways of working, offers a global workplace based on common values, and creates a sense of purpose for all employees across regions and age groups. To support these goals, a global Employment Policy was adopted in 2018 that describes what fair working conditions mean in daily practice, underlining the importance of employee collaboration. It clearly commits to equal development and promotion of all people across every organizational level and age group.

In 2019, Clariant introduced trainings on the Employment Policy for regional heads of Human Resources and – in an exchange with the local Human Resources teams – clarified its content and objectives throughout the organization. The policy was also included in the onboarding curriculum for new employees. To monitor implementation and adherence to the new policy, Clariant conducted an internal audit in all major countries by means of a survey and calls with regional and local heads of Human Resources as well as Human Resources consultants.

The objective for the coming years is to further raise awareness among business leaders and managers by introducing the policy in management meetings. Clariant will also assess the implementation of the policy and potentially adjust processes in certain regions to ensure full alignment with the global policy.

1.2.3. Expressing appreciation and promoting internal development opportunities

In 2019, Clariant decided to further formalize its Recognition Program. Besides its monetary recognition awards, Clariant established a global guideline to streamline noncash recognition awards and introduce appreciation award programs in countries where no such programs existed. Furthermore, a new function in the »MySuccess« Human Resources platform was implemented to support the nomination and administration process of the existing Special Recognition Award.

In addition, Clariant further developed its Referral Program and rolled it out in India and several countries in Asia-Pacific, Europe, and the Middle East & Africa. The expansion of the program was part of a concerted effort to advertise internal development opportunities to a wider audience, which was triggered by feedback from the Pulse Survey 2018. As a result, internal applications have increased by 30 % in 2019 as compared to 2018.

Recognition Program

The program includes monetary recognition awards for outstanding achievements and nonfinancial awards that encourage employees to recognize contributions of their peers and supervisors in the form of vouchers or presents.

Global Benefits Policy

The policy sets binding guidelines for benefits in regard to flexible working, healthcare, travel, well-being, retirement, accidents, and death, while leaving some flexibility to adjust programs according to country-specific circumstances.

1.2.4. Aligning benefit programs with the global policy

In 2018, Clariant adopted a Global Benefits Policy to establish a consistent framework for benefit programs across the organization. In 2019, Clariant documented the benefits offered in all countries to identify potential gaps between country programs and the global policy. Clariant also introduced an updated approval matrix, defining the process of reviewing or newly establishing local benefit offers.

GRI Online Report

Management Approach Employee Engagement
→ reports.clariant.com/2019/gri



CUSTOMER TO CASH

1.3. Occupational health, safety, and well-being

Clariant's zero-accidents goal underscores its commitment to protect and promote the health, safety, and well-being of all employees. In addition to multifaceted health and safety programs, such as AvoidingAccidents@Clariant, Clariant took further steps in 2019 to maintain a safety-oriented leadership culture, enhance health and safety precautions at its sites, and learn from past incidents through improved reporting.

OCCUPATIONAL HEALTH, SAFETY, AND WELL-BEING

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Lost time accidents ¹			28	27 ⁴	3.7
Lost time accident rate (LTAR; accidents with at least 1 day lost/ 200 000 work hours)	0.15	0.13	0.15	0.14 ⁴	7.1
Number of recognized occupational illnesses	1	2	3	1	200
Number of work-related fatal accidents	0	0	0	0	0
Lost workdays (LWD) caused by occupational accidents	418	243	661	879 ⁴	-24.8
Lost workday rate (LWDR) ²	3.79	2.95	3.43	4.68 ⁴	-
Process safety event rate ³	0.77	0.08	0.48	0.46	-

¹ Number of occupational accidents with at least one day's work lost

² Lost Workday Rate = loss of work days caused by occupational accidents in relation to 200 000 hours of work

³ Process Safety Event = ratio of the number of Process Safety Events in relation to 200 000 hours of work

⁴ Restated due to one reclassified injury, which was not considered by the statutory insurer as an incident but determined to be a personal health issue.

In 2019, the overall health and safety performance at Clariant's sites further improved, as illustrated by several performance indicators. Although there was a slight increase in occupational incidents, they were less severe than in the previous year. The number of lost time accidents slightly increased by 3.7% from 27 in 2018 to 28 in 2019, with one case concerning a supervised (non-Clariant) worker. In addition, ten lost time accidents involved contractors, which is the same number as in 2018. 83% of all recorded injuries required first aid measures; 13% needed medical treatment; and 4% of recorded injuries were restricted work cases. The most frequent injury types in 2019 were sprains, bruises, and contusions (25%), open wounds (22%), bone fractures (14%), and chemical burns (14%). Burn injuries accounted for 7%. The remaining 18% are due to unspecified injuries. In none of the cases was a limb lost or was the injury caused by a foreign body. No work-related fatal accident was recorded in 2019. The number of recognized occupational illnesses increased to 3, compared to 1 in 2018.

The lost time accident rate (LTAR) slightly increased to 0.15 accidents per 200 000 hours of work, as compared to 0.14 in 2018. The total number of lost workdays decreased significantly from 879 in 2018 to 661 in 2019, representing an improvement of 24.8%. This reduction indicates that job-related injuries were less severe in 2019. Clariant also managed to reduce the lost workday rate to 3.43 workdays lost per 200 000 hours of work.

1.3.1. Raising awareness of safety challenges

The »Safety Moments« initiative, launched in 2017 to strengthen Clariant's safety-oriented leadership culture, was further developed in 2019.

To support managers with implementation across regions, an internal platform was launched to share customized handouts with relevant information for each employee group. As of 2019, managers can choose from more than 250 »Safety Moments« on the platform.

»Safety Moments«
Held at the beginning of each meeting, »Safety Moments« raise awareness for safety-related challenges and offer ideas for how to avoid or resolve them.

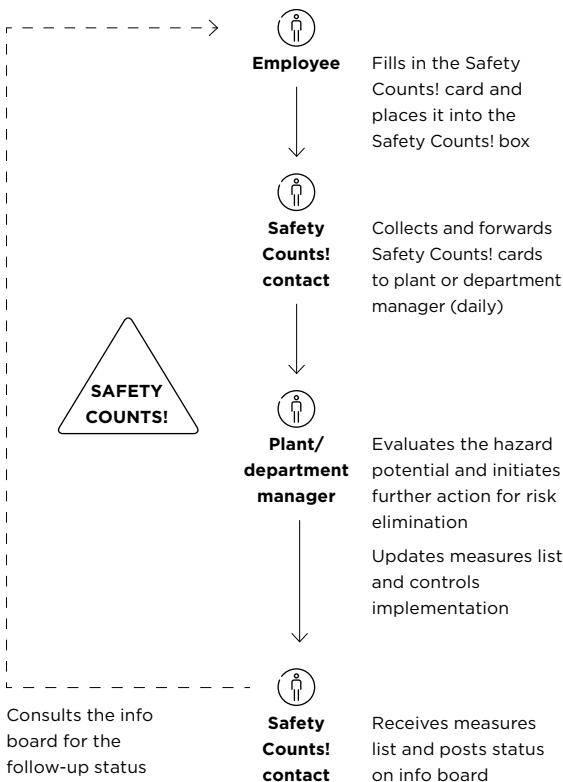
1.3.2. Reporting on safety

Clariant provides dashboards for occupational health and safety reporting. The company requires all sites to issue a report immediately after the occurrence of a lost time accident or a restricted work case – an incident that keeps the affected employee from performing routine functions of their job or from working at least one full work day. Investigation reports are mandatory for all cases. The number of cases decreased from 62 in 2018 to 49 in 2019.

Since 2018, Clariant reports Process Safety Events (PSEs) according to the criteria of the International Council of Chemical Associations (ICCA). The number of reported Process Safety Events increased to 92 in 2019, compared to 86 cases in 2018. The Process Safety Event rate increased from 0.46 in 2018 to 0.48 in 2019. In order to comply with the reporting requirements of the European Chemical Industry Council (Cefic), Clariant will also record process safety events according to Cefic criteria until 2020. From 2021 onward, only ICCA criteria will be applicable.

AvoidingAccidents@Clariant

Occupational health, safety, and well-being at Clariant means much more than wearing necessary safety gear. It is a commitment to tackle safety in a comprehensive way and ensure that every employee returns home after work as healthy as they arrived. The most effective way to prevent occupational accidents and achieve the goal of zero accidents is by implementing a set of cohesive management programs and leadership measures. AvoidingAccidents@Clariant is a global program that creates safe working environments, raises awareness of safety, and illustrates Clariant’s focus on prevention. Since the start of the program in 2007, the lost time accident rate (LTAR) has declined from 0.92 to 0.15. Clariant’s Safety Counts! cards also play an important role in ensuring health and safety, helping employees document critical safety situations and the circumstances that led to them. Improvement measures taken are shared locally, enabling the production teams to build best practices and promote a preventive mindset throughout the entire company.



1.3.3. Enhancing employee well-being

The promotion of workplace health and well-being is a local responsibility that each Clariant region addresses with tailored programs. In many countries, Clariant offers free psychological counseling and stress management trainings and runs employee assistance programs that analyze and evaluate mental strain, educate employees on mental health risks, and develop relief strategies with affected employees.

To protect its employees from work-related hazards, every workplace at Clariant is subject to a systematic, multi-step assessment that includes workplace ergonomics, illumination, noise, indoor air quality, humidity, and temperature. Clear minimum requirements are defined for each factor and measures to redesign the workplace are taken if these requirements are not met.

In addition, Clariant offers a range of benefits designed to enhance the work-life balance of its employees. These include the provision of fitness facilities and contributions to external fitness programs, flexible working hours and working from home arrangements, childcare facilities and contributions to external childcare, as well as support for employees who care for elderly family members.

GRI Online Report
 Management Approach Occupational Health, Safety, and Well-being → reports.clariant.com/2019/gri

2. Relationship capital

In 2019, Clariant focused on building strong customer relationships and understanding customers' needs to gain valuable insights for sustainable value creation. As suppliers are critically important to Clariant's value creation, the company continuously analyzes spend effectiveness and reduces risk in procurement. In 2019, Clariant received the World Procurement Award for its integrative supplier risks management approach that helps suppliers meet the company's strict sustainability and risk expectations.

OVERVIEW RELATIONSHIP CAPITAL

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Survey responses obtained from customer contacts			n.a. ¹	2 791	-
Customer interviews			404	538	-24.9
Net Promoter Score (NPS) (%)			n.a. ¹	29	-
Raw material suppliers ²	3 503	3 896	6 805	7 000	-2.8
Raw material supply base by spend covered by sustainability evaluations (%)	80	74	78	74	-

¹ Surveys are conducted every two years

² Duplicate counts possible. One supplier may supply to continuing and discontinued operations.



MARKET TO CUSTOMER

2.1. Customer relationships

Customer engagement, a key to profitable growth, lies at the core of Clariant's commercial strategy. After taking significant steps in recent years to turn Clariant from a product-driven to a customer-centric organization, in 2019, Clariant refocused on strengthening the customer experience to gain a better understanding of the customers' needs and develop tailor-made value propositions.

CUSTOMER RELATIONSHIPS

	Total 2019	2018	Change in %
Survey responses obtained from customer contacts	n.a. ¹	2 791	-
Net Promoter Score (NPS) (%)	n.a. ¹	29	-
Customers who want to continue doing business with Clariant (%)	n.a. ¹	90	-
Customers who plan to intensify the business relationship (%)	n.a. ¹	77	-
Customer interviews as part of marketing and strategy initiatives	404	538	-24.9
Interviews with industry experts as part of marketing and strategy initiatives	144	150	-4.0
Number of Commercial Excellence projects	33	34	-2.9
Margin from Commercial Excellence (CHF m)	24.7	31.7	-22.1

¹ Surveys are conducted every two years

2.1.1. Deriving actionable insights from customer feedback

The significant number of customer interactions throughout the year reflects Clariant's focus on customer experience. In 2019, Clariant conducted 404 customer interviews (2018: 538) and 144 industry-expert interviews (2018: 150) as part of marketing and strategy projects, yielding valuable feedback on how to further improve its offerings and the entire customer journey. The decline in conducted customer interviews mainly reflects the absence of follow-up interviews to the customer satisfaction survey, which is conducted biennially.

In 2019, Clariant responded to the results of the 2018 customer satisfaction survey by implementing a program for strategic key account management. The company also addressed other areas for improvement, including complaint management and logistics. Since survey results differ considerably between regions and Business Units, improvement efforts targeted business-specific and regional challenges in order to further increase customer satisfaction and loyalty.

2.1.2. Moving towards true customer centricity

An ongoing dialog with customers enables Clariant to address customer needs along the entire value chain and to move towards true customer centricity.

Clariant's Commercial Excellence comprises more and more a mix of tailored initiatives that encompass, for example, customer strategy, pricing and commercial execution. In 2019, Clariant carried out 33 Commercial Excellence projects to improve the ability to find, keep and grow business opportunities with customers. The margin from these Commercial Excellence efforts was CHF 24.7 million in 2019.

With the launch of the Leading Marketing Organization in 2017, Clariant built the foundation to fully integrate marketing into each Business Unit by developing the required capabilities and tailoring resources to individual business needs. Dedicated marketing functions and the Marketing Advisory Board ensure the continuous development and delivery of marketing programs within and across the Business Units through training and the exchange of best practices. In 2019, Clariant created a marketing training curriculum in collaboration with the renowned Kellogg School of Management at Northwestern University in the United States. A total of 37 employees completed the program, strengthening commercial competencies across the organization.

The Marketing Excellence initiatives capture growth opportunities. In 2019, Clariant carried out 15 Marketing Excellence projects to identify subsegments of customers and gain in-depth knowledge of the customer decision journey. → PAGE 60

GRI Online Report

Management Approach Customer Relationships
→ reports.clariant.com/2019/gri

2.2. Ethics and compliance

In 2019, Clariant remained committed to implementing its Strategic Integrity Roadmap. This roadmap, which is structured around the company's five pillars of leadership engagement, communication and training, risk assessment, standards and controls, and monitoring, lays the foundation for an ethical mindset and responsible behavior in the workforce. By carrying this commitment forward, Clariant's transformation from a rules- and principles-based organization into a value-based organization continues.

Clariant uses a comprehensive set of key performance indicators to measure effective progress toward the objectives of the roadmap.

ETHICS AND COMPLIANCE

	Total 2019	2018	Change in %
Questions and allegations issued via the anonymous Integrity Line	116	104	11.5
Fully or partially substantiated	8	29	-72.4
Closed during the year	31	72	-56.9
Percentage of Board members who received training on anticorruption (in %)	100	50	-
Percentage of relevant employees who received training on anticorruption (in %)	85	30	-

2.2.1. Revising the Code of Conduct to embed ethical behavior

As part of the standards and controls pillar of the Strategic Integrity Roadmap, Clariant's Code of Conduct guides employees through ethical commitments and supports them in reflecting on responsible actions and decisions. In 2019, Clariant revised the Code of Conduct, which applies to everyone working for Clariant. It includes new topics and commitments, a Q&A section, as well as scenarios that demonstrate these commitments in practice and emphasize the speak-up culture by strengthening its commitment to non-retaliation and the manager's responsibility. The updated Code of Conduct will be published on Clariant's website and will be rolled out throughout the organization in 2020.

2.2.2. Engaging people for ethics and compliance

To underscore the importance of ethical business practice, in 2019, Clariant continued the rollout of its Leader-led Compliance Sessions to the company's senior leaders and the commercial organization. These sessions provided a forum to discuss ethical dilemmas that emerge in daily business practice and share lessons learned and best practices. The dilemmas were based on scenarios addressed by the Code of Conduct, such as anti-bribery, antitrust, data privacy, conflict of interest, and discrimination and harassment. As observed in 2018, the Leader-led Compliance Sessions resulted in more requests for guidance from the Ethics & Integrity functions and increased the number of reports received through the Integrity Line by 11.5 % compared to the years that preceded the rollout of Leader-led Compliance Sessions.

Clariant continued to conduct its mandatory e-learning and in-person compliance trainings for all employees to prevent violations of the Code of Conduct. In 2019, roughly 6 000 employees received Code of Conduct training; 100 % of the Board members and 85 % of employees received training on anti-corruption; and approximately 8 200 employees successfully completed the e-learning on antitrust law.

In 2019, Clariant further strengthened communication regarding ethics and compliance, which included regularly publishing articles on the intranet regarding business ethics and sharing results from internal investigations in its ethics journal. Each communication illustrated a real case from Clariant's businesses and discussed how it was resolved. The articles caught considerable attention from employees, as indicated by above-average click rates.

2.2.3. Taking steps to reduce risk exposure

Since Clariant's businesses operate in countries with diverging risk profiles, an ongoing risk assessment is conducted to identify gaps in the ethics and compliance framework in different markets. In 2019, Clariant carried out additional compliance risk assessments in two Business Units. After this process revealed gaps, steps were taken to reduce the risk exposure. For example, the Economic Sanction policy will be revised and a provision regarding anti-money laundering will be added to the Anti-Bribery and Anti-Corruption Policy. In addition, employees working in compliance functions were trained on topics such as anti-bribery, data privacy, and general ethics and integrity.

2.2.4. Establishing the Data Privacy Program

In response to the General Data Protection Regulation (GDPR) of the European Union, Clariant implemented a Data Privacy Program in 2018. The program consisted of a policy framework that encompassed a Data Privacy Policy, a general Directive on how to process personal data, standardized operation procedures (SOPs) on the subject of Data Breach and execution of privacy rights, and a basic Data Privacy e-learning course to familiarize all employees with the principles of the data privacy policy. In 2019, Clariant focused on further implementing the framework, offering deep-dive sessions for more exposed functions, and introducing a second module to the Data Privacy E-Learning. Furthermore, Clariant continued its efforts to establish a personal data inventory and record of processing activities aligned with the GDPR requirements.

A Data Privacy Organization was also set up and internally certified after extensive training that covered the main topics for certified Privacy Professionals from the International Association of Privacy Professionals. The certified members of the Data Privacy Organization are responsible for creating awareness and building up the relevant knowledge throughout the company with a Train-the-Trainer approach.

2.2.5. Improving performance of the grievance mechanism

A key instrument to track Clariant's performance on ethics and compliance is the »Clariant Integrity Line,« which is used to report workplace-related issues and violations against the Code of Conduct. All employees are encouraged to confidentially report non-compliant behavior. In 2019, Clariant improved the Integrity Line by simplifying the process of raising a concern and by enhancing the reporting on multiple indicators. With improved assessments and classifications of allegation types, Clariant is able to gain better insight into potential misconduct and take preventative actions.

GRI Online Report

Management Approach Ethics and Compliance
→ reports.clariant.com/2019/gri

2.3. Policy and stakeholder relations

Clariant believes that maintaining an open and trustworthy dialog with all stakeholders and participating in relevant public policy developments are both important aspects of its corporate responsibility.

The engagement of Clariant representatives in trade associations and other platforms supports strategic alignment across the industry, provides an opportunity for exchange on industry perspectives and best practices, and brings forward Clariant's views and positions on various policy areas.

Clariant is a member of numerous interest groups and trade associations. At the international and regional level, these include, among others, the International Council of Chemical Associations (ICCA) and the European Chemical Industry Council (Cefic). At the national levels, Clariant is part of national business federations and chemical industry associations, such as the Associação Brasileira da Indústria Química (ABIQUIM) in Brazil, the China Petroleum Chemical Industry Federation (CPCIF) in China, the Verband der Chemischen Industrie (VCI) in Germany, and the American Chemistry Council (ACC) in the United States.

Clariant is also active in sectorial associations, such as in the bioeconomy field, and supports scientific and research associations, including SusChem, the European Technology Platform for Sustainable Chemistry.

As a responsible corporate actor that values transparency, Clariant publicly discloses its contributions to trade and business associations. → CLARIANT.COM/EN/COMPANY/CORPORATE-GOVERNANCE/PUBLIC-POLICY-DIALOG

The top three contributions Clariant made in 2019 were all for Europe-based associations. Together, they represented more than 50 % of Clariant's total membership costs. These were:

1. Verband der Chemischen Industrie e.V. – VCI, the German national association of chemical producers;
2. Handelskammer beider Basel, the Basel Chamber of Commerce; and
3. Scienceindustries, the Swiss business association for the chemical, pharmaceutical, and biotech industries.

Active engagement in these bodies helps Clariant maintain a continuous stakeholder dialog in strategically important fields. In 2019, Clariant has worked on a number of policy areas related to sustainable chemistry, climate change, circular economy, bioeconomy, and innovation policy frameworks.

GRI Online Report

Management Approach Policy and Stakeholder Relations
→ reports.clariant.com/2019/gri



CUSTOMER TO CASH

2.4. Sustainability performance in the supply chain

Clariant sources over 20 500 types of raw materials from approximately 6 800 suppliers. In 2019, CHF 2.6 billion was spent on raw materials, representing the largest portion of Clariant's total expenditure. Suppliers are critically important to Clariant's value creation and substantially impact the company's overall sustainability performance. Clariant uses a comprehensive set of criteria to select and manage suppliers, outsourcing partners, and service providers. Apart from economic and product-specific performance, these criteria include sustainability considerations such as environmental and safety standards, social and governance aspects, complaint management, working conditions, and respect for human rights.

SUSTAINABLE VALUE CHAIN

	Con- tinuing	Discon- tinued	Total 2019	2018	Change in %
Number of new Sustainability Assessments shared ¹			1 043	1 491	- 30
Raw material supply base by spend covered by sustainability evaluations (%)	80	74	78	74	-
Number of new Sustainability Audits shared ²			309	358	- 13.7

¹ Together for Sustainability supplier assessments

² Together for Sustainability supplier audits

2.4.1. Supplier Code of Conduct

In its Supplier Code of Conduct, Clariant outlines the strategy, scope, and expectations regarding the sustainability engagement and performance of suppliers. The Code is part of Clariant's General Terms and Conditions of Purchase, which are incorporated into every purchase order issued by procurement. Suppliers and their subsidiaries are required to agree and fully comply with the Code. → [CLARIANT.COM/EN/COMPANY/CORPORATE-GOVERNANCE/CODES-OF-CONDUCT](https://www.clariant.com/en/company/corporate-governance/codes-of-conduct)

2.4.2. Assessing sustainability in the supply chain

In order to ensure compliance with the Supplier Code of Conduct, Clariant relies on assessments and audits conducted by Together for Sustainability (TfS), which uses the internationally recognized EcoVadis platform. In 2019, TfS members assessed 1 043 suppliers for the first time, compared to 1 491 new supplier assessments in 2018. In total, there are more than 9 000 suppliers with an active assessment registered at TfS. Clariant maps completed assessments against

its supplier base to identify which portion of its total spend is covered by Tfs assessments. In 2019, coverage was 78 %. With this, Clariant surpassed its goal of a direct spend coverage of 70 % by 2019. The number of new audits amounted to 309 in 2019, compared with 358 in 2018, adding up to a total of more than 1 800 audits conducted since 2012.

Based on Tfs assessments, Clariant initiates Corrective Action Plans (CAPs) to reduce identified sustainability risks. In 2019, the 100 largest, previously not covered suppliers, and risk suppliers characterized by a Tfs assessment score of less than 45, were selected for a Tfs assessment or an improvement via CAP. Further, at the AchemAsia International Expo in China, Tfs conducted a training for suppliers involving more than 300 participants, 20 of which were invited by Clariant.

In 2019, Clariant invited suppliers from outside of the Tfs supplier pool to share valid (that is, not older than three years) assessment scorecards with Clariant in order to increase spend coverage and contribute toward the Tfs impact KPIs.

2.4.3. Going beyond direct suppliers

Clariant is committed to extending its approach to sustainable supply chain management beyond its own suppliers to include tier-2 suppliers. Tier-2 supplier evaluation has been considered and discussed within Tfs. In 2019, Clariant looked into the Sustainable Procurement score of EcoVadis to assess specific suppliers against expected minimum requirements (that is, a score above 45). The Sustainable Procurement score represents the capabilities of a supplier to assess its own suppliers, which are Clariant's tier 2 suppliers.

Together for Sustainability



Together for Sustainability (Tfs), which was founded in 2011, included 22 members by the end of 2019. In 2019, Tfs welcomed its first Chinese member, the Wanhua Chemical Group. Collectively, Tfs members represent EUR 325 billion in turnover, based on published financial reports, and an estimated EUR 235 billion in spend. Clariant joined Tfs in 2014 in order to assess and steer sustainability in its supply chain. As an active member, Clariant contributes to the initiative by providing sustainability performance assessments and audits of its own suppliers. In turn, it gains access to assessments generated and shared by other Tfs members.

To ensure independence and consistency of results, Tfs supplier assessments are conducted according to a standard approach by best-in-class service providers. The sustainability assessments consist of scorecards that provide an overall score as well as a sub-score for performance in the categories of environment, labor and human rights, ethics, and sustainable procurement. The on-site sustainability audits are carried out by globally renowned and specialized service providers.

2.4.4. Enhancing capabilities for sustainable supply chain management

Clariant organizes internal trainings every year to increase awareness and enhance its capability to evaluating sustainability performance in the supply chain. Opportunities for awareness-building include Lunch & Learn sessions, workshops, and exchange meetings. The trainings mainly target employees in Global Procurement Services (GPS) and associates in the Business Units. The toolbox that Clariant uses to promote sustainability with the company's suppliers is a particular focus of the GPS trainings. The trainings for the Business Units provide updates on GPS activities and inform them about sustainable procurement initiatives in other businesses.

2.4.5. Strong engagement leads to outside recognition

In the last few years, Clariant's supply chain sustainability performance has consistently received external recognition. In 2019, Clariant was honored by two organizations: EcoVadis granted the company the Sustainable Procurement Leadership Award for »Best Internal Stakeholder Engagement.« Further, riskmethods, a company that assesses supplier risks, awarded Clariant with the »TOP Sustainable Supply Chain Program.« The awards recognize excellence in sustainable procurement practices and distinguished Clariant as a best-in-class example, driving internal engagement to roll out a global sustainable procurement program. → PAGE 64

GRI Online Report

Management Approach Sustainability Performance in the Supply Chain → reports.clariant.com/2019/gri

2.5. Human rights

Clariant is firmly committed to protecting human rights during all phases of value creation within all Business Units. This obligation applies not only to Clariant's own business operations, but also to its entire supply chain and contracted workers. As a prerequisite for sound business governance and license-to-operate, Clariant expects its business partners to uphold the same high standards regarding human rights.

Clariant crafted a comprehensive framework of policies, guidelines, and processes to ensure the implementation of its human rights commitments. Clariant performed investigations in areas that were identified as high-risk during the 2016 human rights due diligence review.

In 2019, Clariant decided to join the Responsible Mica Initiative. This cross-industry initiative cultivates collaboration with local governments and NGOs as well as global stakeholders in the mica value chain, which include Clariant suppliers and customers. Clariant will be actively involved in the four action programs of the initiative: Traceability & Specifications, Legal Framework & Advocacy, Communication, and Community Empowerment.

To further advance ethical operations, Clariant developed a global employment policy in 2018 that addresses fair working conditions, discrimination, freedom of association, occupational health and safety, as well as child and forced labor. In 2019, particular emphasis was placed on trainings for employees working in the Human Resources departments in order to ensure global implementation. The policy's content and objectives were further propagated throughout the organization to ensure comprehensive understanding and acceptance. Clariant also conducted an audit in all major countries to monitor implementation and adherence to the policy. As of 2019, the policy is also part of the onboarding curriculum for new employees. In order to ensure proper comprehension, the policy was translated to local languages and communicated to employees. By embedding the topic in leadership and management meetings and developing a learning and training curriculum, Clariant will further raise awareness.

Finally, via the Tfs platform and in cooperation with other companies, Clariant regularly assesses its suppliers in relation to child and forced labor, among other social, governance, and environmental topics.

GRI Online Report

Management Approach Human Rights
→ reports.clariant.com/2019/gri



Keep

+ Occupational Health,
Safety, and Well-being

the

Team

Safe

Eyes on the road

Clariant's Oil Services business has introduced a new technology to keep their truck drivers and the drivers around them safe.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 3 and SDG 9.

Read more on → PAGE 24



Trucking is a tough job. In the United States of America alone, there are over twelve million registered large trucks that collectively travel around 300 billion miles each year. While improvements in technology and training have made the job of

driving these trucks a lot safer in recent decades, it still comes with both an inherent risk and a huge responsibility.

In an effort to keep its delivery, long-haul drivers and those around them safe, Clariant's Business Unit Oil and Mining Services has recently deployed a unique combination of new technology and training for its entire North American truck fleet. Collectively, Oil Services' drivers in the USA cover about 18 million miles on the road each year. »Still, driving is the most dangerous part of our job,« says Cody Applin, Regional Operations Manager for Oil Services in Midland, Texas. That is why, in 2018, the Oil Services business chose to install a state-of-the-art safety and transportation system called SmartDrive in all of its roughly 200 heavy commercial trucks. These trucks deliver products to customers out in the field.

»Driving out here can be tough, and it comes with a big responsibility because we often carry hazardous materials,« says Eduardo Rodriguez. He is the head driver for the Midland site, the business's largest operation in the United States. Coming up on thirty years behind the wheel, he joined Clariant six years ago and today trains the company's drivers and new hires. He's also on the road every single day.

The Oil Services site in Midland is located in the heart of the Permian Basin, an area of more than 80 000 square miles that covers parts of Texas and New Mexico. The Basin is home to what has become the most productive oil field in all of the USA since its discovery about a century ago, with production reaching four million barrels per day for the first time in 2019. Clariant's Midland site supplies customers in the oil industry with specialty chemicals and services. Delivering these products to customers is no small feat. Midland, which is nicknamed »The Tall City« for its impressive downtown skyline, has a population of about 160 000. However, some of the counties in the Permian Basin are among the least populated in the United States. »This is pretty much the textbook definition of 'the middle of nowhere,« says Applin. The oil rigs and other facilities that his drivers head out to are scattered over a two-hundred-mile radius.

001 Eduardo Rodriguez

Treater Truck Driver, Business Unit
Oil and Mining Services

002 Off the main road

A typical route for Clariant's drivers
involves miles on unpaved tracks.



001



002

The middle of nowhere

Clariant's trucks deliver products to individual oil rigs out in the field.



»Back in the 1980s, it was dangerous on the road. The industry improved a lot since then.«

Liojildo Arrieta

Regional Department of Transportation (DOT) Manager,
Business Unit Oil and Mining Services

Not alone anymore

A typical route for Eduardo Rodriguez and his fellow drivers will involve 30 to 45 individual stops. Most of the routes start on Interstate 20, which passes Clariant's site only a few hundred yards away. Often drivers will eventually have to turn off the main road and follow unpaved tracks on a customer's property for a few miles to make several stops. »Sometimes, we don't leave a customer's lease for the entire day,« says Rodriguez. »And for the most part, you're all on your own out there – if it weren't for SmartDrive.«

Under the new system, every Clariant truck is fitted with two cameras. One camera faces inward and captures what the driver is doing. The other camera captures what is occurring in front of the vehicle. Sensors are used to capture video footage and data that occur in critical situations. That can be anything from a collision to erratic maneuvers. The sensors pick up on hard brakes, revving engines, lane changes, and U-turns. The system runs the entire time but only records inside the cabin when it is triggered by an event. It then captures a maximum of 20 seconds' worth of data – ten seconds leading up to the event and another ten seconds thereafter. Drivers can also trigger the recording manually, whenever they feel they need to document what's going on. The data and footage are then automatically uploaded and reviewed by dedicated SmartDrive analysts. Any relevant events are made available to Clariant within 24 hours.

That's where Liovijildo Arrieta comes in. He goes by »Leo,« and he helps ensure the drivers and trucks meet the safety standards in the Permian. Prior to joining Clariant, he was a Texas state trooper for 33 years, some of that time in Commercial Vehicle Enforcement. Driving his patrol cars on these roads, he's seen his share of tragedy. »Back in the old oil-boom days of the 1980s, it was dangerous just to be on the road,« he says. He remembers a particular stretch of road just off the Interstate 20 with several truck stops where countless oil trucks would pull in and out all day and night. »They would have an accident there literally every day,« he remembers. »But traffic has changed and the industry has improved a lot since then.« Leo is part of that change. He oversees and inspects Clariant's drivers and vehicles transporting hazardous materials throughout the Permian Basin. And he's responsible for most of the training and debriefing done with the help of data collected by the SmartDrive sensors and cameras. »I review every incident where there's something we need

to address, and then I immediately call in the driver. Some are new drivers that carry over old habits. I remind them of our safety rules and that we're a safety-minded company. I rarely have these conversations twice,« says Arrieta.

A massive improvement

The new safety and transportation intelligence system is more than just a tool to document accidents or near misses. The data it collects has a profound impact on training and promoting safe driving. By tracking certain behaviors such as speeding, unfastened seatbelts, short following distances, or the use of mobile devices while driving, the system helps focus training on things that urgently need fixing. Just as importantly, it then shows whether the training has actually worked. The results speak for themselves: In the first year since introducing the technology in all its trucks, Clariant Oil Services was able to improve its aggregated Safety Score by 97%. »The biggest impact we've had was with seatbelts,« says Rodriguez. »Especially out on unpaved roads and with

UNITED STATES OF AMERICA



Midland, Texas

»And it's not about showing where our guys did something wrong.«

Cody Applin

Regional Operations Manager Oil Services,
Business Unit Oil and Mining Services



so many stops, drivers can get complacent. We've put a stop to that and we are now close to 100 % seatbelt use.« Other areas have seen similarly encouraging results. A recent safety report prompted the business to set even higher goals for the coming year.

To Cody Applin, one of the keys to success is the combination of video and immediate training. »Using video to back up any discussion: that's what brings down the numbers,« says Applin. »And it's not just about showing where our guys did something wrong.« He remembers a particularly harrowing incident where one of his trucks was hit from behind while making a turn. As the footage showed, the driver wasn't at fault. »Our guy was wearing his seatbelt. He was in his lane with his turn signal on, checking his mirrors, when out of nowhere this speeding truck hits him,« Applin recalls. Luckily, nobody was hurt. Applin and Arrieta made a point of showing the video of the impact and the flying debris during their next workshop with drivers. It left a lasting impression: »Seeing that and knowing it's not just something on the five o'clock news, but really one of us, well, it hits home!«

A true asset for drivers

Securing video evidence is also a valuable asset to exonerate drivers. »Having that many trucks out on the road makes you a target,« says Applin. »Our drivers get accused of all sorts of things, but when we then look at the footage, nine times out of ten, it's not them that were at fault.« Applin recounts a recent incident where another truck cut in close in front of one of his drivers and then slammed the brakes. »Our guy inevitably rear-ended that truck. And normally we would have been at fault for following too close. Fortunately, the footage clearly showed that wasn't what happened.«

Eduardo Rodriguez has been the victim of similar calls himself. One time a company blamed him for hitting and damaging one of their gates out in the field. »Luckily, we were able to pull the recording,« he remembers. The footage of his front-facing camera backed him up: »The video showed that the gate was already all messed up before I even got there.«

Knowing that you're not out there alone and that your company has your back is what makes a big difference in Rodriguez's mind. »Trucks are generally seen as a nuisance, you know. Everybody needs us, but nobody wants us on the road. So you have to be at your best, and you need to stay very aware of your surroundings at all times,« he says. »And even then you get accused.«

Just like with other new technologies, from GPS tracking to modern emergency brake systems, the hope is that, with these safety intelligence systems becoming the norm, trucking becomes a lot safer. »We want to make sure everybody gets home safe after their day's work,« says Applin. »That includes our guys and everybody else out there on the road.« Unlike other innovations in road safety, safety intelligence also has the power to change attitudes, as the safety scores and the experience of Leo Arrieta, Cody Applin, and Eduardo Rodriguez show.

Whenever Rodriguez introduces SmartDrive to a newly hired driver, he notices an initial feeling of discomfort about being watched. That goes away quickly when drivers realize how the system can work in their favor and get help to them faster in an emergency. »We are not alone like we used to be,« says Rodriguez. »It really makes a difference to know there's somebody out there who has your back.«

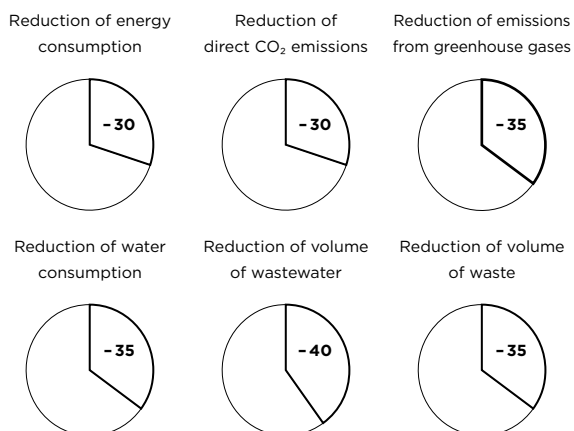
Planet

Clariant's brand value Planet encompasses value creation that evolves from using natural capital responsibly. This includes progress toward Clariant's environmental targets and on the material topics of Environmental Protection and Resources, Climate Change, and Circular Economy.

1. Natural capital

Clariant is steadfast in its commitment to continuously improve operational efficiency by developing solutions to environmental challenges. Since Clariant's production depends on ongoing access to many raw materials, stewardship of these natural resources is vital. To reliably and efficiently monitor environmental impacts from its production sites, Clariant regularly validates and reports the environmental data from its largest sites, which cover approximately 95 % of production volume. Clariant tracks the smaller sites as well by collecting their environmental data every three years. In 2019, 80 of the 118 production sites, as well as 5 administrative sites, were included in the reporting.

001 ENVIRONMENTAL TARGETS 2025 in % (per t produced goods)



In 2019, Clariant managed to reduce almost all resource intensity figures and is still well on track to achieve its 2025 environmental targets. → FIGURE 001 → FIGURE 002
Due to the planned divestments of its Masterbatches and Pigments businesses and related effects on the production and the product portfolio, Clariant will revise its environmental targets.

CUSTOMER TO CASH

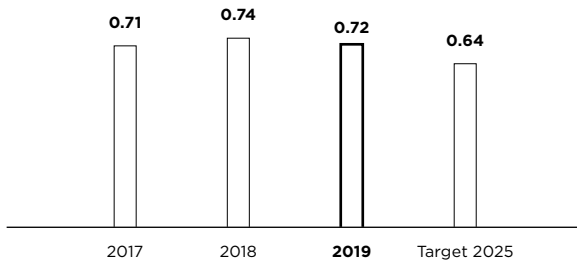
1.1. Progress toward environmental targets 2025

Clariant has set goals to achieve significant environmental impact reductions in six crucial areas by 2025, as compared to 2013. In relation to produced goods (per ton), Clariant aims to reduce energy consumption and direct CO₂ emissions by 30 %; greenhouse gas emissions, water consumption, and waste volume by 35 %; and wastewater volume by 40 %.

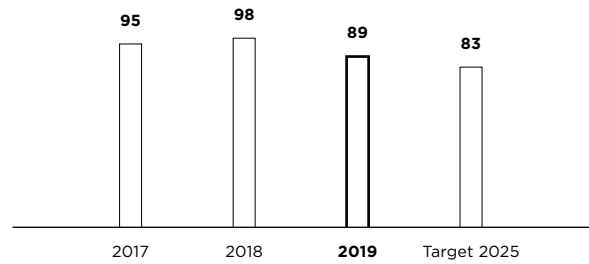
In 2019, energy consumption per ton of produced goods decreased by 2.5 %, from 739 kWh to 720 kWh. Direct CO₂ emissions (Scope 1) and greenhouse gas emissions (Scope 1 & 2) were reduced from 98 to 89 kg (-9.2 %), and from 215 to 198 kg (-7.9 %) per ton of production, respectively. The reduction in emissions indicates Clariant's shift to cleaner energy sources, such as natural gas and purchase of green electricity.

Water consumption per ton of produced goods decreased by 7.9 %, from 11.3 m³ to 10.4 m³. This reduction was mainly due to water efficiency improvement at many sites and changes in site ownership. Wastewater generation per ton of production diminished by 3.4 %, from 2.9 m³ to 2.8 m³.

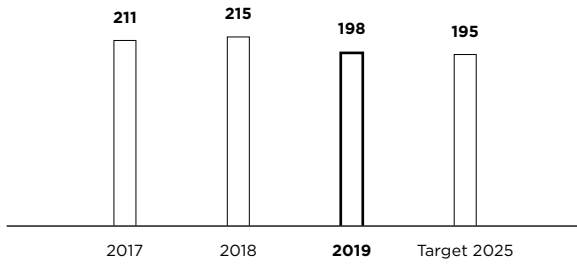
002 PROGRESS TOWARDS 2025 TARGETS



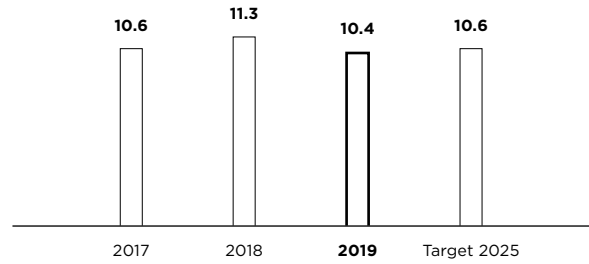
Energy consumption
in MWh per t produced goods, corresponding to -22% since 2013



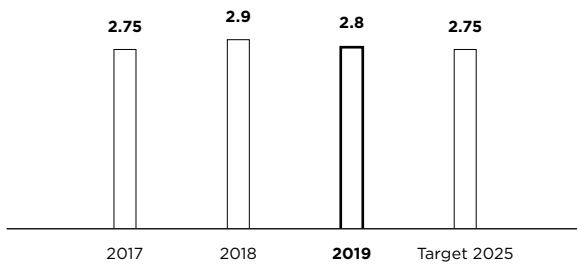
Direct CO₂ emissions
in kg per t produced goods, corresponding to -25% since 2013



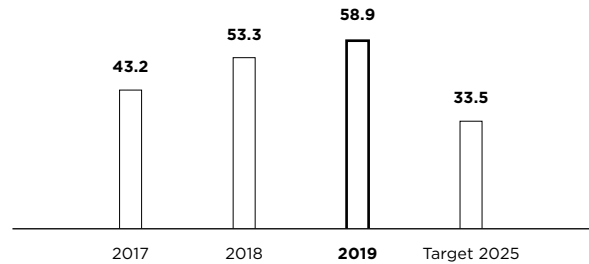
Greenhouse gas emissions
in kg per t produced goods, corresponding to -34% since 2013



Water consumption
in m³ per t produced goods, corresponding to -36% since 2013



Wastewater generation
in m³ per t produced goods, corresponding to -39% since 2013



Waste generation
in kg per t produced goods, corresponding to +14% since 2013

Waste generation increased by 10.5 % in 2019, rising from 53.3 kg to 58.9 kg per ton of production. This significant increase was mainly due to increased generation of non-hazardous gypsum waste generated as sludge during wastewater treatment in a few bentonite processing sites.

1.2. Environmental protection and resources

For Clariant, environmental protection and resources encompasses both the consumption of resources, such as energy and water, and the prevention of pollution and ecosystem effects. To minimize the company's impacts on the environment and safeguard natural resources, top management attention and a corporate culture that prioritizes environmental stewardship throughout the company are essential.

Optimizing energy consumption with eWATCH™



eWATCH™ oversees all forms and usages of energy at Clariant – electricity, heating and cooling, steam, natural gas, nitrogen, and the production of deionized water – by taking into account the design and setup of equipment and processes across Clariant's facilities. It also records and analyzes Clariant's energy consumption, including information on energy flows, prices, and usage optimization. It maintains information on total energy usage patterns and requirements and will increasingly consider maintenance activities, changeovers, cleaning, and production planning and scheduling in the future. eWATCH™ focuses on three pillars: operations and technology; awareness, mindset, and behavior; and energy management.

In 2019, Clariant recognized enhanced interest and focus by investors, customers, and other stakeholders regarding sustainability topics such as plastic recycling and water efficiency improvement, confirming Clariant's commitment to implement various measures throughout the company and engage in sustainable product development.

ENVIRONMENTAL PROTECTION AND RESOURCES¹

	Con- tinuing	Discon- tinued	Total 2019 ²	2018	Change in %
Total energy consumption (in m kWh)	2 400	652	3 058	3 209	-4.7
Energy consumption (in kWh/t production)	601	2 547	720	739	-2.6
Total water consumption (in m m ³)	25.7	17.3	44.3	49.0	-9.6
Total wastewater generation (in m m ³)	6.7	3.7	11.9	12.6	-5.6
Total quantity of waste (in thousand t)	215.7	32.6	250.2	232	7.8

¹ Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017. In the interim years, including 2018 and 2019, the reduced reporting scope comprises the larger sites responsible for 95% of production.

² The difference in the sum of continued and discontinued operations compared to the group total is due to the resource consumption of non-production sites.

1.2.1. Energy

Clariant aims to continually reduce energy consumption and to minimize energy-related greenhouse gas emissions. In 2019, energy consumption per ton of produced goods decreased by 2.5%. Clariant will continue to work toward its energy consumption reductions targeted for 2025 by further investing in and developing programs such as eWATCH™, Clariant Operational Excellence, and the Clariant Production System Yield, Energy, Environment (YEE) initiative.

Through eWATCH™, Clariant crafted a comprehensive energy efficiency program that analyzes energy consumption across operations and identifies potential cost-saving opportunities. Since 2013, a total of CHF 37.3 million was saved by implementing energy efficiency measures and energy-purchasing optimizations. In 2019 alone, Clariant managed to save CHF 4.4 million.

In 2019, Clariant advanced the »eWATCH™ goes digital« initiative. In its production sites, energy management systems and smart meters were implemented to enhance data availability. In order to increase visualization capabilities, Clariant used tools such as Microsoft Power BI, which helped to quickly spot improvement potential or identify outliers. Further, Clariant introduced a monthly energy performance indicator reporting on site and country level.

Clariant globally passed the recertification of the energy management system according to ISO 50001 and prepared for the updated standard in various sites. 39 % of Clariant's production volume was produced at sites certified with ISO 50001. Clariant also continued performing energy benchmarks of utility generation systems internally as well as against state-of-the-art installations.

The Production System YEE initiative analyzes Clariant's production processes and units to discover even more opportunities to increase yields, improve energy efficiency, and reduce waste streams. Since its inception in 2012, Clariant achieved savings of CHF 80 million due to YEE. In 2019 alone, savings amounted to almost CHF 6 million.

1.2.2. Water consumption and wastewater generation

Water is one of the most important auxiliary materials for the chemical industry. Clariant considers the entire volume of water withdrawn and used as its total water consumption. Cooling water returned to the source after being used in cooling cycles is not excluded

from total consumption. Clariant uses roughly 70 % of purchased water for cooling production plants, 20 % for production processes, and 10 % as a product component or for sanitary purposes. In 2019, water consumption per ton of produced goods decreased by almost 8 %. This reduction was due to water efficiency improvement measures, changes in site ownership, less water-intensive production processes, and a decrease of production volume in sites with high water consumption.

Wastewater is well managed at all Clariant production sites, and local regulatory requirements regarding discharge limits are strictly followed. The company assesses wastewater quality by measuring heavy metals concentration, nitrogen and phosphorus compounds, as well as biological and chemical oxygen demands. Wastewater is often pretreated at Clariant's sites before being transferred to dedicated industrial or municipal wastewater treatment plants for further treatment. The pretreatment mostly consists of a multistage chemical and physical treatment to ensure effluents do not impair the receiving water bodies. With this multistep treatment approach and constant monitoring, Clariant guarantees that discharged wastewater does not negatively impact ecosystems. In 2019, wastewater generation per ton of produced goods decreased by 3.5 %.

Two years ago, Clariant undertook a Group-wide water-risk assessment employing the World Resources Institute's (WRI) global risk assessment tool. The assessment showed that only a small percentage of Clariant's sites are located in water-risk areas. To further deepen the understanding of risks, a pilot water-risk assessment project was completed in Santa Clara, Mexico, in 2018. Several water efficiency projects were implemented on the site, which included harvesting rainwater for cooling purposes, reducing water consumption in various production steps, and implementing a water pressure system in filter press areas. In addition, upgrading the existing wastewater

Clear goals

In 2019, Clariant opened a new wastewater treatment plant at its production site in Bonthapally, India. The facility at the zero liquid discharge site has the capacity to treat 300 000 liters of wastewater per day. It employs a state-of-the-art combination of highly efficient processes that remove any contamination and purify the water in various stages to be potable as per World Health Organization (WHO) guidelines. The process involves biological treatment, ultrafiltration, reverse osmosis, multiple evaporation

techniques as well as agitated thin-film drying. The investment in the new wastewater treatment plant is part of the company's growth strategy for its Business Unit Industrial & Consumer Specialties (ICS), and it ensures the company's continued focus on sustainability and environmental protection. The ICS site in Bonthapally has been awarded a rating of three stars out of three for its Environment, Health, and Safety (EHS) practices in 2018 by the Confederation of Indian Industry, Southern Region.

SPOTS

The Sustainable Palm Oil and Traceability in Sabah (SPOTS) aims to support small Malaysian palm oil producers with regard to sustainability, certification, and supply chain traceability, and to increase productivity by 20% until 2020. → clariant.com/en/Sustainability/Value-Chain-Collaboration/The-SPOTS-Initiative

treatment plant to enable reuse of treated water is being investigated. In 2019, analogous water-risk assessment studies were performed at all Clariant sites located in water-risk areas. These in-depth analyses will be used to develop water management goals that ensure the respective sites can responsibly manage their risks. Clariant's comprehensive and continued efforts in water-risk management at different levels of the organization resulted in outside recognition. In the Dow Jones Sustainability Index (DJSI), the company was one of the best-in-class performers in its sector regarding water-related risks for the third consecutive year.

1.2.3. Waste

Clariant follows a strict waste-management protocol. The company prioritizes waste prevention as this approach minimizes resource consumption in addition to costs. During product development and manufacturing, Clariant aims to generate as little waste as possible, and any unavoidable waste is recycled or disposed of properly in adherence to local regulations. Accumulated waste is documented in detail in order to enable proper classification and handling. Per ton of production, generation of waste increased by 10.5% in 2019. This was mainly due to an increased generation of non-hazardous gypsum waste generated as sludge during wastewater treatment in a few bentonite processing sites, and the removal of out-of-date inventory such as old equipment.

1.2.4. Air pollution

Clariant also judiciously monitors and contains air emissions from operations. Clariant adheres to local regulations regarding air emission limits in all the countries in which it operates. Air pollutants tracked at the Group level include volatile organic compounds (VOCs), sulfur oxides (SOx's), and nitrogen oxides (NOx's).

1.2.5. Ecosystem protection

Clariant strives to ensure its activities do not impede or degrade ecosystem services, such as provision of fresh water, air purification, energy production, and protection against natural disasters, as they are vital for its businesses and society in general. Clariant does not operate production sites in biological reserves or areas with high biodiversity value.

To protect rainforests and peatland and combat ecological degradation caused by the clearing of land for palm oil plantations, Clariant also considers impacts of specific raw materials used and pursues certification of its palm oil derivatives supply. As a member of the Roundtable on Sustainable Palm Oil (RSPO), Clariant achieved mass-balance certification for all of its sites in 2016 and has more than 200 products, which are available with the Mass Balance certificate. Clariant will continue to extend the certified product portfolio in order to help its customers meet demand for certified palm ingredients.

When mining bentonite, Clariant follows several steps to exceed societal and community expectations regarding the conservation of the surrounding ecosystem. Before drilling begins, Clariant's geologists craft a plan to minimize associated environmental impacts. This includes removing the topsoil and overburden as carefully as possible in order to preserve it for future land restoration. During mining, Clariant ensures that resident animals may easily move to adjacent areas. Before being transported, the bentonite is sun-dried, reducing its weight and thus emissions produced in shipping. Quarry closure is undertaken with local experts in order to restore the land for profitable use in forestry or agriculture. These efforts are crucial to maintain healthy relationships with local communities and protect local ecosystems.

GRI Online Report

Management Approach Environmental Protection and Resources → reports.clariant.com/2019/gri

1.3. Climate change

Climate change is one of society's most significant challenges and is driven by the emissions of greenhouse gases. As impacts magnify, such as shifting weather patterns and increased risk of flooding, attention rises and calls for actions accordingly.

For an innovative chemical company like Clariant, climate change triggers both risks and opportunities. For example, while more governments are introducing carbon pricing schemes, business opportunities to reduce

energy costs and the development of low-carbon products, such as catalysts that support the reduction of greenhouse gas emissions, are to be exploited.

In order to contribute to a sustainable economy, Clariant adopted environmental targets to be achieved by 2025. Compared to the base year 2013, Clariant committed to reduce Scope 1 and 2 greenhouse gas emissions by 35 % and to reduce direct carbon dioxide emissions by 30 %, both per metric ton of production. Clariant is well on track to reach these targets.

→ PAGE 178

In 2019, direct CO₂ emissions (Scope 1) per ton of production decreased by 9.2 % and greenhouse gas emissions (Scope 1 & 2) were reduced by 7.9 %. This was mainly driven by changes in site ownership, an overall reduced energy consumption, as well as a shift away from heating oil to natural gas and purchase of green electricity at certain sites.

Since 2018, Clariant improved the comprehensiveness, transparency, and robustness of its greenhouse gas emissions data by reporting on emissions occurring along Clariant's value chain (Scope 3 emissions). The reporting includes relevant activities such as the purchase of raw materials, energy-related emissions, transportation and distribution of supplied materials and sold products, and the end-of-life treatment of sold products.

The decrease of Scope 3 emissions between 2018 and 2019 by 12.3% was primarily driven by a decrease of CO₂ in purchased goods and services, and end-of-life treatment of sold products. A detailed breakdown of Clariant's greenhouse gas emissions is available in the GRI Report.

GREENHOUSE GAS EMISSIONS¹

	Con- tinuing	Discon- tinued	Total 2019 ²	2018	Change in %
Total greenhouse gas emissions (Scope 1 & 2 CO ₂ equivalents) (in m t)	0.68	0.16	0.84	0.93	-9.7
Total indirect greenhouse gas emissions (Scope 3 CO ₂ equivalents) (in m t)			4.99	5.69	-12.3
Greenhouse gas emissions (Scope 1 & 2 CO ₂ equivalents) (in kg/t production)	171	609	198	215	-7.9

¹ Every three years, Clariant validates environmental data from all production sites. The last full reporting campaign was in 2017.

In the interim years, including 2018 and 2019, the reduced reporting scope comprises the larger sites responsible for 95 % of production.

² The difference in the sum of continued and discontinued operations compared to the group total is due to the resource consumption of non-production sites.

In 2019, Clariant continued rolling out its energy efficiency program eWATCH™ to China. In addition, it advanced the digitalization of the program by piloting different business intelligence systems for energy management and by introducing smart metering to measure energy consumption. Clariant also introduced a monthly reporting cycle that includes Energy

Fear no colors

Light, tough, water-resistant and fast-drying – when it comes to sportswear and outdoor gear, synthetic fabrics are hard to beat. If taken good care of, these materials can last a lifetime, which makes their use very sustainable. Clariant and the Swedish start-up We aRe SpinDye® have teamed up to make them even more so. Together they have developed a method of spin-dyeing polyester. It involves coloring the fibers themselves before spinning them into yarn and weaving that into a fabric. That may sound obvious and has in fact been standard practice in many industries for decades. But it is only now catching on in fashion. Here, fabrics are usually dyed after they are woven, all too often using methods that use large amounts of water, harmful chemicals, and cheap labor in countries where wastewater management is lacking. Naturally, Clariant's Business Unit Masterbatches knows a thing or two about coloring synthetic polymers. It supplies a host of industries with color-giving pellets called masterbatches, which are to be melted into clear plastics. Together, Clariant and We aRe SpinDye® apply that method to spin-dyeing polyester fibers in a large choice of colors. And they have already made a splash by teaming up with high-profile brands such as Quiksilver and Fjällräven. The hope is to make spin-dyeing the new industry standard for polyester fibers. According to We aRe SpinDye®, compared to piece-dye-finished fabrics, the process uses 75 % less water, 90 % less chemicals, up to 40 % less energy, and reduces the CO₂ footprint by about 30 %.

Performance Indicators on the site and country level. This allows Clariant to process and use energy data to improve energy savings and emissions reductions while increasing transparency. Furthermore, several sites were brought into compliance with the new ISO 50001 (2018) standard for energy management. At the end of 2019, 39 % of Clariant's sites were covered by ISO 50001.

Clariant made further progress in substituting fossil fuels with renewable energy sources. In 2019, the Knapsack, Germany, site joined the sites in Sweden and Belgium in making the switch to 100 % renewable electricity. In addition, the sites in Tarragona, Spain, Bonthapally, India, Santa Clara and Coatzacoalcos, Mexico, increased their share of renewable electricity consumption.

In 2019, Clariant also worked to reduce Scope 3 emissions with several approaches, which included establishing a partnership with Neste to replace fossil-based feedstock chemicals with low-carbon solutions and moving strategic production sites closer to customers, thereby reducing transportation distances.

GRI Online Report
Management Approach Climate Change
→ reports.clariant.com/2019/gri

IDEA TO MARKET

1.4. Circular economy

Society, governments, and businesses are coming to the consensus that the circular economy is a viable alternative to the current linear way of conducting business. In a circular economy, materials are durable and repairable, kept in use for as long as possible, and are fully recovered or recycled at a product's end-of-life. Ideally, material components are also renewable and sourced sustainably.

1.4.1. Target-oriented initiatives

Besides a continuous stream of policies and studies promoting the circular economy, Clariant observed an increasing number of brand owners promoting plastics recycling and registered more customer requests for collaboration in 2019. As a supplier to various industries, Clariant has the desire and vast potential to contribute toward achieving a circular economy. As a specialty chemical company strongly embedded in the plastics value chain, Clariant's understanding of product-related recycling and deep chemical knowledge are clear advantages for developing circular solutions.

In 2019, Clariant bundled its efforts to promote a circular and sustainable plastics economy under the motto »Symphony of Collaboration,« underlining the importance of the complete value chain in addressing the plastic waste challenge. As part of this effort, Clariant launched EcoCircle, a company-wide initiative to support the transition from a one-way plastics value chain to a circular plastics economy. With

Launch of four sustainability designators

In 2019, Clariant introduced four so-called sustainability designators to help customers looking for particular sustainability attributes. The four suffixes are applied to the end of product names to identify products with key advantages in certain areas:



Aqua - water saving

Found on products and solutions that support customers and the value chain in saving at least 20 % of water in the direct or end use of their products.



Circle - circular plastics economy

Found on products with the primary purpose of supporting the reduction, reuse, or recycling of plastic products demonstrating a beneficial and validated performance.



Terra - renewable feedstock

Found on products and solutions containing a significant share of renewable resources with mass-balance certification or real renewable content reaching a Renewable Carbon Index of at least 50%.



Vita - natural ingredients

Found on products and solutions that contain enough natural and renewable ingredients to achieve at least 98 % on the Renewable Carbon Index.

»We made ›Symphony of Collaboration‹ our theme for 2019 because it's vitally important for the whole value chain to address the plastic waste challenge, and collaboration is the best way forward.«

Hans Bohnen

Chief Operating Officer (COO), Member of the Executive Committee

EcoCircle, Clariant extends its focus from the product to the entire value chain, identifying sustainable and viable solutions for a circular plastics economy. Clariant is also introducing worldwide EcoCircle Centers of Excellence dedicated to collaborative research and joint development of products and solutions for a circular plastics economy. Specialized teams and facilities will allow Clariant to channel expertise and develop specialty products for specific circular applications. → **PAGE 186**

In 2019, Clariant introduced four sustainability designators that enable customers to identify products with key advantages. The »Circle« designator highlights products that contribute to plastic recycling and the circular economy. → **PAGE 184**

1.4.2. Tangible results

Clariant was awarded the Material Health Certificate GOLD level certification from the Cradle-to-Cradle™ Products Innovation Institute for Licocare® RBW Vita, a renewable and competitive processing aid for formulators of bioplastic compounds. The Material Health Certificate uses the rigorous, globally recognized material health assessment methodology of the Cradle-to-Cradle Certified™ Product Standard to verify a product's support for safe and circular products. All ingredients present at concentrations above 100 ppm in a product are assessed. The certificate is highly valued among brand owners and facilitates customers' ambitions to certify their final products. In order to

receive the Cradle-to-Cradle™ certification, Clariant collaborated closely with the Swiss-based certifier, the Environmental Protection Encouragement Agency (EPEA).

Cradle-to-Cradle™

The Cradle-to-Cradle™ certification assesses a product along five dimensions: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness.

1.4.3. Advancing together

For the circular economy to take off, innovation and collaboration are paramount. To strengthen its impact and deliver its sustainability ambition with other like-minded companies, Clariant joined the World Business Council on Sustainable Development (WBCSD) in 2019. Clariant is contributing to the WBCSD Circular Economy Initiative Factor 10, a project that brings companies together to rethink the current way of finding, using, and disposing of the materials that make up global trade, and aims to create scalable solutions for businesses. Clariant also contributed to the WBCSD's CEO guide to the Circular Bioeconomy, which calls for a shift toward a sustainable, low-carbon, circular bioeconomy and provides a clear view on the concomitant economic opportunities.

Together with 29 multinational companies that use, sell, process, and recycle plastics, Clariant founded the Alliance to End Plastic Waste (AEPW), which was launched in early 2019. The AEPW's mission is to end plastic waste in the environment by cleaning up rivers that carry vast amounts of plastic waste to the ocean, building infrastructure to collect, manage, and recycle waste, advancing and scaling new technologies, and educating and engaging governments, businesses, and communities to mobilize action.

GRI Online Report

Management Approach Circular Economy

→ reports.clariant.com/2019/gri



Drive Change in the Industry

+ Circular
Economy

Closing the loop

With its new EcoCircle initiative, Clariant is tackling the problem of plastic waste along the entire value chain by building a unique cross-industry network.

Contribution to SDGs

This story is an example of Clariant's contribution to SDG 12 and SDG 17.

Read more on → PAGE 24



Plastic is everywhere. In the century since a Belgian chemist named Leo Baekeland came up with Bakelite™, the first fully synthetic polymer, these types of materials have become ubiquitous and changed almost every aspect of our everyday

life. That's no surprise. Plastics are tough, lightweight, cheap, extremely versatile, and almost imperishable. Sadly, it is this last part in particular that is causing problems. Plastic waste takes decades, if not centuries, to decompose. And despite all of our recycling efforts, only about 16 % of all the plastic produced worldwide is recycled. The vast majority is either incinerated or ends up in landfill, unmanaged dumps, or even in the wild. Every year, about eight million tons of plastic leak into the ocean. At this rate, some estimates say, plastic will outweigh fish in the sea by 2050.

In fact, the phrase »plastics are everywhere« has taken on a somewhat ominous meaning. Researchers have recently found microplastic in the food we eat, the water we drink, and the air we breathe. That level of pollution has lent a different image to the wonder material of the past. The good news is that it doesn't have to stay that

way. Most plastic could be recycled. The bad news is that doing so requires a massive shift in the way we produce, use, collect, and reuse it – and Clariant wants to contribute its part to this shift.

»Humanity desperately needs to solve its waste problem,« says Richard Haldimann, Clariant's Head of New Business Development. For him and many others, establishing a truly circular plastics economy is the way to go. As a leading supplier to the industry with decades of experience in improving plastics, Clariant is certainly wellplaced to do its part. Clariant's Business Units Pigments, Additives, and Masterbatches supply eponymous products that are essential to the industry. A masterbatch, for example, is a type of concentrate, a polymer with a very specific and highly concentrated mix of pigments and additives, which can be melted into any raw polymer to achieve a desired effect. »Some of our products already help make plastics especially fit for recycling or can enhance the performance of post-consumer recyclates,« says Haldimann. But when it comes to plastic packaging, for example, Clariant is just a single link in a complex value chain that involves everybody from polymer producers and converters, who manufacture the actual packaging, to brand owners and retailers, and ultimately consumers, waste collectors,



»Humanity desperately needs to solve its waste problem.«

Richard Haldimann

Head of New Business Development

and recyclers. »They all have very different requirements,« says Haldimann. »However, one cause they all increasingly rally around is the push for a truly circular economy.« That's why Clariant initiated what it calls its »EcoCircle,« an initiative to jointly develop new materials and technologies with the whole value chain in mind. »With EcoCircle, we bring together very different stakeholders across several industries,« says Bettina Siggelkow, who manages these collaborations at Clariant. Siggelkow is herself not only a chemist but also an expert in collaborative techniques and joint R&D. She was involved in introducing modern approaches such as design thinking to Clariant's own innovation work. »I've had many jobs within Clariant. One thing they all involved was orchestrating people from very different fields,« she says.



Future address

Clariant's site in Pogliano, Italy, is home to the company's first so-called EcoCircle Center of Excellence.

Identifying problematic plastics

At the triennial K 2019, the world's largest plastics expo in Duesseldorf, Germany, Clariant and a host of its EcoCircle partners recently demonstrated what these collaborations bring to the table. One of the projects presented at the expo was Clariant's cooperation with TOMRA Sorting Recycling, a Norwegian company that is an industry leader for the type of instruments that enable automated sorting. The collaboration tackles a common problem with dark or black plastic packaging. These have become immensely popular in recent years for anything from shampoo bottles to the housing of consumer electronics, but that has proven problematic for recycling centers. Conventional black pigments such as carbon black do not reflect near-infrared (NIR) light. That renders them invisible to the kinds of NIR scanners that recyclers commonly rely on to automatically identify and pick out plastics in the waste stream. Under NIR, any plastic bottle cap, shampoo bottle, or food container tinted with carbon black is simply indistinguishable from the conveyor belt it moves on. As a result, these plastics are lost to recyclers and either end up in landfill

or are incinerated. To end this, Clariant developed – and TOMRA successfully tested – a new additive masterbatch called CESA® IR that enables the detectability of black plastics for recycling and is also itself recyclable.

The role of additives in recycling can be tricky. While some, such as Clariant's new CESA® IR, help in the process, others can have adverse effects. That was a problem for another of Clariant's EcoCircle partners. APK, a young company from Merseburg near Leipzig, has developed a unique solvent-based recycling technology they've dubbed Newcycling™. It allows APK to dissolve certain plastics from waste and then extract the desired plastic from the solution in its pure form. That puts the technology somewhere between mechanical recycling, which relies on melting shredded plastic but almost never yields perfectly pure material, and chemical recycling, which delivers quasi-virgin plastic via depolymerization but requires large amounts of energy. »In working with APK, we've already learned a lot about what types of impurities, additives, and pigments in the waste stream can gum up their process,« says Siggelkow. »And together, we've come up with new ways to purify and reuse their solvent after each cycle, which makes the process very efficient.«

Biotransformation

An end to fugitive plastic

While EcoCircle, as the name suggests, is devoted to recovering and reusing as much plastic as possible, the risk of plastic leakage into nature always remains. And not just in regions where waste collection generally leaves a lot to be desired. To tackle this problem, Clariant joined forces with Polymateria in 2019 to bring its unique innovation to market. The British start-up has developed a »biotransformation« technology that alters the properties of commonly used plastics to make them entirely biodegradable after a predetermined time. Applied as an additive, Polymateria's solution remains dormant for the specified shelf life of the packaging, which can range from six months to three years. »That way, our technology gives recycling every chance to happen,« says



Niall Dunne, Polymateria's CEO. »But if any of the material does find its way out into the wild, our technology is the only one that is able to achieve full biodegradation – in water, CO₂, and biomass – for the most highly littered forms of plastic.« Polymateria's solution avoids creating microplastic by attacking the hard crystalline structure of the polymer, making the molecules bioavailable again. Additional prebiotic activators even draw in and stimulate microorganisms to feast on the carbon molecules.



»Consumers, retailers, and brand owners are all pushing to close the plastics loop.«

Bettina Siggelkow

EcoCircle Program Manager,
New Business Development

Effective additives after numerous cycles

The best-case scenario, however, is for additives to actually be part of the recycling process and maintain their beneficial effect throughout several cycles of reuse. That is something Clariant has specifically worked on for its range of Exolit® OP flame retardants. These are phosphorus-based, non-halogenated flame retardants that are commonly used for plastics in electronics or cars. Together with the Fraunhofer Institute, an independent German research center, Clariant was able to show that the Exolit® range also maintains its flame-retardant property even after being recycled multiple times. That is a huge boon to sustainability because it allows the likes

of circuit board producers or automotive suppliers to recycle their own waste and regrind material for the same application.

The business case for recyclable materials and what Clariant calls »design for recycling« is straightforward. »Consumers, retailers, and brand owners are all pushing to close the plastics loop,« says Siggelkow. Various brands have committed themselves to using 100 % recyclable materials by 2025, increasing the amount of recycled polymers in their products to up to 25 %, partly even up to 50 %. And retailers, who up until recently mostly cared about things like shelf life, stackability, and



002

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**001 Producing**

Developers in Pogliano already use industry-standard equipment to produce different plastic materials.

002 Using

Clariant has decades of experience in tailoring material properties to fit any application imaginable.

003 Recovering

Shredding plastic waste is one step in the small-scale recycling process.

003

sturdiness, now look to do their part by reducing waste and recycling more packaging themselves. Big industry names are even themselves getting involved along the entire value chain. »We see brand owners and retailers opening up their own labs and buying up recyclers or start-ups,« says Haldimann.

For Clariant, moving up the value chain to talk directly with brand owners is nothing new. Its ColorWorks™ team has established ties within the industry to work and advise on coming trends. With the industry now looking for trends and innovation in terms of recycling and circular solutions, Clariant sees itself involved with even more stakeholders.

Joint efforts with EcoCircle partners have already yielded new products, some of which are marketed with the suffix »Circle« to promote their benefit to the circular plastics economy. But EcoCircle is about much more than product development. Clariant is building a platform and a network to work on R&D and new industry standards together with stakeholders. Only very few of those will ever be direct customers to Clariant. »It's much more about supporting the transition from single-use plastic to a truly circular plastics economy,« says Haldimann. »The industry and its stakeholders can undoubtedly benefit from our products along with our know-how, whether it's for virgin polymers or for recyclates. That's one reason why we're confident about the size of those respective markets.«

Global plastic production has increased more than twentyfold in the last half century. It is set to at least triple again by the middle of this century. With all the negativity surrounding plastic, that might seem daunting. But it's easy to forget the positive impact plastic has. Better plastic packaging has dramatically decreased food waste, lightweight plastic packaging saves fuel in transportation, and plastic use for medical equipment has helped immeasurably to make medical treatment safer and affordable. »Plastic is here to stay. What will change is the way it's produced and reused,« says Haldimann.

Tackling real-life problems

EcoCircle, which so far has been an umbrella term for a range of ongoing R&D projects, meetings, and roundtables, will soon have its own dedicated research facilities. At its Masterbatch site in Pogliano, Italy, Clariant is building the first of what it calls »EcoCircle Centers of Excellence.« Here, Clariant is establishing a kind of small-scale recycling center that, together with already existing labs, will eventually replicate the entire process from waste shredding to washing, recycling, and finally converting recyclates back into actual products. »In Pogliano, we've been working for some time now with industry-standard extruders and production equipment that our direct customers use,« says Siggelkow. »Now we're expanding to what comes before and after.« The aim is to come up with solutions that tackle real-life problems for anyone recovering and reusing plastic materials, both by mechanical recycling as well as chemical recycling. To address other areas of recycling, Clariant is currently investigating the setup of additional Centers of Excellence.

Clariant's Business Unit Additives, in particular, is set to improve recycling not only in the packaging industry. One recent innovation involves carpets. In Europe alone, about three-quarters of all carpet flooring eventually is sent to landfill or incinerated – even though most carpets today are made with recyclable woven or tufted materials. The problem is the latex backing, which usually cannot be removed from the fibers and makes for a nonrecyclable mix of materials. With Licocene®, Clariant's Business Unit Additives offers recyclable adhesives that also save water and energy in their application. More importantly, they can be separated from the fibers easily and cleanly by using a process called CreaSolv™, developed by the Fraunhofer Institute. It recovers the adhesive with at least 90 % of its virgin quality for reuse and has the potential to close the plastic loops for yet another industry.

SWITZERLAND & ITALY



Independent Assurance Report on Clariant's Non-Financial Reporting 2019

To the Board of Directors of Clariant Ltd, Muttenz

We have been engaged to perform assurance procedures to provide limited assurance on the non-financial performance reporting of Clariant Ltd and its consolidated subsidiaries (Clariant) for the year ended 31 December 2019.

Scope and subject matter

Our limited assurance engagement focused on the 2019 non-financial performance indicators published in the Integrated Report 2019 of Clariant:

- a) The »Intellectual Capital« indicators on page 140, the »Innovation and Technological Advances« indicators on page 140, the »Manufactured Capital« indicators on page 149, the »Product Stewardship/Sustainable Chemistry« indicators on page 150, the »Raw Material Procurement according to Region« indicators on page 152, the »Human Capital« indicators on page 155, the »Talent Attraction and Development« indicators on page 155, the »Occupational Health, Safety and Well-being« indicators on page 160, the »Relationship Capital« indicators on page 163, the »Customer Relationships« indicators on page 163, the »Ethics and Compliance« indicators on page 164, the »Sustainable Value Chain« indicators on page 167, the »Environmental Protection and Resources« indicators on page 180 and the »Greenhouse Gas Emission« indicators on page 183; and
- b) The management and reporting processes to collect and aggregate the data as well as the control environment in relation to the data aggregation of these data.

Criteria

The reporting criteria used by Clariant are described in the internal reporting guidelines and define those procedures, by which the non-financial performance indicators are internally gathered, collated and aggregated. The internal guidelines are based on the GRI Sustainability Reporting Standards (GRI Standards) published by the Global Reporting Initiative (GRI).

Inherent limitations

The accuracy and completeness of non-financial performance indicators are subject to inherent limitations given their nature and methods for determining, calculating and estimating such data. Our assurance report should therefore be read in connection with Clariant's internal guidelines, definitions and procedures on non-financial performance reporting. Further, the greenhouse gas quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

Clariant responsibility

The Board of Directors of Clariant Ltd is responsible for both the subject matter and the criteria as well as for selection, preparation and presentation of the information in accordance with the criteria. This responsibility includes the design, implementation and maintenance of related internal control relevant to this reporting process that is free from material misstatement, whether due to fraud or error.

Our responsibility

Our responsibility is to form an independent conclusion, based on our limited assurance procedures, on whether anything has come to our attention to indicate that the non-financial performance indicators are not stated, in all material respects, in accordance with the reporting criteria.

We planned and performed our procedures in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (revised) ›Assurance engagements other than audits or reviews of historical financial information‹ and with ISAE 3410 ›Assurance Engagements on Greenhouse Gas Statements‹. These standards require that we plan and perform the assurance engagement to obtain limited assurance the identified non-financial indicators.

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks. Consequently, the nature, timing and extent of procedures for gathering sufficient appropriate evidence are deliberately limited relative to a reasonable assurance engagement and therefore less assurance is obtained with a limited assurance engagement than for a reasonable assurance engagement is obtained with a limited assurance engagement than for a reasonable assurance.

Our independence and quality controls

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, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Summary of the work performed

Our limited assurance procedures included, but were not limited to the following work:

- Reviewing the application of Clariant’s internal guidelines
- Interviewing Clariant representatives at Group level responsible for the data collection and reporting
- Interviewing Clariant representatives in Germany, Spain and China responsible for the data collection and reporting
- Performing tests on a sample basis of evidence supporting the non-financial performance indicators as outlined in the scope and subject matter section concerning completeness, accuracy, adequacy and consistency
- Inspecting the relevant documentation on a sample basis
- Reviewing and assessing the management reporting processes for non-financial performance reporting and consolidation and their related controls

We have not carried out any work on data other than outlined in the scope and subject matter section as defined above. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our assurance conclusions.

Limited assurance conclusion

Based on the procedures we performed, nothing has come to our attention that causes us to believe that

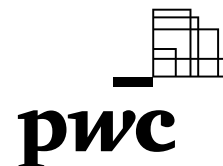
- a) The 2019 non-financial performance indicators of Clariant as described in the scope and subject matter section are not prepared and disclosed in all material respects in accordance with Clariant’s internal guidelines and procedures; and
- b) The management and reporting processes to collect and aggregate the data as well as the control environment in relation to the data aggregation are not functioning as designed.

PricewaterhouseCoopers AG

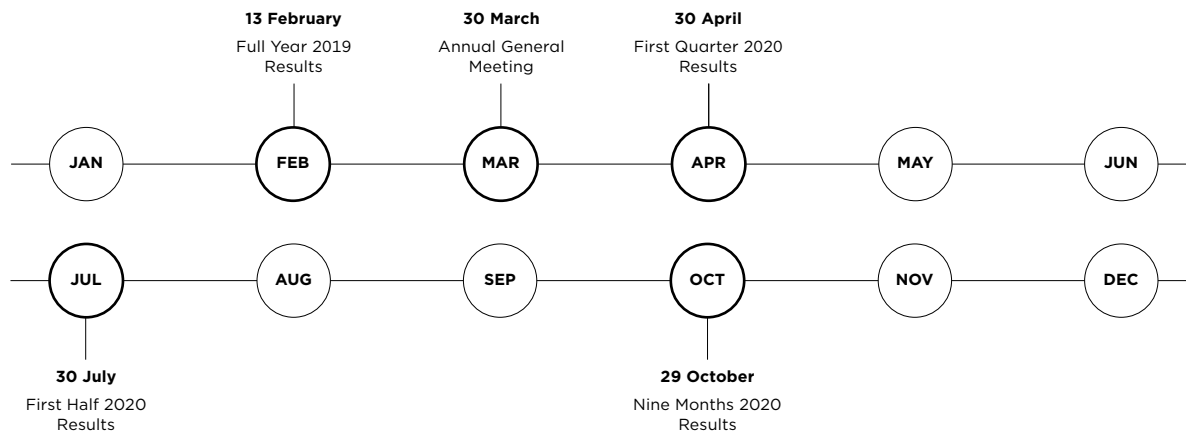
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Cedric Helsly for Soletanche Bachy: p. 114 - 115

Clariant: p. 97 (bottom), 101

Comezora: p. 83 (bottom)

Direction Projet Eole - SNCF Réseau: p. 117 (bottom)

Gilles Martin: p. 87 (top)

Jiang Hongya: p. 87 (bottom)

Plant Advanced Technologies PAT SA: p. 86

Roger Coughlin: p. 173 - 174, 176

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Note about forward-looking statements

This report contains forward-looking statements based on current assumptions and projections made by management. Such statements are subject to known and unknown risks, uncertainties and other factors which may cause the actual results and performance of Clariant International Ltd to differ from those expressed in, implied or projected by the forward-looking information and statements. The information published in this report is provided by Clariant International Ltd and corresponds to the status as of the date of publication of this report.

Disclaimer

Clariant International Ltd published the Integrated Report in English and German. The English version is legally binding.



Five-Year Group Overview 2015 – 2019

	Continuing operations				
CHF m	2019	2018	2017	2016	2015
Sales	4 399	4 404	6 377	5 847	5 807
Change relative to preceding year					
in Swiss francs (%)	0	-	9	1	-5
in local currencies (%)	3	-	9	2	3
Operating income before exceptionals	444	480	673	622	596
Operating income	165	348	496	512	496
EBITDA before exceptionals	740	739	974	887	853
EBITDA after exceptional items	461	607	813	785	767
Net income	- 34	213	302	263	227 ²
Basic earnings per share (in CHF)	- 0.17	0.59	0.84	0.78	0.67
Distribution per share (in CHF)	0.55	0.55	0.50	0.45	0.40
EBITDA margin before exceptionals (%)	16.8	16.8	15.3	15.2	14.7
EBITDA margin after exceptional items (%)	10.5	13.8	n.a.	n.a.	n.a.
Return on invested capital (ROIC) (%)	9.0¹	9.0 ¹	10.2	10.2	9.7
Operating cash flow	509¹	530 ¹	428	646	502
Investment in property, plant, and equipment	273¹	237 ¹	248	297	374
Research & Development expenditures	207¹	209 ¹	211	206	206
Depreciation and amortization	330¹	325 ¹	301	265	257
Net working capital	713	1145 ¹	1281	1087	1027
in % of sales	16.2	17.3 ¹	20.1	18.6	17.7
Total assets	7 979¹	7 981 ¹	8 229	8 365	7 461
Equity (including non-controlling interests)	2 677¹	2 970 ¹	2 939	2 546	2 494
Equity ratio (%)	33.6	37.2	35.7	30.4	33.4
Net financial debt	1 372¹	1 374 ¹	1 539	1 540	1 312
Gearing ratio (%)	51¹	46 ¹	52	60	53
Employees (in FTE)	17 223¹	17 901 ¹	18 135	17 442	17 213

¹ Including discontinued operations

² Continuing operations

Into the New

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