

To ensure sustainable management, all details of the value creation phases must be taken into account. The **Sustainability Report for 2016** addresses a central question: What can Clariant as a specialty chemicals company contribute to the future? Responsibility must guide every action. And aspects related to the three dimensions performance, people, and planet have to be considered in a holistic and comprehensive approach.

About this Report

As one of the world's leading specialty chemicals companies, Clariant creates value with innovative and sustainable solutions. By deeply ingraining sustainability issues throughout its corporate reporting suite, the company strives to communicate openly and transparently with all stakeholders. The Integrated Report 2016 discusses how sustainability contributes to value creation through the corporate strategy, the business model, and the business areas. This Sustainability Report 2016 adds even more depth by detailing key sustainability initiatives and results related to Clariant's three brand values Performance, People, and Planet. Lastly, the online GRI Report provides detailed data on Clariant's material sustainability topics. Together, these three publications give a comprehensive picture of sustainability at Clariant. Requests for more information and comments concerning sustainability at Clariant are welcome at sustainability@clariant.com.



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2016/integrated-report](https://reports.clariant.com/2016/integrated-report)

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Sustainability Report 2016



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»Our commitment to providing sustainable solutions is appreciated and recognized in the market.«

HARIOLF KOTTMANN
Chief Executive Officer



Hariolf Kottmann, Clariant has identified sustainability as one of its five strategic pillars. Why do you place such high value on sustainability?

HARIOLF KOTTMANN At Clariant, we are committed to creating value with innovative and sustainable solutions for our customers from many industries as well as the society. We want to become a globally leading company for specialty chemicals, and to stand out through above-average value creation for all stakeholders. We achieve this by recognizing the needs of customers, employees, shareholders, and the environment. This means that sustainability is deeply ingrained in our »corporate DNA« and is a key component of everything that we do.

We apply a holistic approach to integrating sustainability into the company in both our processes and our governance. This is an ongoing journey that is shaped by our understanding of corporate responsibility and our belief that the chemical industry is central to solutions for global challenges such as climate change and resource scarcity. At the same time, a focus on sustainability helps us gain competitive advantage. Sustainability is a prerequisite for our growth and our license to operate in the long-term.

What is the relationship between sustainability and business success? Doesn't sustainability imply higher costs, which can negatively impact business performance?

It's true that customers increasingly demand sustainable solutions but don't want to pay a significant premium. Therefore sustainable innovations have to be competitive on economic as well as sustainability performance



Hariolf Kottmann
Chief Executive Officer
(CEO) since 1 October
2008. Member of the
Board of Directors since
10 April 2008

factors. Achieving this results in clear benefits for the customers and for Clariant.

The more than 140 EcoTain® products we offer often outperform conventional products not only in terms of sustainability and performance, but also with regard to profitability. Our commitment to providing sustainable solutions is appreciated and recognized in the market. For example, our 2016 customer survey not only showed that our customers particularly appreciate the high quality of our products and technical services, it also told us that around two-thirds of our customers see Clariant as standing for sustainability.

As a globally active company, how does Clariant experience the interest in sustainable solutions in different markets around the world?

The time when sustainability was recognized as a concern in only a small part of the global market is long gone.

With our strong presence in Europe, Clariant is consistently exposed to European regulations on environmental protection and sustainability. While in the short term this can be a challenge, as it can create an unfavorable cost position compared to other regions, in the longer term addressing strict requirements right away forces us to develop products and services that are globally state of the art. Take Brazil as an example, where we can register an increasing demand for cosmetics based on natural ingredients. The same applies for China, as confirmed by our second Sustainability Dialog event in Shanghai in November 2016. More than 200 representatives of Chinese customers, distributors, suppliers, and authorities participated in the discus-

sions on the sustainability and innovation needs reflected in China's New Normal and 13th Five-Year-Plan.

Our strong positioning regarding sustainable solutions is a clear asset in our strategy and our business ambitions to become a »China Insider.«

What feedback do you receive on the efforts by Clariant with regard to sustainability beyond your customer responses?

One example of gratifying feedback is the recognition of Clariant as one of the most sustainable chemical companies by the world-renowned Dow Jones Sustainability Index (DJSI). In fact, in 2016 we received the most positive feedback on this topic in our corporate history. This tells us that our continuous journey toward integrating the performance, people, and planet dimensions of sustainability into the solutions we offer to our clients and into our own operations as a responsible company is going in the right direction.

In my Real life

In the series »In my real life,« six Clariant employees from Europe share their views on sustainability by answering the question: »What does sustainability mean for my professional life and in my daily routine?« The personal statements cast light on the diversity of people and their perspectives in the world of Clariant, their values and activities.

PHOTOGRAPHY Jo Röttger TEXT Bertram Job

I am thoroughly convinced that people are a company's most valuable asset. They are what brings a company to life. That is why in my position, I make sure there is a focus on the employees' well-being. Especially as we are asking our employees to continually deliver high performance, it is important that we strive towards a better work-life balance. As an HR manager, I try to put myself in the employees' shoes and come up with creative solutions to allow them to balance work with the rest of their lives.

In the UK, we have introduced a buy-sell arrangement for holidays and also implemented flexible working hours. Some colleagues use the flexible working conditions to take their children to school, to support their local church, or simply avoid the peak traffic. For me personally, it allows me to help my 95-year-old dad to look after my mum who is suffering from dementia. But it also means that I don't miss out on those special moments with my children, such as school plays and sports days. The fact that the company is willing to meet the employees halfway shows that Clariant recognizes the longer term benefits of employee well-being. The value of the goodwill that is generated amongst our employees with these initiatives should not be underestimated.

There are many employees now that are part of the »sandwich generation,« looking after both children and aging parents. My situation is not unusual, and for me, that's what life is all about. It is not always easy, but I love looking after my parents. After all, they looked after me so well, for so many years. I know how important it is though to get some personal respite, and I love spending quality time outdoors with my husband and my two boys. Taking our camper van to the Yorkshire Dales on weekends, discovering new walks, and sitting around the campfire in the evening – it's often the simple things that allow me to relax and find some inner peace.

Sometimes, it can be a challenge convincing managers that employees do not need to be sitting in the office every day at set times in order to do a great job. With the right IT equipment and some good individual planning, most of us are able to do part of our jobs from home. These different ways of working are not just for parents who need to consider childcare. If we take a closer look at our workforce, we also have employees supporting grandchildren, elderly parents, or sick family members, whilst at the same time, remaining committed to their career and the company.

The profile of our population is changing, and not just at Clariant. As a society, we must be ready to adapt to new ways of living and working, so that we can keep juggling our commitments without sacrificing our well-being.



TRACYANN OTTESLEV
Human Resources Manager,
Great Britain and Ireland



I feel truly in my element when I'm with friends who share similar interests. Dogs are a very important part of my world, and my husband and I have a large circle of friends who love dogs as much as we do. We take our dogs out together, and even train them and go to dog shows together. I have already won several gold and silver medals with Rosa, my golden retriever.

Once when I was with Rosa in the woods, I found another dog that had been abandoned there. She followed us to the parking lot and jumped into the car. I couldn't afford to keep her, so I brought her to the shelter. After three months, the staff at the shelter were able to find a new home for her. I was so happy that I wanted to thank them in some way. At work, I took up a collection, and my co-workers generously donated money and supplies such as food and medicine. When I drove to the animal shelter to present them with these gifts, my car was full.

Since that time, I often visit the shelter and take out homeless dogs for a walk. Those dogs are otherwise locked up in cages the rest of the time. There are hundreds of them here, and in the country, the problem is even worse. There, the animals are simply killed if no one needs them. The people in those areas don't even bring their dogs to the vet. They just abandon them.

I was surprised at how many co-workers supported my collection. You'd think that everyone would just be too busy with their own concerns to even care. But the response was overwhelmingly positive. I believe that you can cause a lot of people to reflect with these types of initiatives. The people you reach just need someone to raise their awareness.

In this instance, we only improved the lives of some dogs. But it really encourages a person to take on other causes as well. I know I would like to do a lot more. Caring for dogs is just the beginning.



AGATA WIERUSZEWSKA

Assistant Manager, Global Business Services,
Clariant Shared Services Center, Lodz, Poland



JORDI SERRAL

Head of Local Sustainability and Regulatory Affairs (LSRA),
Spain and Portugal

My father took me to the nearby mountains of Catalonia when I was five or six years old. That's when my love of this region was ignited, and it has not been dampened since. To this day, I try to spend time there as often as possible, either alone, with a co-worker or with my family.

I think today's children need to learn about nature. We live on a beautiful planet, which they should value. For me, sustainability means recognizing the value of life by respecting people, respecting the planet and trying to give one's best.

In my position, I help to ensure that the employees at the locations in Spain and Portugal return home just as healthy as when they arrived at work. I also help to ensure that we are always working in a more environmentally compatible manner. Protecting the environment and people – I think that is what motivates me the most.

From my perspective, we have done a good job if the year-end statistics do not show any accidents with downtime and if there is progress: less waste, less air pollution, and less waste water – and if people understand why safety and environmental impact are so important. As long as I can convey this, I feel satisfied in knowing that I have done my job effectively.

If something needs to be changed, people are the only resource that can bring about that change. That's why people are the most important part of a company. That is also probably what I like the most about my job: You have to work with people and try to convince them of what you're talking about.

Here in Tarragona, we have the tradition of the »castells« – towers constructed out of real people who rely on each other to climb upwards. For me, this is the best proof that we have the opportunity to achieve incredible things if we work together. The team is always mightier than the individual. Each person brings their own strengths, but those who know how best to work with others win in the end.





KATRIN BACHMEIER
Marketing Manager,
BU Industrial &
Consumer Specialties,
Region EMEA

Especially in our Business Unit, we are extremely widely positioned with approximately eight segments, which include everything from aircraft de-icing fluids to household cleaners to cosmetics. Our communication regarding our positioning is very good, but we must always strive to stay up to date. This is one reason why I'm also working toward a master's degree in advanced studies with a concentration in brand and marketing management at the University of Applied Sciences in Lucerne. I want to learn how the marketing world will evolve in the future, particularly with regard to digitization and Industry 4.0.

Of course, I don't have much free time because the classes are on Friday afternoons and Saturdays. But it's incredibly fun. There are ten of us in the course, which is quite intense. We talk about big data and the entire digital transformation that is underway. All of the course content is very practical and tailored to my needs. For instance, with what I'm learning, I can help make our portfolio digitally accessible to customers. This is extremely important for those who wish to access our information at any time of the day.

I like to listen and absorb information quickly, and I am not afraid of change at all. As the digital transformation progresses, some jobs will certainly fall by the wayside. On the other hand, new jobs will be created. Humankind is resourceful, and individuals will have to adapt to the changes.

In our own company, we have already implemented an enormous change. I am really proud that with GlucoTain®, we brought a product to the market that is both innovative and sustainable. Since then, a surface cleaner made with bioethanol from straw has also arrived on the market. These types of environmentally compatible products strengthen our employees' identification with the company. And as for myself, I'm more than a Marketing Manager. I'm also a consumer. And I make sure that I don't buy products made from raw materials that are harmful to the environment.



CAMILLA LÅNG

Site Manager Hällekis, Sweden and
Site Management Gdansk, Poland, BU Functional
Minerals and Country ESHA Nordics

When I became the site manager in Hällekis in 2011, we had about 30 different safety risks at the site. There was a lot to do to bring everything up to Clariant's standards. But despite the challenges, I really like my job. It is also not very difficult to establish these types of objectives, because in Sweden, people already have an environmentally conscious mind-set. Starting in kindergarten, the Swedes learn everything related to the environment, recycling waste, and other similar topics.

I grew up in the countryside, and I still live there today. We had horses at one point, and I've been going horseback riding since I was five years old. Spending time in nature has always been my favorite thing to do. Even today, I feel at my best when I'm outdoors. I'm truly in my element when I'm standing in the garden with rubber boots on and digging in the soil.

I've dreamt of having a greenhouse for a long time, and last year, we finally bought one. I now have my own vegetable garden where I grow tomatoes, cucumbers, peppers, and strawberries. Eating these home-grown treats is quite special, and they taste incredible.

At home, we only use »green« electricity from wind and water sources, just like at our site. We have even lowered consumption by 50%, which I am particularly proud of. But I'm not going to stop there. If you have goals, you have to work until you achieve them. And then from there, new goals will always pop up!

My two daughters are proud of what their mother does and I am proud of them. I truly hope that they and eventually their children will be able to live in a clean and healthy environment in the future. So I do what I can. Some think only the actions with the biggest effects are the most important, but the small steps really add up as well.

I firmly believe that cooperation with others is extremely important. That is why I highly value transparency. I want the people who work with me to be completely honest. I also do my best to be completely honest in return. I believe that trust is the basis for all teamwork.

Luckily, I work in a company where people are regarded as a pillar of success. The value of a company lies not only in making money. Every individual is important, from the young workers in production to the members of the board. Everyone deserves respect.

When I started my career as a plant manager, I once had a crazy day in a highly complex factory. I couldn't answer any of the questions I was asked, and I was on the brink of tears. As I was leaving the office that evening, the foreman came to me and asked, »How was your day?« I said, »It was horrible!« »No it wasn't,« contradicted the foreman. »The machines are running, the lights are on and the people know what to do. So it was a good day.«

This attitude continues to set an example for me even today. I always feel that it's truly a perfect day as I sit down to dinner with my family in the evenings. I am Italian, and Italians tend to do a lot together as a family. On Sundays, we all make pizza together while we talk about school, work, or perhaps a song we heard on the radio. Sometimes, my older son and I might even try to figure out the song on the guitar, and my wife might improvise and sing along.

Making music with others has a lot to do with understanding the people you're playing with. You need to be in harmony. Even at work, like in a musical group, we very often have to make decisions quickly and find out whose playing is a little off. Sometimes the sounds come together to form a harmonious chord, sometimes they don't. But if it works, it can be very beautiful.



OSCAR MARTINI
Operations Manager
BU Masterbatches, Pogliano, Italy



Performance

With a focus on sustainable innovation, integrated life cycle considerations, and a robust product portfolio, Clariant vigorously embraces its production and performance.

For example, by proactively pursuing collaborative sustainable innovation, Clariant is building its resiliency and adaptability as global trends oblige corporations to move beyond their status quo. Additionally, Clariant sets an ambitious standard to fine-tune its product portfolio continuously toward sustainability while identifying products that stand out for their sustainability excellence using its trademark label, EcoTain®. Lastly, Clariant's devotion to safety and compliance supports and enhances its robust product stewardship and its overall performance.

BEST-IN-CLASS SUSTAINABILITY PRODUCTS



> **140**

Products
awarded with the EcoTain® label for their sustainability excellence

SUSTAINABILITY CRITERIA

36

criteria grouped in six categories are considered in the Portfolio Value Program (PVP) to screen the product portfolio for sustainability.

Performance



Integrated sustainable business



Performance advantages

People



Safe use, transparency and information



Addressing megatrends and societal needs

Planet



Resource efficiency and environmental protection



Raw materials and sustainable sourcing

R&D SPEND



206

CHF m spent in Research & Development in 2016. Since 2012, approximately CHF 1 b has been spent on R&D.

SCIENTIFIC COLLABORATIONS



125

active collaboration projects with universities research institutes, and external partners.

ACTIVE INNOVATION PROJECTS

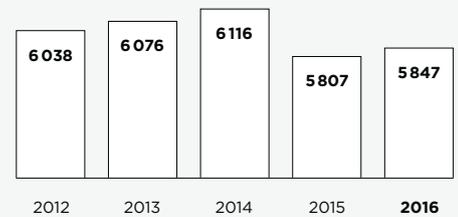


320

of which 60 »Class 1 projects« that show double-digit million sales potential or are of strategic importance

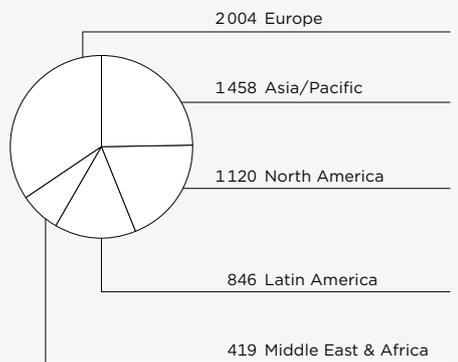
GROUP SALES

in CHF m



SALES BY REGION

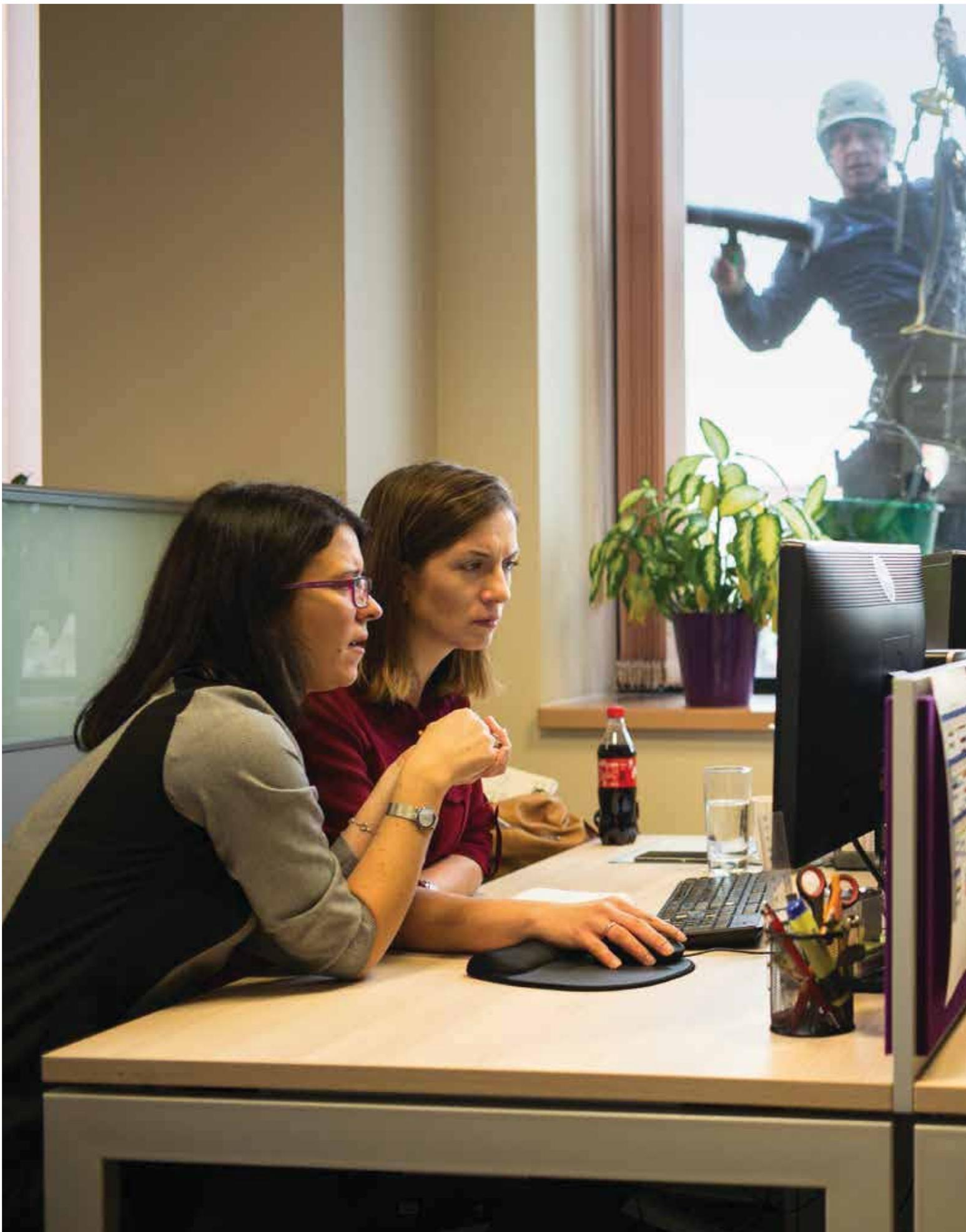
Group sales CHF m 5847



EBITDA MARGIN

15.2%

before exceptional items





The Lodz Roadmap

For its ambitious managing director, the Shared Services Center in Lodz, Poland is an opportunity to put leadership qualities to the test. The bundling of complex services is a priority for Clariant. Those who organize these services in a more streamlined, affordable way have a decisive advantage in global competition.

PHOTOGRAPHY Jo Röttger **TEXT** Bertram Job

Tomasz Lesniewski could curse this elevator. It is probably the slowest elevator in central Lodz, if not the entire Republic of Poland. It feels like it takes an eternity to move between two floors. Far too long for someone who has such ambitious goals and is always pushing forward. Yet Tomasz still relies on the old elevator for talking with his employees, as they bustle about on several floors of the »Orange Plaza« – one of two buildings 500 meters apart that currently serve as a fixed address for his company.

However, these circumstances don't really annoy this tall, lanky man. They indirectly represent a problem that is good to have. When Lesniewski took over management here in mid-2015, the Clariant's Shared Services Center (SSC) in Poland had 70 employees. By the winter of 2016, the number of employees had grown to 220 and could soon increase to 300. There is a sense of pride in growing that quickly. More and more people also means the need for more and more chairs, desks, and space. This works until another floor is bursting at the seams.

But there is no going back now, only moving forward. That's the only direction Lesniewski is interested in. »Soon we will have our own building,« he tells his visitors as he rushes through the halls to quickly clarify something again. »We hope to move in as early as the beginning of next year.«

Educated as an engineer and certified accountant, he is determined to use his reputation and all of his energy to expand the Shared Services Center in his hometown. This is not simply about becoming larger. It is about a complete »Journey of Transformation,« he emphasizes. It should redefine the value of the location. It is no longer merely the starting point of payment transactions in Europe, but a globally operating nerve center for far more complex services. End-to-end processes, as they are referred to in process-management jargon.

»We want to become an ever more efficient organization,« explains Lesniewski. »That means that we

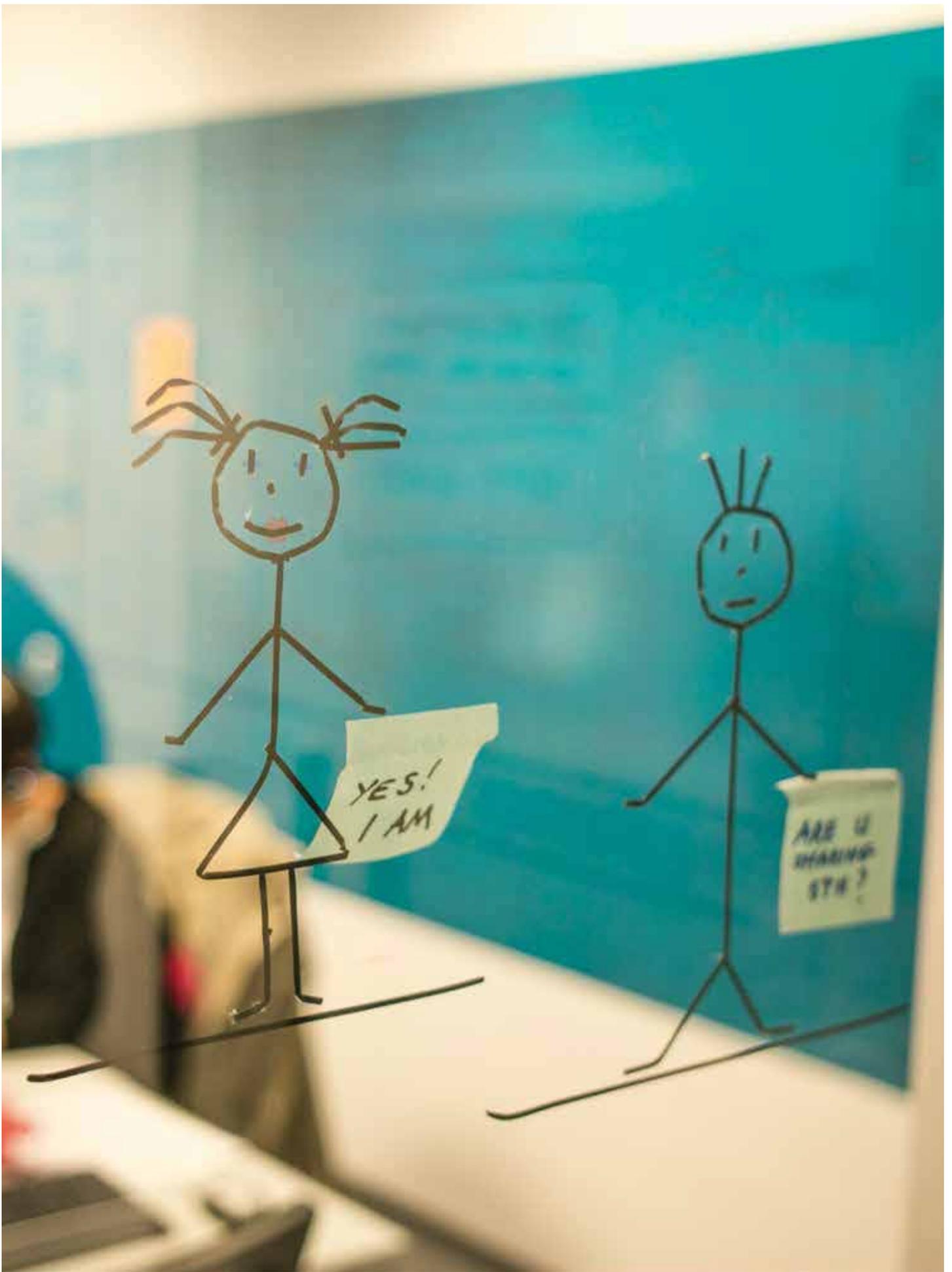
must change the way we work as well as shape the processes we are responsible for.«

This means clearly defined, standardized customer services like order-to-cash, data-to-insight, source-to-pay, etc. And those who believe these processes are a secondary matter are very much mistaken. In the operational business of international companies, these types of computer or IT-enabled services support important transactions from accounting to procurement to logistics. If successful, this means leaner structures and greater efficiency.

It was no coincidence that Clariant started to bundle these types of processes into a separate organization within the company in 2013. Within Global Business Services (GBS), methods with which the end-to-end services can be controlled as uniformly and cost-effectively as possible should be optimized and implemented. This is currently being done in three global services centers. They operate out of India, the Chinese city of Dalian, and – as mentioned – out of Lodz, Poland's third largest city, which is home to 700 000 people and located about one and a half hours west of Warsaw by car.

The decision is a vote for the location which has already proven itself in other contexts. Two years ago, one of the most modern production facilities for Clariant's Business Unit Masterbatches was opened outside the center in Konstantinow Lodzki. Since then, it has served as a model. And for Tomasz Lesniewski, it is »a great opportunity to manage my own organization.« He is willing to withstand the pressure that something like this entails. »It's up to me to handle it, and it is up to me to deliver in line with expectations. I am responsible for this.«

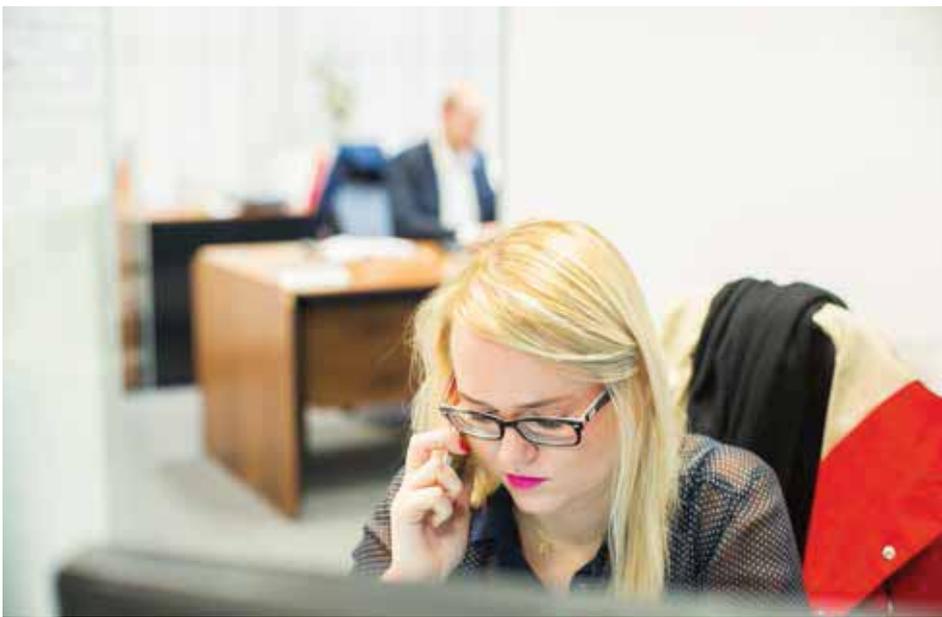
He has had enough training to think outside the box. Soon after his graduation in Lodz, Lesniewski worked for a hardware multinational in Ireland. Back in Poland, he was then employed in one of the first service centers, as well as for a market leader for outsourced services. He completed his master's degree in





»We want to become an ever more efficient organization. That's why we must change the way we work as well as shape the processes we are responsible for.«

TOMASZ LESNIEWSKI
Head of the Shared Services Center, Poland

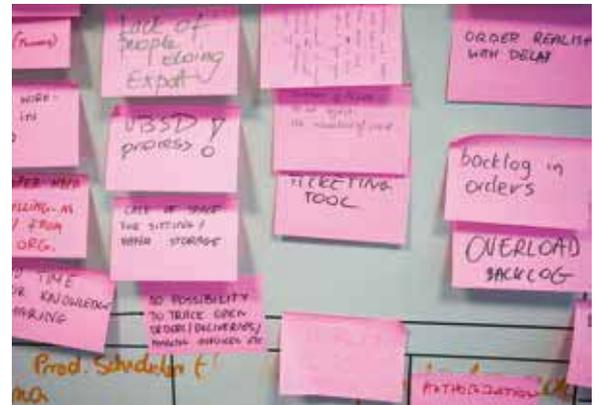


business administration in the U.S. at the University of Illinois. And now, this challenge that goes far beyond the performance spectrum of conventional service centers: to be different, faster, more comprehensive, simply better, and more sustainable than others.

»In two years, we have become one of the largest centers in the city,« adds Lesniewski when he is back in his own office – at a desk that is not unorganized despite the heavy workload. »Others need ten years to do that. And when it comes to the complexity of operations, we are already a leader.«

This has to do with his ambition and his fondness for methodology at all levels. Hardly any space on the walls remains unoccupied. Memos containing diagrams, data, and arrows, which should ensure any process, are stuck all over them. Informal meetings and talks are on the daily agenda. And there is also a workforce that puts the drive of the mastermind into constant performance. The average age of its employees is 30 years old, and with 30% of its workers coming from other countries, it is most likely more international than any other in this city.

Employees from Western Europe, Latin America and elsewhere can talk to their customers in the respective regions in their language. Forty people alone with Latin American roots cover the LATAM region and provide a lively atmosphere in the offices. According to Lesniewski, there is a reason why there is much more interaction here than in most of the more than 70 services centers in Lodz: »The people get to know each other here. I've also had other experiences in my own career ...«







A good atmosphere, multiculturalism, and social events – from bowling nights to going mountain biking together – make up for some of the downsides of the location. Lodz is still not one of the most attractive corners of the Republic. The former textile stronghold, also called »the Manchester of Poland,« strives for further restructuring. Many small shops, restaurants, and cafes have moved into deserted factories and old courtyards – nice gathering places for young employees who prefer the rough charm over the slick chic.

Tiago Ferreira says he loves this city anyway. The 32-year-old from the small town of Suzano near São Paulo would love most of all to persuade his parents and all four sisters to come here. For him, the work with the procurement team was »an opportunity to finally have a life.« Douglas Campos, who shares an apartment with him and a colleague from Venezuela, views it similarly. Here, the shift often goes from noon until the late evening, says the 21-year-old, »but I can make my own decisions on the job and work in larger contexts.«

These opportunities will continue to show up more frequently. Since 2015, the Latin America and Middle East & Africa regions have been tested to see whether Lodz is already positioned to offer customer services beyond Europe. In 2016, they began to manage selected processes for the Functional Minerals Business Unit from here. This did not run smoothly in every case, but optimizations have already been made. With this, two Clariant programs, »Lean« and »Excellence« play a decisive role, as well as an »ideal state« agreed on with GBS – an optimal state that is expected to be achieved at the end of a »Lean Transition Journey« in 2018.

Ultimately, Tomasz Lesniewski would like to move forward quickly and methodically. Thus, failure is not an option. »We know what we are doing today and what we need to do tomorrow. And we have a very structured program here that will soon grow.«



Sustainable Innovation

The foundation for long-term growth

At Clariant, sustainable innovation is not just a corporate priority, it's a way to engage with the dynamics of a changing world. Clariant's Head of Scouting in New Business Development, Verena Niebuhr, can certainly attest to that.

Challenges do not shut down Verena Niebuhr, they wake her up. As Clariant's Head of Scouting in New Business Development, Verena takes special pride in working closely with highly skilled experts from Clariant's research and development (R&D) and Business Unit (BU) teams to conceptualize and develop new business with innovative and sustainable products that address global challenges while also meeting customers' specifications. According to Verena, »chemistry is everything – the majority of products in our constructed as well as natural environments are based on chemicals. It is impossible to imagine a world without chemistry. I therefore believe that the chemical industry will play a major role in addressing the challenges facing our society and planet to sustain our world for future generations – with Clariant leading the charge.« As both a cornerstone and touchstone of Clariant's strategy and success, sustainable innovation drives Clariant toward promising market opportunities that support not only customers, but also society and the environment – making it a significant priority for Clariant.

The reason why

Ecological, social, and economic global megatrends, including those challenges resulting from population growth, urbanization, the spread of typically Western consumption behaviors among a rapidly growing middle class in emerging countries, are expected to cause drastic changes that pose a variety of challenges to mankind, e.g. leading to

huge strains on the environment from increased waste, to the challenges of supplying enough (clean) energy. These challenges will and need to propel innovation across industries, and the chemical industry will play a crucial role in addressing the challenges.

Clariant recognizes this, and so does Verena. »We are currently consuming the resources of almost two planets, which clearly exceeds the Earth's capacity to regenerate. The demand for chemicals will continue to grow and not only can we make current production processes and products more efficient and sustainable, chemicals can also save energy and resources.« Creating new solutions for these demands and challenges means prioritizing sustainability in the design, production, and intended use of a product. This is also emphasized by the fact that sustainability and the innovation it requires are key pillars in Clariant's strategy. This in turn has made Clariant rigorous in its R&D decisions, raising red flags and stopping non-sustainable innovation projects if they are not aligned or can be further developed in line with the company's sustainability ambitions.

Sustainable innovation emerges from a place

Built around a culture of creativity, collaboration, efficiency, and sustainability, Clariant dedicates itself to both finding new product innovations and promoting innovation daily. The Clariant Innovation Center (CIC) helps Clariant's employees



Verena Niebuhr
Head of Scouting
New Business
Development

Verena plays an important role managing and inspiring sustainable innovation at Clariant. She approaches her work with passion and pride, sometimes even engaging with visitors at the Clariant Innovation Center to discuss the many applications of Clariant's diverse product portfolio.



How innovation and sustainability can work together

There are many ways chemicals can reduce products' environmental impacts while saving resources. In one of Clariant's New Business projects, for example, a new nano silver conductive ink plays an important role in the miniaturization of electronics – ultimately reducing materials and energy consumption while creating a variety of new applications. reports.clariant.com/v05

»We are currently consuming the resources of almost two planets, which clearly exceeds the Earth's capacity to regenerate.«

—
VERENA NIEBUHR

Head of Scouting in New Business Development

achieve this. The CIC is the flagship among the research and development centers at Clariant's production site in Frankfurt-Höchst, Germany. Equipped with research and application laboratories for several BUs and the most up-to-date analytics, the CIC is also where the Intellectual Property Management and New Business Development departments are located.

At the CIC, no two days are ever the same – especially for Verena. »I am always looking forward to meeting with my colleagues and team in the morning and typically spend some time to align on the most important news and urgent tasks to prepare for the day. The environment and atmosphere in our open space office in the CIC supports this daily assembly well, and fortunately, there is no such thing as a normal day for New Business Development – I highly appreciate the diversity of both our staff and the work we do.« The CIC is a vital player in Clariant's global R&D network, which includes more than 50 Technical Centers in Europe, North and Latin America, India, and China, with a total of about 1100 employees.

Diverse minds forge ideas

For Verena, »a major part of my day is filled with conceptual and content work as well as external and internal networking – for example, to drive forward the search for new ideas, scouting fields, and scouting projects. Our work involves a great deal of external networking, which is crucial to fill the pipeline with ideas that provide great value

206

—
CHF million invested in research and development for innovation in 2016.

6 500

—
patents held by Clariant at the end of 2016.

125

—
scientific collaborations with universities, research institutes, and external partners.

potential for our customers and for Clariant.« The CIC's »Open Lab,« where Clariant can work on innovation projects together with customers and other development partners, exemplifies this. Innovation workshops bring together Clariant's customers with various experts from Clariant to jointly identify and develop new ideas that ultimately provide solutions to unmet needs. In addition, Clariant participates in more than 125 scientific collaborations with universities, research institutes, and external partners, while simultaneously monitoring any and all industry trends and developments – including pioneering projects at start-up companies.

Internal collaboration for delivering on sustainable innovation

Internal collaboration also propels Clariant's sustainability and innovation, particularly through Clariant's »Sustainability Trend Meetings.« During these sustainability forums, global experts from Clariant's sustainability strategy, marketing, and business development teams discuss sustainability challenges that can be addressed using Clariant's expertise in chemistry and material science. By having experts from around the globe and across the Business Units in the meeting, the sustainability challenges are scrutinized from different business and geographic perspectives. These meetings often lead to new ideas for project or product development and business scouting, which then are pushed forward by BUs, regional teams, Group Technology and Inno-

Clariant's global Innovation Network



~500
Employees

are working in the Clariant Innovation
Center in Frankfurt-Höchst, Germany.



8
R&D Centers

in North America, China, India,
and Europe.



50
Technical Centers

in Europe, North and Latin America,
India, and China, with a total of about
1100 employees.



Sustainability and innovation precision

To assess projects' competitive advantages and make them comparable, Clariant established the Corporate Sustainability Index for R&D projects (CSIR&D).

A mandatory part of all major R&D projects, CSIR&D assesses the relative sustainability of new products under development. By using CSIR&D as a tool, Clariant is able to pursue sustainable ideas and approaches while ensuring that all products developed today are still viable and competitive tomorrow.

vation or New Business Development. Progress on the uptake of sustainability opportunities are reported to the Sustainability Council. This Council holds a meeting twice a year at the executive level to determine sustainability strategies for the company.

In subsequent Sustainability Trend Meetings, previous findings, new challenges, and industry trends are once again presented, analyzed, and discussed, continuing Clariant's collaborative and ongoing dialog around sustainable innovation opportunities. The backbone of Clariant's competitive edge is to deliver sustainable innovation and performance, and this is exactly what Verena finds so exciting in her work: »This spirit of change regarding sustainability can clearly be felt throughout Clariant – especially during Trend Meetings – and it already manifests in tangible initiatives, projects, and new products. I am particularly proud that Clariant has also managed to spread this enthusiasm to customers, and that we are not only recognized as a sustainability pioneer, but that we also have several ongoing sustainable innovation projects jointly with customers that are showing continuing success.«

Moving forward

Sustainable innovation practices and solutions are required for taking on industry trends and responding to societal challenges, which is why they have become a foundational pillar underlining Clariant's performance. However, sustainable innovation practices and solutions continue to evolve

with Clariant's business and sustainability strategies. Verena knows this well, highlighting that sustainable and innovative solutions at Clariant ultimately revolve around creating value: »Clariant's approaches to sustainable innovation have changed drastically from a theoretical concept to actual products that impact us in our everyday working life. To deliver added value to Clariant's customers, innovation requires an overlap of desirability (for example, an unmet customer need), feasibility (for example, technical attainability), and viability (for example, economic competitiveness). At Clariant, it is understood that even when providing a more sustainable alternative to an existing solution this may not always be sufficient. The particular performance benefits are crucial and need to meet customer expectations to have realistic implementation chances.«

Many current and future challenges will require interdisciplinary approaches and holistic solutions, and sustainability is thus a catalyst for innovation. Chemistry and other sciences will play a major role in addressing societal challenges, and industry players that rise to the top will be those that think both inside and outside of the box in developing solutions. Clariant clearly has great potential to be one of these game changers, and already Clariant's innovators – like Verena – are using efficiency, creativity, collaboration, and sustainability to develop solutions in response to global challenges while continuing to leverage Clariant's existing capabilities.

The journey towards the future

A sustainability lens on the product portfolio

Clariant's approach to its product portfolio and sustainability performance is built upon external and internal collaborations, careful screening processes based on clear criteria, as well as a drive to continuously improve and promote sustainability excellence solutions. As an example, GlucoPure® SUN showcases how these important processes are used in practice.

A simple, mild, high-performing, and renewable-based detergent. This was the vision when Clariant came up with its EcoTain®-labeled GlucoPure SUN®, a sugar-based surfactant with a chemical foundation made from sunflower oil. Capable of tackling dirty jobs while remaining gentle for both humans and the environment, this foamy detergent was synthesized through Clariant's dedication to sustainable innovation and efficiency. However, the steps involved in developing this product – upstream in collaboration with suppliers, during production at Clariant, and downstream in its use by clients and end consumers – are much less simple than this detergent description suggests. In fact, when developing products, Clariant considers how all necessary pieces fit together – both with regard to how a product is used and how its performance, safety, and sustainability features co-mingle across the life cycle of the product. As an example, GlucoPure SUN® offers a clean, helping hand in understanding how Clariant approaches the

screening and development of its products and product portfolio on the basis of sustainability.

A cohesive framework: The Portfolio Value Program

Investigating the challenges and issues and mapping them across the overall life cycle of a product like GlucoPure SUN® is key to effective product development – especially in determining and maintaining a product's properties as they relate to sustainability and efficiency. To assess, map, and label its product portfolio, Clariant developed the Portfolio Value Program (PVP) in 2012 in cooperation with the internationally renowned Collaborating Centre on Sustainable Consumption and Production (CSCP), a non-profit organization and »think and do tank« founded by the United Nations Environmental 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, including experts, policy makers, businesses, NGOs, trade union organizations, and customers. The PVP provides the overarching framework for the company's approach in devel-

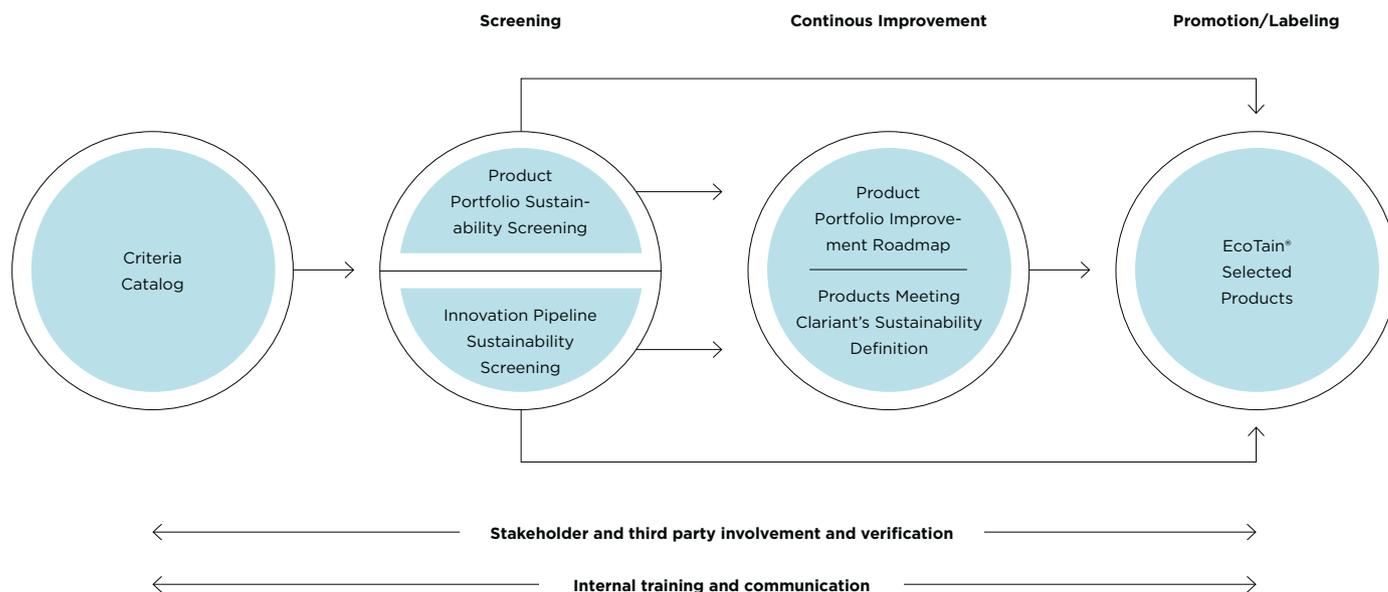


Inspiration for the Portfolio Value Program

The Portfolio Value Program (PVP) is inspired by Clariant's ambition to steer its product portfolio toward solutions that add value through sustainability for customers and society while ensuring long-term growth for its business and performance leadership.

Main components of The PVP System

The PVP System drives continuous improvement through transparency and targeted steering



ECOTAIN®

The flagship label for sustainable products

At the end of 2016 more than 140 of Clariant's products carried the EcoTain® label for sustainability excellence.
clariant.com/ecotain

oping its product portfolio towards more innovative and sustainable products and sales methods, enhancing also the company's sustainability performance as a whole.

The PVP is inspired by Clariant's ambition to steer the product portfolio toward solutions that add value through sustainability for customers and society while ensuring long-term growth for its business and performance leadership. Clariant continues to be inspired by the opportunities to raise the bar in sustainability that are brought about by societal changes, market trends, existing and future regulations, customer preferences, and stakeholder expectations.

Through a cohesive interplay of collaborative assessments, evaluations using clear criteria, and sustainability labeling, the PVP backs Clariant's systematically screened, sustainable, and innovative product portfolio.

Strong basis underpinned by external and internal collaborations

The PVP is based on a collaborative and forward-looking approach. In the different development phases of Clariant's PVP, several discussions were held with internal and external stakeholders. This collaboration and dialog process ensures an outside-in perspective and that the PVP system meets stakeholder expectations. The development of the PVP methodology and criteria are based on the external collaboration process.

To use the PVP system and screen the product portfolio, varied and extensive expertise is needed given the wide-ranging

»Steering our portfolio towards sustainability creates long-term value for Clariant and for our customers and stakeholders.«

LYNETTE CHUNG

Head of Sustainability Strategy & Advocacy

needs and impacts to be assessed. Working in conjunction with leaders in Clariant's core team of corporate and business sustainability experts, product managers, marketing managers, as well as product stewardship and supply chain specialists are involved in the PVP screenings. The PVP's screening process is based on the utilization of 36 criteria that reflect sustainability needs and opportunities across the life cycle.

Evaluation by 36 criteria

The PVP's 36 criteria are grouped into six categories. These categories revolve around the economic, social, and environmental sustainability of a product, representing Clariant's three pillars of sustainability: performance, people, and planet. These criteria also ensure that proper consideration is given to impacts across the life cycle of a product or solution, covering upstream, production, use, and end-of-life phases.

Screened products are ultimately divided into three broad categories:

1. Products standing out for their sustainability excellence performance, which can be distinguished by Clariant's hallmark EcoTain® label.
2. Products representing a standard that is considered by Clariant an acceptable level of sustainability (which, however, goes beyond the regulatory requirements).

3. Products falling below the Clariant sustainability standards, which will be part of an »Improvement Roadmap« and particularly checked for opportunities for improvement, replacement, or even discontinuation.

For GlucoPure SUN® and all other products, the PVP approach incorporates general elements of ensuring a proper analysis and screening for the different upstream, production, and downstream life cycle phases of a product.

Most surfactants used in dishwashers cause irritation to human skin. Customers are seeking products that are mild yet still performing. At the same time, environmentally compatible, renewable sources are coming into focus. Clariant uses renewable alternatives: sugar and sunflowers. With a 95 % renewable feedstock and a mild but effective performance when used in detergent, these ingredients seemed like a winning combination and a basis for GlucoPure SUN®. Downstream, it is evident to Clariant that detergents have the potential to harm habitats and ecosystem services. This issue served as another driver in GlucoPure SUN®'s development.

For the GlucoPure SUN® assessment, the screening team included sustainability experts, experts from the Global Application Development and EMEA Technical Application teams as their joint efforts were

The criteria catalog's six groups

Performance



Integrated sustainable business



Performance advantages

People



Safe use, transparency, and information



Addressing megatrends and societal needs

Planet



Resource efficiency and environmental protection



Raw materials and sustainable sourcing

crucial in developing the formulations and ensuring the product's performance and mildness in various application scenarios.

The GlucoPure SUN® screening outcome shows benefits across all three sustainability pillars and in the six groups of the criteria catalog: best-in-class performance and multi-functionality, reducing the use of components such as VOC solvents and stabilizers. Besides this, it presents 95 % of renewable carbon index, enables Nordic Swan and EU EcoLabel, allows milder detergents without an irritant label and delivers the same cleaning performance of traditional non-green formulations while also helping to adjust the formulation's viscosity and appearance.

Branding sustainability excellence

Building upon the PVP's comprehensive sustainability screening, Clariant further clarifies sustainability performance features of its product portfolio using a distinguishing label: EcoTain®. 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 adverse environmental or social impacts. A corporate panel of experts reviews and awards flagship products with the EcoTain® label. By the end of 2016, more than 140 products from all Business Units were awarded the EcoTain® label.

GlucoPure SUN® fell into this privileged group, receiving an EcoTain® label for its efficacy and sustainability:

GlucoPure SUN® is made of renewable sunflower oil and sugar, is biodegradable, and is still gentle on skin and effective on dirty dishes.

Delivering on sustainability ambitions

Together, the EcoTain® label and the PVP form a very important step in delivering on Clariant's sustainability ambitions. Reviewing its product portfolio from a sustainability perspective, thereby highlighting products such as GlucoPure SUN® and taking actions for steering its product portfolio towards sustainability and increasing performance requires consistent commitment and efforts across the company. This needs a gradual approach, transparency, and understanding of the portfolio's sustainability performance in order to define roadmaps and action plans. This ensures the long-term value not only for Clariant, but for Clariant's customers and stakeholders as well.

EcoTain® product highlights

Licocene® for hotmelt adhesives

Used for hotmelt adhesives in furniture, automotive, floor-covering and packaging industries:

- 100 % recyclable
- Increases water and energy savings due to the elimination of a drying process for furniture applications

Geko LE®

A sustainable greensand casting additive:

- Lowers organic pollutants and greenhouse gas emissions

- Lowers amounts of waste sand by higher efficiency additives
- Helps improve the health and safety of foundry operators, the environment, and neighbors

Ceridust® 8090 and 8091

A 100 % bio-based, sustainable additive for wood coatings:

- Non-hazardous
- Made of renewable raw materials

Hostavin® 3330 Disp and 3070 Disp

Water-based UV absorber and light stabilizer dispersions for coatings:

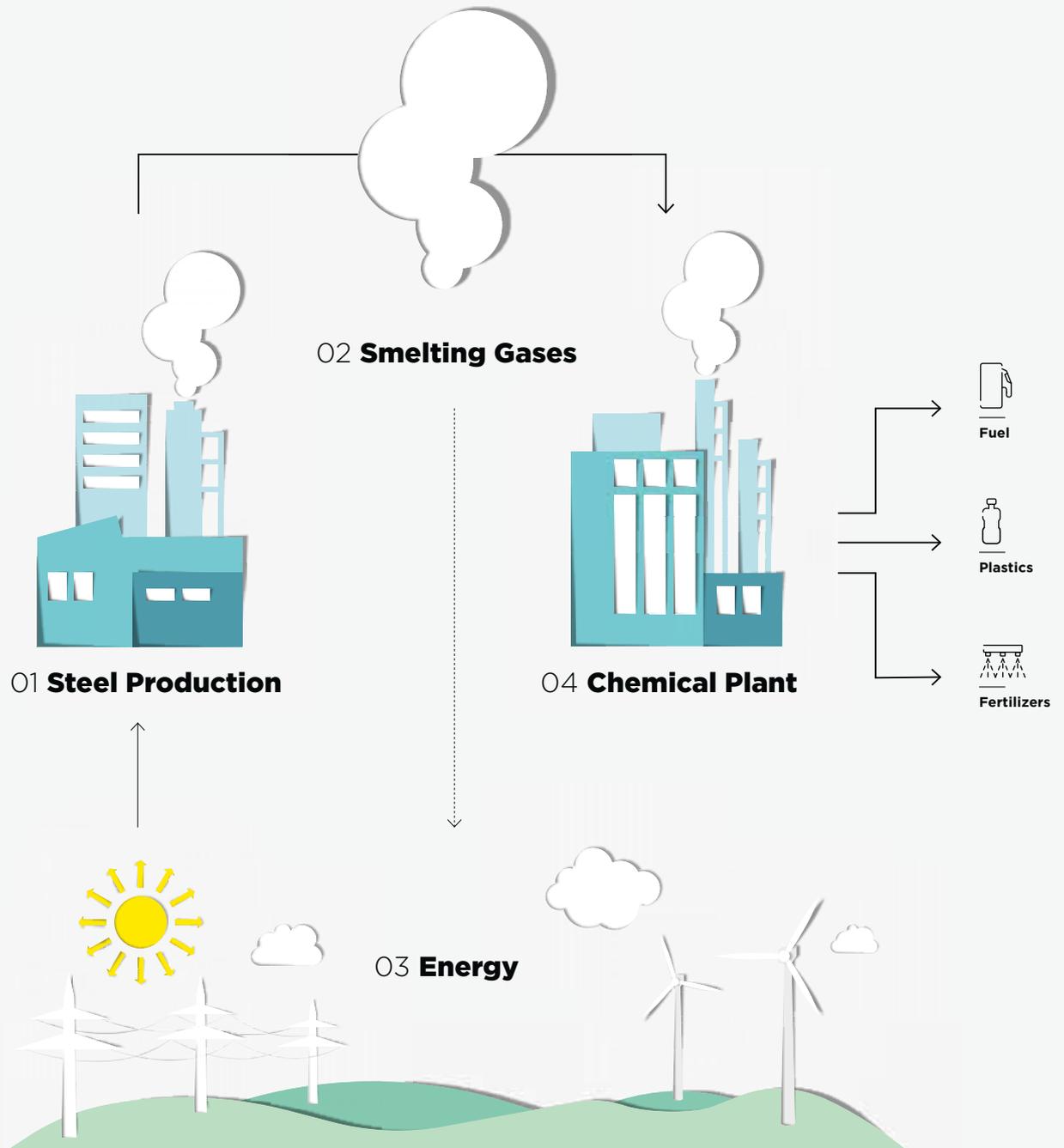
- Reduces emissions
- Contains less hazardous components than competitive systems
- Easy dispersion enables reduction of energy consumption

Would you like to learn more?

clariant.com/ecotain

Contributing to low-carbon and circular economy

By marrying steel production emissions to chemical production, the industry takes life cycle thinking to a new level of innovation: Carbon2Chem.



A cross-industry venture sponsored by the German Federal Ministry of Education and Research, Carbon2Chem is a project that reduces industrial carbon dioxide emissions from steel production (1) by converting smelting gases (2) into valuable chemicals. Smelting gases are currently used for power generation (3) in the steel plants. The objective of the Carbon2Chem project is to go one step further and develop a solution for using

the smelting gases (mainly CO, CO₂, H₂) for the production of materials (4). Demonstrating Clariant's dedication to deliver solutions to address life cycle impacts across different value chains, Clariant provides methanol catalysts and the necessary application expertise to evaluate the catalysts' suitability. Clariant also participates in the upstream processing of the smelting gases, as methanol can only be acquired from smelting gases

in purified form. For the gas purification, Clariant contributes sorbents, catalysts, and expert know-how on their application. To sustainably improve the ecological performance of steel production, Clariant considers it an important step to capture and convert components of the smelting gases, which contain considerable amounts of syngas (carbon monoxide together with hydrogen) that can form the basis for chemicals.

Facilitating high-quality, safe, and sustainable products

Product stewardship is a crucial facet of Clariant's business approach. Through carefully managed assessment, testing, and customer engagement processes, Clariant's Product Stewardship offers customers and Business Units professional service that contributes to the high safety and legal compliance of its products.

Outstanding products are never as simple as they may first appear. To achieve a high level of quality, performance, and safety, a product requires detailed management during its entire life cycle, which includes the research and development phase, production, use by customers, and ultimately end-of-life disposal. However, high-quality products are also backed by carefully integrated innovation, manufacturing, and marketing development stages. At Clariant, Product Stewardship brings together all of these processes, delivering the high performance its customers expect and require.

Product Stewardship ensures integrity and quality

Protecting both consumers and the environment in the development and use of products is one of Clariant's top priorities. Clariant's Product Stewardship organization offers guidance for customers and all Business Units (BUs) in addressing, managing, and maintaining product safety while also preventing reputational or legal damages to Clariant or Clariant's customers. This is particularly important in regard to intended use and impacts of products. In addition to ensuring

safety, Product Stewardship also integrates sustainability and innovation into the design of a product, thus creating added value.

Clariant's Product Stewardship offers support and guidance to all relevant business components:

- 1.** Innovation, which includes evaluation of safe uses and performance
- 2.** Marketability, which includes assessment of chemicals and registrations to chemical inventories
- 3.** Manufacturing, which includes classification and labelling, safety data sheets and storage, and safe transportation
- 4.** Marketing/Customers, which includes transparent supply chain communication on all relevant safety aspects of our products and offering respective certificates.

The various steps Product Stewardship is focusing on are complex, often requiring the input and engagement of various external and internal stakeholders such as regulatory authorities, research and development (R&D), production, marketing and sales, and procurement. Through careful registration and evaluation of chemicals, strict chemical regulatory compliance, and customer support on chemicals and uses, Clariant holistically produces products that are safe, sustainable, compliant, innovative, and high-performing.

Compliance and registration

During the course of its design and development, a product undergoes a series of screenings that evaluate its safe use and environmental impacts. Clariant strives to integrate the highest degree of safety into its products. Before a product is produced and marketed, it is screened in accordance with – and often exceeds – the requirements of all relevant global regulations.

All products are validated to ensure their safety for humans and the environment when properly used. Chemicals registration requires data on the substance, proof of safe use of the substance, and submission of substance data and assessments to appropriate authorities. These authorities include, for example, the European Union’s (EU) European Chemicals Agency (ECHA), which coordinates the registration, evaluation, and authorization of all chemical substances based on available scientific data according to the EU REACH regulation. Through Product Stewardship, Clariant fulfills all necessary regulatory obligations.

Assuring the compliance of Clariant’s products on a global scale

Clariant’s approach to product stewardship is globally oriented. Ensuring that products comply with all relevant national and international chemical legislations is fundamental

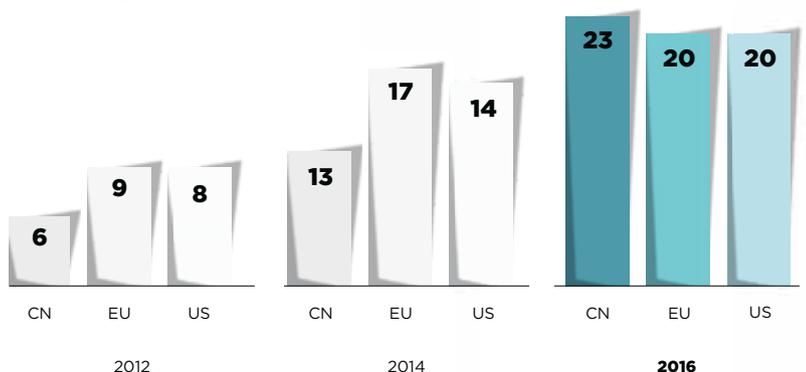
Registrations support business growth

Increased quantity of registrations at Clariant demonstrates a commitment to innovation. As Clariant innovates existing products, expands its product portfolio, and enters new markets, more and more chemicals are registered across the globe. Between 2012 and 2016, Clariant nearly doubled its registration projects for new products in China, Europe, and the United States. In China, this growth has exceeded the number of registered projects in Europe and the United States, illustrating Clariant’s prosperous product portfolio and global performance.

to Clariant. In fact, Clariant has product stewardship capacity in 30 countries, which helps cover production at over 200 sites worldwide. With Clariant’s Product Stewardship represented in every key region of its production, marketing, and distribution, Clariant stays up to date with any and all necessary documentation for and evaluation of its products.

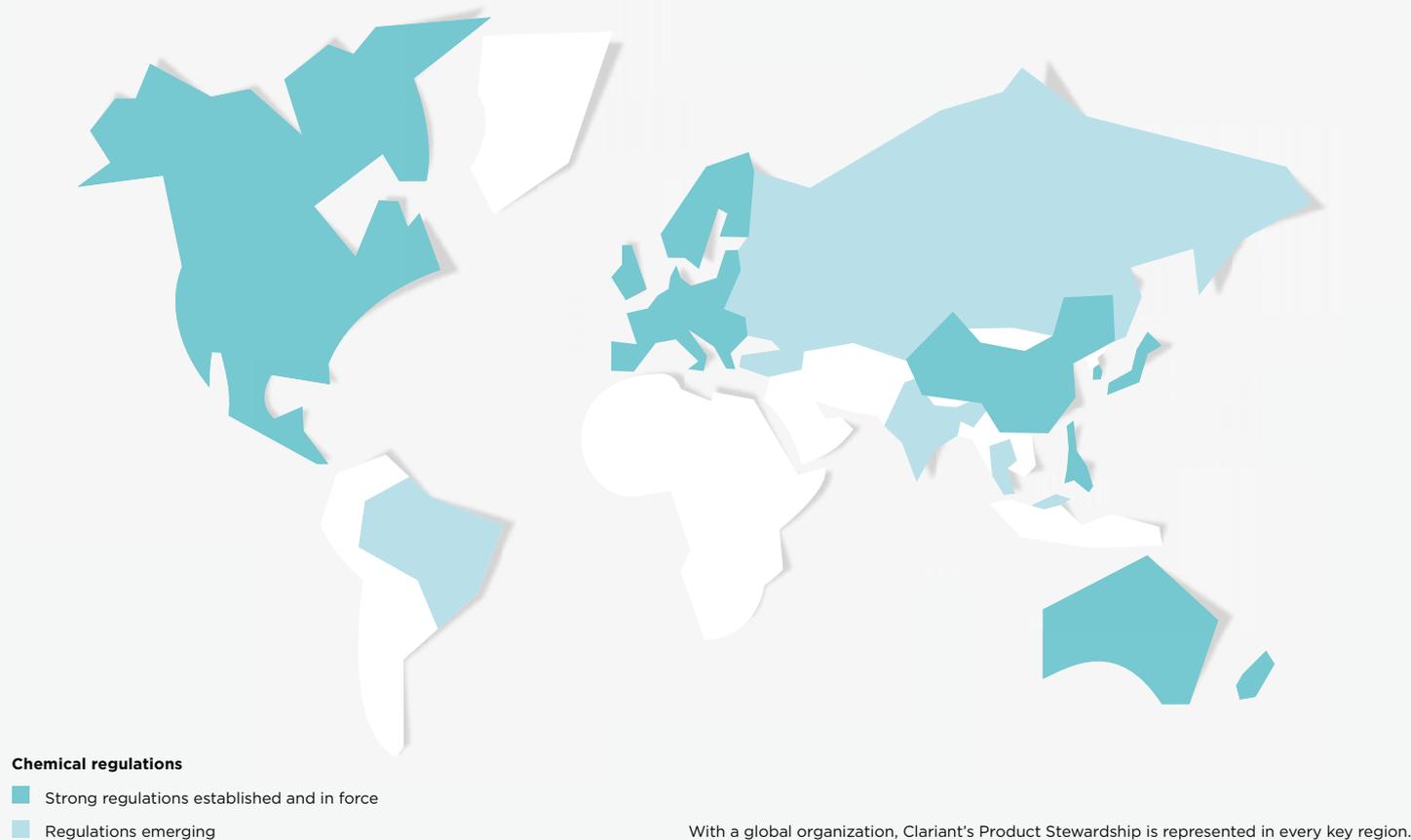
With a strong commitment to animal welfare, where possible, Clariant generates one set of data per substance with which compliance with all relevant chemical regulations worldwide may be verified.

REGISTRATION PROJECTS OF NEW PRODUCTS 2012 - 2016
in China, Europe, and the United States



Globally emerging

Chemical regulations



With a global organization, Clariant's Product Stewardship is represented in every key region.

Toxicological data: Avoiding animal testing

A major component of Clariant's product stewardship effort involves assessing the chemical properties and safety of products for innovation as well as for registration and use purposes. These assessments, coupled with registrations, confirm that a product can be used without causing harm to people or the environment. These evaluations involve developing toxicological data profiles for substances and products that meet chemical registration requirements. These profiles are typically achieved through extensive animal testing. Besides impacts on animal welfare, such tests are often time- and cost-intensive. To achieve appropriate toxicological assessment without animal testing, Clariant developed a new approach

that evaluates the chemical properties of products by using alternative methods to close existing data gaps. This alternative approach, Clariant's CompTox Suite, is spearheaded by Product Stewardship. Short for Computational Toxicology, it reduces the need for animal testing to the greatest degree possible while still complying with necessary regulations. Using the computational methods of the AMBIT chemical structures database together with high-quality (eco) toxicity data from the REACH database IUCLID (International Uniform Chemical Information Database), the CompTox Suite identifies and groups substances into chemical categories based on common and comparable structures, properties, and expected effects.

The CompTox Suite aids in the evaluation of chemicals

Thanks to the CompTox Suite, data gaps can now be filled with robust information from structurally related substances by using all relevant already existing data together with computer-based predictions instead of animal experiments. It provides information about the effects of chemical substances, allows for verifiable documentation, is widely accepted by registration authorities, and may even deliver suggestions and tips for product improvements or desirable product composition. CompTox Suite considerably reduces animal testing or the need to spend huge amounts of time and resources gathering toxicity information from diverse sources.

Creating value for customers through open dialog

To maintain high quality and ensure the highest level of safety, Clariant's Product Stewardship supports customers by providing them with information on the safe and appropriate use of its products. For specific questions, Clariant experts are available to answer inquiries throughout all development and production phases, providing safety data sheets, comprehensive information on optimum handling and application, hazard and risk profile, transport and packaging, and finally waste disposal. Supporting open dialog around the safety and integrity of its products along the value chain is one of Product Stewardship's top initiatives.

Clariant also responds to about 50 000 requests per year from customers seeking

50 000

requests per year are sent to Clariant from customers seeking documents, certifications or regulatory advice regarding applications of its products.

Reducing animal testing across the industry with the CompTox Suite

The Clariant CompTox Suite saves time and innovation costs and avoids unnecessary animal testing, making it easier to comply with regulations governing chemicals, by removing animal testing from the process, but still receiving all necessary toxicology information thanks to a computer program.

documents, certifications, and regulatory advice regarding applications of its products. For example, if a Chinese company wants to use a Clariant additive in a plastic food container that is destined for American consumers, the customer would need certification that the Clariant product may be used in this application and in this market. Customers receive this information from the certificates, which in turn enhances Clariant's perception of market trends and customer requirements.

Products built with safety, innovation, sustainability, and performance

With a pulse on regulations and an innovative approach to bringing new life to established safety and toxicology testing procedures, Clariant is moving the frontier of product stewardship in the chemical industry forward. Customer support and collaboration are crucial to understanding how products fulfill their intended purposes, and what can be improved or innovated during production. Thus, listening to customers' concerns is extremely important to a product's quality and ultimate success. As products continue to develop, receive feedback from customers, and endure a variety of applications, they are often improved and their production evolves. However, Product Stewardship will always guarantee a rigorous process of assessing, testing, and registering products so that they have superior performance, reproducible properties, maximum safety, optimized costs, and innovative design.

People

Clariant's foundation for success is its team of ambitious, diverse, and dedicated people. More than any other factor, close collaboration drives Clariant's achievements.

Clariant prioritizes creating a diverse and inclusive environment for its employees in all of its global sites, labs and offices. Ensuring employee occupational health and safety is crucial, so Clariant continuously enhances its safety culture and employee engagement. Additionally, Clariant collaborates with the suppliers in its value chain to commit to sustainably sourced resources. To Clariant, the diversity, health, and safety of employees and suppliers are key to business prosperity.

GENDER DIVERSITY



14%

Proportion of women in global management (management level 1-5)



22%

Proportion of women of Clariant workforce (general staff)

GLOBAL WORKFORCE

17 442

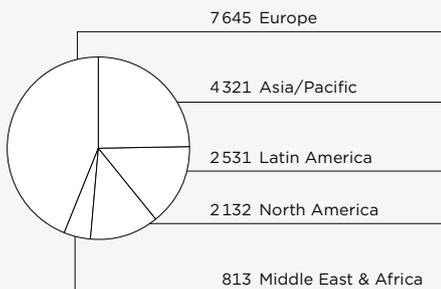
total staff in full time equivalents (FTE)

EMPLOYEES BY BUSINESS AREA

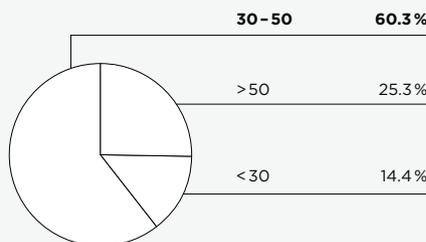
BUSINESS AREA	FTE
CARE CHEMICALS	2574
CATALYSIS	1548
NATURAL RESOURCES	3235
PLASTICS & COATINGS	6737
(SERVICES)	3348
GRAND TOTAL	17 442

EMPLOYEES BY REGION (FTE)

total staff 17 442



AGE DIVERSITY



EMPLOYEE ENGAGEMENT



69%

of employees participating in the global employee survey in 2016 (compared to 65% in the previous survey in 2014)

TRAINING & DEVELOPMENT

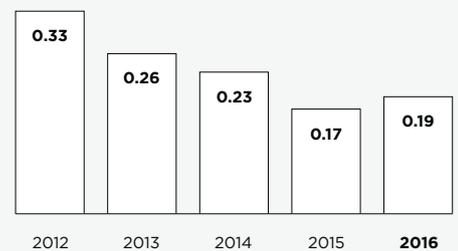


200 000

total hours of training, with 11000 employees participating in trainings in 2016

LOST TIME ACCIDENT RATE

(accidents with at least 1 day lost/200 000 working hours)



SUPPLY BASE



25 000

suppliers worldwide provide products and services to Clariant every year

SUPPLIER SUSTAINABILITY ASSESSMENTS

> 60%

of supply base* covered by sustainability evaluations
*by spend on raw materials

A forest full of possibilities

The trainees of today could very well be the company's important employees and decision-makers of tomorrow. From the beginning and along the way, they should be familiarized with their options and the culture of their company, for example, with the help of a motivational camp led by an Olympic champion.

PHOTOGRAPHY Jo Röttger TEXT Bertram Job

One thing is clear in the minds of the participants as the bus drops them off at their destination on Monday morning: they can kiss urban living good-bye. There is not even a stable internet connection – only trees as far as the eye can see. A handful of rustic houses and a large building with a common room and kitchen will be the center of the action for the next few days. It's hard to believe that such a transition can happen so quickly. A one-and-a-half-hour bus ride from Frankfurt-Höchst suddenly brings you to a completely different world.

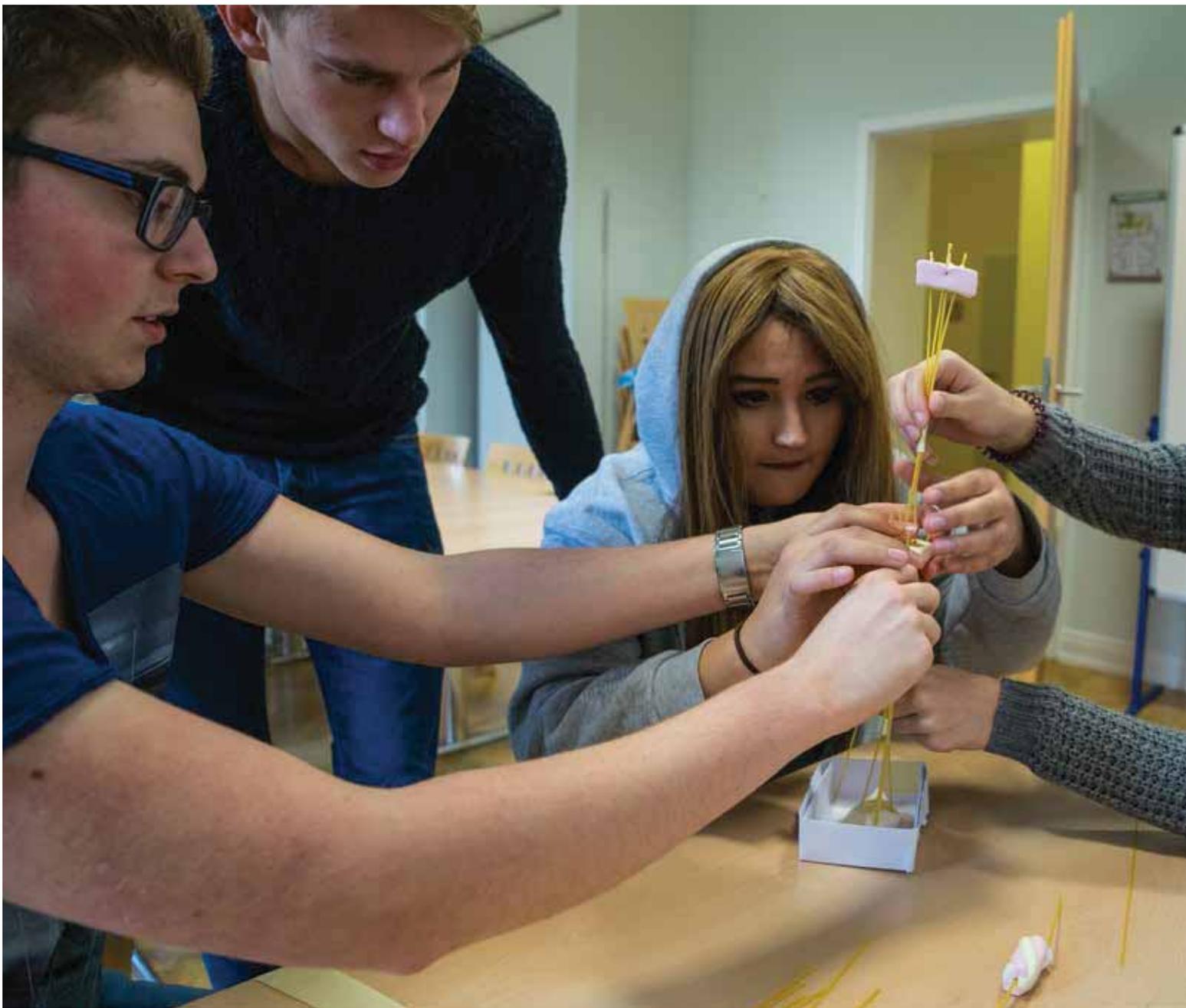
Normally, seminars for managers looking for new inspiration and motivation in their jobs begin this way. However, the 32 young people who arrive in the Hunsrück today have only begun their careers just over a year ago. They are Clariant trainees in the Höchst Industrial Park, who are now about to explore something other than dry academic textbook material at the Soonwald Forest Experience Center. The material covered will include different perspectives on issues that will impact their ways of thinking and their influence on the company – from the many facets of teamwork and how one presents oneself and organizes one's environment to the vision of sustainability.

»Recognize your strengths« is the motto of the motivational camp. The camp begins when Christian Schenk, a nearly six-and-a-half-foot-tall hulk of a man, suddenly appears before the participants. In a friendly tone, he provides an overview of the event and describes the planned modules. They will include presentations and talks (»How Healthy Is Our Forest«), a potential



NICK RÜCKER
Industrial manager in training





analysis using personality profiles, information on preparing for tests, communication training, team-building exercises, as well as sports and recreational activities. The activities move along quickly from 9:00 a.m. until 8:30 p.m., leaving no opportunity for anyone to get bored.

It spreads quickly that Christian Schenk has worked hard for his physical achievements. He was a decathlete for a while and even earned an Olympic gold for the GDR. But that is only a side note now. In his current position, it is more important to him that his years as an athlete represent values that make achievements possible in the first place, such as will, discipline, commitment, and perseverance. The 52-year-old is con-



VANESSA HAHN
Aspiring laboratory chemist



»The company is showing us that it values trainees, and that it is also interested in our continued growth after the training.«

CHRISTIAN SCHWARZ

Chemical laboratory assistant in a dual study program



CHRISTIAN SCHWARZ

Chemical laboratory assistant in a dual study program

vinced that this kind of mind-set can be »a beautiful thing to impart« to young employees of a company. Ultimately, this is the distinguishing feature of the events that his agency has offered for over eight years to individuals starting out in their studies or in their professional careers.

»The opportunity lies in allowing young people to encounter something new,« says Schenk – himself an ambassador of SOS Children’s Villages – between two modules to a smaller group. »We are creating a metaphorical bouquet of flowers here. Everyone can take something out of it for themselves. How someone assesses what they take depends on how they’ve been socialized and their intelligence...«

With a casual style, the teacher and his two employees come a long way in accommodating the wishes and needs of their young audience, but they don’t try to win their favor by pretending to be like them. In this manner, they are able to foster an atmosphere of mutual acceptance. Nick Rücker, an industrial manager in training, quickly changes his mind regarding the value of the event. Before the camp, he occasionally thought that his time could be used differently. »But once you’re here, you realize there might be something you can get out of this,« he explains.

And the passionate county league soccer player from the Main-Taunus area is not even referring to the trip to the Mainz 05 German soccer club, where a junior coach is giving a talk on optimal training and true spirit. Instead, he is referring to the practical tips on how to better focus one’s efforts when preparing for the final examination. (»Passing is all in your head.«) Or he is referring to the potential analysis using personality profiles, which will be discussed on Tuesday. And yes, even the challenges related to teamwork that he must successfully deal with on Wednesday with Klaudia, Vanessa, and Christian – building the highest possible freestanding sculpture out of spaghetti and marshmallows, moving matches to create new geometric figures, and so forth. »You have to get involved,« says Nick, »otherwise you’ll just be left out. And this is good for breaking the ice.«

His friend and soccer buddy, Christian Schwarz, a chemical laboratory assistant in a dual study program, thinks it’s very important to take an in-depth look at sustainability. »This will certainly help us in the future,« Christian explains. He also describes the encouragement he feels from sensing »that the company also wants to convey something to us with the training. They’re showing us that they value trainees, and that they are also interested in our continued growth even after the training.«



KLAUDIA MISETIC

Chemical technician in training

Beate Georg couldn't have expressed the deeper purpose of the camp more clearly. As the training coordinator, she wants to have this very effect on the 109 trainees at the site in Höchst. »They should not feel left out or alone, and they should get an initial feel for the type of company they work for.« Hence the traditional four-day introductory trip that Nick, Christian, and the other participants took to Cologne in their first year. And now, one year later, this second four-day event has been added for the first time, with the hope that it will reinforce the supporting role of the company through a second motivational section.

There is also a sustainable strategy behind it. Today's trainees are the company's valuable decision-makers of tomorrow. In this respect, it is in the employer's best interest to offer support along the way. Throughout Germany, there are about 30% of trainees who »don't stay the course,« Schenk points out, referring to the rate of individuals who don't complete their training program. At Clariant in Höchst, the rate tends towards zero. In addition, there are those who do not feel integrated. They turn their backs on their companies soon after their final examination and take their valuable potential with them. These are serious losses on everybody's part.

Thus, it is better to invest early, Beate Georg explains, who has positioned herself as a fly on the wall in the common room of the Soonwald Forest Experience Center for a few days. Likewise, Hermann Stoelzel, among others a long-serving member of the works council, has his eye on the trainees. The two veterans are both amazed at how punctual and focused the

young colleagues are while completing the camp's entire program. They also listen carefully as a feedback session after Schenk's lecture on self-presentation and communication concludes the last day.

At the end of the event, only details and specific content are critically evaluated by the group. The purpose of the whole program is crystal clear to everyone. The event is even given an A for participant satisfaction. This means that the Olympic champion Schenk and his colleagues have also passed the test. Vanessa Hahn, an aspiring laboratory chemist, was not overly enthusiastic about the trip to Mainz 05. »I couldn't see much benefit in it,« she said. The potential analysis and the material on sustainability offered her so much more. The latter was »perhaps a way of showing us where we can focus our efforts a little bit more,« Klaudia Miseti explained, who is training to be a chemical technician. »This is an issue that concerns all of us to a certain extent,« she adds.

The valuable feedback will help Schenk and his team to fine-tune future programs. For Beate Georg, the feedback straight from the mouths of the participants is encouragement to continue supporting the trainees. In light of this, it has already been decided that the introductory trip for the first year of training will now be extended to five days.



Appreciating the voices of employees

Fostering a globally engaged team

Diverse, talented, and highly engaged employees are a backbone to Clariant's success. Hence, engagement, recruitment, onboarding, and training strategies are top priorities for Clariant.



At Clariant, a diverse workforce is an essential driver to deliver better results. Employees are not only considered as human capital, but 17 442 employees from more than 90 nationalities are expected to act as a global team, jointly collaborating across the globe to bring Clariant forward. Bringing up performance while keeping the proper interests and needs of our people in mind, Clariant's employees are a topic of ongoing conversation at the various Clariant premises around the world and a permanent priority for the Global Management of the company. Clariant's Head of Region Latin America (LATAM), Monica Ferreira Vassimon, and the Region Human Resources Head for Latin America, Alberto Mendes, spearhead

this conversation regularly – often acknowledging Clariant's strategies to recruiting, onboarding, and engaging employees as essential to the success of the organization.

Strategy shaped and driven by engagement

At Clariant, engagement follows clear principles and measures, and it often manifests itself as a spirited exchange. In fact, that is exactly what it sounds like when Monica and Alberto discuss engagement in LATAM: To Monica, »employee engagement, coupled with motivating leadership, drive inno-



Monica Ferreira Vassimon
Head of Region Latin America

As Head of Region Latin America, Monica reinforces that employee engagement, coupled with motivating leadership, drive innovation and entrepreneurship.

»Employee engagement is a prerequisite for us to achieve our goal of industry leadership and long-term profitable and sustainable growth.«

MONICA FERREIRA VASSIMON
Head of Region Latin America

»We want employees that are ready to take risks with responsibility, that lead their organizations into higher performance.«

ALBERTO MENDES

Region Human Resources Head in LATAM



vation and entrepreneurship at Clariant. To diagnose the current work environment and identify actions to leverage the engagement of our population, Clariant uses the employee engagement survey. Feedback from surveys provides insights for Clariant's team, and the results from the latest survey held in 2016 will serve as a basis for planning and implementing further changes that create value for employees and the company moving forward.«

In Alberto's terms, the survey that almost 11 000 of Clariant's employees participated in globally, »is certainly an effective tool. Clariant tends to approach this survey like it's a diagnosis, and the global and regional engagement strategies developed thereafter are the prescription. In other words, the survey takes the temperature of Clariant's current workforce and working environment to identify what actions could help drive employee performance.«

Ongoing engagement

Strategies that engage employees even further are ongoing and growing at Clariant, including in LATAM. In Brazil, for example, a nominated Committee analyzed the results from employee engagement surveys to understand the improvement areas. This led the local committee to collect over 500 ideas on engagement initiatives among

employees, and to generate an action plan for several projects grouped into three clusters: Social Dimension, Communication, and Organizational Development. Moreover, on a regular basis, the committee members assumed the role of communication agents to get our employees' view and to understand what motivates them. Monica reinforces that »it is important to have a robust structure like the Engagement Committees, as well as planning and discipline for execution. Nevertheless, the most impacting factor is listening to our employees and building up together with them the best solutions for the improvement areas. People make the difference, and our employees must actively contribute to drive the changes within our organization. The leadership team plays a crucial role by supporting and encouraging our people in this process.«

Recruiting and onboarding the right people, faster

If you ask Alberto and Monica about finding the right people to join Clariant's team, they speak enthusiastically: Alberto describes how »Clariant jumps at the opportunity to attract a new member of the team. Our recruiting model helps walk applicants through a smooth interviewing process that leads them into our onboarding program. Our recruiters also use a toolkit of online



Alberto Mendes

Region Human Resources Head in LATAM

In his role as Region Human Resources Head, Alberto strives to make sure that Clariant continues to create an inclusive and supportive atmosphere for its workforce in LATAM - especially through engagement committee projects.

1675

New employees

hired by Clariant in 2016



Encouraging a culture of Excellence

Excellence & Change

We expect, recognize, and reward excellence and high performance.

We embrace change, strive to continuously question the status quo and discover value.

Freedom & Opportunity

We trust you with the freedom to change and to create value through innovative and sustainable solutions.

Respect & Appreciation

We recognize each individual's contribution and appreciate openness in thinking and flexibility in acting. We work together in a respectful, open-minded environment.

platforms – including Clariant's MyRecruitment and MyCareers web programs, and external platforms like LinkedIn. These tools help us find the right people for Clariant faster, while supporting our initiative to be a preferred employer in our industry.«

Clariant encourages current and future employees to embody a culture of excellence, an openness to change and opportunity, and an attitude of respect and appreciation.

For Alberto, recruiting at Clariant is also about being proactive in preparing for change. »We see demographic change as a relevant factor for Clariant – especially in LATAM. With a flourishing local population of young adults in LATAM and a number of employees close to retirement, we have to think strategically about keeping the right balance in age and experience.« With employees that vary in age, gender, position, location, and skills, Clariant strives to continue supporting and growing its diverse team.

Setting the stage for new employees, and for Clariant as a whole

Onboarding and training employees is vital to their long-term success – and affect Clariant's performance. The organization helps new hires adjust to their jobs smoothly so that they are capable of performing efficiently upon starting. Alberto has seen the approach to onboarding first-hand, commenting »Clariant's goal is to help new employees hit-the-ground running as soon as they start. A buddy-system that pairs new employees with experienced mentors also helps them feel included as part of our company and remain for the long-term. We have attracted differentiated professionals to our teams, who have quickly delivered on results and challenged the organization in a very positive way.«

Beyond established and recently enhanced engagement strategies, Clariant continues to explore the changing needs of current and future generations while maintaining open dialog. Whether in LATAM or across the globe, employees are invaluable assets that drive Clariant's success – making them an extremely high priority and worth supporting through all engagement, recruitment, and onboarding processes.

Safety counts at Clariant

Occupational health and safety

Health and safety are ongoing priorities at Clariant. With an occupational health and safety strategy that revolves around prevention, training, incentives, and open dialog, Clariant focuses on making sure employees are safe and feel comfortable in their workspace.

The health and safety of any person is and continues to be extremely important to Clariant. For Clariant's consumers and customers, safety is addressed by Clariant's product stewardship initiatives (see page 32). However, to ensure the safety of Clariant's hard-working and diverse employees, many strategic and multifaceted health and safety programs are set in place. In other words, occupational health and safety is a holistic commitment that incorporates much more than just wearing necessary chemical safety gear.

Safety starts with a resolved, safety-oriented leadership culture

Employee safety and accident prevention means that using safety gloves and goggles are second nature. It also requires that a set of cohesive management programs and leadership measures back Clariant's occupational health and safety strategy. Avoiding-Accidents@Clariant, a global program aimed at creating safe working environments and raising awareness of safety concerns is an example of this. When AvoidingAccidents@Clariant first started in 2007, Clariant had a lost time accident rate (LTAR) of 0.92.

The LTAR, which reflects the number of occupational accidents with at least one day of work lost in relation to 200 000 hours of work, has reduced by more than half since 2007, and in 2016, Clariant had an LTAR of 0.19.

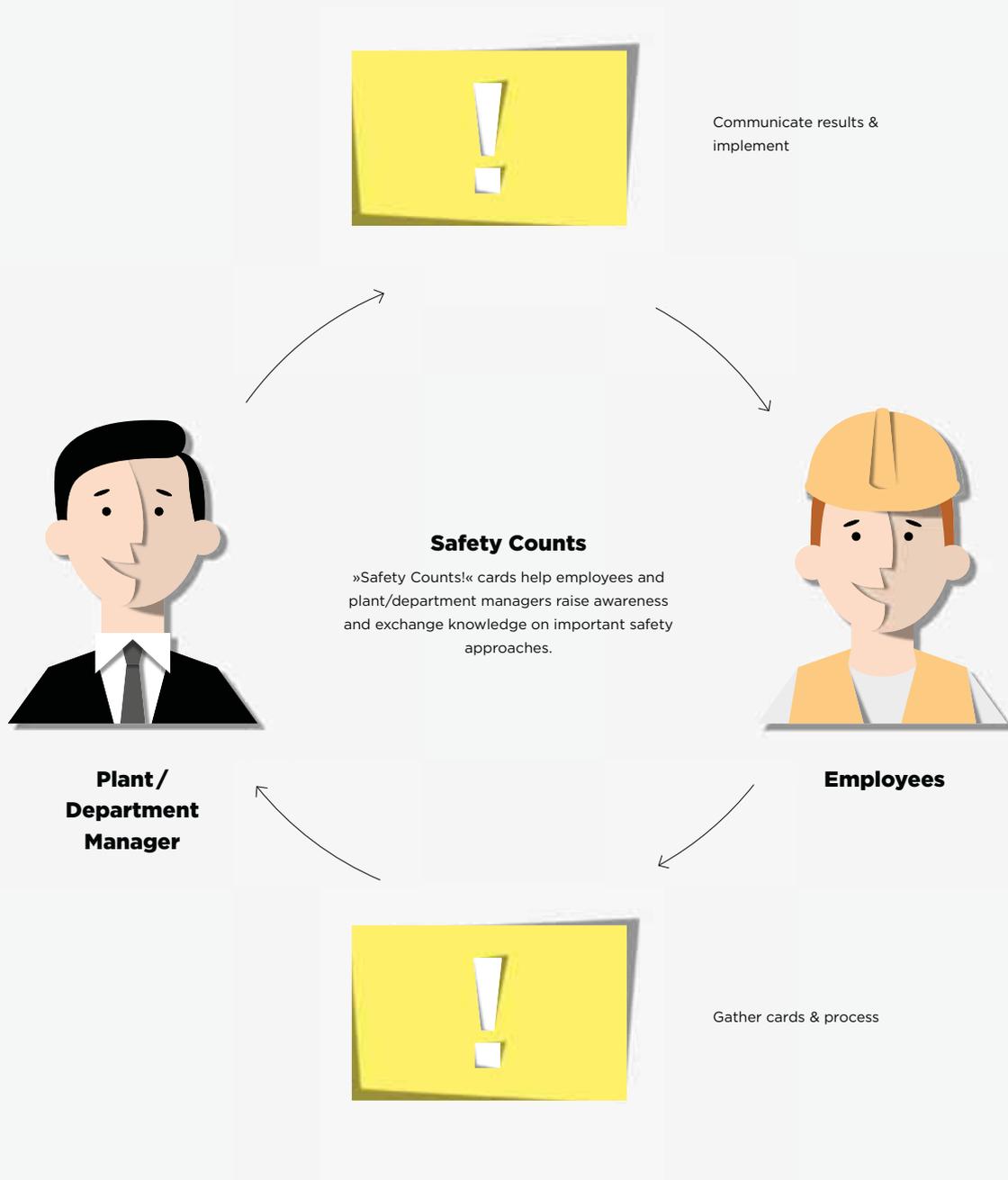
Clariant's »Safety Counts!« cards also play a part in ensuring health and safety, often eliminating critical situations that could lead to an accident. Every month, safety deviations that occur at the sites are recorded with these cards, and implemented improvement measures are shared locally. This allows the production teams to share the lessons they have learned from accidents and safety deviations, correcting behavior and operations (where necessary), and promoting a preventive mind-set throughout the entire company.



Winning safety: our safety awards

In 2015, Clariant's Daya Bay, China, production site received Clariant's inaugural Platinum Safety Award for demonstrating superior safety performance. With this award, as well as Clariant's other safety awards, the company motivates employees to continuously strive for safety excellence across all sites.

Safety counts!



Prevention is essential for Clariant

Preventing occupational accidents is an essential component of Clariant's production activities, and the company's measures for this purpose greatly exceed legal requirements. Clariant closely monitors everything that could lead to an accident, examines its employees' health on a regular basis, and keeps precise track of accidents - not only of its own teams, but also those of supervised staff. Clariant's commitment to the safety of its employees includes clear safety rules and mandatory personal protective equipment to prevent injuries, while additional regular safety and health trainings and a concept of local internal trainers work to implement

the concept of work safety in the employees' awareness. What has been essential for success has been the commitment on the uppermost levels of management, which has led to a distinctive culture and approach with regard to safety. The high quality of the safety programs is proven, for example, by the global OHSAS 18001 certification, an internationally applied standard for occupational health and safety management systems.

ELEMENTS ACCOUNTING FOR A SUCCESSFUL SAFETY CULTURE



»The Avoiding Accidents@Clariant program and safety awards are key elements in our striving for our ultimate goal: zero accidents.«

VOLKER HAUTZEL

Head of Occupational Health & Safety

Prevention means taking action before anything happens

For Clariant, the most critical health and safety goal is zero accidents. The most effective way to reach this goal is to prevent occupational and safety accidents from happening in the first place – thus, prevention is at the core of Clariant’s health and safety strategy. Clariant closely monitors everything that could lead to an accident, examines its employees’ health on a regular basis, and keeps precise track of accidents – not only of its production teams, but of all staff at all locations.

Safe behavior

Clear safety rules and mandatory personal protective equipment like safety shoes and safety glasses help to prevent injuries, but additional regular safety and health trainings combined with lessons from internal trainers that encourage safe operations embed safety into the culture and habits of Clariant’s employees. Clariant Safe Behavior Trainings (CSBT), for example, are conducted by internal trainers at Clariant locations to spread and ingrain health and safety behaviors.

Awards and recognition

Safety recognition awards, such as Clariant’s Platinum Safety Award, also incentivize employees at production sites to maintain and improve the highest level of health and safety at their sites. These awards recognize excellent performance in safety, and an entire site will receive an award to foster

a team spirit. The Platinum Safety Award, for example, is based on 16 criteria that focus on leadership, training programs, and safety reports. Clariant recently celebrated the inaugural winner of the Platinum Safety Award, Clariant’s Daya Bay site in China. This exciting accomplishment in Daya Bay helps motivate employees to continue improving health and safety practices across the entire company. In addition, the Phoenix Safety Award is presented to one site annually in recognition of the most significant improvement in safety program delivery and performance. In 2016, the Sant Andreu (Spain) site received this award for the first time.

Health and safety: an ongoing commitment

Clariant’s ongoing dedication to occupational health and safety is about both adhering to important safety guidelines – like wearing appropriate protective equipment for certain work – and continuing an open conversation around this important topic to ensure safe behavior. To Clariant, the health and safety of its employees is crucial to its operations and sustainable success.

0.19

was the lost time
accident rate (LTAR)
per 200 000 hours of
work in 2016 (2015: 0.17)

Closer collaboration along the supply chain

Beyond the boundaries

Suppliers represent an integral part of Clariant's strategy and success. In order to take into account aspects of quality and performance, environmental and social criteria in each stage of the value chain, significant efforts and close collaboration are necessary. This includes all relevant categories and geographies globally.

Warm, humid air blankets a lush field of tropical foliage, while bushels of small, bright-red palm kernels are harvested. Although Clariant does not source directly from palm oil producers, this place is just as important as the labs where Clariant processes its chemical products: It is the location where farmers harvest one of Clariant's renewable raw materials – palm oil. In line with its sustainability commitments, Clariant selects suppliers, outsourcing partners, and service providers based on extensive environmental, performance, and social criteria, because Clariant pursues the highest quality of raw materials, packaging, capital goods, services, and other inputs needed. All of Clariant's global suppliers – including those that supply palm oil – are valuable assets to the company, and therefore Clariant is focused on maintaining strong, collaborative relationships with each of them.

Suppliers are essential to Clariant's success

A company does not excel without taking care of ensuring quality, performance and sustainability. With this in mind, Clariant takes special care in selecting and managing its suppliers. Clariant procures products and services from more than 25 000 suppliers worldwide every year. To reach and maintain high sustainability standards for the products and services procured, Clariant expects suppliers to apply comparable standards in the areas of human rights, employment conditions, environmental protection, and corruption prevention as Clariant applies to itself.

One step further: Supplier Code of Conduct and the UN Global Compact

Clariant's suppliers are located across the entire world, but they abide by the same principles: providing high-quality and sustainable sources, with production carried out under ethical employment conditions. Clariant outlined these expectations in its Supplier Code of Conduct integrating, among others, the principles contained in the United Nation's (UN) Global Compact. The goal of this commitment is to respect

human rights, prevent discrimination against employees, exclude forced and child labor, ensure freedom of association of the workforce, comply with environmental standards, accept product stewardship, and ensure fair competition.

Challenges lead to opportunities and collaboration

It is very difficult for any company to be fully aware of every detail in its entire supply chain – particularly upstream where materials are sourced further away from its own operations. To address and manage this challenge, Clariant leverages different channels and collaboration initiatives with other stakeholders to enhance supply chain transparency. One of these channels is the Together for Sustainability (TfS) initiative, which Clariant joined in April 2014 to elevate supplier sustainability monitoring and improvements.

By participating in TfS, Clariant and the other chemical company members assess the sustainability performance of a supplier using a set of sustainability criteria tailored to the requirements of the chemical industry. These criteria are based on the principles of Responsible Care®, the UN

Supply chain certification

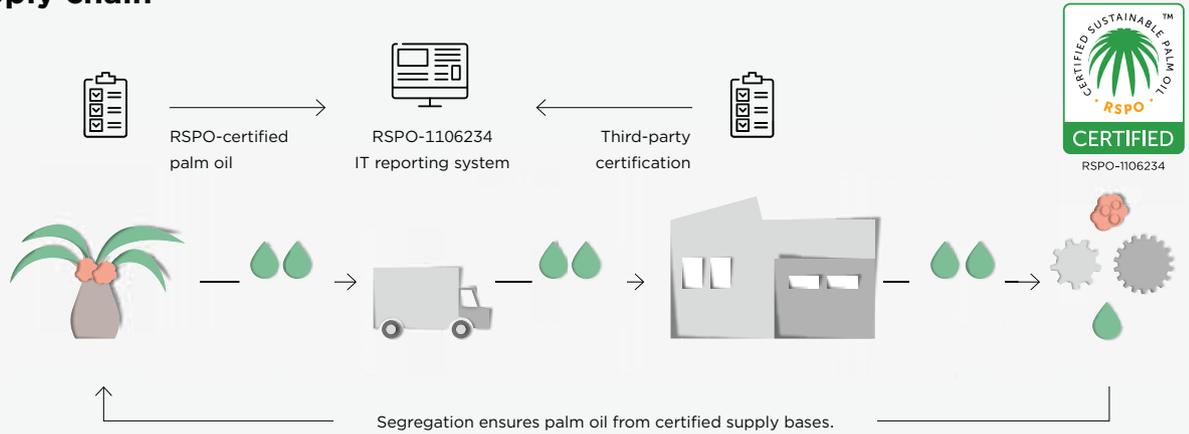
Supply chain certification requires compliance with the requirements of the RSPO supply chain certification standards, which are based on a quality management system in which production identification and control are the key objectives.

Segregated supply chain

Future path: Segregated

Many current challenges to overcome:

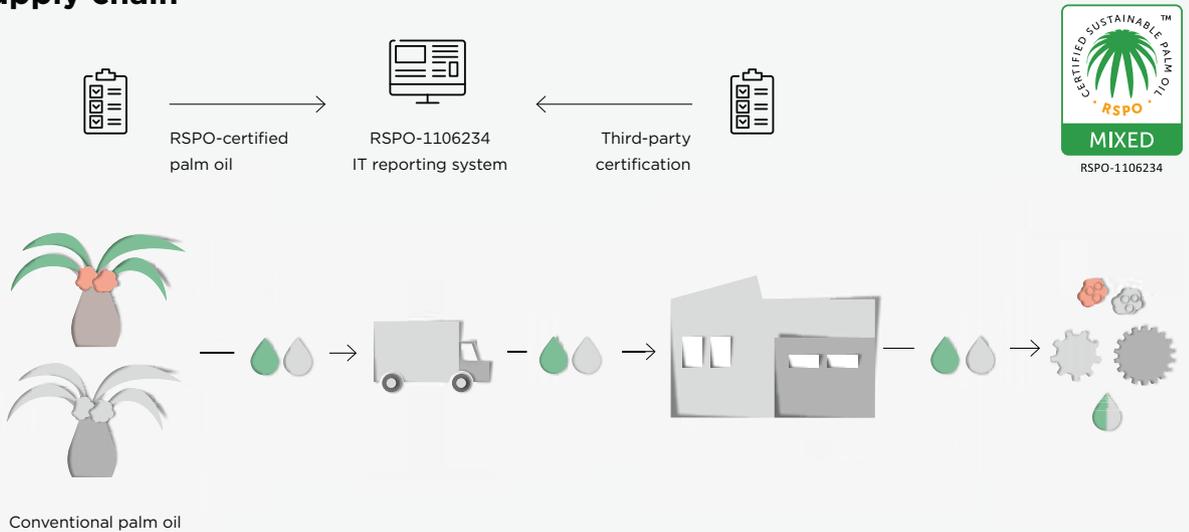
- High complexity for palm derivatives
- Increasing costs
- Difficult supply situation



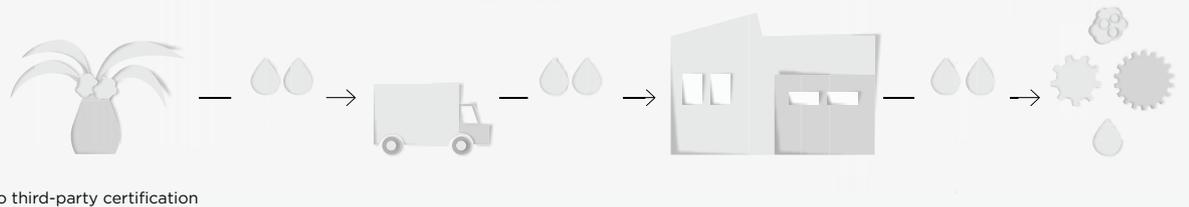
Mass balance supply chain

Current status: Mass Balance

- Enhanced collaboration with suppliers
- Increase of real share of certified palm material
- Paving the way for segregated supply chain



Conventional supply chain



The RSPO developed environmental and social criteria that companies must comply with in order to produce Certified Sustainable Palm Oil (CSPO). These criteria can help to minimize the negative impacts of palm oil cultivation. RSPO offers certification schemes to moni-

tor certified palm based material throughout the value chain. Mass Balance Certification confirms that the amount of incoming RSPO-certified palm-based material is equal to the outgoing amount of material. Ensuring such certification requires careful monitoring of the

production, which Clariant undergoes as confirmed by RSPO auditors who have visited all of Clariant's relevant sites. In future, in a segregated supply chain, sustainable palm oil from different certified sources is kept separate from ordinary palm oil throughout the chain.

2020

By 2020, Clariant intends to achieve an RSPO segregated supply chain certification for all relevant sites.

100 %

of all relevant Clariant sites are RSPO-certified following the mass balance rules as of 2016.

17 %

of global palm oil is certified according to the RSPO standard.



Global Compact, the International Labour Organization (ILO), and national laws. Thanks to this innovative and collaborative program, more than 60 % of Clariant's yearly raw materials purchases are covered by a supplier sustainability evaluation.

Palm oil & the Roundtable on Sustainable Palm Oil (RSPO)

The tropical, bright-red kernels harvested from palm plantations produce a substance that is increasingly used as a renewable raw material in a broad variety of applications: palm oil. Clariant does not use palm oil, but derivatives based on palm kernel oil, mainly in the personal and home care sector. Unfortunately, some palm oil agriculture contributes to deforestation and negative effects on local communities. As a result, in collaboration with its suppliers and its cus-

tomers, Clariant is intensifying its efforts to achieve sustainably sourced palm oil derivatives to reduce the negative environmental effects and adverse social impacts associated with palm oil production.

The foundation to enable more sustainable choices is transparency. To ensure this, Clariant achieved its goal of certification from the Roundtable on Sustainable Palm Oil (RSPO) to all sites manufacturing products based on palm-based raw materials (i.e., Clariant's personal and home care products). Under RSPO Mass Balance Certification, the volume of palm kernel oil in a product reflects an equivalent volume of palm kernel oil produced by RSPO-certified mills and plantations. By offering products based on RSPO Mass Balance Certified palm oil derivatives, Clariant provides its customers the chance to claim a contribution to the production of certified sustainable palm oil. For a description of RSPO and Mass Balance Certified palm oil, please view page 51.

Collaboration in action: Sustainable Palm Oil and Traceability in Sabah (SPOTS)

For Clariant, collaboration has proven to be an effective tool for enhanced traceability and supply chain transformation. To this end, Clariant teamed up with Wilmar International Ltd, The Global Amines Company, Wild Asia, and L'Oréal to both support small Malaysian palm oil producers on sustainability, certification, and supply chain traceability, and to increase productivity by 20 % until 2020. This joint venture, known as Sustainable Palm Oil and Traceability in Sabah (SPOTS), implements specific action plans regarding the sustainable sourcing of palm oil and palm-based derivatives by working on the transparency of the

»Mass Balance Certification underlines our commitment to sustainable sourcing of renewable raw materials.«

RALF ZERRER

Head of Strategic Marketing, Business Unit Industrial & Consumer Specialties



affiliates' supply chains and supporting independent smallholders to increase their income, improve their quality of life, and sustainably enhance welfare. With this project, everyone involved enjoys benefits: the companies, organizations, and smallholders as well as the ecosystems and communities surrounding the palm oil plantations.

Together for Sustainability

Together for Sustainability (TfS) was founded in 2011 by the Chief Procurement Officers of six major multinational chemical companies and meanwhile has grown to 19 members. TfS develops and implements a global supplier engagement program to assess, audit, and improve sustainability practices within the supply chains of the chemical industry. TfS members have two tools at their disposal to evaluate the sustainability management of their suppliers: TfS assessments, conducted via EcoVadis, and TfS audits, on-site inspections conducted by pre-approved audit companies. The results are then anonymously shared amongst the members with the supplier's consent. This collaborative approach increases efficiency for both suppliers and members.

Since the start of the TfS initiative, the sustainability performance of 6 383 suppliers has been rated based on EcoVadis assessments and 724 TfS audits have been conducted by means of the TfS Audit Program. In 2016, 241 new TfS audits were

conducted through the TfS Audit Program, and 1773 new supplier assessments were conducted through EcoVadis.

Value chain collaboration continues

Clariant strives to be the bridge between suppliers and customers. This means attempting – wherever and whenever possible – to trace and manage complex sources so that high levels of sustainability and quality are achieved. This holds true for suppliers down the street from Clariant as well as those across the globe. However, for Clariant to excel, its suppliers must excel, so it is important that suppliers are provided with the right resources and education to succeed. Collaborative efforts – such as SPOTS and TfS – have proven successful in managing this vital part of Clariant's business, and Clariant hopes to pursue more opportunities that expand collaboration and improve transparency with suppliers to enhance sustainability of products and the industry overall.

25 000

suppliers worldwide provide products and services to Clariant.

> 60 %

of Clariant's raw material purchases are evaluated based on sustainability criteria.

6 383

suppliers have been rated based on EcoVadis criteria since 2011.

724

sustainability audits have been conducted by means of the TfS Audit Program since 2011.

Planet

Maintaining energy efficiency, optimizing operations, and reducing emissions through technology and behavioral changes contribute to Clariant's goal of reducing environmental impact. On top of this, Clariant is helping to develop innovative water management solutions to protect and preserve this irreplaceable common resource. By using renewable raw materials in its chemical products, Clariant takes on new avenues for sustainable production.

Clariant cannot achieve its intention to become more and more sustainable in the long-term with the implementation of isolated solutions, but rather with a holistic approach – this is the only way to meet the ambitious environmental targets.

ENVIRONMENTAL TARGETS 2025

(in % per t produced goods compared to 2013)



Reduction of Energy Consumption



Reduction of Direct CO₂ Emissions



Reduction of Emissions from Greenhouse Gases



Reduction of Water Consumption



Reduction of Volume of Waste Water



Reduction of Volume of Waste

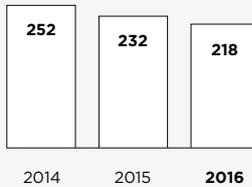
ENERGY CONSUMPTION

2950

m kWh energy used in Clariant facilities in 2016

GREENHOUSE GAS INTENSITY

in kg per t produced goods, corresponding to -27% since 2013



WASTE WATER

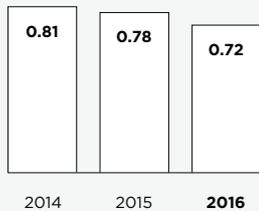


13

m m³ of effluent, including 3rd party waste water

ENERGY CONSUMPTION INTENSITY

in MWh per t produced goods, corresponding to -22% since 2013



GREENHOUSE GAS EMISSIONS

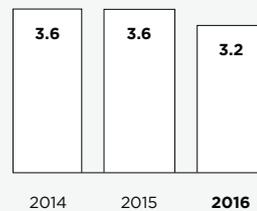


0.89

Direct and indirect emissions in m t

WASTE WATER INTENSITY

in m³ per t produced goods, corresponding to -30% since 2013



DIRECT CO₂ EMISSIONS



0.41

from boilers and combustible sources in m t

WATER INTENSITY



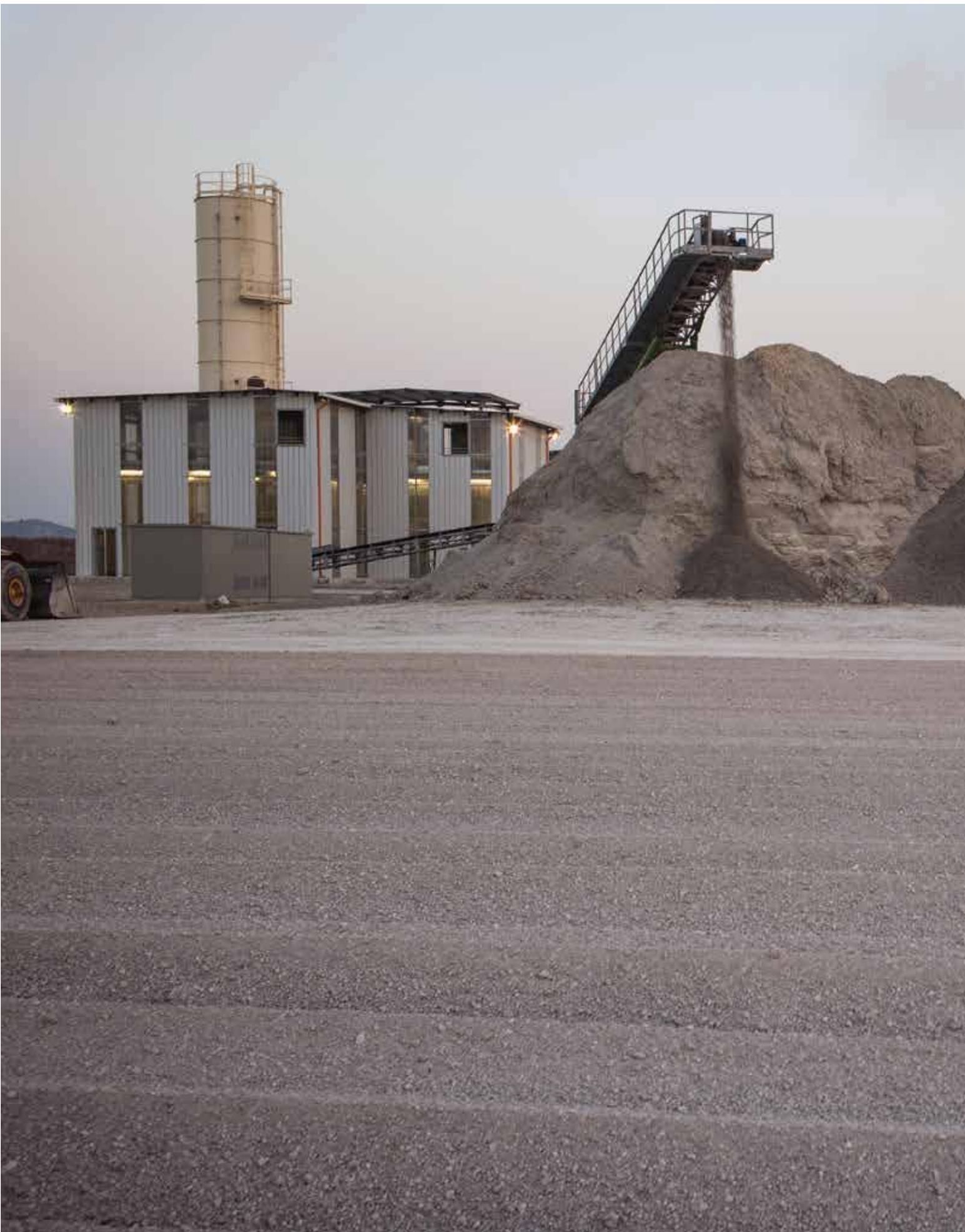
11.7

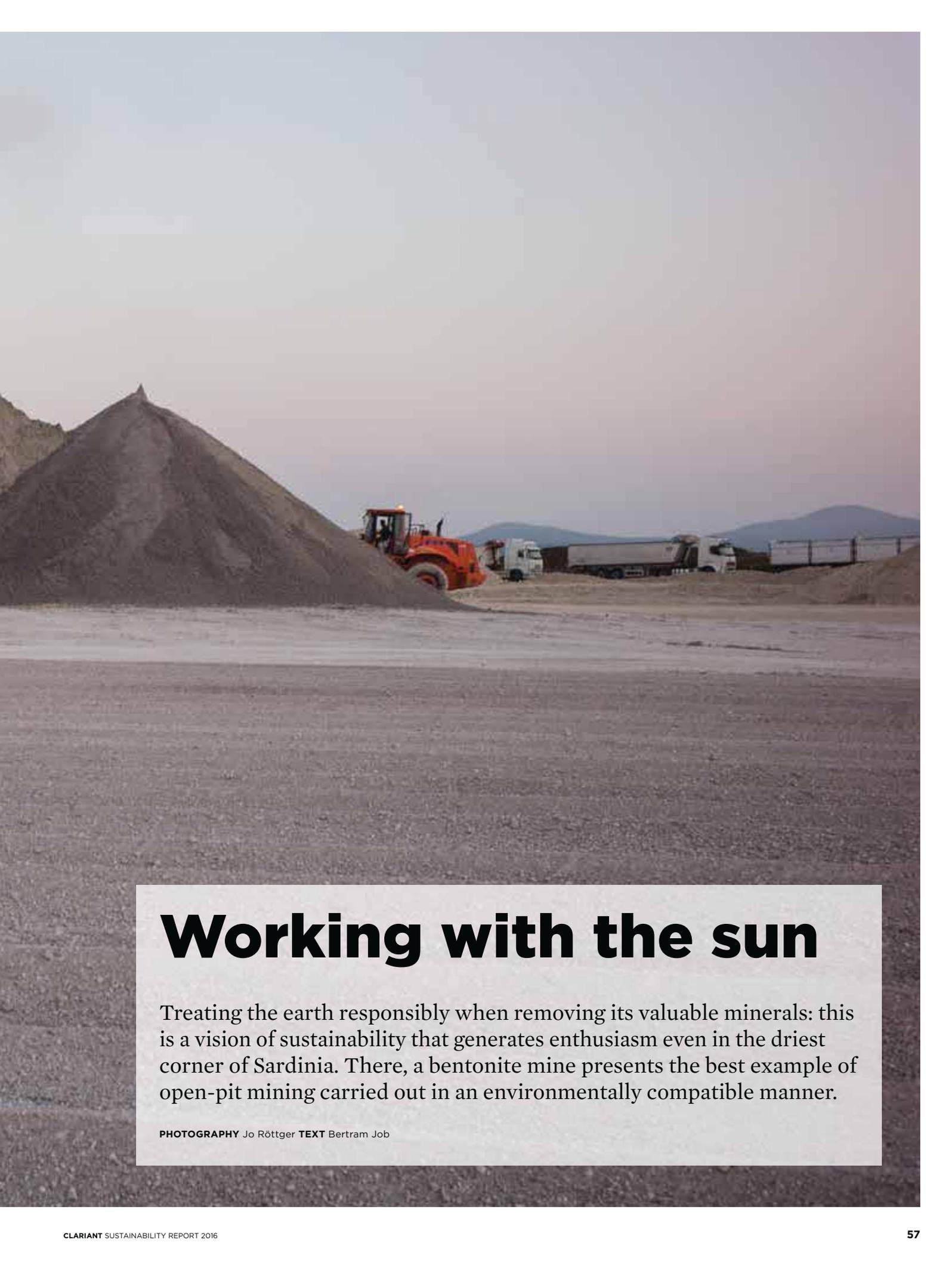
m³ per t produced goods, corresponding to -28% since 2013

WASTE

147

thousand t of hazardous and non-hazardous waste





Working with the sun

Treating the earth responsibly when removing its valuable minerals: this is a vision of sustainability that generates enthusiasm even in the driest corner of Sardinia. There, a bentonite mine presents the best example of open-pit mining carried out in an environmentally compatible manner.

PHOTOGRAPHY Jo Röttger **TEXT** Bertram Job

The main island of Sardinia is divided into about 20 topographical areas, and if it were up to the 2.5 million tourists a year, La Nurra would be at the bottom of the popularity scale. On the other side of the sheer, hard-to-reach cliffs, the dry plateau in the northwest area of the second largest Mediterranean island appears to offer only bushes, dust, and persistent winds for the most part. More than fifty years after malaria was eradicated here, proper villages, let alone noteworthy towns, can hardly be found to this day. On average, there are five people per square kilometer. For geologists and mineralogists, however, the region ranks near the top. Layers of earth from the early Tertiary period, which are of great interest, are hidden in its limestone and shale. There is evidence that silver was mined at Capo dell'Argentiera since Roman times up until 1963. And further inland, at s'Aliderru, crawlers and excavators bring a special treasure to light each day: white bentonite, a clay buried up to 40 meters below the earth's surface, and formed between other geological layers over many millions of years. Its impressive absorbent and binding properties are primarily due to the layered minerals of the bentonite, which has been formed from compressed ash under high pressure for millennia.

Worldwide, there are 57 different types of the precious clay, which is further processed in very different industries – for purification of edible oils and fuels, as an additive for pharmaceuticals, in papermaking, for drilling, etc. For calcium bentonite, which is mainly used in foundries and the pelletization of steel, this area is reputed to be one of the best, even far outside of the region. Francesco Loi explains this sooner or later to every visitor onsite. »This is the backbone of our opportunities in Europe,« he says in a penetrating, bassy voice with unmistakable pride.

With this, he is referring to the Società Sarda di Bentonite (SSB), which manages the operation, and for which Loi, a man in his fifties with jet-black hair, works as Operation Sites Manager. He is also referring to the Clariant Group, which, as the owner, strives for the long-term use of the deposit – an ambitious strategy that is not limited to exploiting the resources. This is also

clearly spelled out in the guidelines (»Our Mission«) of the Functional Minerals Business Unit, which state, »We create value through sustainability and innovation.«

These are guidelines that Loi and his team are only too happy to comply with and improve on. Every February, after the rainy season, they resume excavating the precious clay from the expansive, sprawling open pit. Tractor-trailers take the clay to the adjacent factory load by load until November. The factory is an open station comprising silos, office containers and a well-equipped laboratory in which Alessandro, the chemist, analyzes samples of the excavated material for all relevant parameters on a daily basis.

Loi explains that for a long time, his people were largely limited to pressing a few buttons in the silo factory. That was enough to activate the bentonite with sodium carbonate and to prepare it for further processing in Santa Giusta – the main plant in the port of Oristano, where it is dried and shipped to Europe. However, this also meant hauling the raw material, which still contains around 40 % water, a distance of 160 kilometers – and using a lot of oil and energy at the destination to further reduce the water content to around 12 %, the level required for further transport. This entailed a great deal of emissions, from the truck to the rotating dryer.

Since that time, however, the site manager and his engineers have been able to significantly improve the process. Now, as Loi notes, they are all much busier outside, because clay of various colors is now spread out ankle-deep around the plant. With this, one can easily guess what is taking place here. Resources are being conserved by using solar energy to dry the bentonite. In this manner, the rock is sent to Santa Giusta with a significantly lower percentage of liquid, where it can then be dried faster.

Ultimately, this saves some tons of weight per truck and reduces the transport costs significantly. This means less strain on the environment, lower costs for the company – and noticeably greater efficiency. »We are now able to produce more material in less time,« Loi sums up. This is a significant advantage in international



»We should not leave any footprint on the land, because it is not ours. We must eventually return it to our children.«

FRANCESCO LOI

Operation Sites Manager, BU Functional Minerals

competition, in which a great deal revolves around the predictive calculation of demand.

This progress is entirely to the liking of the native islander, who is a dyed-in-the-wool patriot like many others here. It does not take long to realize that these plots of earth are the greatest thing of all to him – and thus also the most worthy of protecting. In addition, this technological breakthrough goes hand in hand with the thriving Clariant Business Unit's philosophy, which always strives for both long-term access to minerals through sustainable development and a leading role in the global market. This aspiration is underscored by 39 mines on three continents and 1.9 million tons of bentonite production per year for customers in some 130 countries.

The company has provided substantial funding for the restructuring of the drying process. To acquire land for drying in the sun, an additional 18 hectares of land were leased in s'Aliderru. Clariant guaranteed the municipalities that the land would be returned unharmed at a later point. Moreover, another mine further north was closed. Additional clay can now be dried in this area. Contractors use a respectful approach to soil management. Each cubic meter of excavated soil is expected to be backfilled exactly where it was taken from after the mining. And the surface is subsequently recultivated at the company's expense and returned to the farmers for ongoing agricultural use.



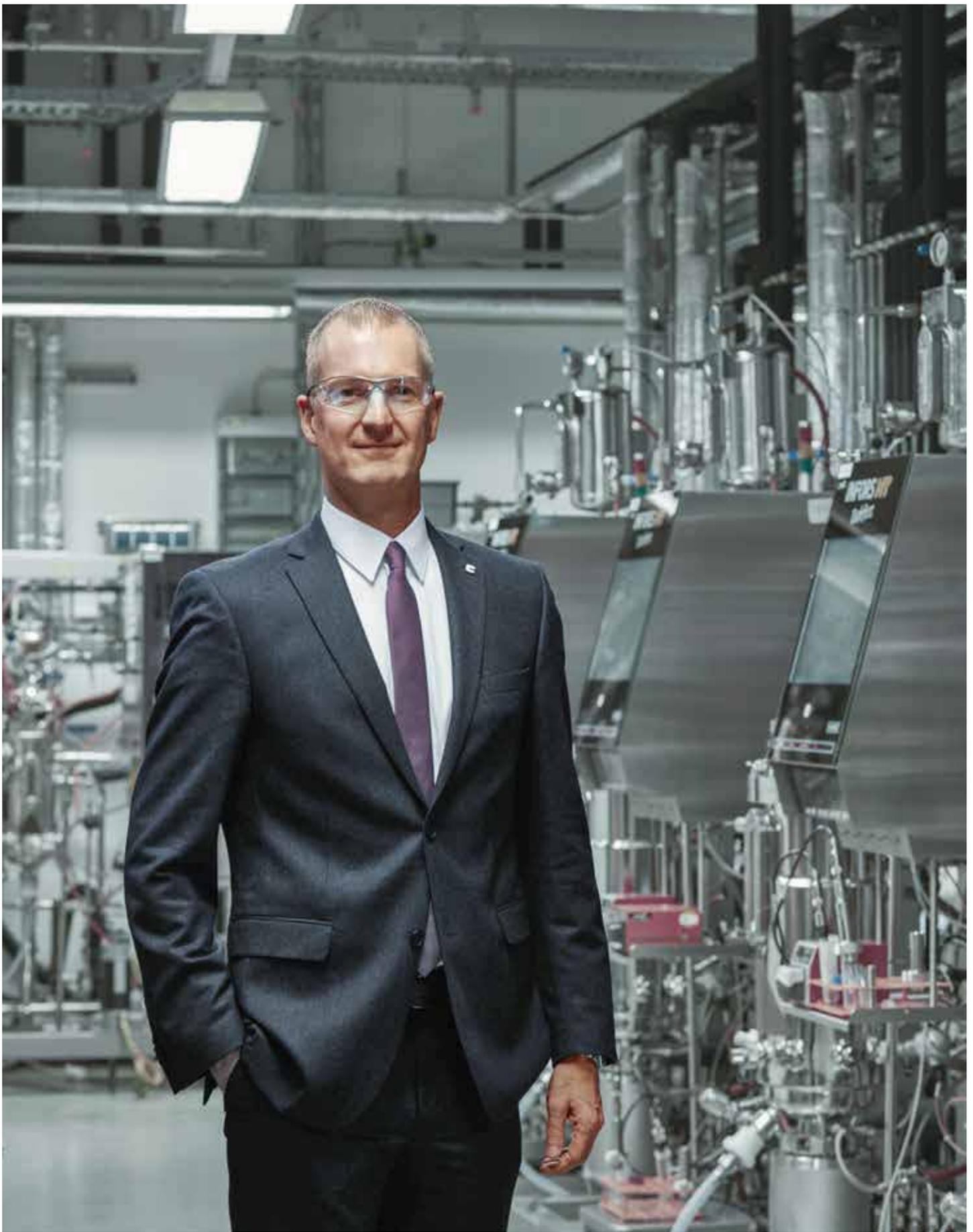


Under these circumstances, Francesco Loi sometimes has the air of a conductor. He must set the tempo, open up the soil, temporarily store large amounts of earth, and then fill them back in at the appropriate time. The landowners, including many small farmers, benefit from the lease. It ensures their existence. And for Loi himself, there is no alternative to this use of resources. »We should not leave any footprint on the land, because it is not ours. Everything is merely borrowed. We must eventually return it to our children.«

What has been started with this apparently has not yet reached any endpoint. Loi and his staff have long kept some of the surfaces of the mine open for ex-

periments. There, they attempt to dry the bentonite even further with the help of the sun before it is brought to Santa Giusta. This is a real challenge, with the last percentage of water being particularly difficult to get out of the clay. By this point, the clay has been laid out up to seven times, which takes a few weeks.

But isn't tenacity a quality that people on this island want more than any other? »We believe in our idea,« says Loi. This was the case a few years ago when their idea was first developed in an exchange among engineers and decision-makers distributed throughout Sardinia, Switzerland and Bavaria. »And now we are implementing it step by step.«



MARKUS RARBACH

Head of Start-up Business Project Biofuels & Derivatives

Remaining at the forefront of change

Embracing renewable raw materials

As a sustainability leader in the chemical industry, Clariant prioritizes its strategy of responsible procurement of renewable raw materials, increased use of renewable raw materials in products, and development and production of innovative bio-based chemicals and biofuels.

Fueled by a need for more efficient and sustainable solutions, industries across the globe, including chemical companies, are on the verge of changing the materials they use: Renewable raw materials are an emerging and innovative solution to sustainable energy and production needs. With this in mind, Clariant became a pioneer in the renewable raw materials space. An interview with Clariant's Head of Start-up Business Project Biofuels & Derivatives, Markus Rarbach, explores Clariant's innovative plant-based sunliquid® technology as well as the opportunities associated with utilizing renewable raw materials in a changing world.

How would you describe the increasing importance of renewable raw materials in the chemical sector?

MARKUS RARBACH Industry and society as a whole, face the challenge of maintaining economic growth and quality of life in a sustainable way. While limited fossil resources make up a huge part of feedstock in the chemical industry currently and in the foreseeable future, it is important for chemical companies to investigate alternative resources that support high-quality products. Sustainable processes that use

renewable raw materials – to produce bio-based chemicals and biofuels – will be key to moving forward, and Clariant embraces this. Basically, staying competitive and innovative while reducing our carbon footprint as much as possible and offering the highest possible performance motivates us to continue offering our customers sustainable bio-based solutions.

What is your primary involvement with renewable raw materials?

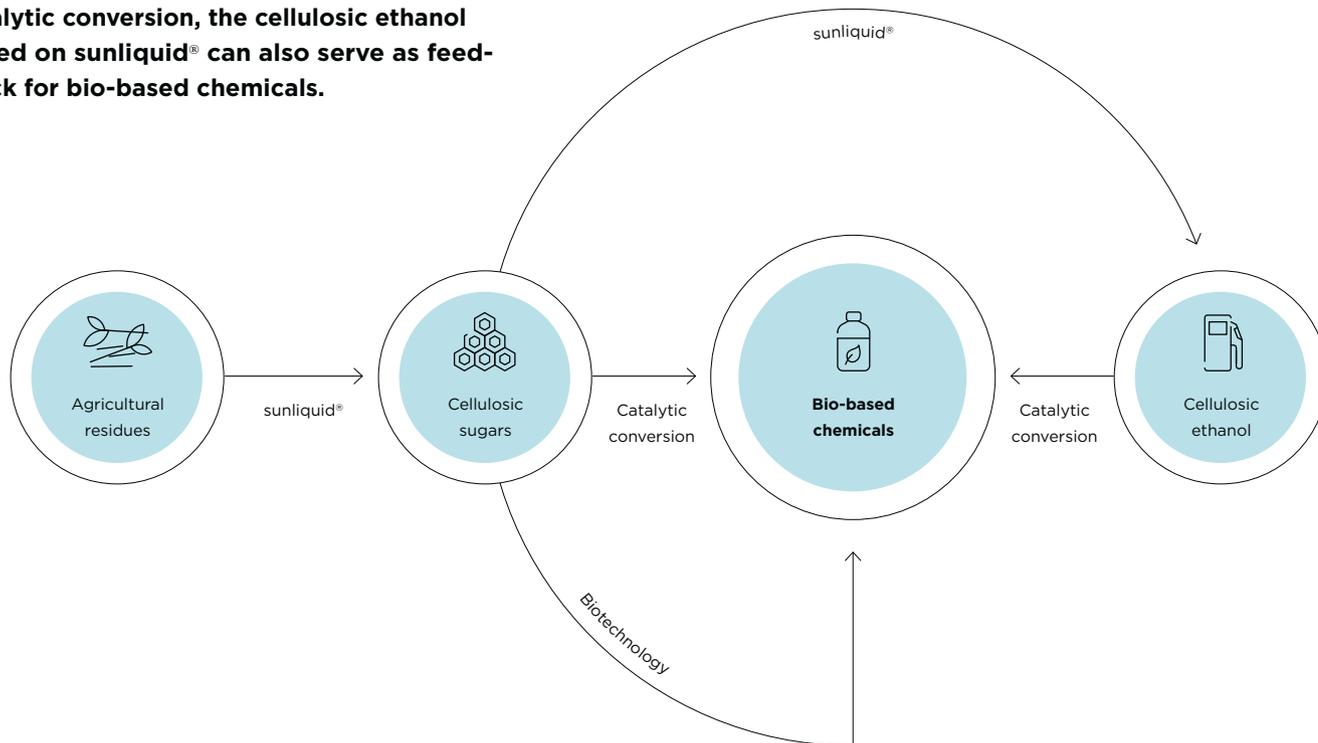
At Group Biotechnology, we focus on developing new products and processes based on renewable raw materials. My team focuses on the conversion of lignocellulosic material into valuable products. This means we take non-food plant material, such as wheat straw or bagasse, the remains of sugarcane processing, and use biotechnology to convert these materials into sugars. Sugars build the foundation of biotechnological conversion, as they are the nutrient for a large number of different microorganisms – and when these organisms digest the sugars, other products such as alcohols or acids are produced. Our team designs processes and works with microorganisms to produce these products in the most efficient and sustainable way.

A partnership for renewable raw materials

In 2016, Clariant became an anchor shareholder and exclusive global distributor of South Korean BioSpectrum, a leading provider of natural active ingredients for personal care. This strategic partnership will support Clariant's initiative to utilize highly innovative active ingredients based on renewable raw materials.

Competitive and sustainable cellulosic ethanol

Beyond its use as sustainable biofuel, with catalytic conversion, the cellulosic ethanol based on sunliquid® can also serve as feedstock for bio-based chemicals.



Collaborations prove everyday suitability of sunliquid®

- With Mercedes-Benz and Haltermann, Clariant successfully tested sunliquid®20 – a blend that contains 20% cellulosic ethanol – in a fleet test with series vehicles.
- Clariant tested three Scania trucks running on ethanol at its production plant in Suzano, Brazil.
- In a collaboration with Werner & Mertz, the producer of products of the Frosch brand, the use of cellulosic ethanol has been extended to detergents, cleansers, and cleaning agents. clariant.com/sunliquid

What projects or innovations with renewable raw materials are you currently working on?

Although the concept of using renewable resources is nothing new, using inedible plant material for chemical products is relatively new, and the challenge with doing so is finding processes that convert plant materials into products in an economically efficient and sustainable way. Clariant's sunliquid® project resolves this challenge. With sunliquid®, we can convert wheat straw or other agricultural residues into ethanol, while both achieving greenhouse gas savings of 95% compared to fossil fuels and keeping production costs at a minimum. This makes sunliquid® a competitive option for our customers, who are looking for alternatives to starch- or glucose-based products. We offer a 100% cellulose-based, entirely integrated process that delivers high-quality ethanol or fermentable sug-

ars. On top of that, the sunliquid® technology is thoroughly developed and has been validated in our pre-commercial plant in Straubing.

How does the material used for sunliquid® impact the amount of energy needed to produce ethanol?

The sunliquid® technology is energy self-sufficient, which is one of its greatest advantages. About four to five tons of straw produce one ton of ethanol through sunliquid®'s process. Lignocellulose, which is the biomass base of sunliquid®, is essentially mother nature's most stable way to store sugars. Nature uses sugars as energy storage units, and lignocellulose consists of cellulosic sugars bound in long chains. By breaking these chains and converting these sugars into ethanol, they turn into a liquid energy carrier with a high-energy density that can be stored and transported easily

»Clariant views the use of renewable raw materials as an opportunity to take customer needs to the next level.«

MARKUS RARBACH

Head of Start-up Business Project Biofuels & Derivatives

without losing much energy in the process. Also, two additional plant-based byproducts come out of the sunliquid® process, and together these generate enough energy to power the entire production process.

What is a real-world application for ethanol produced from Clariant's sunliquid® technology?

The most obvious application is in vehicles – sunliquid® ethanol is an efficient and most sustainable energy source for liquid fuels. This is of special importance as biofuels continue to play an important role in reducing carbon dioxide (CO₂) in transportation. Clariant, for example, took advantage of the opportunity of using sunliquid® in its own trucks starting at its Suzano plant in São Paulo, Brazil. Through a partnership with Scania, a heavy-duty vehicle manufacturer, Clariant acquired three cargo trucks, now known as Ecotrucks in mid-2015. After nearly a year of using the Ecotrucks, Clariant experienced a 90 % reduction in CO₂ emissions compared to the diesel engines used in its trucks before. In a second phase, the trucks started using second-generation ethanol produced from sugarcane bagasse with Clariant's sunliquid® technology. It was also demonstrated in a fleet test with Mercedes-Benz series vehicles that sunliquid® ethanol helps increase sustainability in transportation without having to change vehicle fleets and infrastructure (see page 64). Beyond this, with catalytic conversion, cellulosic ethanol can be utilized as feedstock for bio-based chemicals or the sugars

produced in the first step can be used for fermentation of other bio-based chemicals and building blocks (see figure page 64).

What inspired Clariant's use of renewable raw materials, and how is Clariant hoping to continue advancing their use now and in the future?

I think there are many different aspects that need to be considered here. First of all, sustainability is one of Clariant's strategic pillars, and one aspect of this pillar is reducing our carbon footprint by increasing the use of renewable raw materials. This is not just important to Clariant, but also to many of our customers. Secondly, the core of our efforts focusses on discovering value for our customers. Renewable raw materials play an important role here. By leveraging the potential that lies within the use of renewable materials, we can add value to existing products and also discover value in new products and applications for our customers. This added value may have its foundation in innovation, but it also supports economic competitiveness, sustainability, and feedstock security. The chemical industry is looking to broaden its feedstock base. Renewable materials are, in general, not typically subject to high price fluctuations compared to limited fossil resources. And fortunately, renewables will be available in substantial amounts for the long-term. Clariant will always focus on customer needs – and as the bio-based industry grows, Clariant will remain at the forefront in bridging customer needs with sustainable and innovative solutions.

Renewable raw materials for EcoTain® products

Clariant uses lignocellulose in sunliquid®. Beyond this, many EcoTain® products are based on renewable raw materials:

Plantasens® Olive Squalane

Personal care ingredient based on renewable raw materials

- Exceptionally silky touch
- Plant-based (100 % olive origin)
- Emollient and heat stable

GlucoTain®

Surfactant based on renewable raw materials

- Plant-based, available as RSPO Mass Balance quality (Roundtable on Sustainable Palm Oil)
- 94 – 95 % RCI (Renewable Carbon Index)
- Approved by the recognized COSMOS standard

Quinacridone pigments

High performance pigment based on renewable raw material (succinic acid)

- Lower carbon footprint compared to fossil-based products
- Identical product specification (bio/petrochemical succinic acid)

Energy efficiency, emission targets, and optimization

Balancing costs, culture, and technology

Using comprehensive management tools and programs that integrate technology, data, and behavioral guidelines, Clariant achieves energy efficiency, operational optimization, and reduced carbon dioxide and greenhouse gas emissions.

Energy efficiency lives at the intersection of technology, data, and behavior – where operational technology and digitized environmental indicators converge with human habits and behavior to drive energy reduction. Simply put, this is the intersection where Clariant aims to constantly reside – especially while pursuing its ambitious energy and emission goals: reducing energy consumption by 30%, direct carbon dioxide (CO₂) emissions by 30%, and emissions from greenhouse gases (GHG) by 35% per ton of produced goods between 2013 and 2025. Through the development of innovative, ongoing programs that manage energy use, costs, optimization, and training, Clariant pursues energy efficiency in a way that ultimately enhances operational and production equipment, improves the energy-reduction habits of employees, and most importantly, reduces energy use and greenhouse gas emissions.



eWATCH savings

Through large and small projects, by end of 2016 energy consumption per kilogram of manufactured products has decreased by more than 20% in total compared to the base year 2013. In the same period CO₂ emissions have decreased by about 15% and greenhouse gas emissions by approx. 27%. In terms of financial savings, Clariant managed to save CHF 3.4 million in 2016 alone thanks to eWATCH.

eWATCH: Energy management all in one place

Energy efficiency, at its core, is a balancing act. Achieving reduced environmental impacts requires high-level and focused management, a culture of performance, and a look at costs. For Clariant, this certainly is the case: maintaining high performance and quality in operations and throughout the entire product life cycle is vital. However doing so in a way that is energy efficient is equally important from a cost and sustainability perspective. To achieve this balance, Clariant developed a comprehensive energy efficiency program that identifies savings potential through the detailed analysis of energy consumption across Clariant's entire operations. This program is called eWATCH, and as an innovative and insightful tool, it fulfills the triple task of enhancing employees' energy awareness, helps achieve business objectives in energy management, and further improves energy efficiency of machinery processes.

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. It also contains information on best practices, optimization of equipment, and situations in which employees should shut down equipment that may not be running at full capacity. In other words, eWATCH is a full package, holistic system that guides both operations and mind-sets, ultimately helping to manage Clariant's entire spectrum of energy use.

Clariant Energy Intelligence Guide and employee engagement

One aspect of Clariant's approach to energy management is technology-based – computers log environmental data and operational programming watches trace energy consumption and emissions. However, Clariant's approach also includes a dynamic, behavioral component in eWATCH: the Clariant Energy Intelligence Guide (CEIG). This guide is a database that combines information, advice, best practices, and successful optimization projects, as well as key figures and tools that support energy efficiency, while enabling users to systematical-

ly improve energy efficiency of equipment. By providing every employee specific guidance on intelligent utilization of energy, Clariant captures a complete picture of energy consumption and builds an improvement process that engages employees constantly along the way. CEIG helps personnel perform sufficiently exact and quick calculations about topics like insulation, pressure loss, CO₂ footprint, or the efficiency of on-site energy production. CEIG also contains an abundance of useful training material about how to save energy in practice.

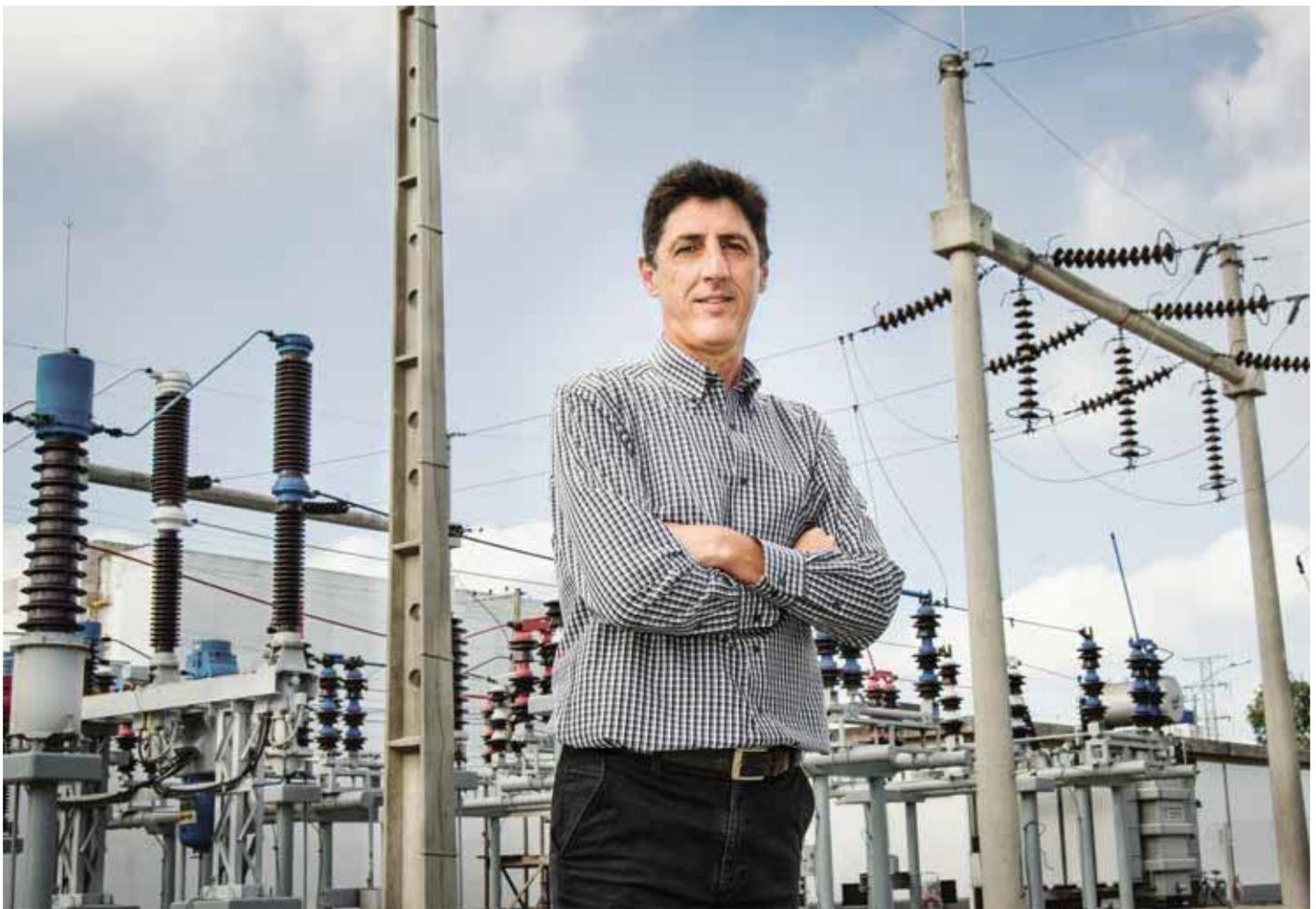
To create ongoing engagement and encourage behaviors that promote energy efficiency, Clariant also encourages employees to submit suggestions for improvements in production processes. For example, a team of employees within the Business Unit (BU) Pigments suggested improvements to optimize the production process of pigments. In that specific process, this led to reductions in effluents by 50%, wastewater pollution by 20%, reductions in steam consumption by 40% and electricity and ice by 50% per kilogram of pigment. On top of that, the suggested improvements in the production process nearly doubled the batch quantity. This illustrates how embedding energy and operational efficiency into the habits and behaviors of employees can lead to positive outcomes. Jose Luis Arranz, Head Site Management & Services at the

721

kWh of energy used by Clariant per ton of products produced in 2016 (2015: 782 kWh).

50 000

kWh energy savings in total could be realized in 2016 via the eWATCH program.



JOSE LUIS ARRANZ

Head Site Management & Services, BU Industrial and Consumer Specialties (ICS), Suzano, Brazil

eWATCH

Clariant's energy efficiency program that identifies savings potential through the detailed analysis of energy consumption across operations.

18

CHF m of yearly recurring savings on energy costs could be achieved via the eWATCH program since 2013.

3.4

CHF m energy costs could be saved with the eWATCH program in 2016.

Suzano site in Brazil, is fully aware of this, too: »At our Suzano site, we involve all the people on the ground in trainings and actions aligned to CEIG eWATCH, encouraging employees to contribute suggestions for better ways to improve energy management and efficiency, and spreading awareness on how energy savings lead to cost savings and a reduction in CO₂ and GHG emissions.« He elaborates, »It is important to realize that the participation of employees – coupled with operational excellence – creates a strong energy efficiency culture.«

Clariant Operational Excellence

Another element of Clariant's efforts to balance and integrate technology, behavior, and environmental data to save energy and reduce emissions is the Clariant Excellence (CLNX) initiative. CLNX encompasses four areas: Operational, Commercial, Innovation, and People Excellence. Operational Excellence, in particular, focuses on efficiency improvement and creating added value for Clariant and its customers, and deals with all steps of product and service creation – including, for example, order receipt, production planning, production itself, transporting products to customers, and the entire sales process and subsequent customer care. As a complement to eWATCH, Operational Excellence also involves comprehensive training to make sure optimization, efficiency, and excellence are implemented and ingrained in the minds of all employees.

»The employee suggestions are an important success factor in improving energy management.«

JOSE LUIS ARRANZ

Head Site Management & Services, BU Industrial and Consumer Specialties (ICS), Suzano, Brazil

Production efficiency and optimization: CPS YEE

Clariant's Operational Excellence program expands efficiency initiatives even further through the Clariant Production System (CPS), which supports optimal productivity, sustainability, and financial performance production for all BUs. CPS operates in three dimensions – management, employee engagement, and operating systems – in a way that standardizes, simplifies, and modernizes production processes while enhancing performance and sustainability. By addressing all of these moving parts, CPS supports Clariant's business objectives, nurtures the efficiency mind-set and behavior of Clariant's employees, and optimizes operating systems.

Clariant addresses production efficiency with a thorough, detail-oriented, and holistic approach. The CPS YEE (Clariant Production System Yield, Energy, Environment) takes into account the fact that costs related to yield (raw materials), energy, and environment usually make up a major part of production expenses. However, this tool directly serves to increase yields and improving energy efficiency and reducing waste streams by analyzing specific production processes or production units to create a

comprehensive picture of energy optimization. Through CPS YEE, Clariant identified savings of approximately CHF 51 million between 2013 and 2016.

Capturing the whole efficiency picture

Driven by its environmental targets for 2025, Clariant achieves energy and emissions reduction through the combined use of eWATCH, CLNX, and CPS YEE. In the past, the development and implementation of these programs have enhanced process efficiency and increased employee awareness. Benchmarking environmental indicators, which illustrates progress while promoting greater efficiency, has led Clariant to experience great success. The company will continue to dedicate itself to strategies that incorporate these elements.

Moving forward

All of Clariant's German locations are certified under ISO 50001, an international standard for establishing efficient energy management systems in companies. Moving forward, Clariant hopes to certify more of its sites with ISO 50001. Clariant also plans on implementing more projects that reduce energy use and emissions, replace operational equipment, and increase employee engagement.

Innovative solutions for water management

Pursuing ambitious environmental targets

Sustainable water management is a broad and complex issue – and one that Clariant strives to support through its goals of reducing water consumption and wastewater production. Through collaborative and innovative initiatives, Clariant intends to develop efficient water use solutions that are applicable in industrial settings across the globe.

In Eastern Spain, in Catalonia, lies a both ancient and modern city that boasts thriving human innovation: the city of Tarragona. Dry, yet saturated with culture and Mediterranean beaches, Tarragona hosts an archeological world heritage site and a cluster of chemical companies, including Clariant. Recognizing that responsible water use is an extremely important environmental issue now and in the future, Clariant joined a wastewater treatment project introduced in 2016 known as INSPIREWATER to help pursue its ambitious water goals – reducing water consumption by 35 % and wastewater by 40 % per ton of produced goods between 2013 and 2025. Based in the microcosm of chemical companies nestled in Tarragona's water-limited region, INSPIREWATER brings together eleven industrial and scientific partners through a European Union-funded grant to explore wastewater treatment efficiencies using innovative membrane technologies at Clariant's Tarragona site. The eleven partners of the consortium span eight industries, including steel, paper, and chemicals, and the project is funded by the European Union's (EU) framework program for research and innovation, Horizon 2020. Clariant represents the chemical industry within the consortium and provides the testing ground for innovative wastewater treatment solutions.

Solutions to better wastewater management

Like societies at large, Clariant depends on a healthy environment and the long-term availability of natural resources, including water. As a result, Clariant strives to reduce freshwater consumption as much as possible, especially as water shortages increase in frequency in many regions. In the province and city of Tarragona, where reduced river volumes put pressure on local municipal and industrial consumption, Clariant focuses on advanced technologies applied in new combinations to enhance performance and create optimal recycling conditions.

This not only supports Clariant in creating sustainable technologies that reduce impact on the environment, it also limits increases in production costs.

Beyond the Tarragona microcosm

Although the individual technologies integrated by INSPIREWATER are not new, their combined use is innovative for effluent treatment as they work in harmony to enhance the efficiency of the wastewater treatment processes. On top of that, INSPIREWATER's innovative use of membrane technology helps Clariant achieve its ambitious wastewater reduction goals.

»To Clariant, the best wastewater is wastewater that barely exists.«

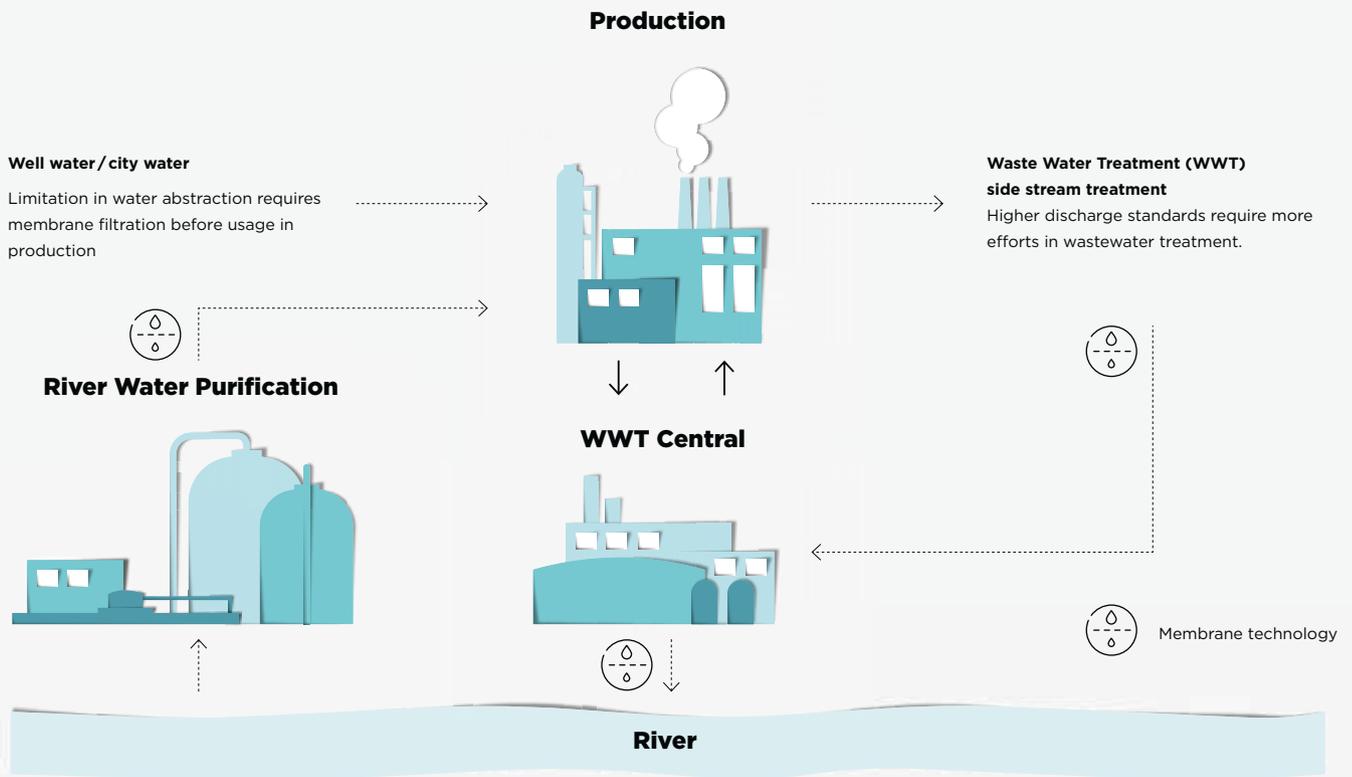
FRIEDHELM ZORN

Head of Competence Center Environmental Technologies

Striving for ambitious environmental targets

An integrated plan for water treatment

By utilizing a multi-membrane technology, Clariant sidesteps high costs and energy requirements.



INSPIREWATER is a public-private partnership (PPP) by Clariant and 10 other partners. The concept helps to reduce wastewater up to zero liquid discharge and fresh water consumption by recycling of cleaned wastewater. At the same time, energy consumption is re-

duced by efficient waste water treatment (WWT). Using Clariant's Tarragona facility as a testing ground, it takes a renewed approach to water treatment. By utilizing a multi-membrane technology that incorporates anti-fouling, catalysts, and forward osmosis with standard

reverse osmosis techniques, Clariant sidesteps high costs and energy requirements of using reverse osmosis alone. Unlike reverse osmosis, the semi-permeable membrane involved in forward osmosis does not require hydraulic pressure, therefore reducing cost and energy.

With these environmental goals in mind, Clariant believes INSPIREWATER has both broad benefits and broad applications, creating not only end-of-pipe wastewater treatment solutions with energy and emission reductions, but also a knowledge base for possible applications within earlier stages of the production process. For example, in other regions with more abundant river water resources, Clariant may be able to pre-treat these water sources as production inputs and purify wastewater across its operations for recycling within production.

This creates multiple uses for every drop of water needed.

Saving resources and reducing environmental impact may ultimately start a ripple effect among Tarragona's microcosm of chemical companies. However, INSPIREWATER also has the potential to create a tidal wave of enhanced solutions for sustainable water use by companies across the globe – with Clariant helping lead the charge.



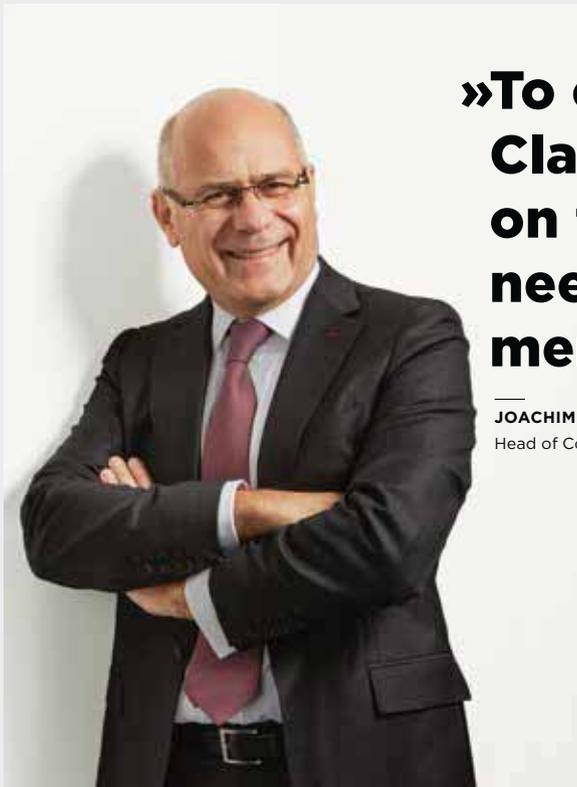
Water use and waste water declining

Over the past four years, water consumption at Clariant's production facilities decreased from 71 m³ to 48 m³, while waste water declined from 20 m³ to 13 m³.

Strategy and Materiality

Clariant is dedicated to generating high-quality, sustainable, and innovative products. Therefore, when Clariant pursues sustainability initiatives, its strategic approach revolves around the three dimensions of sustainability: performance, people, and planet.

The programs discussed throughout the preceding sections of this report are built upon relevant sustainability topics that were identified through a materiality assessment. A major part of Clariant's approach is concerned with the development and sustainable production of competitive and future-oriented products as well as the processes that are necessary for this. The human factor plays a major role in the success of the company. Finally, all elements of this sustainability strategy contribute to positioning Clariant as one of the leading sustainable companies in the global chemical industry.



»To create sustainable value, Clariant must constantly stay on the pulse of customer needs and the latest developments in the industry.«

JOACHIM KRÜGER

Head of Corporate Sustainability & Regulatory Affairs

Joachim Krüger, what does sustainability success at Clariant mean to you? What do you see as major indications of progress for your team and Clariant as a whole?

JOACHIM KRÜGER To foster progress and innovation, the Corporate Sustainability and Regulatory Affairs team stays in close and regular touch with employees across the whole company to keep them engaged in sustainability issues. Strong interest and awareness of the staff combined with stringent processes such as the Portfolio Value Program, which analyzes the sustainability aspects of Clariant's products, are the basis of success.

To create sustainable value based on this, Clariant must constantly stay on the pulse of customer needs and the latest developments in the industry. Our Sustainability Dialog events held in Frankfurt in 2015 and Shanghai in November 2016 are important for this. Insights from these events feed into our knowledge of market needs, which ultimately supports the development and expansion of sustainability solutions offered to customers.

For example, the number of Clariant's sustainability flagship products awarded the EcoTain® label for their excellent sustainability profile grew from 60 in 2015 to more than 140 in 2016.

How is customer interest in sustainability developing, and is there a willingness to pay a premium for certain sustainable solutions?

Our customers are expressing an increasing demand for products that offer sustainability excellence. In this respect, we get very positive feedback on the EcoTain® label as a solid and transparent tool that supports them in their own sustainability targets and market differentiation.

However, the willingness in the marketplace to pay a premium for more sustainable products and services remains limited. Sustainable innovations have to be competitive compared to benchmark solutions or even offer additional value. For example, Clariant's bio-based pigments, sugar-based home and personal care products, sustainable additives, and non-halogenated flame retardants combine sustainability and business advantages for our customers. Overall, our EcoTain® products also generate higher margins than the average product portfolio. This shows that sustainability and business can go hand in hand.



Joachim Krüger
Head of Corporate
Sustainability &
Regulatory Affairs

You've talked about the sustainability of solutions offered to customers. What about the sustainability of Clariant's own operations?

As an open company that communicates in a transparent manner with all stakeholders, Clariant publicly sets environmental targets and holds itself accountable to them. After we exceeded our environmental targets that were set in 2011 for 2020 well ahead of time, we committed to further significant environmental improvements by 2025 compared to production volume based on 2013 levels. While in 2016 we have achieved further progress toward all of them, in order to continue to advance and optimally align investments, a cross-company 2025 Target Team closely works together to identify further improvement areas.

In addition to environmental topics, issues such as the health and safety of our employees are central to the sustainability of our operations. Since its inception in 2007, the AvoidingAccidents@Clariant initiative has helped to significantly reduce Clariant's lost time accident rate (LTAR). This rate, which reflects the number of occupational accidents with at least one day of work lost in relation to 200 000 hours of work, fell from 0.92 in 2007 to 0.19 in 2016.

Further areas of exploration include defining additional social targets to complement our sustainability target set and increasing integration of human rights aspects into sustainability assessments to ensure that we continue to have a comprehensive, well-rounded approach to corporate sustainability.

How do you include your suppliers in your sustainability initiatives?

Today's complex supply chains offer major opportunities and risks with regard to sustainability. To work on these in a collaborative manner, Clariant has participated in the chemical industry's Together for Sustainability

(TfS) initiative since 2014, which shares results from supplier assessments and audits by independent certified experts among all participating companies. In 2016, this allowed us for the first time to cover more than half of our supply base by expenses with sustainability evaluations. In the future, we want to further increase consequence management and corrective action plans.

What else do you see on the horizon for sustainability at Clariant over the next years?

We want to continue working on sustainability issues at the Business Unit level, including detailed sustainability roadmaps. We will further work on our targets toward our commitment to the sustainable sourcing of palm-based raw materials, phase out heavy-metal-based pigments in the Business Unit Masterbatches, and replace Cr(VI) Catalysts through innovation currently in progress. Generally speaking, collaboration beyond our own boundaries will become more and more important to achieve our ambitious sustainability targets. Best-practice like the SPOTS initiative of our Business Unit ICS are examples that show the way into the future.

Strategic focus on sustainability

As one of the world's leading specialty chemicals companies, Clariant creates value with innovative and sustainable solutions for customers from many industries. Corporate sustainability supports long-term success in the marketplace, as illustrated by positive customer feedback and take-up of Clariant's sustainability offerings. Sustainability programs also underscore Clariant's role as a corporate citizen, committed to environmental protection and social responsibility, and driving positive impact.

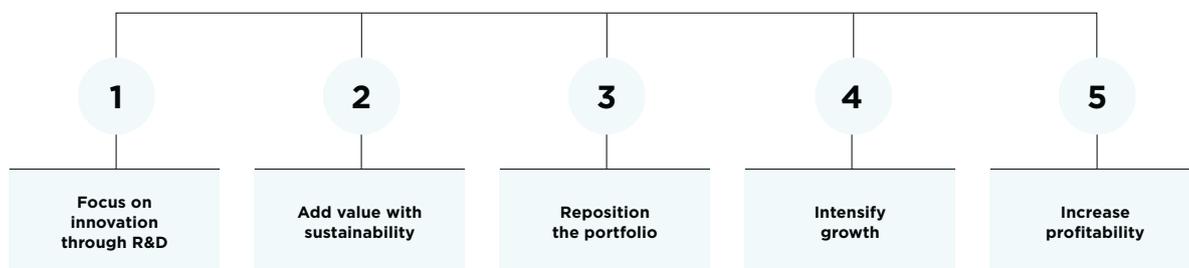
For Clariant, sustainability management encompasses environmentally compatible, ethical, socially responsible and forward-looking action, the careful use of raw materials, and the fair treatment of customers and employees. While the preceding chapters have described key aspects of sustainability management at Clariant in more detail, this section provides a summary overview of how Clariant strategically addresses these sustainability topics.

Full integration into corporate strategy

To ensure that it is factored into all of Clariant's activities, sustainability has been ingrained as one of the five pillars of the overall corporate strategy since August 2014. This integration is not only paramount to ensure Clariant's success and growth, but also to align this success with social and environmental targets.

In 2016, the strategic pillars were reviewed and refined. Following innovation, which is seen as the strategic starting point, sustainability is the next guidepost for future-oriented value generation. Repositioning the portfolio, intensifying growth, and increasing profitability then build on these two initial pillars, further strengthening the focus on value generation for shareholders and other stakeholders. Clariant's Business Units then substantiate these five pillars in their respective Business Unit strategies (see page 42 in the Integrated Report).

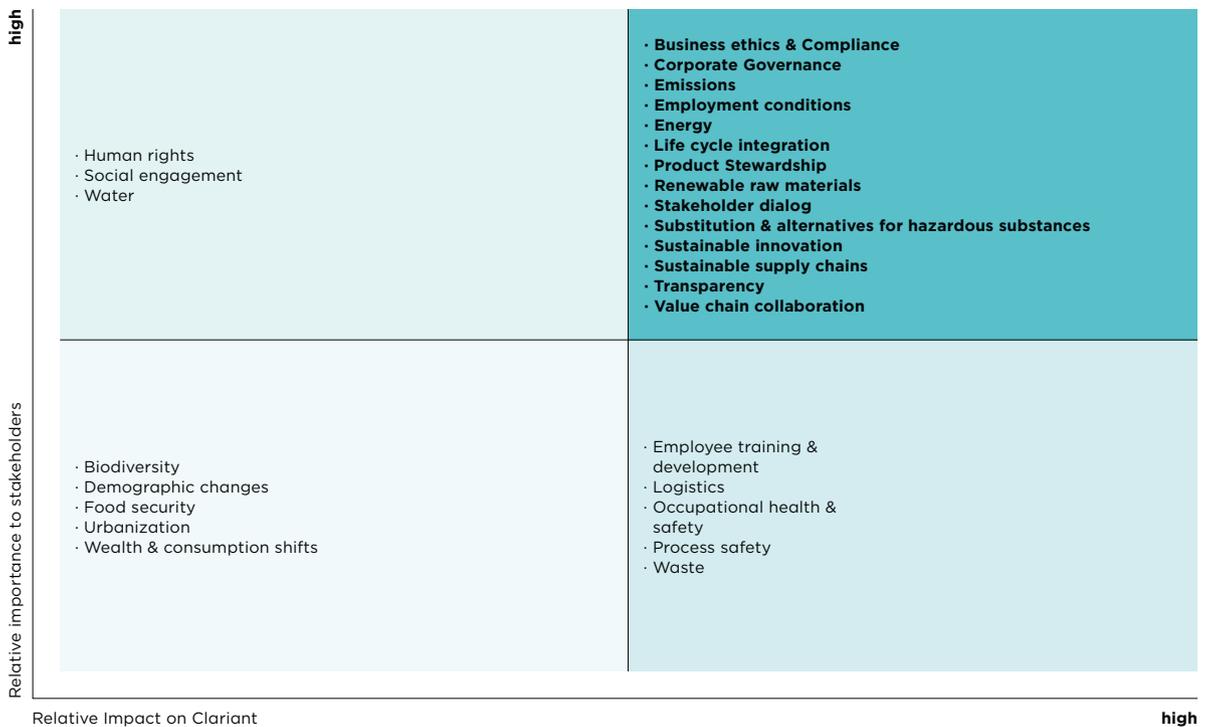
THE FIVE-PILLAR STRATEGY



Innovation Excellence · Commercial Excellence · Operational Excellence · People Excellence



MATERIALITY MATRIX BY CLARIANT



Focus on material issues

To focus its approach to sustainability, Clariant determines the most relevant (or »material«) sustainability aspects through a materiality assessment. These issues are shown in the »Materiality Matrix« above.

This matrix displays the sustainability topics for Clariant and its interest groups (»stakeholders«) with the highest relative relevance. It is the result of a comprehensive stakeholder and trend analysis by Clariant

and external experts. A full materiality assessment has been conducted in 2012 including market analysis and stakeholders surveys. During the course of 2013, Clariant carried out further analyses and collected data to update and fine-tune the matrix.

The Clariant Sustainability Council, the central steering committee for sustainability chaired by the CEO, evaluates the results and determines those sustainability issues and fields that currently are of particular rele-

vance or are especially important with respect to current projects and objectives of the company. Regional sustainability committees ensure that the sustainability strategy is adopted accordingly in the regions and implemented consistently. In addition, Clariant's next full materiality assessment is planned for 2017.

Open communication for sustainability

Complementing surveys and conversations, Clariant has conducted annual stakeholder discussions on sustainability since 2015. The first Sustainability Dialog was held in Frankfurt in 2015, followed by the second in Shanghai in November 2016.

At this event, more than 200 customers, suppliers, and authorities participated in presentations, panel discussions, and parallel sessions that offered insights from Clariant specialists and external experts on China's sustainability challenges and performance. With the Chinese government now steering customers and markets toward more sustainable solutions, Clariant demonstrated its proactive support through products and services linked to three global megatrends: Environmental Protection, Globalization & Urbanization, and Resources & Energy.

Employees and people processes

Clariant strives to be a preferred employer, attracting, engaging, and retaining strong candidates dedicated to its development as a high-performing company. Therefore, recruiting the right employees, onboarding and integrating them quickly and effectively, and supporting their professional development are all paramount to Clariant's success. It is at the core of Human Resources' priorities to strengthen Clariant's reputation as employer, attract new talents by fostering new ways of working.

Clariant also considers the heterogeneity of its employees, who come from over 90 countries, a competitive edge in the marketplace. These employees have diverse cultural backgrounds and bring varying skills and talents to the company – the basis for innovative and creative solutions. In order to document its social commitment to diversity, Clariant has adopted the global Employment Policy, a workplace related internal directive that includes the promotion of a diverse workforce and aims to find the best candidates for open positions.

People processes at Clariant are managed using state-of-the-art digital technologies with particular focus on the performance management process, which plays a key role in employee engagement and in supporting the change agenda for a high-performing organization. In addition, global engagement surveys bolster Clariant's strong focus on employee motivation and participation. The second of these surveys was conducted in 2016 with 15 803 employees in 26 countries (18 languages) that have been invited to participate (2014: 10 583 – 10 countries). This relates to almost 90 % of the Clariant global workforce, the overall response rate has increased and in some countries even comes close to 100 %. Going forward, Clariant wants to ensure that the

company responds effectively to the changing global labor markets and the diverse cultural requirements of its increasingly globalized workforce (see page 44 in this Report and page 15 in the Clariant Integrated Report).

Business ethics and compliance

Business ethics and compliance is also a key corporate sustainability topic. Clariant is committed to respect and support human rights, both in its own operations and in business relationships. This commitment is enshrined in the Clariant Human Rights Policy Statement. The Clariant Code of Conduct, launched in 2007 and publicly available in the corporate governance section of Clariant's website, covers responsible behavior, protection of the reputation of the company, and mitigation of risks for shareholders and is binding for all Clariant employees. To implement these commitments, we assess, monitor and manage our human rights impacts, both in our own operations and in our supply chains and work to make sure that we do not contribute, knowingly or unknowingly, to any adverse human rights impacts.

The ten compliance principles at the core of the Clariant Code of Conduct require all employees to avoid conflicts of interest, active or passive bribery, insider trading, anti-trust violations, money laundering, account fraud, disclosure of confidential information, and abuse of business assets for private interests, and to prevent environmental hazards and abstain from discrimination and harassment. Clariant does not tolerate any violation of the Code of Conduct. All employees are encouraged to confidentially report noncompliant behavior to the compliance organization. An important channel through which all violations against the Code

of Conduct can be reported is the »Clariant Integrity Line«, including discrimination or violations of human rights. Also any workplace related compliance issues or questions can be channeled globally via this tool. In close collaboration with the Compliance Team, a global HR Case Manager organization within Group Human Resources is taking care of any such substantiated concerns.

Product safety, sustainability, and innovation as base for developing solutions

As a specialty chemicals company, product stewardship for ensuring protection of human health and the environment is key. Clariant's Product Stewardship organization ensures regulatory compliance for the company products in the markets the company is active as well as relevant communication to customers on the safe use and management of our products (see page 32). Going beyond product safety, screening for sustainability is a mandatory step for all major research and development projects at Clariant and the Portfolio Value Program (PVP) systematically analyzes the product portfolio for strengths and weaknesses in terms of sustainability over the entire life cycle (see page 27). Through the Portfolio Value Program, the company sets an ambitious standard and approach for steering its product portfolio toward more innovative and sustainable solutions.

To draw particular attention to its sustainability offering in the marketplace, Clariant has launched the group-wide EcoTain® label, which recognizes products showing sustainability excellence and having a defined

best-in-class performance. The more than 140 EcoTain® products available by the end of 2016 from all Business Units and examples are presented in both this report and the Integrated Report 2016 (see page 27 in this report and page 30 in the Integrated Report).

Environmentally compatible and safe production

The sustainable use of renewable materials is increasingly important in the chemical industry to conserve valuable resources and reduce emissions and waste. Customers and consumers are also increasingly demanding solutions based on renewable materials. Clariant is gradually increasing the use of renewable raw materials in products wherever possible and appro-

priate, and is developing and producing innovative bio-based chemicals and biofuels (see page 62).

To mitigate environmental impacts from operations, Clariant wants to achieve significant improvements in six major areas compared to the base year 2013 and in relation to the volume of goods produced, as shown in the »Environmental Targets 2025« graphic.

Compared to the previous year, in 2016 in all six areas a progress toward the 2025 targets has been recorded (see page 54). Progress toward these environmental targets is supported by Clariant’s comprehensive analysis and continuous improvement efforts. The YEE (yield, energy, environment) program helps to identify potential improvement areas in the production system, defining measures and ultimately resulting in environmental and financial benefits. Clariant’s eWATCH energy efficiency program and its participation as a chemical industry representative in the European Union’s INSPIREWATER public-private partnership for innovative wastewater treatment are further elements of the company’s holistic approach (see page 70).

Health and safety are also overarching priorities at Clariant. The company’s approach and goal is to continuously aim for zero accidents. The company’s occupational health and safety strategy emphasizes prevention, training, incentives, and open dialog and is supported by the global AvoidingAccidents@Clariant program (see page 47).

Supply chain sustainability

Balancing cost efficiency, high product quality, environmental standards, social standards, and security of supply is a challenge in an increasingly globalized value chain. Since suppliers form an integral part of Clariant’s

ENVIRONMENTAL TARGETS 2025

(in % per t produced goods compared to 2013)



network, the company expects them to commit to ethical and sustainable business practices. These expectations are expressed clearly in the Code of Conduct for Suppliers, which can be downloaded from our corporate website and is being distributed to suppliers. Clariant expects its suppliers and business partners to maintain the same high standards with regard to human rights as it has set for itself. Our Code of Conduct for Suppliers makes it clear that we will not tolerate the use of child labor or forced labor anywhere in our business and supply chains and protect our employees' and supply chain workers' rights in key human rights areas, including non-discrimination, working conditions and freedom of association.

In addition, Clariant's Group Procurement Services has developed a 2017 Sustainability Roadmap that includes goals such as generating 100 new supplier assessment scorecards and improving re-assessment scores in more than three-quarters of suppliers via the Together for Sustainability (TfS) initiative. TfS allows Clariant, in collaboration with other chemical company members, to assess the sustainability performance of suppliers against a set of criteria tailored to the requirements of the chemical industry (see page 50). Its participation in TfS enabled Clariant to cover more than 60% of its raw materials supply base (by spend) with sustainability evaluations by the end of 2016.

Recognitions

In 2016, Clariant received a number of recognitions for its sustainability programs and performance including Responsible Care® awards in the United States, Brazil, Chile and Venezuela or the Clean Industry Certification for two sites in Mexico. A key recognition was Clariant's repeat listing in the European as well as the global Dow Jones Sustainability Indices, receiving best-in-class scores of 100 points in the Innovation Management, Environmental Reporting, and Operational Eco-efficiency categories. RobecoSAM analysts confirmed that Clariant is among the top 3% of companies in the global chemical industry on economic, environmental, and social dimensions of sustainability, and Clariant received the RobecoSAM Sustainability Silver Class 2017 Award for its performance. In addition, Clariant is listed in other sustainability-oriented indices such as FTSE4Good, Vigeo Europe 120 Index, and the SXI Switzerland Sustainability 25 Index. The company is considered a leader in terms of sustainability by analysts such as Sustainalytics and IMUG/eiris.

MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM



Sustainability data

To provide transparent and comparable sustainability disclosure to all stakeholders, Clariant has been reporting detailed data on its sustainability performance against the GRI (Global Reporting Initiative) sustainability reporting frameworks since 2007, and since 2014 in accordance with the GRI G4 version of the GRI guidelines.

GRI is an international independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues (see www.globalreporting.org).

PwC provided limited assurance on the quantitative 2016 sustainability indicators disclosed in the sustainability online report as well as the management and reporting processes to collect and aggregate the sustainability data.



[reports.clariant.com/
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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.

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Change starts with us.

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