

# Sustainability Report **2014**



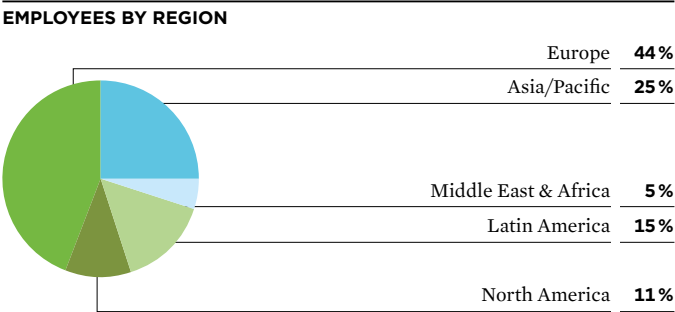
# Key Performance Indicators

## SUSTAINABILITY AT CLARIANT

### AT A GLANCE

#### PEOPLE

KEY FIGURES		
	2014	2013
Employees (FTE)	17 003	18 099
LTAR (lost time accident rate)	0.23	0.26
Training hours	90 000	117 000
Maturity of workforce: age structure (%)		
< 30	13.0	12.2
30 – 50	63.4	63.4
> 50	23.6	23.7



#### PLANET

change in 2014 (per t of produced goods)



-7 %

CO<sub>2</sub> emissions



-16 %

Greenhouse gas emissions



-18 %

Water consumption



-12 %

Energy consumption



-15 %

Waste



-22 %

Waste water



-0.03

Process Safety  
Incident rate (PSI)

# Clariant

# SUSTAINABILITY POLICY

## COMMITMENT AND CLARIANT EXCELLENCE

Clariant commits itself to ethical and sustainable operation and development in all business activities according to the Responsible Care® Initiative and Clariant's Code of Conduct. Clariant strives for a business culture of continuous improvement as well as for sustainable competitiveness and top performance in consideration of our ethical standards.

## RESPONSIBILITY

Clariant bears an ethical responsibility for sustainable, economic and ecological, as well as fair, business practices. Corporate Social Responsibility is therefore an integral component of our company's philosophy. All Clariant employees are therefore educated and trained to assume responsibility in line with their function, level of authority and qualification.

## CLARIANT'S MANAGEMENT SYSTEM

Clariant's certified Management System adheres to all internal and external standards to which Clariant subscribes and forms the company's documented structural framework as the basis for objectives and programs. The system complies with ISO 9001, ISO 14001, OHSAS 18001, ISO 50001 and Responsible Care®. Achieving and maintaining a high level of quality across all aspects of our businesses, our ESH related activities, Social Responsibility and Responsible Care®, is our understanding of Corporate Sustainability.

## COMPLIANCE

Compliance with laws, international standards, internal regulations, and Clariant's Code of Conduct is a basic requirement for all our activities. Clariant appreciates voluntary initiatives and provides adequate support to develop effective and efficient safety, health and environmental and energy regulations.

## SAFETY, SECURITY AND ENVIRONMENT

Among Clariant's most important objectives are the safety and security of its worldwide activities and the protection of people and environment. We set protection goals which are valid throughout the entire group and monitor and evaluate all aspects of our activities.

## RISK AND EMERGENCY MANAGEMENT

Comprehensive assessment of risks related to our operations and products are prerequisite to our business processes. Local and global emergency organization is in place to ensure comprehensive emergency management and response.

## INNOVATION AND PRODUCT STEWARDSHIP

We are convinced that it will be essential to understand our customers' needs. Innovation and customer focus is therefore the key to our business. We permanently develop better and new products and services to add value to our customers and to our environment. Concurrently we secure that our products can be used over their entire life cycle in a safe manner for employees, customers, the public and the environment.

## SUSTAINABLE OPERATIONS AND PROCESSES

We take initiatives to reduce environmental, safety and health risks in production, storage, distribution and usage of our products and the disposal of waste. This includes the efficient use of energy and resources and the continuous improvement of our processes to minimize the impact of our activities on the environment by increasing our environmental and energy performance.

## THIRD PARTY MANAGEMENT

Our aim is to establish mutually beneficial relationships with our third party suppliers and contractors in order to support our services on the basis of our internal ESHQ standards, which include Corporate Social Responsibility and Responsible Care®. We encourage our suppliers and service providers to adopt standards comparable to Clariant's policies.

## COMMUNICATION

Clariant fosters a culture of proactive and transparent communication as key to trusting and reliable relationships. All stakeholders are regularly informed about our activities, our targets and our ESHQ and energy performance. We identify the concerns and expectations of our stakeholders systematically.

## MONITORING AND REVIEW

We monitor and review all business aspects and processes including Responsible Care® issues at regular intervals. Observing our quality and performance is an integral component of our business processes, our top priorities and our strategic planning.



Hariolf Kottmann  
Chief Executive Officer



**RESPONSIBLE CARE®**  
OUR COMMITMENT TO SUSTAINABILITY



Clariant International Ltd

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# Foreword from the CEO



—  
**HARIOLF KOTTMANN**  
Chief Executive Officer

## DEAR READERS,

Sustainability does not contradict entrepreneurial thinking. On the contrary, sustainability is a prerequisite of entrepreneurial thinking. The principles of environmentally compatible action that is focused on the long term, of the careful use of raw materials and of fair dealings with customers and employees can only be implemented successfully if they have been holistically and meaningfully integrated into the business strategy. Sustainability has increasingly played an important role at Clariant for several years, and in September 2014 we formalized it by making »Add Value with Sustainability« one of the five pillars of Clariant's corporate strategy.

Sustainability cannot be limited to just a few areas, it must be incorporated throughout the whole company and integrated into the whole of the value chain. In order to guarantee this we analyze the sustainability profile of our products from the procurement of the raw materials through manufacture to the customer and the application of the products. In 2013 we introduced the »Portfolio Value Program« as part of which our whole product portfolio was systematically evaluated from the point of view of sustainability. In this we examined the intrinsic sustainability of every product per se and also in comparison with rival products. The results of this analysis gave indications as to the type and scope of the improvements required to our product portfolio. At the same time the assessment allowed us to award the »sustainability stars« in our product range with the EcoTain® label. The close connection between Clariant, its suppliers, customers and our Research & Development function enables us to increasingly exploit the sustainability potential of our products.


We identify opportunities in the development of innovative products that are often produced from renewable raw materials, for example, or in the production of products that use increasingly fewer resources and which therefore offer added value for our customers and consumers. You will find a large number of excellent examples of this in this report: Products for the protection of foodstuffs, to increase the efficiency in industrial processes or to reduce emissions.

We are also working hard on optimizing our internal processes on an ongoing basis. In 2011 for the first time, we set ourselves specific targets for the reduction of our energy consumption and our greenhouse gas emissions and also for other benchmarks such as water consumption and volumes of waste produced. It was our aim at that time to improve by 25 % to 30 % in nine years, based on the figures in 2005. Thanks to our efforts and the changes in our portfolio we were able to achieve these targets a full six years earlier than planned. For this reason, at the beginning of 2015 we set ourselves new, even more ambitious environmental targets and within the next ten years we want to realize further improvements of 30 – 40 % in the benchmarks selected. Our production also became not just more efficient but also safer in 2014. Thanks to our program AvoidingAccidents@Clariant we have been able to clearly reduce the number of accidents and the consequences of accidents on an ongoing basis over the last few years.


Sustainability applies not just within the company, but it essentially begins with procurement, for example. The control and management of the supply chain requires much time and effort. We purchase goods and services from thousands of suppliers. It is not possible for us to carry out comprehensive sustainability checks on all of them. For this reason we joined the initiative »Together for Sustainability« in 2014, an assessment network for sustainability in the supply chain. Thanks to this we now have access to the evaluations of more than 2 400 companies in more than 100 countries and have therefore been able to raise transparency in procurement.

All these efforts have also been recognized by the financial markets. In September 2014, Clariant was again admitted to the European Dow Jones Sustainability Index (DJSI Europe), and for the first time to the global Dow Jones Sustainability Index (DJSI). This internationally renowned sustainability index selects stock-listed companies based on economic, ecological, and social criteria. Clariant is counted among the leading 10 % of the companies in the chemicals industry in matters pertaining to sustainability.

Clariant has already attained some important milestones in its efforts to reach a balance between economical, social and ecological interests. One important reason for this is that our sustainability awareness in all areas and at all levels of our company has increased consistently in the past years. For the current year we have set ourselves the motto »Accelerate Change«. For as a company we have to be open and constantly evolving in order to successfully meet the challenges of the global economy. In 2015 we will continue to work at further strengthening this positive fundamental attitude and to use it as a driver to help accelerate our change. We will be guided in this by our vision of becoming the global leader in specialty chemicals – and the way to achieving this lies essentially via our sustainability strategy.



Hariolf Kottmann  
Chief Executive Officer



# Add Value **WITH SUSTAIN- ABILITY**



**W**ith the final declaration of its 1992 conference on the environment and development in Rio de Janeiro, the United Nations has required member states to take the precautionary measures within their capabilities to protect the environment, known as Principle 15 of the Rio Declaration. Accordingly, remedial actions may only be postponed if no serious or lasting damages to the environment are looming, or if the states would be financially overburdened to implement these measures. This principle connects environmental protection with a cost-benefit analysis and attempts to achieve a balance between ecology and economy.

Clariant has not only transferred this principle to the company, but it has expanded the environmental considerations with social aspects – the whole foundation for sustainability. Clariant has been investing in safe products and both efficient and environmentally compatible processes for years. The company continuously initiates measures to completely live up to its responsibilities towards employees, customers, shareholders and other stakeholder groups. The ongoing pursuit of trends and pertinent developments ensures the timeliness and appropriateness of all these activities.

## SUSTAINABILITY AS A STRATEGIC PILLAR

Clariant aims to become the leading specialty chemicals company in the world, with above-average value creation, based on sustainability and innovations for all customer groups. This requires that all employees focus on company values: Drive for excellence, disciplined performance management, deliver to promise, courageous and decisive leadership, lived appreciation and corporate responsibility. Clariant's strategy is based on the establishment of leading positions in the Business Areas in which the company is active.



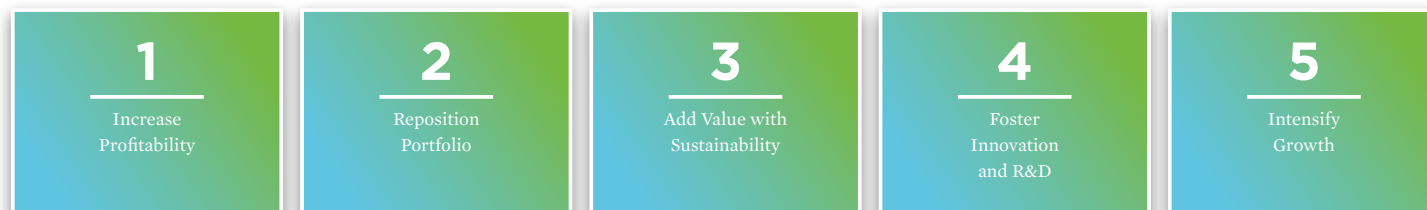
see Annual Report 2014, on page 40

Sustainable economic activities combine the success and growth of the company and its growth with the needs of society, each individual and the environment. This permanent optimization attempt is a process, which strives to reconcile demand, production, availability of resources, as well as technological and institutional changes. With this in mind, a company behaves in a sustainable manner if it completely integrates this understanding into its business processes and adjusts its economic actions accordingly.

Clariant has already achieved some important successes in its efforts to reach a balance between economical, ecological and societal interests. Sustainability awareness has increased continuously throughout the company over the past several years. In order to consolidate this trend and to document its significance, sustainability has been defined as one of the five pillars of the corporate strategy in 2014.

Sustainable economic activities play especially a key role in achieving the Group's objectives for growth. Without »sustainability-driven«, innovative products, companies will not remain competitive in the near future. This is why Clariant has established programs, initiatives, and long-term actions years ago in all important topic areas in order to become more sustainable in the sense sketched out above, and to increase the benefit for all stakeholders.

## THE FIVE-PILLAR-STRATEGY of Clariant



### STRATEGY TO INCREASE PERFORMANCE

#### Success With Broad Sustainability Approach

In all of its activities, Clariant commits itself to environmental protection and safety. The company's own regulations on the environment, safety, and health (ESH) are in line with the objectives of the Responsible Care® Global Charter (see page 12). Clariant has been certified worldwide according to the management systems ISO 9001, ISO 14001, OHSAS 18001, and also increasingly based on the standard for energy management, ISO 50001.

Clariant does not intend to become more sustainable in the long-term with implementation of a multitude of isolated solutions, but rather with a holistic approach. This includes societal responsibility across the entire value chain. All regulations, precautions and measures mesh across a product's entire life-cycle. This way, sustainability already attracts interest in the research and manufacturing phase of the preliminary products on the suppliers' side, and only ends with the final utilization of the product by the customer.

For this purpose, Clariant has started to examine and evaluate the entire product portfolio based on sustainability criteria in 2014. Comparable sustainability assessments are already being used in the research and development phase of the products (see page 19). In addition, Clariant is focusing more and more on the sustainability performance of its suppliers. For this purpose, Clariant has introduced a comprehensive set of rules (»Code of Conduct for Suppliers«) with corresponding control and sanctioning mechanisms (Initiative »Together for Sustainability«, see page 105).

#### The Value Chain in Clariant's Sustainability Strategy

- Research and development based on sustainable criteria for safe and environmentally compatible products (see pages 19 and 110).
- Suppliers' obligation for sustainable economics (Clariant's Supplier Code of Conduct) with comprehensive review mechanisms (see page 105).
- Production and logistics on a high safety level (internal guidelines for transportation, storage and production safety) (see page 109).
- Review and further development of the existing product portfolios based on sustainability criteria (see page 7).
- Efficiency in manufacturing and an increasing share of renewable raw materials (see pages 95 and 105).
- Safety for employees and customers (product documentation) (see page 59 and 117).
- High product quality and sustainable benefit for customers (see page 20).

The sustainability approach of Clariant extends to the entire company and production spectrum. Sustainable raw and input materials are preferred in purchasing, and not only in view of environmental aspects, but also with regard to labor and human rights. Production is as resource- and energy-saving as possible. Clariant was able to continuously reduce emissions, waste and waste water over the past years. Clariant ensures the safety of its (production) plants with continuous tests and examines them regularly for optimization potential. This commitment also pays off economically – for example, with lower energy or material costs for the manufacturing of the corresponding products. Each of Clariant's products is supposed to noticeably improve the benefit for the customers with regard to the intended use, and also in the interest of sustainability. This can be mainly accomplished with innovative products, which have long life cycles, reduce energy consumption, or are manufactured with renewable raw materials (also see pages 105 ff.).

### Portfolio Value Program

Clariant's Portfolio Value Program is a systematic approach to consistently evaluating the entire product portfolio utilizing sustainability viewpoints. This is done with an absolute observation (»How sustainable is a product really?«) as well as with a relative observation (»How sustainable is a product compared to similar products on the market?«). The result of this analysis gives indications of the nature and extent of necessary improvements in order to continuously optimize the entire product portfolio.

Existing sustainability instruments such as the EcoTain® concept, market standards and expectations of stakeholders have been analyzed and assessed as part of the Portfolio Value Program, accompanied by the »Collaborating Center on Sustainable Consumption and Production« (CSCP). On the basis of 36 criteria in the areas environment, society and economy, the portfolio's products are being examined throughout the entire life cycle on their strengths and weaknesses in reference to sustainability. Subsequently it becomes clear, which products already fulfill Clariant's sustainability standard, which have potential for improvement, and which qualify as »Best-in-Class« products for Clariant's enhanced EcoTain® label. This analysis provides additional arguments for marketing and better visibility of specific product performances, which achieve the sustainability standards with customers.



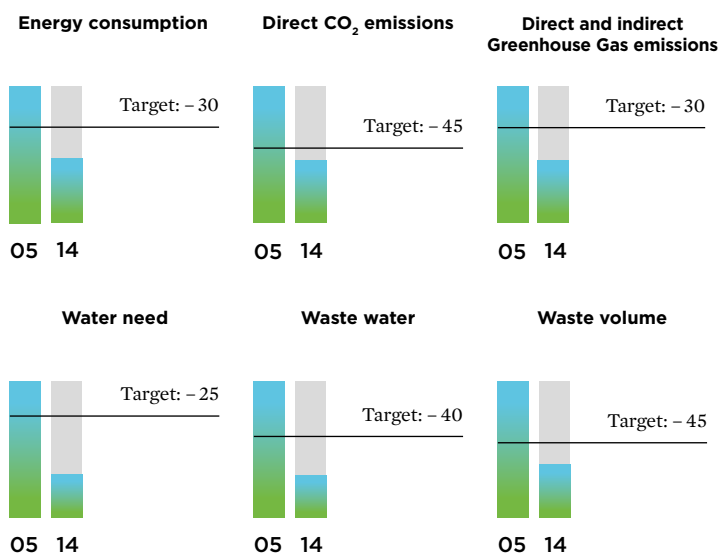
The analysis also shows the need for improvements and concrete action steps in order to optimize individual product attributes; for instance, with regard to their energy consumption, the raw material base, or relating to disposal. Such an approach gradually reduces risks in the product portfolio and increases its international competitiveness. Each optimization also increases these products' competitiveness and benefits for the customers.

## NEW ENVIRONMENTAL TARGETS FOR 2025

For the first time Clariant determined concrete target values for the reduction of the important environmental parameters of energy consumption, water use, waste and waste water volume, CO<sub>2</sub>- and greenhouse gas emissions in 2011. With these targets, gains in efficiency between 25 and 45 % should be achieved by 2020 compared to the base year of 2005. However, Clariant has been significantly faster than originally assumed. The targets were not only reached by 2013, they were exceeded. With portfolio adjustments (including the acquisition of Süd-Chemie), even higher reductions ranging from 50 – 70 % when compared to 2005 could be achieved.

However, Clariant does not want to stop with these achievements, but rather continue to increase gains in efficiency. Therefore, the company set even more ambitious environmental targets at the beginning of 2015. Simultaneously, Clariant has taken into account the acquisition and sale of companies or business units over the past few years and the changes in production structure that is involved.

TARGET ACHIEVEMENT UNTIL 2014 in % (per t of produced goods)

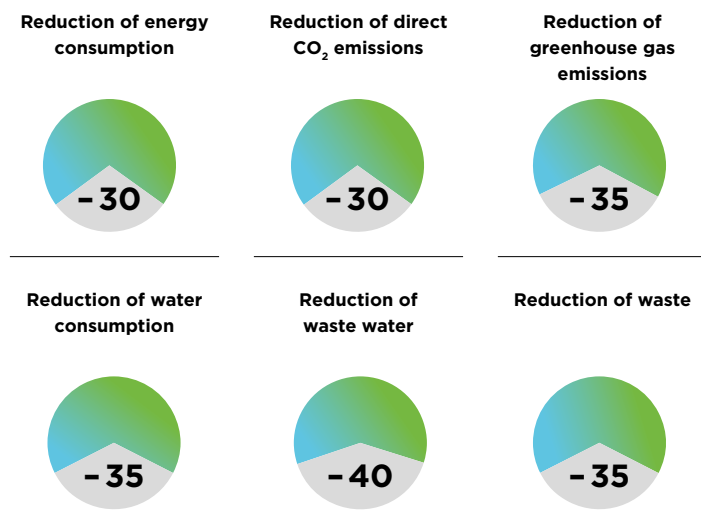


»The new environmental targets should meet our high sustainability requirement and contribute to a continuous improvement in all parameters.«

**MICHAEL SCHNEIDER**, Head of Environment

The new targets should be achieved by 2025 and continue to refer to relative figures, meaning a certain value per ton of produced goods. Based on the values of 2013, the energy consumption and CO<sub>2</sub> emissions should be reduced by 30 % within the next 12 years. The greenhouse gas emissions should be reduced by 35 % altogether, in the same extent as the amount of water used and the waste volume. The waste water volume should even be reduced by 40 % over the next 12 years. Clariant would have thereby achieved an improvement of about 70 - 80 % in all named environmental indicators over a span of 20 years.

— **NEW ENVIRONMENTAL TARGETS 2025** in % (per t produced goods)




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**> 20 m m<sup>3</sup>**

of water saved by Clariant over the last three years

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**= 170 000**

This corresponds to the average yearly consumption of 170 000 households with two persons

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### **Utilize Each Opportunity for CO<sub>2</sub> Savings**

Clariant does not seek to increase its revenues by exceeding the legally stipulated reductions in CO<sub>2</sub> emissions. Although Clariant has established an internal organization for trading emissions in accordance with the official regulations on the European trade in emission certificates, it has neither bought nor sold any certificates thus far. Any surpluses – in other words, lower-than-permitted emissions – have simply been »put on ice« rather than being sold.

### **Sustainability Targets Include the Supply Chain**

Clariant does not limit sustainable actions to internal processes and individual dimensions of sustainability. So sustainability targets were also introduced for the raw materials procurements for the first time during the year under review. All main locations, which use raw materials based on palm oil in their production, shall be certified by 2016 according to the criteria of the »Roundtable on Sustainable Palm Oil« (RSPO) for the so-called mass balance. In addition, Clariant committed to only purchasing palm oil-based materials that are certified and separated from non-certified palm oil along the supply chain starting in the year 2020. Thereby, it must be ensured that the end products contain only certified sustainable palm oil (also see page 113).

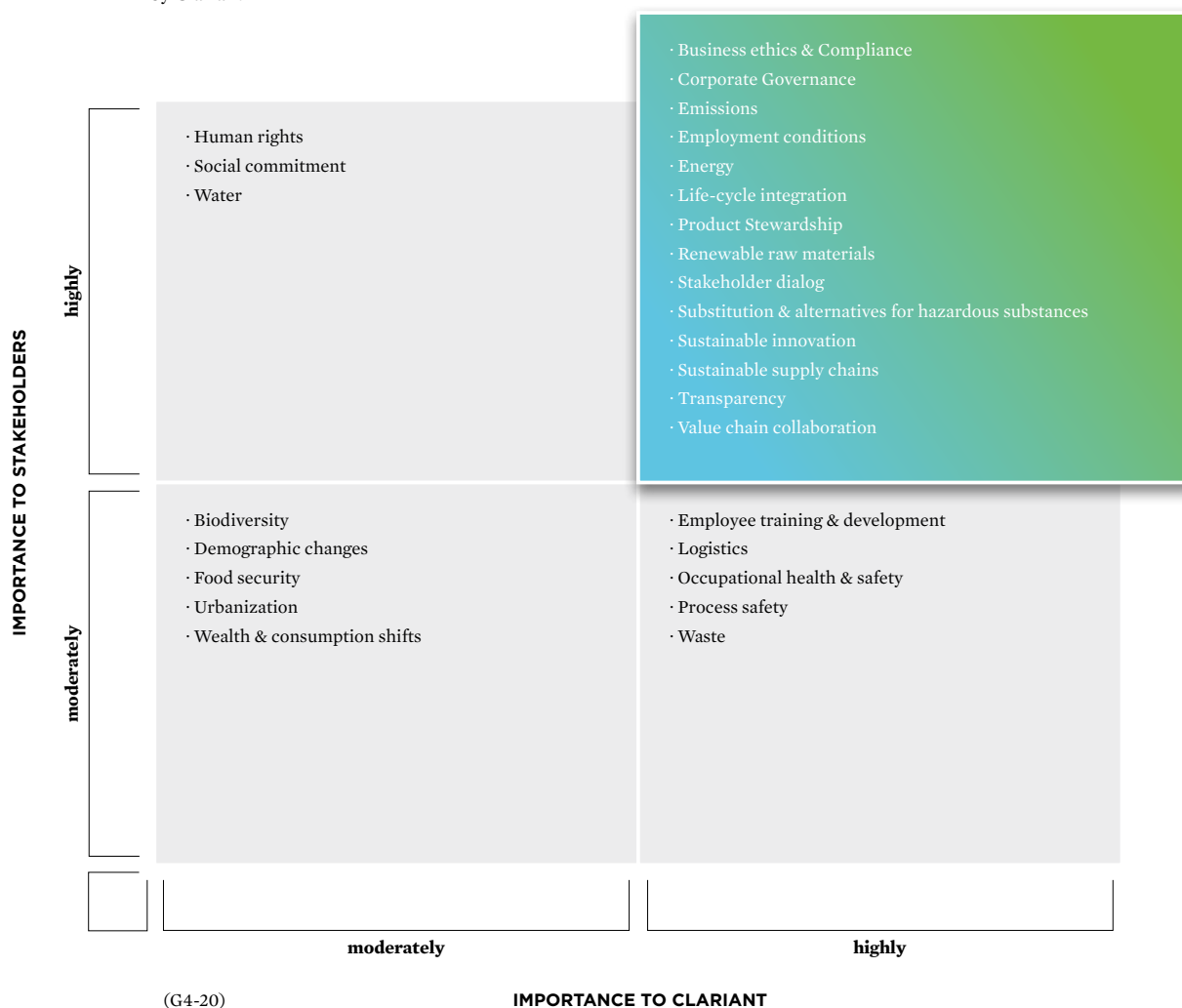
## **SYSTEMATIC SUSTAINABILITY STEERING**

Clariant focuses sustainable management on areas that inevitably stem from the action of a globally operating chemical company: work, plant, process, and product safety, environmental protection, innovation, employee responsibility and corporate governance. Add to those areas that are identified as essential by intensive dialog with the interests groups, the so-called stakeholders. Examples for such areas are employment opportunities, local social commitment within the scope of corporate citizenship, raw material and water management. To ascertain key areas of sustainable actions, Clariant conducted an intensive dialog with all relevant interest groups. Over 150 internal and external stakeholders were involved; global market trends and business drivers were evaluated and prioritized.

Clariant performs this analysis on a regular basis. The Sustainability Council, the central steering committee for sustainability under the chairmanship of the CEO, evaluates the results and determines sustainability themes and areas, which are relevant in any business year or have significance with respect to the plans and targets. Regional sustainability committees must ensure that the sustainability strategy in the regions is being undertaken and uniformly implemented.

The following materiality matrix gives an overview of the essential areas of the sustainability policy (G4-18). The matrix summarizes aspects with high and moderate relevance to Clariant's business and for the various stakeholders. This classification is also the result of comprehensive investigations within the previously men-

## MATERIALITY MATRIX by Clariant



tioned Portfolio Value Program. For this purpose, experts within and outside the company analyzed market trends and business drivers in terms of sustainability (see page 84). The themes and their guidance for the sustainability policy were tested for their timeliness and evident nature and finally adopted in the Sustainability Council in 2014. The information focal points of this report adhere to them (G4-19) (G4-21).

### Management Structure for Sustainability Steering

Clariant's Executive Committee, which is superior to the Sustainability Council, gives the guidelines for sustainable management and the corresponding control - the relevant templates come from the respective departments. The members of the Board of Directors and especially the Executive Committee have extensive expertise in economic, ecological and social issues. In order to be kept up-to-

date about current trends and developments to the aforementioned issues, their members collect information regularly from the responsible corporate functions and Business Units or they participate in appropriate events.

The »Enterprise Risk Management« (ERM) is a system initiated by the Executive Committee to identify, evaluate and manage risks to the company's business operations. It monitors specifications, measures and developments. A successful and sustainable business also depends on the recognition of possible risks and how they can be prevented and limited.

Furthermore, Clariant records hazards and potential opportunities with respect to environment, safety and health on all company levels, in all relevant functions and in all business areas with the »ESH Risk Portfolio« (environment, safety, and health). The essential risks are analyzed and communicatively prepared. This tool pro-

vides management with an overview of important ESH hazard potentials and risks. The risk assessment allows for the prioritizing of risk reduction. The overview of required and possible corrective actions is the foundation for an optimized allocation of ESH resources.

The relevant reports are routinely drawn up twice a year or more often if necessary. This approach ensures that all significant risks and avoidance/counteractive measures are indeed reported to the Executive Committee via the relevant managerial levels, and serious risks are presented to the Board of Directors via the CEO for appraisal.

## COMMITMENT FOR SUSTAINABILITY

As a leading specialty chemicals company, Clariant not only restricts itself to the adherence of legal regulations, but also commits itself to important global initiatives. All of Clariant's actions comply with the principles laid down in the Responsible Care® Global Charter, the Global Product Strategy, the UN Global Compact, and the company's internal Code of Conduct and Code of Conduct for Suppliers.

## Responsible Care

Clariant has signed the »Responsible Care® Global Charter« that was developed by the International Council of Chemical Associations (ICAA), which monitors compliance with this charter. The Charter is a self-commitment by the chemical industry worldwide to pursue continual improvements in the fields of environmental protection, product responsibility, work safety, transportation safety and dialog. Among other things, the Clariant national subsidiaries in China, Mexico and India were recognized for their achievements in these areas from their respective national chemical associations in 2014.



**RESPONSIBLE CARE®**  
OUR COMMITMENT TO SUSTAINABILITY

## Participation in Sustainability Initiatives

Clariant is involved in numerous interest groups and associations. Most notable activities are, for example, the International Council of Chemical Associations (ICCA), the European Chemical Industry Council (Cefic), and the European Technology Platform for Sustainable Chemistry (SusChem). The objective of SusChem is to promote and facilitate increased sustainability in the areas of research, development and innovation in European chemicals and biotechnology companies. SusChem is a joint initiative of Cefic, the German Society for Chemical Engineering and Biotechnology (Dechema), the European Association for Bioindustries (EuropaBio), the Society of German Chemists (GDCh), the Royal Society of Chemistry (RSC) and the Section on Applied Biocatalysis (ESAB) of the European Federation of Biotechnology (EFB). Clariant also commits itself to sustainability at the International Chamber of Commerce and in addition its national companies are represented in various national interest groups, e.g. the Association of International Chemical Manufacturers in China (AICM), the Business Association Chemistry Pharma Biotech (scienceindustries) in Switzerland, the German Chemical Industry Association (VCI) or the American Chemical Council (ACC).



»Anchoring sustainability in the company is a continuous process. Besides the overlapping, centrally managed initiatives, the sustainability concept is being implemented individually in all Business Areas and Functions«.

**JOACHIM KRÜGER**, Senior Vice President Corporate Sustainability and Regulatory Affairs (CSRA)

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

#### **Renewed Inclusion in the DJSI Sustainability Index**

All of these efforts also pay off financially. In September 2014, Clariant was again admitted to the European Dow Jones Sustainability Index (DJSI Europe), and for the first time to the global Dow Jones Sustainability Index (DJSI). This internationally renowned sustainability index selects stock-listed companies based on economic, ecological, and social criteria. Clariant fulfills these criteria and is counted among the leading 10 % of the companies in the chemicals industry in areas pertaining to sustainability. In the worldwide comparison of the chemicals industry, Clariant achieved one of the top five positions in 2014. For this performance, Clariant also received the »RobecoSAM Bronze Class Sustainability Award 2015«.



The renewed acceptance into the DJSI documents that Clariant not only meets European requirements, but is also recognized globally in the area of sustainability. The index is considered as one of the most important measuring sticks for the sustainability performance of leading companies. Extensive groundwork has been performed for this purpose. Clariant has developed a comprehensive program for the continuing improvement of its sustainability activities on all levels and advances the integration of sustainability targets for its business and product development.

The acceptance in the DJSI requires the provision of special performances in various areas of sustainability, in terms of economic, ecological, and social criteria. This not only applies to the fulfillment of legal requirements. By international comparison, Clariant was attested particular strengths for example in the areas of product stewardship or customer relationship management.

#### **Slowing of Climate Change as Important Environmental Challenge**

To date, Clariant has been unable to detect any noteworthy effect climate change may have had on its business, whether of a physical, regulatory, or financial nature. However, the company is extremely aware of this sensitive and urgent topic. The significant reduction of emissions into the atmosphere and therewith the clear reduction of CO<sub>2</sub> and greenhouse gas emissions are an integral part of Clariant's planning and investment strategy - independent from economic or seasonal fluctuations and special factors (see page 91).

At the same time, efficiency and international competitiveness must be increased in order to remain permanently successful. Climate change not only brings companies risks and challenges, but also opens the door to options. Business opportunities for Clariant lie in the development of innovative products which, for example, require fewer and fewer materials and a greater proportion of renewable materials and are produced by processes that consume less and less energy. The company offers solutions for the use of renewable energies, such as cellulose ethanol made from agricultural residues (see page 32).



# Performance. People. Planet

## PERFORMANCE

PHOTOGRAPHY JO RÖTTGER, TEXT BERTRAM JOB

**T**his voice comes across. Sonorous and firm it rolls through the rows of the audience, like an acoustic ball, touching everyone briefly. And before you realize it, it has made an impression on you. Just like that.

Deepak Parikh needs no microphone to carry his voice across the platform. But on this special day one has been provided. In his double-breasted suit he stands in front of his employees and some European guests to seize the moment. For all those who should be in good spirits now, albeit not self-righteous.

»We have the right people and the right projects,« he says with a confident gaze through his glasses, »and we have passion.« The game has not yet been won, he emphasizes, before coming to the closing appeal. He sounds like the call from a sports arena: »Bring the ball home!«

On this early afternoon, the topic is not about football or cricket, though. It is about the newly equipped laboratories for the development department of Clariant in Navi Mumbai. That is reason enough for a celebration ceremony in the stylish company cafeteria on the eighth floor – and thereby also for another appearance by its Managing Director and board member.

Deepak Parikh does not appear self-absorbed when he is about to give a speech. His calm demeanor at the microphone is an acquired trait. But each of these occasions is a welcome opportunity for him to step among the workforce, among the engineers, chemists and department heads, whom he has known by

their first names for a long time. But also to declare his core messages, succinct like a trainer.

»You can do it,« is one of these messages he disseminates again today. Another one: »You only have to tap your potentials in order for us to move ahead.« And lastly, again and again: »The time is now!«

Others may tire at some point of always playing the role of the motivator – Parikh has internalized it. Since the time the Doctor of Polymer Science & Engineering joined the Board of Directors of Clariant in India in March 2013, he has been on a personal mission. He would like to see this company flourish in a big way – representative of the overall economy of the country. Because he sees the opportunity.

»We want to grow,« he says. »Three to four times greater than the GDP of India. We can, we should and we will. To accomplish this we have to think more like an entrepreneur, not like a bureaucrat.«

»Or could they,  
through all the noise  
and dust, discern  
the will of the people,  
their desire for  
better conditions?«

**Lavanya Sankaran,  
»The Hope Factory«**

India has been the subject and promise in the world of chemistry since European companies began producing on the subcontinent about 60 years ago. And a gigantic domestic market: Almost 20 % of the earth's population (1.4 billion) live in the economic region that also includes Nepal, Bangladesh and Sri Lanka.

Now our infrastructure is moving towards a state of excellence, we have a stable political leadership and one, two younger generations of very well educated engineers and managers. It is for





them that Parikh would like to »remove the barriers,« remain in discussion with them and encourage self-initiative. »Ask for forgiveness, not for permission,« is another motto from his arsenal. It is his most effective weapon against hesitant behavior, which he fights at all levels, just as he strives to bring about holistic synergy among all business units and functions. »We must be quick, agile and flexible. The world is flexible – we cannot be stagnant.«

When Deepak Parikh assumed the leadership role, he realized what a difficult task it was to change the DNA of the organization in India. But he enjoyed it and brought in a paradigm shift. Almost every month now, some kind of progress, an interim stage, can be celebrated between Mumbai and Cuddalore, deep in the south of India. For example, a new laboratory that develops innovations for future markets, or upgraded production facilities that are more economical and more sustainable.

There has to be something to it, when 20 – 40 % of employees in America's digital »dotcom« companies have Indian ancestors, states Parikh. Curiosity and scientific talent are firmly rooted in

the gene pool, and if it can be accessed the entire company may benefit: »We must merely uncover the potential of our people and give their performance a lasting effect.«

Maybe one has to have gone away in order to see it so clearly. The chemical engineer from the University of Mumbai was twenty years old when he packed his shirts and ambitions into two bags and went to America. Once there he acquired a PhD in polymer science and engineering and worked for several chemical companies in positions of responsibility. He convinced as R&D mastermind and strategic manager and settled as a US citizen in North Carolina with his wife and two children.

The holder of 40 patents embarked on the adventure in India nonetheless. The intermittent return home is »a self-actualization« for him, as he states: »I would like to give back to the country of my origin. I believe in these people and would like to reach their souls. And I would like to see them shine.«

Since then, »change of mindset« has been the overriding theme in this company. The global citizen Parikh pursues it by relentlessly commuting between his new home in North Carolina and in Mumbai. In doing so, he often feels like Captain Willard in



the epic film »Apocalypse Now«: »Headquarters says do this, do that, and I must win the battle on the ground ... The Group wants profitable growth.« It was not an easy start. Less profitable businesses – »Leather Services«, »Paper Specialties«, »Emulsions« and »Textile Chemicals« – were sold. Then Captain Parikh turned his leading engineers loose so they could identify the weak points in the factories with their teams: Where and how are valuable resources not effectively utilized, how can efficiency be increased? »We corrected the course at the same location with the same people,« explains Parikh – »they make the difference. They wanted, they were able to and they did it.«

Meanwhile the productivity in the largest factories has increased by up to 20 %, and energy consumption was reduced by over 7 %. The Managing Director's satisfaction is obvious when he recites these numbers. They are at least an indication that the turnaround has happened. Now it's about improving speed and image on the way to growth. Especially with creative innovations for future markets. »I am an impatient guy,« states Parikh, »I want more.«

Hence the speeches wherever he goes, the motivation seminars for the leadership team, the many lived appreciation awards at the factory and the small gestures. Just like during the brief visits to the R&D laboratories: Those who still want to take a bow must expect the boss to pat them on the back. When in doubt, he would rather reach out to his people than dominate them. »Tickle the brain and you will reach their hearts,« he says. »Touch their hearts and you will reach the brain.«

Only a company that brings its people along has a chance in Depak Parikh's opinion. With this in mind, he promotes transformation, half commander and half colleague. At the new headquarters in Airoli, Navi Mumbai, the dynamically curved lines of the interior architecture set the direction. In addition, motto plaques in the hallways (»Think Big!«) evoke the new spirit. They replace the Managing Director with their resolve during his absence.

Between these walls everybody should be given a fair chance, regardless of religion, caste or gender. Parikh is convinced that more diversity will produce more quality in the end; and is change not already in the air? »Wander the floors during the week«, he says, »then you will feel them, the positive vibrations ... The numbers are happening, the sales are increasing, the team is motivated. Everything is in place.«



# Innovation **FOR GLOBAL TRENDS**

**A** focus on innovation and research & development is a prerequisite for continuing to produce internationally competitive products and to boost sales and higher margins for years to come. The development of innovative and tailor-made solutions to fulfill the requirements of the customers and development partners belongs to Clariant's core objectives. This requires fast market maturity of product developments, leading technologies, competitive product offerings, flexibility. »Thinking in solutions«, not only regarding products, is a prerequisite on all levels.

The significance of research & development at Clariant has steadily risen over the past years, as it is the goal to reach an additional annual sales growth of one to two percentage points with innovations as part of the strategic objective »Profitable Growth«. There are currently more than 300 innovation projects in development, of which 63 are in the category »Class 1 Projects«. These projects distinguish themselves with significant sales expectations, and therefore will be advanced with focused and intensive use of resources.

At the beginning of 2013, Clariant has also launched the »Portfolio Value Program« that captures Clariant's sustainability performance in three phases, develops sustainability instruments, and implements them throughout the entire company (see also page 7). Beginning in 2014, the entire product portfolio has been carefully scrutinized in relation to sustainability performance within the scope of this project in order to compare it with market standards. The insights from the program allow the definition of specific measures for the qualitative further development of the products and the portfolio as a whole.

### **Sustainability Assessment of Competing Research & Development Projects**

Sustainability begins with product development at Clariant. In order to assess development projects in terms of their absolute and relative advantages, Clariant introduced the »Corporate Sustainability Index« for research and development projects (CSI<sup>R&D</sup>), which goes beyond commonly used standards and legal requirements and is an integral part of the Portfolio Value Program. This index allows an assessment of the relative sustainability of new products in particular, as early as the beginning of the development phase – mandatory for all Class 1 projects. With this plan, Clariant wants to visualize the sustainability ideas and approaches early and ensure that all of the products developed today are still feasible and competitive tomorrow.

The CSI<sup>R&D</sup> is used to assess the products to be developed based on the criteria of economic efficiency (Performance), social responsibility (People), and environmental compatibility (Planet). Use and origin of raw materials, the production process and energy efficiency, as well as an inspection of the effects of product applications are examples of what is being examined. Based on these results, projects can be compared in terms of their cost-benefit ratios and sustainability. In this way the CSI<sup>R&D</sup> helps to optimize the entire development portfolio in the medium- and long-term. The higher the score of a certain project, the more attractive is the project in the context of sustainability. The CSI<sup>R&D</sup> creates competition between the different projects and provides additional transparency in the process. This motivates the R&D project managers to focus their projects on sustainability targets from the outset. Moreover, the index helps management to allocate resources optimally to projects and to increase the overall sustainability of the company's project and product portfolio.

Clariant is geared to research and development of global trends. The challenges that may arise from the global nutritional situation or the energy consumption caused by mobility, demand a forward-looking, integrated approach with a view on the total value chain.

# High Efficiency in FOOD PRODUCTION

As the world population grows, so does the meat consumption and therefore the demand for livestock feed. Agricultural land is shrinking or becoming barren, or it is used simultaneously for the cultivation of crops for energy production. In addition, the spoilage and waste of food is quite extensive. The consequence: Every eighth person worldwide still suffers from hunger despite the higher production yields in agricultural products; almost all of them are in developing countries. Altogether, more people die every year from

hunger and malnutrition than from AIDS, malaria and tuberculosis combined. Therefore, across the entire production and supply chain of food – from planting to the households – Clariant has developed products that on one hand increase the amount of available food, and on the other hand, make agronomy ecologically more compatible and also more economical.

## GLOBAL NUTRITION TRENDS BY 2050



<sup>1</sup> World Resources Report  
<http://www.wri.org/blog/2013/12/global-food-challenge-explained-18-graphics>

<sup>2</sup> [http://www.un.org/waterforlifedecade/food\\_security.shtml](http://www.un.org/waterforlifedecade/food_security.shtml)

<sup>3</sup> <http://www.shabait.com/categoryblog/11471-facts-about-fertilizer>

<sup>4</sup> <http://oecdinsights.org/2012/03/19/oecd-environmental-outlook-to-2050-were-all-doomed>

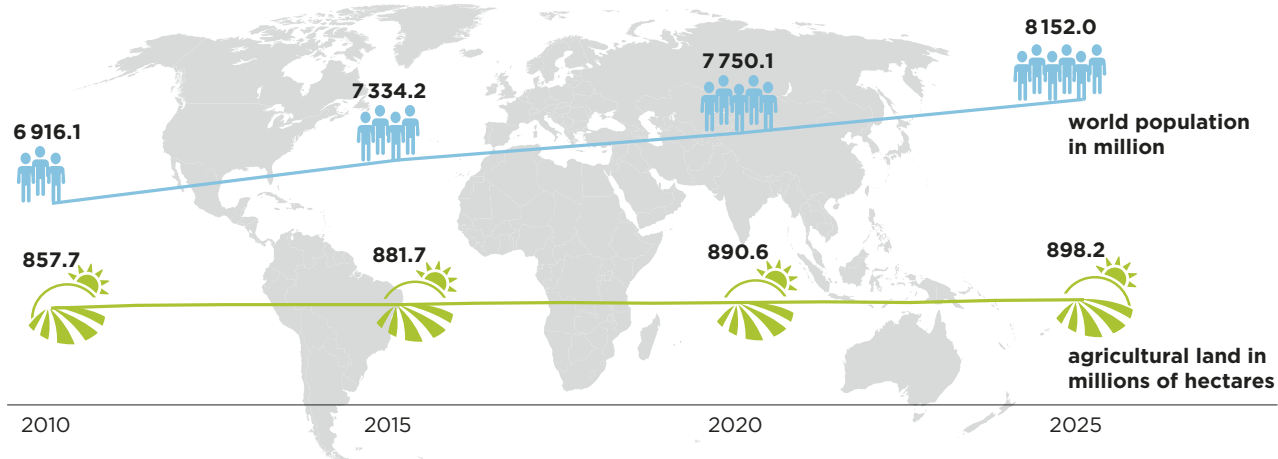


### Rising Demand for Food Requires Increased Agricultural Efficiency

The world population is growing increasingly faster. Based on a prognosis of the United Nations (UN), the number of people will rise by more than 50 % to 10.9 billion in the year 2100. In contrast, the global usable farmland increases significantly slower from currently 12.1 billion ac by only 4 % until 2025. The

Hamburg Institute of International Economics (HWWI) even predicts a reduction in farmland because of the increasing expansion of metropolitan areas and the risk of devastation, i.e. the decreasing soil fertility through biological, chemical and physical processes. The great challenge of the future will be to close the gap between population growth and availability of farmland by using the farmland more efficiently.

#### FORECAST ON THE CHANGES IN WORLD POPULATION AND AGRICULTURAL LAND



Source: United Nations – Department of Economic and Social Affairs, Population Division: World Population Prospects: The 2012 Revision (June 2013), available online at <http://esa.un.org> and Statista: Agricultural land worldwide from 1961 – 2011 (2014), available online at [www.statista.com](http://www.statista.com)

**OPTIMIZATION OF HARVEST YIELDS WITH BIODEGRADABLE EFFICACY BOOSTER FOR CROP PROTECTANT**

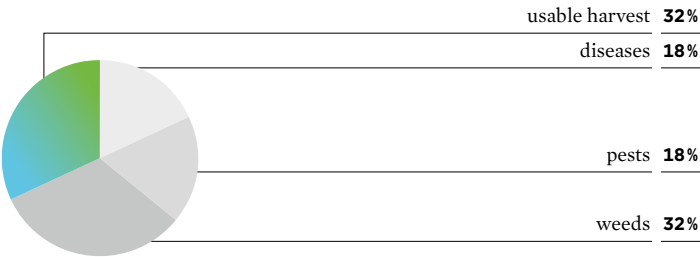
In order for a crop protectant to be effective at all, its active ingredient has to be introduced into the spray fluid (usually water) and transported to the sites of action on and inside the plant. This is accomplished with adjuvants (additives). Without adjuvants, crop

protectants in reasonable quantities often provide only a low or uneconomic efficacy. The challenge is to develop sustainable products that spare the environment and do not jeopardize human health. Synergen® OS is such a sustainable and yet high performing adjuvant developed by Clariant. It is manufactured from renewable raw materials, is biodegradable and has an excellent environmental profile.

**GLOBAL TOTAL LOSS DUE TO DISEASES, PESTS AND WEEDS**

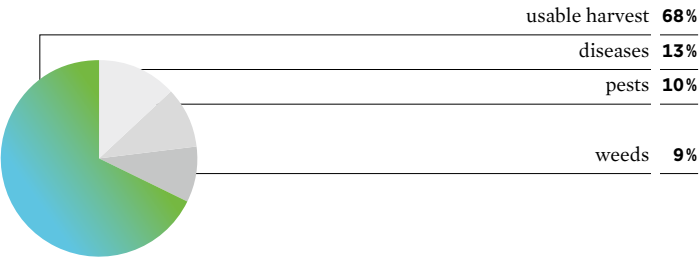
**Without crop protection**

up to 68 % of crops could be lost



**With crop protection**

reduces the potential crop loss by approximately 53 %



Source: Acc. to Oerke, E.-C.: Safeguarding production – Losses in major crops and the role of crop protection, Crop Protection 23 (2004), p. 275 – 285

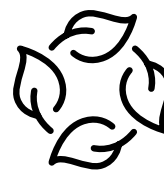
»Synergen® OS is highly effective. A concentration of merely 0.1 % in the spray liquid is sufficient to increase the biological efficacy, whereas conventional adjuvants commonly require 5 – 10 times higher dosages.«

**PETER BAUR**, Head Competence Center Crop Solutions

### Improved Combination of Natural Substances

Synergen® OS is a combination of the nature-based ingredients MSO (Methylated Seed Oil) and PGE (Polyglycerol Ester). MSO is an adjuvant made out of vegetable oils such as rapeseed, sunflower or soybean oil, which is already frequently being used in agriculture. PGE is an emulsifier out of coconut oil that is harmless for the environment and health and is also being used in food and cosmetics. PGE and MSO have proven difficult to combine with each other thus far because of their differing solubility characteristics. Clariant has now developed a tailored PGE, which is easy miscible with MSO due to its special properties and suffices as the sole emulsifier for MSO. The particular strength of Synergen® OS lies in the combination of two properties. On one hand, the adjuvant ensures a faster penetration of the crop protectant into the inside of the leaf; on the other hand, the adjuvant significantly reduces the drift of the liquid during the spraying process so that considerably less spraying agents are lost or applied to the wrong areas.

### BENEFITS OF SYNERGEN® OS



BIODEGRADABLE



HARMLESS TO HEALTH



HIGHER CROP YIELD

## BETTER REGULATION OF THE CROPLAND'S MICROCLIMATE

The cultivation of plants in a climate-protected room significantly helps to increase the food production with a given amount of arable land. This principle of a greenhouse was already known 2000 years ago. A deciding development step, namely the use of plastic film in agronomy, took place in the middle of the last century. At that time the expensive greenhouse glass was replaced for cost reasons by cellulose acetate and later by polyethylene film. A short time later, they were replaced by mulch films made of low density polyethylene (LDPE).

Today agricultural films are used worldwide in greenhouses as mulch films and in silage production; their technical properties have been steadily optimized. This enables resource conservation and optimizes cultivation yield of food because greenhouse films provide a targeted control of light and temperature. This not only positively influences the water supply, but also protects against pests. Film characteristics can be adapted to the cultivated products and local conditions.

### BENEFITS OF HOSTAVIN® NOW



INCREASED LIFESPAN



ENVIRONMENTALLY COMPATIBLE



INCREASES YIELDS

## Delayed Aging of Plastic Films Thanks to Tailored Solutions

Strong sun rays and high temperatures not only damage agricultural products, but greenhouse films age faster and become brittle. Substances such as oil-based solvents in paints, wood preservatives, or protective plant sprays containing copper additionally corrode the films. Other pesticides like today's increasingly used sulfur (the primary plant protection agent in ecological agriculture) contribute to quicker aging of the agricultural films. The same applies for halogenated, often chlorinated chemicals for pest control. Against this background, Clariant has developed tailor-made AddWorks® AGC solutions for agricultural films using the Hostavin® NOW technology in order to considerably slow down the aging of plastic films applied in agriculture. The product functions thereby as a light stabilizer and collects the so-called free radicals that occur from the exposure to UV rays or high temperatures from the film itself and neutralizes them. Regarding the negative effect of crop-protecting agrochemicals or pesticides, the Hostavin® NOW technology stabilizes the chemical structure of the films and protects them thereby. Thus, Hostavin® NOW prolongs the lifespan of agricultural films considerably by raising the total effectiveness.

## Multi-Functional Use of Films in Agriculture

High performing greenhouse films can accomplish many tasks. They allow the light spectrum, needed for the photosynthesis of plants, to pass undisturbed while simultaneously shielding any other rays. The use of film reduces the temperature in the greenhouse; less water evaporates in the greenhouse and in the plants. In cooler regions, it prevents a big loss of heating energy. In addition: Films block certain wavelengths of light and thereby prevent sun damage and plant diseases such as fungal growth.

»The use of Container Dri® II helps to minimize food waste, supports global aid transports with food, and most importantly, ensures that hundreds of thousands of tons of food reach the people who need it most, while the good quality is preserved«.

**JUSTIN MUELLER**, Head Business Group Cargo & Device Protection, BU Functional Minerals

### FOOD PROTECTION IN TRANSIT

The spoilage of food in transit over long distances is a serious problem. The United Nations Industrial Development Organization (UNIDO) estimates that up to 40 % of the harvested food annually is lost in transit. Steel Containers are frequent transport receptacles. Inside the steel containers, water vapor condensate can easily form, predisposing the goods to fungal colonization, change in flavor, rotting, corrosion of metals, or color fading. Cartons and packing materials are also affected by the water, which may impair the sturdiness of the packaging and lead to cargo damage. The safe transportation of food is therefore a critical factor in the fight against global food loss.

### Excellent Protection Against Humidity and Water Damage

For this purpose, Clariant has developed the drying agent Container Dri® II that provides reliable protection against humidity and water damage. The formation of condensation, so-called container sweat, is effectively prevented. This granular drying agent has a high absorption capacity and can hold up to three times its weight in water from the atmosphere. While absorbing water from the atmosphere, it transforms into a gel which securely locks in the water. Container Dri® II is completely non-toxic and the saturated dehumidification bags can be disposed through the normal industrial waste. The product offers a high level of safety and is extremely effective for all temperature and humidity ranges.

#### BENEFITS OF CONTAINER DRI® II



PREVENTS DAMAGE CAUSED  
BY MOISTURE



NON-TOXIC



EASY DISPOSAL

## MANUFACTURING OF FERTILIZER WITH REDUCED ENERGY REQUIREMENT AND AT LOWER COSTS

People have tried to increase agricultural yields with different adjuvants since the beginning of farming. At that time, only animal and human excrements were used. The Romans already used nitrogen-collecting plants, which were plowed into the soil as fertilizer. In the Middle Ages, alchemists dealt with the aspects of nutritional plant physiology and the nutrients supplied by the soil. However, from an agricultural perspective, the breakthrough was achieved only when German chemist Justus von Liebig recognized the importance of chemical fertilizer production in 1840. Although Liebig's experiments did not lead to success per se, he laid the groundwork for the utilization of inorganic substances such as ammonia. At the beginning of the 20th century, the first ammonia synthesis was developed. The most important industrial process for the manufacturing of ammonia to date was invented by chemist Fritz Haber and engineer Carl Bosch.

Nitrogen generates the strongest yield reaction of all plant nutrients. At the same time, Ammonia is an important basic chemical in the production of many nitrogen-containing substances. In everyday life, it is found in various products ranging from colorful synthetic fibers in clothing to pharmaceuticals, or baking powder to most rubber products, such as tires. However, only 20 % of the ammonia production is attributable to these various applications, while 80 % of the commercially manufactured ammonia is being processed for nitrogenous fertilizers, predominantly ammonium nitrate and carbamide.

The global energy consumption of the synthesis of ammonia equals approximately the annual energy consumption of all German households combined. Thus, Clariant has worked to make the Haber-Bosch method, which has hardly been changed in 100 years, more energy-efficient. They succeeded with the development of the innovative and highly active catalyst AmoMax®-10. Thanks to its special compilation, the ammonia production clearly requires less energy.

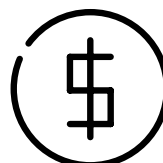
## Larger Catalyst Surface Increases the Efficiency

AmoMax®-10 consists mainly of the iron oxide-containing mineral wüstite. With system-optimizing promoters, this mineral increases the total surface area of the catalyst after activation and increases the number of active centers. As a result, the activity is 40 % higher compared to catalysts based on magnetite. AmoMax®-10 already operates very efficiently at lower temperatures and less pressure and ensures significantly reduced energy needs for the ammonia production. Approximately 90 ammonia production facilities that switched to AmoMax®-10 have been saving approximately 1 200 gigawatt-hours annually so far, which equals the energy needs of a city with 60 000 households.

### BENEFITS OF AMOMAX®-10



ENERGY SAVINGS 40 %



LOW INVESTMENT COSTS



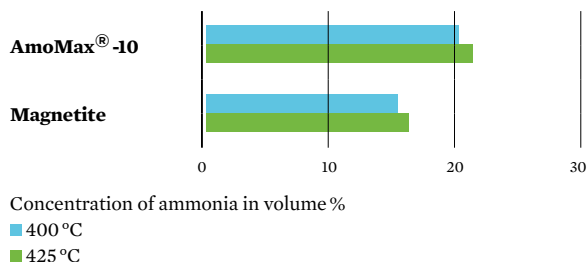
SAVES UP TO ANNUALLY  
USD 500 000 IN ENERGY  
COSTS PER FACILITY

»Thanks to AmoMax<sup>®</sup>-10, new ammonia production facilities could be designed smaller with the same output and would therefore be more cost-efficient. This is progress which significantly facilitates the production of ammonia as a source substance for the worldwide urgently required fertilizer.«

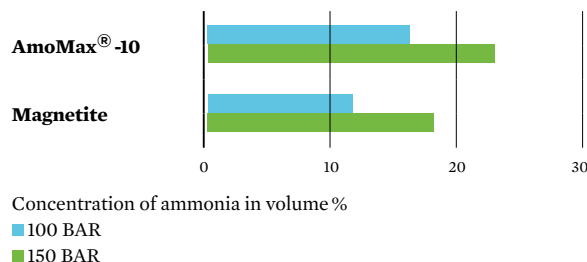
**STEFAN GEBERT**, Product Manager for Catalyst Technology

#### PRESSURE AND TEMPERATURE DEPENDENCY OF THE AMMONIA YIELD OF AMOMAX<sup>®</sup>-10 COMPARED TO A CATALYST BASED ON MAGNETITE

Temperature dependency



Pressure dependency



#### More efficient Extraction of Phosphorous for Fertilizer

Clariant optimized the apatite collector in the froth flotation process for a large phosphate mine in South America, in which the apatite is extracted from the ore for the production of fertilizers. The special feature of igneous origin ores, containing low levels of apatite, the mineral who contains the phosphorus, needed a collector with high selectivity, allowing the extraction of apatite, with a purity level of at least 35 % P<sub>2</sub>O<sub>5</sub> (phosphorous pentoxyde). The collector Flotigam<sup>®</sup> 5806, was developed in conjunction with the client and adapted to very specific requirements for that mine. The Flotigam 5806 is mainly made of renewable raw materials based on vegetable oils. Therefore, the product will meet several goals at once: Increase of exploitation due to an adjustment tailored to the special characteristics of the rock, improving the level of quality and sustainability profile.

»150 years of experience in this field, the collaboration of geologists and extensive studies build a solid foundation for this clay mineral as the ideal, natural solution against the risk of mycotoxins.«

**FRIEDRICH RUF**, Head Application Development

## DECONTAMINATION OF FEED TO PROTECT THE LIVESTOCK

Livestock is very important for human nutrition. Almost 40 % of the human protein intake is covered by livestock. Eggs, milk and meat serve as food products worldwide. A large portion of the dry feed used for livestock consists of grains such as corn, wheat, barley and oats, but also soybeans and rice. Under certain environmental conditions, several types of mildew and therefore also poisonous mycotoxins form in feed.

A global study ordered by the Austrian feed producer Biomin was conducted in 2012. It showed that more than half of all samples were contaminated with several toxins. The degree of burden for the different mycotoxins was between 23 % (Ochratoxin A) and 59 % (Deoxynivalenol) of all tested samples.

## Toxins from Fungus Impair Health

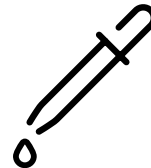
It only takes low concentrations of mycotoxins to show a toxic effect in humans and animals. Acute or chronic poisonings can be observed depending on the substance. Symptoms cover a broad spectrum ranging from damage to skin, mucous membranes, liver, and kidneys, to a weakened immune system and hormonal effects such as reproductive disorders. Some mycotoxins are carcinogenic or could cause genetic defects. According to the International Food Policy Research Institute (IFPRI), 26 000 sub-Saharan Africans die from liver cancer annually, which is linked to aflatoxin contamination from consumed food.

Mycotoxins are also responsible for an enormous economic loss. The Food and Agriculture Organization of the United Nations (FAO) estimates that mycotoxin contamination leads to an annual loss of 1 billion t of food products worldwide. This amount would be sufficient to feed the entire starving world population of almost 900 million people for three years.

## Elimination of Toxic Substances in a Natural Manner

Clariant has developed a compound Toxisorb® Premium for the improvement of storage conditions of feed. Toxisorb® Premium possesses a very broad spectrum of effects. Thanks to its exceptionally absorptive large-pored surface, it can bind more than 90 % of all toxins simultaneously. Only a very small dosage is required – a mere 0.1 – 0.5 grams per kilo of feed. Thanks to its open structure, the clay mineral used for Toxisorb® Premium offers the most diverse toxins – independent of their load or structure – the perfect conditions for docking harmful substances. Hydrophilic and hydrophobic layers react with their polar and non-polar »counterparts« of mycotoxin molecules and bind them firmly to themselves. With Toxisorb® Premium, Clariant eliminates toxic substances in a natural manner, contributing to the health of animals and the safety of food products. This high-quality raw material is merely dried and milled before use and complies with all legal requirements for feed additives.

## BENEFITS OF TOXISORB® PREMIUM



HIGHLY EFFICIENT EVEN  
AT A LOW DOSE



100 %  
NATURAL PRODUCT



PRESERVES ANIMAL HEALTH AND  
PREVENTS ECONOMIC LOSSES



## **IMPROVED PACKAGING MATERIALS EXTEND THE SHELF LIFE OF FOOD**

An essential factor in food spoilage is the contact with oxygen. In order to protect food, different methods have been developed over the centuries that were adapted to the prevailing climatic conditions. Nevertheless, today about 1.3 billion t of food are thrown away annually worldwide. This corresponds to one third of the world's annual production of food. According to the World Packaging Organization (WPO), between 25 and 50 % of food is thrown away in developed countries because it exceeded the expiration date.

The effectiveness of the packaging plays a decisive role with respect to the length of shelf life. The thicker, more stable, and insulated the packaging, the greater is its protective effect. However, this condition of effectiveness for packaging often collides with the environmental provisions such as energy consumption in the manufacturing of the packaging or waste prevention. The demand for minimizing packaging, as well as the demand for not using plastic based on crude oil in the manufacturing of food packaging result from these environmental conditions.

## **Packaging Has Multiple Stipulations to Fulfill**

Food stays fresh longer if it is stored in high-performance packaging, which prevents the passage of oxygen and thereby prevents the content from spoiling. There are only two materials that completely protect from contact with oxygen: metal and glass. Metals like aluminum are mainly used in cans for preserved food and beverages. In addition to a comparatively poor life-cycle assessment, disadvantages of aluminum include the potential impact on the flavor of the packaged food. Highly sensitive baby food is therefore mostly filled into jars.

Plastics such as PET are used for beverages such as juices, milk and carbonated drinks besides the more expensive and heavier glass. However, plastics have a certain permeability contrary to glass and metal. Additional barriers are therefore necessary in order to attain the needed protection.

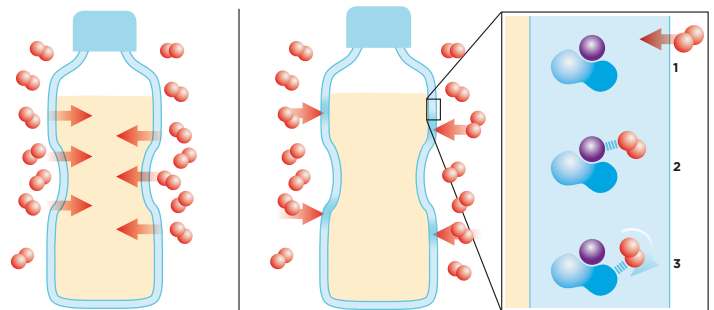
»With the new oxygen barrier under development at Clariant the transparency and recycling ability of PET packaging are preserved. Thanks to our product, even demanding thin bottle walls and small containers offer very good protection against oxidation. As a result, this extends the shelf life of sensitive foods and reduces the amount of packaging material needed.«

**ANGELICA MARSON**, Head Global Innovation, BU Masterbatches

### Extended Shelf Life of Food due to an Integrated Oxygen Barrier

Clariant is currently developing a new masterbatch with an integrated oxygen barrier, which better protects the packaged food and thus clearly lengthens the shelf life. The barrier is very durable and also provides reliable protection for demanding products, which, for example, must be preserved for more than twelve months. The oxygen barrier can be combined with colors and other additives that take on a variety of different tasks. This allows light-sensitive food to be fully protected by integrated UV absorbers. This preserves transparency and recycling ability of the packaging. Even thin-walled packaging and smaller containers guarantee a good protection from oxidation, which saves packaging material.

### CONTENT PROTECTION BY BINDING OXYGEN IN THE PACKAGING



The oxygen scavenging units integrated into the package wall bind the oxygen tightly. This protects the package contents against oxidation.

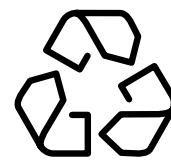
### BENEFITS OF OXYGEN BARRIERS



EXTENDED SHELF LIFE OF  
OXYGEN-SENSITIVE PRODUCTS



REDUCTION OF  
FOOD WASTE



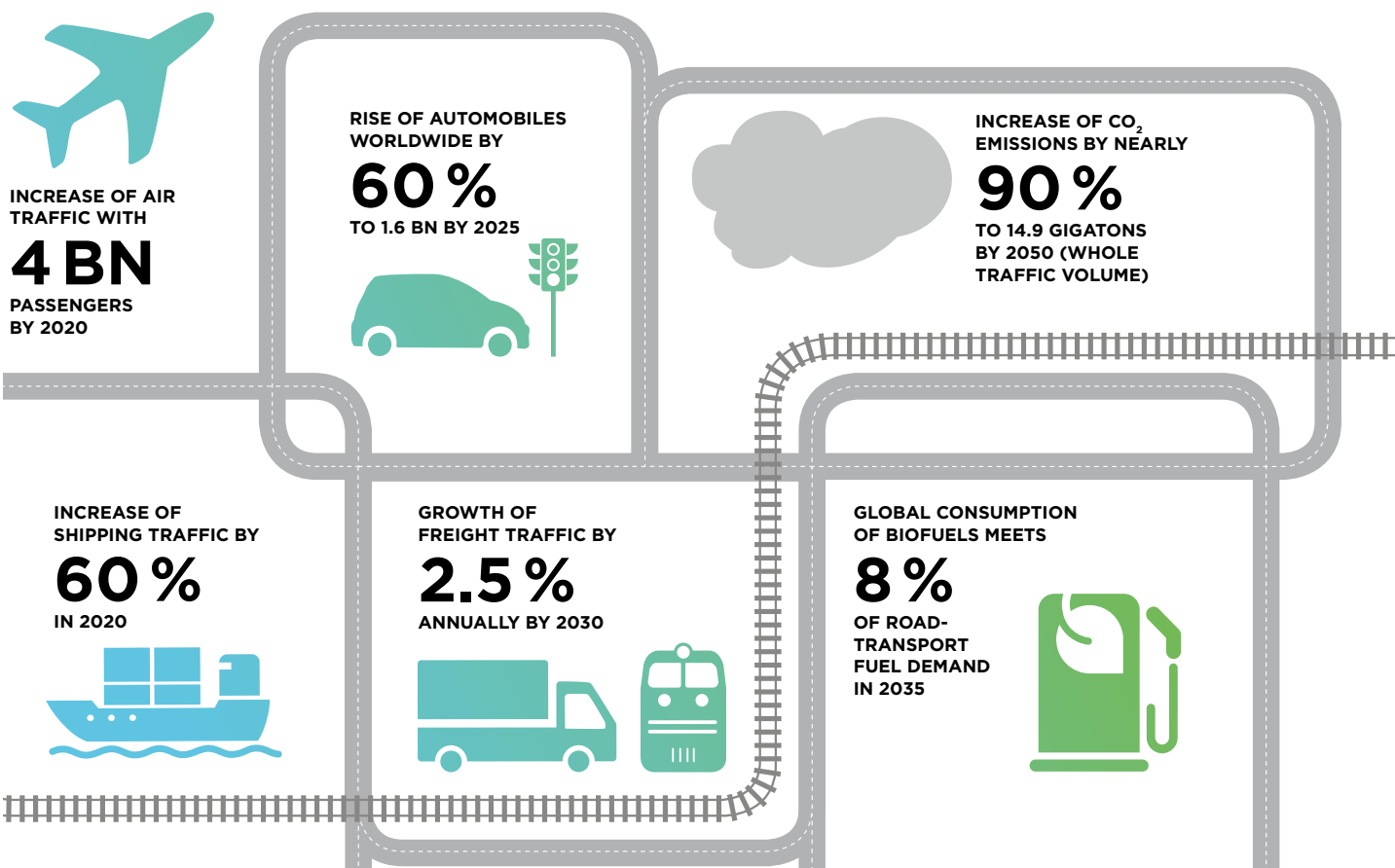
ENSURES RECYCLABLE  
PACKAGING MATERIALS

# Innovative Ways to **SUSTAINABLE MOBILITY**

Mobile independence is a need of modern society. There are about 900 million cars worldwide today; the tendency is increasing. The International Energy Agency predicts more than two billion vehicles by 2050. The mobility sector is already responsible for 23% of the global CO<sub>2</sub> emissions, of which 73% comes from road traffic. The rising number of vehicles reverses the efficiency gains achieved by improved propulsion systems. Therefore, the growing traffic vol-

ume worldwide has significant effects on resources and the environment. The sustainability of the various mobility concepts is determined by different factors and encompasses aspects such as vehicle production, vehicle operation and recycling of vehicles. Broad solutions must be found in order to attain effective improvements for a more sustainable mobility.

## GLOBAL MOBILITY TRENDS



Source: Siemens survey; <http://www.siemens.com/innovation/en/home/pictures-of-the-future/mobility-and-motors/Urban-Mobility-Dossier.html>;  
<http://www.plasticseurope.org/Document/automotive---the-world-moves-with-plastics-brochure.aspx?FolID=2>

## BIOFUEL PROVES ITS STRENGTHS IN THE FLEET TEST

The so-called E20 fuel sunliquid® 20 consists of 20 % cellulose ethanol, which is not extracted from edible plants, but rather from wheat straw or other inedible agricultural by-products with the help of the sunliquid® method. Cellulose ethanol remains almost entirely CO<sub>2</sub>-neutral during its production, and thereby saves almost 100 % in CO<sub>2</sub> emissions compared to gasoline.

Thereafter, cellulose ethanol is mixed with conventional gasoline components and added to the new fuel sunliquid® 20 by the partner company Haltermann, which specializes in the manufacturing of special fuels. The cellulose ethanol content in sunliquid® 20 shows particularly high greenhouse gas savings across the entire value chain. Cellulose ethanol gives the fuel an extraordinarily high knock resistance with 100 octane (RON) and guarantees optimum efficiency.

This fuel was not only convincing in the development, but also during fleet tests. Clariant, Haltermann, and the car manufacturer Mercedes-Benz have conducted extensive tests throughout the 2014 year. The results substantiate the high quality and excellent properties of the sunliquid® 20 fuel. Sunliquid® 20 ensures an improvement of the engine efficiency through its first class combustion properties. For this reason, the 4 % lower energy content compared to E10 will be more than compensated.

The sustainability of the fuel (CO<sub>2</sub> savings) is therefore significantly increased while keeping the consumption stable. Besides the excellent performance, the 50 % improvement in particle emissions with sunliquid® 20 compared to the EU reference fuel is quite significant. This would already permit consumers to fill their vehicles without compromising range and driving comfort with a fuel that is more environmentally compatible and would not require any adaptations to the current gas station infrastructure in Europe.

### BENEFITS OF SUNLIQUID® 20



USE OF LOCALLY AVAILABLE  
RAW MATERIALS



UP TO 95% LOWER GREENHOUSE  
GAS EMISSIONS COMPARED  
TO FOSSIL FUEL

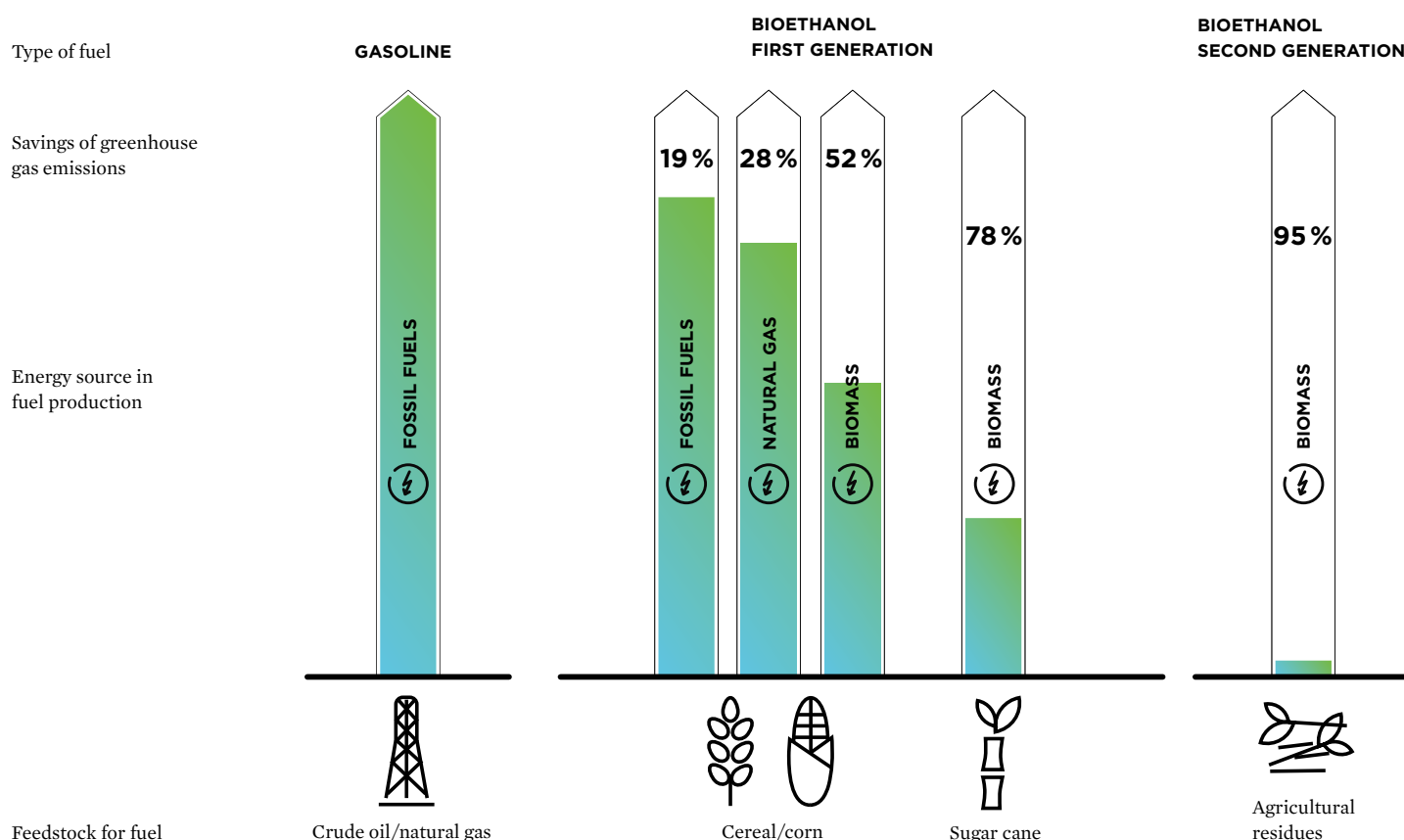


EMPLOYMENT CREATION AND  
INCOME FOR LOCAL FARMING

»Cellulose ethanol made from agrarian residues can play a key role in making mobility more sustainable. Here we have a truly advanced next-generation biofuel, whose performance has been confirmed in the fleet testing with standard vehicles.«

**ANDRE KOLTERMANN**, Head Group Biotechnology

**SAVINGS OF GREENHOUSE GAS EMISSIONS IN THE PRODUCTION OF VARIOUS BIOFUELS** compared to gasoline



Source: Michael Wang, May Wu, Hong Huo (Center of Transportation Research – Argonne National Laboratory): Life-cycle energy and greenhouse gas emission impacts of different corn ethanol plant types (22.05.2007), in Environmental Research Letters, Volume 2, Nr. 024001, p. 12, available online at <http://iopscience.iop.org> and Markus Rarbach (Clariant): Zellulose-Ethanol aus Agrarreststoffen – Biokraftstoff der 2. Generation für eine nachhaltige Mobilität (02.12.2011), p. 28

CONSIDERABLE IMPROVEMENTS IN THE RECYCLING OF PLASTICS

The processing and reutilization of already used raw materials helps in the pursuit of several goals. It lowers the need for new raw materials while at the same time saving energy compared to the production using new raw materials, and it reduces (residual) waste. This makes particular sense with plastics. The need for crude oil is significantly lower here. Plastic is a highly sought-after material, not only in order to save weight – for example, in component manufacturing (structural parts, seat upholstery, carpets) for automobiles, trains and airplanes.

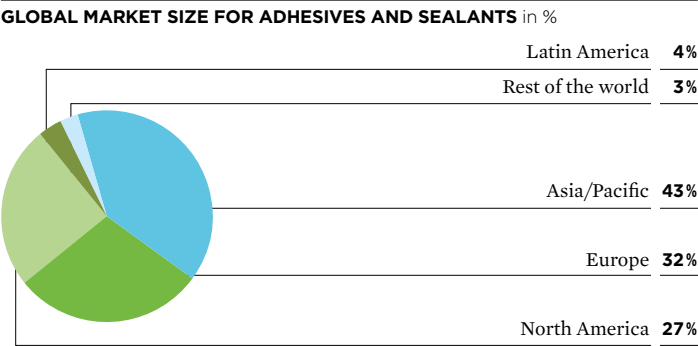
Nowadays, on the average a good 100 kg of pure plastic is built into every car – including composite materials and reinforced plastics, this weight proportion is actually almost double. Compared with other materials used in car manufacturing, this share of plastic has risen steadily over the past 40 years from 6 % to approximately 15 % and increasingly replaces iron and steel. The reasons are the diverse application possibilities for plastic in light-weight construction, the easier assembly, and improved functional integration, as well as the improved freedom of design.

Quick and Complete Separation of Textile Components in Vehicles

Textile components such as carpets and linings in cars, trains, ships or airplanes are used for aesthetic reasons, to reduce the noise level, and for slip-resistant floor spaces. For example, large installed carpet areas result in a large amount of material for disposal. In order to achieve high recovery rates and to keep the recycling process as energy efficient as possible, it is important to pay attention to a

good recycling capability as early as in the development phase of the components. This is especially important for the European automobile industry, which is obligated to recycle 95 % of the weight of a new car being placed on the market, starting in 2015.

Carpeting, a frequently used light-weight material, consists of several layers: a lower layer often made of latex dispersions or polyurethane, a middle layer to fix the carpet fibers in the support fabric (often connected with an adhesive to the lower level), and the top layer made out of various fiber materials such as virgin wool, cotton or plastic, and a carrier material. Carpets are almost always glued onto the substrate to avoid shifting. Consequently, a considerable portion of the carpet that needs to be disposed consists of adhesive residues. These adhesives, for example made from a synthetic latex base, usually are connected with the used plastics in the carpet, therefore making homogeneous recycling impossible.



Source: John Baker: Putting adhesives growth on the map. ICIS Chemical Business (30 September – 6 October 2013).

»Licocene® offers outstanding soundproofing and vibration absorbing properties. It lowers the weight of carpet floorings for example considerably – an Airbus A380 equipped therewith saves over 70 000 liters of kerosene per year.«

**SEBASTIJAN BACH**, Head of Technical Marketing BL Waxes, BU Additives

### High Adhesion and 100 % Recyclability

Against this background, Clariant developed Licocene® Performance Polymers, multi-functional polyethylene- and polypropylene waxes, which are clearly superior to traditional bonding techniques. Licocene® combines the high mechanical firmness of polymers with the easy formability of waxes. Licocene® has a low melting point (low processing temperatures) and viscosity, quickly sets, and needs less energy and no water during the production. However, it has an extraordinary bonding strength. Licocene® is tailor-made according to customers' wishes because its properties, such as hardness, melting point, transparency and viscosity, can be selectively adjusted.

Carpets glued together and produced with Licocene® can easily be recycled up to 100 % as homogeneous composites (carrier materials, fibers, and Licocene® as adhesive). Licocene® Perfor-

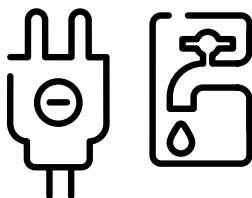
mance Polymers demonstrate an excellent environmental and health profile. Significantly less volatile gases arise from the production and the finished product. In comparison to other adhesives, they are completely non-toxic; different than latex materials, they do not cause any eye or skin irritations and possess no allergenic potential.

An advantage regardless of the recycling factor – both for the automobile and the airplane industry – is the possible weight reduction of the installed carpets when using Licocene®. From the viewpoint of fuel efficiency, Licocene® can contribute significantly to the savings of fuel and thus of emissions that are bad for the environment. An Airbus A380, for instance, uses 71 500 l less kerosene per year and causes 173 320 kg less CO<sub>2</sub> emissions if it is equipped with Licocene®.

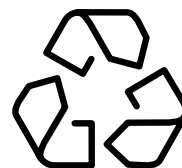
### BENEFITS OF LICOCENE®



INCREASED PERFORMANCE



WATER- AND  
ENERGY-SAVINGS



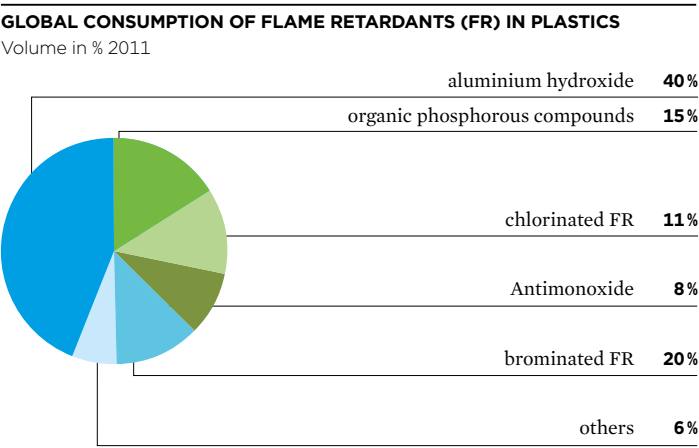
100 %  
RECYCLABILITY

RISK-FREE FLAME PROTECTION

Flame retardants are chemical substances, which effectively change the material properties relevant for a fire (flammability, extinguishing ability, flame spread, thermal release, smoke formation). Materials in building construction are currently the largest application field for flame retardants; however, the need for flame retardants is rising considerably in the automobile and airplane industry. Important drivers in this regard are the increased use of light weight components made of plastic on the one hand with simultaneously higher temperatures in the engine compartments due to smaller engines giving off more heat, and stricter flame protection standards in the airplane industry on the other hand. Considerable value is already being placed on the environmental compatibility of the used flame retardants. This causes questionable halogenated substances to lose market shares to environmentally more compatible, phosphorus-based flame retardants. Nevertheless, the absolute amount of halogenated flame retardants used is increasing – especially in China and the rest of Asia.

Chlorine and Brominated Flame Retardants with Considerable Dangers for the Environment

Halogenated flame retardants are based on chemical compounds with chlorine and bromine. These substances and compounds became the focus of public and scientific criticism over the past few years because they harbor considerable dangers for people, animals and the environment. The compounds are considered to endanger water, are being transported over long distances, and naturally decompose only very slowly. Furthermore, they accumulate in organisms: They have already been verified in fish, marine mammals, and birds of prey from Arctic regions. In case of fire, dangerous decomposition products can arise, so-called dioxins, when using haloge-



Source: Townsend Solutions: Plastic Additives Global Marketing Report (2012), p. 9 – 22, online at [www.townendsolutions.com](http://www.townendsolutions.com)

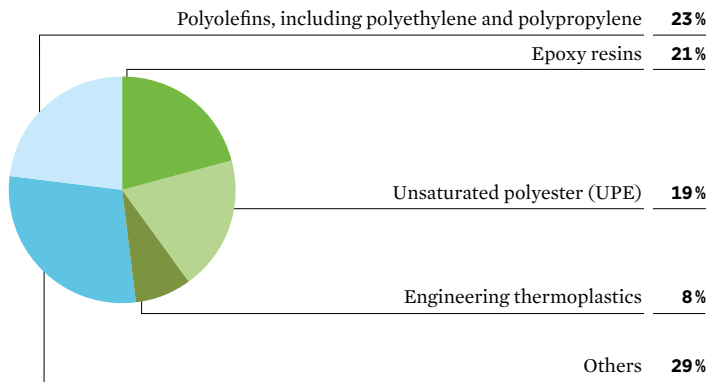
nated flame retardants. Therefore, legal provisions, which regulate halogenated flame retardants, have been enacted in many countries. The treatment of plastic components, which have been treated with halogenated flame retardants, is also problematic. Another European directive regarding the disposal of electrical and electronic technology prescribes, therefore, that halogenated flame retardants must be separated from plastics before recycling, energy recovery, or disposal.



»Exolit® OP offers highly effective fire protection, which fulfills the most stringent specifications. The halogen-free products possess an excellent environmental and health profile. In case of fire, considerably less smoke arises with Exolit® OP as with many other flame retardants.«

**ADRIAN BEARD**, Head Marketing and Advocacy Flame Retardants, BU Additives

#### GLOBAL MARKET SHARE FOR PLASTICS WITH NON-HALOGENATED FLAME RETARDANTS

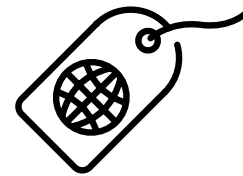


Source: Transparency Market Research: Non-Halogenated Flame Retardants (Aluminium Hydroxide, Phosphorous and Others). Market for Polymers (Polyolefin, Epoxy Resin, PVC, ETP, UPE, Rupper, Styrenics and Others) – Global Industry Analysis, Size, Share, Growth and Forecast, 2012 – 2018 (01.07.2013)

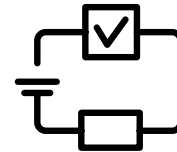
#### Excellent Protection of Fire and Damage

Exolit® OP is an innovative, highly effective flame retardant based on organic phosphates, which allows for processing with excellent long-term stability. The Exolit® OP products have excellent flame-retarding properties and reduce the smoke density and smoke corrosiveness. This elevates the chances for people to weather a fire unharmed on the one hand, and on the other hand, it minimizes the consequential damages, for instance, on electronic components. In the event of a fire, they lower the emissions of highly volatile organic compounds and other dangerous gases.

#### BENEFITS OF EXOLIT® OP



FULFILLS MOST STRINGENT ENVIRONMENTAL DEMANDS, MEETING THE ECO LABEL REQUIREMENTS



HIGH SECURITY BY AVOIDANCE OF SHORT CIRCUITS



PREVENTS FIRES AND EXPLOSIONS

EFFICIENT CATALYST TECHNOLOGY

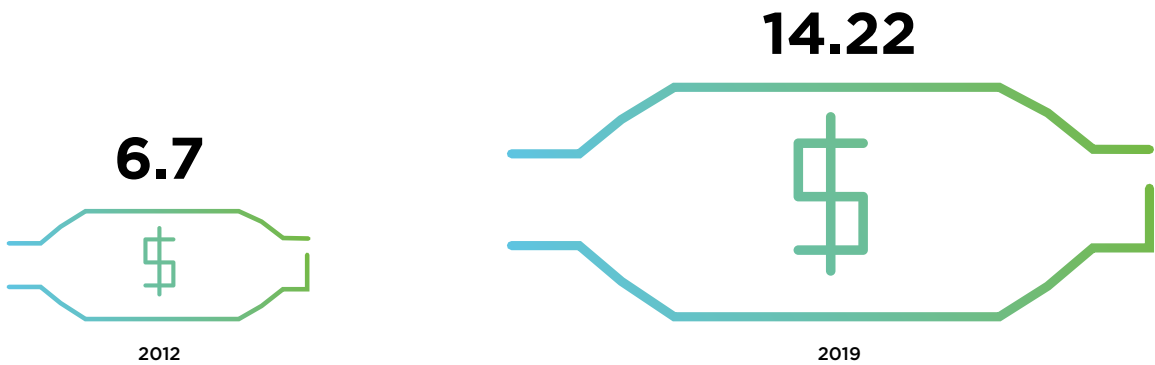
In 1956, the engineer Eugene Houdry filed a patent application for an automobile exhaust catalyst in the USA. Exhaust gas from combustion engines contains mostly oxygen, nitrogen, hydrogen and water vapor. Among them are also toxic or climate-damaging gases, such as nitrogen-oxide (NO<sub>x</sub>), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>) and sulfur dioxide (SO<sub>2</sub>), as well as unburned hydrocarbons. With the new catalyst, the burned fuel should only generate exhaust gases that are relatively harmless for fauna and flora, such as carbon dioxide (CO<sub>2</sub>) and water vapor (H<sub>2</sub>O). The equipment of gasoline engines with catalyst has been standard for more than 20 years. Technical obstacles, like lower exhaust gas temperature, has prevented this for a long time with diesel engines; however, meanwhile the catalyst has found entry into this domain. Innovative materials like zeolite are part of this continuously advancing technology. They make it possible that diesel engines are able to

fulfill more stringent exhaust gas standards (such as, for example, the European Norm EU6 and the specification of the Low-Emission Vehicle Program in the state of California).

Innovations for Exhaust Gas Catalyst

Continuously more restrictive exhaust emission standards and the continuing efforts for an improvement in air quality in cities demand increasingly more efficient engines and more effective catalysts. This is especially true for diesel powered vehicles. Synthetic zeolites as carrier material and reservoirs of pollutants are an important component of catalyst technology for diesel engines. The attributes of this most diverse group of substances (based on aluminum- and silicon oxide) has already been proven in other application areas for decades and can be tailor-made for a specific use. This also makes them interesting for application in the automotive exhaust gas technology. Zeolites are thermally stable, cost effective and harmless for people and the environment.

GLOBAL MARKET SIZE FOR CATALYSTS FOR EMISSION CONTROL in USD bn

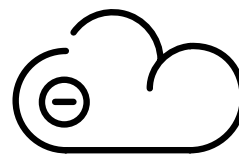


Source: Frost & Sullivan: Opportunities in the APAC Automotive Industry Spurs Growth of Global Emission Control Catalyst Market (23.5.2013), media release, available online at [www.frost.com](http://www.frost.com)

### Zeolites According to Customer Requirements

Clariant belongs to the leading European manufacturers of zeolite with its production plants in Germany, South Africa and India. Zeolites are available in high and reproducible quality. Zeolites manufactured in close cooperation according to customer requirements play a key role in Clariant's portfolio. This especially applies for zeolites in the field of catalytic converters. About half of Clariant annual zeolite production in the amount of approximately 2000 t is applicable to this area. Per catalytic converter, about 500 grams of zeolite powder is needed – the Clariant production is sufficient for about 2 million catalysts per year.

### BENEFITS OF ZEOLITES



EFFECTIVE REDUCTION  
OF EMISSIONS



HARMLESS FOR PEOPLE AND  
THE ENVIRONMENT



COST-EFFICIENT AND  
HIGH-QUALITY REPRODUCTION

»GEKO® LE and ECOSIL® LE offer two solutions individually adapted to the conditions at each foundry supporting the gradual transition to a reduced-emission process.«

**LORENZO SECHI**, Head Sales Foundry Additives, BU Functional Minerals

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### **HIGH-QUALITY CASTING ALMOST WITHOUT EMISSIONS**

Casting of metal belongs to the oldest-known production processes in the world and is already more than 5 000 years old. Although the main features of the production process have not changed much technically in comparison to antiquity, it has only been a comparatively short time since metals could be »casted« in a way that allows the production of very complex objects. However, the casting process still produces highly toxic emissions and the recycling of the no longer usable sand casting molds is often difficult because of its toxic burden.

#### **Shape Metalwork with Sand**

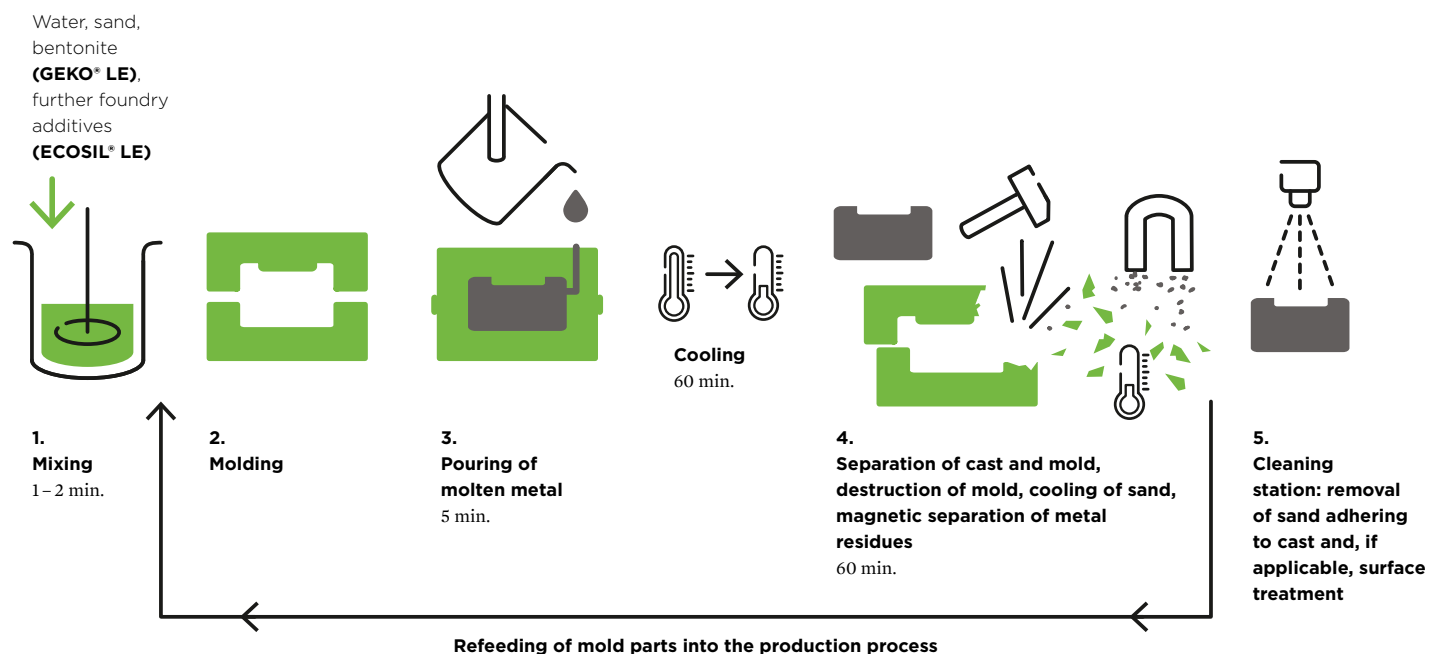
The process overwhelmingly used in the industrial production of small- to medium-sized castings is the so-called sand casting process. Sand casting is characterized by its flexibility and low cost because the molds do not have to be pre-treated before being filled with the molten metal. The process is used for producing engine blocks, gearboxes, drive shafts, suspension arms, brake discs, pivot bearings, manifolds, turbochargers and other suspension components.

First, a model is made out of wood, plastic or metal. Then a mixture of quartz, bentonite as a binding agent, mineral coal, or natural and synthetic resins as »lustrous carbon producers« (to prevent the adherence of the sand grains to the metal), and water under shaking or pressure around the model are solidified. During this process, the upper and lower sides of the object are molded separately, and at the end, the two halves are joined together into a hollow shape.

The use of these mineral coals and resins result in emissions during the casting process. These include volatile organic compounds (VOCs), dioxins and furans, as well as polycyclic, aromatic hydrocarbons, which are related to benzene. Among the volatile organic compounds, the BTXE aromatics (abbreviation for benzene, toluene, xylene and ethylbenzene) are particularly toxic to some extent. Many of these compounds are considered carcinogenic, toxic to reproduction and genetically harmful.

To limit these risks, the emissions occurring during the casting process can subsequently be made innocuous – this is, however, connected with high investments and operating costs. Emissions are already being reduced during the casting process – as with the use of lustrous carbon producer, which possess a lower tendency to form aromatics than other additives. This would also reduce the cost and drastically facilitate the recyclability of the sand that is no longer needed from the molds.

## GREEN SAND MOLDING PROCESS



### Highly Efficient Reduction of Toxic Foundry Emissions

Clariant supplies two very efficient solutions to limit toxic emissions from metal casting and to reduce the costs: Ecosil® LE and GEKO® LE. The lustrous carbon contained in Ecosil® LE is responsible for a faultless and smooth surface. Clariant uses a

special mineral coal known for its particularly high gloss carbon-forming ability in the production of Ecosil®. The quantity used can therefore be reduced significantly as compared to alternative mineral coals. Thanks to the additional graphite contained within that does not cause any VOCs, significantly lower emissions occur when using ECOSIL® LE.

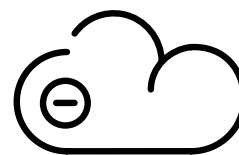
### Considerable Reduction of Emissions

After a three year test phase, GEKO® LE and ECOSIL® LE achieved a drastic reduction in the emissions of aromatic compounds, which are considered especially harmful to health. The release of benzene was decreased by up to 88 %. The emissions of other substances such as xylene, toluene, and ethylbenzene could also be reduced 75 – 99 %. Clariant's low emission technology for resin additives costs 20 – 25 % more than a comparable variant that is not low in emissions. However, this investment will pay for itself quickly because using the high-efficiency products GEKO® LE and Ecosil® LE require significantly fewer binding agents, lustrous carbon producers and other additives. Due to more stringent regulatory emission requirements beginning in Europe with the year 2020, Clariant expects the global sales of its low-emission casting additives to increase by 20 % annually.

### Reusable Sands Due to Lower Chemical Contamination

The natural clay mineral-based foundry bentonite GEKO® LE initially provides superior mechanical stability of the sand mold within the shortest possible time and rapid disintegration after the casting process. In addition, the foundry-Bentonite GEKO® LE from Clariant's own extraction sites, contains only traces of arsenic. As a result, the pollution of the foundry sand with cancer-causing chemicals can be reduced and the waste material can be more easily disposed. This allows the sands to be reused for a variety of applications, for example, in civil engineering, while material contaminated with arsenic must be disposed of in landfills.

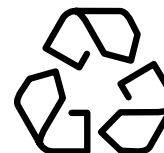
#### BENEFITS OF GEKO® LE UND ECOSIL® LE



FIELD TESTS DOCUMENT SIGNIFICANT  
REDUCTION OF THE EMISSION OF  
HAZARDOUS CHEMICALS



OUTSTANDING PRODUCT FEATURES  
IN THE VARIOUS PROCESSING STEPS  
OF THE GREEN SAND MOLD  
PROCESSES



EXCELLENT RECYCLABILITY  
OF THE USED SAND THANKS TO HIGH  
QUALITY BASE MATERIALS

## HYDROCEROL FOR INCREASED LIGHT-WEIGHT CONSTRUCTION

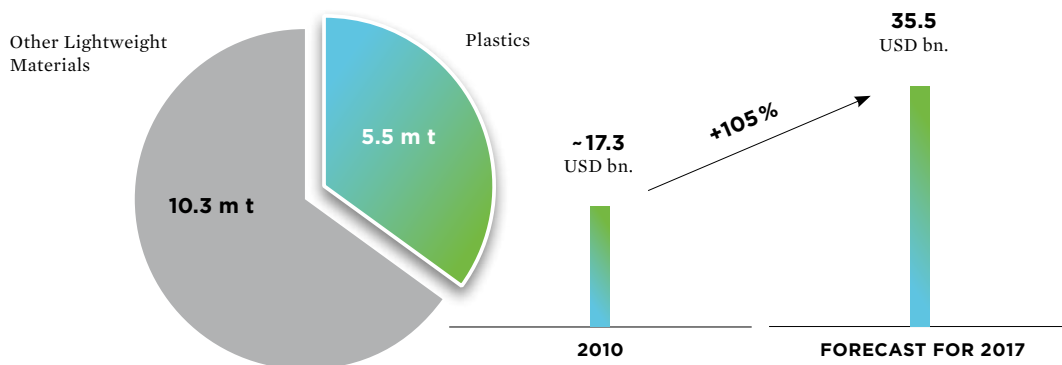
In 130 years of automobile history, the materials to manufacture automobiles and thus their weight have changed dramatically. While the chassis of the first cars were made out of wood, steel has since prevailed in the body construction. The weight of automobiles has steadily increased with more elaborate technology over the decades – an average of about 50 %. A higher weight simultaneously means a higher fuel consumption and higher greenhouse gas emissions. Therefore, the manufacturers tried to slow down or even stop this trend with new, lighter materials.

The new materials must fulfill several requirements: Besides the lower weight and equal size and functionality, they ought to be environmentally-compatible, recyclable, hardly inflammable, stable, and especially cost effective. One single material generally cannot

fulfill these requirements. Only the combination of different materials permits the diversity of the desired features. An important group of these combined materials are so-called fiber composites and amongst them the fiber-reinforced polymers. Fiber-reinforced plastics have become an indispensable part of light-weight construction.

According to a study by the market research company McKinsey & Company, the automobile manufacturers must more than double the share of light-weight components from currently 30 % to 70 % by 2030 in order to balance the vehicle's weight increase by alternative propulsion systems and fuel-saving technologies.

### GLOBAL MARKET SIZE FOR LIGHT-WEIGHT MATERIALS



Source: Green Car Congress; Frost & Sullivan – market for lightweight materials in automobiles to reach USD 95.3 B in 2017 (23.08.2011),  
Online-article at [www.greencarcongress.com](http://www.greencarcongress.com)

»Polymer foams can be manufactured in a fine, uniform cell structure with Hydrocerol® as foaming agent. This new technology reduces the material consumption, investment costs, and energy.«

**PIRKO KOLDITZ**, Product Manager Additives, BU Masterbatches

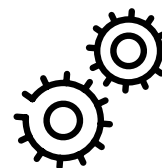
### **Significant Reduction of Plastic Density with Unchanged Mechanical Properties**

Clariant developed an innovative solution for the production of foamed thermoplastics, a type of polymer with the propellant Hydrocerol®. The density of these plastics can be considerably reduced with this special foaming process – with practically unchanged mechanical properties – and the components have a considerably lower weight. The Hydrocerol® range of products consists of chemical propellants for various requirements. Thereby all plastics that are used in vehicle production can theoretically be foamed – without forfeiting firmness and functionality.

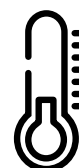
#### **BENEFITS OF HYDROCEROL®**



REDUCED DENSITY BY 20 - 50% LEADS  
TO WEIGHT- AND MATERIAL-SAVINGS



GAIN IN EFFICIENCY: SHORTER  
PROCESSING TIME, EASIER  
INSTALLATION, BETTER FLOW  
CHARACTERISTICS  
AND LOWER WASTE



IMPROVED THERMAL AND  
ACOUSTICAL ISOLATION MINIMIZES  
SOUND LEVEL AND LOWERS  
AMBIENT TEMPERATURE



# In My Real LIFE

6 Employees – 6 Views

Photography Jo Röttger, Text Bertram Job



## **ABHIJIT NAIK** **HEAD OPERATIONS PIGMENTS INDIA**

»My greatest pleasure is to see that so many improvements are happening in our pigment plants and sites. Our business achievements, no accidents and employees making progress give immense satisfaction. This happens when there is a clear direction and discipline. Being disciplined also generates additional values.

We all have the desire for India's economy to grow and want it changing for the better. One of my passions is energy conservation and low cost manufacturing. India is a very competitive market for pigments, and our competitors are often small manufacturers who expend much less efforts on environmental standards.

Last year we renewed the concept of energy conservation and together with Clariant Production System's savings we contributed significantly towards cost reductions and this also gives me lot of satisfaction. I cannot rest at the periphery but always have to get to the core of the issue, whether you give me an apple or a problem, I would break them both into small components until I have understood everything.

My father worked for the railways; he was a track specialist. He said: Abhijit, whenever you perform any work, ensure that you complete it with quality and to customer expectations. I always keep this in mind, very well knowing that if I compromise in the area of quality it may lead to misfortune and especially in the chemical industry this can do severe damage. I had a wonderful father; and I often spent my vacations going out with him on the tracks, which gave me a lot of general understanding of the way things work in life.

Unfortunately, I am the same at home; there is always a specific spot for an item and an item for every spot - perfection. And what my father passed on to me I would now like to pass on to my son. We frequently take long walks together and I believe he understands me quite well. He is 22 years old and attends the university; he would like India to be successful, which will generate more jobs.«





**PRIYANKA SHIVAN**  
**HEAD OF STRATEGIC INITIATIVES,**  
**REGIONAL BUSINESS SERVICES INDIA**

»The first thing that I need when I come home from work is a steaming hot cup of tea and a newspaper. It helps me unwind and switch off after a long day at work.

Working closely with the Managing Director's Office is a complex job and challenging at the same time. I am from Srinagar, but did my higher education in Mumbai and decided to make it my home. I like the buzz that Mumbai offers and feel that no other city in the country has that. Also, it is more professional than any other part of the country.

The stress at work has increased, but it is a positive stress. It is related to internal changes; no one can disregard this. I love everything about it, because it presents me with more challenges. Once in a while my friends complain that I am not talking much with them. They will just have to wait until the weekend. Then we travel to South Mumbai and go dancing together.

I have a small, but very close circle of friends who are more like family to me. And most of my weekends are busy with them. Watching movies, mall hopping, clubbing and short road trips is what our weekends look like. My friends and family are most precious to me. When we love someone, we should do it without expecting anything in return. That is my mantra for peace and happiness. I am myself quite a roadie and luckily my husband is one too. We love travelling by road and although we've already undertaken quite a few adventures, the list is long.«





## **SAMBIT ROY**

### **REGIONAL HEAD BU PIGMENTS, REGIONAL MARKETING & SALES DIRECTOR BS PLASTICS & SPECIAL APPLICATIONS AND BS PRINTING INDIA**

»I have enjoyed my career path very much over the years. I had the opportunity to develop various areas and was given the freedom to pursue my own path. At the same time, I allowed my employees some freedom. It is very easy: I trust my employees and they trust me in return. We work with the sentiment that it is not for someone who pays us, but because it is our purpose.

I believe that people who want to be leaders need a certain amount of flexibility. In my case, I started at the operational level. When I switched to a technical and subsequently to a sales position, I had to think differently immediately in order to develop new skills. An excellent training program – »Emotional Intelligence« – was very helpful to me. Furthermore, we can always learn something from others who are good at their work.

Emotional intelligence is a powerful instrument. Even though you may have a good product, a good brand – in the end, it is always the people who understand the creation of value and customer relations who make a difference. But we need a team of diverse people. If a cricket team only has good batsmen, it will not win. Some are aggressive sales people; others tend to be analytical. We need the right combination for long-term success.

On a typical day, my workday ends at 7:00 pm. I go home, take a bath, and three days per week I meditate. This meditation lasts about 30 minutes and brings a lot of inner peace. You sit down, follow the instructions of the guru from an audio recording and separate yourself from your daily cares. At the end your body is filled with a good amount of positive energy.

My most important task is to remove barriers for my employees. Everyone comes to the office in the morning to accomplish something positive. If they don't succeed, it is my responsibility as a superior to identify the obstacles. Or to teach my employees how they can accomplish this themselves. That is all one needs to know.«







## **SHYAM SITARAM GADEKAR** **FOREMAN OF PIGMENT PRODUCTION IN ROHA**

»When I started working at this factory I was 22, 23 years old. That was 35 years ago. Meanwhile, the work has become more pleasant and also safer. Today, we have many more regulations, and if we inquire about something it is available immediately. The atmosphere has greatly improved; I like that.

I have three daughters and am very happy with that. I didn't necessarily need to have a son. I am happy with what God gives me.

One daughter works for the government, she is a teacher. One lives with her husband in Yemen. All of them have a good education. The company helped me to earn the necessary money for this. Two of my daughters are married. Once the third one marries I will be relieved.

I have taken over some rice fields from my ancestors. My father and grandfather worked in them as well. We harvest approximately 600 kg of rice per year. I have never had to buy rice in my entire life. In the past, my three daughters helped in the fields; now one of my brothers helps out. Or a few paid workers. I also have two bulls.

I have always explained my type of work to my daughters. But they never attended the special day during the year when families are allowed to visit the factory. I am very proud of them. My family, my friends: I wish all of them a good life. I have always prayed for that.

Two years ago, I won a company drawing for a trip to Germany and Switzerland. My wife and I spent ten days there, in Frankfurt, Berlin, Munich, Zurich. We liked Berlin the best. Everything was so clean and quiet there. I remember the many churches we visited. It was a noble feeling to sit there.

Next year I will retire. Then I can spend more time in the rice field if I stay healthy. And I would like to travel to Singapore with my wife, my daughters and their partners. My friends have told me that this is the best place in the world.«



## **SUNIL DEVAL** **DIRECTOR PRODUCT STEWARDSHIP INDIA**

»I take my work very seriously, regardless of my position, which does not matter to me much. It is more important to me to spread this message: Be as conscientious as possible, but do not be in the illusion that you will achieve happiness with more money and a higher position. On a spiritual level only you can become permanently happy and satisfied. I have spread this concept everywhere I worked.

When I worked in the area of basic research for this company, all my chemists would come to my office in the morning. We used to dwell upon verses from the holy books like Bhagavadgita, and I explained to them what it was about. Only afterwards did we discuss our work. I was fortunate that my superiors allowed me to do this and even encouraged me. It created an ever increasing harmony, leading to unprecedented successes.

Now my work is predominantly to assess the products for their possible adverse effects. If we detect something risky, we caution users so that people, machines and the environment are well protected. Everyone handling chemicals should know what kind of risks and dangers are related to the chemicals they handle.

My colleagues always honored me more than my designations or ranks and came to me with private questions for holistic solutions. I always took time for this because I believe it to be my most important responsibility as a person. If you remain pure and honest, your colleagues will go out of their way for you. All the more I have to make sure that they do right things.

I get up at 3:30 in the morning and start my day by spiritual practices such as reading Holy Books, chanting, meditations, or yoga. I make notes on how I understand the texts. Meditation on breathing slows down thought processes. Once your thought processes have stopped, true knowledge comes on its own.

I am not at all for short-term happiness, I believe in sustainable success. Ethics is the basis for this. A more important factor for success of any organization is, however, the contentment of its members. If employees are content, a company grows automatically.«





## **MURALI SAMALA** **REGIONAL ENERGY MANAGER INDIA**

»It is my responsibility to improve energy efficiency at all locations in India. In the past, the main emphasis was placed on the factories in Roha and Cudalore. We focused on conserving water, because energy consumption can also be reduced by this. Water is very precious, particularly in India. The next challenge will be the new plant in Vashere.

The local population already has an awareness of this topic. Since I arrived here twenty five years ago from Hyderabad with a bag full of testimonials, the level of interest in this regard has increased. Even for me. As a young project engineer, my only thoughts were of how to increase productivity. Over the years I have learned how important sustainability is. And instead of merely talking about it, we are implementing it.

I also transfer these ideas to the home we purchased. Look here, these small lights; they only use about 5 Watts per hour. This is not ideal for reading, but provides very interesting lighting. I will switch all our lighting to this. I have already installed LED lights in the hallways of the house. Right now, the committee of home owners is discussing solar panels.

When we conserve energy, we also do it for the next generation. My son reminds me of this frequently. If I don't shut off the car at the stop light, he asks: Why are you wasting fuel? He is attending college to become an engineer for computer technology. The competition is fierce, but he is doing very well. When he comes home, we go out to eat and do some shopping together. My family is my inspiration; every evening I take a long walk with my wife.

Initially, I wanted to become a pilot; it's too late for this now. The closest I ever came to flying was during an appointment in Bangkok. You can see the photo here on the wall: Here is the speed boat, and here the paraglider. You are pulled upwards and move as quickly as the boat. It was fantastic.«



People  
**MAKE OUR  
SUCCESS**

**I**n key markets such as China, United States and Europe, companies are confronted with increasing challenges when trying to recruit qualified personnel. Almost a third of the employers in those regions describe the task to adequately fill positions as difficult. Therefore, a positive perception of companies as attractive employers and the long-term commitment of employees are deciding factors for a lasting success. Companies with successful positioning in the labor market exceed the competition 1.8 times in sales growth and even 2.4 times in earnings and profitability.

### **Attractive Programs for Employees**

Clariant's employees are of central importance for the company; their performance alone is responsible for the economic strength and competitiveness. For this reason, Clariant has launched several programs for promotion and development of employees by offering various services over the past years, with special focus on apprenticeships and in-service programs.

Attracting qualified employees and providing ongoing employee training and development are both of great importance to Clariant. Clariant would like to provide all employees with the skills and resources they need to work in an even more efficient and innovative way. Clariant also aims to become more attractive as an employer and keep employees within the company for as long as possible through measures including a modern family policy and special demographic management.

### **GLOBAL EMPLOYMENT POLICY**

Clariant sees a competitive edge in the heterogeneity of its employees who come from over 90 countries. These employees have diverse cultural backgrounds and bring different skills and talents to the company - the basis for innovative and creative solutions. Consequently, Clariant does not tolerate any discrimination based on race, ethnicity, sex, religion, conviction, disability, age or sexual identity of employees - either within the company or by business partners. These values are documented in the Clariant Code of Conduct and the Suppliers' Code of Conduct. In order to document its societal commitment, Clariant has adopted a suitable workplace directive (Clariant Employment Policy) on these issues.

Clariant's global employment policy strives for a diverse workforce and aims to find the candidates best suited for an open position. Clariant is a non-discriminatory employer, hiring and promoting employees based solely on the qualifications and skills required for the work. The recruitment of employees is based solely on their qualifications for the open position and their individual potential. At the end of 2014, almost 60 % of the individuals hired at the top four management levels were citizens of the country in which the hiring part of the Group was located.

Clariant pays wages and salaries that are determined by local relevant competitive markets rather than by legally defined minimum wages. Therefore, Clariant does not keep statistics of the salaries in relationship to minimum wages. More than half of the employment contracts are based on agreements with employee representatives. Managerial positions are generally not included in such agreements. Clariant is generally committed to paying its employees fair and appropriate compensation in the form of wages and salaries, social components and other perks. This compensation

should meet minimum statutory standards and in principle exceeds them in each country in which Clariant is active. Globally, the average basic salary of female employees was 93 % of that of the average male employee in 2014.

The spread of salaries between Clariant employees varies from one country to another. This depends heavily on the relevant local managerial and employment structure, and is frequently culturally influenced. For this reason, local salary structures cannot be used to address compensation issues. On a global level, the ratio between the average- and the highest base salary is 1:9. In terms of the total compensation, including variable salary components, the spread is 1:17. The ratio tends to be higher in growth regions than, for example, in Europe. Salary adjustments are negotiated in accordance with a fixed and unambiguous system and implemented through mutual agreement between the line manager and the HR department. As a basic principle, a consistent »salary philosophy« ensures that adjustments are made in the context of the local markets and the individual performance.



see Annual Report 2014, pages 130 ff.

### **Attractive Benefits in Addition to Salary Payments**

Pension and other employee benefit plans are monitored globally by Clariant for relevance, compliance, costs and suitability as a valuable employee benefit. Clariant is aware of the significance of these pension and other benefit plans as a way of retaining staff. These plans are regularly matched with benefits in the respective countries in order to be in line with the current practice. Before every adjustment, Clariant carefully examines the impact the changes have on the employees, and if necessary, conducts direct consultations with them.



see Annual Report 2014, page 186

No intentional differentiation is made in the company benefits provided by Clariant according to the type of employment contract, but this does not exclude differences depending on the individual case and local circumstances. The deciding criterion in this case is the customary market standard, which is being reviewed within the scope of continuing benchmark surveys. However, a systematic survey has yet to be undertaken.



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# 90 000

Hours of training attended by employees in 2014

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# > 9 200

Employees took part in training courses

## TRAINING AND FURTHER EDUCATION

In 2014, more than 9 200 employees took part in Clariant training courses, attending a total of about 90 000 hours of training. Almost a quarter of this training occurred in the Clariant Academy programs with an emphasis on the so-called leadership trainings with approximately 730 participants and about 22 000 hours. Local training offerings comprised more than 67 000 hours with emphasis mainly on language courses, communication and interpersonal relations, performance management and business administration. Employees also attended courses in information technology (IT), environment, safety, and health (ESH), law and technology. However, data for these courses is not yet centrally recorded.

## More Flexibility through Innovative »Working Time Account«

In a pilot project, Clariant offers the employees at German locations the possibility to retire earlier or take more time for the family without financial loss. The new »long-term account« is an instrument for improved reconciliation of work and family or for more leeway for easier implementation of personal plans.

The long-term account functions in principle like a savings book. In the savings phase, employees deposit wages – and other compensation components. This includes parts of gross pay, vacation time, collective allowances, bonuses, or mandatory overtime. Therefore, wage and other compensation components can be contributed per year up to a maximum amount of the double contribution assessment ceiling into the German statutory pension insurance.

These credits even carry interest. Clariant bears all costs for the establishment and management of the long-term account, as well as for a double trust guarantee. The credit balance will be independently managed and is protected against insolvency. In the event the employee is released from the job, she/he is guaranteed by law at least the contributed amounts. The goal is a longer-term, paid release from the job – usually right before retirement. What makes this so special is that the social security protection remains intact during the release phase. The credit balance will be available even when the working relationship has been prematurely terminated, or will be dispersed to the heirs in the event of death.

### Custom-Fit Educational Offers

Clariant arms itself against an increased lack of specialists. This happened at the Knapsack location with customized apprenticeships and in-service training offers for their existing staff and new employees. With the Rhein-Erft Academy, which evolved from a training department of the former Hoechst AG, Clariant has a renowned private vocational school specialized in the chemical industry that is available at the Knapsack site.

The training at the academy takes place within a modularly configured program, which accurately reflects the operating procedures. The training measures take place in the categories of basic training, equipment and procedural training: It all starts with the basic training, which is completed mostly on a theoretical level. This is followed by the plant training where Clariant's employees are already schooled on the new equipment. The in-services conclude with the process training where the employees deal specifically with all processes, which could be of any significance for them in their daily jobs.

**»I have the utmost trust in the expertise and experience of the team. However, it would not be fair to expect everybody to prepare a large number of new employees in a pedagogically valuable manner for their challenging tasks. This is why we are counting on the support from the Rhein-Erft Academy.«**

Thomas Westerfeld, Operations Manager at the Knapsack location

### Active Family Policy

In 2012, Clariant initiated a program to promote more family-friendly job opportunities. As part of this program, all mothers are guaranteed a comparable position upon their return to work of up to one year following the birth or adoption of a child. For the two years following the birth or adoption, Clariant grants mothers ten days of paid leave for family purposes, in addition to their standard annual vacation. Correspondingly, this provision is available to fathers as well. Close to 10 000 males and females were entitled to this provision in 2014. From the 470 mothers and fathers who took advantage of this opportunity, 360 returned back to their workplace in 2014, of which 124 were females and 236 were males (return rate for mothers: 59 %, for males: 91 %).

### Global Employee Survey Should Accelerate the Change

Clariant would like to be a preferred employer, not only for the employees, but also for potential candidates. For this reason it is important for Clariant to regularly compare its attractiveness as an employer with the international competition and to receive appropriate feedback from the employees. In the fourth quarter of 2014, Clariant has conducted an extensive survey of the employees under the motto »your voice matters«. The mood of the employees shall provide information to management about how the staff perceives the working conditions, which aspects of the work environment are regarded as particularly positive, and which ones are looked at more critically. More than 6 800 people from 16 countries participated in this survey, which corresponds to a participation rate of 65 %. The survey was conducted confidentially. The findings from the feedback are now being used to initiate local activities, which generate additional value for the employees and for Clariant in terms of profitable growth. For this growth, an open-minded, forthright company culture and continuous dialog among the employees are important building blocks.

### Employment with Perspective

The internal talent-management process on a local, regional and global level is an important means for the systematic development of the employees and for the needs-based design of the training programs. During talent reviews, strengths and development areas of key personnel are systematically identified and individual development plans drawn up. One of the aims of the »360-degree feedback process« and the annual »performance dialog« is to identify the ongoing development potential of employees and agree on appropriate development goals. The continuous training of employees within the framework of the internal talent management process ensures well-functioning succession planning for important positions within the company: About 85 % of the senior management positions can be filled internally.

The performance management process comprised about 920 people in the highest five management levels (ML) by the end of 2014, which corresponds to approximately 6 % of the total work force, as well as about 9 200 people in the downstream levels (54 % of the employees). This corresponds to a percentage share of 60 % of all employees. Over the next few years the process will be applied to the majority of employees of lower levels.

#### EMPLOYEES BY CATEGORY AND GENDER IN 2014

Employee Category	Gender	FTE	in %
Management (Level 1 – 5)		<b>822</b>	4.8
	Female	<b>94</b>	0.6
	Male	<b>728</b>	4.3
Employees (Non-ML)		<b>9 040</b>	53.2
	Female	<b>3 003</b>	17.7
	Male	<b>6 037</b>	35.5
Worker		<b>7 142</b>	42.0
	Female	<b>544</b>	3.2
	Male	<b>6 598</b>	38.8
<b>Total</b>		<b>17 003</b>	100

## COMMITMENT TO A DIVERSE WORKFORCE

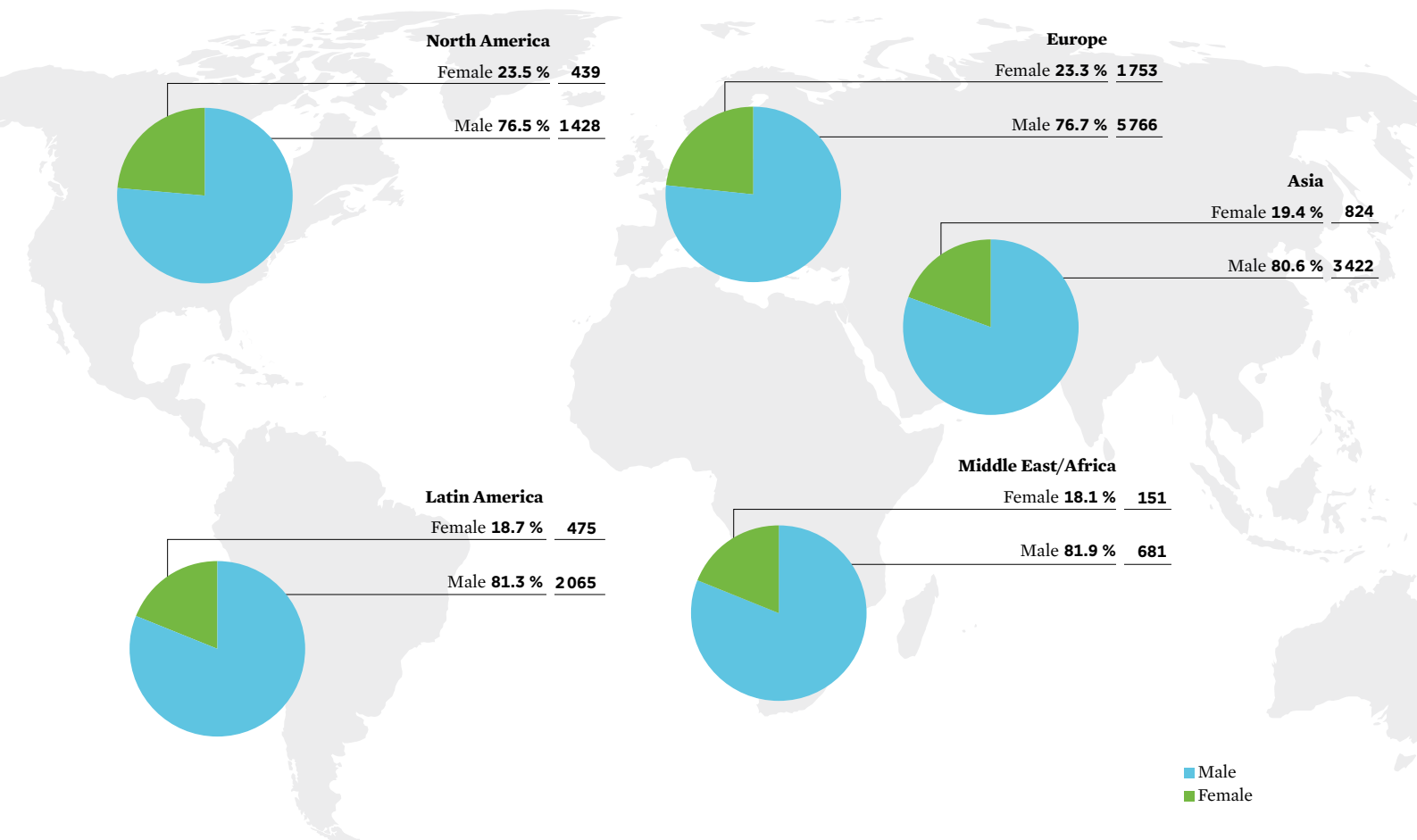
The number of employees who left the company on their own accord in 2014 has slightly decreased. Altogether 1 857 employees left Clariant, about 7 % were laid off due to organizational or operational reasons, or left because of retirement, expiration of temporary contracts and other reasons. The remaining number, about 3.5 % of the employees, were voluntary terminations. In the same time peri-

od, 2 018 new employees joined Clariant. From those who left, 1 258 males and 599 females, 34 % were younger than 30 years of age, 41 % were between 30 and 50 years of age, 25 % were over 50 years of age. From those who were hired, 1 383 males and 635 females, 47 % were younger than 30 years of age, 47 % were between 30 and 50 years of age, and 6 % were over 50 years of age.

### THE STRUCTURE OF THE CLARIANT WORKFORCE IN 2014

Information based on full-time equivalents (FTE)	Total	in %
<b>Headcount</b>	<b>17 003</b>	<b>100.0</b>
Male	13 362	78.6
Female	3 641	21.4
<b>Employment relationship</b>		
Permanent employees	16 707	98.3
Male	13 164	77.4
Female	3 543	20.8
Full-time	16 396	98.1
Male	13 109	78.5
Female	3 286	19.7
Part-time	311	1.9
Male	55	0.3
Female	257	1.5
Temporary employees	296	1.7
Male	198	1.2
Female	98	0.6
<b>Type of employment</b>		
Employees	9 862	58.0
Male	6 764	39.8
Female	3 097	18.2
Workers	7 142	42.0
Male	6 598	38.8
Female	544	3.2

## TOTAL WORKFORCE BY REGION & GENDER



## VERSATILE WORKFORCE

> 90

Workforce originating from over 90 countries

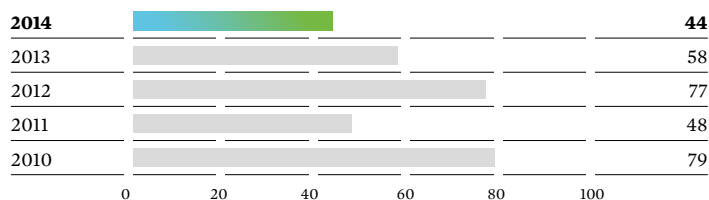
## OCCUPATIONAL SAFETY

Avoiding occupational accidents is an essential component of Clariant's productions activities. The program »AvoidingAccidents@Clariant« helps to systematically reduce the accident rates and consequences. Significantly decreasing accident rates are the results of this program. In 2014 Clariant saw a total of 44 work accidents with more than one workday lost (down from 58 a year before), involving 39 men and five women. However, every single accident could be avoided – therefore the target remains: zero accidents. Thanks to AvoidingAccidents@Clariant the accidental downtime could also be held at a very low level in 2014. The so-called Lost Time Accident Rate (LTAR) of the group sank to 0.23 after 0.26 in 2013 and 0.33 in 2012. LTAR refers to the number of accidents with lost work time of at least one working day per 200 000 operational working hours. Before AvoidingAccidents@Clariant was introduced, this rate was above one.

The lost work days caused by occupational accidents did not remain at the same low level as in the preceding year due to two accidents that occurred with long downtimes. Hence, the lost days in 2014 added up to 1 213 compared to 1 152 and 1 431 respectively in the two previous years. The »Lost Workday Rate« (LWDR, loss of work days caused by occupational accidents in relation to 200 000 hours of work) was at 6.4 after 5.6 and 6.2 in the two periods before.

### OCCUPATIONAL ACCIDENTS WITH AT LEAST ONE DAY'S WORK LOST

Number of Accidents



### ACCIDENTS WITH DOWNTIME OF AT LEAST ONE DAY'S

WORK LOST by Region

	Male	Female	Total
Europe	18	2	20
Greater China	2	0	2
India	2	0	2
Japan	0	0	0
Latin America	9	1	10
Middle East/Africa	5	1	6
North America	2	1	3
Southeast Asia/Pacific	1	0	1
<b>Worldwide</b>	39	5	44

# AvoidingAccidents@Clariant

## **SAFETY COUNTS!**

**Your commitment to safety.**

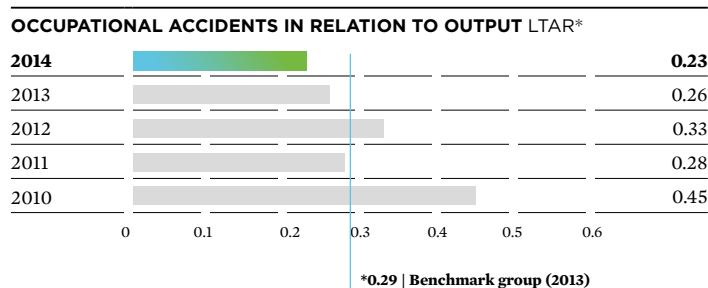
Our goal is zero accidents! Hence we pay attention to everything that could lead to an accident. Clear safety rules and prescribed personal protection equipment are in place to prevent you from injuries. But mostly it depends on you – on your awareness and your dedication to a safe working environment. Dedicate yourself to AvoidingAccidents@Clariant. It's worth it for you and your colleagues' safety!



what is precious to you?

Once again, there were no deaths for operational reasons recorded in 2014. In the year under review, there were no occupational diseases newly registered. Clariant not only keeps track of the accidents of its own employees, but also those of the globally employed and supervised staff throughout the group. Within this group, there were eight accidents altogether in 2014, of which only males were affected. This corresponds to an LTAR of 0.31.

The health of employees is regularly examined by Clariant. Depending on the workplace, sometimes extensive health checks are carried out in order to detect signs of illness as early as possible. For some activities, special health certificates and vaccinations are required, and special attention is paid to ensure that these are obtained and given. Clariant exceeds the legal provisions by far with these programs, and therefore, Clariant does not consider it has a formal obligation towards third parties, namely the representatives of the employees' interests. However, in some regions, such as countries in North and South America, these programs are explicitly regulated with the corresponding unions.



\* LTAR = Lost Time Accident Rate (the ratio of the number of occupational accidents where at least one day's work was lost to every 200 000 hours of work)

#### LOST WORKDAYS CAUSED BY OCCUPATIONAL ACCIDENTS in Days

	2014	2013	2012	2011	2010
Days	1 213	1 152	1 431	1 115	1 188
LWDR*	6.4	5.6	6.2	6.5	6.8

\* LWDR = Lost Workday Rate (loss of work days caused by occupational accidents in relation to 200 000 hours of work)

#### NUMBER OF RECOGNIZED OCCUPATIONAL DISEASES AND DEATHS

	2014	2013	2012	2011	2010
Occupational diseases	0	2	1	5	7
Fatal accidents*	0	0	0	0	1

\* Including accidents unrelated to work with chemicals, such as road accidents



The Clariant guideline »Prevention from Hazards to Health« serves to avoid work-related diseases. This directive covers all potential risks at Clariant, both in its chemicals business, as well as in other areas. At workplaces with high noise emissions of more than 85 dB (A), as well as with handling of carcinogens, mutagens, or reprotoxic substances (CMR substances) and dust, there are strict rules and minimum requirements.

The management at the Clariant locations conduct regular safety and health trainings within the scope of AvoidingAccidents@Clariant. Clariant operated about 120 production facilities worldwide in 2014, of which 81 had a committee dealing with safety issues. The remaining 36 facilities either did not establish such a committee because of their small number of employees, or they deal with safety issues in other appropriate panels. This means that 82 % of staff employed in production are represented by a safety committee. Taking the workforce as a whole (production, procurement, sales, management), 82 % of staff are also represented. At Clariant, safety issues are also addressed in committees that do not primarily deal with this topic.

### **Safety Awareness as Key to Permanently Low Accident Rates**

It is one thing to continuously lower the accident rates. It is another thing to maintain the achieved low level. The regions take innovative approaches to anchor safety awareness in the minds of the employees and to continue to solidify the corporate culture of safety in the work place. For instance, the management at the Phoenix (USA) location named the paths and streets with signs such as »Correct Lifting Way«, »Safe Working Street«, »No Lost Days Alley« or »Safety Boulevard«, so that the team remains aware of the dangers relating to their daily tasks. Terminals were installed at the Suzano, Brazil location, which allow for function-related ESH trainings besides other offers, including an evaluation of test results. Almost 12 000 ESH trainings were completed this way during the year under review. The Dayabay location in China publishes – like many other sites also – monthly safety reports and information about dangers in the workplace, which are available to all employees. The location has been recognized once again by the local management for the implemented measures of workplace safety.

### **Safety in Complex Work Environments**

The Technology Department of the Clariant Business Unit Industrial & Consumer Specialties (BU ICS) at the Bavarian location in Gendorf has been awarded for 6 000 days or 2.4 million work hours without a reportable accident in 2014. The last »event« occurred in 1997. The technology department's employees mainly conduct repair, maintenance and inspection tasks on instruments, machines, pipelines, as well as on electrical and measurement technology systems. In view of the diverse risk factors, this performance documents the permanent adherence to the precautionary rules.

### **LABOR PRACTICES**

Clariant processed 79 complaints from employees regarding breaches of labor practices or labor laws in 2014. Of these, 58 were processed conclusively, 42 processed complaints were from earlier reporting periods. Complaints are received via line managers or works councils within the relevant statutory framework. Beyond this, complaints can also be made through Group Compliance (i.e. reported to the regional HR department or compliance officer or Group Compliance Officer). An additional channel through which all violations against the Code of Conduct can be reported is the »Clariant Integrity Line«, which has been introduced during the year under review. Including discrimination or violations of human rights. With regard to discrimination in the workplace, a case with such accusations has been reported to Clariant and has been resolved in the course of this year. Four cases of accusations with regard to violations of human rights have been reported via the regional offices, which have all been settled during the reporting period.

Employees are promptly informed of all significant operational changes by the company. In addition to the regular and ad hoc information provided to all employees via the intranet as well as information letters from the CEO and management, the company complies with all local statutory and operational requirements in regard to the provision of information to employee representatives and employees. Information is also disseminated about the reporting lines for the relevant hierarchical levels. Moreover, corporate information sessions are regularly held.

Clariant rejects any form of child labor with the aforesaid workplace directive and strictly complies with local regulations concerning legal minimum age requirements for work permits. ILO convention numbers 138 and 182 are expressly acknowledged as the minimum standard here. Clariant is not aware of cases of child labor in the company or with its suppliers. Similarly, Clariant rejects any form of forced labor or slavery. Clariant is also not aware of any cases of forced labor or slavery in the company.

Clariant supports freedom of association. As part of this, it respects the right of employees to join unions and to be represented by representatives of these unions internally and externally in accordance with the applicable national or local laws and practices. Clariant knows of no cases in which freedom of association or the right to collective bargaining have been seriously jeopardized or even breached.

Sustainable success can only be achieved when all employees conduct themselves according to Clariant's values to behave in a lawful and ethical manner. Since 2007 the Clariant Code of Conduct has defined a set of rules and principles that are binding for all employees to protect the company's reputation and keep the risks to shareholders at an absolute minimum.

All employees receive the Code of Conduct when they are hired and must agree to it when signing their contract of employment. So-called e-learnings are mandatory for all employees. Participation in these trainings, which cover different topics or themes of the Code of Conduct, is registered, and those who default are warned; a non-participant would be sanctioned. The Code is available in all relevant national languages (see page 77).

In addition to the Group headquarters, the compliance officers at both regional and local levels are available to provide support in connection with issues relating to the ethically correct and legally compliant conduct of employees. A web-based reporting and query portal for all employees was built in 2014, the so-called »Clariant Integrity Line«. Besides the reporting of breaches of the Code of Conduct and other violations regarding the corporation or its staff, the employees have the possibility, if necessary anonymously, to place questions about compliance on the portal, which the responsible Compliance Officer of the corresponding country answers or forwards to the Group Compliance Officer.

In 2014, Clariant unified the process of reporting, compilation of information, investigation and disciplinary action of the violations to the Code of Conduct. Herein the jurisdictions are clearly regulated with respect to the investigation of the Code of Conduct violations between the areas of Group Compliance, Group HR and ESHA. In 2014 Clariant received 34 reports of breaches of the Code of Conduct. Out of these 34 reported breaches, 31 cases were closed in the same year, while in three cases the investigation is ongoing. Twelve employees were disciplined as a result of these 34 reported breaches. Five cases pertained to a suspicion of corruption, out of which four cases were closed in the same year, while in one case the investigation is ongoing. For corruption charges, four employees were disciplined in 2014, three of which were dismissed; one supplier was terminated. There were no legal proceedings against Clariant or its employees for alleged corruption.





# Performance.People.Planet

## PEOPLE

PHOTOGRAPHY JO RÖTTGER, TEXT BERTRAM JOB

**T**he drive from her office at the headquarters in Navi Mumbai to get here can be as long as an hour and a half, especially at this time of day, but Gracy Alva has never regretted it. For her, this additional responsibility is a special privilege, because it always feels right. »My heart is with these people,« she stresses, and: »It makes my day when I can be useful to others.« The petite woman in her late forties with frizzy curls is Senior Manager of the Department for Regional Sustainability and Regulatory Affairs with Clariant in India.

An afternoon in Mahalaxmi, one of the busiest regions in the south of Mumbai: On the grounds of the venerable King George Memorial Hospital, in the pleasant shade of massive Banyan fig trees, you can find the flat-roofed buildings of several charitable organizations, among them a so-called Open-Shelter-Home. Boys between the age of six and 16 are running and jumping in the two courtyards between three building sections. They play volleyball and cricket or help the gardener who is tending to the plants.

At Vatsalya, Gracy is called »Didi«, the caring older sister. Sort of like a visiting relative for the agile boys who often barely know their parents. The name of the aid organization that runs this children's home is »Vatsalya«. It means »parental love« in Sanskrit and pretty much says it all. India's mega-cities are teeming with children who grow up under precarious conditions. In some cases, their parents are too poor or involved in drugs or other problems and thus are unable to take on the responsibility for the children. As such the under-age children run away and live on the street, or are abandoned as orphans.

These children recount of days and nights in poorly constructed dwellings or on cardboard on the sidewalk, of child labor, drug addiction and children gangs. It is often a small miracle to see what becomes of them under different circumstances. The smart Salman, the curious Indrajeet, the restless Abinash and all the others.

»What do you need?« – this is often the second or third question that Gracy asks in the office of the facility. Then she sits across Ms. Mukherjee, the Director of the children's home, with a cup of Masala tea. Not many other organizations have as much experience in this field as the Vatsalya Foundation. It developed from a field project for children living on the street, which was initiated

in 1982 by the College for Social Work (Nirmala Niketan) in Mumbai; since then it has given advice to UNICEF, Misereor and several Indian authorities. Vatsalya would not be able to operate this or other projects without public subsidies and Corporate supporters like Clariant in India.

Assistance is always needed, explains Ms. Mukherjee. For example, when the

office needs a computer, or when the support staff need to be paid or textbooks need to be ordered for the children. Almost all boys stay in the shelter home, even though this is not a strict requirement, and they adjust to the procedures quickly. The boys from the first few batches, who have long since completed higher education, sometimes return as guests and successful employees or small business owners in order to provide an example for the younger children at Vatsalya.

»Be the change  
you like to see in  
the world.«

**Mahatma Gandhi**



Every morning the boys can be seen walking on Dr. E. Moses Road in their school uniforms on their way to school. They have the noon meal together, but not without saying a prayer first. In the afternoon, some teachers help with their homework. After this, there is still enough time for play time or watch a movie on TV together, until all lights go out in the flat-roofed buildings, punctually at half past nine.

The boys are happiest when Sunil comes, the Capoeira teacher. Then they can burn off energy for an hour and a half with the Brazilian mixture of artistry, dance and martial arts: Jumping and singing, moving rhythmically to the beat of the tambourine. Sunil is their hero, their dear friend. They listen to him. »They have performed with him for several events of Clariant«, says Gracy, »to demonstrate their amazing acrobatics«.

»Sometimes, on weekends, parents stop by«, explains Ms. Mukherjee, »in order to visit their sons or take them home, if such a thing exists«. And on February 14 there is a big birthday party for all as these children are not aware of their real birthdays.

This way, Valentine's Day becomes a happy celebration for all those who are provided with their human right to protection, shelter, health, education and social inclusion. In light of the fact that 44 000 children disappear every year in India, this gesture by Vatsalya is a noble one.

At Clariant each site has a committee that explores Corporate Citizenship Activities (CCA). A standardized process has been developed to identify and implement CCA projects. »Engagements for children and the disadvantaged, health and hygiene are of primary importance«, explains Puthige Murali, Head of Regional Sustainability and Regulatory Affairs Clariant in India. Above all, Community projects in the surrounding area of the branches should be supported. Such as supporting homeless girls by associating with Ma Niketan in Thane or supporting a primary school as well as an educational establishment for the mentally challenged in Roha, Maharashtra. Infrastructure support by way of furniture, roof sheets, canteen items, chairs, cupboards and several laboratory apparatus were donated to ten needy institutions and NGOs. Barriers were provided to the traffic police department. And an ambulance was donated to an NGO. Or the water supply for a village near Cuddalore in Tamil Nadu.



Ms. Swathi Mukherjee, Director – Vatsalya Foundation

The number of homeless alone among them is cautiously estimated at 11 million. Meanwhile, it is not only a voluntary gesture to show social responsibility: For several years now, larger companies who are registered in India have been legally obligated to invest 2 % of their profit in charitable projects.

»I am happy if I was able to contribute something here,« says Gracy Alva. Salman, Abinash, and several others chatted with the »Didi« briefly, but have now returned to playing volleyball. The game must go on.





# Being **PART OF THE WHOLE**



**C**lariant takes ethical responsibility for sustainable, economic, ecological and fair business practices. This responsibility forms an integral part of the company's philosophy. All Clariant employees are educated and trained to assume responsibility in line with their function, level of authority and qualifications. Clariant places great emphasis on upholding human rights within its sphere of influence. A number of internal regulations as well as Clariant's voluntary commitments in accordance with international charters are designed to safeguard these rights.

Clariant expressly supports UN Global Compact and the United Nations' Universal Declaration of Human Rights (UDHR), also known as the UN Human Rights Charter. The charter comprises general human rights principles, which serve as a joint ideal for all people and nations to ensure that each individual and all bodies of the company constantly strive to promote respect for corresponding rights and freedoms through education and training. National and international measures must thereby guarantee the formal as well as the actual recognition of, and compliance to, human rights. This applies to Clariant also. Accordingly, no complaints about adverse conditions were brought forward against Clariant in the year under review because of adverse effects of company concerns.



## FAIR BUSINESS PRACTICES

Corruption risks are investigated as part of the ongoing internal auditing of Clariant. If corruption is suspected, Compliance and possibly other Service Units will carry out an investigation, with the help of specialized third parties, if necessary. The regional and group-wide compliance committees assess the findings of the investigation and order disciplinary or other measures against culpable employees, which may also lead to the termination of employment. As a consequence of such investigations, a negative result can lead to the termination of contracts with business partners, such contracts not being prolonged or changed for precautionary reasons.

## Great Importance on Integrity

Sustainable success can only be achieved if all employees behave in a lawful and ethical manner. Since 2007, the Clariant Code of Conduct has defined a set of rules and principles that are binding for all employees to protect the company's reputation and keep the risks to shareholders to an absolute minimum. The code demands the adherence to all applicable laws and other regulations. The code forbids involvement of employees that could lead to conflicts of interest; it regulates how to deal with presents and invitations, as well as donations and sponsorships; it forbids bribery and corruption, money laundering, so-called insider trading, violations against anti-trust laws, violations against embargo- and trade-control regulations, disclosure of confidential information, embezzlement, the misappropriation of corporate assets, as well as violations of data privacy. Employees may not endanger the environment or discriminate against, or harass colleagues through their behavior.

In 2014, Clariant has continued the training throughout the entire organization in view of avoidance of possible violations against the code, both with e-learnings as with classroom-based courses. Therefore, an online-training was initiated in 2014 on the topic of data privacy. Furthermore, Clariant rolled out a specific anti-corruption training at the end of 2014. Special target groups receive further regular face-to-face meetings beyond online-trainings, for example about the competition and anti-trust law. In 2014 more than 1700 employees were trained in anti-trust law during face-to-face meetings lasting several hours.

In addition to the Group headquarters, the compliance officers at both regional and local levels are available for questions regarding ethically-correct and legally-compliant conduct of employees. A reporting and query portal for all employees was built in 2014, the so-called »Clariant Integrity Line«. Besides the reporting of infractions of the Code of Conduct and other violations regarding the corporation or its staff – also anonymous, if possible by law – employees have the possibility, if necessary anonymously, to place questions about compliance on the portal, which the responsible Compliance Officer of the corresponding country answers or forwards to the Group Compliance Officer. In 2014, Clariant unified the process of reporting, compilation of information, investigation and disciplinary action of the violation to the Code of Conduct. In the relevant guidelines, the responsibilities are clearly delineated between the areas Group Compliance, Group HR and ESHA in regards to the investigation of Code of Conduct violations.

### **Fair Competitive Practices**

Clariant was not aware of any cases in the year under review in which Clariant was accused of not having acted essentially in compliance with laws, regulations and voluntary codes of practice. Consequently, neither corresponding fines or non-monetary penalties for failure to comply with legal regulations are known. Clariant attaches particular importance to fair dealings with competitors, suppliers and customers. In the year under review, there were no legal actions of anti-competitive conduct, the forming of cartels or monopolies, nor legal actions or complaints concerning compliance with legal provisions on unfair competition. Clariant did not have to pay significant fines or suffer non-monetary penalties for failure to comply with legal regulations on the environment.

### **STAKEHOLDER ENGAGEMENT ACTIVITIES**

Clariant does not focus company commitment on individual showcase projects, but is actively committed to the common good in each and every location in which the Group operates, acting with corporate responsibility in all its activities. Clariant supported numerous charity projects in 2014, especially in the vicinity of the various production sites.

### **Successful Battle against Malaria, Especially in Africa**

Malaria, triggered by mosquito-transferred single-celled parasites, is a widespread, and particularly in developing countries, frequently deadly disease. According to estimations by the World Health Organization (WHO), there were about 200 million people infected altogether in 2013, approximately two-thirds of which in Africa. 90 % of the deaths from the disease were registered there. However, the situation is improving steadily. While an estimate of 173 million Africans still contracted malaria in the year 2000, only 128 million suffered from it in 2013 - a decrease of 26 %, while at the same time the population increased by 43 %.

The WHO has traced this development back to an improved access to insecticide-treated mosquito nets. According to the WHO, 214 million insecticide-treated nets with long-lasting effect (long-lasting insecticidal nets, LLIN) were supplied to Africa in 2014, and 427 million nets altogether since 2012. In 2013, 49 % of the people who lived in the African high-risk regions (approximately 800 million) already had access to such a mosquito net; this compares to only 3 % in 2000. Therefore, insecticide-treated mosquito nets have become the most important weapon in the battle against malaria.

Clariant's activities as an employer, as a consumer of local products and services, as well as a payer of taxes and fees in the respective regions or countries support local economic development, especially in emerging economies.

### **Reliable Protection at Night**

The mosquitoes as carriers infect the people mostly at night. The best defense is therefore a mosquito-free sleep area, and ideally reliable mosquito nets serve as protection. There are less than a dozen manufacturers worldwide that offer quality nets, which the World Health Organization (WHO) certifies as sufficiently effective mosquito nets. Clariant has developed a Masterbatch Technology for the LLIN nets, which is regarded as one of the best on the market with respect to bio-efficiency of the nets. In order to be listed with the WHO, one criterion is that the nets can be washed at least 20 times without losing their effectiveness.

The net produced by Clariant takes an innovative approach: Besides its mechanical protective function, there is an insecticide that is harmless to people incorporated into its fibers, which kills mosquitoes on contact. The net thus offers double the protection. The special feature of this fiber net is its depot function for the insecticide, whereby the net has achieved a guaranteed effectiveness of five years. Therefore, Clariant belongs to the market leaders with regards to quality and innovation of mosquito nets.

Clariant raises the living standards of the population, both directly and indirectly, by creating added value. Clariant is not aware of any significant negative effects on local communities as a result of its activities.



### **India: Volunteer Work for the Well-Being of Children**

Company activities in India focus on carefully selected projects, in which the training and continuing education of students is supported on various levels. The projects are selected based on the needs of the local residents. Thus, the available knowledge and commitment of Clariant employees is profitably applied to the projects. A special focus lies with the support of homeless children, whose situation Clariant wants to improve by contributions and volunteer work (see page 72).

### **North America: School Team Successful at Science Olympics**

Clariant promotes the interest and enthusiasm of students for technical, mathematical- and scientific-oriented subjects (STEM subjects) in the USA and Canada. For example, the Business Unit Oil and Mining Services (OMS) supported a team from Stephen F. Austin High School in Sugarland, Texas in their participation at the Texas Science Olympics in 2014. The team could thereby not only visit the central Business Unit OMS and participate in diverse chemical demonstrations in the laboratories, but they also received a financial contribution that covered the registration fee and the necessary equipment for the Olympics. This commitment was rewarded with the ninth place in the overall evaluation and numerous medals in various categories of the Science Olympics.

»Our employees are proud of working for a socially-engaged corporation.«

**HANS HERREL**, Country Head Indonesia

### **Germany: Youth Develops Visionary Ideas**

The »Zukunftsrat Frankfurt« is a public interest consortium of personalities from economy and science. The goal of this »future-focused council« is the development and sketch of innovative approaches for more sustainability in economics, society and politics in Germany and Europe. The council develops relevant holistic, universal and future-oriented concepts. Clariant's CEO Hariolf Kottmann belongs to the board of trustees of this project. Together with the Institute for Corporate Culture Affairs (ICCA), the Frankfurter Zukunftsrat initiated »My Europe«, a platform for youth, providing the possibility to exchange ideas with entrepreneurs, scientists and politicians, and develop forward-looking visions for Europe and the world.

### **Indonesia: Foster Students and Teachers**

Clariant assists school children at the Tangerang location in Indonesia to achieve advanced school degrees - and this already since 2007. Clariant facilitated the school attendance of 150 children with financial support in 2014. Since 2012, Clariant, together with the renowned Indonesian Putera Sampoerna Foundation, has funded the education of 75 elementary teachers thus far. Alone in 2014, 25 teachers were trained in a six month program at a neighboring location, which again benefits about 700 students annually. From this improved education, not only the students benefit locally, but also Clariant. The company is well-anchored in the region and fosters a close exchange with the community.

Clariant established a globally binding policy for Corporate Citizenship Activities (CAA) in the year under review to unify control of non-profit activities in order to centrally record all public interest expenditures. Clariant annually spends a single-digit-million amount for this type of expenditure, in which approximately half is used for sponsorships, and about a quarter each is used for charitable donations and for local infrastructure. The CCA policy promotes Group-wide transparency with regard to donations (contributions, sponsorship, or other expenditures) to charitable causes. Simultaneously, compliance risks are systematically reviewed by an appropriate process step in the CCA approach.

The Clariant Corporate Citizenship Activities Policy explicitly excludes donations to political parties. Accordingly, Clariant did not render donations to parties, politicians and related organizations in 2014.

Besides the commitments in the area of promotion of scientific domains, voluntary services form an important contribution of Clariant's strive for social cooperation. These activities are expanded with donations to charities with sustainable orientation, for example, in the areas of training, culture, or environment.

### **China: Program to Promote Education**

Clariant also expands local social interventions in China with evolving business activities. Concerning this matter, HOPES, a program to promote education in the neighborhood of the Clariant production plants, should bring a new boost to the area: **H**ealthy, **O**pen-minded, **P**ositive, **E**xplorative and **S**ustainable. A first partnership agreement was made in November 2014 with an elementary school in Zhenjiang. As a first step, Clariant donated books for the school's library. The program also plans lessons by Clariant employees in the subjects of language, science, and sustainability, the support of extracurricular activities, as well as scholarships to students whose parents cannot afford the costs. The site manager from Clariant in Zhenjiang was appointed Honorary Headmaster of the school for the purpose of coordinating the activities.

### **EXTENSIVE DIALOG WITH STAKEHOLDERS**

Clariant communicates continuously and promptly with important interest groups (stakeholders) in a way that is relevant for the particular target group. Clariant's shareholders, employees, customers and the direct environment, but also suppliers, government agencies and associations are counted among the stakeholders. All of these groups have a strong interest in the development and decisions of Clariant. Therefore, Clariant fosters an open, multi-lateral culture of communication. Depending on the respective production sites, countries, themes and target groups, this exchange takes place at least once a year. Additionally, the Clariant production sites foster a frequent dialog with the residents, especially if the facilities are located near the settlement areas. Stated objections and concerns reported to the company are recorded and resolved. In the process, no significant incidences were dealt with (G4-24, G4-26, G4-27).

Clariant also maintains an intensive dialog with financial market participants, investors such as analysts, as well as finance- and chemical trade publications. In 2014 Clariant led well over 100 individual and group conversations with investors and analysts within the scope of 17 international presentation trips, so-called roadshows. In addition, there were still well over 100 of these conversations at conferences and 50 telephone conferences for the financial market. These efforts resulted in valuable suggestions for prioritizing relevant sustainability topics. Moreover, Clariant staged a capital market and media day in Frankfurt for the interested public.





### **Brazil: Music Connects**

Clariant has maintained a project since 2010 with the community near the production site in Suzano, Brazil. The project was developed in cooperation with the Bachiana Foundation, an initiative of the well-known Brazilian conductor, João Carlos Martins. Within the framework of the project, already over 100 children

and youth were trained on classical instruments such as the violin, cello, or percussion and chorus. The project is not only of great importance for the education, citizenship values reinforcement and development of students, but it also has a positive influence on their families, classmates and the immediate neighborhood.



### **Germany: Introduce Children to Natural Sciences**

The »Wissensfabrik« (knowledge factory) is an amalgamation of more than 120 German companies that would like to bring children closer to natural sciences. The members of the Wissensfabrik, Clariant included, visit support and training facilities in their respective neighborhoods and offer a multitude of technical themes with different experiments there at special tailor-fitted children's events.

Employees demonstrate to the children simple and vivid experiments with everyday objects such as tea lights, spoons, ice cubes or magnets. They show them how exciting the knowledge of scientific relationships can be - and thus instill an interest in professions in the chemical industry.

### **Steady Expansion of Conversation Topics and Groups**

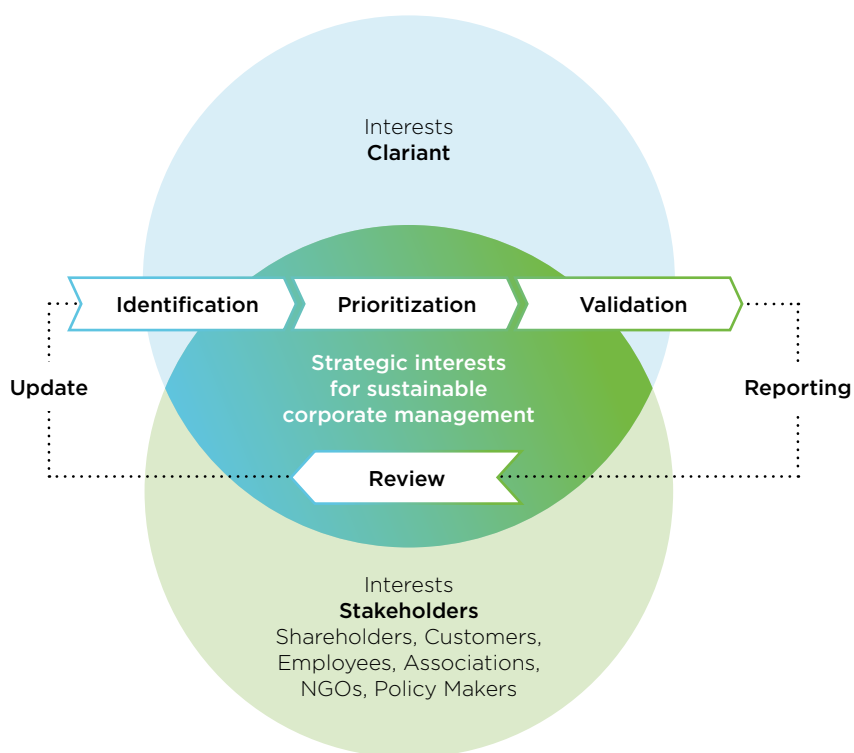
Clariant wants to ascertain the opinions, interests and trends among the stakeholders on the subject of sustainability and initiated a purposeful dialog with these groups within the framework of the Portfolio Value Program. Together with the »Collaborating Centre on Sustainable Consumption and Production« (CSCP) in Wuppertal, Clariant designed a materiality matrix of relevant aspects and topics about sustainability for Clariant and the stakeholders. This analysis is part of a comprehensive and long-term program that has been initiated by Clariant in order to address sustainability in innovative ways and to foster a continuing dialog about it. The exchange and cooperation with the relevant stakeholders are an integral part of the program (see figure on page 85).

The preparation of the materiality matrix was a first step to initiate a continuing dialog with important opinion leaders and experts from associations, non-governmental organizations, politics, science, research facilities and public interest organizations. In 2015, the dialog will be pursued in a sustainability forum for the first time and on an even broader basis (G4-25).



see Annual Report 2014, on pages 48 f.

## SUSTAINABILITY MANAGEMENT – MATERIALITY ASSESSMENT



### Clariant Supports Drinking Water Projects

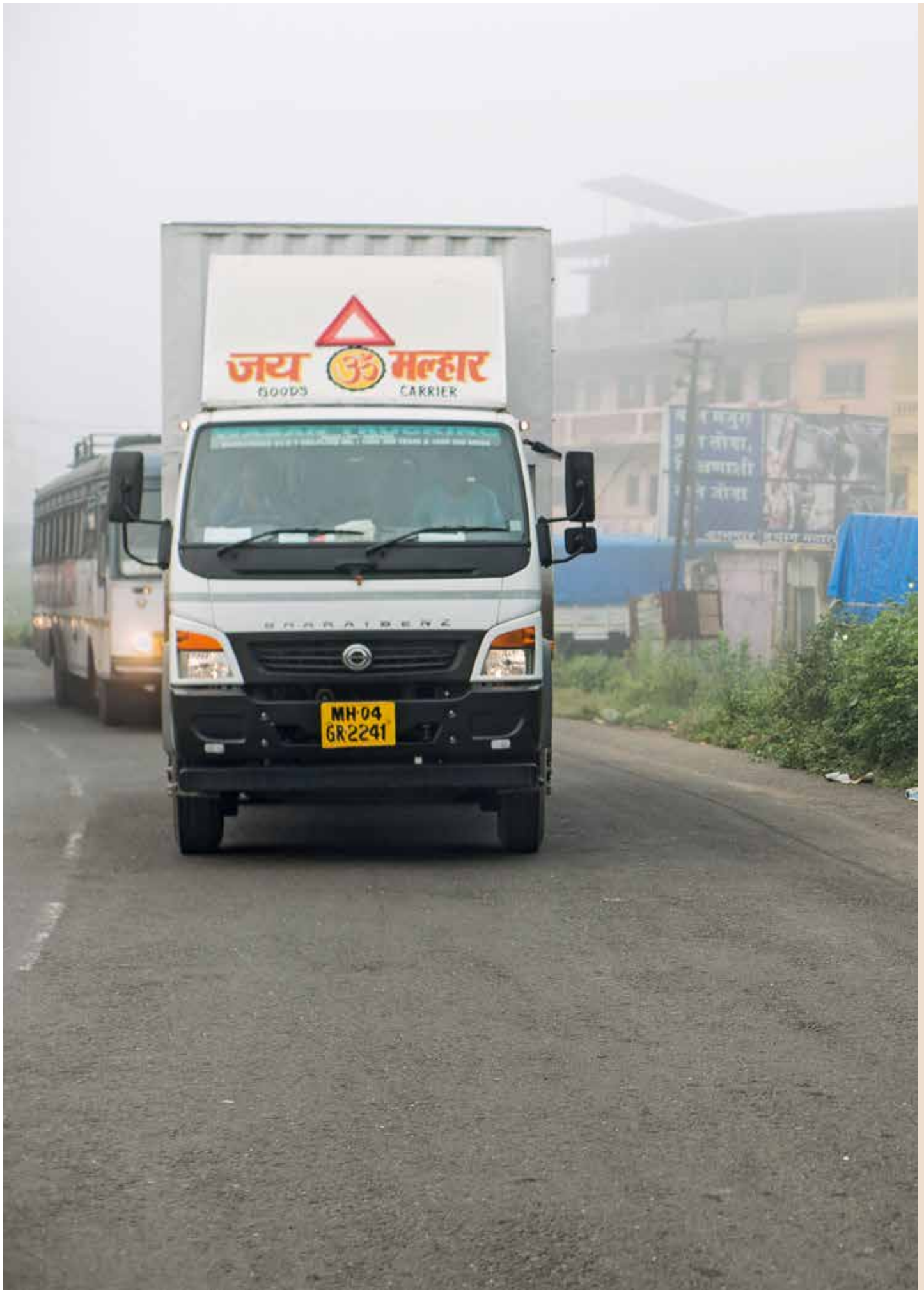
Clariant and the Swiss Federation are jointly committed to an efficient handling of water in selected regions of Latin America and Asia. The various approaches of the project »SuizAgua« are being implemented in close coordination with the local authorities. SuizAgua has been active in Chile since 2012 in order to sensitize the private sector to lower their water use. The initiative started establishing the total water consumption of products and processes – the so called »water footprint«, including raw materials and transport.

The participating companies at SuizAgua who maintain production sites in the mentioned regions have committed themselves to search more intensively for possibilities to lower their

water use as much as possible at their facilities. In addition, the companies have started social responsibility projects with the local communities, aiming to improve their water availability and everyday life condition. Clariant's contribution to the project was CHF 150 000 for three years.

**»Sustainable use of water is important for our business processes. Analyzing and managing the resources holistically and aligning the interests of all is essential to secure our own operations and those of our neighborhood.«**

Daniel Rodriguez, Head of Services, Maipu Site Chile



# Performance.People.Planet

## PLANET

PHOTOGRAPHY JO RÖTTGER, TEXT BERTRAM JOB

**T**he motorcyclists are the worst«, says Suresh, »because they heed nothing – no rules, no obviousness.« With no warning they shout out, just to squeeze in front of his truck the next instant, so that he has to slam on the breaks with force. The motorcyclists are unpredictable like children, who must be watched every second. Sometimes it just has to come out, the anger that has accumulated for more than 12 hours, smelling of asphalt and burned rubber.

Suresh Yadav feels responsible for his loads, thank goodness. With his truck he transports goods that are heavy and potentially hazardous, most often. Such as today, when he is on the road with Feroz, the young »cleaner«, as the co-drivers are called here, because they clean wind-shields and instruments as required.

65 blue plastic drums, weighing 100 kg, are in their truck; they contain chemicals for the treatment of leather and were loaded last afternoon in Roha, at the pigment factory of Clariant in India. Not necessarily a hazardous substance, which they must transport to a warehouse in Bhiwandi, 170 km to the north. But Suresh has learned not to take things lightly, as he explains during a break in a Dhaba, the simple restaurants at the side of the road. The two men spent the night in the truck, on factory grounds, in order to start out before sunrise. At that time the roads belong to the professional drivers, apart from a few exceptions at the side of the road: Farmers and laborers who are on the way with carts and bicycles or on foot. Then the first signs of daylight appear in the sky, in reddish-purple stripes, and soon after the tranquility is a thing of the past.

India cross-country, others may see this as a curious adventure. For people like Suresh, it is a challenging course around dusty roads and barriers.

If you are not completely awake you will quickly have problems. All the more important to properly instruct the transport drivers and to set standards for the safety of their vehicles. That is the thought behind the initiative that was started in India two years ago by seven companies, Clariant among them. »Nicer Globe«, as it is called, contains an entire package of voluntary measures to increase the safety of the transport of hazardous chemicals as well as uniform procedures for handling incidents and emergencies.

»Sarveshaam  
mangalam bhavatu –  
may everyone  
prosper«

This also includes a multi-day safety training, which should be completed by professional drivers at Clariant sites every six months if possible – especially in Roha, a small town in the District of Raigad, where about 30 companies from the industry are located in the industrial zone close to the Kundalika river. In addition, regular health checks for drivers and cleaners

and driving breaks are implemented; by no means a given everywhere until this time. A call center for emergencies with specific information, maps and contacts is staffed around the clock seven days a week. And last but not least, detailed monitoring via GPS technology is used to keep an eye on routes and goods. »No trucking company is required by the law to equip their trucks with GPS«, explains Arun Bavdekar, »but we prefer to hire vehicles that are equipped with this technology. That on its own has an effect on the suppliers...«



The man with a discerning appearance conveys with gestures and body language that he takes no joke when it comes to certain topics. As General Manager for Regional Logistic Services he is akin to the top traffic cop for Clariant at the Roha location. He and his team select partners for the transports predominantly set by the criteria of Nicer Globe.

Meanwhile, GPS technology has been installed in more than 25 trucks of the freight forwarding companies that Bavdekar hires. »We know exactly when and where the vehicles are, which route they are taking, or whether they are stopped someplace,« he states. This is a pleasant milestone on the way to more transparency and predictability to manage transportation of chemicals, which in the end supports the reputation of the entire industry: »The question is: Would we rather close our eyes, or do we want to be seen as a responsible company?«

The Indian Chemical Council (ICC) could not have said it better. The national umbrella organization supports the Nicer Globe campaign and has integrated it into the ambitious »Responsible Care« program. With this distinction, it honors companies who strive for sustainable development – that is economic success in harmony with societal goals, such as environmental friendliness and social compatibility. This should create a better image and establish itself in the critically observed chemical industry.

In India, it is not possible to just fill out a form to attain the Responsible Care logo. Even Clariant in India had to pass a complex, two-step process in this regard, whereby all production locations throughout the country were fastidiously examined. The excitement at Clariant in India headquarters was that much greater when the coveted award was given by ICC for the next three years. As the responsible person for sustainability in the Region of India, Puthige Murali emphasized while receiving the Certificate, that their efforts on that account not only strengthened environmental and social aspects – they also stimulated the collective spirit of »continually improving resources and solutions« at work. About one year earlier, Mr Anil Mane, Site Head – Roha had already accepted the »Best Factory Award« in Maharashtra for the clean and accident-free operation of the Roha factory.

The practice of safe transportation must not stop at the factory gate. It should also include interactions with other chemical companies, suppliers, customers, and also warehouses. For this reason, »Nicer Globe« directs its efforts not only to the chemical industry, but also to the logistics companies who provide the service for transport and warehousing. In all, to almost everyone who participates in the value chain.

Suresh Yadav reports that he recently participated in a two-day safety training in Roha which was very informative. And here, under the roof of the driver's cabin, the GPS system is installed.





He and his cleaner are by no means on their own when fighting their way during 4 – 5 hours through the NH 17 going north. The serious Suresh and the quiet Feroz: They have mastered many trips as a team, way down to Tamil Nadu, south of India.

The street is improving, but also becoming more crowded with vehicles, when the truck reaches the greater Mumbai area. It takes Suresh another hour and a half to travel the last 30, 40 km. At about noon he finally turns into the huge compound of the warehouse in Bhiwandi, the former textile metropolis in the District of Thane, north of Mumbai. »The Manchester of the East«, as the city was once called because of its weaving looms.

Once more all papers are checked at the entrance, there are lots of them, before the warehouse workers carry the blue drums to the designated spot: Sector P6, row 29c. Then Suresh and Feroz depart in the dust-covered truck. It's the end of a completely harmless story, and that's exactly what matters here.





# Care **FOR** **NATURE**



# > 900 m kWh

Reduction of Energy Consumption in 2014. This is approximately the energy consumption of a small-size European city in one year.

**E**conomic handling of limited resources does not only matter due to environmental and conservation reasons, but has a significant influence on the success of companies. Besides the development of sustainable products, an efficient and resource-saving production is very important in order to reach sustainability goals. In this regard, a comprehensive and intensive raw material management renders a decisive contribution. Efficient optimization programs continuously improve water balance and energy efficiency while lowering pollutant emissions and amounts of waste. Clariant favors renewable raw material sources and bio-based chemicals, which enables the development of an increasingly sustainable value chain. In the last years, Clariant continually improved the process efficiency and production procedures. Consequently, resources, waste materials, waste water, and emissions have been gradually reduced, absolutely as well as relatively in relationship to the production volume. The lowered production quantity in the following table is due to the portfolio adjustments made at the end of 2013. These effects are also reflected in the environmental performance indicators. However, a considerable share of these improvements are caused by increase in efficiency, which are between 40 and 60 % for the various indicators. Only for greenhouse gases the effect is predominantly caused by the divestment of an individual site. The new environmental targets set at the beginning of 2015 should be an impulse for further continuous improvement (see page 5).

## MATERIAL USE AND PRODUCTION in m t

2014	<b>Materials used</b>		<b>4.12</b>
	Production		3.81
2013	<b>Materials used</b>		<b>4.48</b>
	Production		4.36
2012	<b>Materials used</b>		<b>4.52</b>
	Production		4.42

Clariant tries, wherever possible, to use recycled materials in production. However, due to the specific conditions in the industry, this share is small because recycled raw materials with specialty chemicals manufactured by Clariant usually cannot be utilized due to the high demands on the level of purity and safety reasons. Therefore, Clariant uses almost entirely new and increasingly renewable raw materials with direct intermediate products. It is a different story with auxiliary materials, product purification and material separation in the course of production procedures. In these instances, there is quite often an internal recirculation, meaning materials are being used multiple times. However, the tracking of these corresponding quantities is not possible in a meaningful way due to the recirculation of materials.



## DECLINING ENERGY CONSUMPTION

Clariant's plants primarily need energy in the form of steam, electricity and natural gas. Electric power is mainly used for drives, such as electric motors in mixers, pumps and other process-engineering equipment. The measurement and control technology, as well as the lighting, require electricity. Clariant uses natural gas for heating dryers, firing crack furnaces and generating electricity and steam in its own power plants. Clariant uses steam to heat reactors and separators, such as distillation columns. The resulting condensate is, whenever possible, used for heating purposes. Across the group, Clariant records the total energy consumption, independently of whether it has been internally produced or externally procured. Small energy procurements such as transport services during business trips are not recorded. In Clariant's overall energy balance, these numbers are insignificant.

Direct energy consumption, i.e. the use of primary energy sources, takes place at Clariant's sites and primarily for process heat and steam generation purposes. The main primary energy source is natural gas; coal is only being used as an energy source in some locations in China and Indonesia. The indirect use results primarily from the consumption of electricity and steam of external sources in lieu of Clariant's own energy generation. Clariant procures a mix of energy from various sources, with this mix varying greatly from country to country. Clariant endeavors, however, to increase the share of energy obtained from renewable sources on an ongoing basis.

### Complete Recording of Energy Consumption

For each of its locations, Clariant records all primary energy sources, such as natural gas, heating oil, and coal that are used to generate energy (mostly steam) at its own plants. Thereby, it also logs non-fossil fuels such as wood and sugar cane bagasse. It reutilizes waste for energy production at some locations, which is also included in the figures. In addition, the operator of each location records all secondary energy obtained from third parties, such as electricity from local utilities, and in the case of larger chemical plants, steam or cooling energy. This data is recorded in the relevant conventional unit, for example, m³ for natural gas and kWh for electricity. These units are then converted into the consolidation unit, gigajoules (GJ), to obtain the mean energy content. This is then used as a standard measure for representing energy consumption. If other companies are situated at a Clariant site and integrated into the location's infrastructure, the amounts of energy supplied to these companies are deducted so that the figures reflect only the energy actually used by Clariant. The energy consumption and energy sources in this report have been determined from the data provided by all 130 Clariant (production) sites. They therefore represent a consolidated and comprehensive picture of Clariant's energy usage.

Since the beginning of the systematic analysis of all energy consumption at Clariant in 2006, the consumption of energy per produced ton of products has been cut in half within seven years. The energy demand per production unit in 2014 was approx. 813 kWh/t.

ENERGY CONSUMPTION			
2014	Absolute in m kWh	<div><div></div></div>	3 100
	Relative in kWh/t	<div><div></div></div>	813
2013	Absolute in m kWh	<div><div></div></div>	4 014
	Relative in kWh/t	<div><div></div></div>	921
2012	Absolute in m kWh	<div><div></div></div>	4 158
	Relative in kWh/t	<div><div></div></div>	941

### Steady Reduction of Energy Consumption

Economic considerations are not the only reason why the reduction of the energy consumption is one of Clariant's most important goals. There is eWATCH, which stands for a systematic, efficient and coordinated energy management program group-wide. The program permanently records the whole energy consumption, analyzes the savings potentials and enables the continuing usage optimization of the machines. Plants are being planned and utilized in the production process in such a way that they can be optimized continuously toward the best efficiency level of each individual usage. The lessons learned here help in the performance optimized design of plants and in the selection of efficient components. Not only is eWATCH very interesting from an ecological point of view, but also especially from economic aspects because the program allows the evaluation of the cost-benefit ratio between investments and energy savings.

## Environmentally Compatible Cost Savings with eWATCH



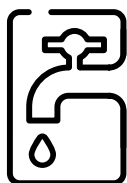
Clariant was once again able to record a significant reduction of its energy consumption in 2014. All forms of energy, such as electricity, heat, cold, steam, as well as natural gas, nitrogen or desalinated water are included here. Almost all of the savings were the result of the measures initiated by the energy management program eWATCH.

- The introduction of the so-called »online-monitor« in a larger, energy intensive production facility in 2013 has resulted in annual energy savings in the amount of a CHF 500 000 so far – with an initial investment of just CHF 200 000. This monitor optimizes the operation of production plants by always aligning the control close to the best efficiency level.
- In 2014 Clariant invested about CHF 70 000 into the optimization of the production supply with fully desalinated water at the Gendorf location. This resulted in an improvement in the connection of the individual components with the consumers at the location. Consequently, the costs of the plant was reduced by more than CHF 100 000, and this year after year.
- Improvements in the company's own infrastructure led to significant energy savings in 2014. For example, alterations in the compressed air supply (new compressor control, new compressed air distribution and drying) at the Ahrensburg location resulted in an annual reduction of the energy consumption by about 15%. The replacement of existing light sources with LED illumination at the German location Lahnstein resulted in an 80 % reduction of the annual electricity consumption while generating a higher luminous efficiency. This allowed the amortization of the expense for the new lamps within three years.
- The investment for the replacement of a so-called »wax mill« was planned at the Gersthofen location. A previous analysis of the process steps in connection with the mill, as well as with the product portfolio, led to the determination of the best mill technology with the least amount of energy consumption, which in the end determined which equipment was selected. This now enables the manufacturing of very voluminous products with this new mill instead of a less energy efficient air separation mill. In comparison with the predecessor, a savings of approx. CHF 150 000 can be achieved while improving the yield at the same time.
- Several other measures have resulted in significant annual reductions in expenditures for the purchase of energy. One example was the review of the compressed air systems for leakages and corresponding sealing at the American location in Louisville, KY, which produced savings of CHF 35 000 per year. Another example was the saving of steam in the production of pigments with a combination of an optimized handling and upgrade of heat insulation at the Brazilian location in Suzano in the amount of CHF 120 000 annually; or finally the saving of steam by optimizing the production planning at the Mexican location in Puebla (CHF 80 000 per year). With another example at the Puebla site in Mexico 360 t of CO<sub>2</sub>-emissions could be saved through energy efficiency in a project of Clariant Excellence (CLNX) in Azo pigment production, resulting in cost reduction of CHF 134 000.

# CHF 6 m

Cost savings due to eWATCH (2014)

The energy-saving measures initiated within the scope of eWATCH in 2014 will lead to an annual cost reduction of approximately CHF 6 million. The investment this requires adds up to at least CHF 10 million. On the average, this results in an amortization period for Clariant's sustainability investments of only two years in the energy sector, which represents an extremely favorable investment. A spin-off of eWATCH is the almost nearly complete certification of all German locations according to ISO 50001 (international standard for establishing efficient energy management systems in companies). This process is scheduled to be concluded in 2015. Finally, eWATCH has raised the awareness of the employees for a more solicitous handling of energy with periodic training. This is also reflected in the increasing amount of suggestions for improvements year after year.



## LESS WATER CONSUMPTION

One of the main auxiliary materials for the chemical industry is water. Foremost, it is used as a coolant and as process water in the production. Of Clariant's total 51 million m<sup>3</sup> of water quantity purchased in 2014, it has applied about 70 % for the cooling of its production plants, 20 % for production processes and 10 % as product component or for sanitary purposes. The water requirements, especially at the large production sites, are primarily supplied by river water. Before it flows into the piping system at each site, the river water is cleaned using various filter systems according to its intended purpose. Remaining amounts are obtained from the respective local water grids, but not in volumes that would significantly impair the water system.

### Reduction of Waste Water with Many Individual Measures

Clariant's color pigment plant in Höchst underwent a new examination of its costs in 2014. Upon closer review, it was determined that a reduction of the plant's water use was possible. Approximately 2 700 m<sup>3</sup> of waste water accrued up to now. The improvements made subsequently to the analysis did not only reduce the waste water amounts, but also the extent of the water contamination with chemical substances. The success was actually quite remarkable. The waste water amount was reduced to below 1 400 m<sup>3</sup> daily, a reduction of 51 %. The organic contamination of this reduced water amount dropped by 74 %. In other words: The amount of pollutants channeled out through the waste water from the pigment production has been reduced by 74 % over a three year period. With regard to certain substances the success has been even greater. Thus, the share of methanol per produced ton of finished products was reduced by 63 % and that of amyl alcohol by 64 %. This could be achieved by process optimization and the application of new technology.

»Taking into account all optimization measures,  
we have reduced the costs by a six figure amount.«

Matthias Ganschow, Operations Manager, HPPS, Höchst

### WATER CONSUMPTION in m m<sup>3</sup>

2014	<b>Water used</b>	<div><div></div></div>	<b>51</b>
	Waste water	<div><div></div></div>	14
2013	<b>Water used</b>	<div><div></div></div>	<b>71</b>
	Waste water	<div><div></div></div>	20
2012	<b>Water used</b>	<div><div></div></div>	<b>79</b>
	Waste water	<div><div></div></div>	21

At some Clariant locations, cooling water is guided into circulatory systems, where the temperature is again lowered after use in re-cooling plants. This environmentally compatible cooling method is used where technically possible, and in 2013 saved 133 million m<sup>3</sup> of industrial water, which would otherwise have been additionally procured.

Clariant uses water for a variety of purposes in the production of chemical products, and the water is partly polluted as a result. At each site, therefore, production waste water is first subject to multi-stage chemical-physical pre-cleaning before being routed to largely biological waste water treatment plants, where it is micro-biologically cleaned. Water that is only used for cooling can be directly released into rivers because it has not come in contact with chemicals. To prevent contamination of the intake water through undetected leaks in the cooling system, the cooling water and rainwater are constantly analyzed at the individual sites as an additional safety measure. If contamination is discovered, discharge into the rivers can be prevented by various containment systems.

The absolute and relative quantity of water used (in relation to production) clearly declined in the period from 2012 – 2014. The amount of total waste water in 2014 came to 13.7 million m<sup>3</sup> or 3.6 m<sup>3</sup> per manufactured ton of production compared to 21 million m<sup>3</sup> or 4.9 m<sup>3</sup> per t in 2012.

Clariant reduced the chemical oxygen demand (COD), the measurement for the degree of waste water burdened with organic substances, in all waste water treatment plants by more than 60 % in the years from 2005 until 2014. The fees, and as a consequence, also the production costs are lowered therewith. Only small amounts

of heavy metals remain in the waste water at Clariant's individual sites. The projected values are partly based on concentrations that are at or below the detection limit. The waste water discharged by Clariant is largely cleaned and therefore is not a particular burden. Thus, Clariant has already achieved a very high level in terms of waste water treatment and water purification.

### Acetone Recovery from Waste Water

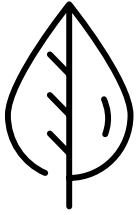
At the Höchst site, Clariant produces diketene, a reactive, colorless liquid, which can be used for the manufacturing of pigments, food additives and vitamin, among other things. Thereby, the solvent, Acetone, is a by-product. It has been disposed of up until now with the plant's waste water.

Chemists and engineers at the site saw a clear potential for improvements here and developed a procedure for the so-called acetone distillation. The new plant separates the acetone contained in waste water with an additional distillation step. Up to 200 t of acetone per year can be stored in a newly constructed storage tank.

The plant will re-use this acetone as a raw material instead of having to procure it, as was the case until now. Surplus acetone can even be sold on the market in the medium term. While additional revenues are attained, the costs for the treatment plant are simultaneously lowered because the need for purification of the plant's waste water is considerably reduced. Therefore, the necessary investment of at least two million Euro is economically sound.

**»Our operation gains a new raw material from its waste water. This may sound a little like alchemy, but is just thought through to the end.«**

Martin Koch, Plant Manager, Höchst



## NATURE CONSERVATION

Clariant is a chemical company with a long-standing history and some of its production sites are more than a hundred years old. New locations were chosen because of the required infrastructure in already existing industrial settlements. For this reasons, Clariant's properties for plants and office buildings are located today almost exclusively in industrial parks or appropriate commercial districts. Because of these targeted locations, animal and plant species included on the Red List of the IUCN (International Union for Conservation of Nature and Natural Resources) and on national protection lists are not visibly affected by Clariant's business activities.

Clariant does not operate any sites in biological reserves or in areas with a high biodiversity value. If forests, which are generally unprotected areas, are located in the immediate vicinity, Clariant ensures that the nature of the plant and the activity carried out there does not have an appreciable adverse effect on the flora and fauna there. In areas recultivated by Clariant following bentonite extraction (such as Southern Bavaria), certain types of animals that are on the Red List of Threatened Species have even repopulated.

With regard to plants located next to rivers, Clariant has laid down strict environmental regulations so that its activities have no registrable impact on the surrounding flora and fauna. The waste water produced by Clariant in the year under review had no measurable impact on biodiversity. Clariant mostly operates plants in integrated industrial sites without sensitive adjacent areas.

## Renaturation of the Catawba River in North Carolina

As part of a conversion of a former industrial park near the Catawba River in North Carolina, Clariant has participated in the restoration of a portion of the endangered river landscape, specifically 175 ac (700 000 m<sup>2</sup>) along a 6 km stretch of river. The river could be renaturalized to a large extent along this section thanks to the investments made by Clariant and the support of other companies. This was accomplished by excavating contaminated soil, restoring the original river course and by rehoming animals. Additionally, a so-called »eco-industrial park« was developed on the premises of the former industrial production site. This is an establishment for sustainable and innovative companies in the areas of renewable energy and recycling. Clariant received a recognition certificate from the US Environmental Agency EPA for this contribution in 2014.



## REDUCTION OF GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions into the atmosphere cannot be completely avoided, despite all environmental protection efforts. They are also side effects of production processes like waste or the consumption of resources and raw materials. Emissions are subject to limits that are laid down in the official operating licenses for the plants. Clariant monitors compliance with these limits at each individual site by taking its own measurements and additionally using measurements taken by independent institutes in accordance with regulatory requirements.

Clariant determines the total emissions into the air at each individual site at regular intervals. The directly emitted amount of greenhouse gas by Clariant has been decreasing for years; most recently it decreased from about 0.81 million t to 0.42 million t in the years between 2012 and 2014. Relatively, that means for each manufactured ton of production, there was a decrease from 184 kg/t to 110 kg/t.

The direct greenhouse gas emissions resulting to a large extent from carbon dioxide emissions (CO<sub>2</sub>) of the combustion processes operated by Clariant are directly proportional to the amount of carbon in the used fuels. To be able to make a comparable global statement, Clariant uses mean emission factors. Emissions of other greenhouse gases like methane and nitrous oxide (N<sub>2</sub>O) are measured locally and integrated into the consolidated calculation of greenhouse gas emissions. Aside from the CO<sub>2</sub> inevitably produced by combustion, N<sub>2</sub>O is particularly significant because of its extremely high globalwarming potential. The significant decline compared to 2012 is a result of the sale of the responsible business, which occurred at the end of 2013.

Indirect greenhouse gas emissions are predominantly generated by external energy procurement, usually in the form of electricity and steam – and thereby almost exclusively CO<sub>2</sub>. Their emergence correlates very much with the amount produced and can be less influenced by Clariant than direct emissions. To calculate the amounts, countryspecific conversion factors are used, which are determined on the basis of the existing infrastructure in the country in question. The amount of all greenhouse gases (expressed in CO<sub>2</sub> equivalents) from indirect emissions decreased because of improved energy efficiency and the sale of energyintensive businesses from 0.64 million t to 0.54 million t, or from 145 – 141 kg/per manufactured ton of products between 2012 and 2014.

#### GREENHOUSE GAS EMISSIONS in m t of CO<sub>2</sub> Equivalents

	2014	2013	2012
Direct emission (scope 1)	0.42	0.68	0.81
In kg/t production	110	156	184
Indirect emission (scope 2)	0.54	0.63	0.64
In kg/t	141	145	145
Total emission	0.96	1.31	1.45
In kg/t	252	300	329

Clariant does not record additional indirect emissions caused, for instance, on business trips with planes or cars, due to the difficult differentiation and the cost-to-benefit ratio. Random checks have shown that the indirect greenhouse gas emissions caused by Clariant are insignificant in the overall context and are therefore not reported as material. For example, CO<sub>2</sub> emissions caused by the travelling of Clariant employees are insignificant in relation to overall emissions (< 3 %). Moreover, with more than 17 000 staff, the cost of determining the CO<sub>2</sub> emissions generated by employees traveling to the company would not be appropriate given the level of insight this would provide. Initial calculations for preliminary products as part of the »Carbon Disclosure Project« (CDP) also point in this direction.



<b>EMISSIONS OF GASES</b> in t			
	<b>2014</b>	2013	2012
Sulphur dioxide SO <sub>2</sub>	<b>344*</b>	770	899
Nitric oxide NO <sub>x</sub>	<b>872</b>	877	847
Hydrogen chloride HCl	<b>39</b>	39	41
Ammonia NH <sub>3</sub>	<b>22</b>	30	17
Dinitrogen monoxide N <sub>2</sub> O	<b>0.1*</b>	517	845
<b>Total inorganic emissionen</b>	<b>1277</b>	1716	1804
Volatile organic compounds VOC	<b>179</b>	350	277
Methane CH <sub>4</sub>	<b>0.2</b>	0	63
<b>Total organic emissions</b>	<b>179</b>	350	340

\* Sale of a production location with sulphuric acid plant and N<sub>2</sub>O-producing site

Clariant reduces carbon dioxide emissions by continuously optimizing production processes to make them more environmentally compatible. For example, the permanently accruing carbon dioxide from catalytic exhaust gas incineration is cleaned at the German plant in Gendorf and passed on to the partner company, Linde, for pressure liquefaction and further industrial uses. As a result of this cooperation, the CO<sub>2</sub> emissions of this Clariant plant were decreased permanently by 95 %. Clariant attempted to reach a reduction in the emissions of greenhouse gases with the use of innovative technologies.

Substances with ozonedepleting potential are exclusively used in closed systems, mostly cooling systems. Clariant records both the respective filling quantities and also eventual losses. Generally speaking, the cooling agents used have no, or significantly lower ozonedepleting potential than the substances R11 or R22. Consequently, the entire effect resulting from losses in the ozone level was reduced by almost 90 % over the past 10 years. When cooling units are replaced or serviced, only coolants such as ammonia are used that have no ozonedepleting effect and minimal greenhouse-gas potential. Significant emissions of other inorganic pollutants such as SO<sub>2</sub> and NO<sub>x</sub> have been reduced by 30 % in the last three years, particle emissions decreased by more than 20 % since 2012.

<b>PARTICLE EMISSIONS (FINE PARTICLES)</b>			
	<b>2014</b>	2013	2012
In t	<b>262</b>	319	335
In kg/t production	<b>69</b>	73	76

### **Electricity Surplus Can Convert Carbon Dioxide into Natural Gas**

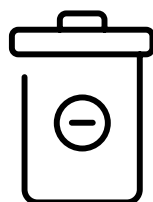
Wind doesn't always blow strongly when much electricity is needed. The same applies to sunlight. Therefore, it is not uncommon for wind and solar power plants to be removed from the power supply to prevent an overload. Battery or pumped-storage power plants are thereby only partly the solution. A meaningful supplement to the storage of large-scale energy quantities is chemical storage. This exploits current spikes meaningfully.

For more than 100 years, it has been technically possible to convert carbon dioxide into a gas similar to natural gas. The only problem was economic efficiency until now. The Federal Ministry of Education and Research now promotes a project to make this conversion economically feasible because of its ecological attractiveness. More than 250 scientists from the University of Munich (TUM) together with researchers from Clariant and Wacker Chemie are testing different catalysts and systems under the name of »iC4« (integrated Carbon Capture, Conversion and Cycling) to transform CO<sub>2</sub> into a natural gas such as methane under economic requirements. The hydrogen needed for this process is acquired by electrolysis of water with excess power from renewable energies.

Methane is particularly suited as a storage format, since voluminous logistics for the distribution and storage of natural gas already exists in Germany. There is also extensive experience with the use of natural gas as fuel for automobiles. Furthermore, the raw material of the reaction, carbon dioxide, is available in large quantities anyway. Biogas plants produce up to 50 % carbon dioxide along with methane. The largest carbon dioxide sources however are power plants, which burn coal, oil or gas, as well as energy intensive processes such as cement manufacturing or metal extraction.

First successes have already been registered. By now the first catalysts in the pilot plant of MAN Diesel & Turbo at the company's Deggendorf location achieve yields in the area between 92 and 95 % and generate enough methane to feed the gas into the natural gas grid. Nevertheless, the researchers of the project are mostly interested in the exact conversion process and the research of the reactions on the catalysts' surfaces.

Besides the University of Munich, Clariant, Wacker and MAN, also the companies of e.on, Linde and Siemens, as well as the Fraunhofer Institute for Interfacial Engineering and Biotechnology are participating at the iC4 consortium.



### Current Recording and Monitoring of Waste Production and Disposal

Waste data at each individual site is assigned to the respective producers and disposers and evaluated. Disposers are chosen responsibly and according to strict quality controls and checks. The checks are recorded and information exchanged between Clariant's different sites. The sum of these measures ensures continuous monitoring and control of all waste flows at the sites.

The waste amounts are recorded separately according to type and disposal method. More than 80 % of hazardous waste is being recycled or treated; only waste suitable for landfills will be disposed. Clariant contracts exclusively with officially approved disposal companies qualified for a particular waste. No longer treatable materials, such as filter dust from internal waste incineration and other manufacturing processes, are disposed of in special landfills. The quantity of these substances is constantly falling thanks to improvements in the manufacturing process, thereby continually reducing the amount of waste.

Clariant uses the term »waste« to refer to hazardous waste, packaging waste, household waste and excavated soil from construction sites. As definitions vary quite widely around the world, the corresponding quantities are summarized under »Total waste« to prevent distortions.

### WASTE PREVENTION AND RECYCLING

At Clariant, the prevention of waste takes priority over recovery or disposal. Therefore, every effort is made during the development and manufacturing of products to ensure that as little waste is generated as possible. Unavoidable production waste is recycled or disposed of properly. Each type of waste is recorded and precisely analyzed and described. Proper disposal must be proven and documented in internal records. It is important to know from which plant the waste originates, which amounts accrue during what period, what properties the waste components have, whether the waste can be classified as hazardous, and how it can be recycled or disposed.

#### QUANTITY OF WASTE in thousand t

	2014	2013	2012
Hazardous waste*	55	96	83
Non-hazardous waste*	113	129	160
Total waste	168	225	243

\* Waste from Clariant activities

#### QUANTITY OF WASTE in thousand t

	2014	2013	2012
Hazardous waste*			
Recycling	19	29	21
Treatment	36	52	41
Landfill	8	27	35
Non-hazardous waste*			
Recycling	26	25	82
Treatment	12	13	29
Landfill	81	93	133

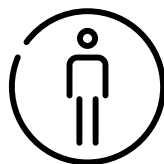
\* The listed treatment and disposal channels also contain waste from other producers

The total amount of waste produced by Clariant has clearly decreased in the past years. Alone in the years from 2012 – 2014, the waste production has decreased from about 243 000 t to roughly 168 000 t. Thus, the amount of waste per metric ton of manufactured products fell in the aforementioned period from 55 kg/t by about 20 % to 44 kg/t.

Clariant provides mostly reusable packaging when supplying customers, who will return them to Clariant after they have been emptied. Often products will be shipped as loose merchandise in tanker trucks and tank rail-cars or silo trucks. Moreover, cleanable and reusable packaging is used where possible and acceptable to the customer. To the extent possible, packaging is recycled for material purposes or, especially in the case of hazardous materials, used to generate energy. The packaging used by Clariant meets the legal requirements and ensures product quality. In 2013, Clariant made approximately 655 000 deliveries to customers. Only in 0.004 % of these deliveries, the packaging proved inadequate or became wet; in 0.09 % it was damaged, and in 0.03 % it leaked. No consequential damages resulted from this.

### **Different Practices in the Worldwide Transportation of Chemicals**

The handling of recyclable packaging made of steel and plastic varies greatly internationally. For instance, in Germany the majority of product quantities are being transported in silos, tank vehicles and in recyclable packaging. The proportionate larger product quantities in non-recyclable packaging are being exported to European countries. Clariant works together with international packaging manufacturers for an optimal implementation of these measures in the course of the worldwide purchasing process. The international standardization process is increasingly promoted via these partners and their network connections. Simultaneously, the re-use and recycling is supported within established and developing circulatory systems, which meanwhile are also being implemented worldwide in non-European markets. Clariant participates in programs for the return of packaging for safe incineration or disposal. The provisions of the European Union are considered standard.



Clariant's operative business adheres strictly to the company's internal control guidelines for the area of »environment, safety, and health« (ESH). This directive should ensure that there are no breaches of internal and external regulations. As a result of these efforts and stringent voluntary commitments, Clariant was not aware of any cases in the year under review in which it has been accused of not having acted essentially in compliance with laws, regulations and voluntary codes of practice in connection with nature and environmental protection. As such, Clariant did not have to pay any substantial fines or non-monetary penalties for non-compliance with environmental laws and regulations.

### **PRODUCTION PROCESS SAFETY**

The safety of people and the environment is the highest priority for chemical companies. One indispensable factor is an effective safety management system that can also identify, assess and control risks in the production process using appropriate measures, so as to reduce or even entirely avoid these risks. For this reason, Clariant, in close cooperation with the European Process Safety Centre (EPSC), has actively supported the development of a simple and representative measurement system, also with the aim of establishing an industry-wide standard.

This system records and systematically assesses smaller substance and energy releases in order to avoid major incidents. These incidents, or PSIs (process safety incidents), are categorized according to criteria stipulated by the European Chemical Association (Conseil Européen des Fédérations de l'Industrie Chimique, CEFIC). They are a component of the ongoing improvement procedures for the process safety of the production systems. In 2014, the process safety event rate at Clariant improved from 0.25 – 0.22. This rate denotes the number of incidents per 200 000 working hours. There was a smaller substance release into a stream at the Moosburg location during the year under review. Sodium hydroxide was released into the Schleiferbach, which led to the death of about a dozen fish. After further investigation, no other damages were noted. Long-term damage to the stream is not to be expected, be it through accumulation or long-term biological degradation effects.

### **Less Operational Disturbances through Targeted Prevention**

Clariant places the highest value on the safety of the process and work safety for the protection of people and the environment. A comprehensive risk assessment of operations and products is a prerequisite for all business processes. They are constantly being monitored and examined. The establishment of type and extent of the measures for minimizing risk and their traceable documentation using this security concept are also goals of the risk analysis. Knowledge from earlier events are thus recorded and communicated in order to avoid repetition.

### **Investments in Environmental Protection**

Investments and expenditures in the areas of environment, safety, and health protection (ESH) are usually triggered by specific events. These could be altered security or occupational safety requirements, or in the environmental area, external requirements such as stricter emissions or waste water limit values. In addition, new production or product changes often require new construction or changes to existing facilities. These are recorded as the ESH component of overall investment. This makes ESH investments a component of the general investment planning and not the subject of an isolated cost-benefit view with distinct capital recovery periods.

The total amount of ESH investments in 2014 was about CHF 33 million, of which 53 % was spent on process and plant safety, 10 % on health/safety, 9 % on fire protection, and 27 % on environmental protection, with focus on waste water and air emissions. The expenditures for environmental protection, safety and health protection in the operative facilities amounted to over CHF 164 million in 2014, of which CHF 85 million were used for environmental protection alone.

Investments for the reduction of energy consumption are a different story. The aim is to secure permanent resource and cost savings and reduce greenhouse gas emissions. A secondary condition of this planning is an amortization period of less than five year for corresponding investments.





# Close Collaboration **ALONG THE VALUE CHAIN**

**B**alancing cost efficiency and a high level of quality, ecological and social standards with a sustained security of supply is a major challenge in a more and more globalized value chain. Increasingly closer relationships with suppliers and customers offer opportunities to create sustainable value with secure, high value added value chains. At the same time, the supply chains at procurement may be exposed to potentially significant risks. Clariant is fully committed to continuously reducing these risks, and therefore, increasing the sustainability in its supply chain. With a product portfolio that promises growth, Clariant proactively monitors and manages supply chain risks, and takes advantage of value chain opportunities as a whole.

## SUSTAINABLE SOURCING

Clariant produces and markets specialty chemicals for its customers. To this end, it requires raw materials, packaging, capital equipment, services, and other inputs, such as energy, sourced from suppliers throughout the world. Clariant procures most of its goods and services directly from the relevant producers and suppliers, whereby the company is not significantly dependent on any one supplier.

Clariant selects its suppliers, outsourcing partners and service providers based on a comprehensive set of criteria. The selection is not based on economic and product-specific performance aspects alone, but also non-financial aspects and sustainability considerations are explicitly taken into account in the selection process. Clariant's sustainability standards are incorporated into its procurement strategies, policies, and general guidelines (such as the Code of Conduct for Suppliers). Therefore sustainability at Clariant does not begin and end with its own manufacturing operations. On the contrary, through its procurement organization Clariant is actively engaged in ensuring that the most sustainable products and services as possible are sourced from its supply base, in order to continuously increase the sustainability profile and performance level of its entire supply chain and product portfolio.

## Leveraging the Advantages of Partnerships

Clariant does not merely carry out sustainability performance monitoring; it also works closely together with its suppliers and other business partners in order to achieve constant improvements in sustainability across the entire supply chain. This includes, for instance, projects for optimized energy and transport management, increased use of renewables, and active waste management reduction as well as the efficient use of resources. Thus, in the reporting year it was possible to reduce the transport-related CO<sub>2</sub> emissions by 65 % and also to lower the concomitant costs by switching the transport methods of raw materials in the Oil and Mining Services Business Unit, for example. This represents a reduction of 37 t of CO<sub>2</sub> per year for a single intermediate product. This optimization was the result of close collaboration between all the internal and external company stakeholders, Clariant sales force, Business Unit and suppliers.

In 2014 Clariant's procurement expenditures were valued at around CHF 4 billion. Of this CHF 2.4 billion was spent on raw materials from approx. 5 400 suppliers and CHF 1.6 billion on other products and services such as technical equipment or energy from a further approx. 20 000 suppliers. Clariant procured more than 11 000 raw materials, whereby approx. one fifth of the total raw materials can be divided between five major raw materials and about half between 100 products. In total 1 500 raw materials make up around 98 % of the procurement volume. Approx. 50 % of the commodities acquired are directly or indirectly based on crude oil; more than 22 % from naturals such as bentonite and approx. 5 % from renewable raw materials.

Clariant Procurement preferentially sources goods and services from within the region in which its respective operations and manufacturing plants are located, as far as qualitatively compatible, technically feasible, and economically justifiable. This way, Clariant's activities support the economic development of the regions concerned. This is particularly relevant for and encouraged in key emerging markets such as Brazil, China, and India.

All investments with a total volume of more than CHF 1 million must be approved by the Investment Subcommittee of the Executive Committee (EC). The Subcommittee makes its decision

based on financial, strategic and sustainability criteria, the latter of which also include human rights aspects.

### Strict Checks on Suppliers

Clariant assesses suppliers through an extensive program based on sustainability factors such as working conditions, respect for human rights, complaint management, safety standards, and credit-worthiness. Clariant views the existence of certified management systems and sustainability policies extending to their related deployment and results, as critical supplier evaluation criteria.

#### RAW MATERIAL PROCUREMENT ACCORDING TO REGIONS in CHF million

	2014	2013
Asia/Pacific	529	464
of which with local suppliers*	486	421
Number of suppliers**	1964	1944
Europe	1276	1327
of which with local suppliers*	1148	1233
Number of suppliers**	1526	1741
Latin America	384	378
of which with local suppliers*	261	243
Number of suppliers**	847	880
Middle East/Africa	85	63
of which with local suppliers*	42	25
Number of suppliers**	506	338
North America	296	270
of which with local suppliers*	263	238
Number of suppliers**	571	516
Global	2570	2502
of which with local suppliers*	2200	2159
Number of suppliers**	5414	5422

\* Spendings for raw materials that Clariant (production) sites in this region have procured from suppliers also in this region

\*\* Number of suppliers in the region that supplied Clariant (production) sites globally

## Supplier Code of Conduct

Clariant expects all of its material suppliers and service providers to commit to and comply with the same high legal, ethical, and moral standards in its own processes. These standards form the basis for the Supplier Code of Conduct. Clariant expects its suppliers

to abide by this Supplier Code of Conduct and to make every effort to keep the environmental impact and negative social effects arising from business activities to a minimum. If these standards are not followed by its business partners, Clariant retains the right to end its business relationship with these suppliers.

### Important Aspects of the Supplier Code of Conduct

Based on the principles of the UN Global Compact and Clariant's stance on human rights, Clariant's Supplier Code of Conduct forms an integral part of and is a binding element in the relationship between Clariant and its suppliers. It is incorporated in Clariant's electronic ordering system and the contracts. In the reporting year the Supplier Code of Conduct was rolled out to the company's entire supply base of about 25 000 suppliers. To support embedding the Supplier Code of Conduct in its supplier business relationships while at the same further raising sustainability awareness in its supply chain, Clariant hosts Supplier Days during which it presents its comprehensive sustainability vision and strategy. These supplier days take place on regional or global base and were organized in multiple locations in 2014.

- **Human rights:** Suppliers must comply with the guidelines governing health and safety at the workplace and the guidelines of the International Labor Organization (ILO) to safeguard the health and safety of their employees.
- **Anti-discrimination:** Suppliers may not discriminate against any employees on the basis of race, ethnicity, nationality, age, religion, gender, sexual orientation or political opinion.
- **Forced labor and child labor:** Suppliers may not allow any forced labor or child labor and must, in particular, comply with ILO conventions 138 and 182.

- **Freedom of association:** Suppliers must observe the right of their employees to strike and to be members of trade unions and must also practice a fair system of compensation.
- **Environment:** Suppliers must adhere to safety standards on the protection of nature and people, particularly local residents of nearby production sites.
- **Product responsibility:** Suppliers are expected to control the environmental impact of the goods and services they produce in their development, production, sales, utilization, and disposal processes.
- **Resource efficiency and climate protection:** Suppliers commit to continuously reducing waste and emissions into air, soil, and water, and to using energy-efficient and sustainable technologies.
- **Competition and business relationships:** Suppliers guarantee law-abiding behavior with regard to competition, waiver of use of unjustified advantage, data protection, information security, exclusion of money laundering, no bribery, and respect of applicable trade control laws and embargos.

Clariant evaluates, selects, and manages suppliers on key criteria such as price, performance, quality, dependability of delivery – and sustainability. Aspects such as the environment, working conditions, respect of human rights and creditworthiness are included in the term sustainability.

### **Risk Assessment With New Suppliers**

By joining the »Together for Sustainability« (TfS) initiative, Clariant has taken the sustainability monitoring of its suppliers to a new and much higher level. In fact the TfS evaluation of suppliers – both with regard to raw materials and services – is based on a standard approach jointly developed by leading global chemical companies. It is managed through leading external services providers globally specialized in sustainability such as EcoVadis for assessments and DQU-UL, ERM, Intertek, and SGS for the audits. The approach developed and implemented by TfS leverages synergies amongst the participants and delivers an independent, standardized and quantitative evaluation regarding suppliers' sustainability and risk profiles. The outsourcing to third party service guarantees process robustness, independence, confidentiality and conformity with anti-trust and competition law. Clariant prioritizes the assessment and audit of suppliers according to country risks, global category priorities, and purchase volumes.

### **Collaboration in Sustainability Across the Supply Chain**

With more than 25 000 suppliers and the level of standards expected, Clariant would be able to deploy its sustainability program only to a limited number of suppliers. This is one of the key reasons why Clariant joined the initiative »Together for Sustainability« (TfS) in March 2014. Clariant prioritizes the selection of suppliers to be assessed and audited according to two major criteria – geographical risk, category priorities and spend. TfS supplier sustainability assessments provide information not only on the consolidated risk, but it also differentiates between the topics of environment, labor law, fair business practices and supplier management. Thanks to

the TfS network Clariant now has access to the assessments of approximately 2 400 companies in more than 100 countries and to the results of numerous audits carried out by TfS. In 2014, in its first year of membership, Clariant has nominated 200 suppliers added to the TfS sharing pool in addition to the 20 audits performed in China and India.

With respect to Supplier Assessments and after a thorough benchmark of various options, the TfS members decided in 2012 to partner with EcoVadis. The EcoVadis platform is quickly emerging as a standard for supplier sustainability performance monitoring and continuous improvement, used in many different industry sectors. EcoVadis combines technology and sustainability expertise to deliver simple and reliable supplier scorecards. A TfS audit is an on-site examination of a company's business sites and practices. The scope of a TfS audit typically covers a single or combined business location such as a production site, a warehouse, or an office building. For the audit to comply with TfS standards it must be conducted by pre-approved audit firms.

In addition to communication campaigns, to further raise awareness about sustainability and sustainable sourcing, TfS offers online training modules and organizes ad-hoc events worldwide, the last of which was held in Shanghai, China, in October 2014.

»Sustainability is firmly rooted in our corporate strategy and thus securely anchored throughout our whole value chain. By joining »Together for Sustainability« we have strengthened our sustainability in procurement as well.«

**NORBERT MERKLEIN**, Head of Group Procurement Services



#### **Assessment Criteria of »Together for Sustainability«**

The TfS initiative was founded in 2011 by the Chief Procurement Officers of six multinational chemical companies.

The purpose is to develop and implement a global assessment and audit program to assess and improve sustainability practices within the supply chains of the chemical industry. This is achieved through a shared infrastructure and collaborative approach built on high-quality third party sustainability assessments and audits as well as efficient web-based data sharing of assessment and audits results and scores. Sharing is achieved through strict respect of confidentiality and in full compliance with anti-trust provisions. Within the TfS assessment as well as audit the supplier's sustainability performance is verified against a pre-defined set of audit criteria. These topics have been defined by TfS and are tailored to the requirements of the chemical industry. These criteria are built on the principles of the United Nations Global Compact and Responsible Care®, but also with respect to the International Labor Organization (ILO) standards, and national laws. The scope of a TfS audit or assessment covers all the critical aspects of management, environment, health & safety, labor & human rights (extending to working conditions and freedom of association), and governance (including ethics and corruption).

#### **Sustainability and Safety During Transport**

In order to prevent any environmental impact as much as possible through the transportation of products and other goods and materials, Clariant has laid down strict rules to ensure transport safety – with the corresponding financial expenditure. In accordance with statutory requirements, Clariant stores key information such as electronic ordering and delivery system classification and labeling data for each product in a database. All the parties in the transport chain are then informed automatically and the transport documents are issued with the hazardous-goods information prescribed by law.

The selection and definition of suitable packaging for hazardous materials are also integrated into this IT solution. Only experienced and reliable companies are used to store, pick, schedule and transport the goods. This ensures that staff, organization and equipment all comply with legal requirements. An example of this is the freight forwarder's requirement profile established by Clariant, which defines the requirements for reliable partnerships with forwarders. In Europe the SQAS standard, a system to review safety and quality with transportation, is mandatory.

The safety of hazardous materials transport is critically dependent on the skill and care of the people involved. Regular task-related and on-going training of Clariant employees contributes to overall safety. In addition, road vehicles and tankers carrying hazardous materials are randomly checked before they leave the plant premises. When receiving deliveries, vehicles with safety defects or with insufficiently secured loads may not drive into the plant premises (see page 86).



### **Recycling of Phosphate with a New Production Procedure**

Substantial amounts of phosphoric acid accrue in the course of the production of (color) pigments. Waste water has been delivered to the treatment plant with an acid level of 30 % so far. The acid level in the water is raised to 40 % with changes in the production procedure by recirculating the washing filtrate in the manufacturing cycle and by optimizing the filtration procedure. In this composition, the water-acid mixture can be used as a full-fledged raw material in other applications. This allowed Clariant to reduce the actual waste volume of phosphorous by more than 85 %. The worldwide deposits of phosphorous, an important component of agricultural fertilizers, are limited. Although phosphorous can be recovered from waste water, the direct extraction in the course of production processes is much more effective and more environmentally compatible.

### **Change in the Process Chain Saves Costs and Takes Pressure off the Environment**

Approximately 10 000 t of the highly flammable ethylene oxide are needed annually in the production plant at Clariant's Tarragona location in Spain. Until now, this ethylene oxide has been delivered from a manufacturer by truck located in Lavéra, a town in southern France, about 330 miles from Tarragona. This corresponds to about 500 trips by truck annually with exhaust gas emissions of roughly 440 t of CO<sub>2</sub>. Since 2014, a local manufacturer is delivering the ethylene oxide. This change was made possible by the construction of a pipeline in Tarragona. The yearly cost savings of about EUR 250 000 for the transportation, unloading and administration amount to a multiple of the investment costs for the new pipeline. The planning safety in production is an additional advantage since deliveries from outside the plant are no longer necessary. The days lost in production could thus be reduced by about 18 %. Additionally, the pollutant emissions caused by the trucks and the risk during the transport and loading process fall away.

## OPTIMIZATION OF PRODUCTS AND PROCESSES

Clariant attaches great importance to the minimization of a potential impact on nature, the environment and people's health. Clariant is constantly developing new and improved products and services to add value for its customers and the environment. At the same time, Clariant cares for the safety of these products during their entire life cycle for employees and customers in particular, and for the public and the environment in general. An active management of the product portfolio continuously decreases the toxicity of the products through the use of more harmless alternatives.

Clariant works continuously with great commitment on the improvement of the product properties and the production processes. This comprises type and quantity of the material use, the quality and benefit of the manufactured goods, as well as the energy demands and waste. The purchasing and supply strategies, the warehouse management, the planning for demand, production, sales and transportation are being coordinated in the best possible way within the scope of the Clariant Supply Chain System (CSS). The Clariant Production System (CPS) identifies and uses optimization potentials during the production process.

However, sustainability doesn't restrict itself only to manufacturing and logistics. Every effort is already made by Clariant during the development of products to maximize their »sustainability potential«.

The share of renewable raw materials plays a role in this sustainability, as well as the energy-saving production, the safe handling, a long lifetime of the (derived) products and a residue-free reutilization (recycling).

## Innovation Chain Creates Sustainable Value

Innovation is an important element to enable sustainable value creation. At Clariant, all major innovation projects move through the »Idea-to-Market« process, in order to efficiently use resources and to implement development processes in a time- and cost-saving manner. Customers are being integrated in this process early-on and their needs are queried already at the beginning of the development process. This happens with interview or in so-called »Ideation Workshops«, a structured process with tools of Clariant Excellence. Further in the course of product development, a close exchange with the customer takes place with sampling of specimens and in a later stage by means of pilot testing. Sustainability aspects already play a central role in this phase for the customers, as well as for Clariant developers. A sustainability evaluation for all Class 1 projects is required at the transition between the »Scope« and the »Execute« phases (see page 112). Before a product is launched, it must undergo another sustainability evaluation in order to receive the EcoTain® label.

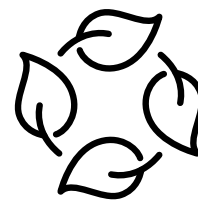
### BENEFITS OF GLUCAMIDES



HIGHLY EFFICIENT RAW  
MATERIALS FACILITATE  
AFFORDABLE COSTS



RSPO CERTIFIED FATTY ACID  
ESTERS OR TRIGLYCERIDES



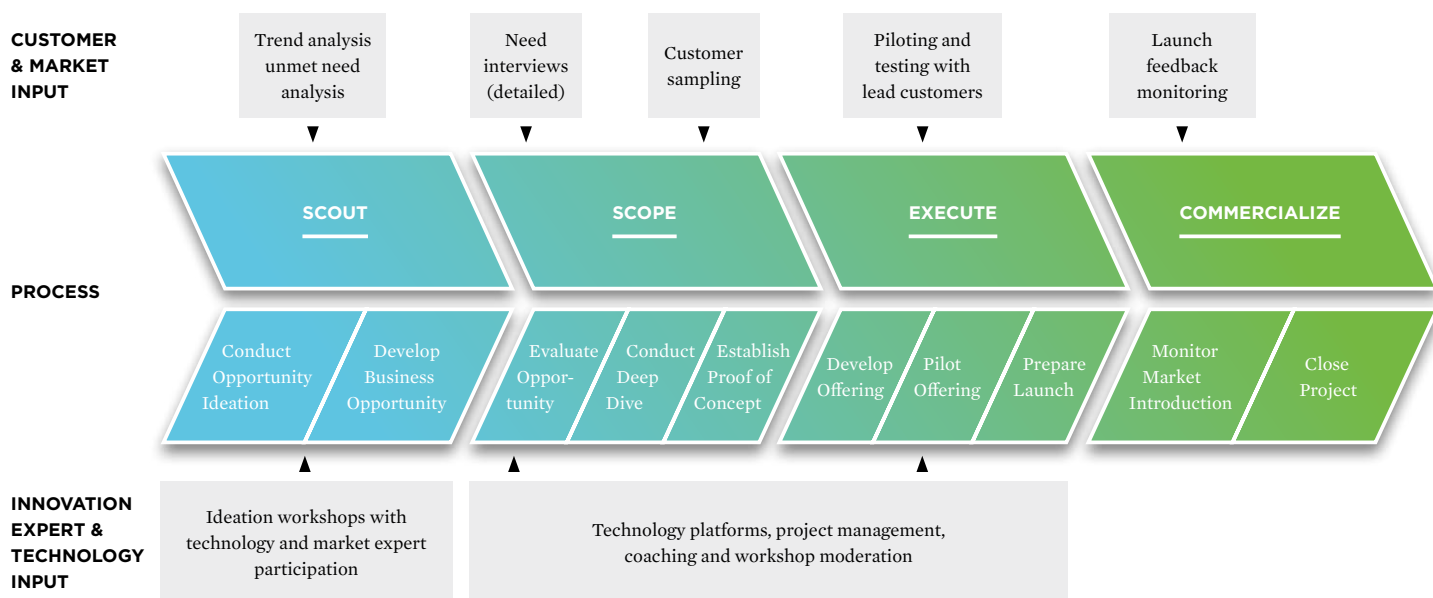
HIGHER USAGE OF RENEWABLE  
RESOURCES AND BIO-BASED  
RAW MATERIALS

## Novel Sugar-based Product Platform

An excellent example of this approach for an integrated innovation chain is the product platform Glucamide. These novel sugar-based tensides can be used in a variety of applications such as cosmetics, purification and crop protection. In their develop-

ment, there was a strong focus on sustainability aspects, such as the high share of renewable raw materials, along with the customer needs. Glucamides are based on natural oils, which are certified on the basis of the RSPO criteria next to raw materials of a glucose basis (see page 113).

### CLARIANT'S IDEA-TO-MARKET PROCESS - Example Glucamide



CST<sup>R&D</sup> project assessment is mandatory at stage gate from Scope to Execute phase since 2013 for all Class 1 projects and projects with NPV > CHF 10 m and therefore drives R&D projects towards more sustainability already in early stages.



### **Certified Raw Materials Ensure Sustainability of the Sources**

Raw materials based on palm oil belong to Clariant's most frequently used renewable basic materials. They are predominantly used in tensides, emulsifiers and preservatives for care and cleaning products. The use of renewable raw materials can contribute to a more sustainable profile of the products; however, public discussion also frequently highlights palm oil because of its negative influence on the environment. Certified raw materials ensure the origine from responsible sources. The procurement of certified raw materials from sustainable sources becomes increasingly significant in this respect.

Clariant will certify all relevant locations that process palm oil-based products until 2016 according to the criteria of the »Roundtable on Sustainable Palm Oil« (RSPO). This certification attests to the locations to monitor the quantity of certified palm oil in the production process in such a way that a certain »mass balance« between certified and non-certified palm oil can be met (»mass balance supply chain certification«). The German plant in Gendorf was the first to be certified in 2014 in accordance with this standard. This was an important step towards completely separated raw material streams. Clariant will organize and certify the locations by 2020 in such a way that the complete separation of certified and non-certified palm oil-based raw materials can be ensured (»100% segregated supply chain certification«). This also allows us to meet the requirement from customers who increasingly request certified products.

### **Clariant Distinguishes Outstanding Sustainability Performance with the EcoTain® Label**

Clariant's EcoTain® label designates products, which possess an excellent sustainability profile across the entire life cycle – from source material to disposal – and exceed market standards in this regard. Clariant has further developed the EcoTain® label of the Business Unit Industrial & Consumer Specialties so that it can be used in all Business Units. This reflects the company's high sustainability standard. It unifies the efficient use of resources with a safe handling of the products, and it distinguishes products that are biodegradable or easy to recycle. Proposals for new product awards come from the Business Units. To be considered for an award, the product must go through the standardized process defined within the framework of the Portfolio Value Program, in which the sustainability risks and performances are determined over the total life cycle on the basis of an encompassing list of criteria. Only if the product meets these high standards can it be distinguished with the label. The development of new products with an excellent sustainability profile is an important and forward-looking part of the corporate strategy.

### **Color Pigments from Bio-based Raw Materials – an Example for EcoTain®**

Clariant is the first manufacturer worldwide that uses biotechnology-produced succinic acid based on renewable raw materials for the production of the pigment Hostaperm® Pink E, which is being used, for example, in printer toners as opposed to crude oil-based raw materials. The bio-based succinic acid, purchased from the US manufacturer Myriant, is being used as an intermediate in the production of high-performance pigments. The application could be developed in collaboration with the supplier in intensive joint research and development steps. The use of the bio-based succinic acid reduces the ecological footprint, without interfering with the manufacturing process. The product was awarded the EcoTain® label because of its excellent sustainability profile.

### **Becoming a True Strategic Partner**

To ensure the best possible results for customers using our liquid color and additive masterbatches, HiFormer® system is an integrated system founded on three primary value-creating elements: CONVERSE, CO-CREATE and COMPLETE.

In the CONVERSE phase, all stakeholders define the parameters of the project and identify major objectives and potential limitations. In the CO-CREATE phase, Clariant, the brand owner and the plastics processor work together to develop customized solutions to the specific needs of the application. This leads to a customized design for a dosing and handling system including a specific carrier tailored to the final application. A customized service and support framework is established to ensure customers get maximum value from the HiFormer® experience. Finally, when all the important decisions have been made, we enter the COMPLETE phase. Clariant's global team goes on-site with a customized training program to make sure that the process continues to perform, delivering long-term profitability.

### **Outstanding Customer Relations**

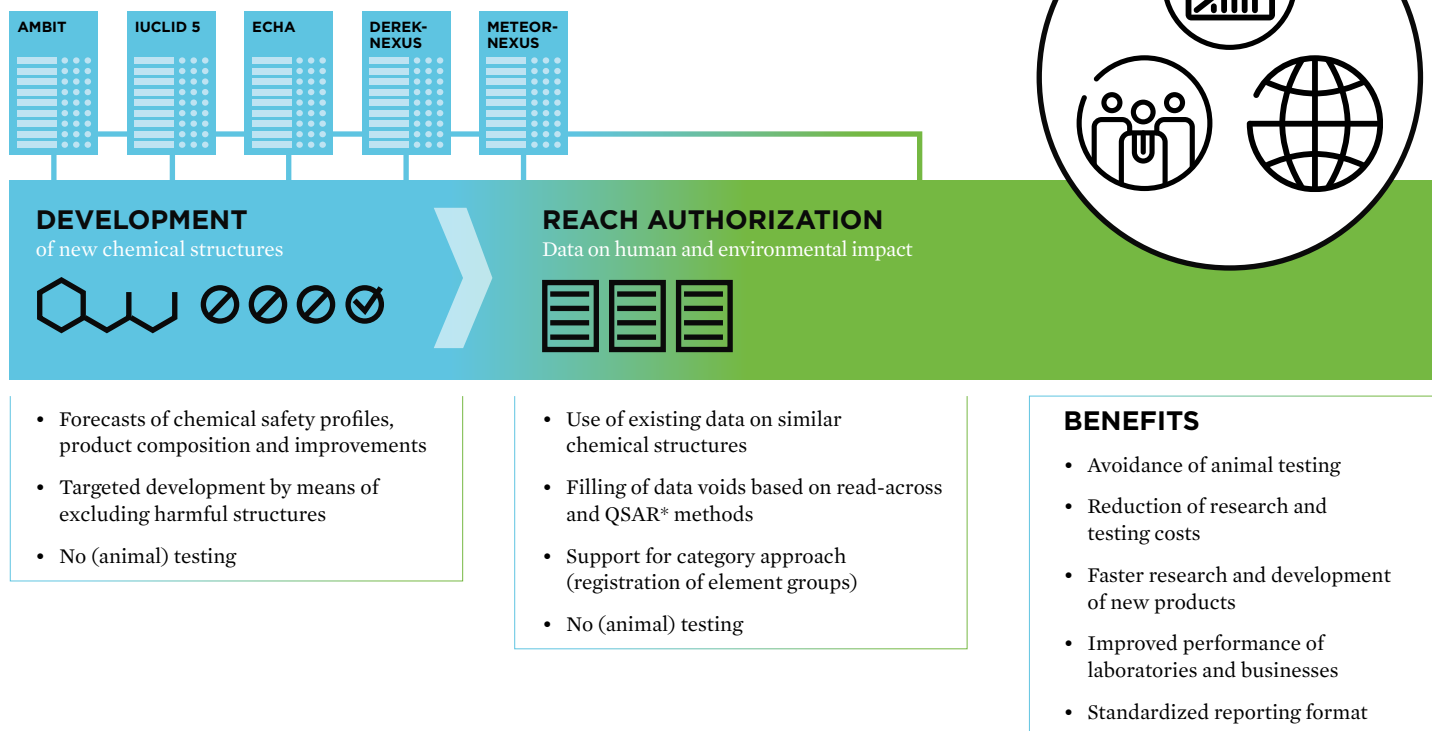
Clariant places the highest value on the recognition of the needs and wishes of its customers, but also the end users and to provide them with innovative products. Cooperation with customers leads to interesting business opportunities and benefits for both sides.

The Unilever »Partner to Win Award« is a great example that shows Clariant as a promising cooperation partner. The company has won this award for the second consecutive time in the category »Joint Value Creation«. The global packaging platform was standardized and flexible packaging was developed exclusively for Unilever through a close cooperation between Unilever and the research and development experts of Clariant Masterbatches. The advantages of developed Masterbatches for Unilever result in an improved cost efficiency for the packaging while maintaining the same quality and product characteristics. This shows clearly that Clariant's tailor-made technical solutions and the coordinated approach for individual customer wishes lead to success in the long run.

## COMPTOX SUITE – SAFE EVALUATION OF CHEMICALS WITHOUT THE NEED FOR ADDITIONAL ANIMAL TESTING

### COMPTOX SUITE

Intelligent integration of existing databases using QSAR\* functionality on a single unified platform



\* QSAR: Quantitative Structure-Activity Relationship

### PRODUCT RESPONSIBILITY

For Clariant, innovation and product responsibility means, wherever possible, to search for replacements and alternatives to hazardous substances. Chemical materials are processed in nearly all products of today's everyday life. Therefore, the corresponding materials in these products, with which people and the environment come in contact, are submitted to stringent and, partly elaborate examinations and testing procedures specified by legislation. The EU authority ECHA (European Chemicals Agency) controls and evaluates these tests. Although growing knowledge about the chemical relationships simplify the test procedures, strict legal requirements still force, however, experimentation with animals.

Clariant has been working for years to replace required animal research by alternative methods. This could succeed to a large degree with the newest developments in material evaluation. The reason for this optimistic outlook is because Clariant developed a program, the so-called CompTox Suite, which is able to predict toxic properties of chemical substances in many cases. The program renders an extremely valuable contribution for the improvement of the product safety by mostly avoiding animal research and costs, while simultaneously shortening research and development time.



### High Hurdles for the Authorization of Chemical Substances in Europe

Since 2007, the European Union (EU) has required that all chemical substances manufactured inside the EU and imported into the EU are being assessed in regards to the impact of these substances to humans and the environment (dossier). The EU authority ECHA (European Chemicals Agency) in Helsinki coordinates the recording, assessment and continued approval of all chemical substances on the basis of the dossiers (presented test results). To do this, it requests verifiable and authoritative statements from the chemical industry. The research methods must be perfectly reproducible and is normally associated with considerable effort and expense. Clariant is committed to fully completing these requirements on time and thereby strives for the highest levels of cost-efficiency while undertaking as little animal-testing as possible, as permitted by regulation.

### CompTox Suite – a Milestone in Chemical Research and Assessment of Chemicals

Large amounts of substance-related data are generated by the EU registration procedures for chemical substances (REACH – Registration, Evaluation, Authorization and Restriction of Chemicals). Per substance, these are in part more than 8 500 pieces of information. Much of this data is not yet available and therefore needs to be collected in animal research. Clariant's approach is to close data gaps with substances that have to be registered by other means. So far this could only be accomplished with time-consuming manual work by searching for suitable comparative data in very diverse ar-

chives. CompTox Suite, developed by Clariant, systematically unifies all available information about chemical substances worldwide on a single platform. Data gaps can now be filled with data from structurally related substances and by predictions of computer programs. CompTox Suite not only provides traceable information about the effects of chemical substances and allows for verifiable documentation, but it also delivers suggestions and tips for product improvements or certain desirable product compositions.

Thus, CompTox Suite can deliver decisive information about the basic understanding of the interactions between substance and organism. Clariant checks nearly all conceivable uses and application possibilities. What could happen during the manufacturing process and at the end consumer? How and in what quantities can people come in contact with the substance? What happens at the disposal? Thus, the contemplation covers the entire life cycle of a product.

Five essential goals can be reached with the help of Clariant's CompTox Suite:

- Faster research and development of safe chemical substances and products.
- Almost complete avoidance of animal experiments.
- In some instances, significant reduction of research and experimental costs.
- Easing the burden of companies' research laboratories with more efficient and effective use of their capacities.
- Suggestions and advice for product improvements.

### Product Safety for Customers

Product safety takes top priority at Clariant. It also involves communication with direct customers and end users in the value chain, besides the optimization of safety- and environmentally-relevant product features. Clariant fosters permanent contact with the customers, who are supported in the application and use of Clariant's products. Laboratories are available to solve any specific problems. The service offering also features comprehensive product information, in particular with respect to optimum and safe application, health risks, waste disposal and handling of packaging.

Safety data sheets containing the relevant substance data, information on the safe handling and storage of products, and measures in the event of incidents such as product spillages/release and fire are provided by Clariant to all parties involved in the further handling of the substances. Clariant has a close relationship with its customers and provides all REACH-relevant information about the supply chain, also with the help of IT tools. Here, every Clariant customer is able to securely receive REACH-relevant information on the specific products that they have purchased. Comprehensive customer support ensures the extremely high communication requirements by REACH in regards to the use of products in the customer chain.

A worldwide operating Corporate Sustainability & Regulatory Affairs (CSRA) organization with the functions ESHA (Environment, Safety, Health Affairs), Product Stewardship, and System Management ensures the high global internal standard in Clariant's production and with Clariant's products. In the 2014 year, there have also been no incidents at Clariant – neither offenses nor criminal investigations – due to product-related health and safety issues or on account of breaches against the applicable law and voluntary codes of practice in relation to information about the labeling of products and services.

### Frequent Dialog with Customers

The results of a representative survey of about 5 000 customers in 2014 signaled a noticeable improvement in their attitudes since the last survey in 2012. The quality of the products and the packaging were particularly praised. Weak points in claim management allegedly have been eliminated. Clariant was more significantly rated as a »reliable business partner« than two years earlier. In the future, Clariant's customers desire an even stronger support with innovative products and technical services.

### Careful Export Controls for Sensitive Substances

Clariant is also dealing with goods that are subject to different trade control regimes such as chemical weapons conventions or the »dual-use goods« regulation. All of the respective national and international trade control provisions, as well as embargo regulations, are monitored by a global trade control network within the Clariant organization. With help from IT systems together with organizational controls, all deliveries are reviewed in order to ensure trade compliance. Thus, for example, controlled goods can only be delivered if the necessary permits are obtained from the relevant authorities, as well as end-user statements from the customer. Clariant makes sure that all trade control requirements are fulfilled.

In 2014, Clariant received no grievances or complaints concerning compliance with legal provisions on unfair competition, incidents or complaints of anti-competitive conduct, and no grievances regarding breaches of customer privacy and loss of customer data. Similarly, Clariant is not aware of any incidents in which there have been infringements of laws/regulations in terms of the procurement, use or supply of products and services. The need to pay noteworthy fines based on corresponding infringements is not known either.

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<sup>1</sup> external assurance of report content (see page 123).

<sup>2</sup> no external assurance of report content

AR = Annual Report

◆ »Materiality Disclosures Service« by GRI

■ UN Global Compact



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DIMENSION	UNGC/GRI	PAGE
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<sup>1</sup> external assurance of report content (see page 123).

<sup>2</sup> no external assurance of report content

AR = Annual Report

◆ »Materiality Disclosures Service« by GRI

■ UN Global Compact

# Reporting limits AND REPORTING STRUCTURE

## REPORTING STRUCTURE

The headquarters of Clariant AG are located at Rothausstrasse 61 in Muttenz, Switzerland. Clariant AG's business operations are conducted through its Group companies. Clariant AG is a holding company and directly or indirectly owns all Clariant Group companies worldwide. Clariant AG is a stock company under Swiss law with a very diverse shareholder structure. More details about the ownership- and holding structure of Clariant AG can be found in Clariant's 2014 Annual Report on page 113 (G4-17). Important key figures about the Clariant Group such as sales, profit, balance structure, employees, research expenditure, etc. can be found in Clariant's Annual Report on pages 93ff.

### The Clariant Group

Clariant is a leading worldwide specialty chemicals company offering innovative and sustainable solutions to customers in a wide variety of markets. Meanwhile, Clariant's research and development is directed toward the key trends of our time. Among these are energy efficiency, renewable raw materials, efficient mobility and the maintenance of resources. The business activities of Clariant are divided into four areas.

The Business Area Care Chemicals unites Industrial & Consumer Specialties (ICS) with the operations of New Business Developments (primarily food additives) and the future-oriented Biotechnologies business. Care Chemicals offers the same technology platforms for several application possibilities, for example, detergents, cleaning- and body care products. The Business Area Catalysis & Energy is the only area of Clariant which specializes in inorganic chemistry. Catalysts for chemical and fuel-related processes are being produced here.

The Business Area Natural Resources is comprised of Oil & Mining Services and Functional Minerals. This business area offers products and services for the oil, refinery and mining industry and functional minerals for use in processes such as water treatment. The Business Area Plastics & Coatings comprises the Business Units Additives, Pigments and Masterbatches. Plastic products are designed for clients in a wide range of areas including packaging and mobile communications, consumer goods, medicine, textiles, transport, and major agricultural groups.

The Clariant Group is active in a multitude of countries with production- and operating facilities or representations. For a relevant overview, see Clariant's 2014 Annual Report on pages 206 ff. Clariant markets and sells its products worldwide. In the past years, Clariant has increased the geographical diversification of its business and reached a significant sales growth in the emerging countries (also see the Clariant 2014 Annual Report on page 56). There were no essential changes in Clariant's Group structure or Business Areas in the 2014 year under review.

Clariant has based both the structure of this report and the representation of individual sustainability issues and topics on the framework of the Global Reporting Initiative (GRI). The report has been prepared according to the GRI Guidelines. The topics/indicators we have identified as material to report on can be found on page 11; all points listed therein will be considered. The materiality of the relevant aspects is presented in the chapter entitled Strategy & Management. Topics within the G4 profile that have little or no relevance to Clariant or its stakeholders are mentioned, but not discussed in detail. This Clariant Sustainability Report encompasses all Group companies and plants (provided Clariant owns more than half of the shares), as well as all relevant

business and subject areas (G4-20) (G4-21). An overview of the most important Clariant AG Group companies can be found on pages 206 ff. of the 2014 Clariant Annual Report. No restrictions are made unless specifically identified. The representation of the sustainability areas and activities in this report cover all major issues for Clariant. There were no essential changes or corrections in 2014 compared to prior Clariant Sustainability Reports (G4-22, G4-23). This report was prepared with the utmost care following an in-depth evaluation. This is so that Clariant can present a balanced picture of its sustainability efforts.

The reporting period of this Sustainability Report comprises January 1 through December 31, 2014 and is therefore identical to the financial year of Clariant. Clariant's Sustainability Report is currently published on an annual basis in the quarter following the reporting year. The last sustainability information published on Clariant in printed form was made available in March 2014 as part of the 2013 Sustainability Report.

Questions about this report should be addressed to: Corporate Communications, Daniel Kaufmann, Tel.+ 41 61 469 54 79, and Investor Relations, Siegfried Schwirzer, Tel.+ 41 61 469 63 73. Inquiries via e-mail to [sustainability@clariant.com](mailto:sustainability@clariant.com) Website [www.clariant.com](http://www.clariant.com). Orders for this report may be placed on the Clariant website: [www.clariant.com](http://www.clariant.com) or sent in writing to the following address: Clariant International AG, Investor Relations, Rothausstrasse 61, 4132 Muttenz, Switzerland. An external assurance has been conducted for this Report by PricewaterhouseCoopers (see page 123).



# Independent Assurance Report on the Clariant Sustainability Reporting 2014

## To the Board of Directors of Clariant AG, Muttenz

We have been engaged to perform assurance procedures to provide limited assurance on sustainability indicators in relation to the sustainability reporting of Clariant AG and the consolidated subsidiaries („Clariant“).

## Scope and Subject matter

Our limited assurance engagement focused on the following data and information disclosed in the Sustainability Report of Clariant for the year ended 31 December 2014:

- a) The quantitative 2014 sustainability indicators (Senior management hired from local community on p. 59, Average basic salary of female employees on p. 60, Apprenticeship and in-service training on p. 61 and 78, Active family policy on p. 62, Performance review on p. 63, Structure of the workforce on p. 63-65, Occupational accidents on p. 66- 69, Work related violations or complaints on p. 70-71, Material use and production on p. 91, Energy consumption on p. 92, Water consumption on p. 94-95, Scope 1&2 CO<sub>2</sub>-emissions on p. 97, Emissions of gases and particles on p. 98, Quantity of waste on p. 100-101, Process safety on p. 102, Procurement spend on p. 105, Raw material procurement by region on p. 106, Supplier sustainability assessments on p. 108 and Financial key figures on cover U4) disclosed in the Sustainability Report 2014 of Clariant; and
- b) The management and reporting processes to collect and aggregate the data as well as the control environment in relation to the data aggregation of these data.

## Criteria

The reporting criteria used by Clariant are described in the internal reporting guidelines and define those procedures, by which the sustainability indicators are internally gathered, collated and aggregated. The internal guidelines are based on the G4 Sustainability Reporting Guidelines issued by the Global Reporting Initiative (GRI).

The accuracy and completeness of sustainability indicators are subject to inherent limitations given their nature and methods for determining, calculating and estimating such data. Our assurance report should therefore be read in connection with Clariant's internal guidelines, definitions and procedures on sustainability reporting.

## Responsibility of the Board of Directors

The Board of Directors of Clariant is responsible for both the preparation and the presentation of the selected subject matter in accordance with the reporting criteria. Our responsibility is to form an independent opinion, based on our limited assurance procedures, on whether anything has come to our attention to indicate that the subject matter is not stated, in all material respects, in accordance with the reporting criteria.

## Independence and quality controls

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

In accordance with International Standard on Quality Control 1, PricewaterhouseCoopers AG maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

## Our Responsibility

We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information', by the International Auditing and Assurance Standards Board. These standards require that we plan and perform this engagement to obtain limited assurance about whether the Identified Sustainability Information is free from material misstatement.

For the subject matter for which we provide limited assurance, the nature, timing and extent of procedures for gathering sufficient appropriate evidence are deliberately limited relative to a reasonable assurance engagement.

## Main Assurance Procedures

Our limited assurance procedures included the following work:

- **Interviews**  
Interviewing personnel responsible for the collection and reporting of the sustainability indicators at Clariant sites in Germany;
- **Assessment of the key figures**  
Performing tests on a sample basis of evidence supporting the quantitative sustainability indicators as outlined in the scope and subject matter section concerning completeness, accuracy, adequacy and consistency;
- **Review of the documentation and analysis of relevant policies and basic principles**  
Reviewing the relevant documentation on a sample basis, the management and reporting structures, and the documentation in relation with the sustainability reporting;
- **Assessment of the processes and data consolidation**  
Reviewing the appropriateness of the management and reporting processes of sustainability indicators; and assessing the consolidation process of data.

## Limited assurance conclusions

Based on our work described in this report, nothing has come to our attention that causes us to believe that the quantitative sustainability indicators of Clariant as outlined in the scope and subject matter section has not been prepared and disclosed, in all material aspects, in accordance with the Clariant internal guidelines and procedures and the underlying GRI G4 Sustainability Reporting Guidelines.

Basel, 13 March 2015

PricewaterhouseCoopers AG



Dr. Marc Schmidli



Raphael Rutishauser

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## NOTE ABOUT FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements based on current assumptions and projections made by management. Such statements are subject to known and unknown risks, uncertainties and other factors which may cause the actual results and performance of Clariant International Ltd to differ from those expressed in, implied or projected by the forward-looking information and statements. The information published in this report is provided by Clariant International Ltd and corresponds to the status as of the date of publication of this report.

## DISCLAIMER

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# Financial SUMMARY

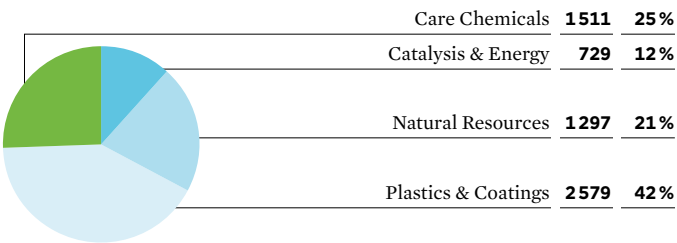
## PERFORMANCE

KEY FIGURES in CHF m		
	2014	2013
Sales <sup>1</sup>	6 116	6 076
EBITDA <sup>1</sup>	867	858
EBITDA margin before exceptionals (%)	14.2	14.1
Net income <sup>1</sup>	235	323
Basic earnings per share <sup>1</sup> (in CHF)	0.55	0.98
Operating cash flow	334	301
Investment in property, plant and equipment	310	292
Research & Development expenditures	213	199

<sup>1</sup> Continuing operations (p. 121)

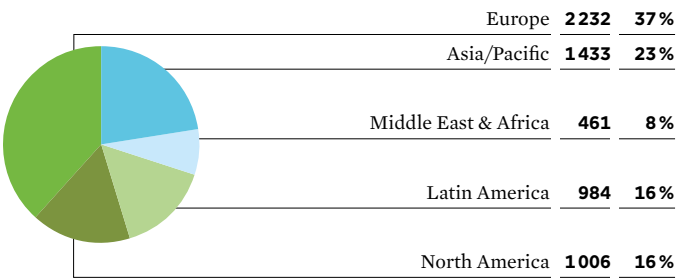
### SALES BY BUSINESS AREA in CHF m

Total 2014: 6 116



### SALES BY REGION in CHF m

Total 2014: 6 116



# Glossary

## **ADDITIVE**

A substance added to products in small quantities to achieve certain properties or to improve a product (Clariant Additives Business Unit).

## **BUSINESS AREA**

Clariant is reporting in four Business Areas with similar end-user markets and growth drivers: Care Chemicals, Catalysis & Energy, Natural Resources, and Plastics & Coatings.

## **BUSINESS UNIT**

Clariant's seven Business Units include: Additives; Catalysts & Energy; Functional Minerals; Industrial & Consumer Specialties; Oil & Mining Services; Pigments, Masterbatches.

## **CLARIANT EXCELLENCE**

Clariant Excellence is an initiative launched in March 2009 with the aim of establishing a culture of continuous improvement. The initiative is based on a change in mindset among all employees and at all levels of the company. It aims to improve competitiveness through gains in efficiency and to create added value. The four elements of Clariant Excellence are: Operational, Commercial, People, and Innovation Excellence.

## **CO<sub>2</sub>**

Carbon Dioxide

## **CO<sub>2</sub> EQUIVALENT**

CO<sub>2</sub> equivalent is a parameter describing the effect of greenhouse gas emissions. A factor known as the global warming potential (GWP) shows the effect of the individual gases compared with CO<sub>2</sub> as the reference value.

## **COMPLIANCE**

Compliance is a key element of Corporate Governance. It refers to compliance with the law and directives as well as with voluntary codes within the company.

## **CONTRACTOR**

In the context of the workforce, an (independent) contractor refers to a person not employed directly by Clariant who performs services under contract for Clariant in its premises. In this case Clariant takes responsibility for general safety of the working environment.

## **EBIT**

Earnings before interest and taxes.

## **EBITDA**

Earnings before interest, taxes, depreciation, and amortization.

## **ESH**

Environment, Safety & Health

## **EXECUTIVE COMMITTEE**

Management body of joint-stock companies; at Clariant the Executive Committee currently comprises four members.

## **FULL TIME/PART TIME/FTE**

Full time/Part time status has been derived from FTE per employee as follows:  $\geq 0.90$  FTE has been defined as full time employment,  $< 0.90$  FTE as part time.

## **GLOBAL PRODUCT STRATEGY (GPS)**

The Global Product Strategy aims to establish global product stewardship standards and practices for companies. The program, initiated by the International Council of Chemical Associations (ICCA), strives to ensure the safe handling of chemicals by reducing existing differences in risk assessment.

## **ISO**

International Organization for Standardization

## **LOST DAYS**

Lost days in which an employee is absent from work due to a work-related injury or illness.

They do not include:

1. the initial day of injury or illness,
2. any days on which the employee would not have worked even though able to work (i. e. holidays, weekends with no scheduled work, etc.).

## **LTA**

Lost Time Accidents

## **LTAR**

Lost Time Accident Rate: the ratio of the number of occupational accidents where at least one day's work was lost to every 200 000 hours of work.

## **LWDR**

LWDR = Lost Workday Rate: the ratio of the number of days lost due to accidents at work to every 200 000 hours of work.

## **MATERIALITY MATRIX**

Presentation of relevance of pertinent topics for Clariant's stakeholders and the company itself.

## **OHSAS 18001**

The Occupational Health and Safety Assessment Series (OHSAS) comprises, among other things, the standard OHSAS 18001 which includes a management system for occupational safety. This system can be integrated into an existing quality and environmental protection management system and certified accordingly.

## **PIGMENT**

Pigments are substances used for coloring; they are used in a technical manner, for example in the manufacture of dyes, varnishes, and plastics (Clariant Pigments Business Unit).

## **REACH**

REACH is an EU regulatory framework for the registration, evaluation and authorization of chemicals.

## **RESPONSIBLE CARE®**

Responsible Care® refers to a worldwide initiative by the chemical industry to continuously improve its performance in the fields of environmental protection, health and safety.

## **R&D**

Research & Development

## **SQAS**

The SQAS safety and quality evaluation system is a norm of the European Chemical Industry Council (CEFIC) to ensure safety and environmental compatibility of logistics providers.

## **STAKEHOLDER**

Stakeholders are people or groups whose interests are linked in various ways with those of a company. They include shareholders, business partners, employees, neighbors, and the community.

## **SUPERVISED WORKER**

A Supervised Worker is a person who performs regular work for or on behalf of Clariant but does not have a contract of employment with the company. This individual is always under the supervision of a Clariant employee and Clariant is liable for the general as well as specific safety of the working environment.

## **UNGC**

UN Global Compact is a voluntary United Nations initiative, under which companies commit to ensuring that their business activities and strategies are in line with 10 principles relating to human rights, labor standards, environmental protection, and the fight against corruption.

## **VALUE CHAIN**

The value chain describes the series of steps in the production process, from raw materials through the various intermediate stages to the finished end product.

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