

DELIVERING  
YOUR POTENTIAL



# Sustainability report **2018**



# Elkem – sustainability at a glance



**100%**

social and environmental screening of new suppliers



## SOCIETAL IMPACT

**NOK 15 billion** procurement

**ZERO** reported incidents of child or forced labour  
incidents of reported human rights abuse in supply chain

**Compliance:**

No identified material incidents

Anti-competitive behaviour:

No identified incidents



## GOVERNANCE & COMPLIANCE

Environmental compliance:

No material deviation

Anti-corruption:

No identified incidents

**0**



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

Use of biocarbon in Norway:

**2016–2018 = 20%**

## ENERGY & ENVIRONMENT

**NO<sub>x</sub>**

Reduction of 312 tonnes.

5% reduction in Norway

**Dust:** 10% reduction

Total energy consumption

**6,228 GWh**

Total recordable injury rate of 2.2:

**second best ever!**

2.5% absentee rate:

**best in 9 years!**



## ATTRACTIVE EMPLOYER

Female share of employees:

**25%**



## Elkem at a glance

Established in 1904, Elkem is one of the world's leading companies in the environmentally responsible manufacture of metals and materials. Elkem is a fully-integrated producer with operations throughout the silicon value chain from quartz to silicon and downstream silicone specialities as well as speciality ferrosilicon alloys and carbon materials. Elkem has more than 6,200 employees and consists of four business areas: Silicones, Silicon Materials, Foundry Products and Carbon.

Headquartered in Oslo, the company's 27 production sites and extensive network of sales offices and agents around the world ensure proximity to customers and access to attractive end markets.

On 22 March 2018 Elkem was re-listed on Oslo Børs.

Elkem's total operating income in 2018 amounted to NOK 25,887 million, with an EBITDA of NOK 5,793 million.

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# Elkem 2018 Sustainability report

## A message from our CEO

The process industry has an important role to play if the world is to achieve the UN Sustainable Development Goals and the Paris Climate Agreement. Elkem's mission is to contribute to a sustainable future by providing advanced silicon, silicones and carbon solutions, adding value to our stakeholders globally.

Our products provide solutions to meet the demand driven by megatrends including energy demand and storage, rapid urbanisation, increased standard of living, ageing and a growing population, and digitalisation. Therefore, sustainability is an integrated part of Elkem's business model. It is part of our business, and essential for our license to operate.

We aim to be a leading and sustainable industrial company wherever we operate. As a global company with more than 6,200 employees and presence in 28 countries, we impact the environment and communities around the world. The products we make, for consumers and industry, create a footprint in our supply chain. Elkem intends to leverage new technology and innovation to become more energy efficient, and provide good, safe and attractive jobs. We are committed to developing products and processes that contribute positively to the UN Sustainable Development Goals while minimising the negative impact of our activities, both environmental and social.

A key priority moving forward is to ensure that Elkem's corporate governance and sustainability standards are applied throughout the organisation. This means that new business divisions and employees, whether they are located in China, Paraguay, France or Norway – all meet the same high standards. We are committed to ensuring safe working conditions for our employees along with business integrity and strict compliance for all our operations. Elkem witnessed seven serious work-related accidents in 2018. We take this very seriously and continue to implement several preventive measures as we strive to reach our goal of zero injuries.

Elkem is among the world's most environmentally friendly manufacturers of silicon based materials, but our production processes still emit significant amounts of CO<sub>2</sub>, as this is an inherent part of the process that cannot be avoided with today's technology. Elkem is however working to change this and is playing a leading role in the Norwegian process industry's commitment to become carbon neutral by 2050. Elkem's goal is to use 20% biocarbon in the mix of reduction materials in the production of silicon and ferrosilicon alloys in Norway within 2021 and 40% within 2030. As of 2018 we have already reached our 2021 target. Moving forward, our ambition is to only invest in

new capacity where production is based on renewable energy.

I would like to highlight two events to underline how sustainability is part of our business model and strategy. In 2018 we opened our first foundry plant in Latin America, in Limpio, Paraguay. The production is based on charcoal and hydroelectric power. The plant has the lowest carbon footprint for smelters in Elkem, and serves as an inspiration to the rest of the organisation for what we can achieve when it comes to reducing fossil emissions.

In 2018 we also made a final decision to build our largest energy recovery plant so far, in Salten, Norway with an investment frame of up to NOK 1 billion. The new facility will be commissioned in 2020 and will substantially improve our ability to ensure environmentally friendly silicon production. It will secure lowest possible emissions and lowest possible use of energy resources.

Elkem's successful re-listing on Oslo Børs in 2018 is a great opportunity for us to engage with stakeholders on sustainability issues. This year we asked employees, shareholders, industry peers, research institutions and other stakeholders to help us identify the most material sustainability issues for Elkem. Energy, water waste and safe working conditions are high on the agenda, both for us and our stakeholders. We are committed to set ambitious, but achievable, targets for these sustainability issues. This will allow stakeholders, from employees to investors, to monitor our progress in the years to come.

Our ambition is to not only meet regulatory requirements, but to be one step ahead. Being at the forefront on sustainability issues gives Elkem a comparative business advantage and secures our license to operate. I firmly believe that our products can contribute to a more sustainable world, be it batteries for energy storage, green mobility, renewable energy production and construction or maybe products based on our materials that we do not even know of today.



Helge Aasen  
CEO, Elkem ASA



“

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## Introduction:

# Elkem's sustainability work

Elkem's mission is "to contribute to a sustainable future by providing advanced silicon, silicones and carbon solutions, adding value to our stakeholders globally". For Elkem, sustainable growth means being part of the response to the great challenges facing the world.

Our products provide solutions to meet the demand driven by megatrends including increased energy needs, a growing population, rapid urbanisation and digitalisation. We believe sustainability is both a responsibility and a prerequisite to be at the forefront of our industry and to remain competitive in the future.

Elkem sees sustainability as a commitment, and our 6,200 employees in 28 countries are the ones who make it happen. The group is committed to harnessing technology and advancing the production of silicon, silicones and carbon materials to create new, innovative solutions and business models that promote a sustainable future. This has been the Elkem way of thinking since Sam Eyde established Elkem in 1904 and Carl Wilhelm Söderberg developed the Söderberg electrode in 1918. Their work came to define the future for Elkem and industry worldwide.

As corporate social responsibility includes a wide range of topics, we embarked last year on a process to identify which of these are most material to Elkem. This comes after a three-year

process of restructuring and repositioning the company from a traditional silicon and ferrosilicon producer to a vertically integrated supplier of silicones covering the whole value chain from quartz mining to a wide range of advanced silicon and silicone based speciality products. Elkem's successful re-listing on Oslo Børs in March 2018 presented a good opportunity to engage more comprehensively with stakeholders on sustainability.

### STAKEHOLDER ENGAGEMENT

Cooperation and dialogue with stakeholders are essential for Elkem as we seek to be good neighbours and valuable community members wherever we operate around the world, be it small towns in Norway or major cities in China. Many of Elkem's plants are cornerstone employers and of great importance to the local community with tax income, jobs, infrastructure and community development. As a long-term partner, Elkem values open dialogue with neighbours, local governments and other partners including research institutions, customers and suppliers.

### Elkem's stakeholders:

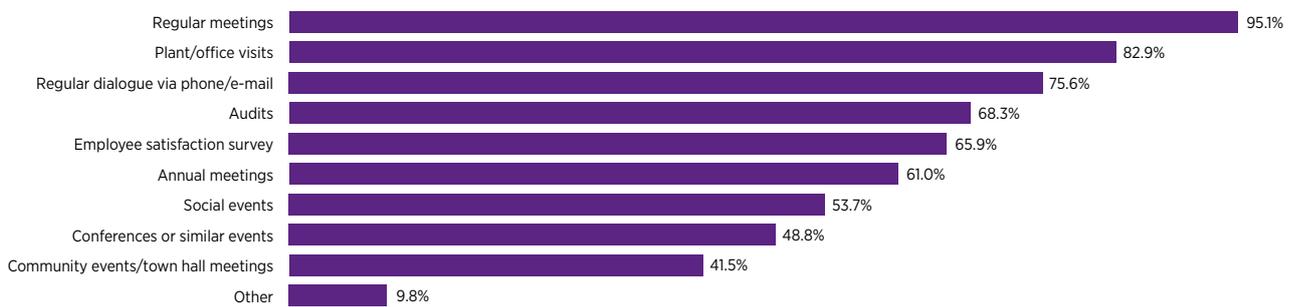


In 2018, Elkem has developed a stakeholder engagement tool to help us structure stakeholder engagement in the organisation and to enable a more thorough impact assessment. The tool pilot is now being tested and we plan to develop it further and implement it in key parts of the organisation in 2019. The aim is

to get a better global overview of our stakeholder engagement. Elkem’s annual internal stakeholder engagement survey shows how and where we interact with stakeholders. The participants in the survey were asked about typical stakeholder engagement types.

**Stakeholder engagement types**

Per cent

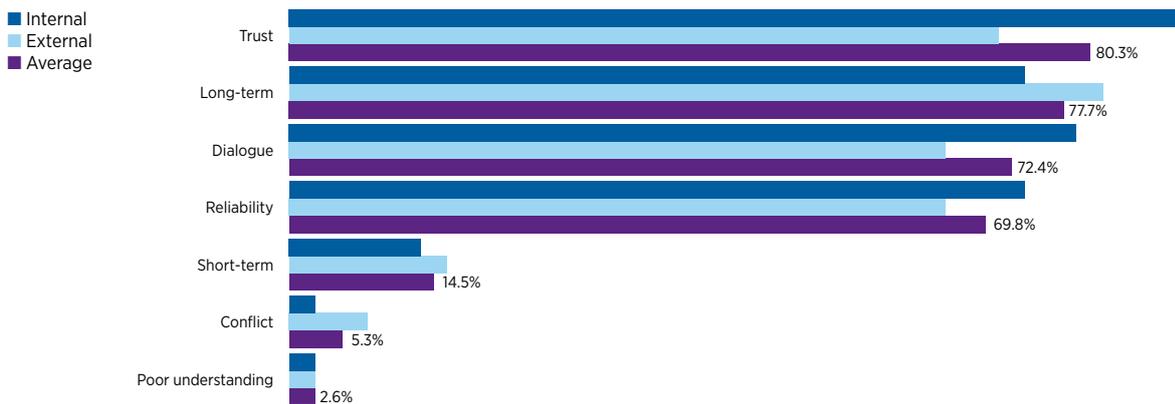


As cooperation and dialogue with stakeholders are essential to Elkem, the participants in our internal survey was asked to describe the overall relationship with their stakeholders. 80% answered that they had a trust-based relationship with their

stakeholders and 78% answered that it was a long-term relationship. Very few participants answered that the relationship to stakeholders is based on conflict (5%) and a poor understanding (3%).

**Stakeholder relationship is built on:**

Per cent



**MATERIALITY ASSESSMENT**

To ensure compliance with Global Reporting Initiative (GRI) and the new stakeholder landscape arising from Elkem’s re-listing on the stock exchange, the group carried out a more extensive engagement process with stakeholders last year. The materiality

assessment table on the next page highlights Elkem’s priority issues on sustainability based on comprehensive dialogue with both internal and external stakeholders.

**Priority issues on sustainability in Elkem:**

<b>Importance: External stakeholders</b>	<b>1. priority</b>	Supply chain: Environmental management	GHG Emissions Stakeholder dialogue/relations Climate change and risk adaption	<b>Compliance</b> <b>Occupational health and safety</b> <b>Energy efficiency</b> <b>Anti-corruption</b> <b>Diversity and equality</b> <b>Water management</b> <b>Waste management</b>
	<b>2. priority</b>	Resources/materials sourcing and use Spills Biodiversity Circular economy/product life cycle Contributions to local communities Noise	Sustainable product innovation Soil pollution Risk management Emergency/crisis preparedness Employee training and development Supply chain: Ethics and governance	Chemicals Human rights Corporate governance
	<b>3. priority</b>	Supply chain: Labour rights and conditions Indigenous rights Contributions to charities/NGOs Public policy and lobbying	Anti-competitive behaviour Security and data privacy Attractive workplace Job creation and retention Labour rights and conditions	Customer health and safety
		<b>3. priority</b>	<b>2. priority</b>	<b>1. priority</b>
<b>Importance: Internal</b>				

The material topics with highest priority in our materiality assessment can be found at the top right of the table. These topics are covered in our report.

**POLICIES AND REPORTING**

Elkem’s management of Corporate Social Responsibility is defined in the following procedures:

- General policy of Elkem ASA
- Elkem policy for corporate social responsibility
- Mandate for the CSR steering committee
- Code of conduct
- Whistle blowing
- Anti-corruption policy
- Competition law compliance policy

The general policy for Elkem ASA is approved by the board and provides the overall strategic approach while the other procedures are approved by corporate management and give necessary details.

Elkem’s reporting of Corporate Social Responsibility is covered by the annual sustainability report that is prepared in accordance with the GRI Standards and in line with Oslo Børs’ guidance on the reporting of corporate responsibility.

**COMMITMENTS**

Elkem is committed to develop its business in support of the ambitions of the Paris climate agreement and the United Nations Sustainable Development Goals (SDGs). As a member of the United Nations Global Compact we ensure that our business is in line with the ten principles of the Global Compact. We are committed to following the United Nations Guiding Principles on Human Rights and Business, and have made available an updated statement for the UK Modern Slavery Act.

Elkem adheres to the principles of “the Norwegian Code of Practice for Corporate Governance” issued by the Norwegian Corporate Governance Policy Board (NCGB). The objective of the Code of Practice is that companies listed on regulated markets in Norway will practice corporate governance that provides division of roles between shareholders, the board of directors and executive management more comprehensively than is required by legislation.

Elkem’s silicones division is a member of the Responsible Care Global Charter which is the chemical industry’s global initiative to drive continuous improvement in environment, health, safety and security. This includes a commitment to managing chemicals safely throughout their life cycle.

Elkem is committed to complying with international regulatory requirements and provides safety data sheets (SDS) for all



applicable products in accordance with the UN Globally Harmonised System of Classification and Labelling of Chemicals (GHS) or its national implementations.

**TARGETS**

We are committed to setting ambitious, but achievable targets for our material sustainability issues. This will allow stakehold-

ers, from employees to investors, to monitor our progress in the years to come. The below targets reflect how we will overall manage engagement and reporting on sustainability. Each chapter in this report includes specific targets, which are aligned to our material sustainability topics and where introduced in the 2017 sustainability report.

Targets	Timeline	Comments
<ul style="list-style-type: none"> <li>Continue to refine materiality analysis with more comprehensive surveys of external stakeholders</li> </ul>	2017-2018	Finalised in 2018
<ul style="list-style-type: none"> <li>Integrate the Sustainable Development Goals more into the report and consider reporting on selected targets</li> </ul>	2019-2020	To be revised in 2019



**United Nations**  
Global Compact



# Governance and compliance: Going further than the law

Governance and compliance is a prerequisite for value creation and trustworthiness. Elkem's strict ethical standards apply to all employees globally and we conduct training to enable our employees to make the right decisions and comply with our standards.

Elkem believes good corporate governance involves openness and trustful cooperation between all parties involved in the group: the shareholders, the board of directors and executive management, employees, customers, suppliers, public authorities and society in general.

In Elkem, we all are required to promote our values and business standards towards colleagues, business associates and society at large. Our governance documents set out principles for how business should be conducted. These apply to all Elkem entities. The board of directors approves the Elkem governance structure.

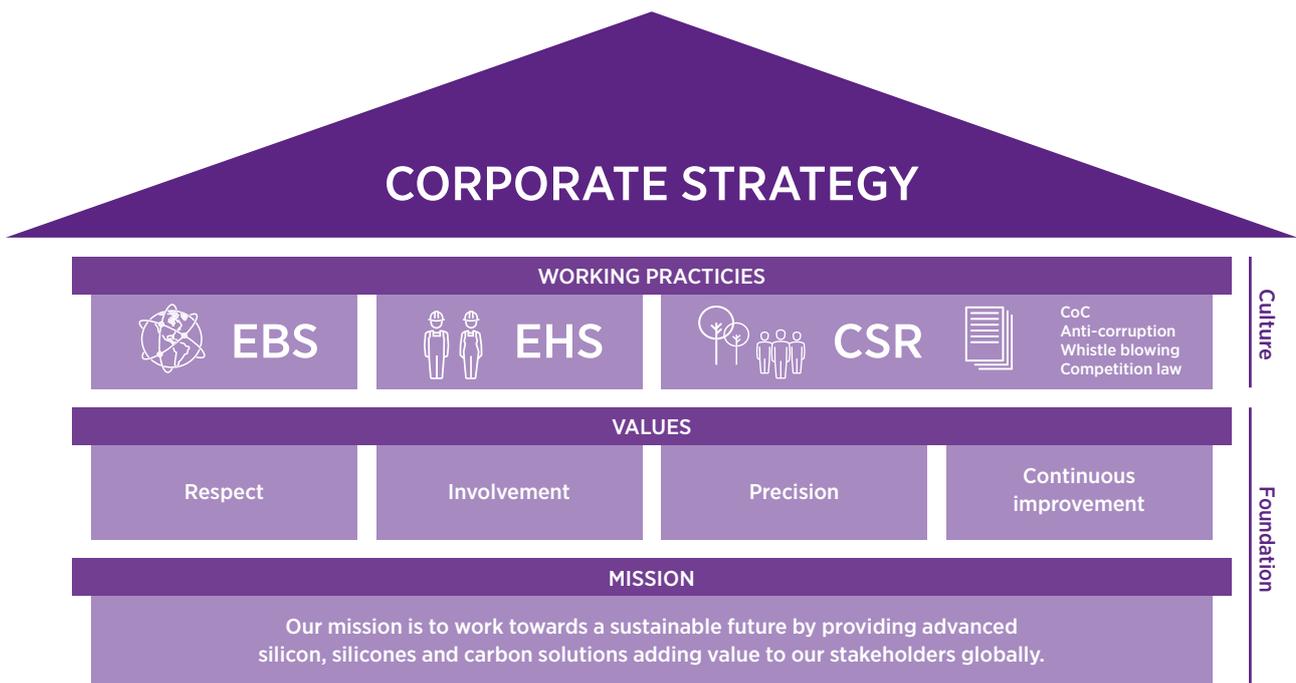
Our code of conduct is based on the principles of honesty and respect, and must be complied with regardless of where our operations are carried out. Corporate social responsibility forms an important part of Elkem's business culture. Elkem is a signatory to UN Global Compact, and Elkem's definition of cor-

porate responsibility is based on the ten UN Global Compact principles concerning human rights, labour rights, environment and anti-corruption.

### COMPLIANCE

Elkem is committed to full compliance with applicable rules and regulations wherever we operate around the world. Compliance is the responsibility of each business unit, but is also followed closely through the corporate system for internal boards and monthly business reviews as defined in the Elkem board of directors' instructions.

Elkem's board of directors endorses "The Norwegian Code of Practice for Corporate Governance" (the "Code") most recently revised 17 October 2018 and issued by the Norwegian Corporate Governance Policy Board (NCGB). The Code of Practice is available on <http://www.nues.no/>



All employees are given documented training on Elkem's code of conduct and must sign the document to confirm their understanding and commitment to follow it. This includes training on Elkem policies related to business ethics, social responsibility and understanding how local culture and customs can influence the perception of what is acceptable in different situations. Training on Elkem's anti-corruption and competition law compliance policies is also required for targeted groups. Sales, marketing and procurement resources also receive anti-corruption training. Elkem employees responsible for supplier audits receive additional training using recognised international audit standards and tools.

Elkem's CEO is the formal owner of Elkem's policy and programme for corporate social responsibility while governing documents are subject to board approval. The board of directors approves the sustainability report together with the annual report. The CSR steering committee is responsible for the sustainability report.

Each location and function are responsible for establishing a shared understanding of how Elkem's CSR policy affects their specific working environment. They are also responsible for developing necessary procedures and routines to ensure full compliance.

**Incidents in 2018**

There were no identified material incidents of non-compliance with laws and regulations in 2018.

**ANTI-COMPETITIVE BEHAVIOUR**

It is Elkem's general policy to compete vigorously and fairly in full compliance with relevant laws and regulations applicable to its business. To ensure group-wide compliance, Elkem has adopted a competition law policy and manual that describes conduct that will or may infringe on competition law.

Absolute compliance with competition law is expected of all Elkem business units, its employees and representatives. Any failure to comply with competition law will be considered as a serious breach of the employee's obligations towards Elkem. Elkem personnel considered as exposed to competition law issues are required to sign the competition law policy and manual and participate in competition law training facilitated by Elkem. Business unit leaders have the responsibility to take steps to implement Elkem's policy in their respective organisations.

**Incidents in 2018**

No identified incidents of anti-competitive behaviour in 2018.

**ENVIRONMENTAL COMPLIANCE**

Environmental impact is one of Elkem's key focus areas. Our EHS philosophy is to run operations with resource-efficient processes where negative environmental impacts are minimised throughout the value chain. Elkem is therefore committed to always stay within the rules and regulations governing environmental laws and regulations. Compliance is followed up by each plant as well



as by the corporate EHS department and management through business reviews. All environmental deviations are documented, investigated and managed, even if they are within permit levels and legal restrictions, to learn from them and initiate actions to avoid them from happening again.

In 2018, there were no reported material deviations causing risk of environmental effects. There were however minor short-term deviations from operating permits at some plants. These were quickly resolved and did not exceed annual limits or trigger administrative sanctions or fines.

In 2018 our Chinese plants have been subject to close scrutiny from the Chinese environmental authorities as part of the general tightening of environmental regulations in China. Based on new regulations that were implemented abruptly some of our activities were temporarily closed down and ordered to invest in new abatement systems. This is being done in full compliance with requirements and all applicable activities have returned to operational status.

**Incidents in 2018**

No material deviation causing risk of environmental effect in 2018.

## ANTI-CORRUPTION

Elkem does not permit or tolerate any form of corruption. Elkem's policy on anti-corruption applies group-wide and worldwide. Along with our EHS focus, anti-corruption is a top priority. The policy explains and elaborates on the content and implications of the anti-corruption policy for Elkem's employees, representatives and partners. All Elkem personnel exposed to corruption risks must sign the anti-corruption policy and manual.

Elkem is present in several countries with high corruption-risk. Elkem also sells products to companies located in countries ranked in the bottom tier (i.e. very high levels of corruption) of the Transparency International's Corruption Perception Index. Elkem conducts risk assessments on all operations group-wide and globally while the aforementioned high-risk countries receive particular scrutiny. All new suppliers of raw materials, goods and services are subject to pre-qualification based on corporate requirements within environment, health and safety, social responsibility, anti-corruption and compliance with laws and regulations. You can read more about our supplier requirements in the societal impact chapter, page 78. Examples of corruption risk includes the use of consultants regarding receiving public approvals, use of agents and joint ventures including local partners.

Risk assessments are typically conducted when entering into business arrangements in a new country where corruption is viewed as a major concern. Elkem will perform an integrity due diligence to assess the different risks related to corporate social responsibility, including corruption. The assessments may be done by relying on external specialists and will be regularly revisited. Elkem did not enter any new countries in 2018.

Elkem also undertakes a group-wide mapping of sales to companies located in countries with high corruption risk. The mapping ensures that the marketing departments have high-awareness to potential risks of unethical behaviour in these countries. This includes questions relate specifically to customer evaluation, CSR policy communication, documentation of sales, transaction transparency, and the application of Elkem's standards when using agents and distributors.

All Elkem personnel exposed to corruption risks must sign the anti-corruption policy and document e-learning. This relates to the following personnel:

- Corporate management
- Division management teams
- Divisional finance managers
- Plant finance managers & controllers
- Treasury and credit management personnel
- Corporate business support personnel
- Technology management team / department leaders
- All project managers
- All managers in research and product development
- All sales and marketing personnel
- All procurement personnel
- Production managers
- General managers of subsidiaries
- Key managers in logistics/supply chain/raw materials

Each Elkem business unit is responsible for understanding the specific challenges regarding anti-corruption, the anti-corruption regulations applicable to its operations and for adopting adequate anti-corruption guidance and measures.

The target is that 100% of personnel in the target group should be trained within the first year of employment. For 2018 the target was met except for a few individuals that recently joined Elkem and have since been trained.

Elkem's anti-corruption policy, as part of our CSR principles, is communicated and to a large extent forms part of the contracts with agents, distributors, partners, vendors and customers. They are also available on our website. All new suppliers must sign that they have understood and accept Elkem's CSR principles.

### Incidents in 2018:

There were no identified incidents of corruption in 2018.

Targets	Timeline	Comments
• Code of conduct communication and signatures for all employees at 100%	Continuous	On track, but not complete due to integration of Yongdeng Silicon Materials and Xinghuo Silicones
• Anti-corruption training of target group at 100%	Continuous	
• Competition policy training of target group at 100%	Continuous	
• Compliance with laws and regulations (zero deviations)	Continuous	Zero deviations
• CSR audits carried out by CSR committee - 8 audits per year	Continuous	Target not reached in 2018
• Update corporate governance policies to comply with rules for listed companies at Oslo Børs - Implement in Elkem ASA	2018	Goal reached in 2018
• Revise policies available online	2019	To be started in 2019



## Attractive employer:

# Striving to be an even better workplace

Elkem's skilled and dedicated employees are the basis of our success and Elkem must strive to remain an attractive employer, both to retain and to attract new employees. Important areas of action are health and safety, training and competence building as well as promoting equality and diversity.

Elkem's skilled and dedicated employees are the basis of our success and Elkem must strive to remain an attractive employer, both to retain current employees and to attract new employees. Important focus areas for this are health and safety, training, competence building and the promotion of equality and diversity.

Environment, health and safety (EHS) are part of the foundation of the company and are always our first priority. Our EHS efforts are based on a zero-harm philosophy. The safety of our employees is paramount. We strongly believe and have shown at many plants that our production can be done without any harm to our people.

Supported by a strong company culture, we work continuously to be a safe and attractive employer, for current and future employees. Organisational development, continuous talent management and systematic competence development are key to the successful growth of the company, especially now that we are growing as a company.

Elkem has more than 6,200 colleagues after the acquisition of two plants in China, Yongdeng Silicon Materials in Lanzhou and Xinghuo Silicones in Jiangxi, this equals 35% more employees in the company.

The number of contract employees in Elkem was 833 in 2018. Contractors deliver services of many kinds at Elkem's plants and other locations around the world and are subject to the same EHS requirements as our own employees. Contractors receive training and follow-up to ensure that they have a safe and healthy working environment. Total number of contractors by region in 2018 was 633 in Asia, 146 in Europe, 0 in Africa and 54 in the Americas.

### COMMON CULTURE: ELKEM BUSINESS SYSTEM

As in all organisations, Elkem evolves and develops over time and the company culture evolves with it. Elkem's values are involvement, respect, precision and continuous improvement. Together with the Elkem Business System (EBS) they are at the core of Elkem's company culture. EBS is our business philosophy and a toolbox that gives a common language and working methods for all employees to achieve both personal and busi-

ness success. EBS covers all areas of work, including productivity, quality and cost efficiency. The EBS method and philosophy applies throughout the organisation, and training of our staff is highly prioritised.

### OCCUPATIONAL HEALTH AND SAFETY

Elkem does not accept that injuries or illnesses are unavoidable facts in our industry. Full understanding of health and safety risks and challenges have high priority at all plants. Elkem's statistics clearly show that it is possible to run difficult and potentially dangerous operations with a large work force without injuries. Several of our plants have achieved this for a number of years in succession. The status of Elkem's safety work is discussed every week at division and group management level.

However, Elkem's production processes also have a number of health challenges that are managed daily in Elkem's organisation. The main exposures that may lead to occupational diseases are:

- Exposure to quartz dust in mining, transportation and storage of quartz, and exposure to SiO<sub>2</sub> dust in smelting halls that may cause lung diseases.
- Exposure to PAH components in carbon paste production that may cause cancer.
- Exposure to toxic chemicals in chemical processes to produce siloxane and silicone products.
- Exposure to noise.
- Exposure to ergonomic challenges that may give long-term musculoskeletal damage.

All of these exposures are carefully managed at each applicable site with containment, work and work station adjustment, and, when necessary, personal protection equipment that is provided free of charge to all employees. Many initiatives have also been implemented through the years to reduce exposure by reducing/eliminating sources of dust and noise, and substitution of hazardous substances in the production process.

Employees who are exposed for hazardous dust, chemicals and noise are also subject to extended medical follow-up. A med-



ical examination sets a baseline for their health condition when hired, and routine medical examinations follow-up that this does not change over time.

### INJURY SEVERITY

Elkem measures injury severity based on the short and long-term effect the injury has on the injured person's health and capabilities. We use OSHA's definition of recordable injuries for reporting and define Lost Workday injuries as H1, and Medical Treatment / Restricted Work injuries as H2.

In 2018 we reached the second best total recordable injury rate (H1+H2) in Elkem's history with 2.2 injuries per million working hours, down from 3.1 in 2017. Our best result was in 2015 with 1.8.

Part of this positive development is due to our growth with a high increase in the number of working hours, but we also see a very good improvement in the number of recordable injuries for own employees. Sadly, we saw an increase from 13 injuries (2017) to 20 injuries for our contractors. This again shows that we can never lose focus on our zero-harm philosophy and goal.

In Elkem, injury severity is tracked as low, medium and high severity. Low severity injuries give no permanent damage and have a short recovery time, medium severity injuries may have a longer recovery period, but no substantial permanent damage,

while high severity injuries give substantial permanent damage or worst case, causes death.

Although Elkem's total recordable injury rate numbers were record low in 2018, Elkem did have an increase in severity. In 2017 we had three injuries with high severity, while the number increased to eight in 2018. 83.4% of all recordable injuries (both own employees and contractors) were registered as low and medium severity in 2018. This is down from 95.3% in 2017, because of the increase in severe injuries.

Elkem had no fatalities in 2018.

### ABSENTEE RATE

Absenteeism is the key performance indicator for health in Elkem. The average rate of absenteeism measured in percent of available working days for 2018 was 2.5%, down from 3.5% in 2017. The absentee rate has been on a downwards trend since 2011, and this year's number is the best in nine years. This is partially an effect of growth in areas where the threshold for taking sick leave is higher than in Europe, but also indicates a strong work environment in the organisation. A small percentage of the total sick leave is work related. Ongoing activities to increase health and wellbeing at Elkem locations include working environment assessments and improvement efforts in the areas of ergonomics, chemical control and noise and dust reduction.



**OCCUPATIONAL DISEASE RATE**

For the past three years there has been very few reports of possible occupational illnesses. Most of these are low-key ergonomic issues concerning strain and pain. There have also been several reports of possible lung disease in connection with dust exposure, but none have been fully documented as work related. All of these have been in Europe.

**DIVERSITY AND EQUALITY**

Elkem is committed to equal opportunities for all our employees in an inclusive work culture. We appreciate and recognise that every individual is unique and valuable, and should be respected for his or her individual abilities. We do not accept any form of harassment or discrimination based on gender, religion, race, national or ethnic origin, cultural background, social group, disability, sexual orientation, marital status, age or political opinion.

Elkem is an international company with a presence on four continents. Having employees to match this global presence, with diverse cultural and individual backgrounds, is necessary for the company to succeed. Elkem is a local employer and aims to employ local management and staff wherever we are present.

Following up the principle of non-discrimination is the responsibility of each unit manager. Elkem has an internal notification service (whistle-blowing) that employees can use to note their concerns about possible breaches of Elkem’s ethical guidelines or other possible unethical or illegal actions. This can be used to alert management of instances of discrimination.

The #metoo campaign on sexual discrimination raised awareness and discussion on several Elkem locations through 2017 and 2018. A pilot project about diversity and inclusion has been developed in 2018, and the first workshops will be held early 2019. The focus of the workshop will be different kinds of discrimination and possible ethical dilemmas in our work day. The pilot will be evaluated and considered for the organisation as a whole.

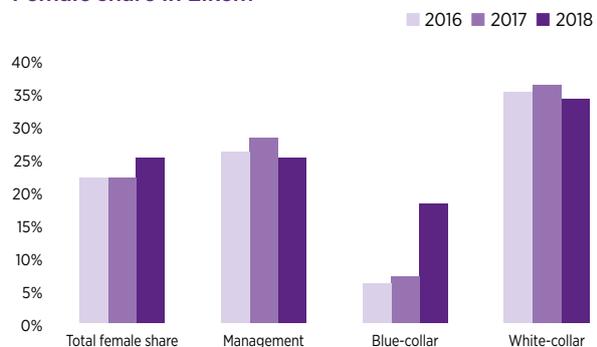
**Incidents in 2018**

There was one case of verbal sexual harassment reported to corporate level in 2017. The case was handled according to Elkem’s corporate procedures. The same case continued in 2018 and resulted in termination of employment.

**FEMALE SHARE**

The process industry is generally male-dominated. Women are, however, increasingly expressing an interest in working in our industry as increased automation leads to less heavy manual work and a high focus on environment, health and safety gives a better working environment and more sustainable operations. Elkem values gender diversity and aims to achieve a better gender balance year on year.

**Female share in Elkem**



The percentage of female employees in Elkem has remained stable and low at 22% the last years. We experienced an increase in female share of the company to 25% in 2018, due to the integration of the Chinese plants of Elkem Xinghuo Silicones and Elkem

Yongdeng Silicon Materials. Asia is the region with the highest number of female employees, with 29%.

Since the two new plants Xinghuo Silicones and Yongdeng Silicon Materials account for a 35% increase of employees in the organisation, any change is naturally affected. A positive change with this integration is the substantial increase in female blue-collar employment from 7% to 18% in 2018.

However, Elkem saw a drop in the share of female leaders. One concrete action to improve our share of female leaders is to actively encourage women to apply for management positions internally. At least 50% of participants invited to Elkem's leadership training programmes are women. The female participation rate in the programme in 2018 was only at 25%.

Elkem does not have the share in age groups at group level available for 2018.

### BOARD OF DIRECTORS AND MANAGEMENT

Elkem's board of directors has eight members from Germany, France, China and Norway.

The female share of the board is 50%. One of the eight board members is in the age group 30–50 years old. The rest of the members are 51 years or older. None of the board members are from minority groups.

The corporate management team of Elkem consists of 10 people. Only one of the 10 is a woman. Two of the members are in the age group of 30 to 50 years old, the rest are 51 years or older.

In 2018 Elkem started mapping the female share of leaders and boards in our divisions to get a better overview and start tracking. The mapping shows great differences within the organisation. Some places in the organisation women account for 50% of internal boards and plant management, other locations there are no women in the boards or management at all.

### DEVELOPMENT AND TRAINING

Elkem is active in a large number of demanding markets and the need for continuous developments and improvement is constant. The organisation's improvement work needs to be targeted, fast-paced and of high quality. Elkem actively uses employees' day-to-day work situation as the primary arena for learning. We believe that the best way to develop new skills is to participate in actual improvement processes and problem solving based on the EBS principles. We also consider taking on new responsibilities as a very important way of learning and developing. To strengthen our learning-by-doing approach we also offer a number of in-house training programmes. Training within various skills is part of the individual development plans for employees.

Elkem's global target is that 100% of employees of all positions and locations shall have an annual development discussion with their leader. In 2018, 59% of employees had such discussions. On that note, 83% of all Elkem units achieved 90% or higher implementation rate. Without Yongdeng Silicon Materials and Xinghuo Silicones, the number of employees that received development discussions was 91%, one of the best numbers we have seen in the company. 74% of our location met our 100% target in 2018. In 2019, we will increase the efforts especially at our two new plants, and strive towards our goal of 100% in the whole organisation.

### TURNOVER

Turnover rate is an indication of attractiveness and how well Elkem manages to retain our employees. The turnover rate is the so called unwanted leavers, the number of people that left Elkem that does not include retirement and similar. Total turnover rate in the Elkem group was 5.4%, down from 6% in 2017.

### Turn over rate

Region	2018 – total	Female share 2018	2017
Americas	8%	1%	6.9%
Europe, Middle-East and Africa	8%	2%	6.2%
Asia	3%	1%	3%

### New hires

Region	2018 – total	Female share 2018	2017
Americas	149	13%	72
Europe, Middle-East and Africa	241	27%	253
Asia	188	27%	72

The female share of new hires was over all 22.5% and the female share of leavers was 22.8%. The numbers are not available by age at group level.

## COLLECTIVE BARGAINING AGREEMENTS

Elkem complies with local statutory requirements regarding freedom of association in all countries where we are present. Pursuant to the provisions of the Norwegian Companies Act, employees have two representatives and two observers on the board of Elkem ASA.

The level of organisation varies from country to country. In some countries the operators are organised under one collective bargaining agreement. In other countries there are no unions represented in Elkem's entities. Elkem supports the right to exercise freedom of association and collective bargaining and in general has good cooperation with the unions. This also includes our suppliers' employees, where information about this is found in contractual agreements.

Information about the number of employees covered collectively by bargaining agreements is currently not available.

## CHILD AND FORCED LABOUR

Elkem has operations in several countries where there is a risk of child labour and forced labour, notably India, Malaysia and Paraguay.

Working at some supplier production sites or some of our own plants is considered high risk work and must only be done by trained and qualified people.

The age limit for working in Elkem is 18 years of age, with the exception of some vacation substitutes and vocational students who can be 16. They are only allowed to do light and simple work that is deemed safe and does not conflict with school participation.

Elkem's suppliers have contractual obligations to ensure that no children under the age of 15 (14 in some selected countries) work at our supplier's plants and that they limit hazardous work and night work to persons over 18 years of age. Elkem adheres to the UN Guiding Principles on Human Rights and Business.

### Incidents in 2018:

There were no reports of child or forced labour in Elkem or with our suppliers in 2018.

Targets	Timeline	Comments
• Zero recordable injuries	Continuous	Positive development the last years, but not complete in 2018
• Zero cases of serious occupational illness	Continuous	Positive development the last years, but not complete in 2018
• EHS training of all new employees at 100%	Continuous	Goal reached for 2018
• Increased female share year on year	Continuous	Goal reached for 2018
• Development discussions at 100%	Continuous	Overall good implementation, but not complete because of the integration of Xinghuo and Yongdeng
• Map female share in internal governing bodies and start tracking	2018-2019	Goal reached in 2018



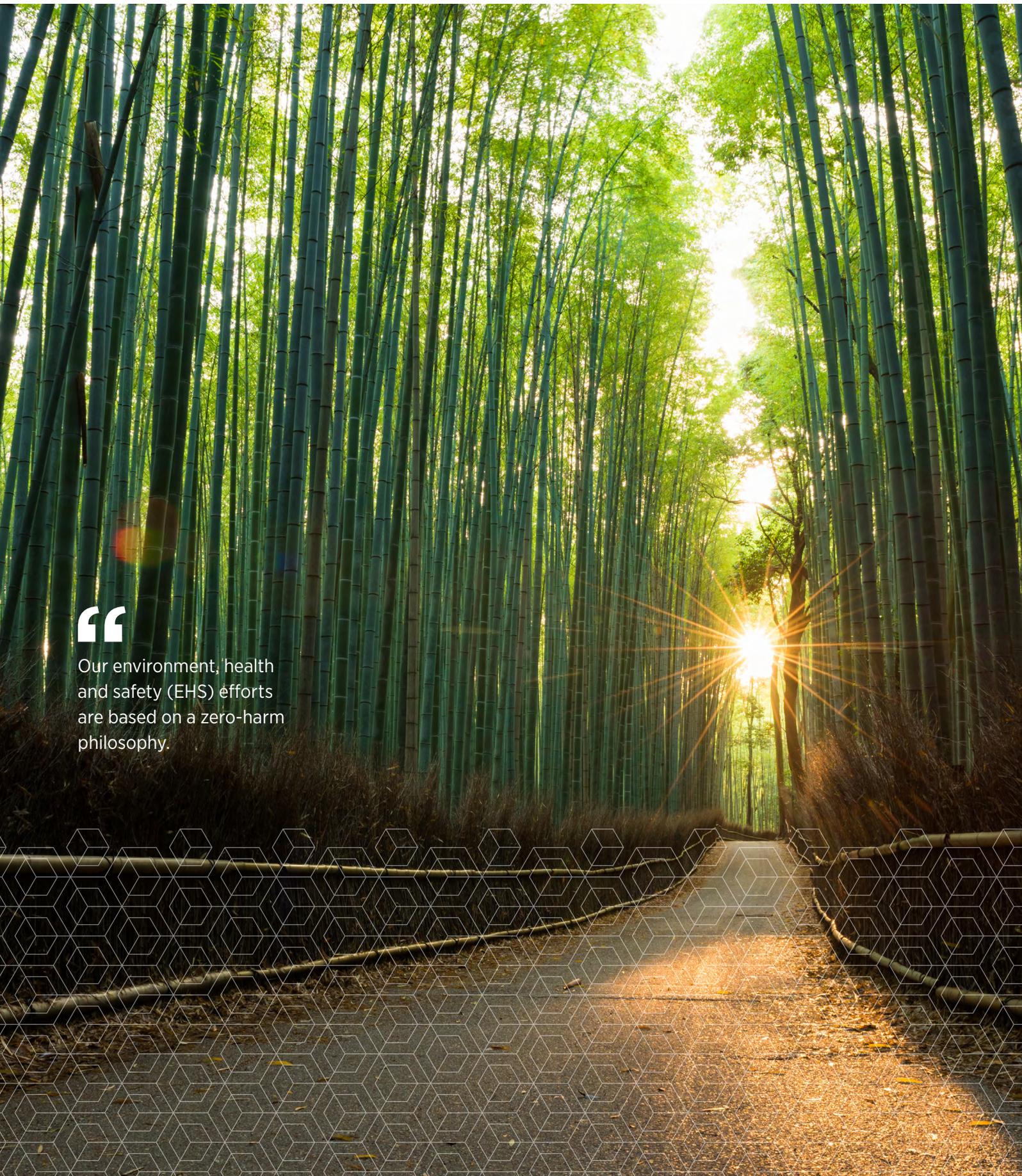
## Employment initiatives at Elkem Rana

In close cooperation with the local public employment office, Elkem Rana employs people without formal competence in a 10 week training programme. After the training, Elkem Rana evaluates the employees for permanent positions at the plant.

People standing outside of the work force are resources that are not being used and are a challenge for both the local community where they live, and for themselves as they are not using their potential to participate in the workforce. People can experience hurdles when trying to return to the work force after a pause with possible gaps in their CVs or if they have had problems in the past. Getting especially young people into the workforce is a focus for local and national authorities in Norway. Even though more and more young adults are finishing high school in Norway, certain regions like Nordland, where Elkem Rana is based, still have lower rates. Nordland has the second lowest rate in Norway. Elkem's challenge in a region like this is to get the right people with the right background

for employment at the plant. This programme is one way to attract and hire the right employees.

Elkem Rana has implemented KPIs on this, as part of their social responsibility in the local community. Several of their permanent employees started in this programme and were able to show their potential. Together with the local employment office, Elkem helps these people normalise their work day, through predictable work hours and routines. Meeting at the agreed time and doing the work set out for them can be a challenge for people that have been outside the work force for some time and is seen as one of the most important success factors for the people in training.



“

Our environment, health and safety (EHS) efforts are based on a zero-harm philosophy.

# Energy and environment: Zero-harm guides our work

Elkem strives to be an environmentally conscious company, with a safe and healthy working environment. Our environmental, health and safety (EHS) efforts are based on a zero-harm philosophy.

A zero-harm philosophy implies protecting the health and safety of all people working at all Elkem locations. It also means running operations with resource-efficient processes where negative environmental impacts are minimised throughout the value chain.

Using highly developed production technology, Elkem converts natural resources into products that today's society is fully dependent on. With recent growth, Elkem is an integrated value chain covering all aspects of production from quartz to silicon and silicones. Each step of the process has its environmental challenges that we believe are managed in a sustainable manner. Our sustainability approach is based on the general principle of producing as efficiently as possible and with the maximum use of all input streams to avoid waste.

The process of converting quartz to silicon is a high temperature smelting process that consumes vast amounts of energy. As the main energy base for this production is hydropower at almost all of our smelters, the electrical energy supply does not have a climate effect. The process itself, however, uses carbon sources like fossil coal, charcoal and wood chips as a reductant in the chemical conversion. This gives emissions of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>2</sub>. These emissions are inherent to the process and cannot be fully removed with today's technology. Our main strategy has therefor been to reduce our environmental footprint as much as feasible with today's technology at the same time as we de-

velop tomorrows technology that will be carbon neutral. Efforts include replacing fossil carbon with biocarbon by increasing the amount of charcoal and wood-chips in the process, rebuilding furnaces to reduce NO<sub>x</sub> generated in the smelting process and using more low-Sulphur raw materials to reduce SO<sub>2</sub> emissions. All of these have had a substantial positive effect on our environmental footprint.

In 2018, Elkem presented a renewed environmental strategy for the board of directors confirming its commitment to:

- Full compliance with all applicable environmental regulations wherever Elkem operates worldwide.
- Create and sustain a strong environmental reputation wherever we operate worldwide.
- Ensure sustainable production and emissions/discharge control based on our knowledge of the environmental effects of our production. This also applies in countries where applicable environmental regulation is weak or non-existent.
- Strengthen our position in the development of technology and materials that enable reduction in greenhouse gas emissions throughout the world.

The strategy also provides KPIs, reported quarterly, for energy consumption, emission to air and water and waste/by-products.

KPI	Targets
CO <sub>2</sub>	<ul style="list-style-type: none"> <li>• 20% reduction in direct fossil CO<sub>2</sub> emissions for Norwegian smelters by 2021, 40% by 2030</li> <li>• Full understanding of indirect CO<sub>2</sub> emissions</li> </ul>
SO <sub>2</sub>	<ul style="list-style-type: none"> <li>• Per cent reduction (to be defined) in direct SO<sub>2</sub> from process gas by 2030</li> </ul>
NO <sub>x</sub>	<ul style="list-style-type: none"> <li>• 1000 tonnes reduction at Norwegian smelters by 2025</li> </ul>
Dust	<ul style="list-style-type: none"> <li>• 30% reduction by 2025 (2015 base)</li> </ul>
Waste	<ul style="list-style-type: none"> <li>• Per cent reduction (to be defined) of process waste to landfill or destruction by 2025</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• Energy recovery increase year on year</li> </ul>
Water (COD / PAH / fresh water consumption)	<ul style="list-style-type: none"> <li>• Meet new water directive requirements in Europe, and new water requirement in China (national and local)</li> <li>• Compliance with mandated remediation of Fiskaa water body to lowest cost</li> </ul>
D4/D5	<ul style="list-style-type: none"> <li>• Zero spills of D4/D5</li> </ul>



### ENERGY: CONSUMPTION, RECOVERY AND EFFICIENCY

Energy is a critical input factor for Elkem's production and represents a significant cost. Energy efficiency and sustainable use of energy is of utmost importance to secure necessary supply while at the same time reducing our global greenhouse gas footprint. New regulatory framework, such as concessions, directives, taxes and positive stimuli in the form of public support underscore the importance of focusing more strongly on energy efficiency.

Parts of Elkem's value chain are highly energy intensive, with silicon, ferrosilicon and foundry alloys being produced in electric arc furnaces. Elkem's smelting furnaces consume just under 5 TWh of electrical energy per year. The other processes in Elkem are considerably less energy intensive with the total of 1,4 TWh.

Elkem was an industrial pioneer in the utilisation of waste heat, with the first energy recovery system on a smelting furnace being installed already in the 1970s. Recovered heat from smelting furnaces can be utilised as hot water for district heating, steam for other production processes and to generate new electricity. Electricity is sold back to the grid while hot water and steam are used both internally and externally to supply other companies and communities in the vicinity of each plant.

Global records of total energy consumption have not been prioritised earlier as a very high percentage of the total is related to furnace production and has been well documented at a

corporate level. With our renewed strategy and more detailed reporting systems this will be in place from 2019.

Total gross electricity consumption in Elkem globally in 2018 was 6,228 GWh, up from 5,279 GWh in 2017. This is because of the integration of the silicon plant Yongdeng, the silicones plant Xinghuo and the start of production at the ferrosilicon plant in Limpio, Paraguay.

Of the total gross power consumption of 6,228 GWh in 2018, more than 85% took place in countries or regions with close to 100% renewable power production.

The increase in energy consumption is mostly related to new plants that now is a part of the Elkem organisation.

Globally, a total of 645 GWh heat and electricity was recovered from our plants, down from 689 GWh. This is due to lower capacity at our Chicoutimi plant.

New electricity is generated at the Thamshavn and Bjølvfossen plants with a total of 209 GWh in 2018. Between 2016 and 2017 refurbishment and ramp-up of the energy recovery system at Bjølvfossen gave a substantial increase, while 2018 has been stable. By 2020, an additional 275 GWh of new electricity will come on line at the Salten plant as an approved strategic investment project started in 2018 is completed.

Elkem has not kept global records of energy consumption outside our industrial processes as this energy consumption com-

prises a small percentage of the total and is very time-consuming to collect. We will aim to improve our records of auxiliary power and fuels consumption over time.

For hot water to district heating there are numerous usages including heating of raw materials internally, supply to public building and sports arenas in local communities and sales to other companies with activities like land-based fish farming that need heat.

As a percentage of total electricity consumption, the amount of recovered electricity and heat went down from 13% in 2017 to about 10% in 2018 due to the integration of new plants that does not have energy recovery facilities. See graphs that compare previous years on page 75.

### CONSUMPTION OF REDUCTION MATERIAL

Elkem's electric arc furnaces use both fossil and biogenic carbon as chemical reduction materials in the metallurgical process. Total use of fossil reduction materials in Elkem globally was 726,267 in 2018, up from 695,004 in 2017.

Consumption will vary from year to year based on market conditions and capacity utilisation. The increase is mainly due to the integration of Yongdeng Silicon Materials in 2018.

Total renewable reduction material consumption in Elkem globally was 364,424 tonnes in 2018, a 4% increase from 2017.

### WATER MANAGEMENT

Historically, the majority of Elkem's production facilities were located in areas where freshwater supplies were abundant and more than sufficient for Elkem's production activities. Water management activities were mainly focused on discharge control to ensure that public permits are respected, and that water bodies close to our production sites were duly protected. As Elkem has developed into a global company and increased its presence in chemical processing, water management is becoming more important, both when it comes to water economisation, recovery and reuse at the plant and controlling and monitoring emissions from our plants to water.

Water monitoring has been done actively at Elkem's plants for decades in accordance with applicable regulations and permits. In Europe this means compliance with the EU Water Framework Directive, while other regulations apply in other regions around the world where we operate.

Water consumption and discharge is limited in silicon and ferrosilicon production. Emissions to air from the smelting process will however have an effect on water bodies close to the production sites as rain washes residue into the sea. Many old plants were also built on landfills and/or have landfills where there is a potential for run-off to water bodies. Water monitoring focuses on sediments and biota in water bodies that may be affected by emissions from our production or by run-off from landfills. Key parameters include levels of heavy metals and organic compounds in blue mussels and sediments.

Carbon production has historically used more water directly in the production process to cool products. For water manage-

## New energy recovery plant at Elkem Salten

In April 2018, Elkem initiated a partnership with Kvitebjørn Energi to build an energy recovery plant at Elkem Salten in the northern part of Norway.

The installation is calculated to be able to recover 28% of the electrical energy feed into the plant's three smelting furnaces. This equals the power consumption of about 15,000 Norwegian households.

At the announcement of the project in April, Elkem's CEO Helge Aasen said: - *This is an attractive and important project for Elkem. Together with our partner, Kvitebjørn Energi, we will continue to develop Elkem's leading position within energy recovery. The project will increasingly strengthen our competitiveness.*

The investment frame of the project is estimated to NOK 1 billion and has been supported by Enova which is the Norwegian government's funding agency for energy efficiency improvements. It is the second largest investment Enova has ever funded.

The energy recovery plant will position Elkem Salten to become one of the most energy effective silicon plants in the world. Together with other energy recovery installations that have been implemented at Elkem plants over many years this will bring the total energy recovery of the group to approximately 900 GWh per year. The project will therefore strengthen Elkem's efforts to ensure environmentally friendly silicon and ferrosilicon production with the lowest possible emissions and lowest possible use of resources.

The project is expected to be finished in 2020.

ment the main focus has been on avoiding discharge of PAH as it contains hazardous components that can affect marine life. Substantial efforts have been made to reduce water consumption and to capture and clean PAH polluted air and water before it reached water bodies where it can do harm.

With growth in silicones, water consumption and management is becoming increasingly important for Elkem. Water is an important raw material in the production of base and intermediate silicones and is also used extensively in the different processing steps. Elkem's upstream silicones production is located close to important freshwater bodies in both France and China where effluent from chemical production is closely regulated. All applicable plants have comprehensive systems for water monitoring and water treatment in compliance with local regulations.

The total fresh water consumption in Elkem was 36,208,744 m<sup>3</sup>. The total process waste water discharge was 14,859,936 m<sup>3</sup>. Water storage has no significant water-related impact.

## WASTE MANAGEMENT

With the expansion of Elkem to include the chemical production of silicones from silicon, the characteristics of our waste streams have changed. From our traditional smelting activities waste consisted mainly of non-hazardous inorganic materials such as slag, product fines, quartz fines and a smaller quantity of organic fines from wood-chips and charcoal. For all of these, extensive projects have been initiated to re-cycle and re-use instead of depositing in landfills. Many of these have been very successful by both creating new products and by better utilisation of raw materials.

With silicones there is much higher content of organic waste and hazardous waste from the different production processes. Hazardous waste is mainly managed by certified external suppliers, while other waste will either be incinerated or landfilled. Many projects have also been initiated here to reduce waste at its source and to regenerate chemicals for re-use instead of destroying or depositing them.

Several plants have a zero waste to deposit target and have accomplished significant reductions over the last years.

Waste to landfill in 2018 was 195,000 tonnes. About 1,300 tonnes of this was hazardous waste and has been managed in accordance with local public regulations.

There were no significant spills, defined as spills that have a lasting environmental impact, in 2018.

However, there have been incidents related to loss of containment in tank facilities, but without substantial environmental impact.

## EMISSIONS

With today's technology, the production of metals and materials on an industrial scale is not possible without the emission of various substances that can be harmful if not controlled. These include CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, PAH and dust. As some of these are inherent to our production process, emission levels vary with production volume from year to year. Elkem works continuously to

reduce these emissions and has dedicated R&D activities working with all major emissions.

## CO<sub>2</sub> EMISSIONS AND TRADING SCHEMES

More than 75% of the total CO<sub>2</sub>-emissions from our production come from the smelting process. As this cannot be measured directly, emissions are calculated based on third party certificates of carbon content (TC) in raw materials (coke and coal). Numbers for CO<sub>2</sub> from other sources, including heating and fuel, are based on standard conversion factors in accordance with EU/ETS Guidelines.

Most of our smelters are subjects to the EU/ETS system and its external revision schemes. From the start in 2013 Elkem was granted on average 1.2 million free allowances per year as part of the EU system to avoid carbon leakage where production would be moved out of Europe to other countries without carbon trading schemes. When it was identified that smelters in Norway had been allocated fewer free quotas than other countries in Europe, the allocation was appealed. At the end of 2018 a decision was announced increasing the number of free quotas at two of Elkem's Norwegian smelters.

The total emission of CO<sub>2</sub> from our processes was 2.54 million tonnes in 2018. This will vary year on year based on market conditions and capacity utilisation. The last years we have seen an increase in our total CO<sub>2</sub> emissions. All of this can be related directly to production expansion. In 2017 Elkem acquired an existing production facility with 2 furnaces in Mo I Rana Norway and in 2018 another with 4 furnaces in China. All of these were existing production facilities and do not increase Norway's or China's total CO<sub>2</sub> emissions. In addition, Elkem started 1 smelting furnace in Paraguay giving a national increase in CO<sub>2</sub> emissions in Paraguay. This furnace is however run on hydroelectric power and uses only bio-carbon as a reductant making its operation close to carbon neutral.

As far as net CO<sub>2</sub> emissions are concerned, this is dependent on improved production yield and increasing the amount of reduction materials from non-fossil sources that can be used. Our goal is to reduce our fossil carbon footprint in our Norwegian smelters with 20% by 2021, and with 40% by 2030. We are working with partners to develop efficient and more environmentally friendly production of charcoal to silicon and ferrosilicon production.

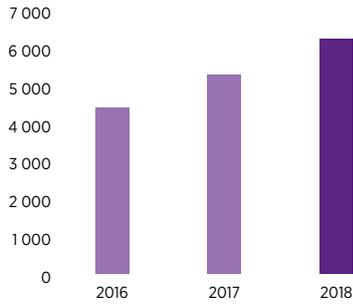
## CO<sub>2</sub>

In 2018, Elkem emitted 2.54 million tonnes of fossil CO<sub>2</sub>, a 30% increase from 2017. This increase is mainly due to the expansion of plants in our organisation.

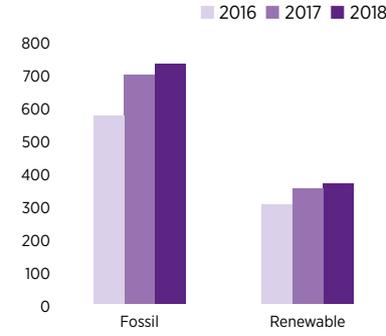
About 75% of the total CO<sub>2</sub> emissions were generated in the reduction processes in the smelters where carbon (C) reacts with oxygen in quartz to obtain silicon/ferrosilicon.

Our goal is to replace fossil emissions with biocarbon by 20% in our Norwegian smelters by 2021. The biogenic emissions in 2018 was 313,500 tonnes, equal to 20,7% of our CO<sub>2</sub> emissions. The emission of biogenic CO<sub>2</sub> originates from woodchips and

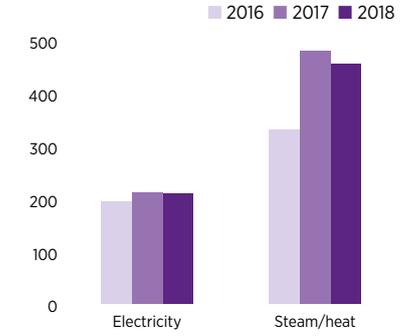
**Gross electricity consumption<sup>1</sup>**  
GWh



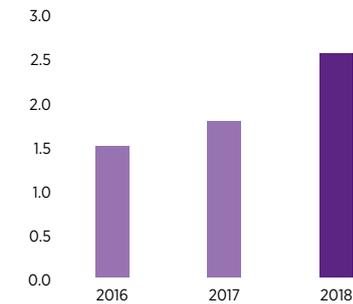
**Consumption of reduction materials**  
Metric tonnes



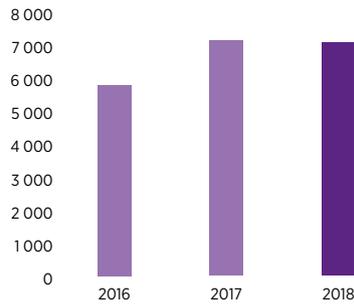
**Energy recovery by electricity & heat**  
GWh



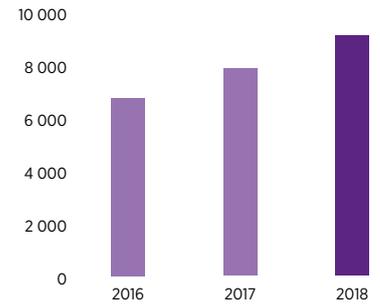
**CO<sub>2</sub> emissions**  
Million tonnes



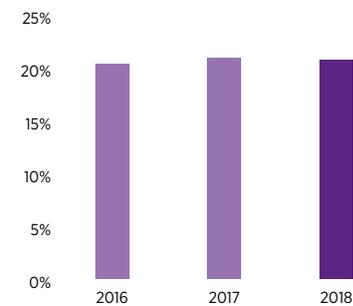
**NO<sub>x</sub> emissions**  
Tonnes



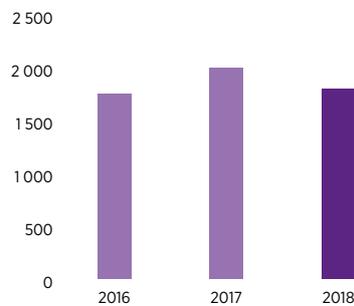
**SO<sub>2</sub> emissions**  
Tonnes



**Biocarbon in Norwegian smelters**  
Percentage of total carbon



**Dust emissions**  
Tonnes



20.7% of the CO<sub>2</sub> emissions in Norwegian smelters are from biocarbon sources.

<sup>1)</sup> 2016 numbers do not include Elkem Rana, Xinghuo and Yongdeng. 2017 numbers do not include Elkem Yongdeng.

<sup>2)</sup> To reach our goal of 20% use of biocarbon, the Norwegian smelters would have to reduce the fossil CO<sub>2</sub> with more than 303,100 tonnes that equals 20% of the total emission.

charcoal used as alternative raw material in the silicon and ferrosilicon smelters.

## OTHER EMISSIONS

Elkem has significant emissions of NO<sub>x</sub>, SO<sub>2</sub>, and dust. Emissions vary mainly due to production volume.

### NO<sub>x</sub>

Elkem's NO<sub>x</sub> emissions saw a small decline from 7,110 tonnes in 2017 to 7,070 tonnes in 2018, including new plants in the calculation. This reduction comes as a result of several initiatives and projects at our plants, mainly supported by the Norwegian NO<sub>x</sub> fund. For our Norwegian smelters, Elkem has seen a 5% decrease in our NO<sub>x</sub> emission, from 5774 tonnes in 2017 to 5462 tonnes in 2018.

### SO<sub>2</sub>

In 2018, Elkem emitted 9,000 tonnes, up from 7,900 tonnes.

For SO<sub>2</sub> the main focus has traditionally been on sourcing raw materials with a lower sulphur content. As this potential

is limited, scrubbing systems are also being considered where this is feasible. In 2018, Elkem Carbon (Norway) finished the installation of a large SO<sub>2</sub> filter with support from the Norwegian SO<sub>2</sub> fund. Unfortunately, the installation has not operated as expected due to technical issues and has therefore been out of operation for most of 2018. These technical issues will be resolved early in 2019. Elkem Bjølvefossen is also evaluating a similar project.

### DUST

Elkem allocates significant resources to combat dust. However, extremely high temperatures and ultrafine particles that disperse very quickly make it especially difficult to capture dust generated in some of the production processes.

For 2018, Elkem emitted 1.8 million tonnes of dust (PM/particulate matter). This was a decrease from 2 million tonnes in 2017. The 10% decrease is highly welcome and comes as a result of continuous improvements. Our overall goal is a 30% reduction by 2025, based on 2015 numbers. We are pleased to see that we are on the way to reach that target.

Targets	Timeline	Comments
• Energy goal: Energy recovery increase year on year	Continuous	On track on projects, but went down because of new plants
• CO <sub>2</sub> goal: 20% reduction of fossil emissions	2021	On track: 20.7% in 2018
• CO <sub>2</sub> goal: on track to reach 40% reduction of fossil emissions	2030	On track
• CO <sub>2</sub> goal: Full understanding of indirect CO <sub>2</sub>	2020	On track
• NO <sub>x</sub> goal: Reduce emissions from Norwegian smelters by 1000 tonnes	2025	On track: Reduction in 2018 was 312 tonnes
• SO <sub>2</sub> goal: Per cent reduction (to be defined) in direct SO <sub>2</sub> from process gas by 2030	2025	Not on track, set-back due to technical issues of facilities
• Dust goal: 30% reduction (2015 base)	2025	Improvements made: Down 10% in 2018
• Waste goal: Per cent reduction (to be defined) of process waste to landfill or destruction	2025	Not completely on track
• Water goal: Meet new water directive requirements in Europe, and new water requirement in China (national and local)	Continuous	No deviation in 2018
• Water goal: Compliance with mandated remediation of Fiskaa water body with cost efficient measures	Continuous	No deviation in 2018
• D4/D5 goal: Zero spills	Continuous	No deviation in 2018
• Elkem Fiskaa Carbon SO <sub>2</sub> scrubber and energy recovery unit fully operational	2018	Some delay, expected to be resolved by Q3 2019
• Energy recovery project in Salten on track for completion	2020	On track
• Analyse and develop a climate risk overview	2019–2020	Startup in 2019



## Elkem Foundry plant based on biocarbon opens in Paraguay

In August, Elkem celebrated the opening of a new ferrosilicon plant in Limpio, Paraguay, with a production based on local and sustainable biocarbon together with hydropower from the Itaipu power plant.

Focusing on sustainability and the future of ferrosilicon production with neutral emissions of CO<sub>2</sub>, the plant is working towards using 100% biocarbon as reductant for the furnace.

Biocarbon in the form of charcoal and woodchips are sustainable carbon sources replacing fossil coal. All the biocarbon is harvested and produced locally, from sustainable eucalyptus plantations, so no native woods are deforested.

The quartz, another raw material, is also being extracted and processed locally giving a low CO<sub>2</sub> footprint.

At the celebration ceremony in August, the President of Paraguay, Mr. Mario Abdo Benitez, made the official opening of the plant, celebrating with employees of the plant, local business and politicians and top management of Elkem.

*"This is a big day for all of Elkem. To open a brand-*

*new plant in Latin America is an important milestone for us. Also, Elkem's long term goal is to achieve carbon neutral metal production. The Limpio plant challenges and inspires the rest of the company to meet our climate and sustainability strategies",* says Helge Aasen, CEO of Elkem.

Limpio is 25 km from Asunción, the capital of Paraguay, and is strategically situated to serve the iron and steel industry in the region. The plant is the first foundry plant for Elkem in Latin-America. The plant has about 100 employees and 1 arc-furnace with 11.5MW-15MVA, which generates an annual capacity of 11,000 metric tonnes.

*"Limpio is a pioneer plant within Elkem and in Paraguay. It is the first foundry Elkem plant in Latin America, the first 100% biocarbon fed plant in Elkem globally and it is the first ferroalloy industry in the country",* says Osvaldo Almeida, General Manager of Elkem Paraguay.

# Societal impact: Sustainable footprint with great reach

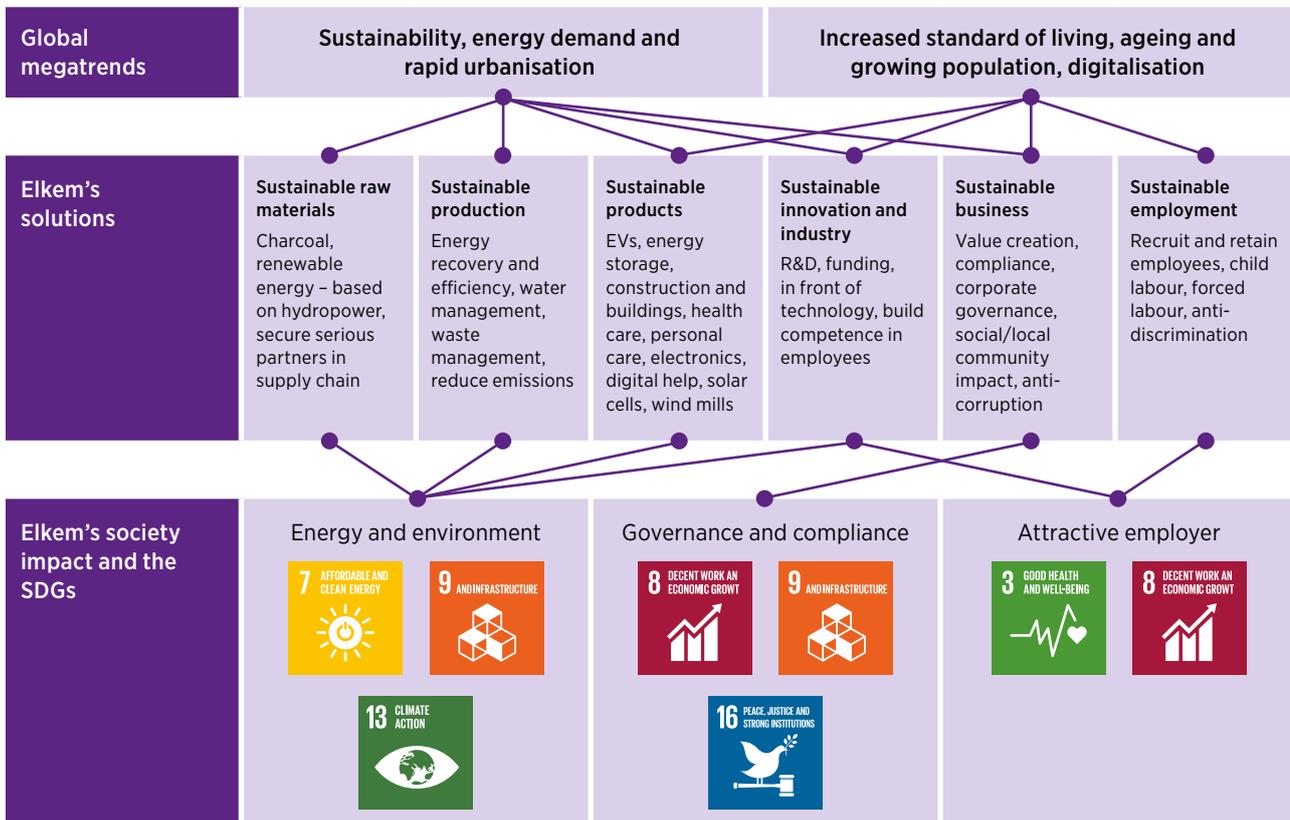
Elkem’s operations have significant impact on society throughout the value chain. In addition to own operations, Elkem also has a significant footprint through its procurement of raw materials, capital goods and services. We set high standards for ethical conduct and social responsibility in our supply chain and monitor it closely.

This impact has both positive and negative sides. On the positive side, our operations create stable employment and tax revenue in addition to developing and producing products and materials that are essential to our way of life and to the changes that are necessary as we see the effects of climate change. On the negative side there is high energy usage and harmful emissions that must be closely monitored and effectively mitigated.

The process industry plays a major role in the transition to a low carbon society. In addition to reducing own emissions and in-

creasing energy efficiency, Elkem contributes to the green transformation by delivering materials, technology and solutions that are necessary for the transformation in other businesses and sectors around the world. Solar panels, wind mills, electric vehicles, low emission transportation and infrastructure, smart phones, batteries and cables are all dependant on products and materials produced by companies like Elkem.

Global megatrends affects our business stratgy and drive growth for Elkem’s products and solutions. This requires that



we specialise. Elkem's products serve demand driven by six megatrends that are strategically important to Elkem: Sustainability, energy demand, rapid urbanisation, increased standard of living, ageing and growing population, and digitalisation. In the illustration on the page to the left you can see how the different global trends are linked to our process, products and solutions, and how we contribute to the UN Sustainable Development Goals. Elkem believes sustainability is both a responsibility and a prerequisite to be at the forefront of our industry and to remain competitive in the future.

### SUPPLY CHAIN AND RAW MATERIALS

Elkem sources raw materials, capital goods and services for our operations around the world. Elkem sets high ethical, environmental and social standards that companies must meet to become our suppliers.

Elkem's corporate supply chain function holds the overall global responsibility for outlining and maintaining Elkem's procurement and logistics strategies and policies. Elkem's main purchasing categories are raw materials, equipment and construction and maintenance services on site. The function is working internationally across all divisions in the company, and the focus is to improve Elkem's total procurement and logistics cost in a sustainable way.

Elkem's total procurement spend in 2018 was approximately NOK 15 billion, covering supplies of raw materials, materials, energy, goods, services and logistics. The active supply base consists of about 15,000 suppliers globally – of which almost 70% in Europe.

### SUPPLIER REQUIREMENTS

All new suppliers of raw materials, goods and services are subject to pre-qualification based on corporate requirements within environment, health and safety, social responsibility, anti-corruption and compliance with laws and regulations. Risk assessments are done before suppliers are approved. Risk-exposed suppliers are subject to detailed requirements from Elkem. Elkem also requires that suppliers and their sub-contractors follow Elkem's principles. Elkem is implementing improved database and contract management systems to ensure compliance and governance in these areas.

Elkem has developed detailed requirements for high risk suppliers and contractors regarding health, safety and environmental standards for operations like mining, transportation, storage and loading, and is actively involved in the promotion and monitoring of safe and decent working conditions. This includes health and safety training and providing correct personal protection equipment for suppliers' employees when necessary. Age control to prevent child labour and ensure responsible working conditions for young employees is also carried out. Elkem requires suppliers and contractors to engage their employees with written contracts on fair terms, and to give them information about their right to organise and collectively bargain with management where this is legally possible.

Elkem's requirements are regularly discussed in meetings with suppliers. High-risk suppliers must document their understanding of legal requirements and hazards in their operations and present plans showing how risk will be eliminated or controlled while working for Elkem. Elkem performs audits and inspections, both in connection with routine visits for quality, technical and business follow-up, and as unannounced site visits. External auditors also conduct supplier audits on Elkem's behalf.

Violations of Elkem's requirements are registered and addressed with verbal or written warnings in addition to requests for improvements when necessary. Repeated violations may lead to requirements for speedy implementation of improvement plans, financial penalties, or termination of contracts with immediate effect.

### Supplier screening

New suppliers of raw materials and hardware and services to plants and investment projects are screened using social and environmental criteria. The goal for 2019 is to continue improving documentation of screening and follow-up and to implement a global supply chain risk management system.

### Supplier audits

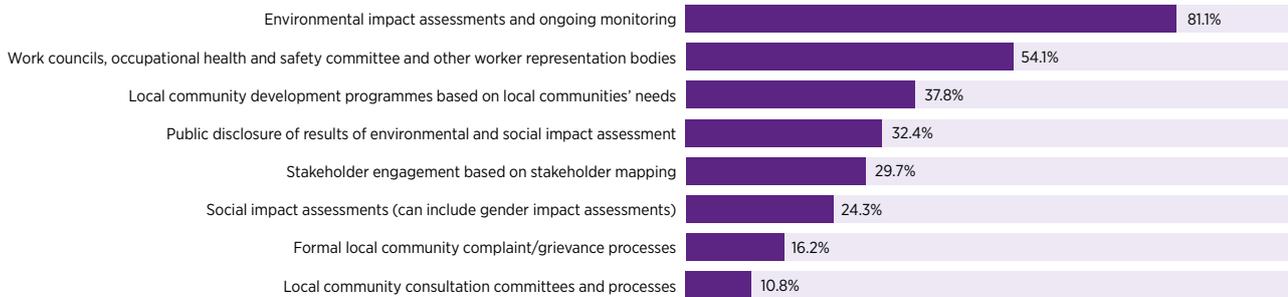
For raw materials the number of suppliers is relatively low, and a structured auditing programme is in place to ensure that all existing suppliers receive regular audits. For suppliers of goods and services such as hardware, plant equipment and services the number of suppliers is high. New suppliers are assessed for social and environmental criteria, and regular audits are performed by plant personnel or corporate personnel. In 2018, Elkem entered into a partnership with a global supply chain risk management solution that will support contractual relationships with existing and new suppliers in keeping their information up-to-date in a web portal, ensuring widespread visibility to their current qualification status and competencies. The system will also be used to keep a central record of supplier audits.

### LOCAL COMMUNITIES

Input from local communities is valuable information that helps us improve. Important topics for dialogue with local communities are community development projects, job security, safe operations, emissions and other environmental issues, and traffic generated by the plant. Complaints raised by local communities, and traffic incidents related to our operations are registered and managed in accordance with good practices for incident and deviation management.

Dialogue with local communities is the responsibility of each plant or site manager and is carried out both formally and on an informal day-to-day basis. A number of Elkem plants have local initiatives and support programmes for better education, sports activities, better local infrastructure, local community poverty reduction/food support or other social impact initiatives. There are clear guidelines for what is permitted to avoid corruption.

**Question: Which activities does your unit have a plan for today?**



Being part of local and regional formal networks are also an important way of understanding the needs of local and regional communities. Several of Elkem's plants are members of business

organisations, research and development clusters or other networks. In our stakeholder survey 65% of the participants said their unit were part of some sort of local/regional network

Stakeholder	Key issues for the stakeholders
Employees	Safe jobs, high EHS standard, sustainable work situation, development/career opportunities, contribute to EHS and business improvements, salaries, benefits and compensation (employee welfare), equal opportunities, sustainability (CSR).
Authorities	Environmental regulations, industrial practice and trust, good environmental performance, open communication, compliant with laws – labour and environment, community development, pay taxes, active participator in dialogue, coordination with fire and police force.
Management	EHS results, financial results, strategic direction, ethical business, CSR issues, compliance, all to follow Code of Conduct, sustainable business, leadership development, full compliance with laws.
Customers	High quality of product, highly trustworthy partner, good coordination in supply chain, technical improvements, fair/reasonable pricing, ethical and responsible behaviour, timely delivery of product, product innovation.
Suppliers	Ethical and responsible behaviour, value addition, anti-corruption work, anti-bribery work, highly trustworthy partner, transportation.
Local communities	Community support/development, EHS, sustainable business, employment prospects, reliable employer, visible in the community, open and trustworthy dialogue, environmental performance and perception.
Unions	Respect of agreements, good work climate, good dialogue, constructive partnership.
Shareholders	Profit, strategic direction, EHS results.

More information on our stakeholder dialogue see page 56 (under introduction).

### HUMAN RIGHTS

Elkem is committed to conducting its business with respect for all internationally recognised human rights, and is dedicated to doing so consistently with the United Nations Guiding Principles on Business and Human Rights and the United Nations Global Compact. Elkem also adheres to the UK Modern Slavery Act.

We will work to ensure the individual's right to privacy and personal dignity, promoting equality for all people and do not accept discrimination based on skin colour, race, nationality, social background, disability, sexual orientation, political or religious conviction, gender or age. Elkem does not tolerate any form of harassment or physical/mental abuse in the form of words or action. This commitment is stipulated in all our governing documents and all Elkem employees are required to sign a copy of the code of conduct stating that they will adhere to these principles.

Elkem follows up human rights issues through risk assessments and audit programmes. In addition, due diligence is done before entering new countries or regions.

Elkem personnel responsible for contracts with significant suppliers of raw materials, goods and services, or who are required to follow-up Elkem's CSR policy at supplier sites receive training on how to conduct supplier audits including criteria for human rights assessments.

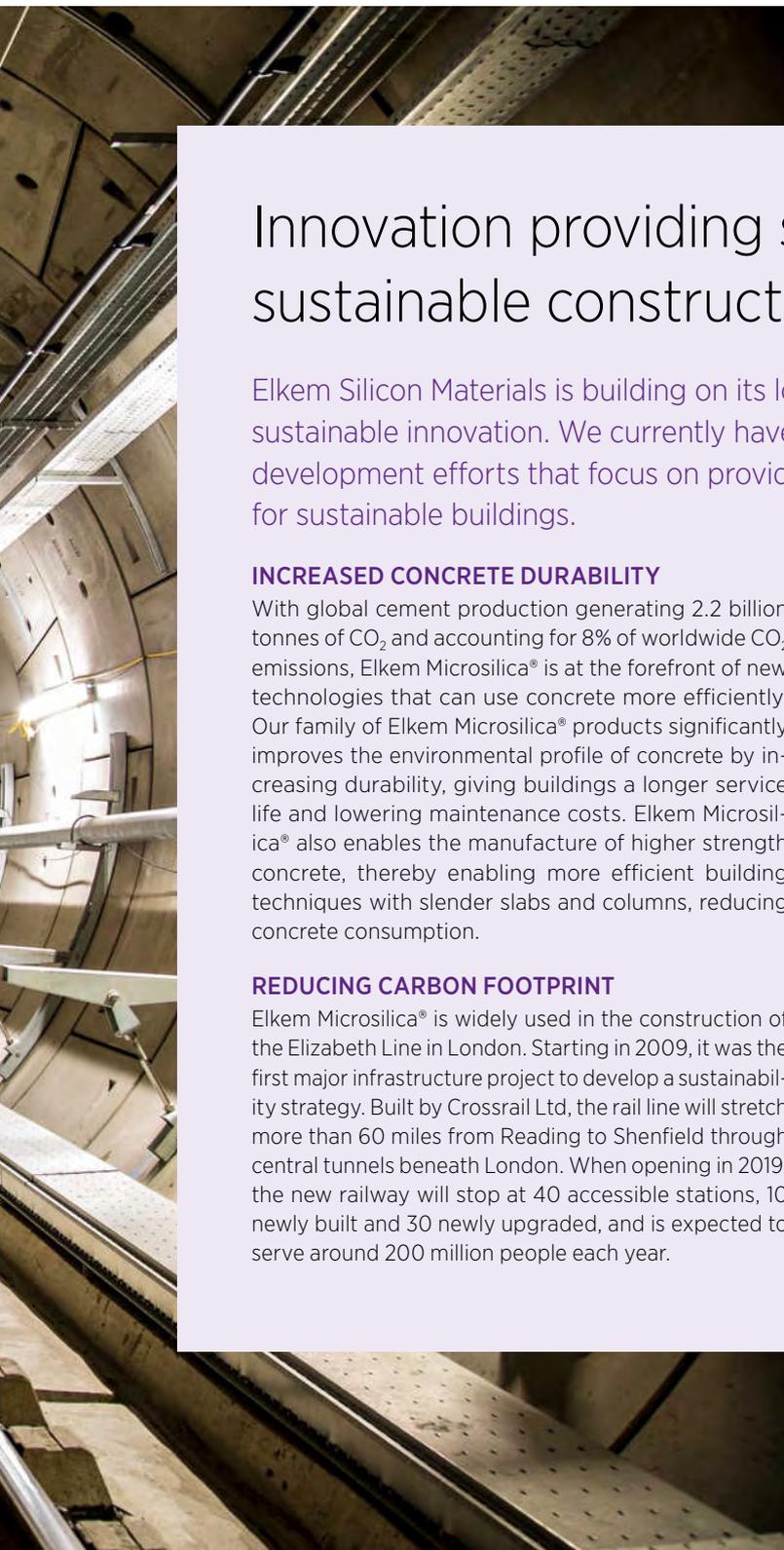
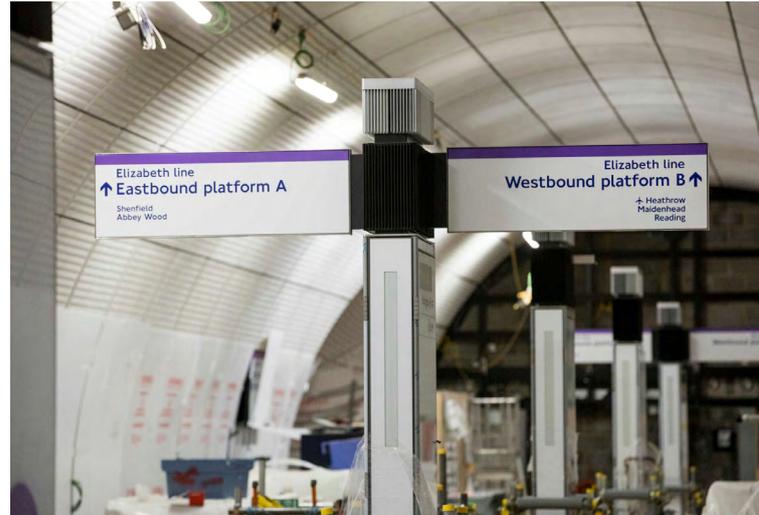
All significant investment contracts are screened using human rights criteria as well as other social and environmental impact criteria. The definition of 'significant investment agreements' concern contracts above NOK 15 mill. or investments of a size that must be approved by plant management or higher. Elkem's Principles for corporate social responsibility are attached to all significant contracts.



Targets	Timeline	Comments
• 100% screening of new suppliers for social and environmental criteria	2018–2020	No deviation in 2018
• Training of target group on human rights at 100%	Continuous	Some delay
• Zero incidents involving violation of human rights in supply chain	Continuous	No deviation in 2018
• Implement updated human rights clauses through training of target employees	Continuous	Some delay
• Implement templates and reporting procedures for more systematic stakeholder engagement	2018–2019	On track
• Map community programmes at all plants and units	2018	Goal reached in 2018
• Implementation of supply chain risk management system	2018–2020	IT application on track

# Focus on **construction**





## Innovation providing solutions for sustainable construction

Elkem Silicon Materials is building on its long history of creating value through sustainable innovation. We currently have a portfolio of products and active product development efforts that focus on providing solutions for solving the world’s need for sustainable buildings.

### INCREASED CONCRETE DURABILITY

With global cement production generating 2.2 billion tonnes of CO<sub>2</sub> and accounting for 8% of worldwide CO<sub>2</sub> emissions, Elkem Microsilica® is at the forefront of new technologies that can use concrete more efficiently. Our family of Elkem Microsilica® products significantly improves the environmental profile of concrete by increasing durability, giving buildings a longer service life and lowering maintenance costs. Elkem Microsilica® also enables the manufacture of higher strength concrete, thereby enabling more efficient building techniques with slender slabs and columns, reducing concrete consumption.

### REDUCING CARBON FOOTPRINT

Elkem Microsilica® is widely used in the construction of the Elizabeth Line in London. Starting in 2009, it was the first major infrastructure project to develop a sustainability strategy. Built by Crossrail Ltd, the rail line will stretch more than 60 miles from Reading to Shenfield through central tunnels beneath London. When opening in 2019, the new railway will stop at 40 accessible stations, 10 newly built and 30 newly upgraded, and is expected to serve around 200 million people each year.

As a major energy user during construction and operation, Crossrail Ltd were committed to reducing their carbon footprint. Elkem Microsilica® helped reduce construction-related carbon emissions by 18.6%, 10% better than the intended target. All civil structures where Elkem Microsilica® was used, such as tunnels, portals and surface sections, were assessed using the Civil Engineering Environmental Quality (CEEQUAL) scheme to evaluate sustainability performance, and have either achieved an excellent rating or are on target to do so. In addition, Elkem had to ensure all trucks delivering to the site were fitted with diesel particulate filters or cleaner Euro Stage IIIB engines to reduce air pollution.

### ASBESTOS SUBSTITUTION

In addition, we have developed solutions for substituting asbestos, a known carcinogen that has commonly been used in the production of building products. Elkem Microsilica® is now an important additive in the fibre cement industry, enabling the production of asbestos free products. In the gypsum industry, Elkem has been developing products that will improve the fire retardancy of wallboard products.

# Process21:

## Roadmap to zero emissions

The initiative of Process21 was launched in the white paper about Norwegian industry in March 2017 (Meld. St. 27 (2016-2017)). In 2018, the forum was formally established by the Norwegian government. Process21 shall give strategic advice and recommendations to the government and other actors on how to combine sustainable growth and reduced emissions from the process industry.

The Process21 has a steering committee lead by Elkem's SVP Technology, Håvard Moe. The steering committee has representatives from the industry, academia and representatives from the tripartite constituents. Here, Håvard Moe tells us about Process21 and his thoughts on how the process industry will have to develop to adapt to the low carbon society of the future.

### *What is Process21 and why do we need it?*

– Process21 is a national forum set up by the Norwegian Ministry of Trade, Industry and Fisheries. The strategy process will end up with advice and recommendations to the Government and other stakeholders on how the process industry can take a leading role in the transition into a low emission society. Part of the recommendations will be to advise how the government's funding agencies better can support the transition. The final report will be handed over to the ministry in December 2020.

– The Paris climate agreement of 2015, our participation in the EU Emission Trading System (ETS) and the Norwegian Parliament's decision that Norway shall be a low carbon society in 2050 are all important frameworks for the process industries development in the coming years. The process industry is an integral part of this future and we have a clear vision: Increased value creation from the industry with zero emissions in 2050

### *What are these "21 strategies" about?*

– The 21 strategies are based on the well established three party collaboration between government, workers unions and business organisations. We are used to work together to find the best solutions on central and great societal challenges. Involvement from the relevant parts has been a key to the success of the tripartite agreement, and that is what the "21 strategies" are based on too.

– There has been several "21 strategy"-groups previously, covering different industries, sectors and technology areas. The main reason to organise this kind of strategic work, is to ensure that R&D and innovation policy, design and structure of the government and the strategic ambitions and needs that businesses have

correlate. That is why the 21 strategies that have been organised have a high involvement from the business sector.

### *What is the goal of Process21?*

– Process21 has two goals. The first is to reduce the emissions from the industry. The second is to make sure that the industry continues to contribute to value creation in Norway, within the framework of the Paris climate agreement. The forum is set to take into account how the process industry in Norway and our technological development in Norway can have indirect effect on cuts in emissions in other sectors and businesses, both in Norway and globally. I believe that the process industry in Norway has the opportunity to be at the forefront of technology to achieve this, and hopefully it will spread and create a positive impact in the world as we move towards a low carbon society.

### *How does the Process21 work?*

– The steering committee collaborates closely with the secretariat to set up our goals and activities. We will organise expert groups to assess key topics related to reduced emissions and increased value creation. The first expert groups are currently being established for entrepreneurship in the process industry sector, product and service development, bio economy, carbon capture and storage (CCS) and digitalisation. During the next 18 months, the expert groups will have a deep dive into their strategic task and give their advice. Our aim is that the first expert group will give their recommendation in August 2019.

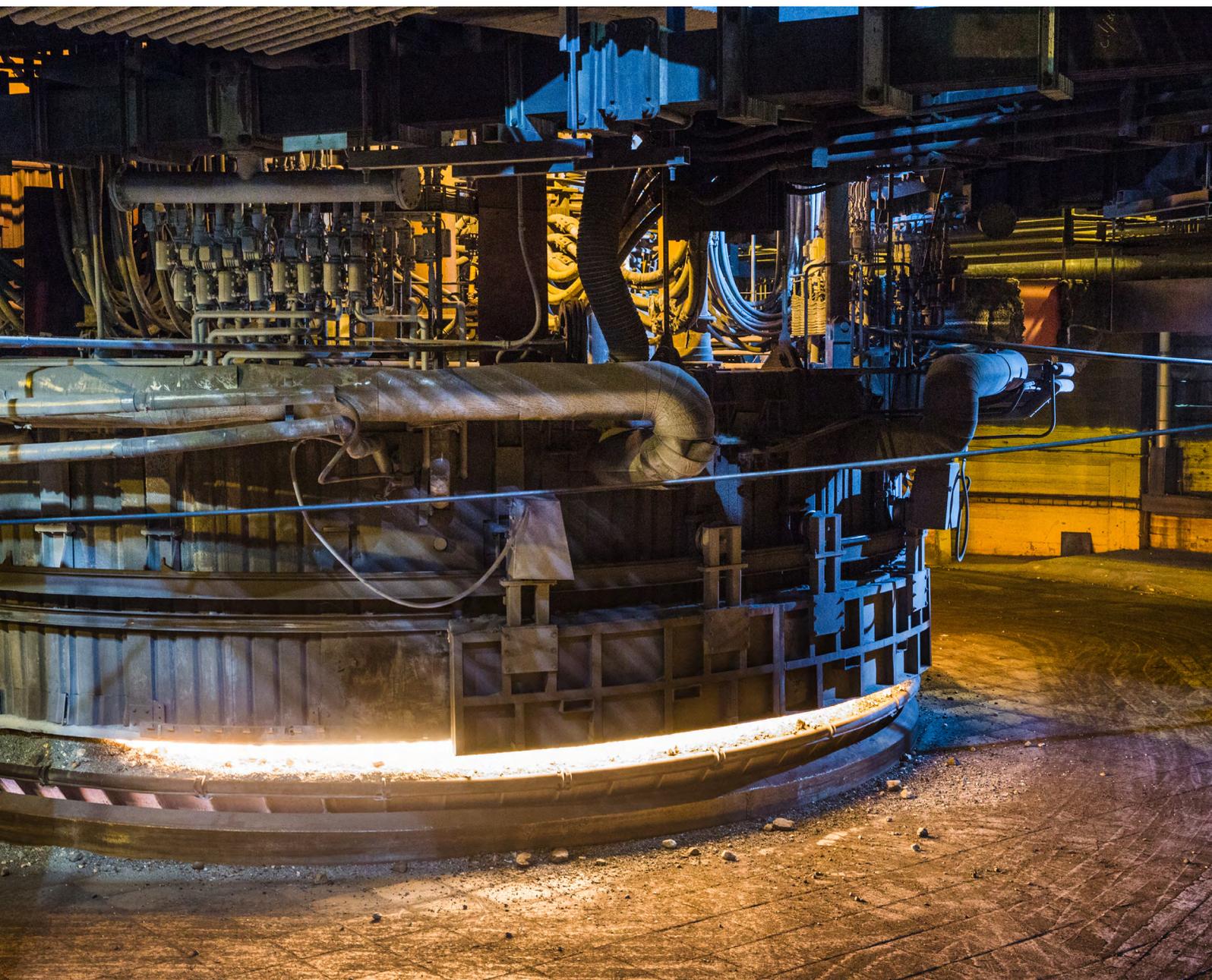
### *You started the work in 2018, what have you done so far?*

– Mobilisation of the industry and other stakeholders has been the main focus in 2018. We have visited the industrial areas in Norway to meet people in the industry, academia and local government. The aim is to engage over 100 companies in the strategy process. So far, the response and feedback have been very positive. If the broad engagement continues, I am quite confident that work done by the Process21 forum will contribute to sustainable development of the Norwegian process industry over the next decade.

*Elkem's SVP Technology Håvard Moe, head of the steering committee Proses21, with Norwegian minister of Trade Torbjørn Røe Isaksen.*



*Håvard Moe tells us about Proses21 and his thoughts on how the process industry will have to develop to adapt to the low carbon society of the future.*





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