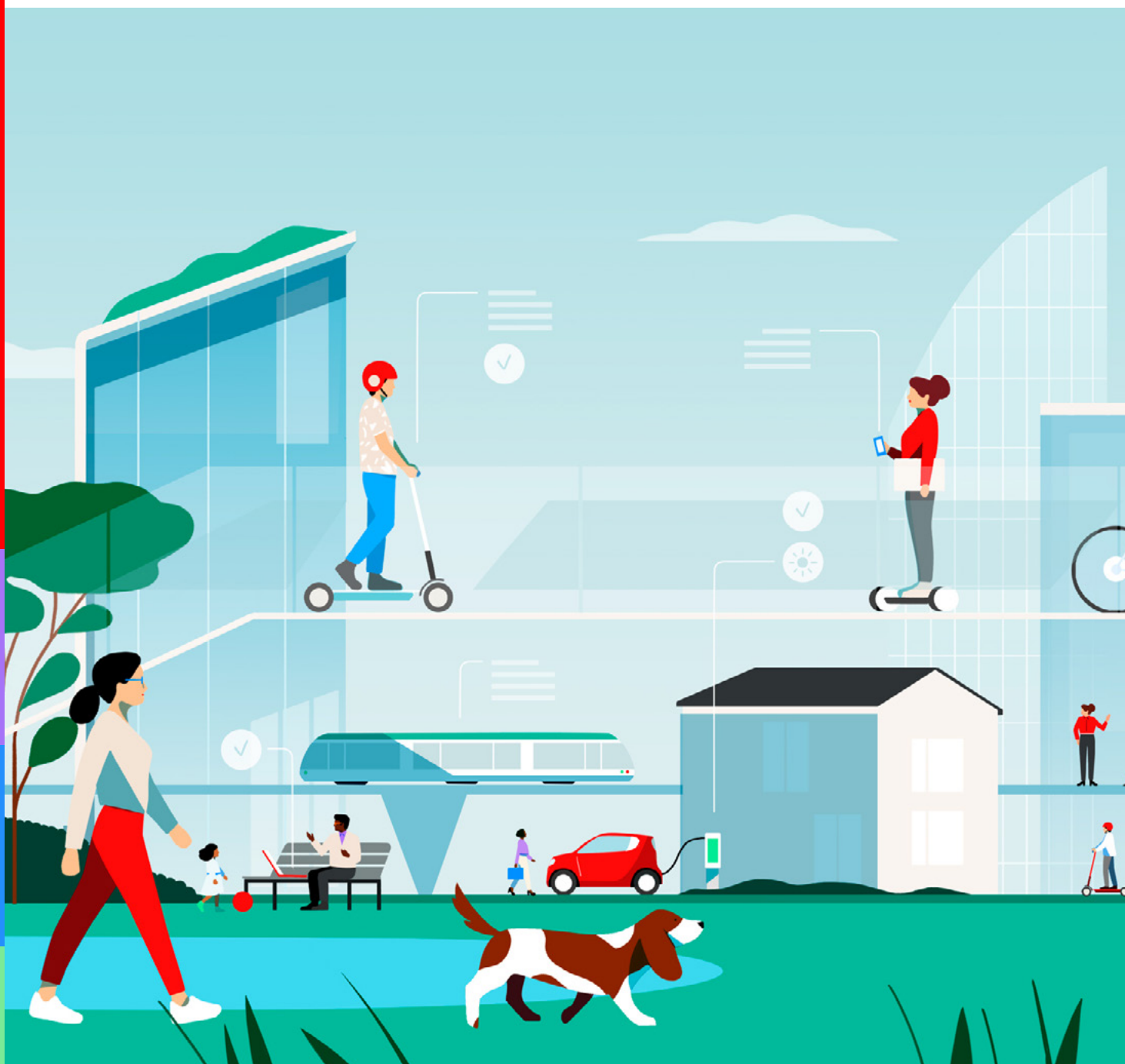


TCFD Report 2021



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1.0 Elkem: Part of the solution

Combating climate change is one of today's greatest challenges, and Elkem aims to be part of the solution. Therefore, it gives me great pleasure to introduce Elkem's first report that is aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Elkem provides advanced materials with a low carbon footprint, and we expect sustainability to drive an increased demand in the years to come. These products are essential for greener solutions like electric vehicles, renewable energy, and better buildings. To be able to reach our strategic goal of providing solutions for the green transition, we need to develop an increased understanding of how risks linked to climate change affects Elkem. That is why Elkem decided to implement the TCFD framework in 2020.

As a global industry company, we know that it is important to measure what matters. We are proud to say that we achieved an A- in the 2021 CDP Climate reporting, and will continue our efforts to again be granted a place on the A-list. Reporting according to the TCFD recommendations can build both internal and external understanding and capabilities that support the green transition, promote transparency, and contribute to climate action. The implementation of the TCFD framework is part of the process to critically evaluate our sustainability strategy and ESG KPIs.

We have spent most of 2021 discussing risks and opportunities connected to short-, medium- and long-term conditions for the company. At the same time, we have developed our new and ambitious climate roadmap towards 2031 and 2050. Elkem's climate roadmap is a way to show our response to the climate change landscape we have identified for Elkem – in 2021 and going forward.

Elkem endorses the aim of the Paris agreement of limiting global warming to well-below two degrees, and we will reduce our emissions accordingly. The 2021 climate roadmap highlights three pillars:

1. Reducing our emissions

Achieving fully climate neutral production throughout our value chain.

2. Supplying to the transition

Providing the advanced material solutions required to enable the green transition.

3. Enabling circular economies

Enabling more circular activities in our operations, products and markets.

We acknowledge that our climate work is a continuous process. That is why Elkem strives to mature our practices. In 2022 we will further integrate the climate risk management procedure alongside determining financial impact and investing our time on the climate roadmap and targets towards 2030. Elkem has good starting position, and we will use our competence in innovation, technology development and continuous improvement to enhance the operations, invest in climate solutions and work together with our stakeholders to limit global warming.

From



CEO Helge Aasen

2.0 About Elkem

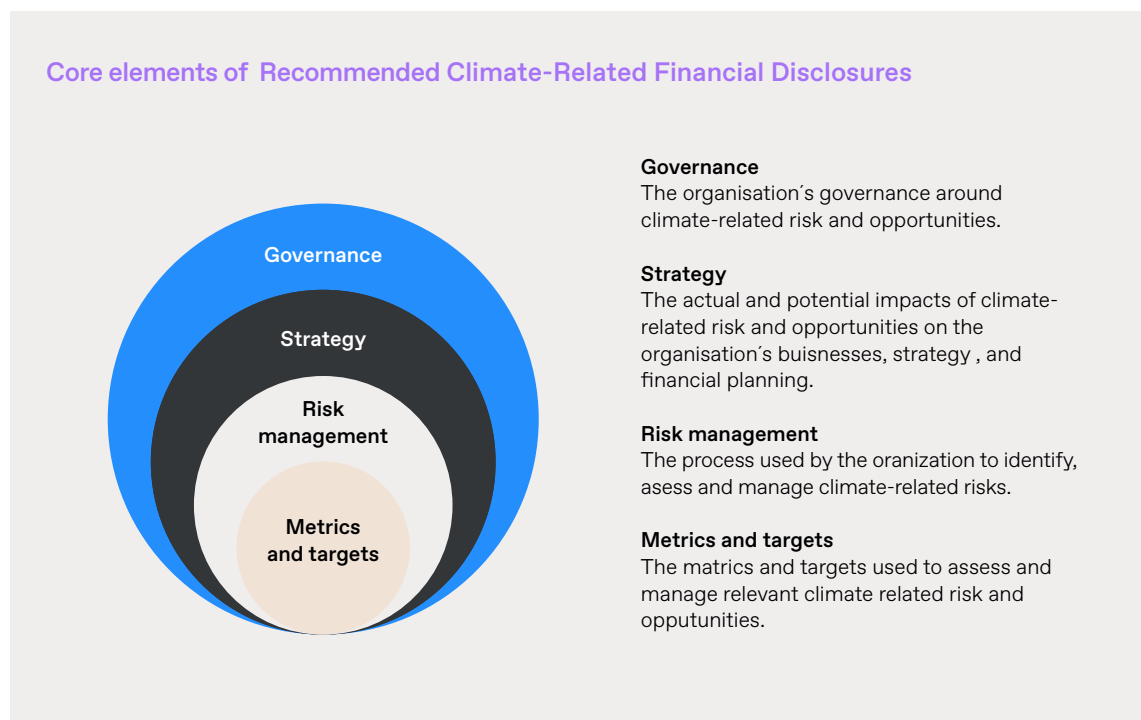
Elkem is one of the world's leading providers of advanced material solutions shaping a better and more sustainable future. The company develops silicones, silicon products and carbon solutions by combining natural raw materials, renewable energy and human ingenuity. Elkem helps its customers create and improve essential innovations like electric mobility, digital communications, health and personal care as well as smarter and more sustainable cities. With a strong track record since 1904, its global team of more than 6,800 people has a joint commitment to stakeholders: Delivering your potential. In 2020, Elkem was rated among the world's top 5% on climate and achieved an operating income of NOK 24.7 billion. Elkem is listed on the Oslo Stock Exchange (ticker: ELK). www.elkem.com

3.0 The TCFD recommendations and index

3.1 Recommendations

There is a growing demand for climate-related information, and creditors and investors are increasingly demanding access to risk information that is consistent, comparable, and clear. The Task Force on Climate-related Financial Disclosure (TCFD) developed the TCFD disclosure recommendations to promote market transparency and stability. Additionally, TCFD encourages the standardised reporting structure for financially material climate-related risks and opportunities to give investors, lenders, and insurers enhanced comparability when assessing and pricing companies.

The TCFD recommendations are structured around four thematic areas that represent core elements of how organisations operate: governance, strategy, risk management, and metrics and targets. Moreover, the framework separates into three main categories: risks related to the transition to a lower-carbon economy, risks related to the physical impacts of climate change, and climate-related opportunities. The TCFD has also incorporated financial impact as an integral part of its disclosure recommendations.



3.2 TCFD content index

The recommended disclosures in the TCFD framework is as follows:

Governance	Strategy	Risk management	Metrics and targets
Disclose the organisation's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's business, strategy, and financial planning where such information is material.	Disclose how the organisation identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
<p>Recommended disclosures</p> <p>a) Describe the board's oversight of climate-related risks and opportunities.</p> <p>b) Describe management's role in assessing and managing climate-related risks and opportunities.</p>	<p>Recommended disclosures</p> <p>a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.</p> <p>b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.</p> <p>c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</p>	<p>Recommended disclosures</p> <p>a) Describe the organisation's processes for identifying and assessing climate-related risks.</p> <p>b) Describe the organisation's processes for managing climate-related risks.</p> <p>c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.</p>	<p>Recommended disclosures</p> <p>a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.</p> <p>b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.</p> <p>c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.</p>

3.3 CDP Climate and TCFD reporting

Elkem has reported to the Carbon Disclosure Project (CDP) Climate questionnaire since 2020. Reporting to CDP represents an important step for us to better identify and manage the climate-related impact of our business activities globally. This year, 2021, will be the first report aligned with the TCFD framework. The TCFD's focus and guidance on climate-related financial impact and scenario analysis will be an important process, both to ensure transparency, but also to improve our understanding of how climate-related issues can affect us, and how we will mitigate the expected changes.

4.0 TCFD disclosure summary

Governance

a) Climate-related issues are integrated into Elkem's overall business strategy and responsibility sits with the collective board. The board follows up and reviews the climate strategy on an annual basis as part of the regular strategy process.

b) The highest management level positions with responsibility for climate-related issues sits in corporate management. The Chief Financial Officer (CFO) and the Senior Vice President of Technology (SVP Technology) are both responsible for assessing and managing climate-related risks and opportunities, and report to the Board on climate-related issues on a quarterly basis.

Strategy

a) The new global climate roadmap has been influenced by the main risks and opportunities. In the short and medium time horizon, the transitional risks have been identified to have the greatest impact on Elkem.

b) Climate-related risks and opportunities have influenced our strategy and strategic decisions in all business areas, including products and services, value chain, investments in R&D, and operations.

c) We aim to limit the long-term global temperature increase to well below 2°C – in line with the Paris agreement. We have developed a climate roadmap that was announced in October 2021, that highlights our initiatives to reach our climate goal.

Risk management

a) Elkem's board of directors and management conduct regular reviews of the group's activities for identifying, assessing and responding to climate-related risks and opportunities.

b) The process for identifying and managing climate-related risks are integrated into the multi-disciplinary risk management process.

c) The total risk exposure is analysed, evaluated and summarised at least on an annual basis in a bottom-up process where each of the divisions and key corporate functions goes through a defined process to identify and quantify the main risks.

Metrics and targets

a) Elkem has different key metrics to measure and manage climate-related risks and opportunities.

b) Elkem's carbon accounting follows the Greenhouse Gas Protocol. Elkem has matured the GHG emissions calculations for all locations since 2018. Complete carbon accounting for all scopes was achieved for the year 2020 and is now an annual procedure.

c) We have set absolute reduction targets and will reduce fossil CO₂e emissions. Our GHG emission reduction targets are classified as a well-below 2°C (2030) and 1,5°C (2050), aligned with the Paris Agreement.

5.0 Governance

5.1 Board-level oversight

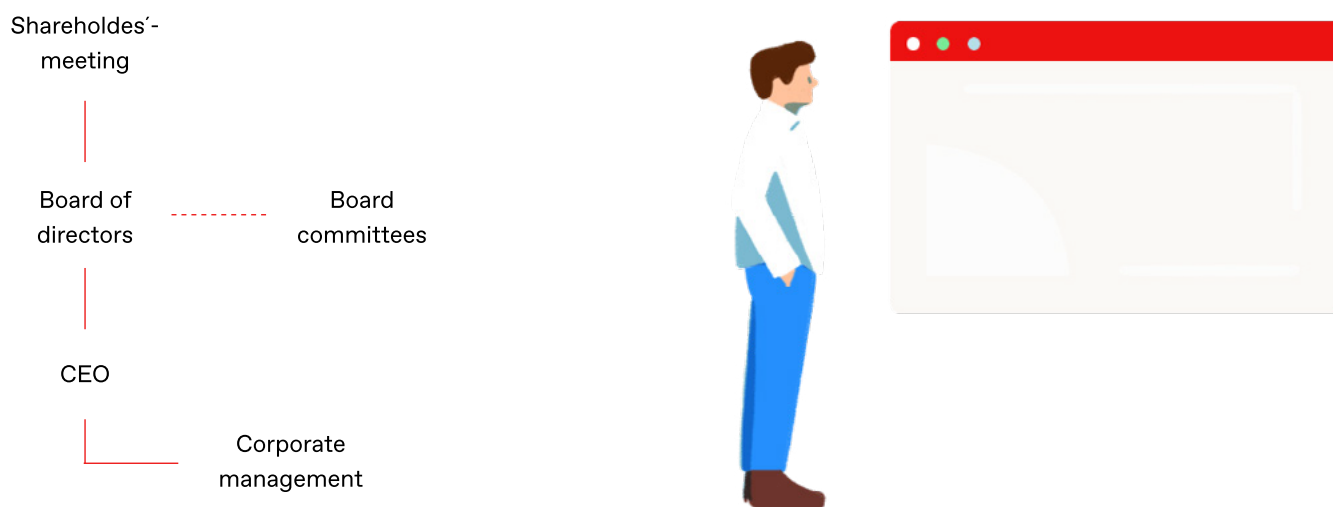
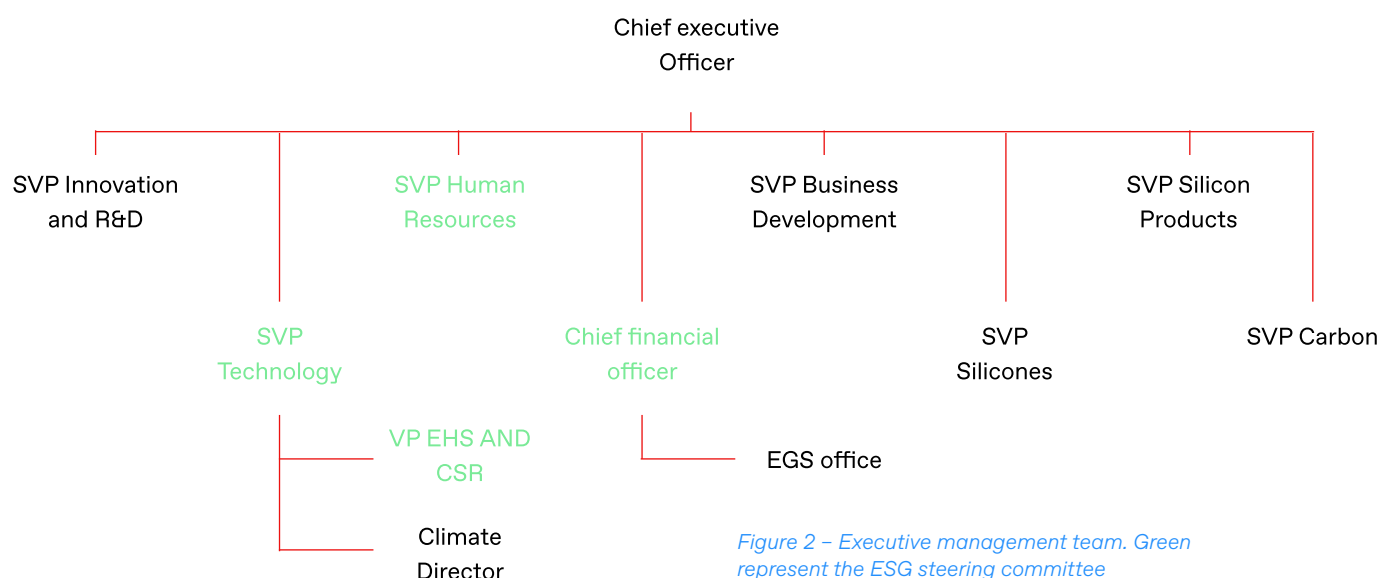


Figure 1 – Board-level oversight

Climate-related issues are integrated into Elkem's overall business strategy and the responsibility sits with the collective board. Climate-related risks and opportunities are an incorporated part of the board meetings. The climate strategy also includes investment projects, which are followed up by the board regularly. The board follows up and reviews the group climate strategy on an annual basis as part of the regular strategy process. The board gets informed about climate strategy performance through different key projects through a bottom-up process. The launch of the new climate roadmap in 2021 includes ambitious goals, which will require dedicated performance indicators and reporting to the board (KPI Score cards etc.). Elkem's climate roadmap identifies how Elkem will continue to grow in the green transition, and reach net zero emissions by 2050.

Climate-related issues are normally presented by the Chief Executive Officer (CEO), Senior Vice President (SVP) Business Development and SVP Technology depending on the respective topic on board meetings. The CEO is ultimately the formal owner of Elkem's policy, procedure and execution for Environmental, Social and Governance (ESG) and climate-related topics at the board-level committee.

5.2 Executive management team oversight



Corporate management is the highest management level with responsibility for climate-related issues. In corporate management there are two main positions with the daily operational responsibility for climate-related issues: the Chief Financial Officer (CFO) and the Senior Vice President of Technology (SVP Technology). They are responsible for both assessing and managing climate-related risks and opportunities, and report directly to the board on climate-related issues on a quarterly basis.

The CFO is responsible for managing Elkem’s ESG steering committee, which is the corporate body with responsibility for climate-related issues. The ESG steering committee consists of members of the corporate management. The members are presented in the model above, and include the CFO, SVP Technology, VP EHS and CSR and SVP Human Resources. The ESG steering committee evaluates climate change, mitigating risks, and seizing opportunities that involve environmental, social and economic factors. The committee reports to the CEO. The CFO is involved in the preparation and follow-up of the company’s climate strategy. The CFO plays a key role in strategic processes, including investment decisions that impact the climate strategy. Elkem wants to ensure that the climate strategy has strong anchoring in the top management and the CFO involves both internal and external stakeholder groups such as the board, investors and banks.

Elkem’s SVP Technology shares the responsibility for climate-related issues with the CFO. The key reason why responsibility for climate-related issues has also been assigned to SVP Technology is that the position is responsible for evaluating, developing and executing technology solutions that enable lower GHG emissions. In 2020, Elkem appointed a climate director, who reports directly to SVP Technology. The climate director coordinates Elkem’s work related to the climate strategy. The purpose is not only to set ambitious targets, but also to make sure that Elkem’s targets are feasible and backed up by necessary investments and technology development.

6.0 Strategy

6.1 Climate-related risks and opportunities

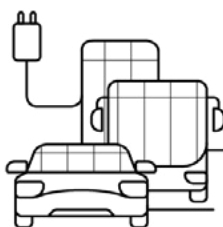
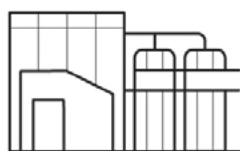
Elkem considers both the short-, medium- and long-term financial and strategic time horizons when assessing climate-related risks and opportunities (R&O's). The following definition of time horizons is applied:

- Short-term: 0 – 5 years
- Medium-term: 5 – 12 years
- Long-term: 12 + years

Elkem has proactively identified the risks and the opportunities related to climate change that have the greatest impact on our business.

Climate-related issues represent important risk factors to the business, as well as attractive business opportunities since our products can be key enablers for lower GHG emissions through renewable energy, energy storage, electrification of transportation, etc. Climate issues are therefore an integrated part of Elkem's business strategy. Elkem aims to limit the long-term global temperature increase to well-below 2°C, in line with the Paris agreement.

To achieve this target, Elkem will apply the climate roadmap that details this commitment. The mission is to provide advanced material solutions shaping a better and more sustainable future. Elkem has a clear corporate strategy to strengthen our competitive positions through specialisation and growth. To deliver on the roadmap, Elkem will focus on three key levers: Reducing the fossil CO2 emissions, supplying to the green transition, and enabling more circular economies.



Reducing our emissions

Achieve fully climate neutral production throughout our value chain

By 2031: Reducing absolute emissions by 28% from 2020-2031 while growing the business - delivering 39% improvement in product footprint

By 2050: Achieving fully carbon neutral production (zero fossil emissions) globally

Supply to the transition

Providing the advanced material solutions required to enable the green transition

Grow supplies of advanced materials to green markets such as better buildings, electric vehicles and renewable energy

Build new business in green markets such as battery materials, biomass and energy recovery

Enable circular economies

Enabling more circular activities in our operations, products and markets

Increase recycling in our own operations

Increase recycling with our customers

Develop the eco-design of innovative products

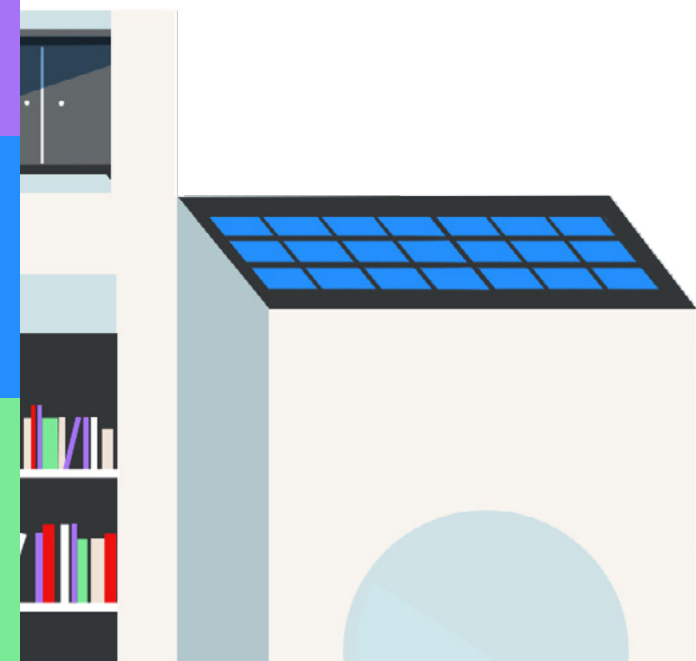
Risk category	Risk type	Likelihood	Potential financial report	Time horizon	Description of risk	Mitigation Strategy
Transitional	Regulatory risk	Virtually certain	Medium	Short term	<p>Elkem has upstream silicon and ferrosilicon production in Norway and Iceland, and silicones production in France. These are under the ambit of the EU's emission trading system (ETS). The development of EU ETS system and other GHG emission pricing mechanisms are key regulatory risks in emerging regulation for Elkem. A reduction of allocation of free allowances and/or a higher price will increase Elkem's direct costs.</p> <p>In addition, Elkem has upstream silicon and silicones production in China. The development of a quota system in China is at an early stage, but has the potential to increase the cost of operations in the country.</p>	<p>The strategy is to increase the use of biocarbon in the smelters to reduce overall fossil CO2 emissions. The target is to increase the share to 50 % in 2030. To achieve this target, Elkem will commit to new external suppliers and sources of biocarbon and/or build its own capacity for production biogenic reduction material. All of Elkem's smelters have developed CO2 roadmaps to increase their bio-share.</p>
	Technological risk	Likely	High	Medium term	<p>There are mainly three risks for Elkem regarding the substitution of existing products and services with lower emissions options. Firstly, the EU taxonomy will reorient capital flows towards "green" sustainable projects. Elkem may be impacted through the need for technological upgrades to meet requirements in the taxonomy. This could have a substantial impact in the medium to long term scenario.</p> <p>Secondly, the global focus on reducing fossil GHG emissions may negatively impact the attractiveness of Elkem's products and cause development of substitute products. Lastly, coal and char are used as reduction agents in the production process and may in the future become scarce resources. This creates a risk connected to access to critical raw materials.</p>	<p>To mitigate these risks, Elkem pursues several alternatives. Elkem will reinforce its efforts to reduce energy consumption, reduce GHG emissions, and develop products that enable reduced GHG emissions.</p> <p>Elkem's strategy to mitigate further access to fossil-based raw materials is to increase the share of biocarbon. Increased share of biocarbon is an overall part of Elkem's business strategy. The strategy is to replace coal and char, and secure access to biocarbon through supply contracts. In addition, Elkem is also investigating solutions for CCS/CCU to become carbon neutral by 2050, and testing the world's first carbon capture pilot for silicon smelters at the plant in Rana, Norway.</p>
Physical	Acute	Likely	High	Long term	<p>Heavy rainfalls that lead to flooding are already occurring in China. So far Elkem's plants have not been severely impacted. However, with changes in precipitation and more volatile weather patterns, Elkem's plants could face an increased risk of severe disruptions. Ingoing and outgoing logistics can be impacted, in addition to the damages to the equipment. Severe flooding could in a worst-case scenario trigger a series of events that could have catastrophic consequences such as an explosion.</p>	<p>Water risk is included in Elkem's overall risk process. Elkem monitors the potential risk of these acute heavy rainfall and flooding events, as part of water-related risk assessment. Elkem has so far not experienced severe flooding at its plants in China.</p> <p>The situation is, however, monitored and Elkem will take preventive actions if deemed necessary. This could include protective measures to buildings and production equipment as well as investments in flood control.</p>

Opportunity category	Opportunity type	Likelihood	Potential financial report	Time horizon	Strategy to realise opportunity	Description of opportunity	
Traditional	Market	Products and services	Very likely	High	Short term	Elkem offers products that support the green transition. Two examples are silicones and anode material. Elkem's production of speciality silicones which are used for insulation of battery packs and cabling in EVs. The sales of electric vehicles (EVs) are expected to grow significantly over the coming years, and EVs require 4x more silicones solutions compared to internal combustion engine vehicles. The market for batteries is also expected to grow considerably over the coming years. The global demand for Li-ion battery cells is expected to grow from 221 GWh to 3,114 GWh in 2030. A key component of these batteries is the anode which mainly consists of graphite. The demand for "battery-grade" graphite is expected to increase from today's level of around 200,000 tonnes per year to above 2.5 million tonnes per year by 2030.	<p>Elkem is well-positioned to realise these opportunities through existing products and R&D capabilities. Extensive development and testing processes to comply with manufacturers' quality and production requirements are conducted. Elkem is already a qualified supplier of battery insulation for EV manufacturers and a supplier of silicones rubber for EV cables.</p> <p>In addition, Elkem is a producer of carbon materials for other applications and has 100+ years of experience in large-scale manufacturing. This provides a solid foundation for entering the production of synthetic graphite to battery anodes. Elkem has constructed a pilot plant to verify the new technology and qualify the product for battery cell producers and an investment decision for a large-scale industrial plant is being considered.</p>
		Products and services	Very likely	High	Medium term	Circular economy practices such as recycled materials could enable Elkem to reduce GHG emissions. For example, by recycling silicones, the emissions may be reduced by 65 %. Elkem aims to increase recycling in its operations and facilitate the recycling of end-products. These innovations could enable Elkem to offer lower emissions goods that increase the market attractiveness.	<p>Elkem is working with customers and researchers across: Reduce, Reuse, Recycle and Renewable. For example, using recycled raw materials in our operations, by collecting raw materials, reintroducing them and also by valuing by-products (i.e. Microsilica). By joining forces with customers, we aim to increase the collection of end-of-life products to recycle them chemically or mechanically.</p>
	Technology	Resilience	Likely	Medium	Medium term	Elkem focuses on sustainable sourcing of raw materials, and the opportunity to increase the share of biogenic reduction materials, and thus reduce the fossil GHG emissions. Elkem is developing alternative carbon sourcing strategies based on biocarbon. A pilot plant for biocarbon is expected to start production in Canada in 2022. The target for the pilot project is to develop and verify the technology. This is an important part of meeting Elkem's increased demand for high-quality biocarbon material for silicon and ferrosilicon furnaces.	<p>Elkem has since 2015 worked to replace coal and coke. To increase the share of biomass from 20 % to 50 % by 2030, a more fundamental approach is required. It will demand the establishment of new value chains and the development of technology.</p> <p>Our strategy:</p> <ol style="list-style-type: none"> 1. Stable and cost-effective access to bio-based raw materials. 2. Industrial plants for the production of bio-based reduction materials. 3. Conversion of the production process for ferrosilicon and silicon alloys to an increased share of bio-based raw material.

6.2 Climate-related R&O's influencing our strategy

Different risks and opportunities were included in the process to establish the climate change strategy.

Business areas influenced by climate-related R&O's	Description	Strategy decision made
Products and services	The demand for Elkem's products is driven by global megatrends such as sustainability and energy demand growth, e.g. solutions for the electrification of transportation, renewable energy, and increased energy storage. Carbon footprint is deemed to constitute a potential risk, which has influenced our strategy, as the market demand for greener products with the lowest carbon footprint is increasing in a short- to medium-term perspective.	<p>→ Develop more sustainable production processes for our products through energy recovery, reduction of waste, and lowering of the group's carbon footprint. Investments in energy recovery plants and the biocarbon pilot plant are examples of substantive strategic decisions which are influenced by climate-related risks.</p> <p>→ Focus on the growth potential in product areas that could contribute to a more sustainable future, e.g. silicon to solar panels and batteries, specialty foundry alloys to wind turbines, silicone applications for EVs and anode material for li-ion batteries.</p>
Value chain	The increased focus of GHG emissions and possibly reduced access to coal-based raw materials in our value chain is a key risk. Our strategy has been to focus on the development of alternative carbon material strategies.	The short-term strategy is to increase the use of biocarbon based on sourcing from external suppliers. The short- to medium-term strategy includes technological development and construction of industrial production of biocarbon materials with the required properties and cost to ensure sustainable production. The investment in the biocarbon pilot plant in Canada was a substantive strategic decision in 2020, which was influenced by our assessment of climate-related risks and opportunities.
Investments in R&D	Our strategy for investments in R&D has been influenced by climate-related issues for many years, as we have set targets to reduce GHG emissions in the production process and to develop products that contribute to a reduction of GHG emissions.	Elkem has a strong focus on R&D, and climate-related risks and opportunities have impacted the focus areas. The investments in biocarbon material to replace fossil coal is a decision which was influenced by transitional climate-related risks. We are working on new technologies that could significantly reduce GHG emissions from the smelting processes. We are also currently conducting a feasibility study for the establishment of carbon capture and storage (CCS), and will test the world's first carbon capture pilot at one of our plants.
Operations	Changes in ETS regulations may cause a reduction of allowances and higher prices. This will increase Elkem's direct costs which is a current risk in our operations. The target to reduce the GHG emissions from production is therefore a strategic goal driven by climate-related issues. A system for carbon pricing in China is under development and could potentially impact Elkem's local operations.	<p>The increase of silicon yield in the silicon and ferrosilicon smelters has been a strategic goal for more than ten years and continues to be an important goal influenced by climate-related issues. We will continue to pursue this strategic goal in the short, medium- and long-term horizon. We seek to locate our smelting plants where there is access to renewable energy and source external silicon and ferrosilicon supply for low carbon sources.</p> <p>Another important initiative will be to work closely with customers and researchers to implement the four Rs in the circular economy. For example, eco-design has the potential to reduce material and energy consumed.</p>

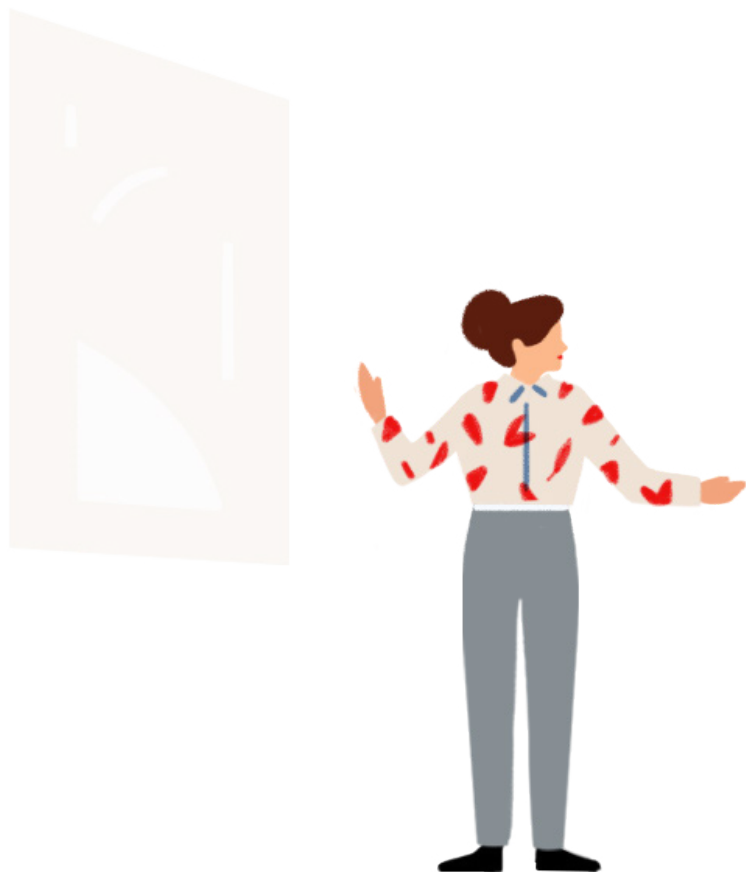


6.3 Climate-related scenario analysis and resilience strategy

Elkem conducted scenario analyses based on the identified risks that were highlighted from each division during workshops in the spring of 2021. The aim of this process was to create an understanding of the potential impact that climate change could have on the core business in the future, as presented in the TCFD framework. The short-term resilience strategy is incorporated in the climate roadmap to mitigate the short and medium-term risks with the most financial impact. The scenarios are descriptions of hypothetical, plausible futures (not Elkem's forecasts). The assessment was made on a 2°C and a 4°C global warming impact scenario as presented by International Energy Agency (IEA) and Intergovernmental Panel on Climate Change (IPCC).

Two different future scenarios narratives were defined, and potential strategical consequences were discussed and analysed. The analysis was limited to the geographical areas of China and Norway because the majority of Elkem's emissions and revenue is related to Elkem's operations in these two countries. The most material risks that were included in the scenarios focused on:

- Climate-related regulations as transitional risk, as it will increase operating costs and may reduce economic activity.
- Higher global temperature as physical risk, because it will trigger more frequent extreme weather events and chronic weather patterns, that can impact operations and economic activity.



Scenario narratives	2 degrees global warming (RCP 2,6 & IEA SDS)	4 degrees global warming (RCP 8.5 & BAU)
Narrative assumptions	The well-below 2°C scenario is dominated by transitional risks and opportunities. This scenario assumes that global GHG emissions peak in 2020 and decline in a rapid pace. We focus on policy and regulatory risks that may impact Elkem.	The 4 °C scenario is a scenario, where economic growth is preferred over climate action. The population grows faster than in the 2°C-degrees scenario and overconsumption of resources continues. The risk of the scenario analysis was connected to the physical risks that may impact Elkem.
Country assumptions	<p>Policy and legal risks:</p> <p>Norway Full implementation of Green New Deal, and 2030 Climate and Energy Framework, reducing GHG emissions to 55 % below 1990 levels. The long-term strategy for climate neutrality by 2050.</p> <p>China Peak emissions in advance of the committed 2030 target. Announced pledge to strive to be carbon neutral by 2060.</p>	<p>Physical risks:</p> <p>Norway Norway has the lowest score on the ND-GAIN Index, using a score that calculates a country's vulnerability to climate change and other global challenges as well as its readiness to improve resilience.</p> <p>China Due to a combination of political, geographic, and social factors, China is recognised as vulnerable to climate change impacts, ranked 61st out of 181 countries in the 2020 ND-GAIN Index.</p>
Main outcomes	New and more stringent climate-related regulations: An increase in CO2 pricing and carbon tax.	Higher global temperatures will trigger more frequent extreme events and chronic weather patterns.
Main impacts on business	<p>An increase in CO2 pricing and the carbon tax is a significant risk to Elkem and will impact Elkem's operating costs in Norway and China in the short and medium-term before they transition to lower emission technologies and solutions (long-term). These costs are mainly related to Elkem's main sources of emissions: fossil CO2 intensive production.</p> <p>Norway Carbon pricing mechanisms: Elkem's free allocation under EU ETS will be gradually phased out as the Carbon Border Adjustment Mechanism is implemented (2026). → Elkem's current carbon price: 500 NOK per tCO2. → Elkem's anticipated carbon price in 2030: 800 NOK per tCO2. → Elkem's anticipated carbon price in 2050: 1,600 NOK per tCO2.</p> <p>China Reach carbon neutrality by 2060, coal will be substantially replaced by renewables by 2030 and completely phased out by 2060 which will increase the price of fossil fuels. → The current price on carbon price is 60 NOK. → The expected carbon price can reach 400 NOK by 2030.</p>	<p>The 4.0°C Business as Usual scenario is dominated by increasing physical risks, due to a lack of coordinated policy actions to limit climate change. The most significant and most likely physical risks are:</p> <p>Norway → Sea-level risk: Bremanger, Tana and Bjølfefossen are among the locations that are most vulnerable to sea-level risk. For example, a NASA tool projects sea-level rise to be 0.20 meters in Bremanger in 2050. → Heat and drought risk: Increased risk of fire on nearby vegetation if drought intensity and length will increase. Temperature increase by: ca. 4.5 °C (interval: 3.3 to 6.4 °C). → Heavy rainfall and flooding: Locations near rivers make flooding an acute risk. Heavy rainfall will be more intense and occur more frequently.</p> <p>China → Seal level risk: Shanghai is the location most vulnerable to sea-level rise. NASA tool projects sea level rise to be 0.36 meters in Shangai in 2050. → Heat and drought risk: Potential to affect the energy market, the government to shut down the power supply to industries. Temperature increases by ca. 5 °C (interval: 5.2 to 5.4 °C). → Heavy rainfall and flooding: Coastal and river flooding are expected to increase. The Yangtze basin is most vulnerable to flooding. Wind and wind storms risk and sand storms and dust storms are also considered, but the likelihood is not expected to be high.</p>

7.0 Risk management

Elkem's process of identifying, assessing, and managing climate-related risks and opportunities (R&O's) is integrated into our multi-disciplinary company-wide risk management process.

Elkem's board of directors and management conduct regular reviews of the group's activities for identifying, assessing, and responding to climate-related risks and opportunities. The risk management process is also reviewed on an annual basis, normally in connection with the budget process. The overall risk assessment includes evaluation of climate-related risks and is normally presented by the CFO at board meetings. Climate-related issues represent important risk factors to the business, as well as it represent attractive opportunities.

The climate-risk process is integrated into a multi-disciplinary company-wide risk management process. The process used to determine whether any of our risks in the value chain, including direct operations, upstream and downstream, could potentially have a substantial financial impact is based on quantifiable factors that will affect Elkem's EBITDA, cash flow and equity. When it comes to climate-related risks, the risk management processes are however, not only limited to the substantive risks. Elkem also include possible climate risks with lower thresholds. Risks that today are perceived to have limited financial impact or frequency could increase going forward as a result of climate change. Such risks particularly include acute and chronic physical risks.

The process used to determine whether any of our risks in the value chain, including direct operations, upstream and downstream, could potentially have a substantial financial impact is based on quantifiable factors that will affect Elkem's EBITDA, cash flow and equity. A substantive financial risk will generally have a financial impact of more than 100 million NOK, with a timeframe of occurrence within 0-5 years with a 60 % of likelihood.

When assessing and deciding on the profitability of emission abatement projects, an internal price on carbon is used. Elkem normally uses the prevailing market price of carbon as its internal price of carbon.

The thresholds established to identify risks and opportunities that are evaluated to have a substantive financial impact is defined below:

Financial impact	Low	Medium	High
MNOK	<100	100-500	>500
Frequency and Likelihood	>5 years or 20 %	1-5 years or 20-60 %	<1 per year or 60 %

Definition of substantive financial or strategic impact

The total risk exposure is analysed, evaluated, and summarised at least on an annual basis in a bottom-up process where each of the divisions and key corporate functions go through a defined process to identify and quantify the main risks. A traffic light system is used in this process to summarise the status of each identified risk. The system evaluates the risk before mitigation activities are implemented and expected status after implementation of mitigation activities. Each risk factor is quantified based on possible financial impact and deemed likelihood to define whether the risk could be substantive on a group level. The risks are categorised into five areas;

- Strategic risks
- Raw material risks
- Production and process risks
- Market and product risks
- Financial risks

In total, 84 main risks were identified in the interviews in 2021. These risks were grouped into 39 risks on group level, and form the basis for management monitoring and follow-up through regular business review meetings. Climate and environment are included across the five main risk categories as climate and environment include transitional risks such as policy and legal risks, technology risks, market risks and reputational risks. The climate risk assessment is based on possible changes in regulations, customer preferences, production technology, physical factors and market reputation. In addition, Elkem's exposure to physical risks have been evaluated and are monitored for potential changes in the definition as not substantive in short to medium time horizon.

Elkem also evaluates the climate-related opportunities. For more information on our opportunities evaluation, see the table on opportunities in the strategy section (page 11).

Different risk factors and the focus in Elkem are presented in the table on the next page.



	Risk type	Relevance in risk assessment	Description
Transitional risks	Current regulations	Relevant, always included	Current regulation is always included as an essential part of our risk assessment process due to the urgency of immediate compliance actions and the potential impact on financial results. → Elkem's operations in Europe are subject to CO2 allowances managed by the European emission trading system (ETS). Elkem's plant in Canada is subjected to a regional quota system. As the costs related to this are significant, this is deemed to be a highly relevant risk for the company that could have a substantive financial impact.
	Emerging regulations	Relevant, always included	Emerging regulation is always included as part of our risk assessment process due to the potentially significant impact on frame conditions and competitive position. → EU's ambitions to reduce carbon emissions, which include emerging regulations that are likely to impact Elkem. Such emerging regulations could be a system for Carbon Border Adjustment Mechanism (CBAM). → The EU Taxonomy is a system to categorise green investments and ensure capital allocation to such projects. As such regulations could have a significant impact on Elkem, they are deemed to be highly relevant risk factors. → China's carbon trading scheme to include more sectors in the coming years.
	Technology	Relevant, always included	Technology is an important driver for how Elkem could achieve lower emissions and reduce environmental impact from its production processes. The risk within this area is the uncertainty of technological development and deployment which needs to be monitored. → Elkem aims to be at the forefront of developing new technology for the reduction of GHG emissions and an assessment of technology risk is therefore relevant for strategic planning processes. This technology includes the use of renewable reduction material (biocarbon) in place of fossil reduction material, as well as efforts to make such material in-house through a biocarbon pilot plant. → Elkem is investigating solutions for CCS/CCU to become carbon neutral by 2050. A pilot test has been announced to be set up at Rana (October 2021).
	Legal	Relevant, always included	Elkem's operations are subject to environmental permits and adaptation to legislation which is why legal risks are always relevant and included in our climate assessments. The risk of a possible implementation of strict permit levels introduced by governments and/or other policy changes requires our attention to mitigate a rapid transition. → Elkem must operate within the defined permits in order to secure its "license to operate", and to avoid production curtailments or even plant closures and therefore assess potential legal risks frequently.
	Market	Relevant, always included	Elkem acknowledges that climate change creates new markets, new needs, and new preferences which is why market risks are highly relevant in our assessments. → The demand for Elkem's products may be impacted by consumer preferences for low carbon products which is a risk we include in our risk assessment.
	Reputation	Relevant, always included	The potential impact on Elkem's reputation is evaluated as a part of our risk assessment which is incorporated in our decision processes for strategy development. → There is an increased focus on environmental and climate-friendly production from society, employees, investors, etc. Such considerations are increasingly important for young professionals, and reputation risks are considered highly relevant for Elkem. → It is of utmost importance for Elkem to be perceived as an attractive employer in order to attract talents to improve production processes and develop new products.
Physical risks	Acute	Relevant, sometimes included	Elkem operates globally and has production units close to rivers and oceans. There is a potential risk of extreme weather causing a physical impact on both people and assets. → Plants could be exposed to acute flooding due to heavy precipitation and/or sea-level rise. → Plants could be exposed to strong winds and storms, such as sandstorms in China. → Extreme weather conditions could impact raw materials accessibility, transportation and pricing.
	Chronic	Relevant, sometimes included	Within Elkem's current processes and plants, the risk of sea-level rise, temperature rise stress or wind are not defined as substantive risks. These risks are currently not classified as chronic but could have the potential to become chronic events due to climate change. → Access to water is important and therefore assessed as a part of our strategic planning processes. → A specific chronic risk that is considered is sea-level rise as it could become a significant risk in the future.

8.0 Metrics and targets

8.1 Emission metrics

Elkem's ambition is to reduce the company's fossil CO2 footprint, by increasing the use of renewable carbon sources and developing of innovative production processes. Our target and metrics are an integrated part in the annual ESG report that allows our stakeholders to follow our progression.

Elkem's carbon footprint accounting is in accordance with the GHG protocol, and we calculate all three scopes.

- Scope 1 covers all direct emission sources, including all use of fossil fuels for stationary combustion (predominantly diesel generators) and transportation.
- Scope 2 includes indirect emissions related to our purchased energy (i.e., electricity and heating/cooling). This includes purchased energy for our offices and sites globally
- Scope 3 comprises indirect emissions resulting from our value chain activities.

Scope	Unit	2020	2019	2018
Scope 1	tCO2e	2,387,915	2,184,172	2,540,000
Scope 2 (location based)	tCO2e	906,286	880,470	874,000
Scope 2 (market based)	tCO2e	2,703,865	2,246,890	N/A
Scope 3 (to+after gate, and to grave)	tCO2e	6,954,171	N/A	N/A
Total emissions, including market based scope 2	tCO2e	10,248,372	3,064,642	N/A
Total energy	MWh	12,045,952	4,431,062	3,414,000

Elkem also measures emission in scope 1 and scope 2 per business unit:

Business unit	Unit	2020	2019
Carbon solutions	tCO2e	95,246	101,647
Silicon products	tCO2e	2,425,749	2,250,771
Silicones	tCO2e	773,204	668,963

8.2 Elkem's energy metrics:

Energy consumption	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	0	1,322,230	1,322,230
Consumption of purchased or acquired electricity	5,328,000	1,245,872	6,573,872
Consumption of purchased or acquired heat	0	0	0
Consumption of purchased or acquired steam	0	54,000	54,000
Consumption of self-generated non-fuel renewable energy	0	0	0
Total energy consumption	5,328,000	2,622,102	7,950,102

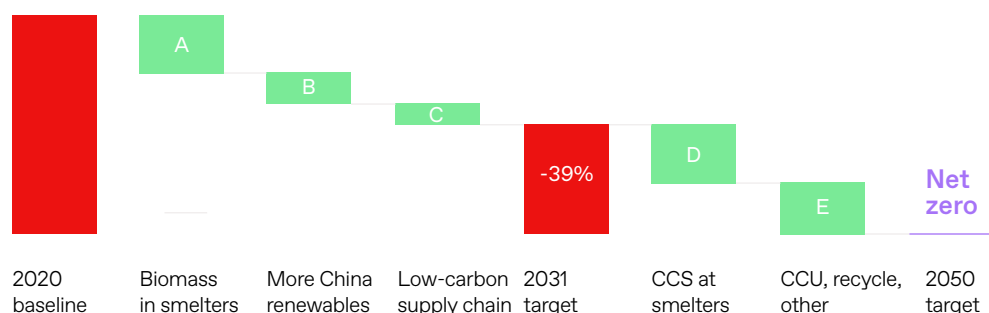
Indicator	Unit	2020	2019	2018
Energy consumption	GWh	6,400	6,010	8,228
Energy recovery	GWh	711	698	645
Energy efficiency	GWh	50,4	51	313
Share of total gross electricity based on renewable energy production	%	83%	83%	

Indicator	Unit	2020	2019	2018
CO2 emissions from renewable sources (biogenic)	tCO2e	541,000	448,000	313,000
Percent of renewable carbon sources, Elkem group	%	19%	17%	11%
Percent of renewable carbon sources, Norwegian smelters	%	20%	18%	20%

8.3 Climate roadmap

The climate roadmap explains Elkem's main actions to be implemented to meet emission targets in the climate change strategy:

Our roadmap to climate neutral products (*illustrative*)



A: Changing to biomass as reduction material

Increasing share of bio-based materials from wood waste as reduction material in our smelters. Elkem has a pronounced goal for using 20 % biological materials in the mix of reduction materials in the production of silicon and ferrosilicon alloys in Norway within 2021 and 50 % within 2030. Elkem reached the 20 % goal in 2018, and works to reach the 2030 milestone.

- To reach this goal Elkem will develop a new industrial process for bio-based materials tailor-made for silicon and ferrosilicon production processes.
- All Elkem smelters have developed CO2 roadmaps for 2031, estimating the feasibility of increasing bio-share for each plant.
- Verification of furnace operations with large volumes of agglomerated biomass from potential long-term suppliers is ongoing.

B: Shifting to renewable power in China

Future decarbonisation of China's power mix will support Elkem's low carbon transition.

C: Low-carbon supply chain

Actively pursue long-term sourcing of renewable-based silicon metal as well as emission-free logistics.

D: Exploring the potential of CCS at smelters

Exploring Carbon capture and storage (CCS) at our smelters. Elkem will test the world's first carbon capture pilot for silicon smelters at the plant in Rana, Norway.

E: Exploring CCU + recycling (and other initiatives)

Explore Carbon capture and utilisation (CCU). Joining forces with our customers to collect end-of life products to recycle chemically or mechanically. Use more biobased raw materials in Silicones, such as fermentation and hydrogenation of sustainably sources sugarcane.

More information about the climate roadmap announced in October 2021 can be found here →

8.4 Emission targets

Elkem has set absolute reduction targets for Scope 1 and 2, and scope 3, and targets for product carbon footprint (intensity) with reduction targets for Scope 1, 2 and Scope 3 upstream (to gate). Elkem will reduce fossil emissions in line with the Paris agreement. Our GHG emission reduction targets are classified as a well-below 2°C (2030) and 1.5°C (2050), aligned with the Paris Agreement. We, therefore, consider these targets as science-based targets since it meets the criteria, but the targets have not been approved by the Science-Based Target Initiative (SBTi).

Target	Year target set	Target Year	Scope	Target
Target 1	2021	2031	1, 2	28 % absolute reduction of emissions
Target 2	2021	2031	1,2,3	39% reduction in carbon footprint of products
Target 3	2021	2050	1,2,3	100 %* absolute reduction of emissions

*net zero

8.5 Biocarbon share targets

For Elkem to be able to reduce GHG emissions in line with science an important initiative is to reduce scope 1 emissions. A high share of biocarbon is important to reduce the impact our processes have on climate change. As CO₂ is inherent to the smelting process with current technology, one of Elkem's main CO₂ strategies is to replace fossil carbon with biocarbon in our smelting operations.

Target	Unit	Yearly biocarbon used at smelters	Target year	Target status
Target 1	%	20	2021	Achieved
Target 2	%	50	2030	New

In 2020 Elkem reached the biocarbon goal of 20% in Norway, and the group share rose to 19%. Each plant has developed a roadmap and reports to corporate level on progress. To reach our target of an increased share of biocarbon, Elkem is actively engaged in new technology development and industrial partnerships. The 2020 announcement of an industrial pilot plant for biocarbon production in Canada is an example of this. Elkem works closely with partners to develop efficient, sustainable, and more environmentally friendly production of biocarbon for silicon and ferrosilicon production. It is a pre-requisite for Elkem that renewable sources comply with our strict environmental and social requirements.

8.6 Supplying the green transition metrics

Referring to the climate change strategy supplying the green transition is an important goal for Elkem. The demand for Elkem's products is driven by global megatrends such as sustainability and clean energy demand growth e.g. solutions for the electrification of transportation, increased energy storage and batteries, reducing emissions and energy consumption, and the replacement of oil-based materials. One of Elkem's climate goals is to grow the market share in the green transition. One of our metrics is to look at the share of revenue that supports green development. The table below highlights how our products are eligible with the EU taxonomy in the initial screening based on 2020 revenue share. In 2022, we will determine further how eligible and aligned Elkem is with the criteria for the EU Taxonomy.

In 2020, 12.9 % of Elkem's revenue came from products that are used in low-carbon applications or abate emissions in use:

Product group	Unit	Silicone and silicones (solar panels)	Foundry products (wind turbines)	Silicones (EV applications)	Silicones (constructions)	Carbon ramming past (aluminium)	Silicones (aluminium to cars)	Carbon electrode (Silicon)
Revenue share	%	1,5%	1%	2,4%	2,9%	1,3%	3,7%	0,1%



