



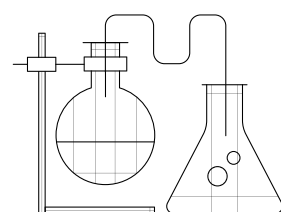
Reducing CO₂ emissions by replacing fossil sources with biocarbon in our production

Biocarbon & Bioenergy Day, Oslo – 01.06.2022

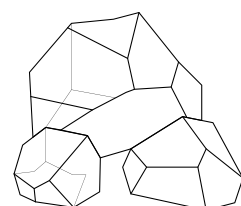
Jon Rune Vetleseter

We are Elkem

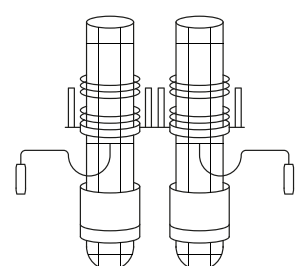
Advanced material solutions shaping a better and more sustainable future



Silicones



Silicon Products

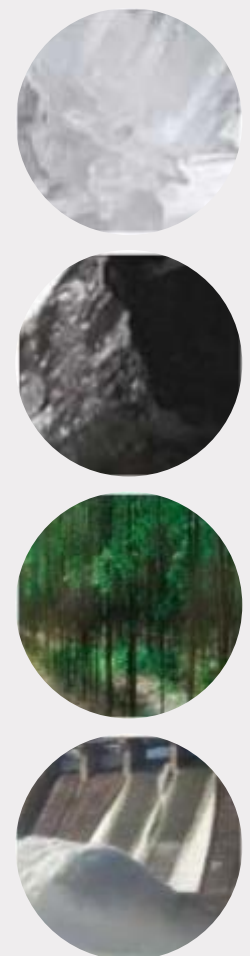


Carbon Solutions



Sustainability is an integrated part of our value chain: From raw materials through the production to end products

Low cost sustainable input factors



Quartz

Coal

Biocarbon

Power

High temperature/chemical production processes



Silicones

Silicon, ferrosilicon, foundry products and microsilica

Carbon solutions

Examples of high value applications and markets



Wind turbines

Solar

Electronics

Infrastructure

Airbags

Automotive EV

Cooking, utensils

Release coating

Our climate ambitions

Elkem is committed to reduce emissions and contribute in line with Paris agreement aim of well below 2°C warming

We aim to contribute to a better climate through three key levers:



Reducing our emissions

Achieving fully climate neutral production throughout our value chain

- **By 2031:** Reducing absolute emissions* by **28%** from 2020-2031 – delivering **39%** improvement in product footprint**
- **By 2050:** Achieving fully carbon neutral production (zero fossil emissions) globally



Supplying to the transition

Providing the advanced material solutions required to enable the green transition

- **Grow supplies of advanced materials to green markets**
- **Build new business in green markets**



Enabling circular economies

Enabling more circular activities in our operations, products and markets

- **Increase recycling – own and customers'**
- **Develop the eco-design of innovative products**

Elkem's climate actions: Reducing our emissions

By 2031:

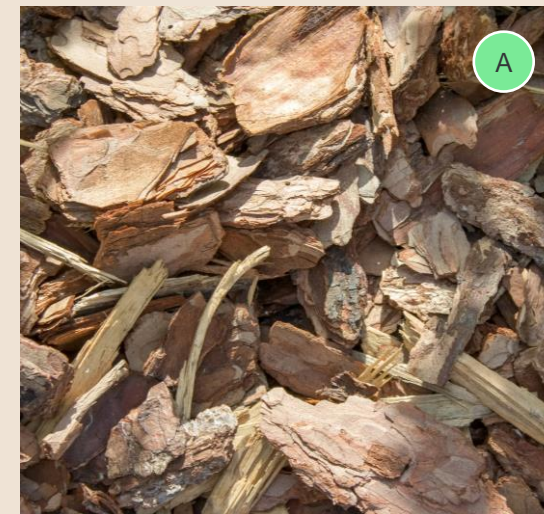
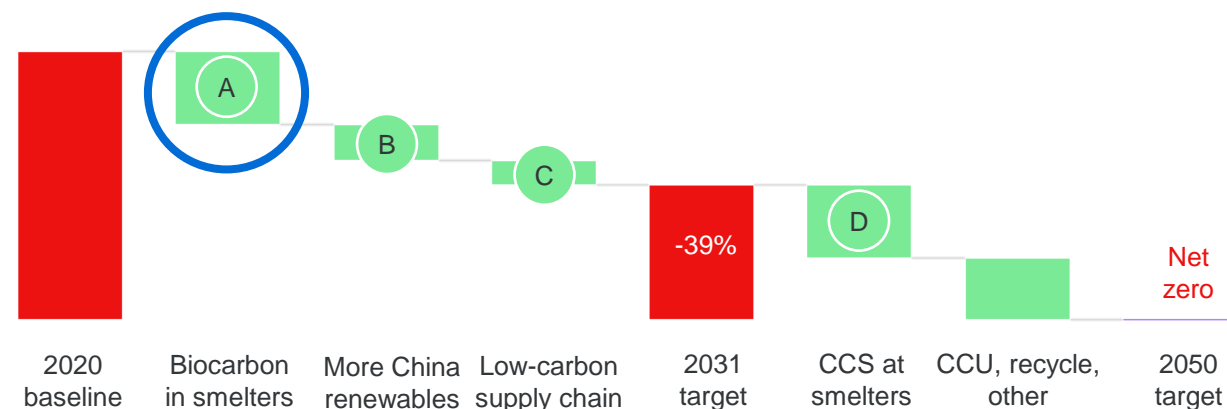
- Reducing absolute emissions* by **28%** from 2020-2031
- Increasing biobased CO₂ from >20% in 2021 to 50% in 2031

By 2050:

- Achieving fully carbon neutral production (zero fossil emissions) globally

Our roadmap to climate neutral products

(Illustrative)



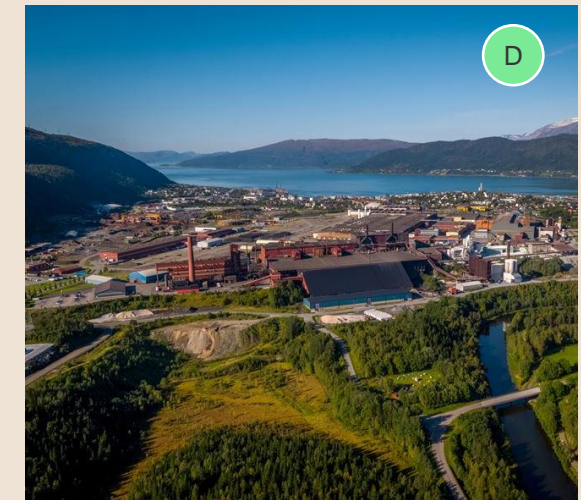
Changing to biocarbon as reduction material



Shifting to renewable power also in China



Low-carbon supply chain



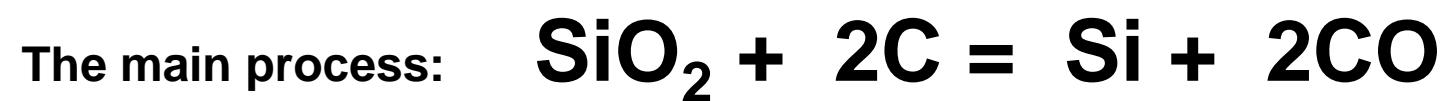
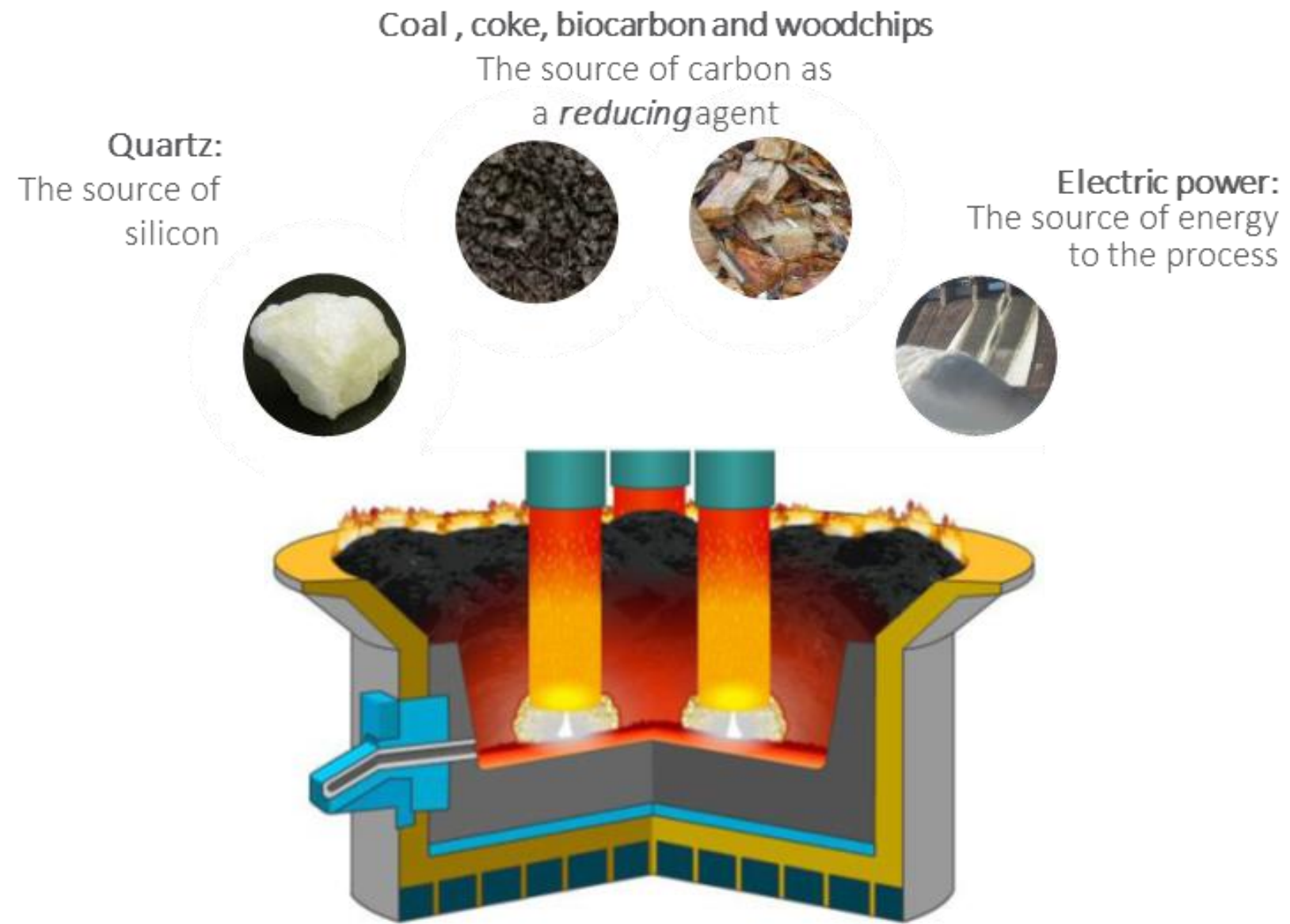
Exploring potential of more CCS at smelters

Why does Elkem need biocarbon?

- The process industry emits CO₂ through production
- Elkem and other industry companies
 - committed to reducing the carbon footprint of our production and to;
 - contribute to meeting the ambitions of the Paris agreement.
- Raw material based on biological sources is today the only known replacement for fossil sources in the metallurgical processes
- The nature of biocarbon makes the emissions carbon neutral
- Using biobased sources in the hard-to-abate processes will give large CO₂ reduction effect



Carbon for Si-production is necessary part of the chemical reaction



High future demand requires multiple biocarbon projects

To reach the ambitious climate targets, Elkem will need additional 200-250 000 MT of biocarbon within 2031

- No biocarbon ready for permanent industrial scale use today
 - development of technology for new product and process
- Raw material access and logistics limit size of projects
 - multiple projects and factories necessary to meet demand



Developing partners is important for Elkem

Elkem cooperating with projects internationally at different stages

- Elkem own technology development constructing pilot industrial scale in Canada by end 2022
- Continuous evaluation of projects world-wide
- Actively supporting value creation for local forestry
- Elkem cooperation with Vow Green Metals to establish biocarbon production at Follum



Focus on changes to increased biocarbon to Si production

Important enablers to speed up reduction in fossil CO₂

- **Predictable framework conditions for transition from fossil to biobased raw materials**
- **Accelerate access to competitively priced resources**
 - Support schemes related to extraction and handling of biobased side- and waste streams from forestry, sawmills, recycling and other
- **Strengthen support of biocarbon investments from R&D to production and use**
 - Need for comprehensive schemes for biocarbon implementation
 - from the development of new technology to the implementation of new production facilities
 - for necessary constructions and changes in existing plants and smelters the increased use of biocarbon

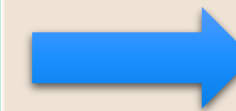


Biocarbon for Si is optimal use of biobased materials

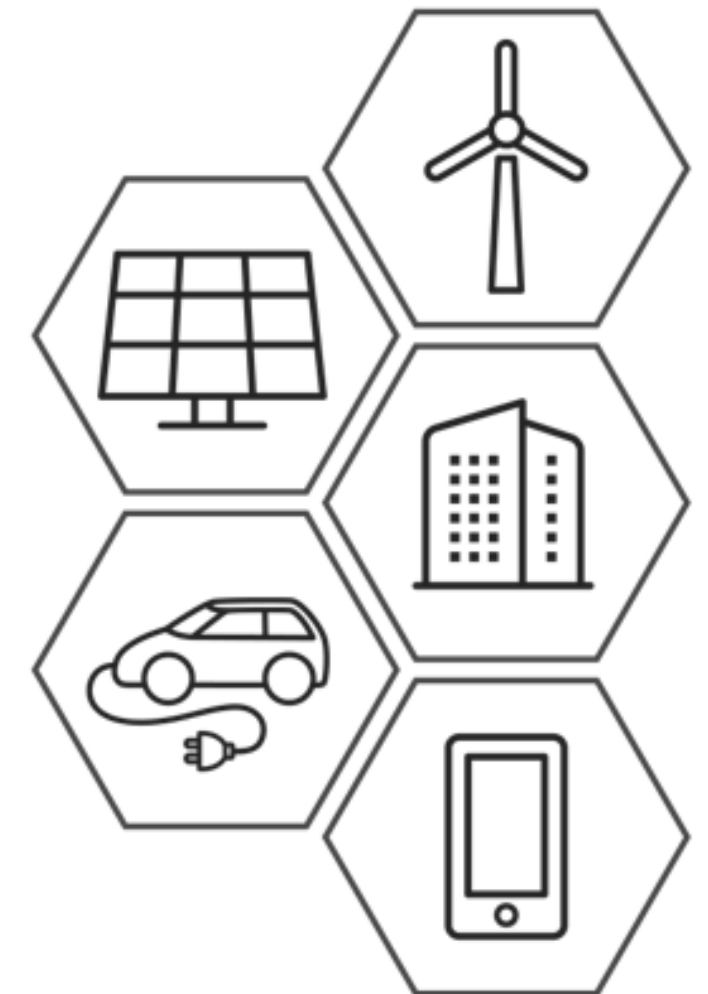
- implementation require right conditions

Biocarbon for Si favorable in most areas:

| Key considerations: | Value creation | GHG reduction | Energy efficiency | CCU/CCS opportunity | End use |
|---------------------|----------------|---------------|-------------------|---------------------|---|
| Biocarbon for Si | High | Direct | Surplus | Yes | Energy efficiency products required for Green Shift |



Solar panels, windmills, bridges, EVs, buildings, computers, mobile phones, health equipment



Pre-requisites for transition to biocarbon

- **Favourable conditions for industry** that reduce emissions today
- **Development of technology and factories**
- **Long-term access to biocarbon**
 - High-quality, renewable and sustainable
- **Biocarbon must be competitive**

Thank you for
your attention!

