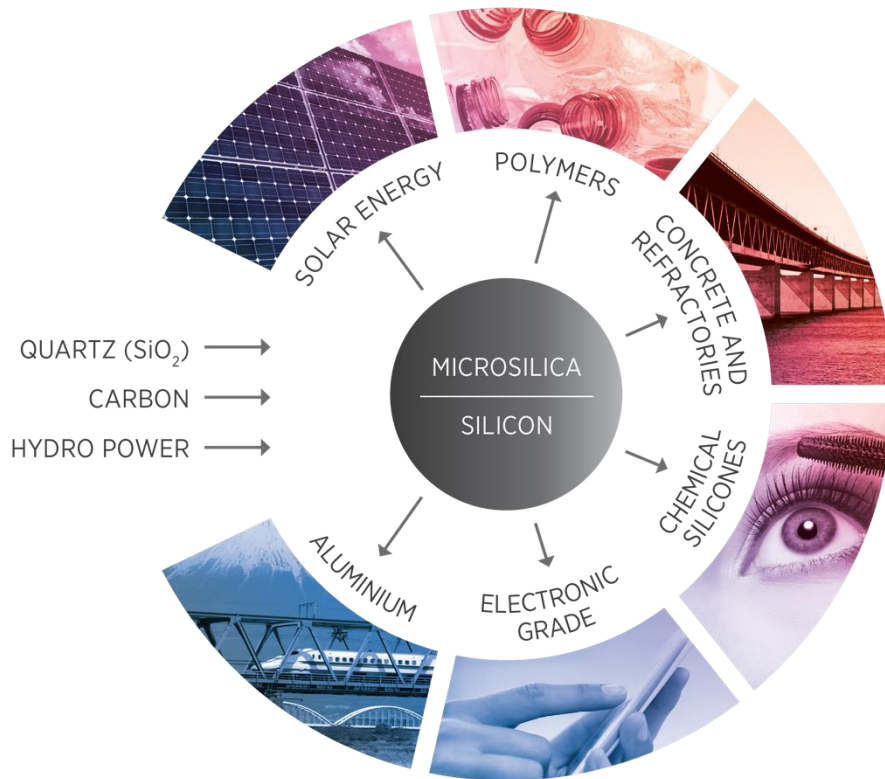


INNOVATION FOR THE LOW CARBON SOCIETY EXAMPLES FROM ELKEM

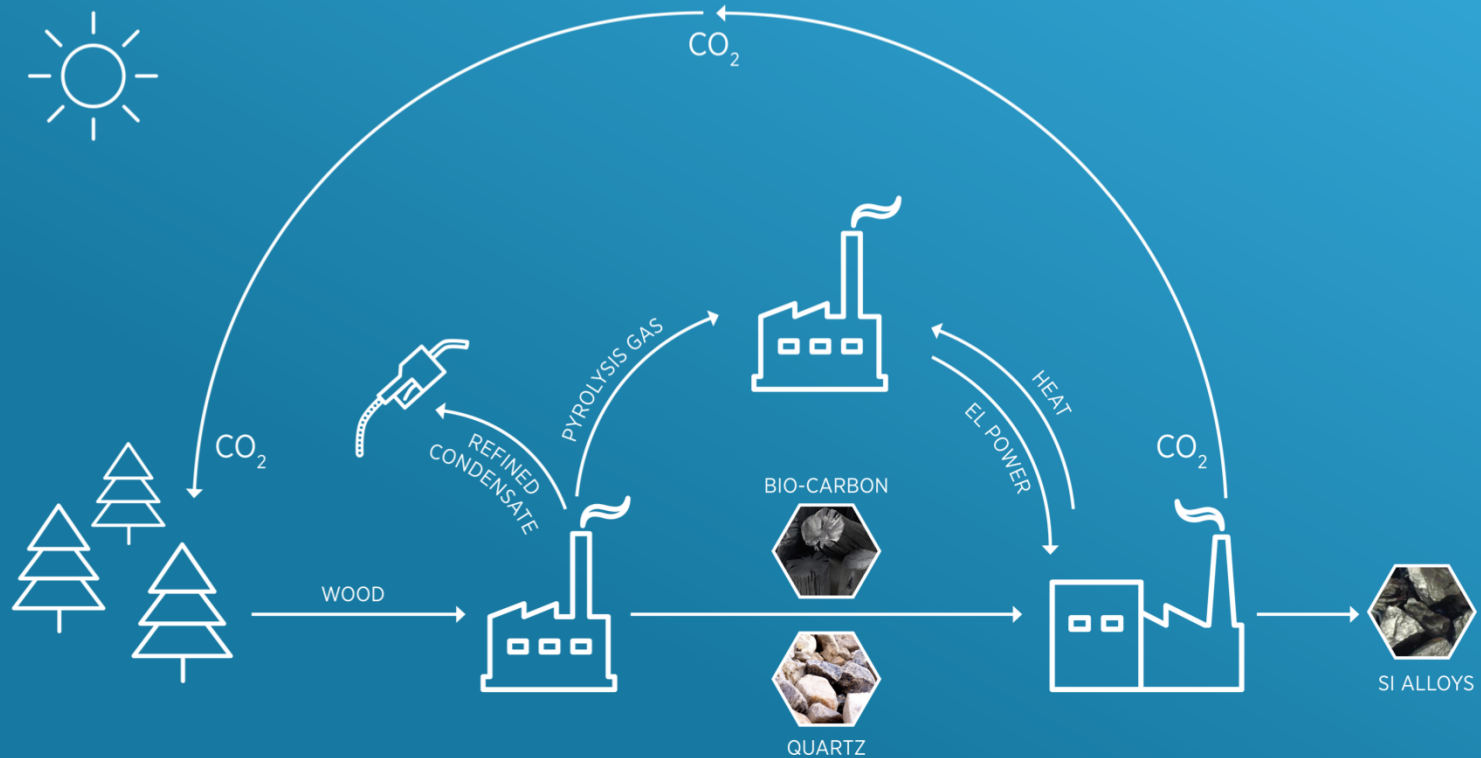
Kristin Karlstad
17 February 2017



Elkem provides materials that are **vital to modern societies**



Our goal: **carbon neutral** and **energy neutral** metal production



Benefits and barriers to success

BENEFITS

- Global average process emissions for silicon production:

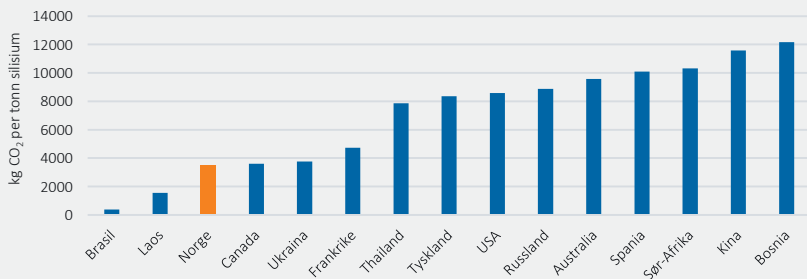
- **Stage 1: 40% by 2030**

Elkems emissions would drop by 500.000 tonnes per year

- **Stage 2: closed furnace and 100% replacement**

Elkem could reduce emissions by 1,3 mill tonnes per year and electricity consumption by 5TWh

GLOBAL POTENTIAL IS IMMENSE



BARRIERS

- Higher raw material cost from bio than from fossil sources
- Long term access to sustainable biomass at predictable prices
- No market demand for «green» silicon means investment will not be covered by increased product price
- Significant technological risk remains for all R&D stages towards piloting and commercialisation
- High costs for near-industrial size pilots (TRL 6-8)

ADVANCED MATERIALS
SHAPING THE FUTURE

