# Elkem ASA

## Capital Markets Update

26 October 2022

# Capital Markets Update

## Introduction and strategy update
- Helge Aasen, CEO

## Silicon Products division
- Inge Grubben-Strømnes, SVP Silicon Products

## Silicones division
- Sophie Schneider, VP Silicones EMEA

## Green Ventures
- Asbjørn Søvik, SVP Green Ventures & Digital

# Introduction and strategy update

Helge Aasen

26 October 2022

Our main message

# Elkem is well-positioned based on a dual-play growth strategy and green leadership

| | |
|---|---|
| Elkem's strategy | → Dual-play growth and green leadership<br>→ Balanced across geographies and products |
| Financial performance | → Strong results, attractive dividend policy<br>→ Profitability driven by strong market positions |
| Silicon Products | → Low cost positions<br>→ Favourable industry dynamics |
| Silicones | → Attractive growth potential<br>→ Focus on specialisation and innovation |
| Green Ventures | → Value creation based on technological expertise<br>→ Solutions for the green transition |

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# Elkem is positioned in fast-growing industries with main gravity towards East – but growth back in the West

- Global economy: China growing faster than western world but re-industrialisation in the West
- Green transition: Focus on sustainability with electrification of transportation accelerating
- Geopolitical polarisation: Trade barriers creating opportunities for dual-play providers
- Industry dynamics: Underlying growth supported by industry maturity and innovation

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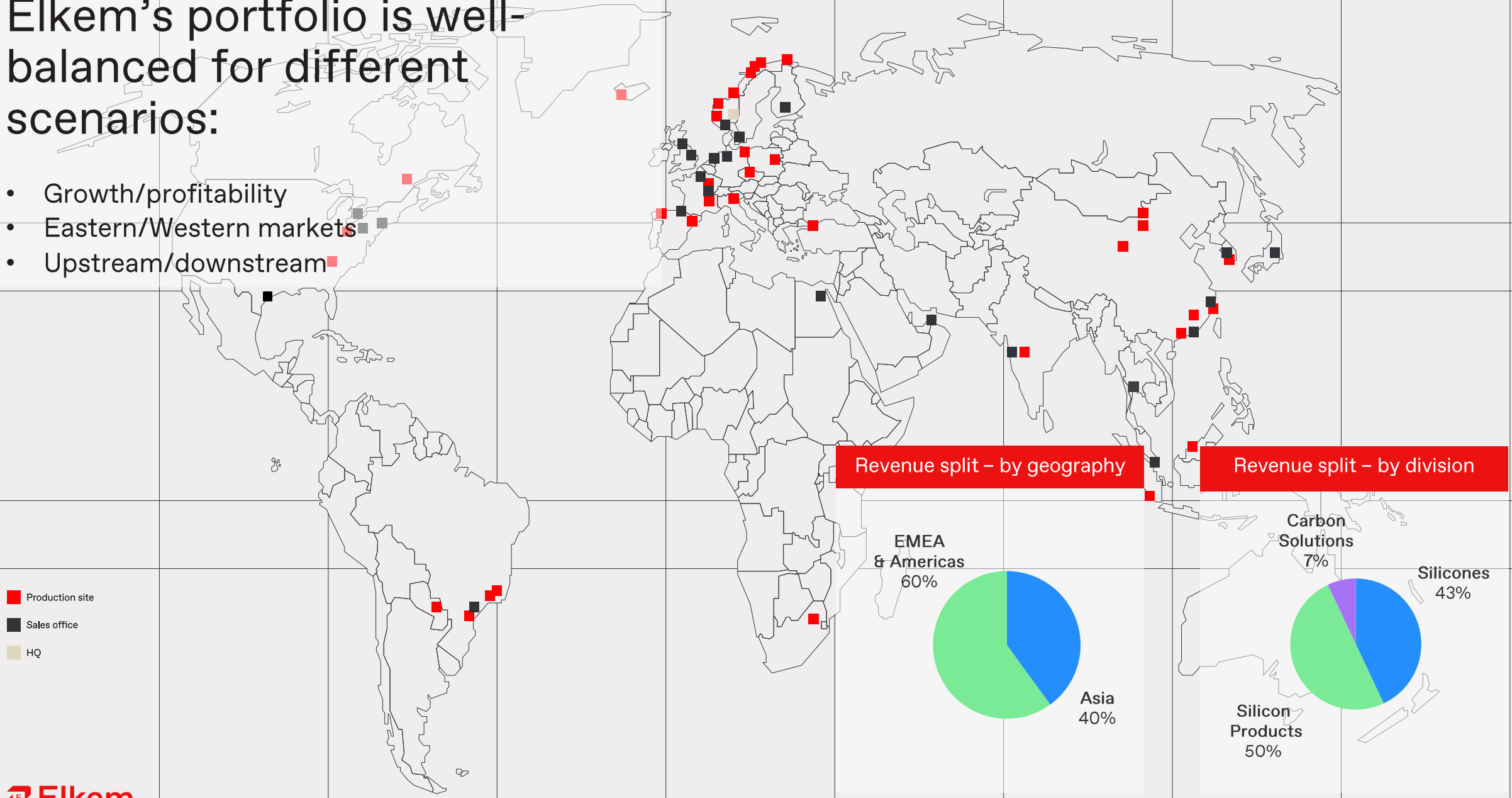
# Elkem's portfolio is well-balanced for different scenarios:

- Growth/profitability
- Eastern/Western markets
- Upstream/downstream




## Revenue split – by geography




## Revenue split – by division

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# 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 while growing the business – 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** such as better buildings, electric vehicles and renewable energy
- **Build new business in green markets** such as battery materials, biomass and energy recovery

**Enabling circular economies**
Enabling more circular activities in our operations, products and markets

→

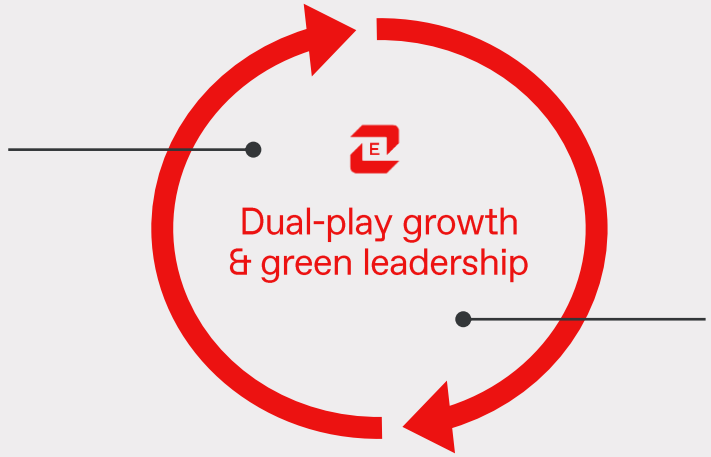
- **Increase recycling** in our own operations
- **Increase recycling** with our customers
- **Develop the eco-design of innovative products**

* Total global fossil $CO_2$ emissions, scope 1 and 2
** Main products average fossil $CO_2$ emissions, scope 1-3

# Dual-play growth & green leadership

**Growth ambitions:**
Top 3 in silicones worldwide
Number 1 in silicon products and carbon solutions in the West

Dual-play growth
→ Balanced between geographic regions (East & West)
→ Balanced across the value chain (Upstream & Downstream)




Green leadership
→ Strengthening position as best in the industry on low $CO_2$
→ Growing supplies to green transition & creating green ventures

| Silicones | Silicon products | Carbon solutions |
|---|---|---|
| → Balanced geographical growth<br>→ Improve cost position<br>→ Higher degree of specialisation | → Selective growth<br>→ Secure leading cost positions<br>→ Lower carbon emissions | → Selective growth<br>→ Sustainable low-cost position<br>→ Preferred supplier with high quality |

## We are Elkem

Advanced silicon-based materials shaping a better & more sustainable future

| | |
|---|---|
| **Growth**<br>>5% per year | **EBITDA**<br>>15% per year |
| **Reduce $CO_2$**<br>-28% 2020-31 | **Net zero**<br>By 2050 |

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# Silicon Products:
## Global leader in silicon-based materials and solutions

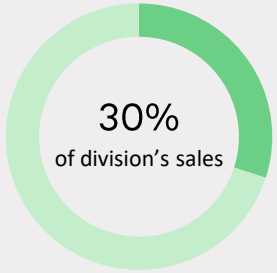
Inge Grubben-Strømnes

26 October 2022

# Global leader in silicon-based materials and solutions

- → Four business lines: Silicon, ferrosilicon, foundry alloys and microsilica
- → End markets driven by electrification, renewable energy, digitalisation and increased standard of living
- → Low cost commodity positions based on scale and operational excellence with improved long term outlook due to the energy situation and underlying growth and developments in China
- → Strong market positions in specialty niches based on production platform, deep application knowledge and close customer relationships

# Silicon – attractive cost position and downstream integration




## Raw materials

### Quartz

### Coal and biocarbon

### Electricity

## Products

### Total production capacity

205.000* mt in Norway and China
→ 175.000* mt silicon grades
→ 20.000 mt Silgrain®
→ 10.000 mt Silgrain® specialties

### Properties

→ Raw material in silicones and polysilicon optimising selectivity
→ Alloy strengthening aluminium
→ Semi conductor insulating electronics
→ Impurity management KSF

### Market dynamics

→ 16% market share ex China (second largest merchant producer)
→ Commodity with index linked prices

## Industry players**

### Silicones (50%)

Elkem · WACKER · DOW · MOMENTIVE · Shin-Etsu · EVONIK

### Aluminium (30%)

Alcoa · TRIMET · ALLIED METAL COMPANY · Hydro · STENA ALUMINIUM · RAFFMETAL

### Polysilicon (10%)

TOKUYAMA · GCL · OCI · WACKER · HSC

### Specialty niches (10%)

SAINT-GOBAIN · brembo · Denka · ORICA · LG Chem

## End markets

### Consumer goods

### Construction

### Automotive

### Renewable energy

### Electronics

* Of which 50.000 mt at Yongdeng plant (internal supplier to Elkem Xinghuo) reported in Elkem Silicones
** Split of silicon revenues by segment – companies named are examples and not necessarily customers

# Ferrosilicon – high quality products to specialty steel


## Raw materials

### Quartz

### Coal and biocarbon

### Electricity

### Iron

## Products

### Total production capacity

- → 185.000 mt in Norway and Iceland
- → 40% High Purity grades
- → 35% Refined grades
- → 25% Standard grades
- → Flexibility to switch grades

### Properties

- → Deoxidising steel
- → Impurity management KSF

### Market dynamics

- → 30% market share specialty FeSi globally
- → Commodity with index linked prices

## Industry players*

### Electrical steel (40%)

ArcelorMittal, thyssenkrupp, posco, NIPPON, CLIFFS, CHINASTEEL

### Stainless steel (20%)

CLIFFS, outokumpu, aperam, ACCIAIERIE VENETE SPA

### Other specialty steel (15%)

OVAKO, voestalpine, CLIFFS, SSAB

### Commodity steel and other (25%)

ArcelorMittal, thyssenkrupp, posco, NIPPON, Steel Dynamics, Inc.

## End markets

### Construction

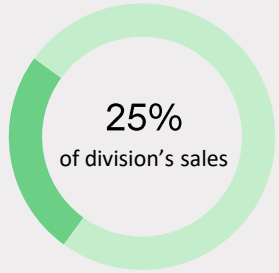
### Consumer goods

### Automotive

### Energy/electrification

* Split of ferrosilicon revenues by segment – companies named are examples and not necessarily customers

# Foundry Alloys – global leader into cast iron metal treatment




## Raw materials

### Ferrosilicon

### Alloying elements

## Products

### Total production capacity

- → 190.000 mt globally
- → 60% FSM
- → 20% Low potent inoculants
- → 20% High/Medium potent inoculants
- → Residual capacity utilised for ferrosilicon

### Properties

- → Improves properties of ductile iron and controls the microstructure and mechanical properties of cast irons

### Market dynamics

- → 50% market share in Europe, North America and India
- → Negotiated quarterly prices

## Industry players*

### Iron foundries

waupaca

BENTON FOUNDRY INC

GREDE

CASTING

brembo

JOHN DEERE

PSA GROUPE

## End markets**

### Automotive (50%)



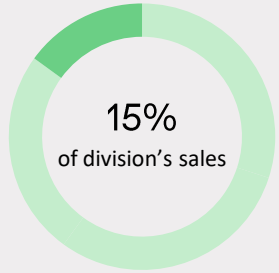
### Engineering (35%)


### Wind turbines (10%)


### Pipes and fittings (5%)


* Companies named are examples and not necessarily customers
** Split of foundry alloys revenues by end market

# Microsilica – tailor made products to wide range of specialty applications

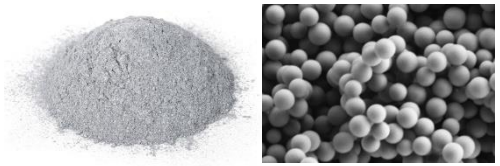



## Raw materials



→ Elkem pioneered the development to collect and process the off-gas of silicon and ferrosilicon, and is now the world's leading supplier of microsilica and related products

## Products



### Total capacity

→ 300.000 mt microsilica globally (40% sourced externally)
→ 35.000 mt other specialty materials

### Properties

→ Additive for concrete to improve durability
→ Used in refractories and ceramics for strength and heat resistance
→ Additive in oilfield applications (cementing, drilling fluids and simulation operations)

### Market dynamics

→ Global market leader with local presence
→ Negotiated prices

## Industry players*

### Construction (30%)

KMEW · MAPEI · NIPPON STEEL · unicon · etex · NORBETONG HEIDELBERGCEMENT Group

### Refractories (30%)

REFRATECHNIK GmbH · VESUVIUS · brembo · skamol · SAINT-GOBAIN · IMERYS · RHI MAGNESITA

### Oilfield (40%)

Schlumberger · NAPESCO · COSL · Baker Hughes · HALLIBURTON

## End markets

### Construction and infrastructure

### Refractories and ceramics

### Oilfield drilling fluids and cementing

* Split of microsilica/ materials revenues by segment – companies named are examples and not necessarily customers

# Competitive edge due to low cost and superior customer offering

## Raw materials

EBITDA cost

- Power (~35%)
- Quartz (~10%)
- Reduction agents (~20%)
- Electrode (~10%)
- Other (~25%)

→ Low cost hydro power

→ Captive quartz mines

→ In-house biocarbon development

→ $CO_2$ quotas covering 75% of ETS

→ Captive electrodes

→ Long term relationships and broad supplier base

→ Global sourcing team with strong presence in China

## Plants

→ Operational excellence and economies of scale

→ Low carbon footprint

→ Energy recovery (up to 30% of where installed)

→ Attractive product mix and high value microsilica

→ Attractive locations/ logistics

→ Market access/ proximity

## Customers

→ Strong brand and long-term relationships

→ Deep application knowledge, patents and technical Customer Support

→ Security of supply and ability to complement with external sourcing

→ # 1 markets positions in foundry alloys, microsilica and high purity grades

## End markets

→ Well positioned to benefit from higher sustainability requirements

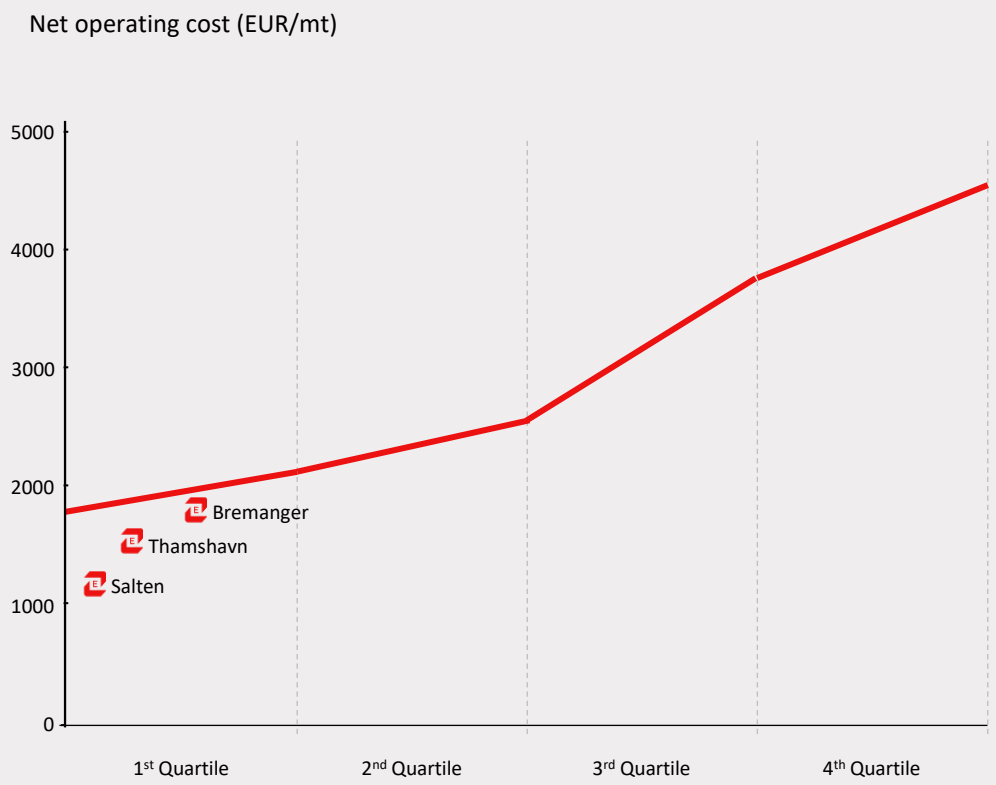
→ Delivering high quality materials to the green transition

→ Reliable producer serving demanding customer requirements

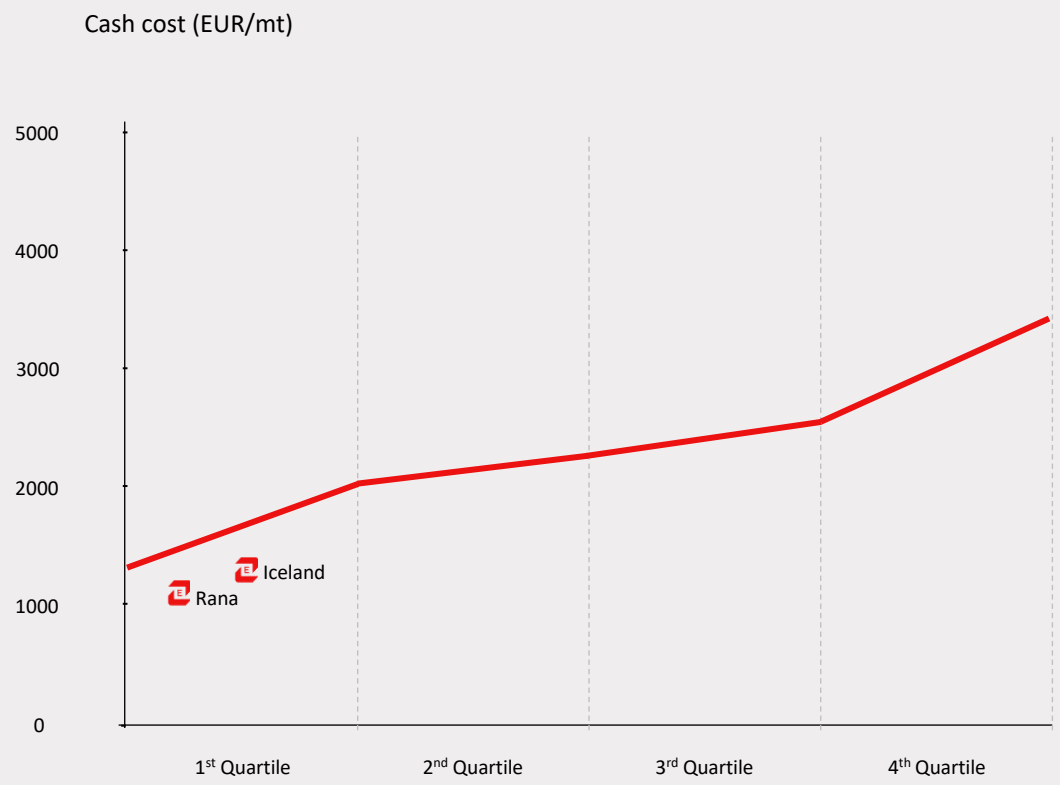
→ Strong long-term relationships with leading industry players

# Low cost based on operational excellence, economies of scale and renewable electricity

## Silicon cost curve




## Ferrosilicon cost curve

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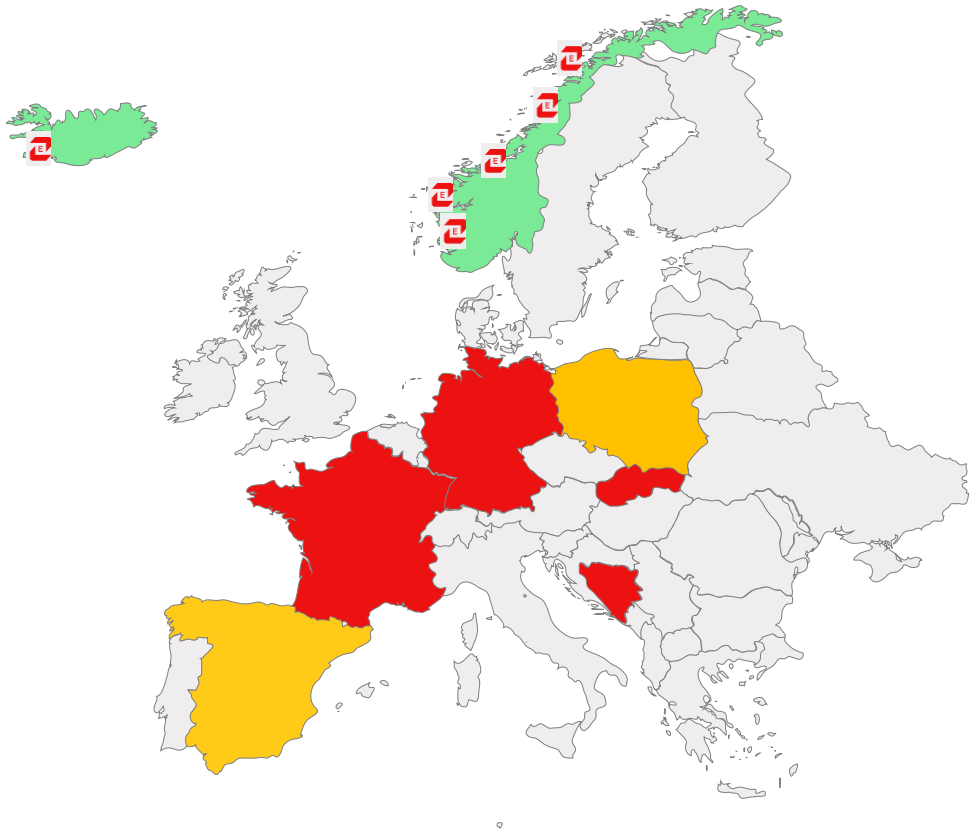
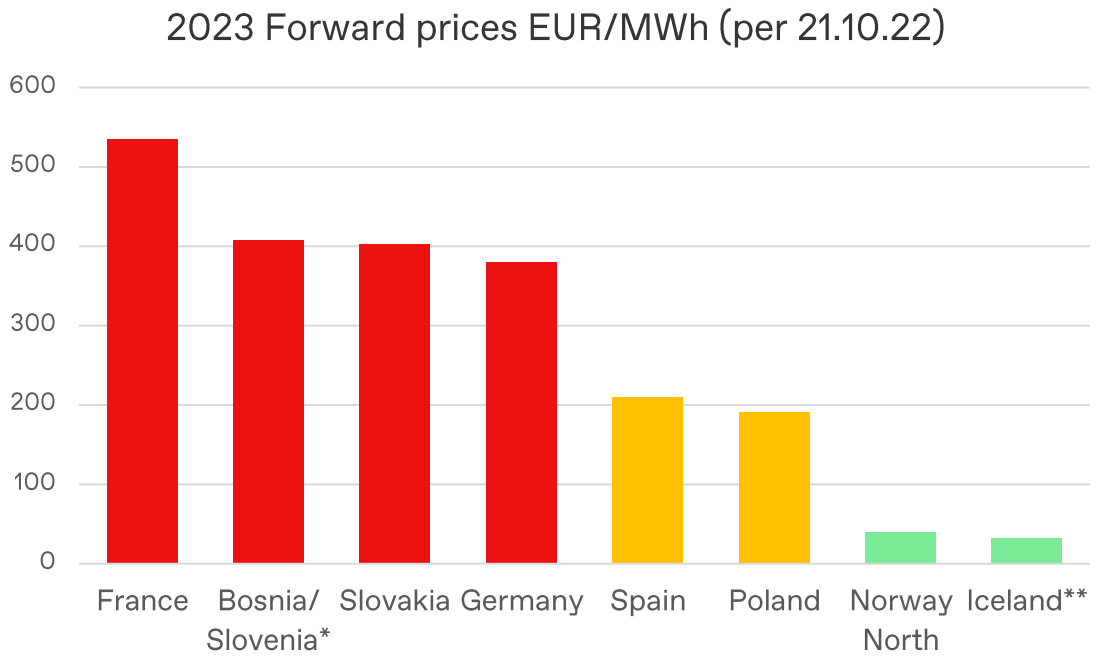
Sources: CRU Silicon Metal Market, AlloyConsult, Elkem Analysis

# Well-positioned with long-term competitive renewable energy






**Elkem position**

- → Norway – long-term contracts in liquid market, short/medium term hedging ratio > 85%
  - → Attractive locations and area pricing
  - → $CO_2$ compensation
- → Iceland – long-term contract
- → Canada – captive hydro power combined with public industrial tariffs
- → Paraguay – industrial tariffs

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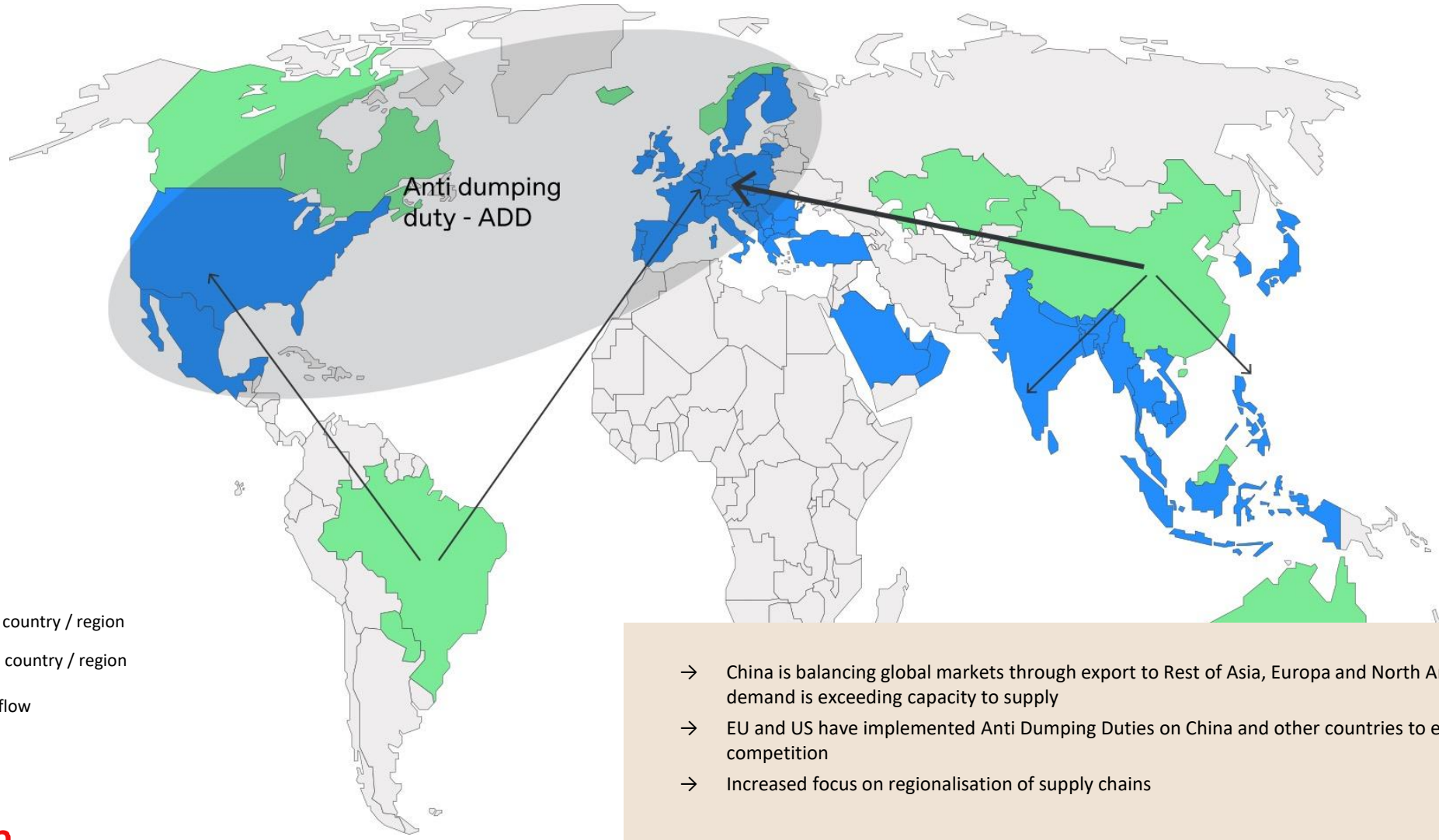
*Prices shown for Slovenia
** Avg. price to industry from Landsvirkjun 2021

# Supply dynamics – China balancing global markets




Net exporting country / region

Net importing country / region

↖ Major supply flow

- → China is balancing global markets through export to Rest of Asia, Europa and North America where demand is exceeding capacity to supply
- → EU and US have implemented Anti Dumping Duties on China and other countries to ensure fair competition
- → Increased focus on regionalisation of supply chains

# China’s balancing role likely to change

→ China’s silicon production established as low-cost exports

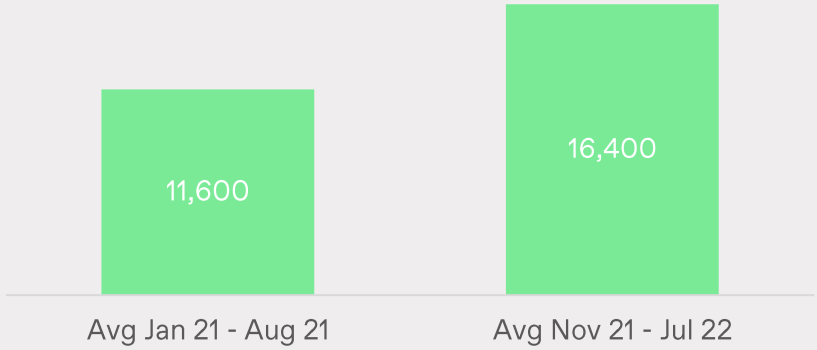
→ Domestic demand is increasing due to solar, silicones and aluminium

→ Production costs are increasing
- → Higher energy cost due to scarcity, strong demand and more imports
- → Stricter environmental regulations (local emissions and $CO_2$)
- → General cost level increasing due to higher standard of living

→ Exports of silicon and ferrosilicon likely to decrease with price expected to increase

**Chinese silicon exports vs. domestic demand**
(Thousand mt/year)


Typical Chinese smelter cash cost
(RMB/mt Si99)




Sources: CRU Silicon Metal Market Outlook, Elkem analysis

# Global leader with strong positions

→ Suppling materials to markets supported by strong megatrends

→ Low cost positions based on operational excellence, economies of scale and long-term competitive renewable energy

→ Strong market positions in specialty niches

→ Focus on maintaining leading cost positions, reduce carbon emissions, optimize product mix and evaluate capacity expansions

→ Well positioned for profitable growth through M&A or brownfield expansions

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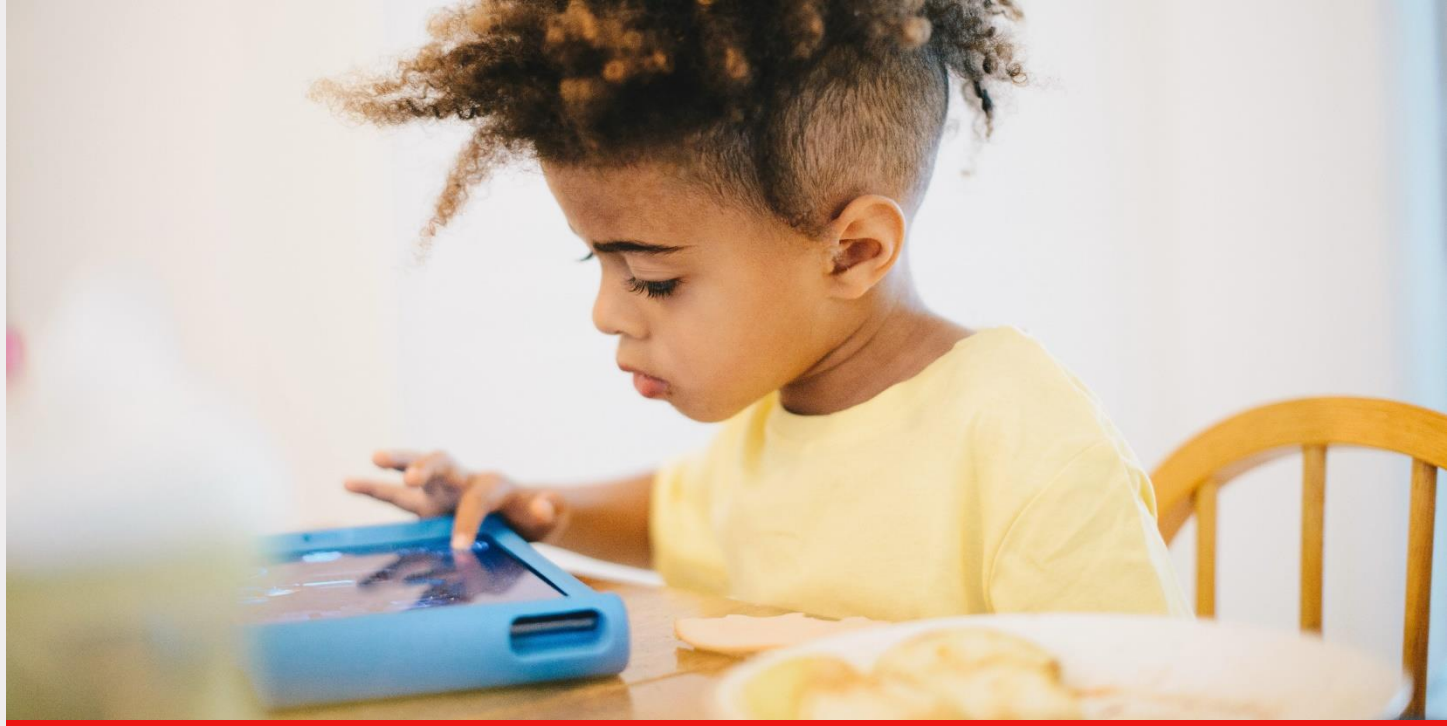


# Silicones: Poised for growth
## with green shift & middle class rising

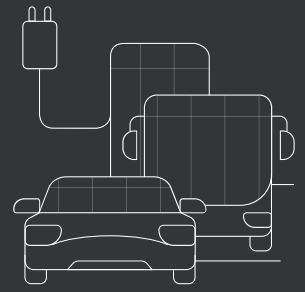
Sophie Schneider

26 October 2022

Silicones – highlights

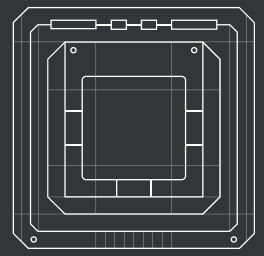
# Unique chemistry for vital applications

Silicones bring unparalleled  properties and performances to materials, which are essential in multiple industries.



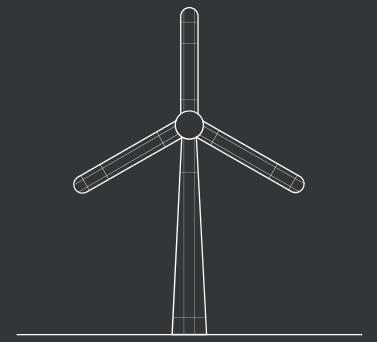
## Electric mobility

Light weighting
Battery thermal management
Electrical & fire safety



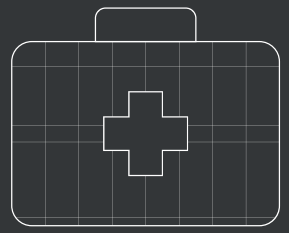
## Semiconductors

Thermal management
Electronic assembly
Circuit protection



## Low-carbon energies

Long-term reliability (weather, UV)
Nonflammable materials
High temperature operations

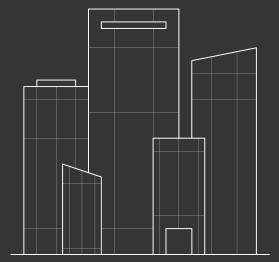


## Healthcare

Biocompatible materials for temporary or permanent implants and prothesis

## Aerospace & defence

Properties retention at temperatures beyond the limits of organic chemistry



## Construction

Long-lasting, weather-proof adhesives and sealants for energy efficient glass façades

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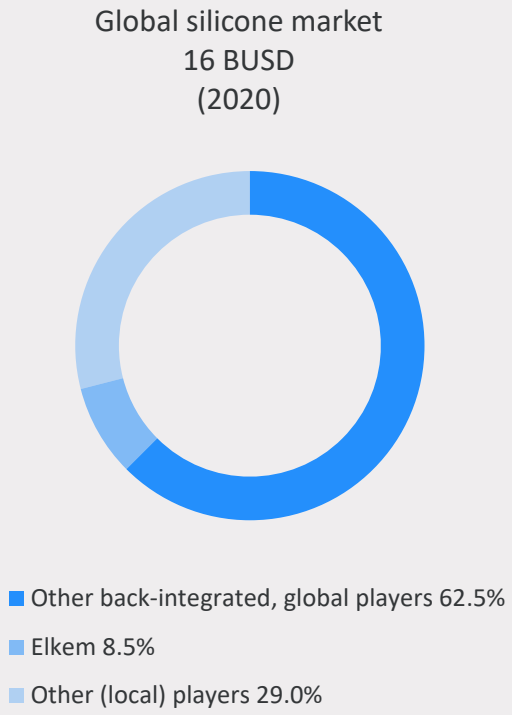
# Silicones industry

- → 5 global integrated players + emerging Chinese local players
- → Total market size is ~ 16 BUSD
- → 8.5% Elkem market share in 2020

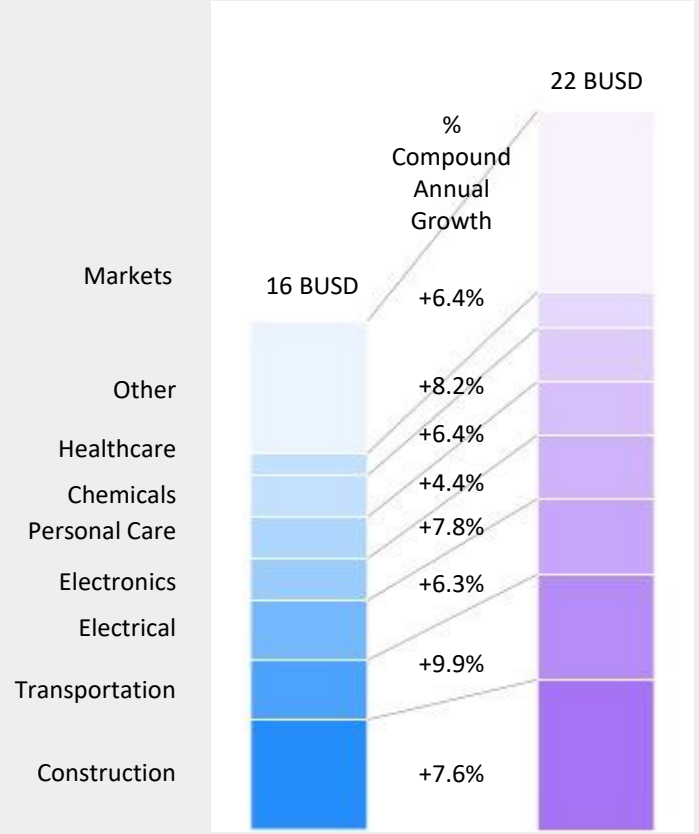
  N°4 in Europe and APAC
  N°2 in Central & South America
- → Silicone demand global annual growth rate expected around +7% for the coming years with strong growth in APAC and Europe
- → Faster growth in specific markets: transportation, electronics, healthcare

## Global Silicones Sales by Company 2020



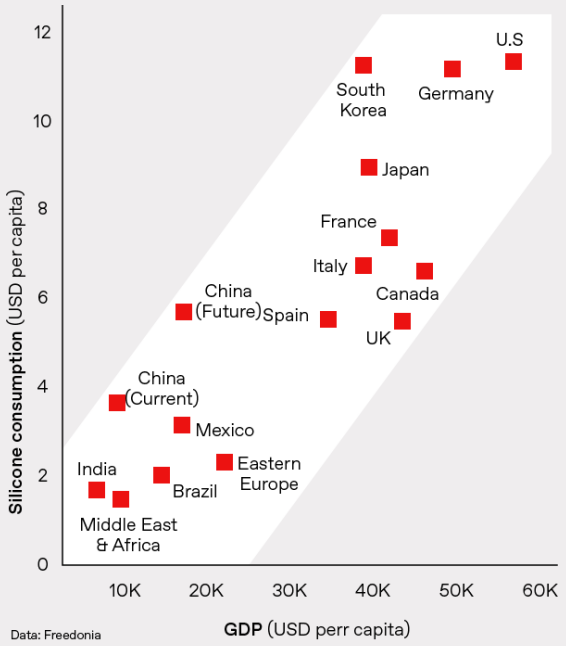

## Global Silicones Demand by Marked

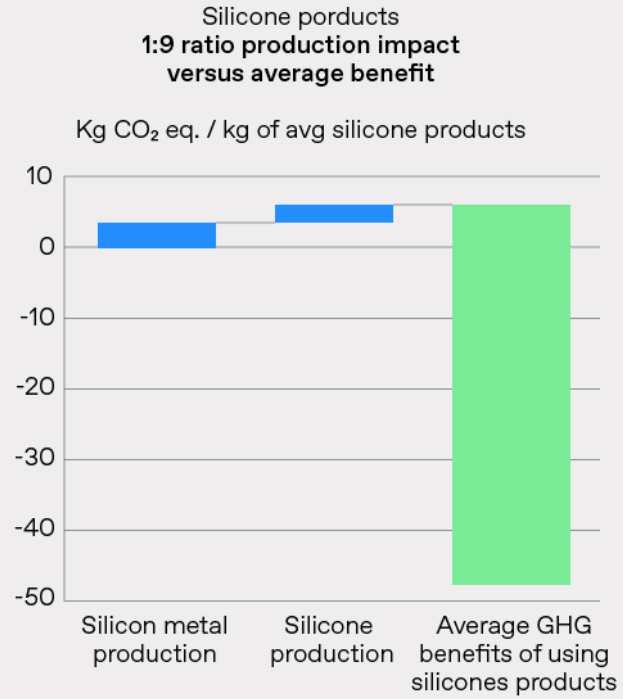
(BUSD)



# Silicones growth drivers: middle-class expansion & green shift

- → Due to their benefits and widespread presence in consumer society, silicones consumption grows as GDP per capita rises.
- → The use of silicones and related products reduces the carbon footprint of many essential products and services.
- → In addition, Elkem's Silicone division has plans and commitments to reduce carbon emissions by 28% by 2031, in alignment to Elkem's carbon roadmap.




For every ton of C02 emitted for their production and during end-of-life disposal, the use of silicones allows for 9 times greater GHG emissions savings.

Data : CES - Silicon-Chemistry Carbon Balance
An assessment of Greenhouse Gas Emissions and Reductions

# Solutions to global megatrends

## Rising middle class

Release coating
Personal Care
Processing aids

*Industry players*

P&G, Beiersdorf, AVERY, UPM, Henkel, Johnson&Johnson, L'ORÉAL, NORDICPAPER, AVON, DREAM COSMETICS

## Digitalisation

Themo-conductive potting
Semiconductors assembly
Moisture & shock protection

*Industry players*

LG, Raytech Électronique, ABB, SIEMENS, GC, BOSCH, Nexans ELECTRIFY THE FUTURE, SAMSUNG, General Cable

## Ageing population

Prosthetics precision molding
Implantable materials
Medical adhesives

*Industry players*

HARTMANN, Dentsply Sirona, Allergan, 3M, WATSON MARLOW, SILADENT, FREUDENBERG MEDICAL

## Mobility

Battery thermal management
Lightweight materials assembly
Lubricant & transmission fluids
Airbag textile coating

*Industry players*

STELLANTIS, COFICAB Powered by Faurecia, ALSTOM, VW, ZF, MICHELIN, Milliken, Continental, DAHER, BYD, arianeGROUP, AIRBUS, SAFRAN

## Decarbonisation

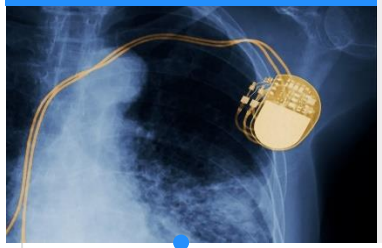
Solar panels assembly
Nuclear grades silicones
Energy efficient sealant

*Industry players*

First Solar, EDF, TONSAN, SAINT-GOBAIN, TREMCO, SOUDAL, ZHIJIANG 杭州之江, BAI YUN, JOINTAS 集泰股份, Silicone

# Serving attractive end-markets with advanced technologies

## Healthcare & Personal Care



Silicones Division 2019-22

CAGR: 18%

- → Medical adhesives, long term implants, medical devices etc.
- → Leader in Orthosis & Prosthesis market

## Consumer & packaging

Silicones Division 2019-22

CAGR: 11%

- → Leading position in Release coatings for food & label industries
- → Solventless, emulsion, UV technologies

## Chemicals

Silicones Division 2019-22

CAGR: 10%

- → Intermediates (silicones polymers) sold to chemical formulators

| % sales | 15% | 15% | 15% | 30% | 25% |
|---|---|---|---|---|---|

Key success factors: R&D, application & formulation expertise → Cost and volume

## Energy, Mobility & Electronics

Silicones Division 2019-22

CAGR: 18%

- → Foams, thermal management
- → Leading position for silicones solution for battery & cables

## Construction

Silicones Division 2019-22

CAGR: 17%

- → High volume intermediates (silicones polymers)
- → Specialisation thanks to technology leadership for green sealants

# Specialisation through innovation

≈25% of global sales
with NEW products <5 years

17
product innovations

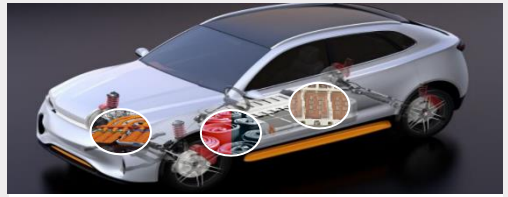
→ Invest in innovation capabilities

2 new global R&D centers

**ATRiON Lyon**
New R&I center, France
Start-up: 2021

**ATRiON Shanghai**
New R&I center, China
Start-up: 2023

## Delivered a series of product innovations for electric mobility over the past 3 years:



BLUESIL ™ EV SEAL 60 L RED
EV battery pack sealing solution

BLUESIL™ LSR 393X/30
Harness connector sealing

BLUESIL™ MF 8165 E/FSR
EV battery cables

BLUESIL™ ESA 6118 A/B
EV electronic modules potting


AmSil™ & AmSil Silbione™

Combine the advantages of silicones durability and biocompatibility with the unique possibilities offered by 3D printing for healthcare and industrial applications.


BLUESIL™ RT Foam

Breakthrough synthetic foam for battery packspotting, combining thermal insulation, fire safety lightweighting, & physical protection of the cells.

bpifrance · La Région Auvergne-Rhône-Alpes · axeLERA · processium · imp · Activation · CP2M

Circularity - Project REPOS

Collaborative project to develop a silicone depolymerisation business model for off-spec material, delivering waste reduction & 65% lower carbon footprint silicones.

# Higher value through specialisation

Specialisation impact

Value growth = 2x Volume growth

Invest in specialty capabilities & technology

Asia: Acquisitions of POLYSIL, China (2019) and BASEL Chemie, S. Korea (2020)

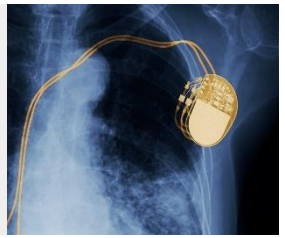
Europe: OFS specialty silicones plant acquisition, France (2021)

U.S.: Medical implantable silicones plant (2022)

POLYSIL acquisition
Guangdong, China, 2019


BASEL acquisition
South Korea, 2020

| | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Healthcare | | **Medical silicones for long term implants**<br>Timing: 1Q 2022<br>Location: U.S. | | |
| Personal Care | | **11 kt low viscosity PDMS for Personal Care green shift**<br>Timing: 4Q 2021<br>Location: China | | |
| High-end packaging | | **OFS – key intermediates**<br>Timing: Start-up: 4Q 2022<br>Location: Europe (Salaise) | | |
| Transportation - EV | | **Silicone rubber for EV cables**<br>Timing: 4Q 2022<br>Location: China | | |
| Construction | | | | **35 kt Green sealant**<br>Timing: Q1 2024<br>Location: China |



# Meet attractive customer growth in key geographies

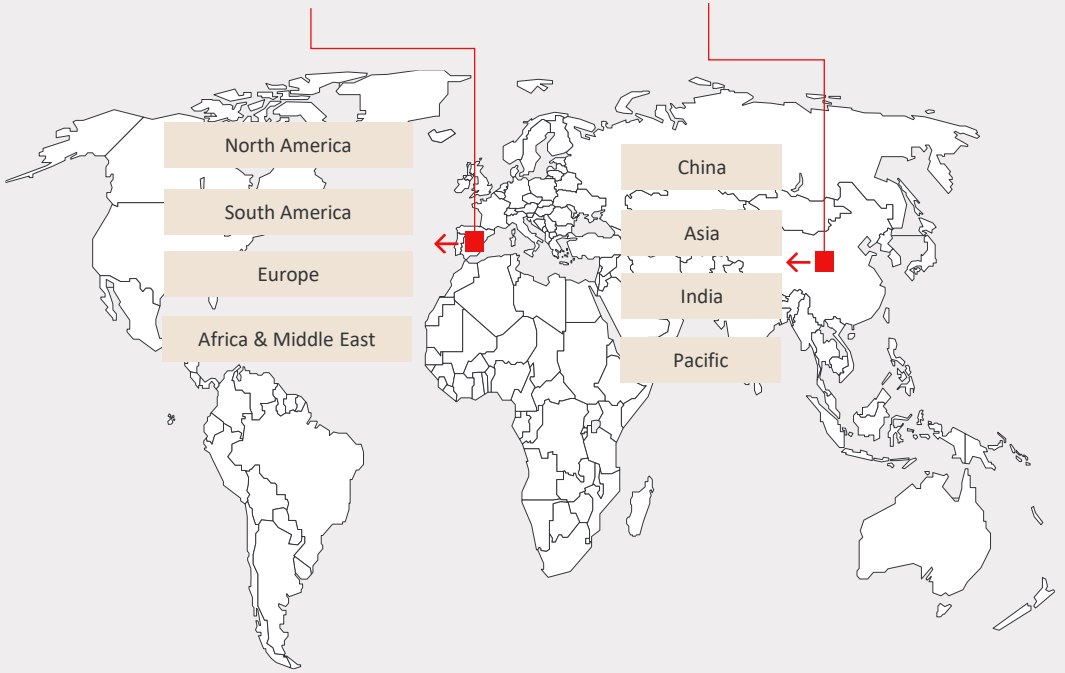
- → Landmark investments underway on upstream capacity on both Elkem's Eastern & Western silicone manufacturing chains
- → Build a competitive upstream capacity supporting downstream expansion by 2024
- → Upstream additional capacity consumed by downstream internal projects with a dynamic portfolio till 2024 under validation & maturation

**Roussillon capacity increase**

Capacity increase: +25% / +20 ktpa
Start-up: H2 2023
2025: 100 ktpa (full capacity)
≈360 MNOK
EBITDA Margin >20%

**Xinghuo capacity increase**

Capacity increase: +50% / +117 ktpa
Start-up: H1 2024
2026: >350 ktpa (full capacity)
≈3,800 MNOK
EBITDA Margin >35%



# Continue the focus on specialisation, growth and competitiveness

## Specialisation

- → Specialise our portfolio through differentiation in order to increase and stabilise margins through the cycle
- → 2 new global innovation centres
- → Invest in specialty manufacturing capabilities and technologies
- → >16 product innovations per year,
- → ≈25% global sales from products < 5 years
- → Dynamic & value-based digital pricing to maximise portfolio value

## Competitiveness and scale

- → Improve profitability through operational excellence and scale
- → Ongoing upstream capacity expansion projects to reduce production costs
- → Eastern: +50% (>350 ktpa) upstream in Xinghuo, China
- → Western: +25% (100 ktpa ) upstream in Roussillon, France


New innovation center ATRiON in Shanghai

Due to start in 2023

New medical grade silicones plant in York, South Carolina, U.S.

Started in 2022

Elkem

# Green Ventures:
## Value-creating solutions for the green transition

Asbjørn R. Søvik

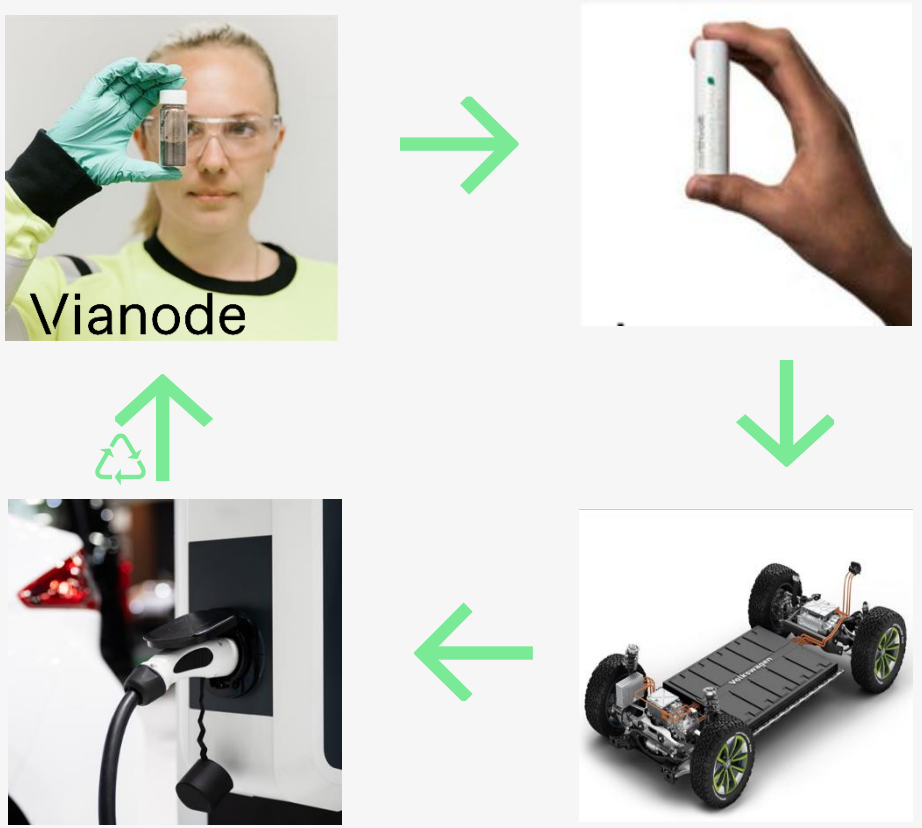
26 October 2022

# Developing Vianode into a leading provider of sustainable materials for the battery market

## Vianode business case in brief

| | |
|---|---|
| Attractive market | Targeting high growth markets with significant regional undersupply and regulatory push for sustainability and localisation. |
| Technology | Highly-efficient and automated production process based on proprietary technology leading to strong competitive position. |
| Sustainability | Close to zero $CO_2$ foot-print supporting the focus for sustainability |
| Trusted supplier | Efficient supply chain and logistics in close proximity to suppliers and customers, ensuring security of supply |
| Customer focused | Longer term contracts with major customers in the industry. Vianode's development backed by strong partners (Elkem, Hydro and Altor). |

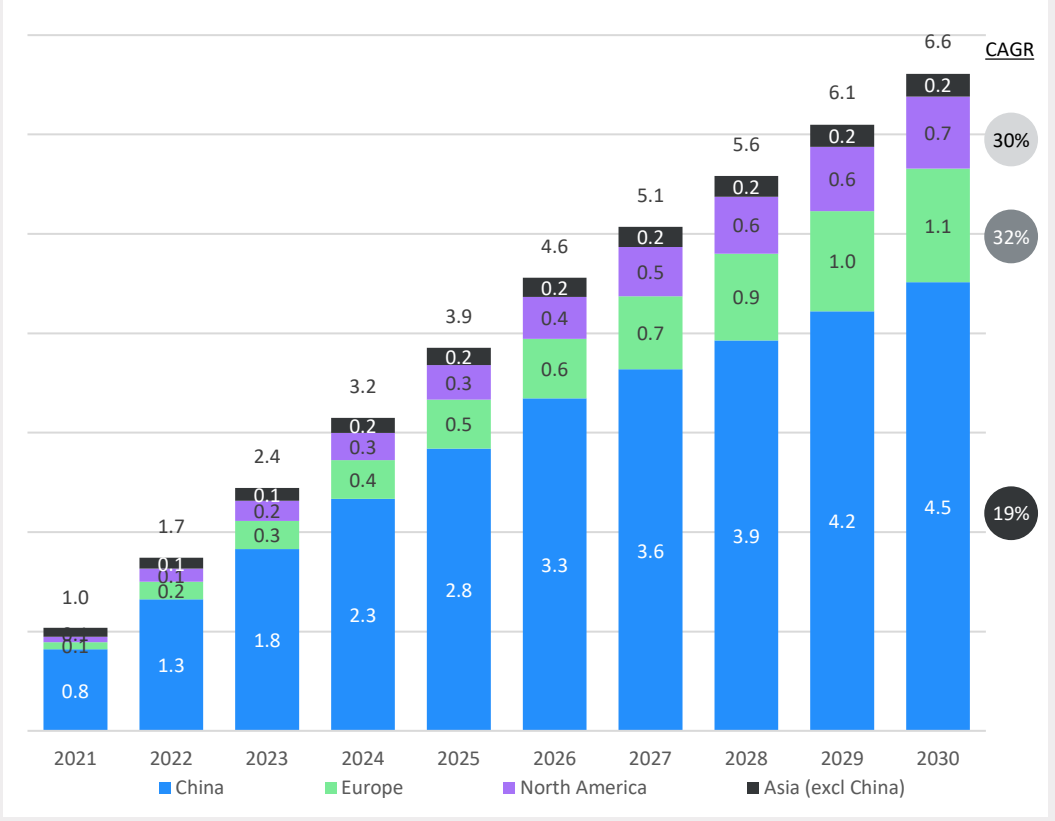
## Vianode in the value chain



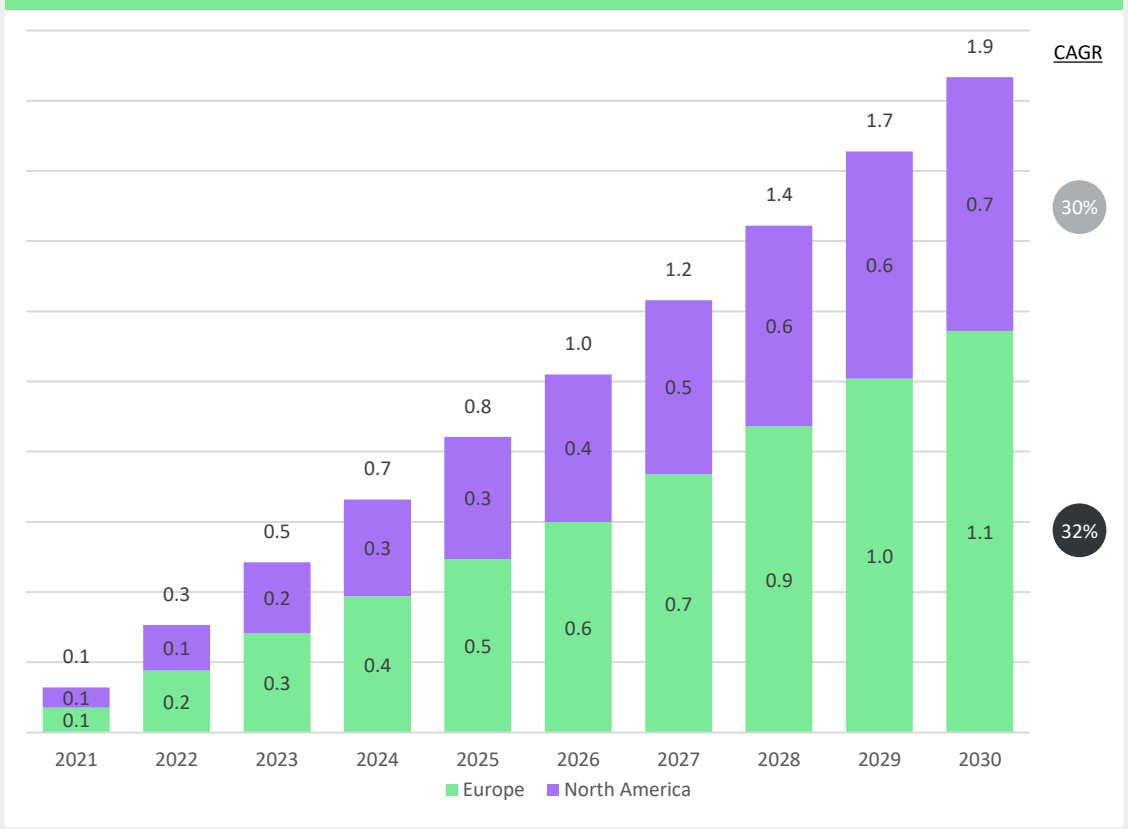

Credit: Northvolt https://northvolt.com/ and Northvolt Sustainability Report 2021

# Targeting the highest growth markets in Europe and North America...

## GLOBAL ANNOUNCED CELL production CAPACITY BY REGION (TWh)




## ANNOUNCED CELL PRODUCTION CAPACITY IN EU & NAM (TWh)

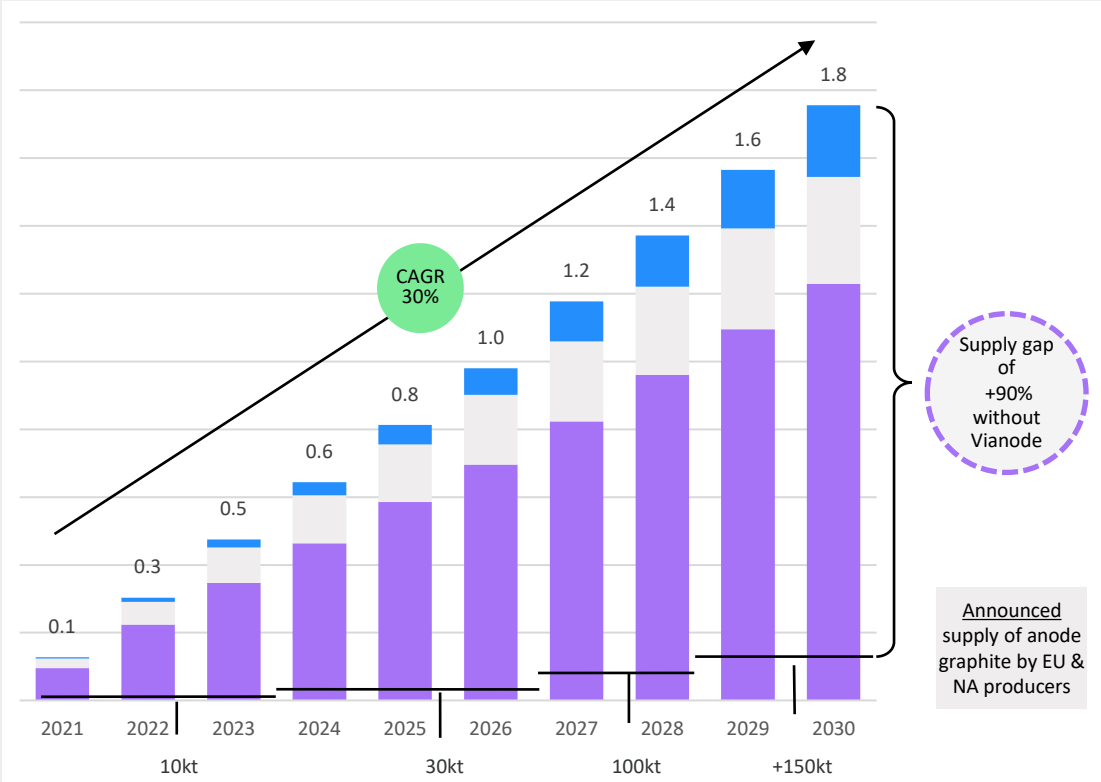



Source: Benchmark Mineral Intelligence, Elkem analysis

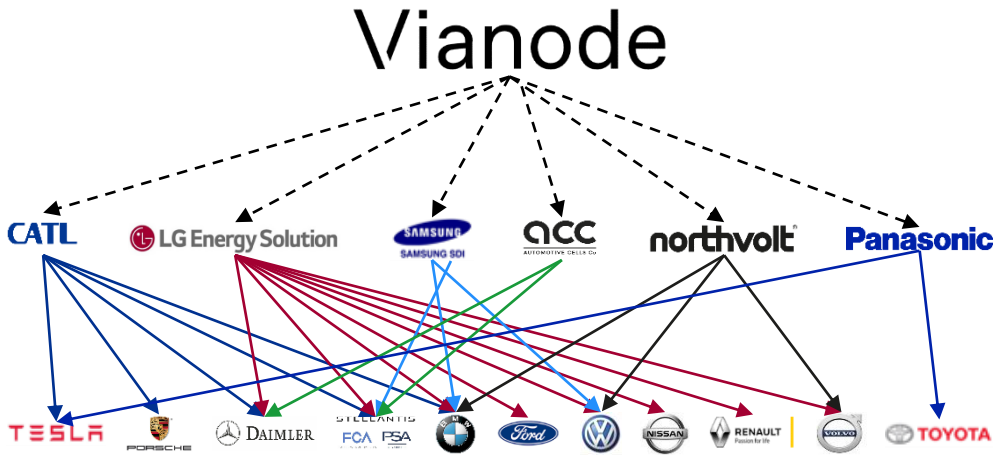
# … with significant regional undersupply

## → ANODE MATERIAL DEMAND IN EU & NAM (million tonnes)

| Anode graphite share (2030) | Anode graphite demand | Anode market value (2030) |
|---|---|---|
| above 90% | ~1,000mt/GWh | ~20 BUSD |




## → Vianode's POTENTIAL CUSTOMERS[1] and link to oems[1]




- → Several partnerships have been established and industry structure is under development
- → Long term contracts are normal in the industry (due to critical materials, long qualification periods and high cost of change)

Source: Benchmark Mineral Intelligence, Elkem analysis

[1] Not in order of importance

# … and strong push for sustainable and local supply resulting in a big opportunity

## Regulatory framework (PUSH)

### "EU Critical Raw Materials Act (CRMA)"

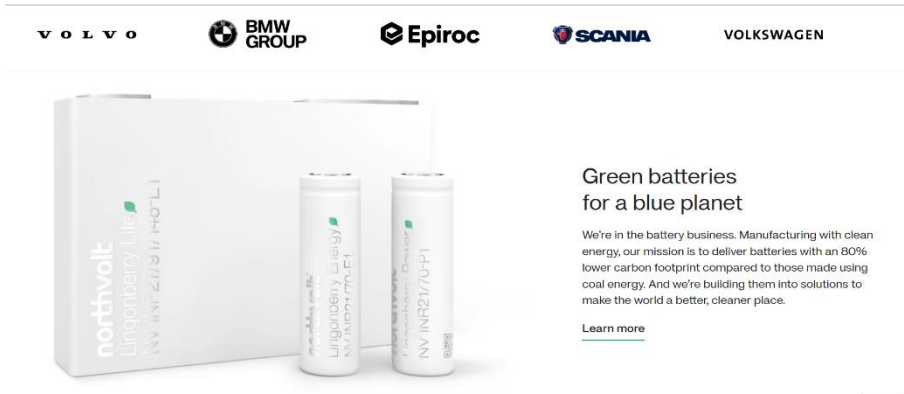
→ The CRMA's objective is to develop a sustainable supply of raw materials needed to reach EU climate neutrality ambitions

### "US Inflation Reduction Act (IRA)"

→ IRA's intention is to develop alternative north American locally sourced battery supply chain

Source: Benchmark Mineral Intelligence, Elkem analysis

## Customer (PULL)




→ Increasingly attractive to for OEMS and battery cell producers to source from local sustainable battery raw materials suppliers in EU and North America.

→ These new regulatory frameworks could result in price premiums for locally produced anode material in the EU and North America.

Credit: Northvolt https://northvolt.com/ and Northvolt Sustainability Report 2021

# Vianode improves properties in batteries...

Key characteristics:

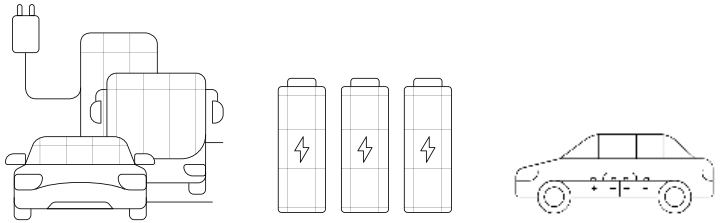
→ Faster charging

→ Increased range

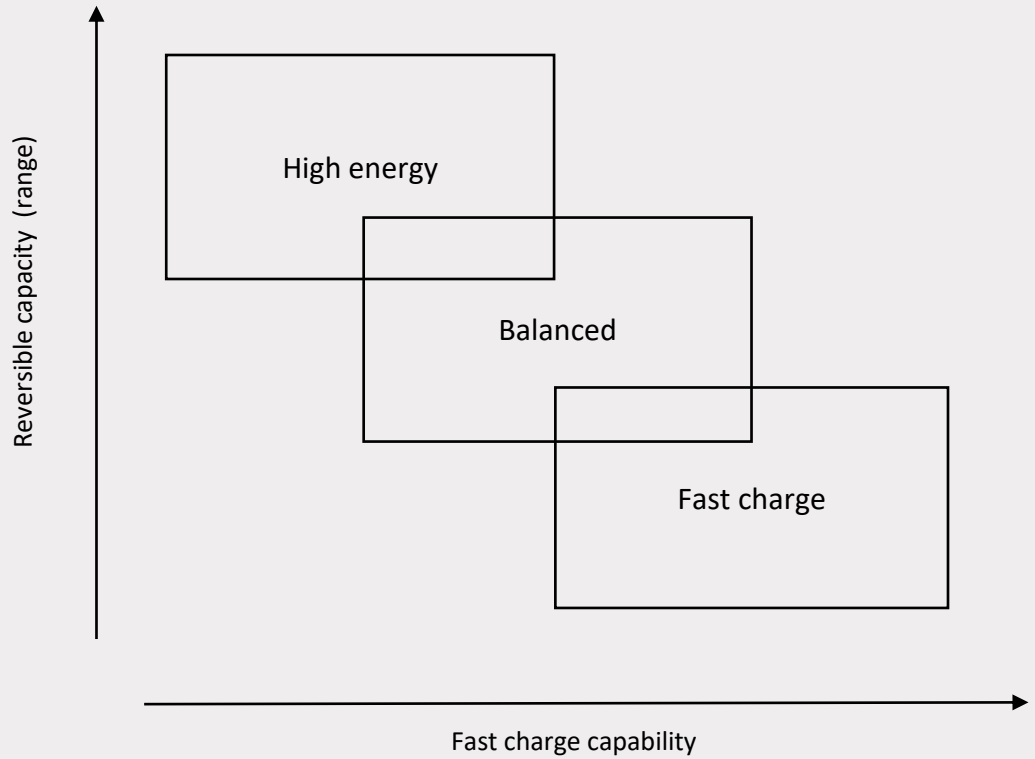
→ Long service life and recyclable

→ Increased safety

→ Vianode offers a wide range of materials for Li-ion batteries within EV and ESS



Main product families



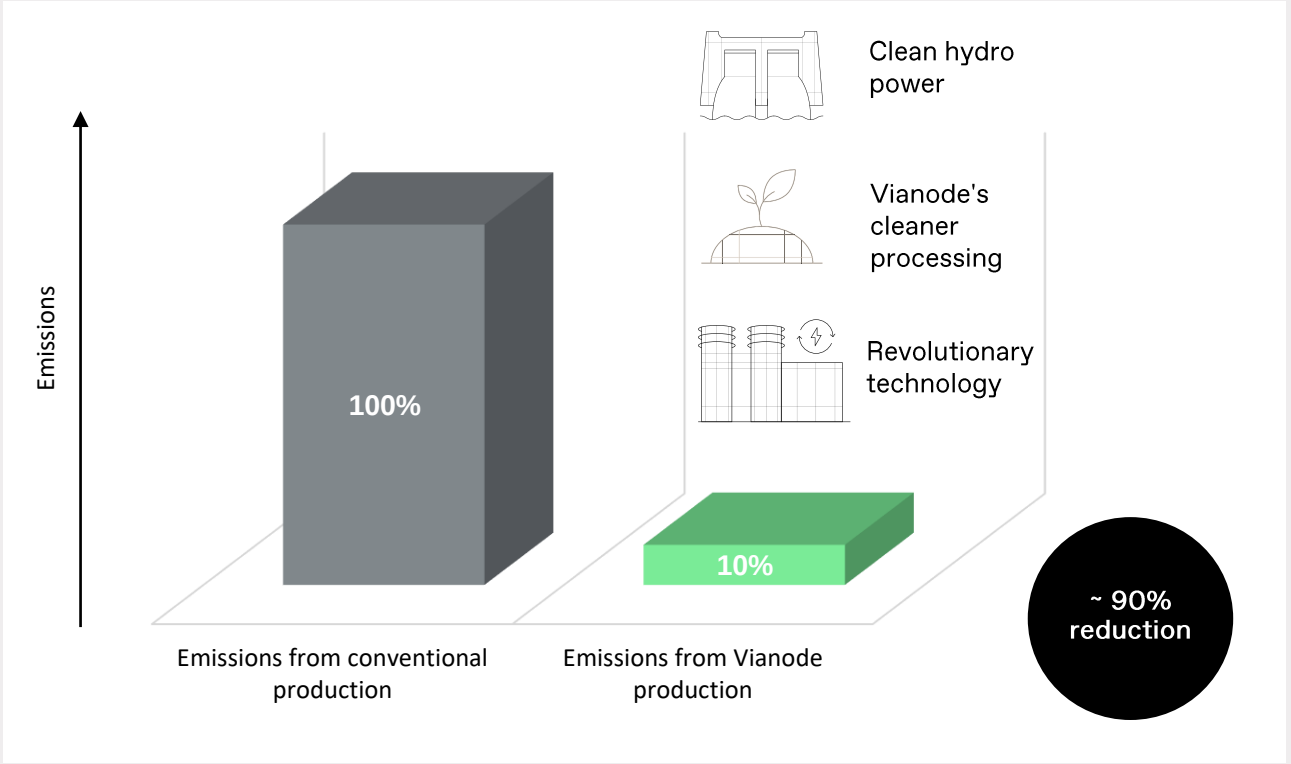
# ...and enables near zero emissions making batteries greener

Technology (closed system) with:

→ High yields

→ Low energy consumption

→ Low emissions




[1] *Indirect CO2 emissions based on data from www.nve.no and www.iea.org*

# Industrial scale production in operation from 2024 and planning for several sites by 2030

| | | Description | Status | Capacity |
|---|---|---|---|---|
| Pilot |  | → All process steps<br>→ Small size industrial equipment<br>→ Located at Kristiansand (Norway) | In operation | 5 tonnes per year |
| Industrial pilot |  | → All process steps<br>→ Industrial environment<br>→ New R&D center<br>→ Located at Kristiansand (Norway) | In operation | Up to 200 tonnes per year |
| Vianode (Phase 1) |  | → Full scale production lines<br>→ Located at Herøya (Norway) | Operational from 2024 | ~2,000 tonnes per year |
| Vianode (Phase 2) |  | → Modular design for rapid expansion based upon phase 1<br>→ Capex 1.5 – 2.0 BUSD | Operational from 2026 | More than 50,000 tonnes per year |
| Vianode (Phase 3) | | → A leading producer of advanced battery materials in growing EV and ESS markets in Europe & North America<br>→ Annual revenue 1.5 -2.0 BUSD | By 2030 | More than 150,000 tonnes per year |

- → Accelerate market access through supplying qualification volumes
- → Prepare a solid base for the next financing and reach bankability
- → Gain production experience in full scale equipment
- → Establish standard operating procedures for an accelerated ramp-up of the large-scale plant

# Developing biocarbon for internal use at competitive costs and for other external markets

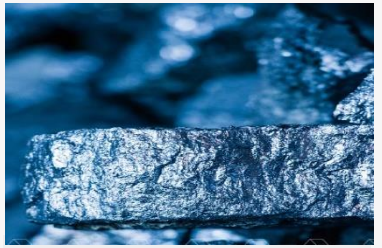
## Elkem biocarbon business in brief

| | |
|---|---|
| Attractive market | Significant undersupply of Biocarbon to metallurgical markets. Elkem requires a minimum 200-250.000 mt of biocarbon by 2030. |
| Technology | Based upon technological advancements and process know how from operating smelters. |
| Sustainability | $CO_2$ neutral foot-print, based on waste biomaterial from sustainable forests and saw-mills. |
| Business development | Competitive cost vs. fossil sources (adjusted for CO2 cost) Targeting internal volumes initially, evaluating to expand business with partners internationally. And when timing is right; potential sell down. |

## Elkem Biocarbon in value chain

Forrest residues

Elkem biocarbon



Silicon

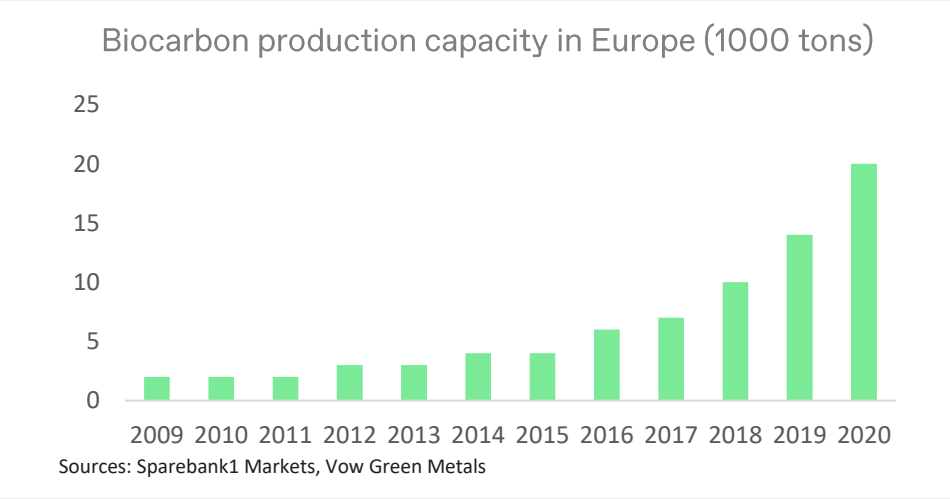
Solar electronics aluminium

# Biocarbon needed to replace coal in several areas to reduce emissions

## but significant undersupply requires multiple projects

### Supply of biocarbon not even close to cover demand

- → $CO_2$ from coal constitutes 40% of total $CO_2$ emissions – in 2021, the Europe coal consumption rose by 11.9%
- → Biocarbon is today the only known $CO_2$ neutral replacement for coal
- → Demand of coal for metallurgical purposes above 50 million MT per year in Europe, while current European Biocarbon production estimated to 20 000 MT




Sources: Sparebank1 Markets, Vow Green Metals

### Elkem pursuing parallel tracks for biocarbon development

- → Developing suppliers internationally
- → Cooperation with Vow Green Metals  biocarbon production at Follum
- → Continuous evaluation of new suppliers/projects

- → Developing own technology
- → Starting an industrial pilot in Canada end 2022
- → Supply a big share of internal demand and external markets

# Elkem Biocarbon pilot in start-up

First large-scale plant planned for in 2025

| | Description | Status | Capacity |
|---|---|---|---|
| Industrial pilot (Phase 1) |  → All process steps<br>→ Industrial environment<br>→ Located at Chicoutimi (Canada) | In start-up | Up to 4000 tonnes per year |
| EBC 1 (Phase 1) |  → Full scale production located in Quebec (Canada)<br>→ Investment of MUSD ~120 (before grants) | Operational from 2025 | ~ 55,000 tonnes per year |
| EBC (Phase 3) | → Planned expansions | By 2030 | TBD tonnes per year |

- → Qualify product and accelerate market access
- → Verify technology
- → Gain production experience in large scale pilot

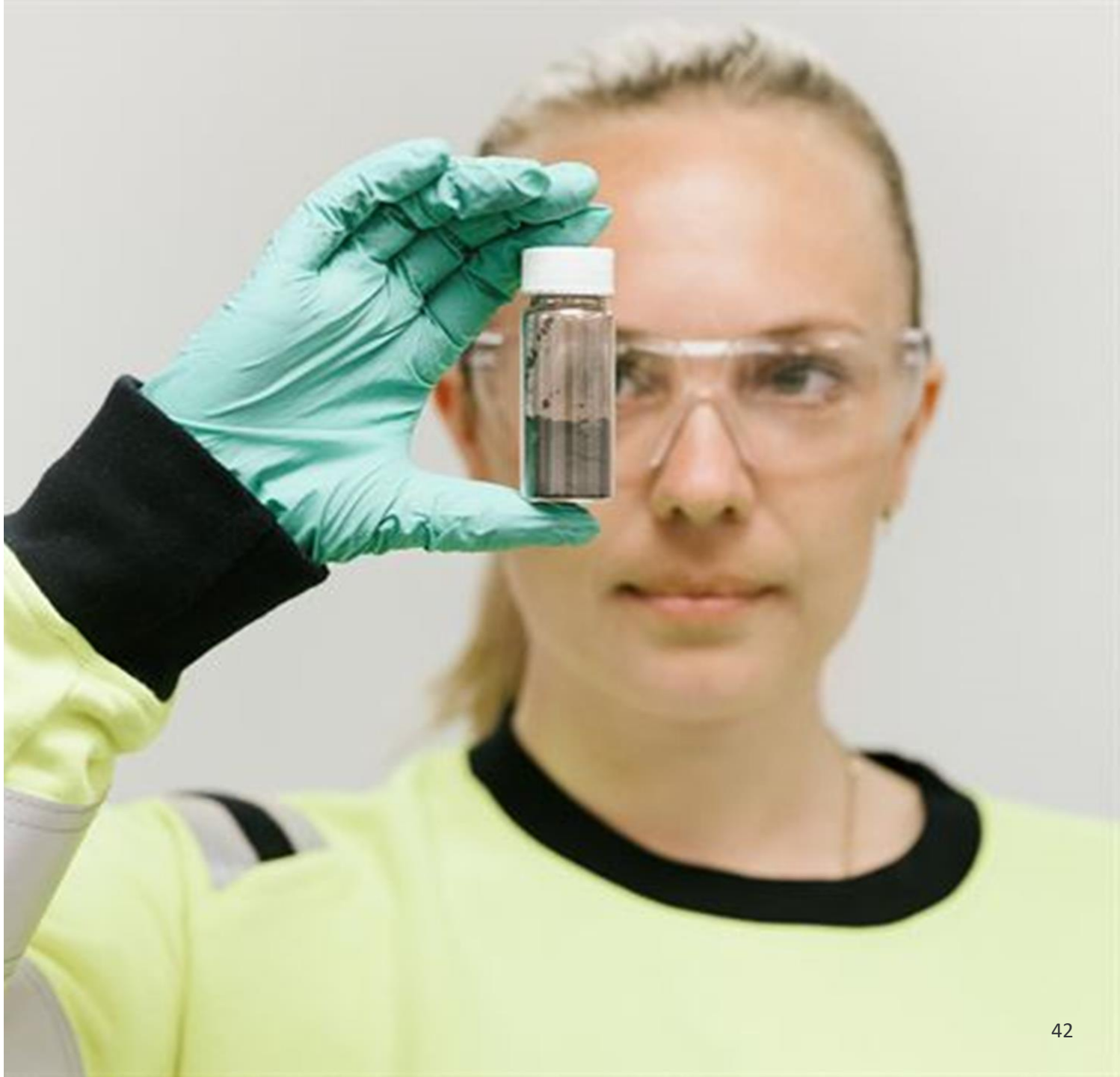
# Development with a green focus

→Opportunities with a green profile and focus on value creation

→Based on Elkem technology and process knowledge

→With partners to realise scale, achieve synergies or mitigate risk

→When attractive sell-down or possible IPO to realise value




Delivering your potential