

The background of the slide is a photograph of a steel mill. On the right side, a large ladle is tilted, pouring bright orange molten metal. The rest of the image shows the dark, complex structure of the factory with various pipes, walkways, and industrial equipment.

# VOW **green** metals

**Investor presentation**  
**July 2021**

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# VOW GREEN METALS



## Making metals green

- An industrial processing company  
*Providing products that are essential for the green transition*
- Enabling the metallurgical industry to decarbonize  
*Our products can easily replace fossil carbon with biocarbon in the metal making process*
- Large and growing market  
*As our customers are moving fast to meet new regulation and economic realities in a carbon neutral future*
- A product and promoter of the circular economy  
*Using biomass and biogenic waste as raw materials and source of CO<sub>2</sub> neutral energy and feedstock for petrochemical industry as valuable by-products*
- Fully funded, backed by committed partners and buyers of our products  
*Planned for completion in 2022, our first plant in Norway will make Vow Green Metals the largest producer of biocarbon in Europe*
- Supported by Vow  
*Our largest owner and provider of technology and experience in delivering industry scale industrial solutions*

# COMPANY STATUS

- Vow Green Metals AS created by and spun off from Vow ASA through a demerger completed in July 2021
  - Shares distributed to Vow shareholders, 1 Vow Green Metals share for 1 Vow ASA share
  - Vow retaining a 30.5% ownership stake
- Experienced company management and board recruited
- Planning of company's first biocarbon production facility well underway
  - Agreements in place with feedstock providers Viken Skog and Lindum, and customer Elkem and Vardar Green Energy
- Company listed on Euronext Growth Oslo on or about 12 July 2021
  - Ticker VGM



# INVESTMENT HIGHLIGHTS

## Strong market demand

Policies, regulation and fiscal stimuli  
**creates strong pull** for environmentally sustainable solutions

## Unique position

**First mover** in an industry with huge replacement demand for fossil coal and energy

## Business model

**Highly scalable** and **flexible** business model which offers several revenue stream opportunities from a wide range of customers, starting in 2022

## Phase 1 fully funded

NOK 150 million in equity and  
NOK 80.7 million in Enova grant

## Attractive economics

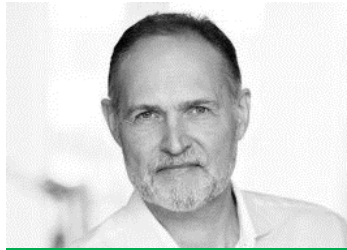
**Attractive project economics** from initial production capacity of more than 10,000 tonnes biocarbon per annum, supported by rising cost of carbon emissions

## Strong team

Experienced management, board and industrial partners, such as Vow ASA and Elkem, with **proven execution capabilities**

# EXPERIENCED BOARD OF DIRECTORS

Active Board of Directors with industry relevant experience



**Narve Reiten**

*Chairman*

- Founder of Reiten & Co
- Extensive investing and operational experience
- On the Board of Directors of Vow ASA, Con-Form AS and Navamedic ASA

**Education:** MSc in Business and Economics from BI and CFA from NHH



**Elise Must**

*Board member*

- Head of Strategy and Sustainability in Batteries at Norsk Hydro
- Broad experience from Norsk Hydro

**Education:** MSc in Global Politics and PhD in Political Science from London School of Economics



**Kari Stine Tærum**

*Board member*

- Senior Engineer for R&D in REC Solar
- 17 years experience from the cellulose industry with Hunsfos Fabrikker

**Education:** Degree in Pulp Technology from NTNU and degree in Analytical Chemistry from University of Agder



**Line Tønnessen**

*Board member*

- Investment Director in Reiten & Co
- Strong analytical and corporate finance background

**Education:** BSc in Business Administration from BI and MBA in Finance and CFA from NHH



**Carl Hartmann**

*Board member*

- CEO of NOAH AS
- 16 years experience in the oil and gas industry, and 18 years experience in the process industry

**Education:** Degree in Business Economics from BI and MSc in Chemical Engineering from NTNU



# MANAGEMENT WITH PROVEN TRACK RECORD

Dedicated and competent management with 50 years of relevant experience



Cecilie Jonassen

*Chief Executive Officer*

- Broad experience from valorizing biomass on an industrial scale
- Previously held the position as Director of Operations Support in Norske Skog, where she has held various positions in Germany and Norway since 2005

**Education:** MSc in Chemical Engineering from NTNU



Lars Mårdalen

*Chief Financial Officer*

- Broad experience from financial transactions, structured finance and capital markets across several capital-intensive industries
- Previously CFO of Gram Car Carriers
- Experience from Höegh LNG and Kistefos

**Education:** MSc in Finance from NHH



Per Carlsson

*Technology adviser*

- Vice President in Vow ASA, and based on the Cooperation agreement, responsible for technology for metallurgical industry
- 14 years experience with thermal conversion of biomass. The last seven years at SINTEF
- Several research projects for Elkem and other potential Vow Green Metals customers

**Education:** PhD Energy Engineering from Luleå University of Technology



# VALUE PROPOSITION OF VOW GREEN METALS

*Valorising organic waste / Decarbonizing industry*

Scalable and standardized

## Input

Biomass and organic waste from forestry or construction



## Offtake

Biocarbon (biocoke, biochar, biocoal)  
Potential for other Carbon products (graphite, graphene)  
CO<sub>2</sub> neutral gas  
Low-carbon fuels  
CO<sub>2</sub> removal certificates

## End user

Replacing fossil-based reducing agents in Metallurgic Industry  
Gas and bio-fuels for industry decarbonization

**Build, own and operate plants** which produce advanced high-quality biocarbon, CO<sub>2</sub> neutral gasses and low-carbon fuels, resulting in **diversified revenue streams** and **risk mitigation**

# DECARBONIZING INDUSTRIES GLOBALLY

**Circular economy will be crucial...**



***Across industries, growing realization that waste is value and an asset which must be utilized***

**...in decarbonising industries**



***Strong demand from energy intensive industries for solutions that can replace fossil coal and fossil energy***

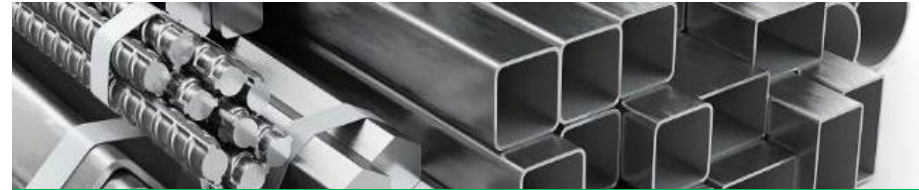
# BIOCARBON FOR INDUSTRY DECARBONIZATION

*Replacing fossil coal and energy*



## Large emissions from metallurgical industry

- Almost 10% of the world's emissions come from the metallurgical industry
- The Norwegian metallurgical industry consumes approx. 1 mill tonnes of fossil coal, which represents 7-10% of Norway's annual CO<sub>2</sub> emissions
- Working with Clients that use 40% of the fossil based reducing agents in Norwegian today



## Vow Green Metals provides the solutions

- Biocarbon as a reducing agent: 1 ton of biocarbon reduces up to 3.6 tonnes CO<sub>2</sub>
- Replacing fossil energy with advanced high-quality biocarbon from Vow Green Metals is a giant leap for carbon neutrality for metallurgical industry
- Biocarbon-based steel offers the lowest cost and fastest way to decarbonize
- CO<sub>2</sub> neutral gas and oil as other products



# BUSINESS CASE DRIVEN BY INCREASED CO2 TAX

## Carbon price is imperative for Vow Green Metals...

As an important part of the price achievement, rising cost on carbon emission supports the economics



## ...and it is expected to climb

Drivers of CO<sub>2</sub> emission cost

Regional taxes and regulations

+

Country based carbon taxes

+

Emission Trading Systems (ETS)

*The effective price of CO<sub>2</sub> emissions increase with more taxes and regulations*

*Designed to reduce CO<sub>2</sub> emissions which could drive prices*

# METALLURGICAL INDUSTRY IS RESPONDING

Elkem is targeting a **40% reduction in CO<sub>2</sub> emissions by 2030 by using biocarbon**, with an aim to reach net-zero emissions by 2050.

“Using **climate-neutral renewable biocarbon** instead of fossil coal as a reduction agent is a key part of our sustainable production strategy. **Through our activities in biocarbon, like this exciting cooperation with Vow Industries**, we aim to secure long-term access to low-cost, **high-quality renewable biocarbon to replace fossil reduction material**, and further improve our competitive position for the sustainable future”

*Michael Koenig, Former CEO Elkem*



# ...AND MAJOR INDUSTRIAL PLAYERS HAVE COMMITTED



“We are determined to be a climate-neutral company by 2050 in line with the Paris Agreement (...) This means that our vehicles and machines will be **emission-free** when in operation, but also that we will **review the materials, like steel**, used in our products and will gradually switch to fossil-free alternatives here as well (...) This is an important step on the road to completely climate-neutral transports.”

*Martin Lundstedt,  
President and CEO at Volvo Group*



# HUGE REPLACEMENT DEMAND IN EUROPE

## Use of coking coal

*Primarily used in production of*



**Iron**



**Steel**



**Silicon**



**Auto, shipping and transport**



**Buildings/ infrastructure**



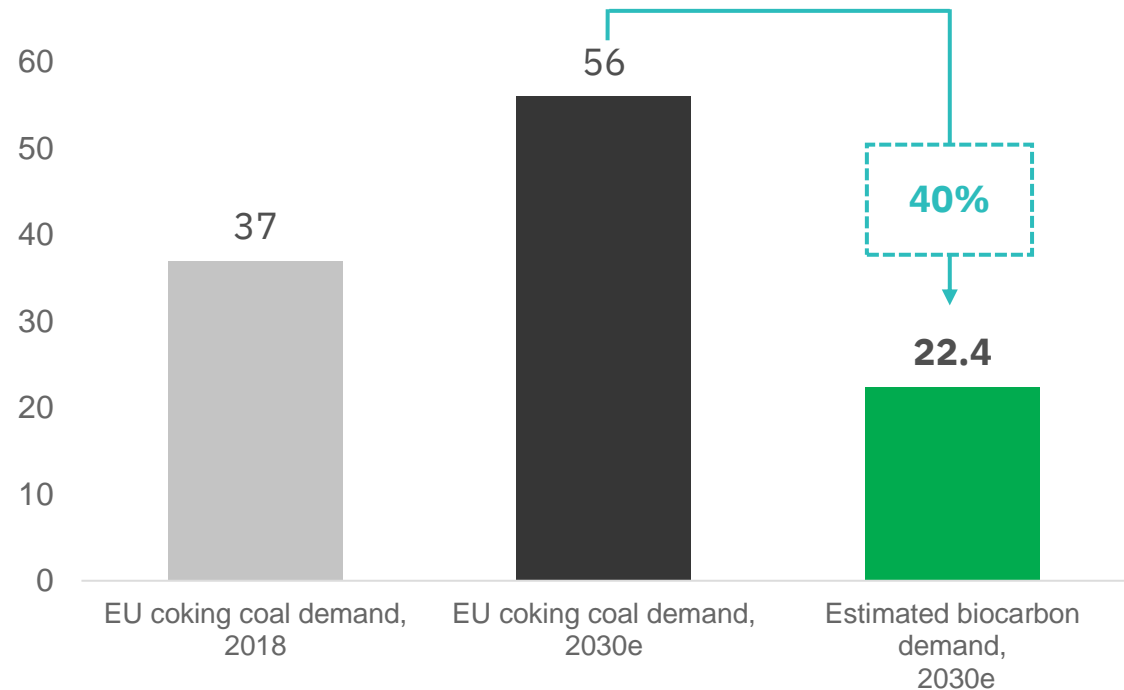
**Batteries and green technologies**



**Machinery**

## Metallurgical industry in Europe chasing net zero by 2050

*2030 coking coal demand in Europe of est. 56 million tonnes highlights the huge replacement potential with biocarbon*



# COMMITTED TO BECOME CO<sub>2</sub> NEUTRAL BY 2050

## Norwegian metallurgical industry commitments

**2021**

- **~1 million tonnes** of fossil coal and coke is consumed annually in Norway
- **7%** of Norway's CO<sub>2</sub> emissions is due to the consumption of fossil coke in the metallurgical industry

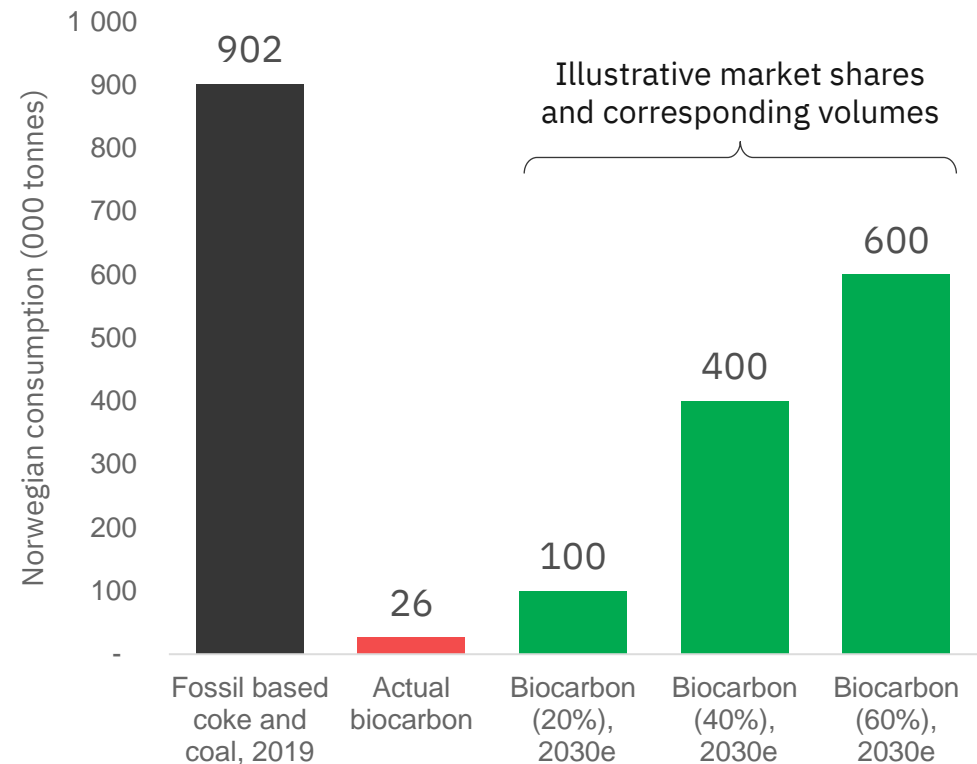
**2030**

- **400,000 tonnes of biocarbon per year** is the estimated demand in Norway (equivalent to **40x** capacity at first plant phase 1)
- **~40%** of fossil coke is replaced with **biocarbon** (Elkem's commitment)

**2050**

- **Zero** fossil-based coal and coke is consumed annually in Norway (industry commitment)
- The metallurgical industry in Norway is **CO<sub>2</sub>-neutral**

## Norwegian biocarbon market



# STRATEGIC PARTNERS IN PLACE



*Forest owners  
association providing  
biomass*



*Targeting a 40% reduction in  
CO<sub>2</sub> emissions by 2030 by  
using biocarbon for the  
metallurgical industry*



*Demolition wood,  
waste wood*

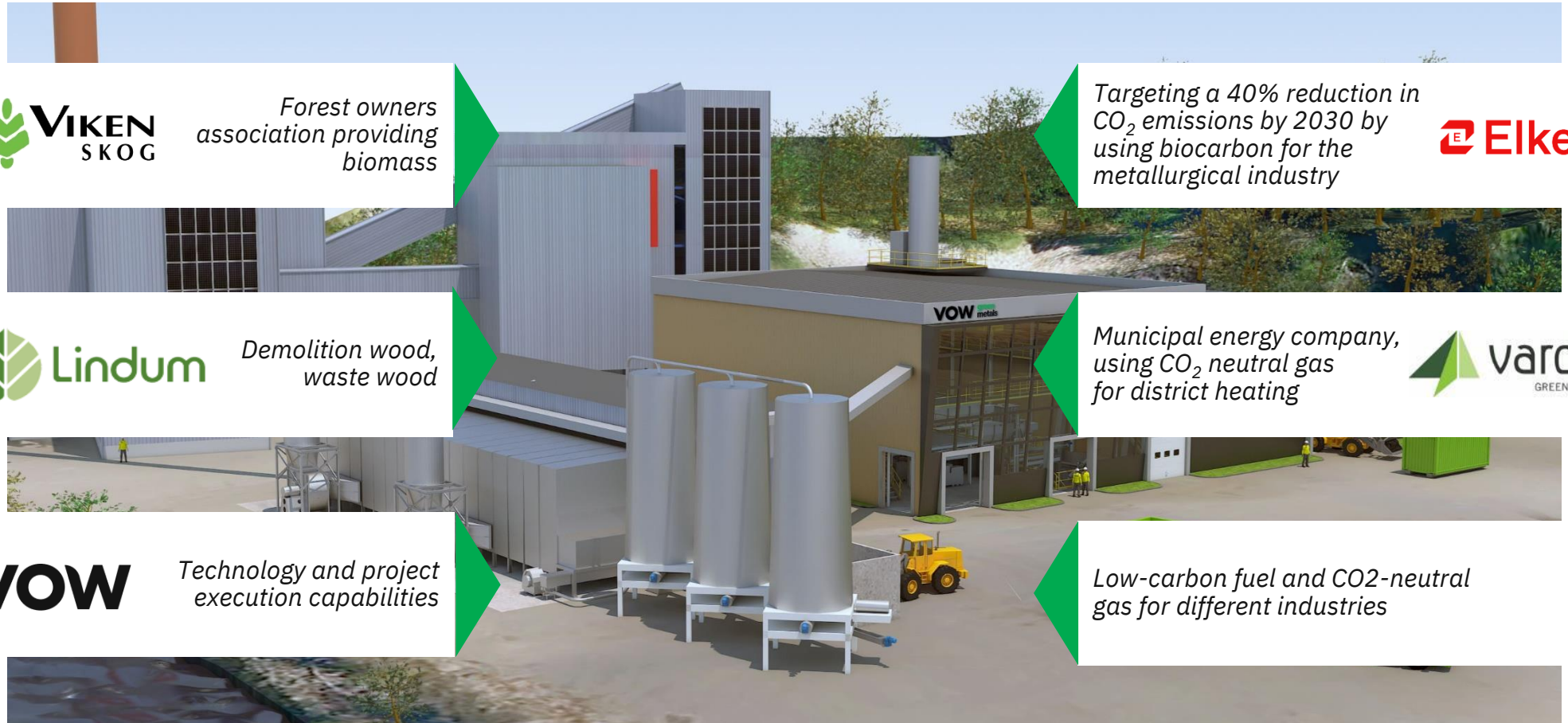


*Municipal energy company,  
using CO<sub>2</sub> neutral gas  
for district heating*



*Technology and project  
execution capabilities*

*Low-carbon fuel and CO<sub>2</sub>-neutral  
gas for different industries*





# SUPPORTED BY VOW'S PROVEN CAPABILITIES

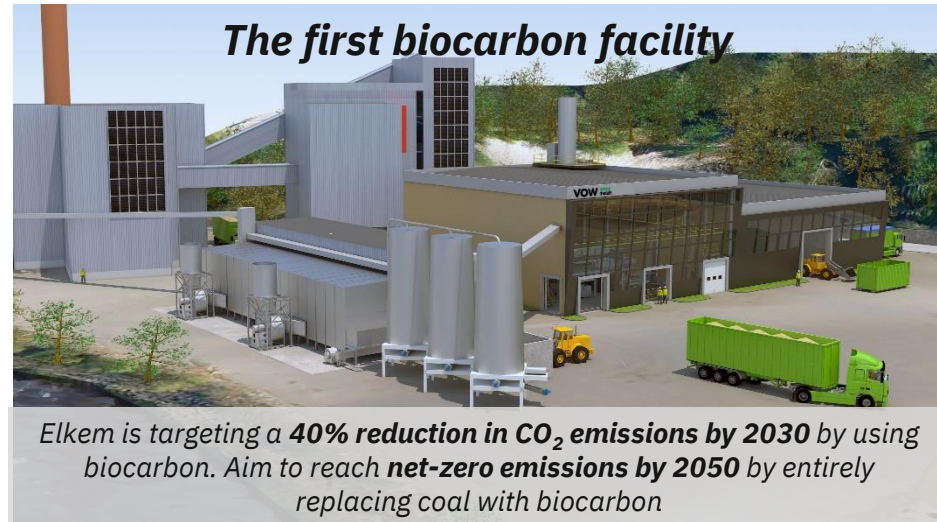
- Vow Green Metals has secured strong support from Vow, which will be instrumental in delivering the projects
- Building on Vow expertise and legacy in technology development and project execution
- Vow offers solid experience and a track record of delivering complex technology in large industrial solutions



Biogreen systems in operation	
Biomass	17
Plastic and polymers	17
Calcination	1
Sludge	6
Other	6
Total number of systems	47

Nearly **300 Scanship systems** for processing waste and purifying waste water installed on **140 cruise ships**

# KEY DETAILS OF THE FOLLUM PROJECT



Joining forces, competence and technology solutions with Elkem ASA to produce biocarbon at Vow Green Metal's planned plant in Norway

## Technology

Biogas and biocarbon instead of fossil fuels

## EPC start

Aim to have the plant operational in 2022

- Production capacity of more than 10,000 tonnes
  - Requiring up to 40,000 tonnes of feedstock
  - Equipment Capex in the range of 175-200 MNOK
- First production 2H2022, ramping up in 2023
- Phase I fully funded by 150 MNOK from Vow and 80.7 MNOK granted from Enova in May 2021
- Fully standardised and replicable facilities

## Attractive profitability

	EBITDA
50k tonnes	NOK 120-170m
30k tonnes	NOK 70-100m
10k tonnes	NOK 20-30m

# STEPWISE EXPANSION PLAN

## Phase I

### *Follum stage 1*



Capacity of more than  
10,000 tonnes  
biocarbon

## Phase II

### *Expansion in Norway and the Nordics*



Identified several locations for  
potential expansion in Norway  
and the Nordics



Expansion of production volume  
of biocarbon

## Phase III

### *Further expansion*



Domestically



Internationally





# VOW **green** metals



**Huge market  
potential**



**Uniquely  
positioned**



**Proven  
execution  
capability**



**Attractive  
economics**





# THANK YOU FOR YOUR ATTENTION

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**VOW** green metals