



# Ocean GeoLoop AS

## Company Presentation

May 2023

# The combined climate, environment and resource crisis is a major challenge and needs a holistic solution



Escalating emissions increase the global temperature, resulting in a major climate crisis



Man-made emissions causing ecosystem collapse and loss of biological diversity in the oceans



A growing world population requires an increasing amount of sustainable, local resources (energy, food, materials)

# Ocean GeoLoop is established to commercialize green, disruptive technologies with a global reach



Our solutions are aimed at solving the greatest challenge of our time; a combined climate, environment and resource crisis



Based on more than 15 years of research & development together with international partners



Copying nature to bypass costly and polluting processes



Highly scalable solutions with significant, global potential



# Management team

## Chief Executive Officer – Odd Geir Lademo



- More than 25 years of experience in SINTEF and NTNU. Research Manager in Department of Materials and nanotech, SINTEF Industry. Adjunct Professor at NTNU. Member of core team of high-ranking research centers, SFI SIMLab and SFI CASA
- Extensive national and international industry networks
- M.Sc. and Ph.D. from Department of Structural Engineering, NTNU

## Chief Operating Officer – Viggo Iversen



- Extensive renewable energy experience from NVE, Enova SF and Proneo
- 10 years experience from Proneo where he was responsible for the advisory business providing business development and innovation services to +40 companies annually
- Cand. Agric. from the Norwegian University of Life Sciences in Resource Economics

## Chief Construction Officer – Jan Arne Berg



- Over 30 years experience from oil & gas industries. Former General Manager / Vice president at Kvaerner in Verdal managing a product- and technology company
- Broad skillset in business development, sales & marketing, management and has an extensive network
- B.Sc. in Mechanical Engineering from Trondheim College of Engineering

## Chief Commercial Officer – Ove Lande



- 15 years experience in investment management and capital markets from Skeie Alpha Invest and Terra Securities
- Significant business experience as former consultant at BearingPoint
- M.Sc. in Financial Economics from The Norwegian School of Economics

## Chief Financial Officer – Maria Terese Hosen



- 18 years of experience from auditing, accounting and operational operation from PwC, Selvaag Bolig, Western Bulk and Mestergruppen
- Strong and versatile leadership skills, highest ethics, and broad experience in different industries, domestic and international
- M.Sc. in Economics, M.Sc. in Auditing and Accounting from NHH

## Chief Project Officer – Lars Strøm



- More than 20 years experience from chemical and process industries from Borregaard, Norske Skog, NorFraKalk and Aibel
- Leadership experience from intl. process and product development
- Degree in Chemical and Process Engineering from University of Surrey and MBA from Griffith University, Australia

## Chief Technology Officer – Carlos Delgado



- More than 20 years of international experience in the Oil & Gas Industry within engineering, manufacturing, business development, and management.
- Experience with founding and managing a technology development start-up focused on reducing CO<sub>2</sub> emissions.
- Electrical Engineering graduate.

**Management with diverse and complementary industry backgrounds**

# Board of Directors

## Chairman – Anders Onarheim



- CEO BW LPG Ltd
- Chairman North Energy ASA
- Vice chairman Reach Subsea ASA
- Extensive experience from Capital Markets as CEO of Carnegie and Executive Director Goldman Sachs in London

## Board Member – Maren Hjorth Bauer



- Active investor, board member and advisor in the blue economy through her private investment company Fynd. Played a key role in building a global ecosystem for blue economy startups globally.
- Co-founder and former CEO of Katapult Ocean, Co-chair Seaweed for Europe, part of a working group for the UN Ocean Decade and advisor to several venture funds
- Extensive experience from McKinsey, Wallenius Wilhelmsen and Orkla.

## Board Member – Ole Jørstad



- CEO and owner of K4 Eiendomsutvikling AS
- Chairman of several companies in the SMB business in Middle Norway
- Member of Executive Committee in The Norwegian Olympic and Paralympic Committee and Confederation of Sports
- Member of Executive Committee in European Handball Federation

## Board Member – Lars Sperre



- Senior Vice President Corporate Strategy of Norske Skog ASA
- Former interim President and Chief Executive Officer of Norske Skog ASA for a period of approximately one and a half years
- Previously part of Norske Skog Group's Legal Council and Vice President Legal
- Former associate lawyer at Norwegian law firm Wikborg Rein

## Board Member – Martha Kold Bakkevig



- Founder and managing partner of MKOLD AS and a non-executive director of the public listed companies, Hexagon Purus ASA, Reach Subsea ASA, Edda Wind ASA as well as CapeOmega AS and BW LPG Ltd
- Served two years as Chief Executive Officer of Steinsvik Group and ten years as Chief Executive Officer of DeepWell AS
- Extensive experience in strategy and business development, and a broad academic background with a doctor's degree in both technical and business strategical subjects

## Board Member – Morten Platou



- Partner, law firm Schjødt
- MA, jurisprudence, University of Oslo, 2010
- LL.M., Georgetown University, DC, USA, 2012
- Specialist tax law and corporate law
- Extensive experience within mergers & acquisition, restructuring, financial structures & incentives

# Selected partners



Shareholder and OGL's main piloting partner

Collaboration agreement



Shareholder and complementary industry partner

MoU



LOI signed and considering potential applications for CCS

LOI



Reputed research partner with a wide range of specialists within OGL's core areas

R&D and commercialization



Delivers the enabling technology powering Ocean GeoLoop's solutions

Enabling supplier



Has an ambition to be the world's first carbon neutral aluminum producer

MoU



World's leading crop nutrition company and a provider of environmental and agricultural solutions

Knowledge grows

LOI



Component and sub-system supply

Enabling supplier



An innovative and motivated partner dedicated to find sustainable CO<sub>2</sub> solutions

LOI



Government of Iceland

Established a working group to reduce atmospheric CO<sub>2</sub> and produce biomass

LOI



An e-methanol pioneer with more than a decade of operational experience

LOI

# Scalable business models with multiple revenue streams

## Business models

**BOO**

*Build-Own-Operate to capture upside and recurring revenues enabled by low CapEx and OpEx*

**Diversified**

*Multiple revenue streams*

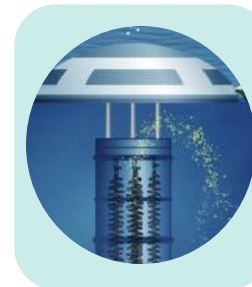
**ESG**

*Unique solutions to critical, global challenges*

## Products



*Point Source Capture*



*GeoLoop Column/ re-remediation*

## Revenue streams

- Revenue per ton CO<sub>2</sub> captured
- Generation 3: self-financed through locally produced electricity

- Ocean remediation paid by industries, sponsors, local and national governments
- Sale of biomass

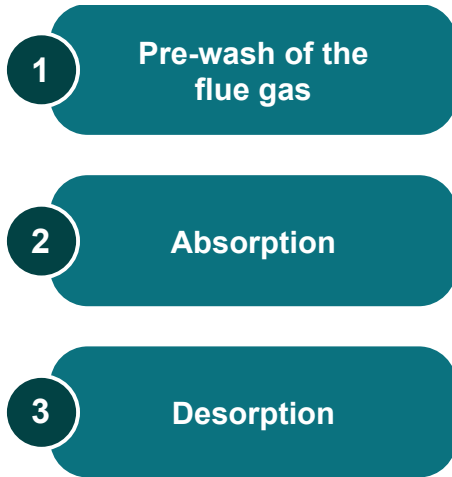
# Our main piloting arena – Norske Skog Skogn





# Our carbon capture process in brief

The GeoLoop carbon capture process is based on the capture of CO<sub>2</sub> in a liquid absorbent.



- 1) Flue gas is pretreated to eliminate acidic components and other pollutants that may affect the capture process. This pre-wash is a water-based, efficient method.
- 2) The pre-treated gas proceeds to an absorption step drawing the CO<sub>2</sub> out from the remaining flue gas.
- 3) The liquid absorbent and CO<sub>2</sub> is separated in the desorption step allowing the collection of the CO<sub>2</sub> as a product and the liquid to be returned to the absorbent stage. The process is not dependent on thermal energy input resulting in uncomplicated integration with the host.





Ocean GeoLoop

# Features – currently being industrially verified



End of pipe solution



Clean and green



Universal absorption technology



Low and flexible footprint



Highly stable and safe operations



Lower capex and operating costs

Co-funded by Innovation Norway



Industrial pilot at Norske Skog Skogn

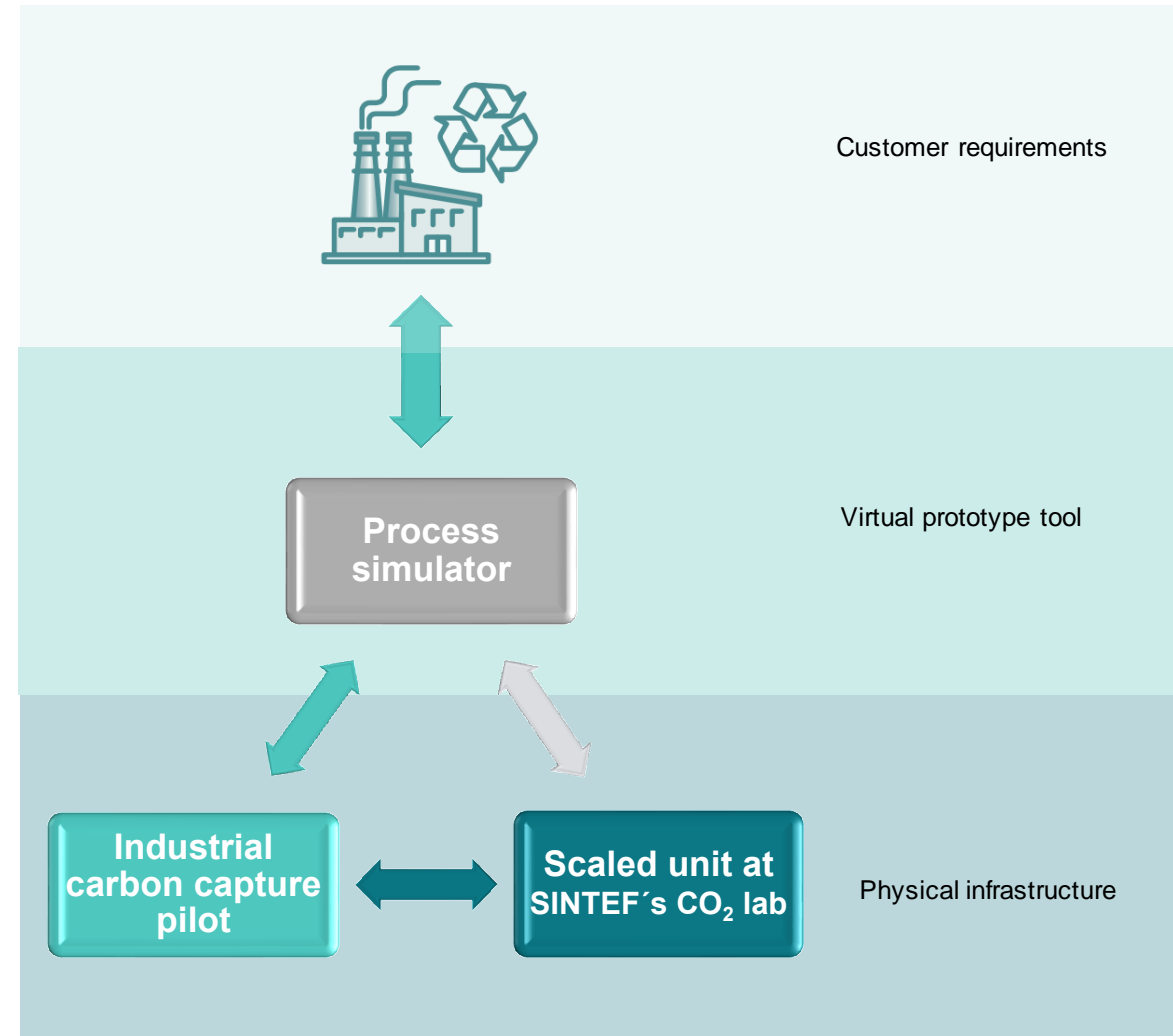
# Our infrastructure at SINTEF's CO<sub>2</sub> lab in Trondheim

- In accordance with our technology roadmap, we have completed the commissioning of a down-scaled carbon capture unit at SINTEF's premises.
- This large-scale test infrastructure allows us to gain even more speed in further optimization of the technology, drawing on the significant expertise of SINTEF to support our technology optimization.
- This is an efficient way forward with respect to time and cost both for the company's continued process improvements and for industrial partners looking for carbon capture technology.



# Customer approach – a comprehensive development solution

- The industrial pilot, the scaled test facility and our process simulator form an effective infrastructure for optimizing solutions for customers.
- The company's Aspen Plus® modeling capabilities offers a basis for process optimization and commercialization.
- The physical infrastructure allows testing of complex flue gases and emitter conditions for rapid de-risking and optimization.



# Collaboration with a set of industry actors



SMELTERS



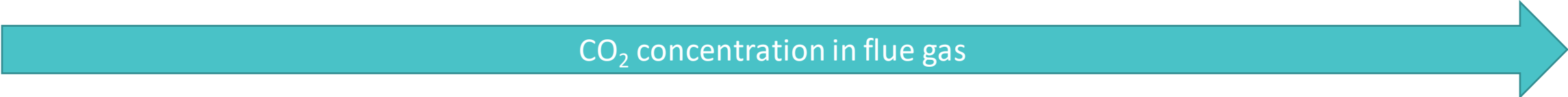
OFFSHORE OIL AND GAS



PULP & PAPER



CEMENT & CALICINATION



< 1%



~4%



~10%



~20%



~65%

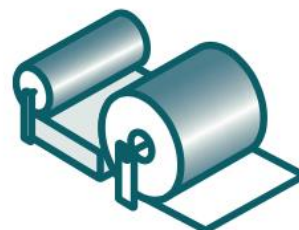
# Addressable industrial market segments for scaling



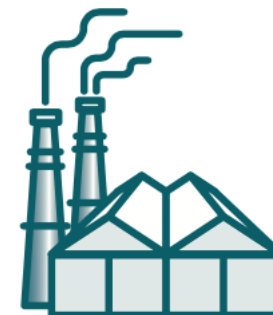
WASTE TO ENERGY



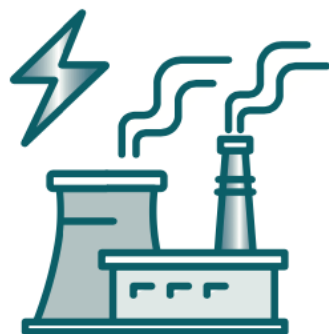
BIO TO ENERGY



PULP & PAPER



SMELTERS



ONSHORE GAS  
TO POWER



OFFSHORE  
OIL AND GAS

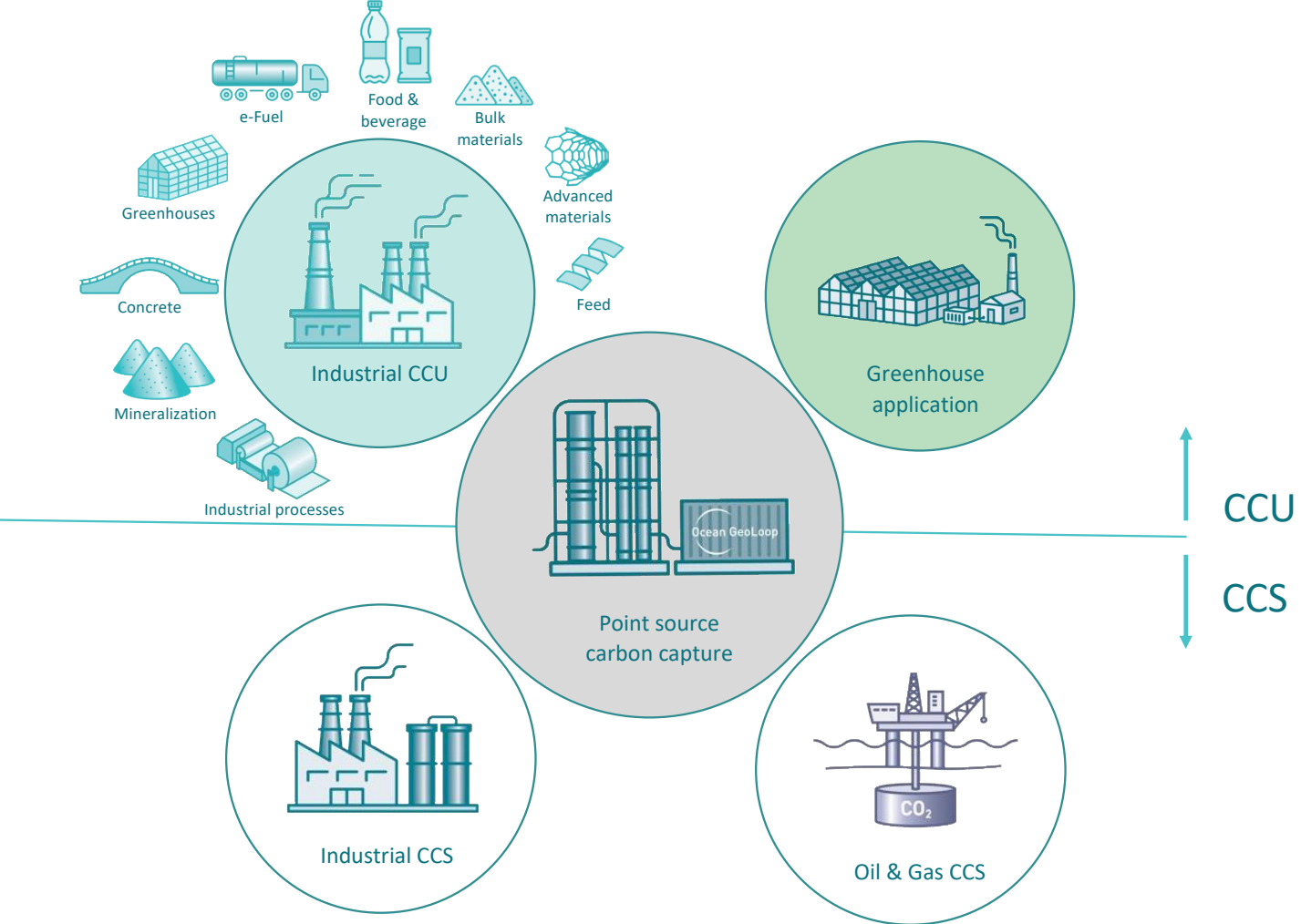


ONSHORE  
OIL AND GAS



CEMENT & CALICINATION

# Roadmap to market



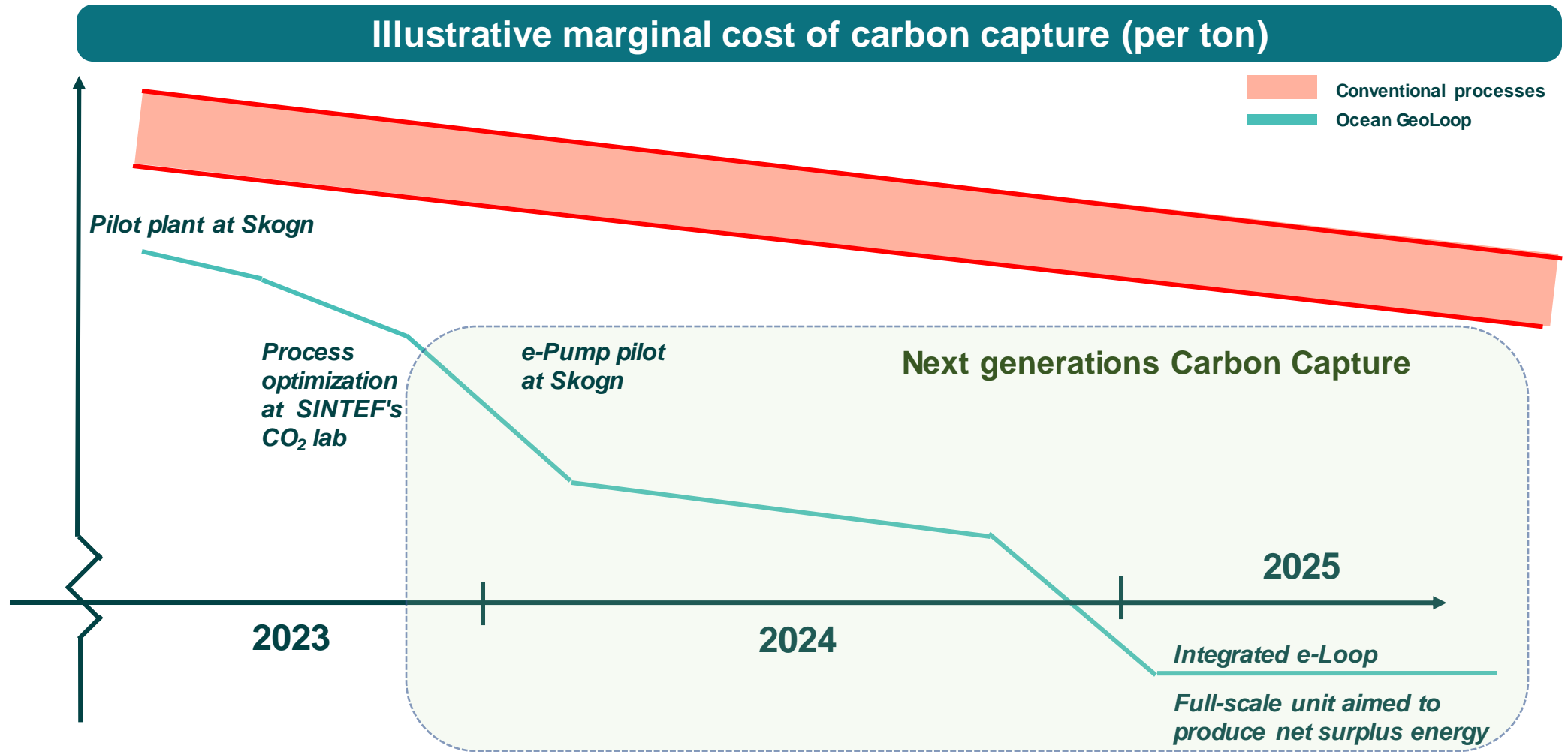
CO<sub>2</sub> is a valuable resource that can be utilized in several markets, representing significant revenue potentials for Ocean GeoLoop.



The carbon price is rising, leading to increased attractiveness of CCS and Ocean GeoLoop's offering.



# High level technology strategy towards disruptive cost levels

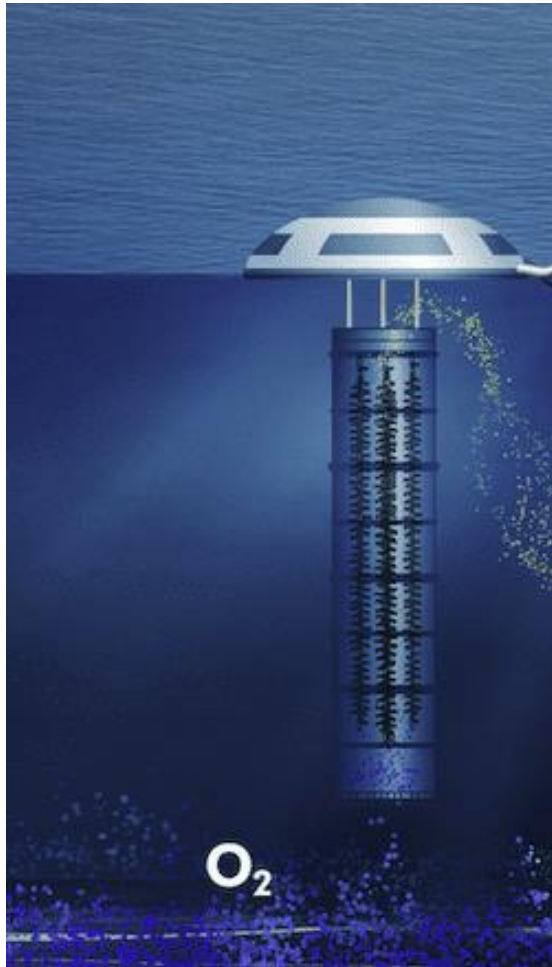


# The e-Pump technology

- Ocean GeoLoop is developing the e-Pump. This project reconfirms our ambitions to significantly reduce electricity consumption, and a new step towards a carbon capture process that can be able to deliver net surplus electricity.
- The e-Pump represents a milestone for our development of next-generation carbon capture technology for the company.
- The e-Pump technology utilizes thermal energy sources to create mechanical energy. This mechanical energy can be utilized to:
  - replace conventional components
  - produce electricity
- We are now planning for a pilot installation at Norske Skog Skogn, to explore the potential of the e-Pump.



# GeoLoop Column



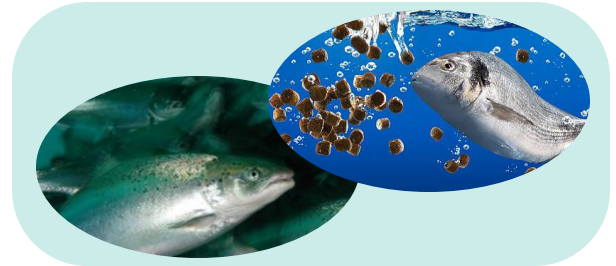
## A multi-functional ocean-based system

- Ocean filtration/cleaning
- Oxygenation of the lower ocean layers
- Biomass generation via the filtering process, farming and harvesting

## Two potential revenue streams

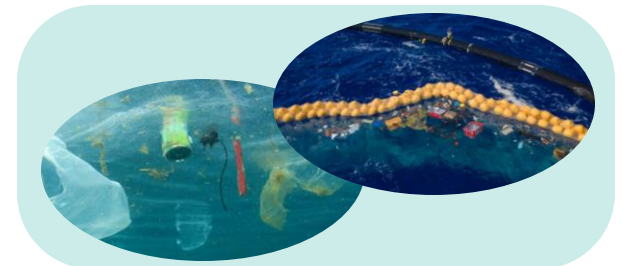
1

Biomass



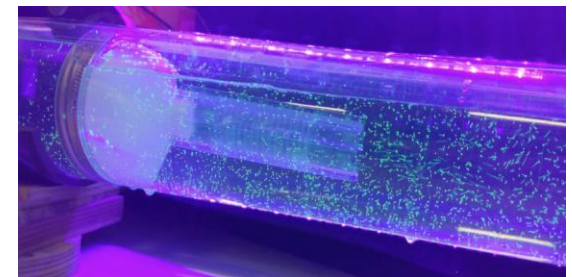
2

Cleaning the ocean

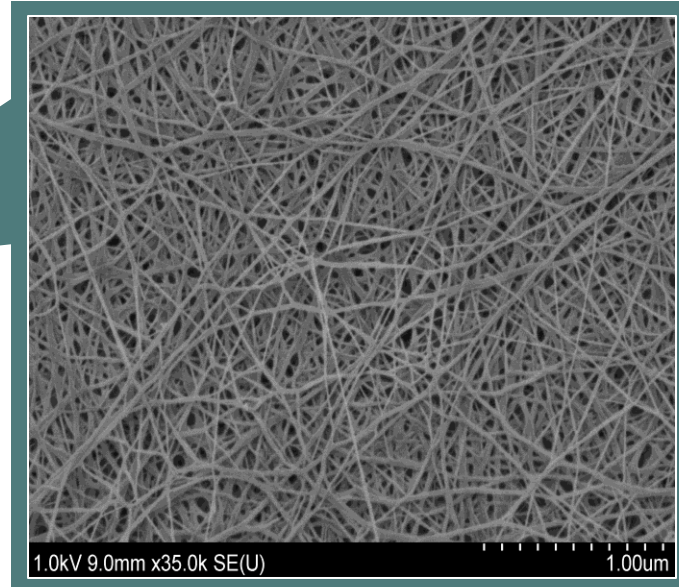
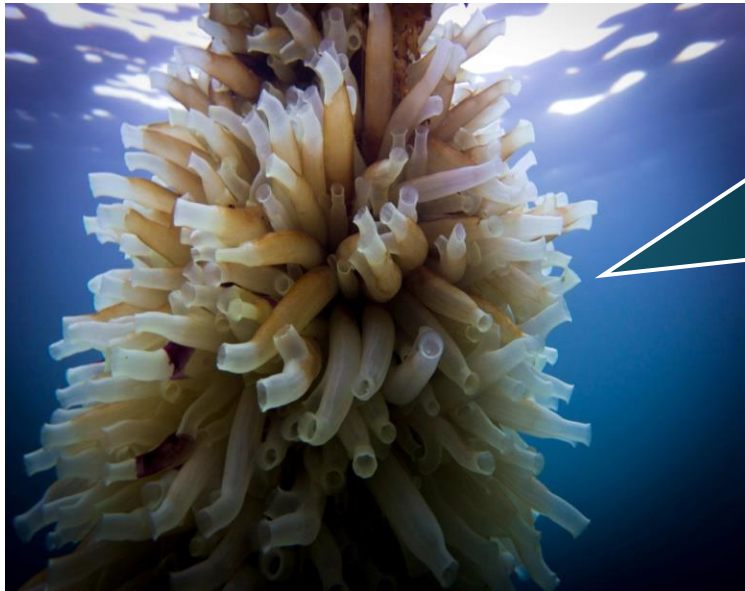


# Maturing the GeoLoop Column for Ocean Remediation

- Ocean GeoLoop has expanded our team with a dedicated person to lead the combined market and technology development activities, in close cooperation with national and international partners.
- Since installation in June 2021, the company has gained valuable experience from the GeoLoop Column prototype in the Trondheim Fjord. The process on improving the circulation of large volumes of water has continuously been under development and testing together with international partners. An alternative structural design that offers improved functionality has been developed by Ocean GeoLoop's EPCI partner.
- A novel mechanical filtration system is under development and laboratory experiments has confirmed the solution as a possible technology for capturing particulate matter by mechanical means, as an alternative to the use of filter feeders. Ocean GeoLoop has recently established a lab at SINTEF's premises in Trondheim, for further experimental testing and technology verification.
- Ocean GeoLoop is working systematically to identify the market entrance for GeoLoop Column. The national challenge with the eutrophicated Oslo Fjord is identified as a potential entrance point, and work has been undertaken to promote a Joint Stakeholder Initiative to fund the first commercial unit.



# The enabler, a new marine biomass resource: Tunicates powering both carbon capture and GeoLoop Column



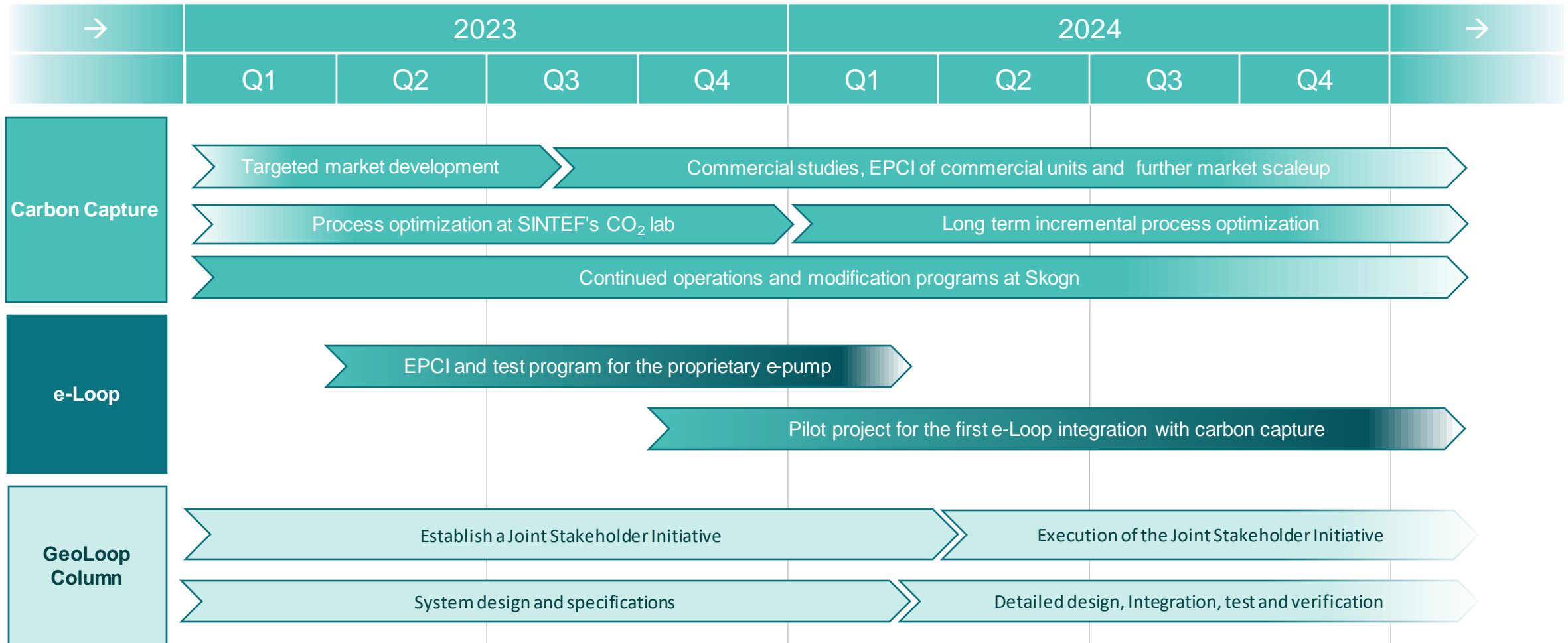
Nanofibrillated cellulose (same resolution)

## Tunicates

- Unique, nanofibrillated cellulose from the only cellulose-producing animal in the ocean, the tunicate
- Developed by Ocean Tunicell in Bergen, and exclusively licensed to Ocean GeoLoop, for GeoLoop CCS/CCU and GeoLoop Column applications
- Enabling the generation of nanocavities powering the CO<sub>2</sub> gas separation, the e-Loop electricity production and buoyancy neutral oxygenation of the ocean column

More than 20 years of research to develop and industrialize the nanofibrillated cellulose

# High level timeline for the entire business rollout



# Copyright and disclaimer

## Copyright

Copyright of all published material including photographs, drawings and images in this document remains vested in Ocean Geoloop AS and third party contributors as appropriate. Accordingly, neither the whole nor any part of this document shall be reproduced in any form nor used in any manner without written prior permission and applicable acknowledgements. No trademark, copyright or other notice shall be altered or removed from any reproduction.

## Disclaimer

This presentation includes and is based, inter alia, on forward-looking information and statements that are subject to risks and uncertainties that could cause actual results to differ. These statements and this presentation are based on current expectations, estimates and projections about global economic conditions, the economic conditions of the regions and industries that are major markets for Ocean Geoloop AS (including subsidiaries and affiliates) lines of business. These expectations, estimates and projections are generally identifiable by statements containing words such as “expects”, “believes”, “estimates” or similar expressions. Important factors that could cause actual results to differ materially from those expectations include, among others, economic and market conditions in the geographic areas and industries that are or will be major markets for Ocean Geoloop AS’ businesses, market acceptance of new products and services, changes in governmental regulations, interest rates, fluctuations in currency exchange rates and such other factors as may be discussed from time to time in the presentation. Although Ocean Geoloop AS believes that its expectations and the presentation are based upon reasonable assumptions, it can give no assurance that those expectations will be achieved or that the actual results will be as set out in the presentation. Ocean Geoloop AS is making no representation or warranty, expressed or implied, as to the accuracy, reliability or completeness of the presentation, and neither Ocean Geoloop AS nor any of its directors, officers or employees will have any liability to you or any other persons resulting from your use.