Norske Skog

Sparebank 1 Markets
Energy Transition Conference

2 March 2022

Website LinkedIn Quartr

Sustainable and innovative industry

Publication paper

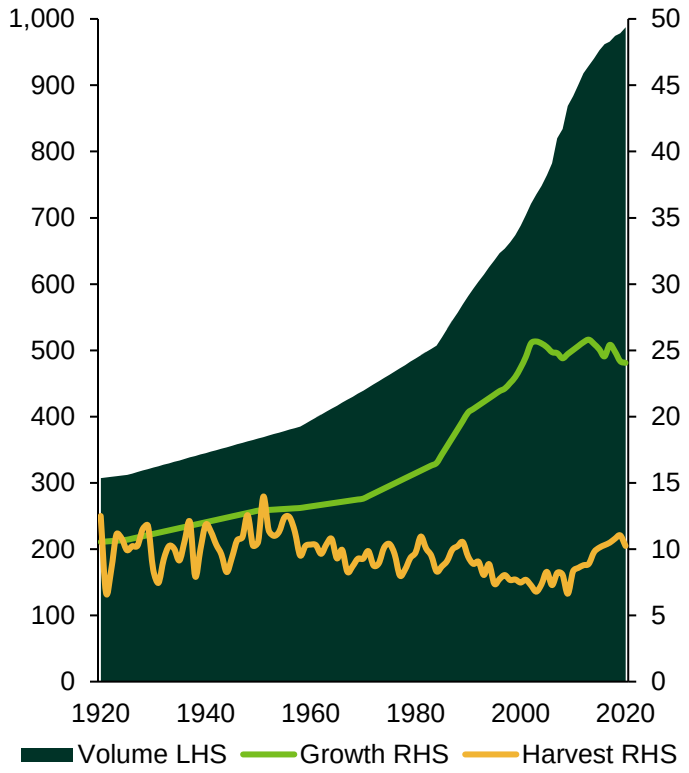
Packaging paper

Energy

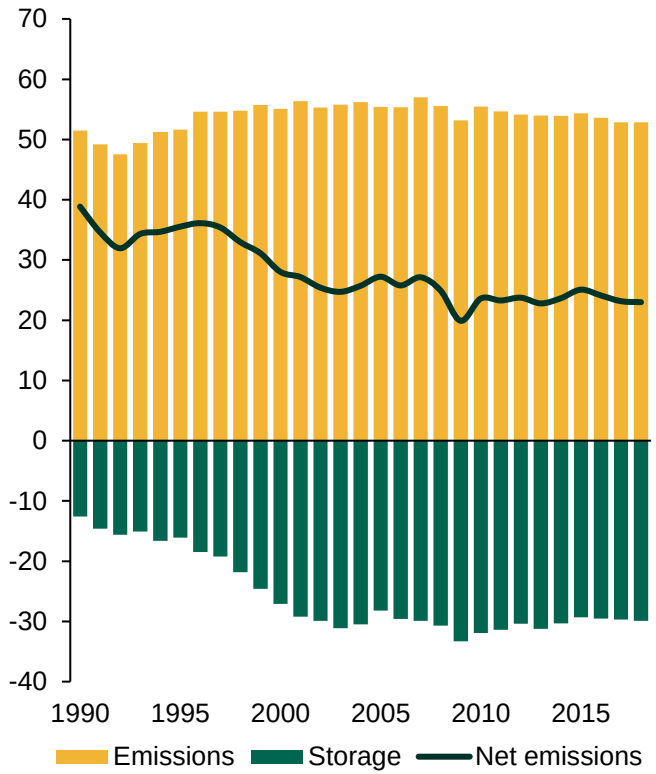
Bio products

Wood is a valuable and sustainable resource

Norway forest development



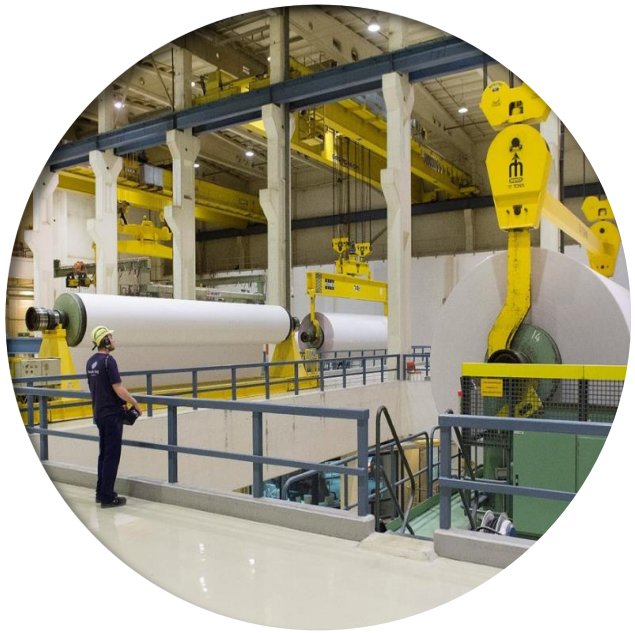
Norway CO_2 emissions and forest storage



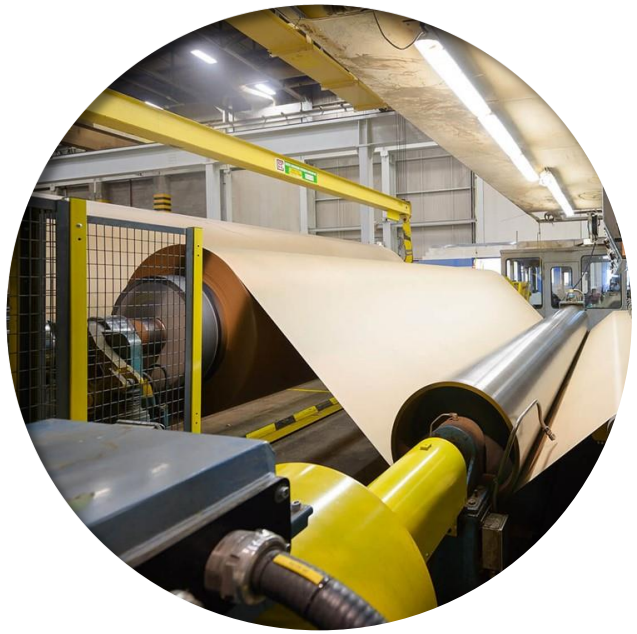
- Wood harvesting increasingly comply with strict guidelines and certifications
- Harvest frees up land for new forest growth, large share of wood-stored CO_2 remains stored in construction materials
- Wood that is not suited for construction materials is used for paper, packaging and other valuable applications
- *Wide effort to develop innovative, circular / environmental, and high-value applications for non-construction grade wood*

Source: NIBIO, Statistics Norway

Publication and packaging papers are circular bio products



Publication paper



Packaging paper

- Norske Skog has ~2m tonnes of publication paper capacity
- Converting two machines to produce 760k tonnes containerboard (start Q4’22)
- Produced from recycled papers and 89% certified non-construction grade wood
- Industry recycling rate of 74% and 97% of waste utilised, i.e., very efficient industry

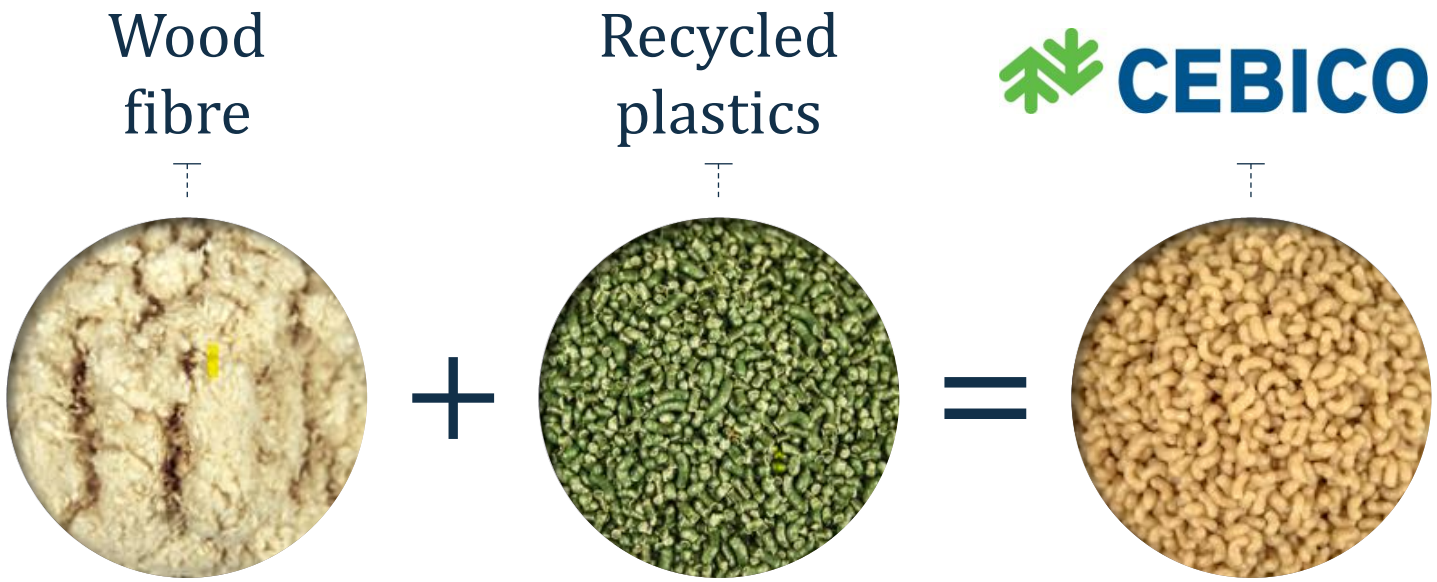
Waste-to-energy facility reduces landfilling and CO_2 emissions at scale

Waste-to-energy

- Takeover of 50 MW waste-to-energy facility from Valmet in Q2 2022
- Reduces gas consumption by ~0.7 TWh and saves 150k tonnes of CO_2 emissions
- Saves 160k tonnes of waste (RDF[1]) from landfills every year

1) RDF = Refuse Derived Fuel, is a fuel produced from various types of waste such as municipal solid waste (MSW), industrial waste or commercial waste

CEBICO is a composite material which replaces plastics with fibre

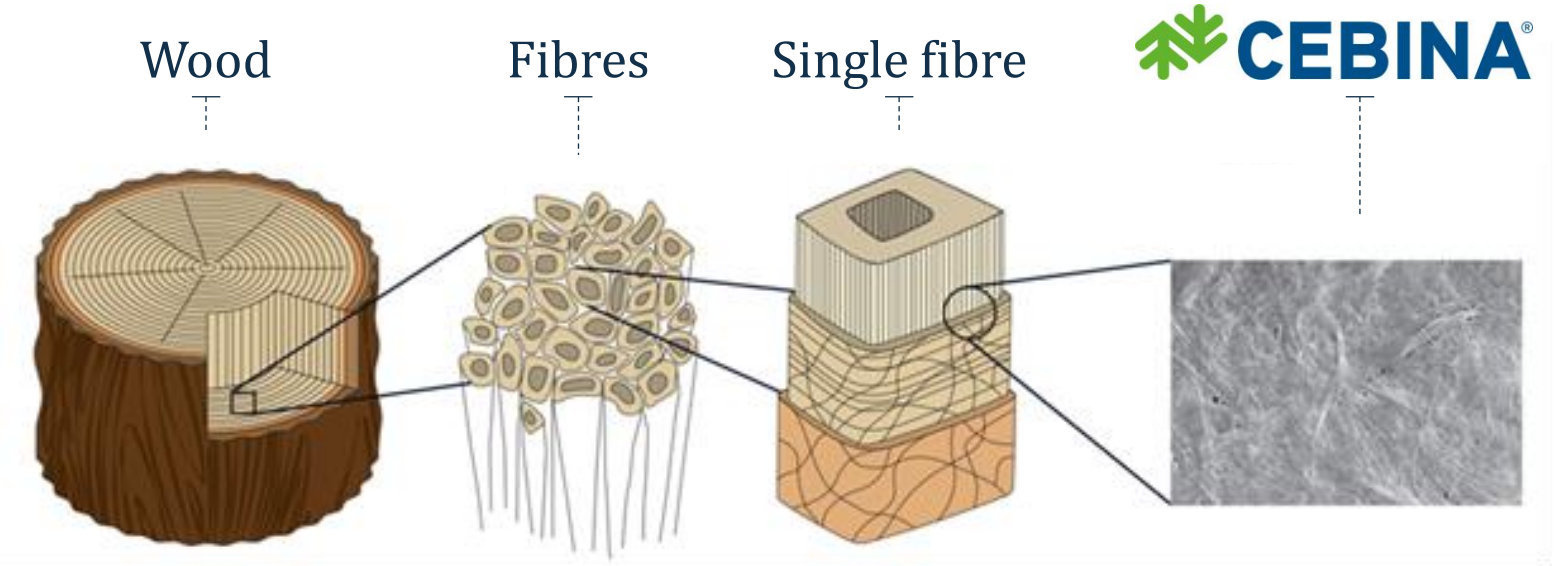


- **Improves strength** in virgin and recycled plastics
- **Enables thinner materials** (i.e. less raw material consumption)
- **Increases value and lifetime** of recycled plastics
- **Reduces product costs** by replacing plastic with fibre

CEBICO demonstration facility with annual capacity of 300 tonnes

- Demo facility located at Norske Skog Saugbrugs, in Halden
- Completed in December 2021 with support from Innovation Norway of NOK ~15m
- Thermomechanical pulp from paper production used as feedstock
- Facility comprises further fibre treatment, compounding and pelletising
- Commercial work ongoing together with several potential customers
- Commercial scale facility would need to be around 25-50k tonnes capacity

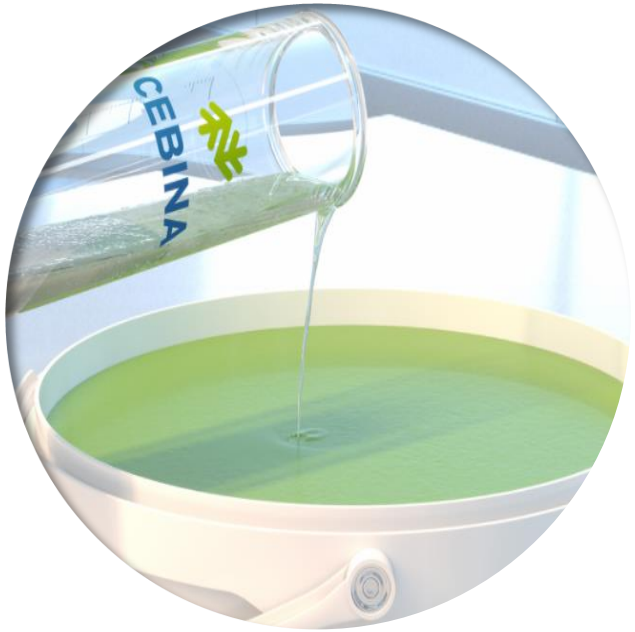
CEBINA is a nanocellulose additive relevant in multiple applications



- CEBINA improves the flow (rheology) and strength (armouring) of materials
- Tested and proven in multiple applications with regular commercial sales
- Pilot of 100-500 tonnes capacity (depending on grade) at Saugbrugs
- Ambition to enter international distribution agreement and increase capacity
- Awarded Grønn Plattform grant of NOK ~60m to support further development

CEBINA has been successfully tested in multiple applications

Epoxy floors

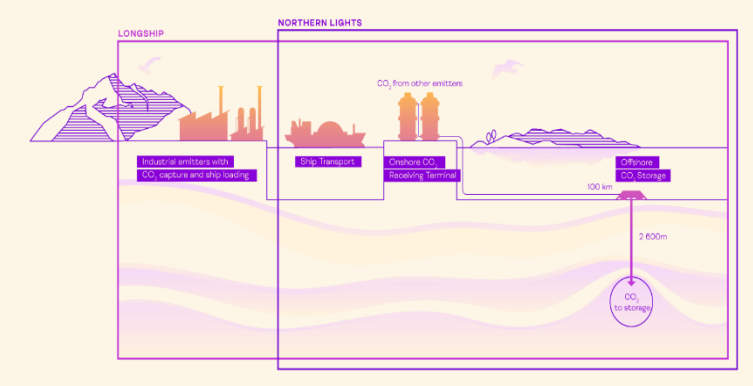


Water-based paint

Spray filler

Large industrial sites enable important role in supporting development of technologies to capture and utilise CO_2

Saugbrugs participates in Borg CO2

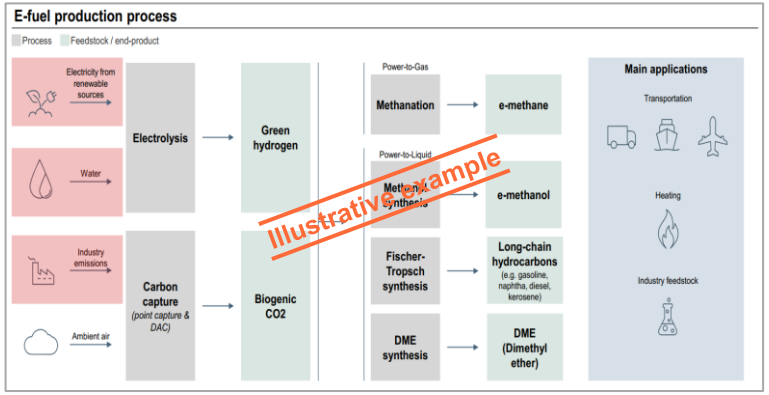


- Borg CO2[1] develops CCUS[2] for industry cluster in Norway, and will test CCUS technology from CO2 Capsol
- Norske Skog Saugbrugs participates as one of the industrial partners in Borg CO2
- In total, the cluster represents 700k tonnes of CO2 emissions (~70% bio-CO_2), ambition to capture ~90% (~630k tonnes)
- Northern Lights[3] will provide transport and storage, utilising newly designed ships and a 100km long pipeline
- The CO_2 will be injected for permanent storage 2.6km below the North Sea seabed (start in 2024)

Skogn supports Ocean GeoLoop

- Supporting Ocean GeoLoop to develop and pilot its CCUS[2] technologies
- The technologies build on decades of research, lab tests and prototypes
- Captures close to 100% of CO_2 from flue gas and uses no harmful chemicals in the process
- Piloting at Norske Skog Skogn during Q2 2022 with demonstration scale CO_2 capture capacity
- Norske Skog holds ~2% of Ocean GeoLoop and is represented on its board of directors

Exploring CO_2 as a resource for utilisation



- Fossil CO_2 reduction, capture and storage is incentivised by various national and international schemes
- Developing economically viable models for capture of bio-CO2 (biogenic CO2) has received less attention
- Norske Skog explores a range of opportunities to utilise bio-CO2 as a valuable resource
- Opportunities range from use in production of animal food to several types of advanced fuels
- Developing bio-CO_2 opportunities into actionable projects is a long-term process

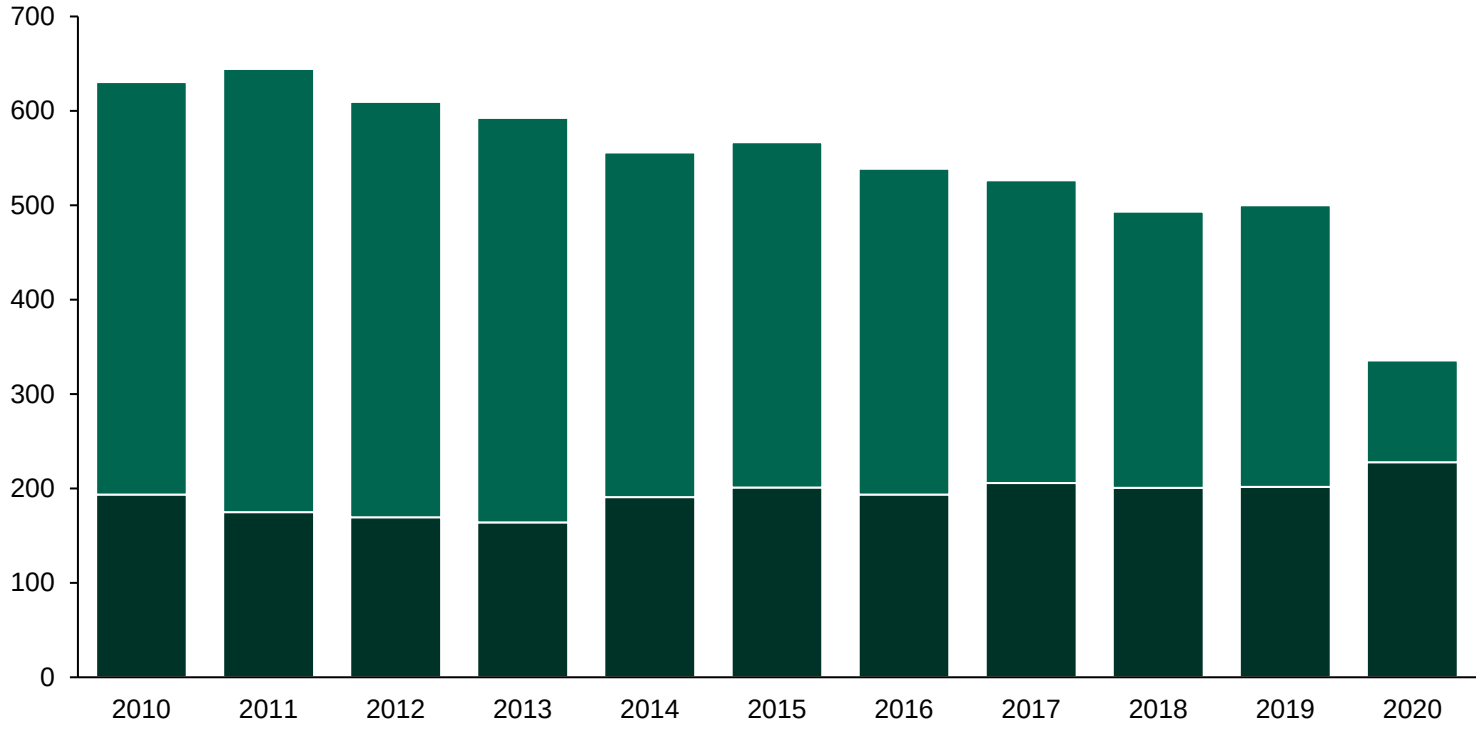
Source: Borg CO2, Northern Lights

1) Subsidiary of Borg Havn IKS; 2) CCUS = Carbon Capture, Utilisation and Storage; 3) Joint venture between partners Equinor, Shell and Total. Delivers CO_2 transport and storage services. Initially, Northern Lights will have the capacity to transport, inject and store up to 1.5m tonnes of CO_2 per year, but the ambition it to increase the capacity to at least 5m tonnes per year as demand grows

Strong focus on sustainability and innovation

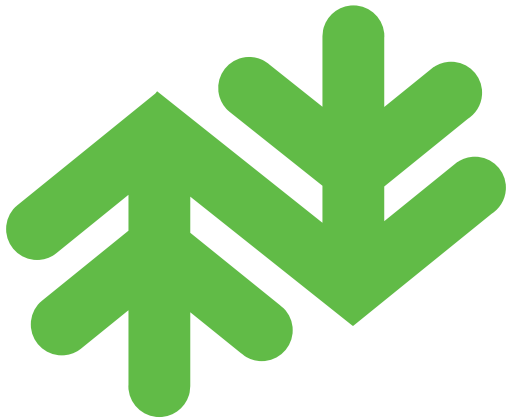
Continue to improve sustainability of existing operations

Kg fossil CO_2 direct and indirect (scope 1 and 2) emissions per tonne produced



Net Zero 2050 ambition

- Incremental and step-change improvement of CO_2 footprint from production process
- Support development of climate solutions within carbon capture, bio-carbon, e-fuels, chemicals, additives and materials
- Extensive CSR reporting applying the GRI guidelines since 2003



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