



# Norske Skog

## Capital Markets Day

25 November 2021

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# Today's agenda

09:00

*Publication paper*

*Sven Ombudstvedt (CEO)*

09:40

*Packaging paper*

*Tore Hansesætre (SVP Strategic Projects)  
Marleen van den Berg (VP Containerboard Sales)*

10:30

*Snack*

10:50

*Energy and bio products*

*Lars Sperre (SVP Corporate Strategy)  
Hugo Harstad (MD CEBINA and CEBICO)*

11:30

*Financial review*

*Rune Sollie (CFO)*

11:55

*Outlook*

*Sven Ombudstvedt (CEO)*

**Q&A**

between  
sessions



**Norske Skog**



# Sustainable and innovative industry

- Leading publication paper producer with **six industrial sites globally**
- Transition into markets with **strong growth outlook** and **higher margins**
- **Waste-to-energy project to be completed in Q2 2022** improving green energy mix
- Becoming a leading independent European **recycled containerboard company in 2023**
- Promising biochemicals and materials projects with **CEBINA, CEBICO and Circa**
- Industrial sites portfolio foundation for **further development in energy and bio products**

3

1) Norske Skog is the largest shareholder with ~26% ownership position in Circa;  
 2) Installed capacity for biofuel and waste from recycled paper of 230 MW.  
 Energy mainly used internally in the publication paper production process

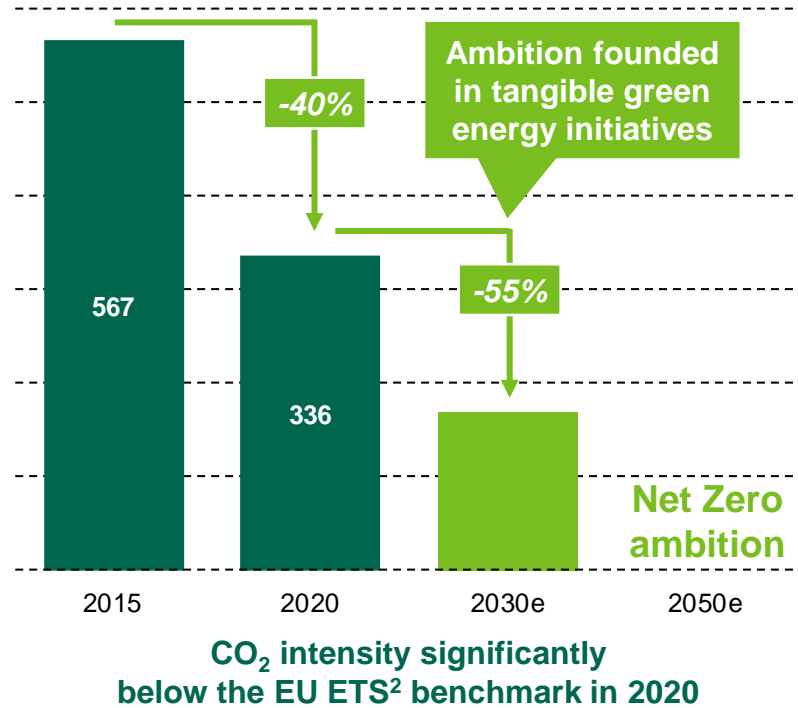




# Reducing the environmental impact is at the forefront of all business decisions

## Carbon footprint development and ambition

Kg CO<sub>2</sub> direct and indirect (scope 1 and 2) emissions per tonne produced<sup>1</sup>



**A** - Excellent reporting in line with best practice. Good description of material issues and relevant results. Clear strategy and specific, quantifiable targets.



CSR reporting applying the GRI<sup>3</sup> guidelines since 2003

## Highlighted green energy initiatives

- ✓ New energy efficiency initiatives introduced during 2021<sup>4</sup>
- ✓ Bruck waste-to-energy facility reducing CO<sub>2</sub> footprint by 150k tonnes, starting Q2 2022
- ✓ New Golbey biomass boiler<sup>5</sup> from Q2 2024, producing green steam and electricity from sludge and waste wood

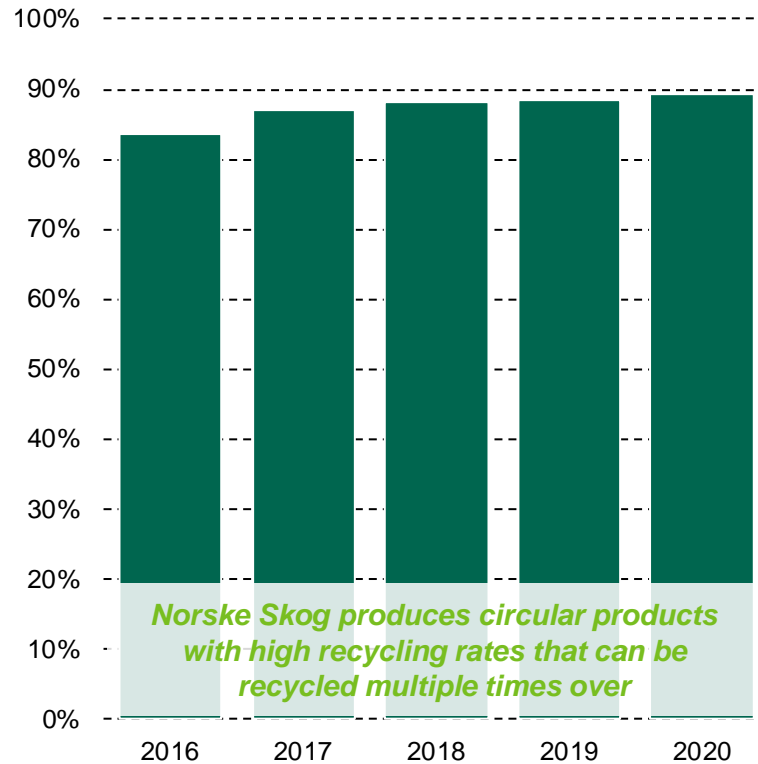
<sup>1</sup> Scope 1 includes direct emissions from stationary fuel combustion, transportation and mobile sources. Scope 2 includes indirect emissions from steam and power imports; <sup>2</sup> ETS = Emission Trading Scheme, Norske Skog is a net receiver of carbon emission allowances, indicating that Norske Skog is better than the industry emission intensity benchmark; <sup>3</sup> GRI = Global Reporting Initiative; <sup>4</sup> The NEXT and Thermanator energy efficiency projects announced at the Norske Skog Saugbrugs mill in March 2020 have come on stream in 2021 to further improve the energy efficiency of Norske Skog. The projects are supported by the NOx Fund and Enova; <sup>5</sup> Being developed in partnership with Pearl Infrastructure Capital and Véoia. Norske Skog to hold 10% of the equity in the development company, Green Valley Energie



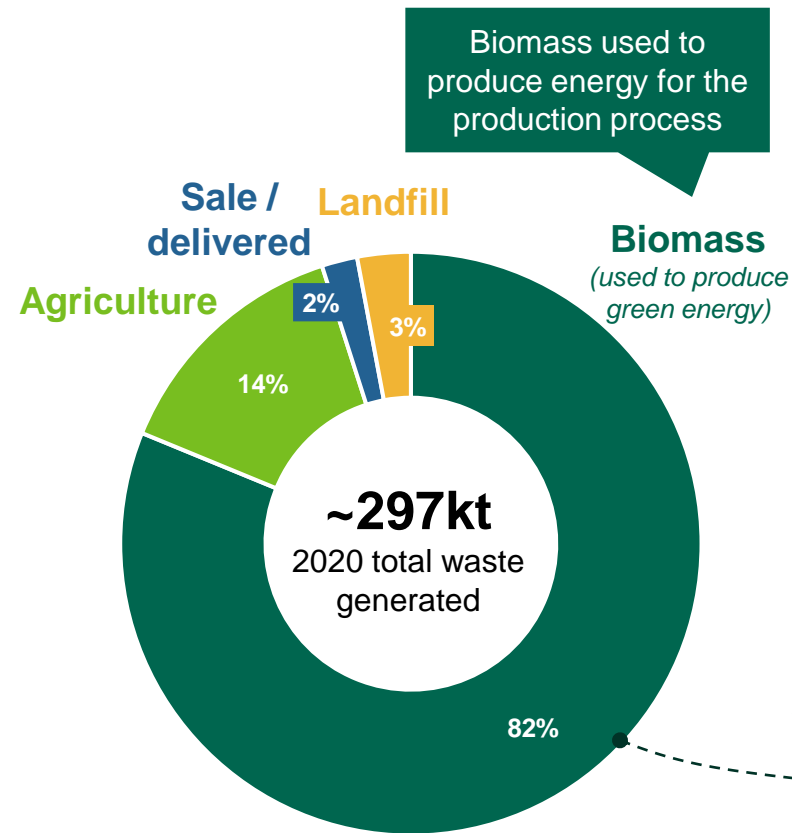
# Sustainability and circularity is a top priority for raw materials sourcing and waste handling

**89% of wood was certified<sup>1</sup> in 2020**

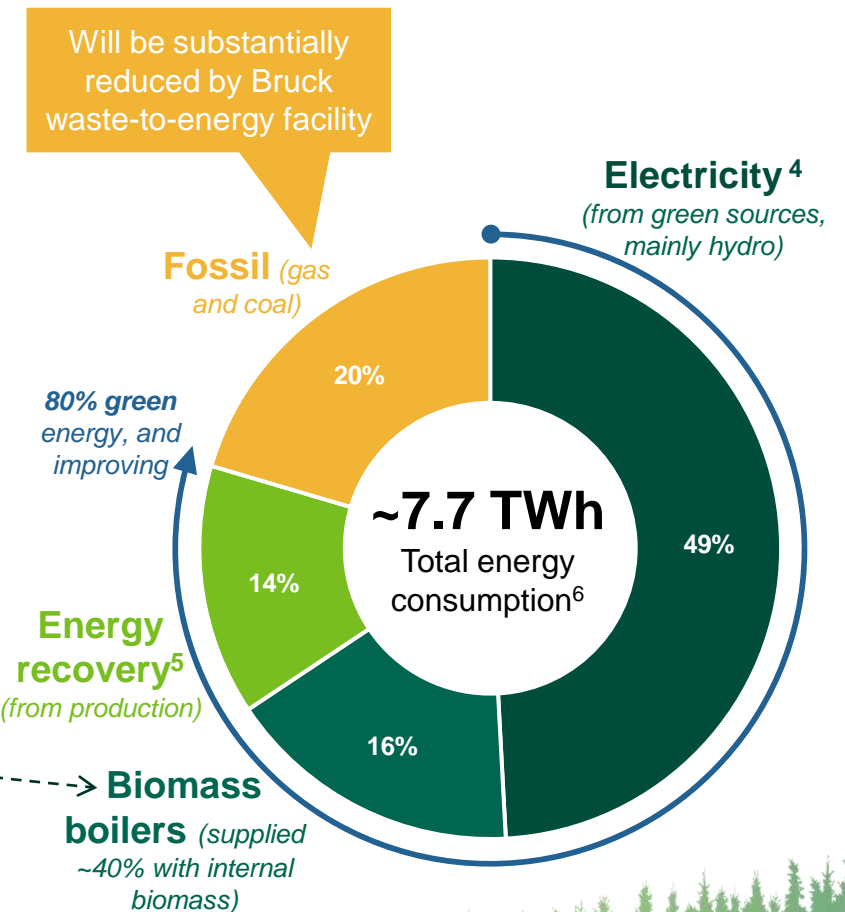
*In 2020, wood<sup>2</sup> represented 58% of consumed fibre, recovered paper (30%) and other<sup>3</sup> (12%)*



**Only 3% of waste landfilled in 2020**



**80% green energy for current paper capacity**

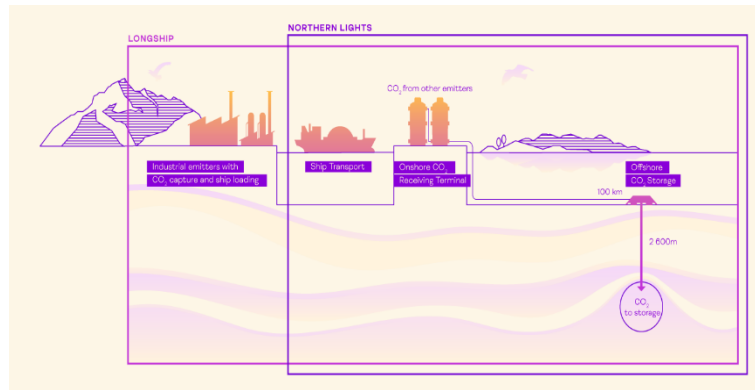


1) Certifications are generally provided by PEFC (Programme for the Endorsement of Forest Certification) and FSC (Forest Stewardship Council), and set high standards with regards to forests being responsibly managed in a socially beneficial and environmentally conscious manner. All Norske Skog mills utilising wood have third-party verified Chain of Custody (CoC) certification; 2) Comprise of lower grade wood (like roundwood and chips) not suitable for building and construction materials; 3) 11% inorganic fillers and 1% purchased pulp; 4) Purchased electricity, including limited internal electricity production from green energy sources other than biomass; 5) Recovered heat energy mainly from the thermomechanical pulping (TMP) process; 6) Pro-forma for current publication paper capacity following ceased production at Saugbrugs PM5 end of 2020, ceased production at Tasman end of Q2 2021, and NEXT / Terminator energy efficiency initiatives at Saugbrugs



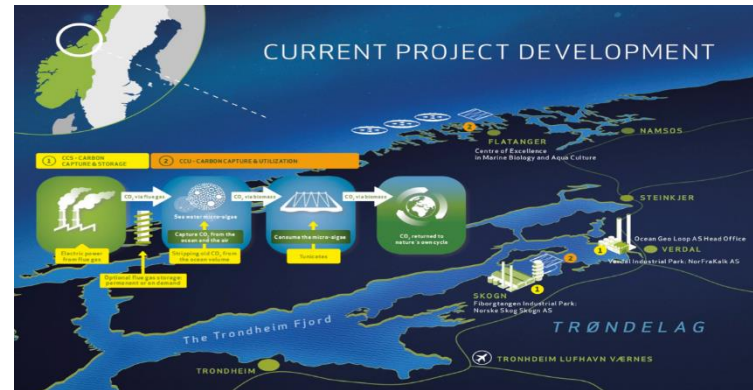
# Working with leading industry initiatives and technologies to capture and utilise CO<sub>2</sub>

## Saugbrugs participates in Borg CO2



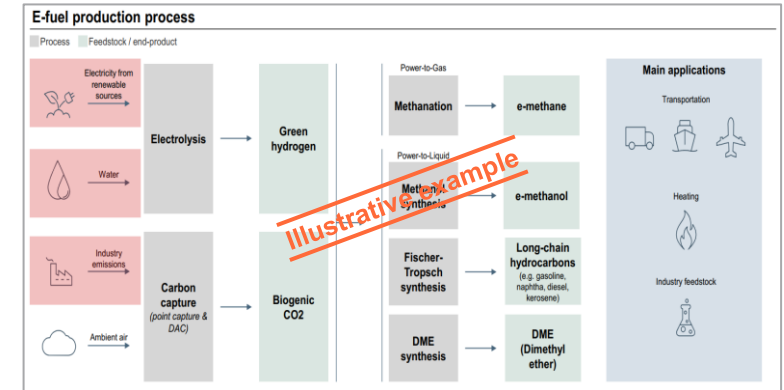
- **Borg CO2<sup>1</sup> develops CCUS<sup>2</sup>** for industry cluster in Norway, and will test CCUS technology from CO2 Capsol
- **Norske Skog Saugbrugs participates** as one of the industrial partners in Borg CO2
- In total, the cluster represents 700k tonnes of CO<sub>2</sub> emissions (~70% bio-CO<sub>2</sub>), ambition to **capture ~90% (~630k tonnes)**
- **Northern Lights<sup>3</sup> will provide transport and storage**, utilising newly designed ships and a 100km long pipeline
- **The CO<sub>2</sub> 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<sup>2</sup> technologies
- The technologies build on **decades of research**, lab tests and prototypes
- **Captures close to 100% of CO<sub>2</sub>** from flue gas and uses no harmful chemicals in the process
- **Piloting at Norske Skog Skogn** during Q2 2022 with demonstration scale CO<sub>2</sub> capture capacity
- **Norske Skog holds ~2% of Ocean GeoLoop** and is represented on its board of directors

## Exploring CO<sub>2</sub> as a resource for utilisation



- **Fossil CO<sub>2</sub> reduction**, capture and storage is incentivised by various national and international schemes
- Developing economically viable models for capture of **bio-CO<sub>2</sub> (biogenic CO<sub>2</sub>)** has received less attention
- Norske Skog explores a range of opportunities to **utilise bio-CO<sub>2</sub> as a valuable resource**
- Opportunities range from use in production of **animal food** to several types of **advanced fuels**
- Developing bio-CO<sub>2</sub> opportunities into actionable projects is a **long-term process**



# Publication paper

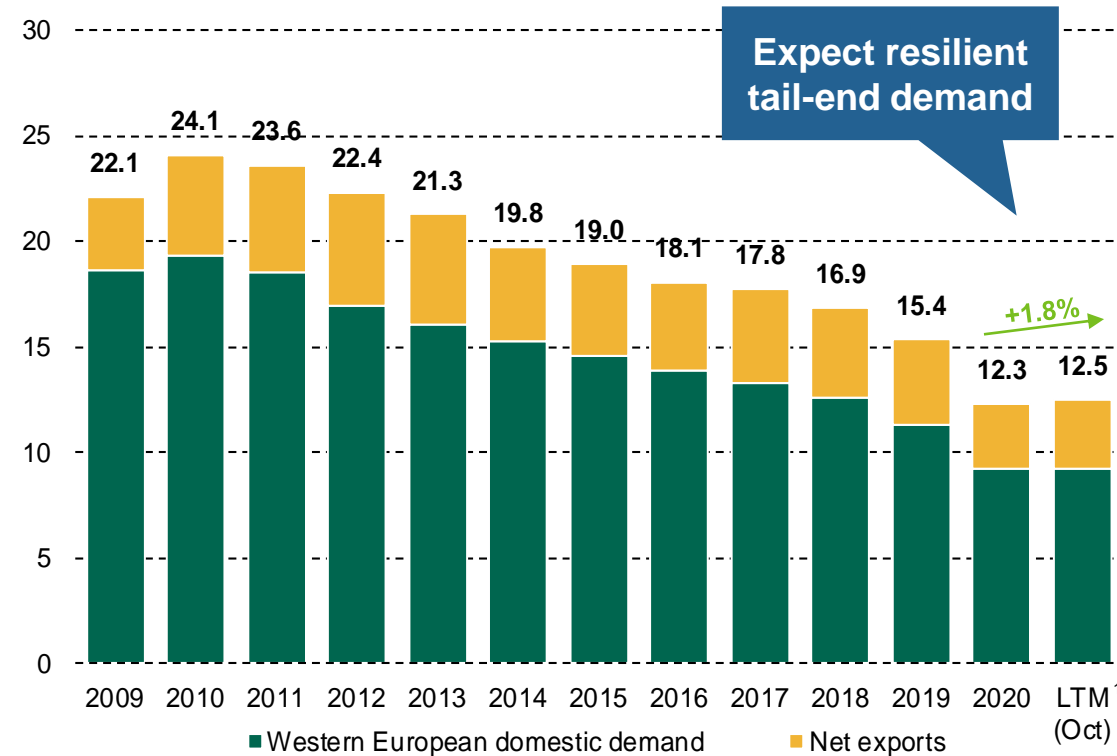




# Significant publication paper demand impact from COVID-19, but demand stabilising as societies reopen

## Annual demand decline of ~5% expected to continue from 2023

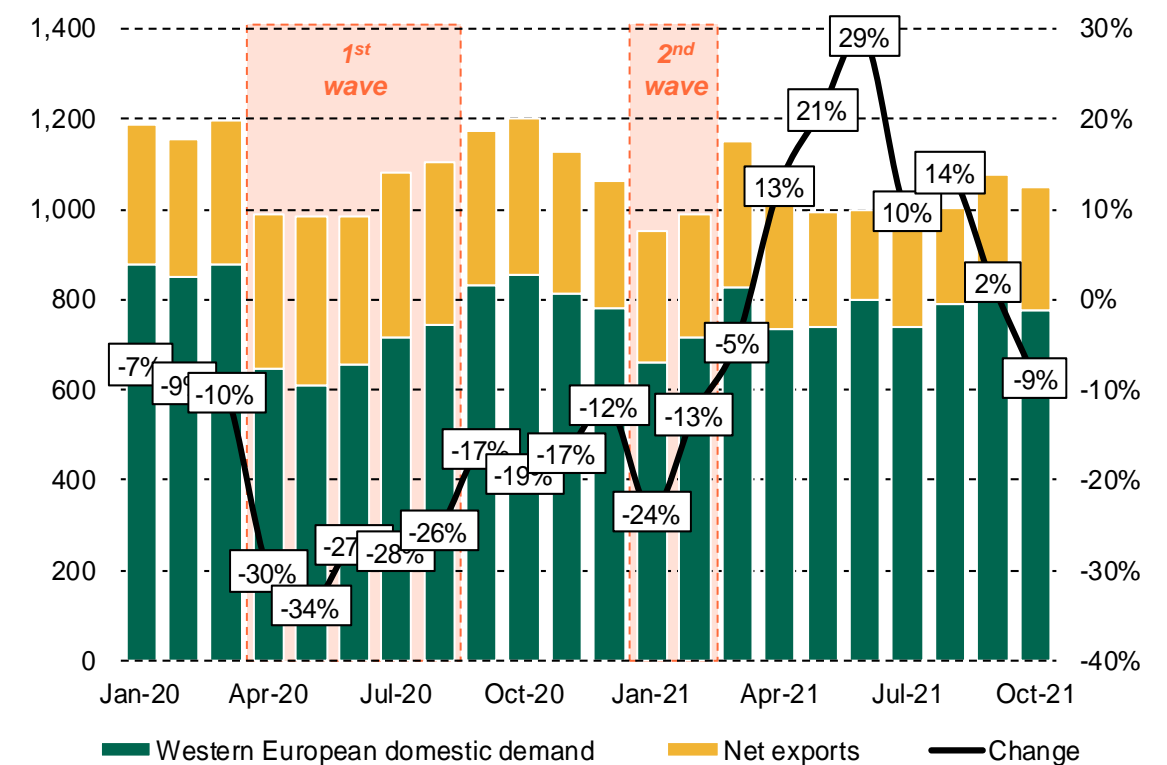
Publication paper demand Western Europe, million tonnes



## Demand stabilising as COVID-19 restrictions ease

Monthly publication paper demand Western Europe, thousand tonnes

Change vs same month previous year

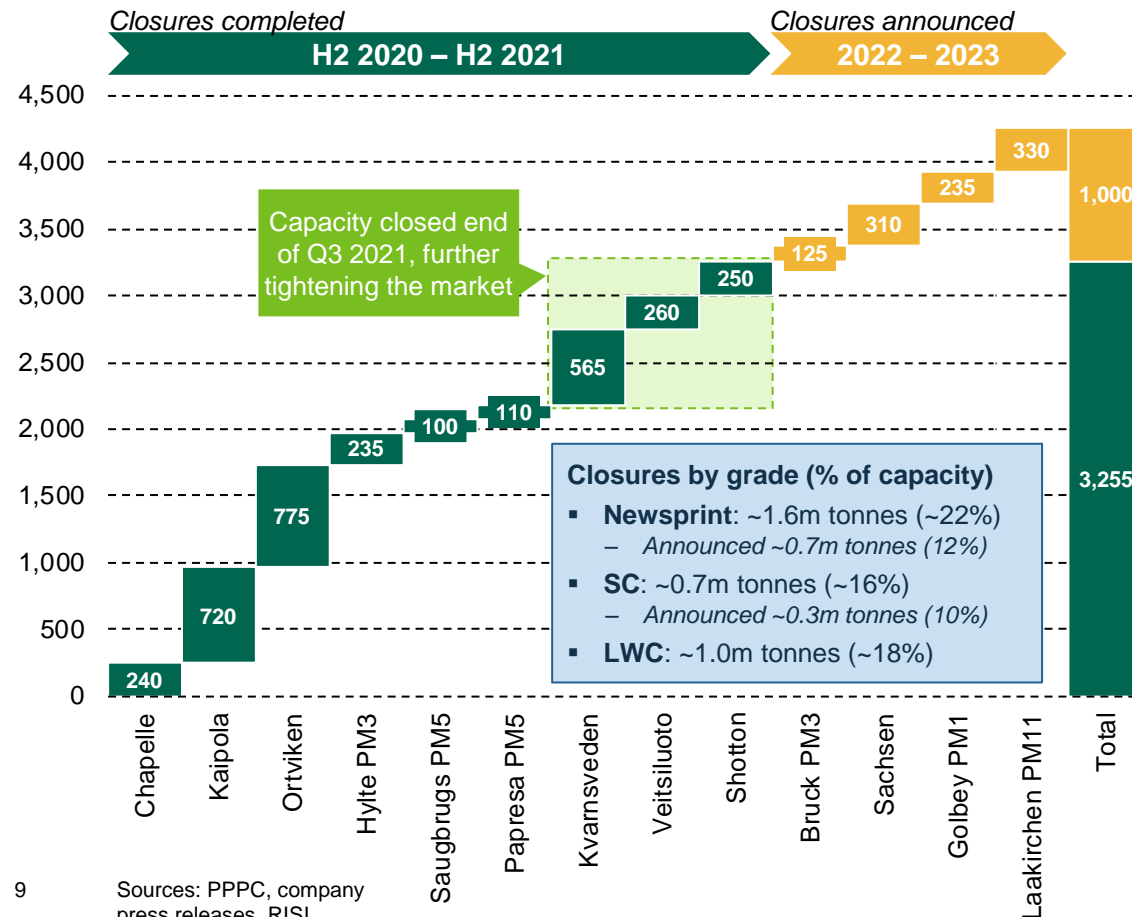




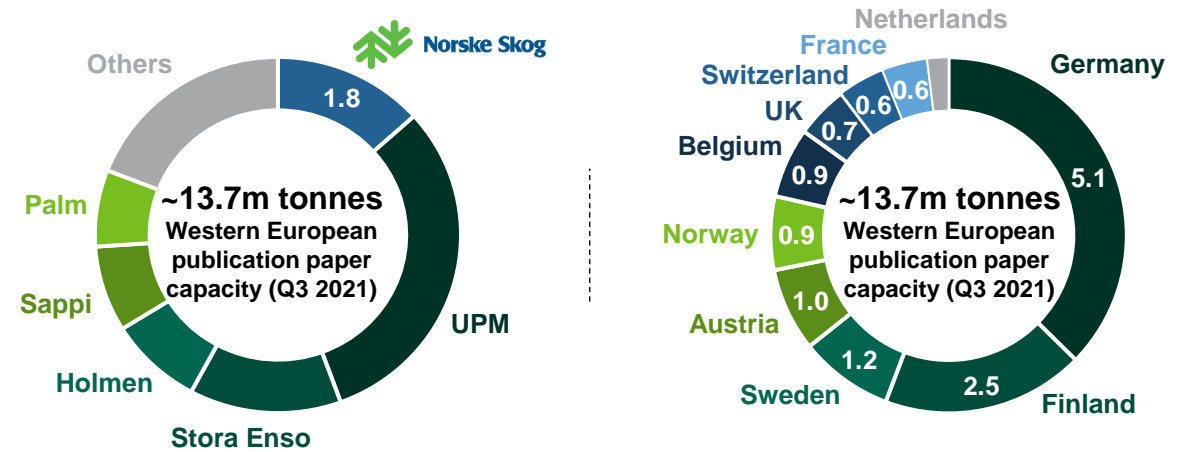
# Unprecedented reduction of installed capacity last 18 months driven by low paper prices and high fibre and energy costs

## Publication paper capacity closures since H2 2020

Capacity closures in Western Europe, thousand tonnes



## Remaining publication paper capacity in Western Europe as of Q3 2021



European capacity	News	SC	LWC
Industry capacity split	40%	25%	35%
NSKOG capacity split	65%	20%	15%
Norske Skog share	22%	10%	5%

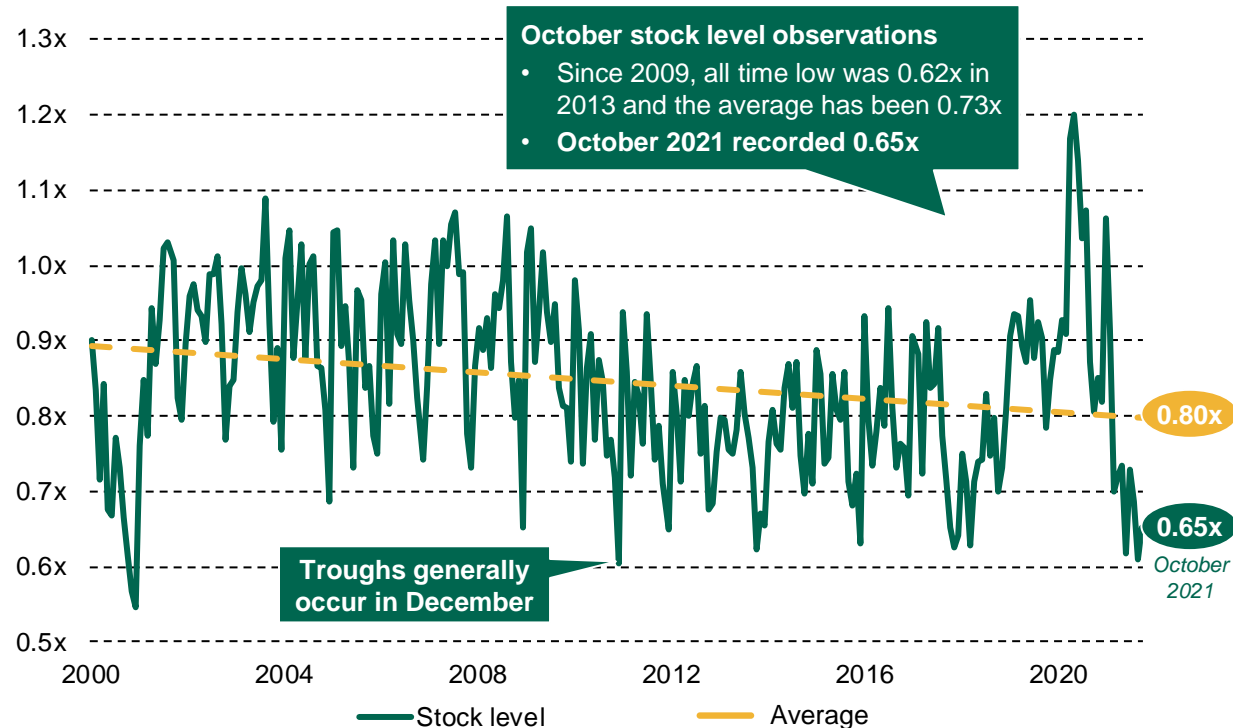
- Industry capacity of ~13.7m tonnes across 30-35 mills (15-20 companies)
- Announced 1m tonnes of newsprint and SC closures during 2022-2023
- Represents ~12% of newsprint and ~10% of SC capacity



# Capacity reductions and very low stock levels have tightened the market balance

## Publication paper stock volume at very low levels

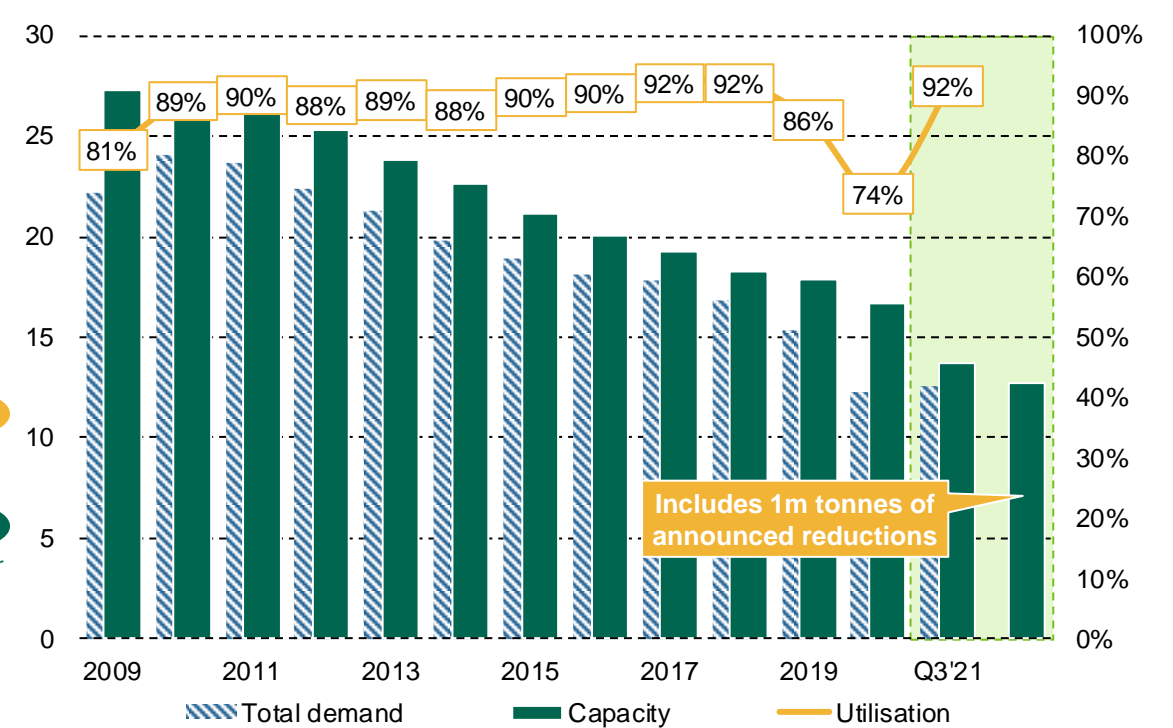
Total publication paper stock volume divided by monthly delivery volume, number of times monthly deliveries are covered by stock volume



## Capacity reductions surpassing COVID-19 related demand loss

Publication paper annual demand and period-end capacity Western Europe, million tonnes

Utilisation, total demand divided by capacity

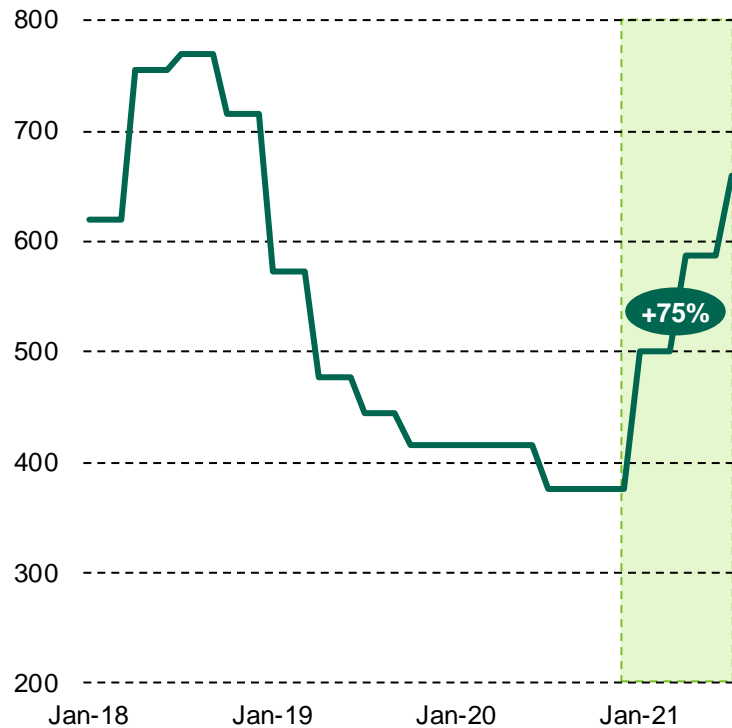




# Tight market balance and significant cost increases have driven highly necessary increases in publication paper prices

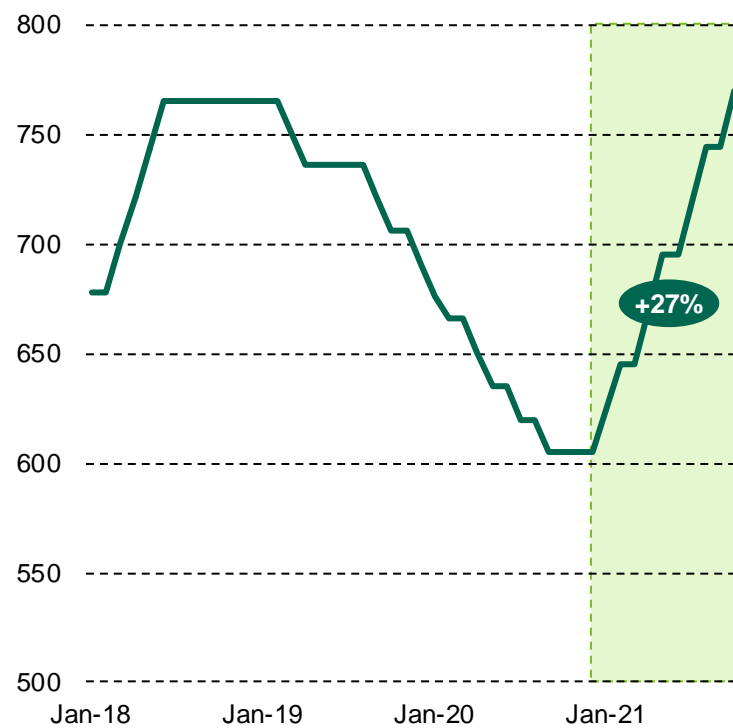
### Newsprint 45g CIF Hong Kong

USD per tonne



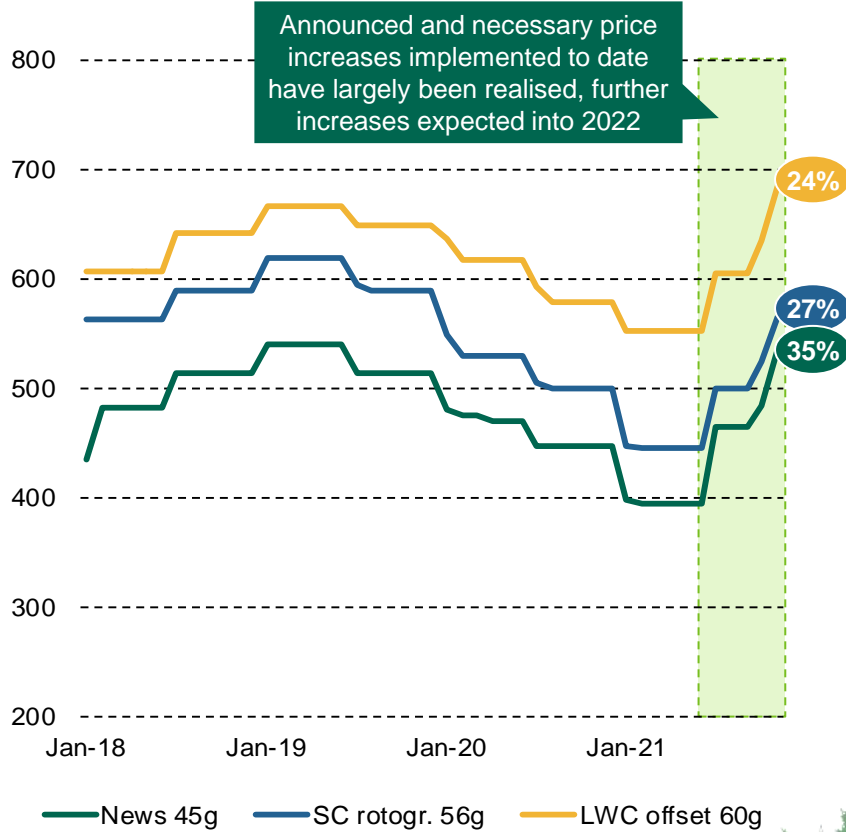
### Newsprint 45g US East

USD per tonne

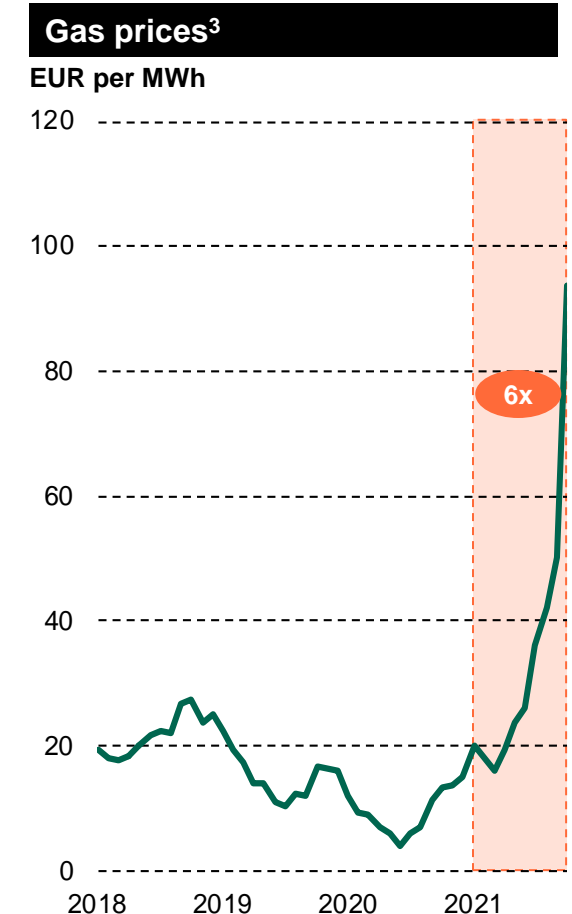
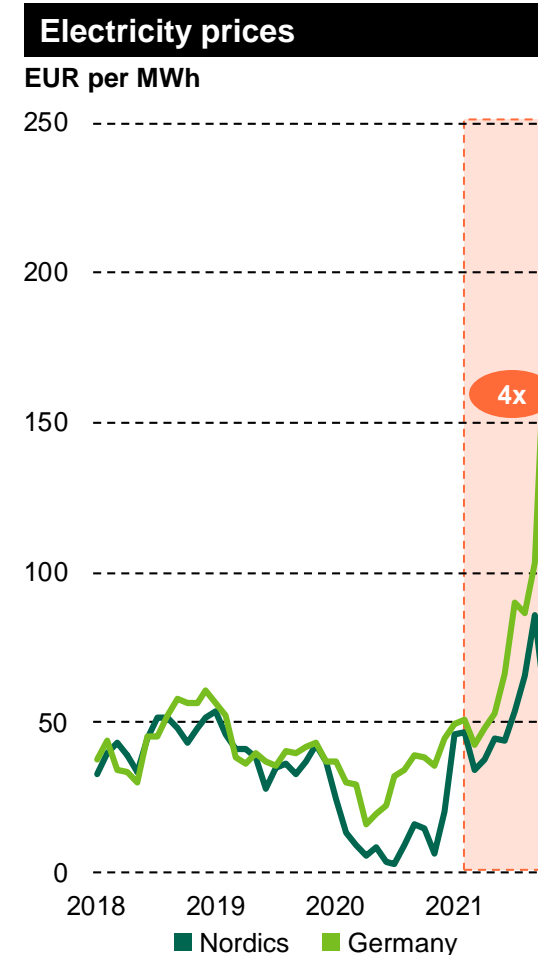
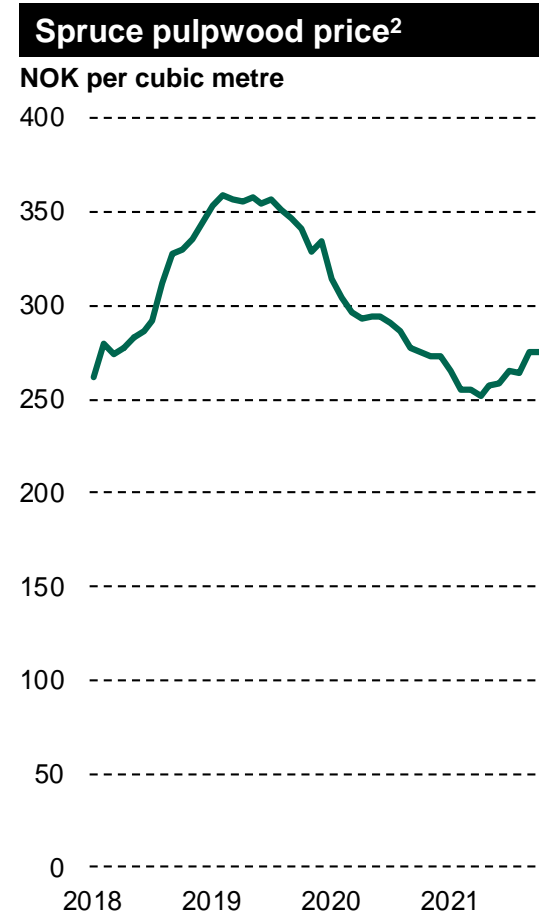
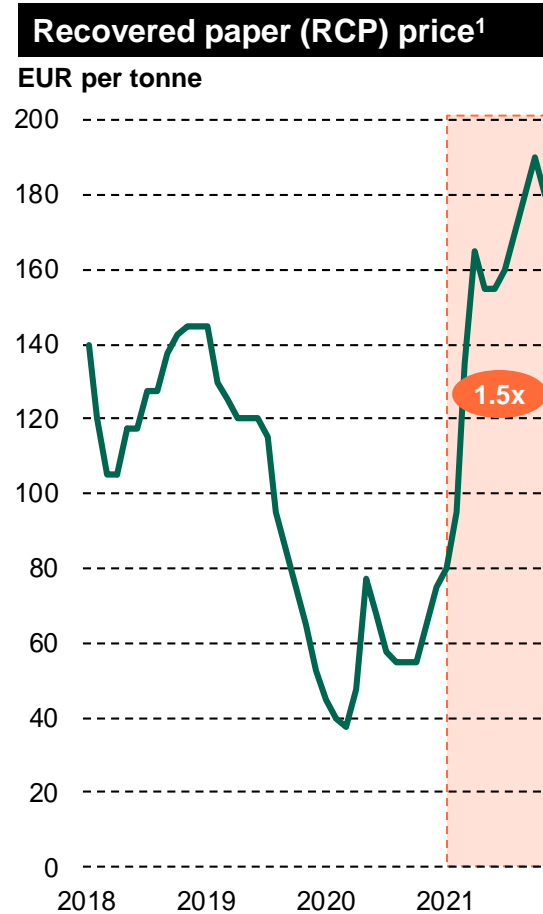


### Publication paper prices Germany

EUR per tonne



# Fibre and energy costs have squeezed industry margins to unsustainable levels in a highly uncertain global environment

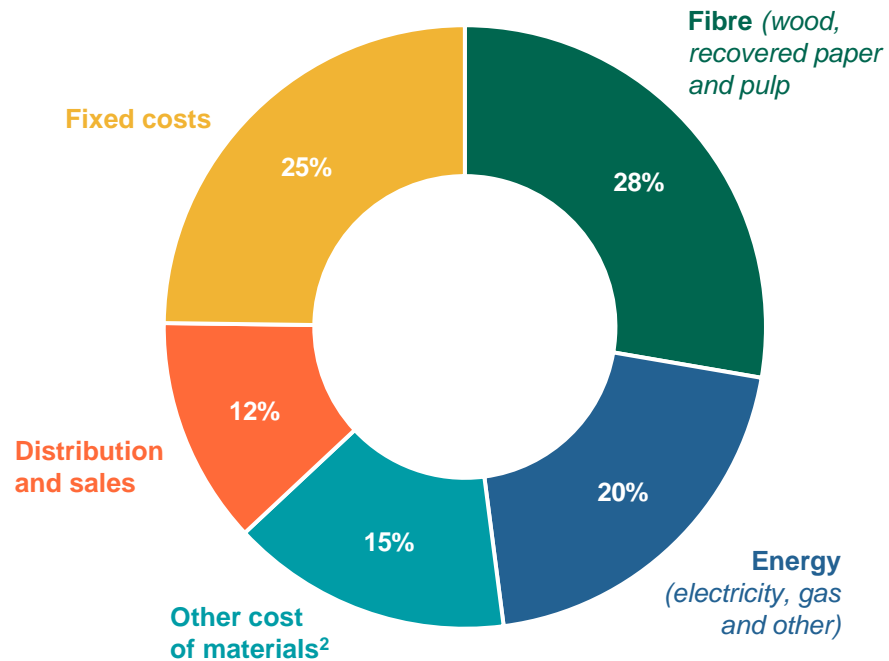




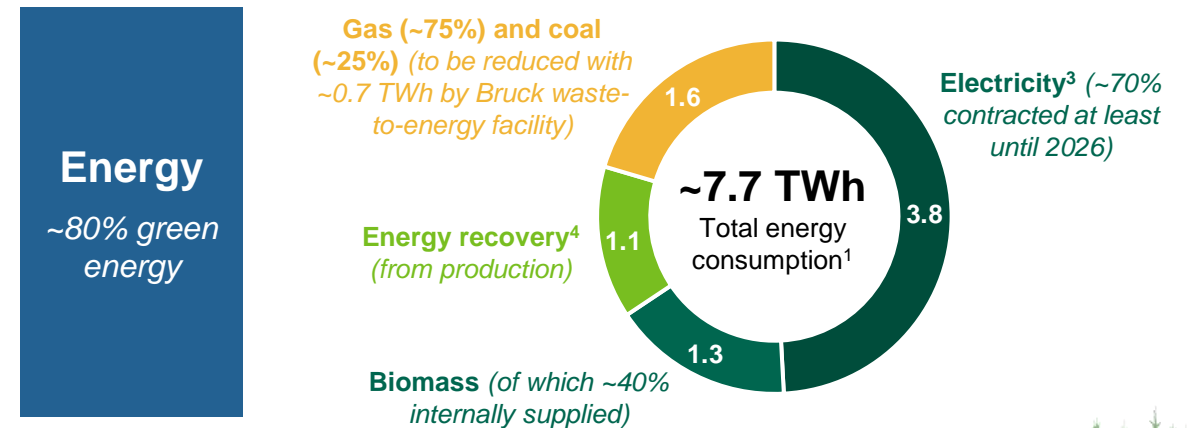
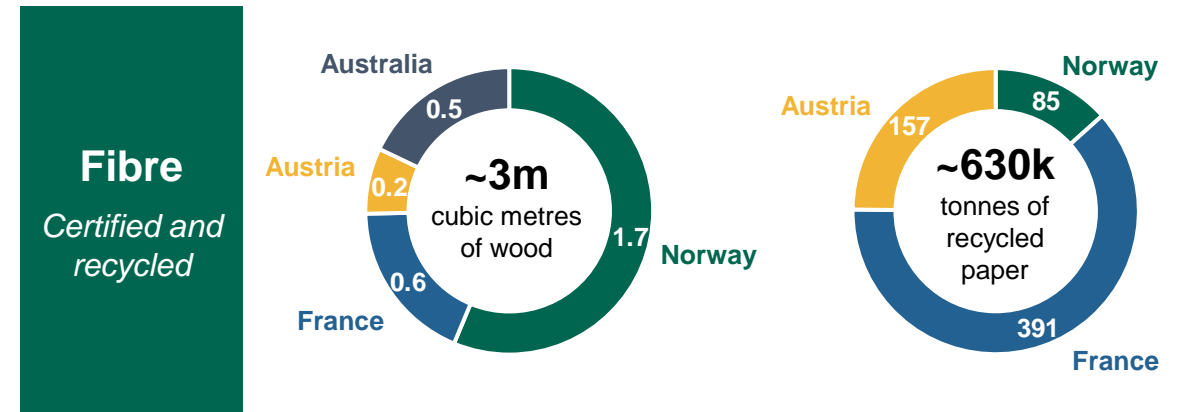
# Publication paper production is energy and fibre intensive

## *Strong focus on sustainability in sourcing*

Indicative cost split for current publication paper capacity<sup>1</sup>



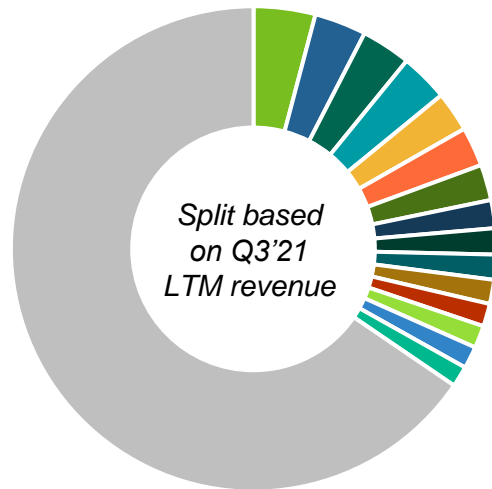
Indicative raw materials split for current publication paper capacity<sup>1</sup>



# Longstanding priority to be a reliable supplier of all publication paper grades to a broad customer base

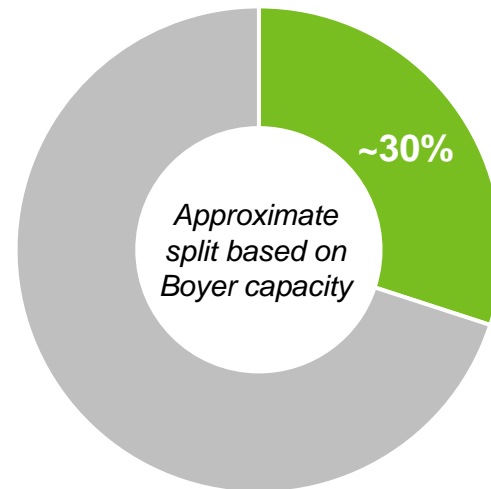
## Diversified customer base in Europe

~35% of European sales to top 15 customers



## Boyer is last domestic supplier in Australasia

~30% of Australasian sales to two long-relationship customers

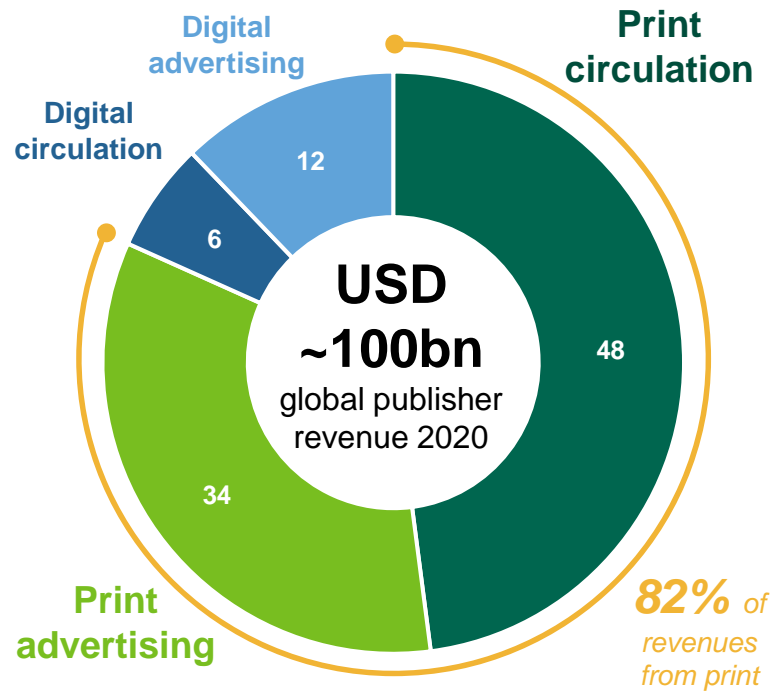


- Norske Skog has **more than 500 customers** across the world
- Sales are split between Europe ~70%, Oceania ~15%, Asia ~10% and other 5%
- Highly **diversified customer base** in Europe with top 15 customers accounting for ~35% of sales
- Higher customer concentration in Australasia with more volume on longer contracts
- Majority of contracts re-negotiated for January and July every year, however some contracts are shorter (3 months) and some longer (12 months)



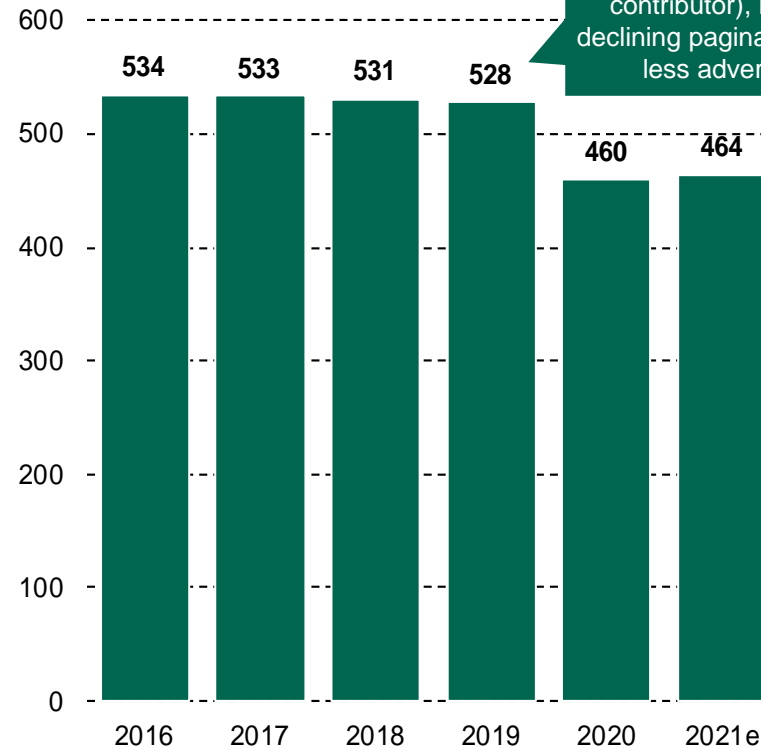
# Print remains the most important revenue source for publishers, and materials represent a minor share of total costs

## Print represents 82% of publisher revenue

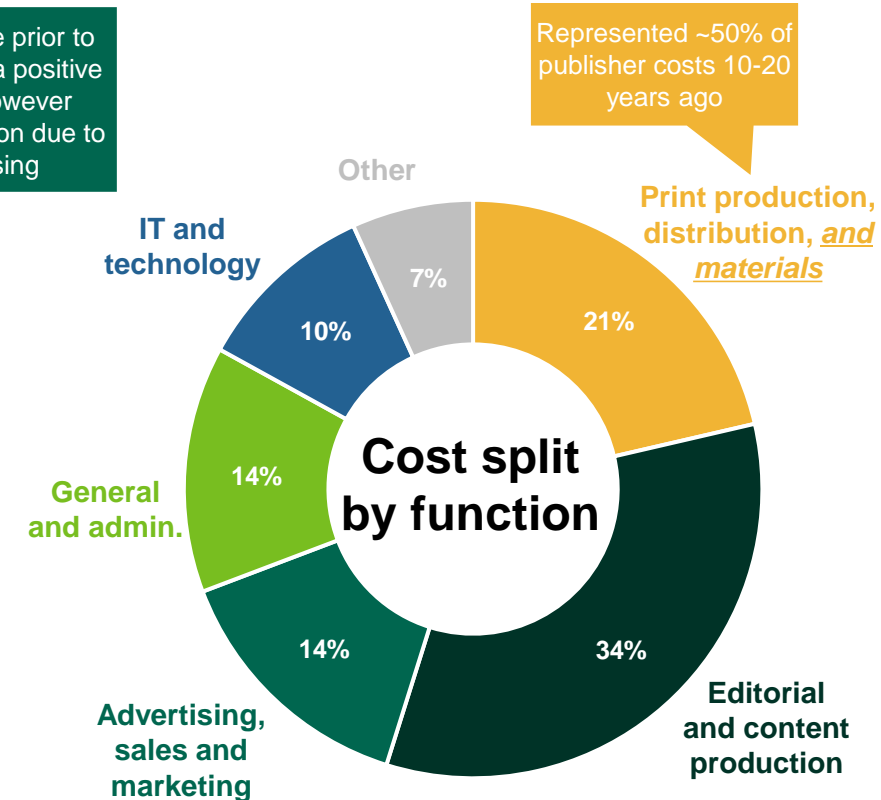


## Global print circulation down ~13% in 2020

Global paid-for / subscription print circulation, million units per day



## Materials is a minor cost factor for publishers



# High quality asset portfolio with industrial development potential

Central / Western Europe	<b>Golbey, France</b>  <ul style="list-style-type: none"> <li>-&gt; PM1: 550kt containerboard (Q4'23)</li> <li>-&gt; PM2: Future containerboard candidate</li> <li>-&gt; 900 GWh biomass boiler<sup>1</sup> (Q2'24)</li> <li>-&gt; Currently 565kt publication paper</li> </ul>	<b>Bruck, Austria</b>  <ul style="list-style-type: none"> <li>-&gt; PM3: 210kt containerboard (Q4'22)</li> <li>-&gt; PM4: Future packaging candidate</li> <li>-&gt; 400 GWh waste-to-energy (Q2'22)</li> <li>-&gt; Currently 390kt publication paper</li> </ul>
	<b>Saugbrugs</b>  <ul style="list-style-type: none"> <li>-&gt; Bio products (CEBINA &amp; CEBICO)</li> <li>-&gt; Bio-CO<sub>2</sub> emissions (CCUS<sup>2</sup>)</li> <li>-&gt; Long-term potential for advanced fuels</li> <li>-&gt; Currently 360kt publication paper</li> </ul>	<b>Skogn</b>  <ul style="list-style-type: none"> <li>-&gt; Testing interliner packaging papers</li> <li>-&gt; Bio-CO<sub>2</sub> emissions (CCUS<sup>2</sup>)</li> <li>-&gt; Long-term potential for advanced fuels</li> <li>-&gt; Currently 510kt publication paper</li> </ul>
Norway		
Australia	<b>Boyer</b>  <ul style="list-style-type: none"> <li>-&gt; Fossil CO<sub>2</sub> emissions (CCUS<sup>2</sup>)</li> <li>-&gt; Long-term potential for advanced fuels</li> <li>-&gt; Exploring high value bio products</li> <li>-&gt; Currently 285kt publication paper</li> </ul>	<b>Nature's Flame</b>  <ul style="list-style-type: none"> <li>-&gt; 90kt pellets capacity (up from 45kt)</li> <li>-&gt; Reviewing scale-up to 150kt</li> <li>-&gt; Currently in sales process</li> </ul>

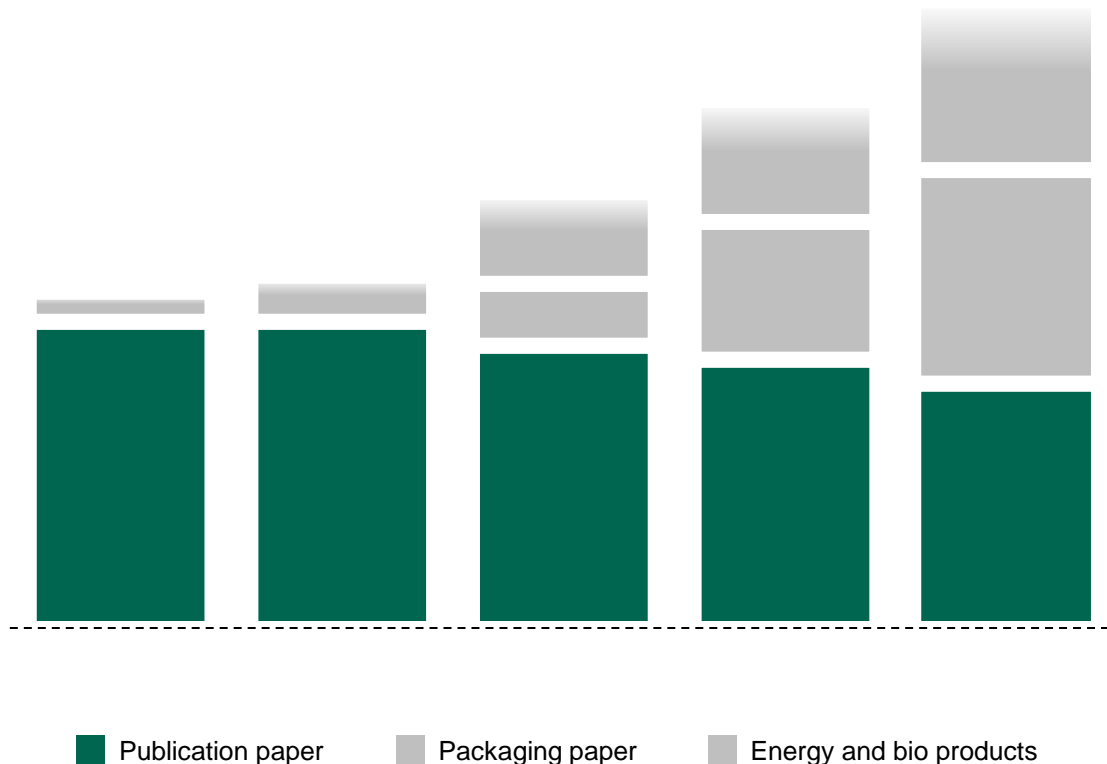
6 large industrial sites  
 2,150 employees  
 7.7 TWh energy  
 +80% green energy



16 1) Being developed in partnership with Pearl Infrastructure Capital and Véolia. Norske Skog to hold 10% of the equity in the development company, Green Valley Energie; 2) CCUS = Carbon Capture, Utilisation and Storage



# Publication paper is expected to continue to generate significant cash flows going forward



- Remain a producer of all publication paper grades
- Publication paper capacity of ~2.1m tonnes<sup>1</sup>
- Five paper mills with 11 paper machines combined
- Continuous focus on optimising cash flows



# Packaging paper





# Norske Skog will enter the large and growing recycled containerboard market in Q4 2022

## Three main segments of fibre-based packaging products

### Containerboard

Regional and bulky commodity product



End-product example



- Packaging mainly for industrial and transit packaging, FMCG<sup>1</sup>, e-commerce, retail and logistics
- Commodity product, albeit there can be large variation in strength and weight specifications
- Mainly based on recycled fibres (old corrugated containers) for both brown and white grades

### Cartonboard



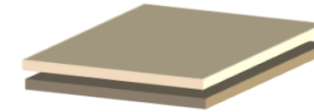
- Primarily consumer goods packaging (i.e. cosmetics, foods, pharma, beverages, etc.)
- Commodity product, however, great variation within weight, thickness, printability, smoothness etc.
- Almost exclusively based on virgin fibres, and large use of chemicals for specific grade variations

### Other packaging paper products



- Bags, pouches and paper labels for a wide range of end applications represent the majority of demand
- Commodity product, but wide variation in customer specifications for various end-uses
- Based on both virgin and recycled fibre depending on the customer's requirement

## Focus on recycled containerboard



### STRATO|Liner

Weight range: 90-160g per sqm  
Fibre: 100% recycled fibre  
Use: Liner in corrugated sheets



### STRATO|Fluting

Weight range: 70-160g per sqm  
Fibre: 100% recycled fibre  
Use: Fluting in corrugated sheets



Well-suited machines for lightweight containerboard



Publication paper experience highly relevant

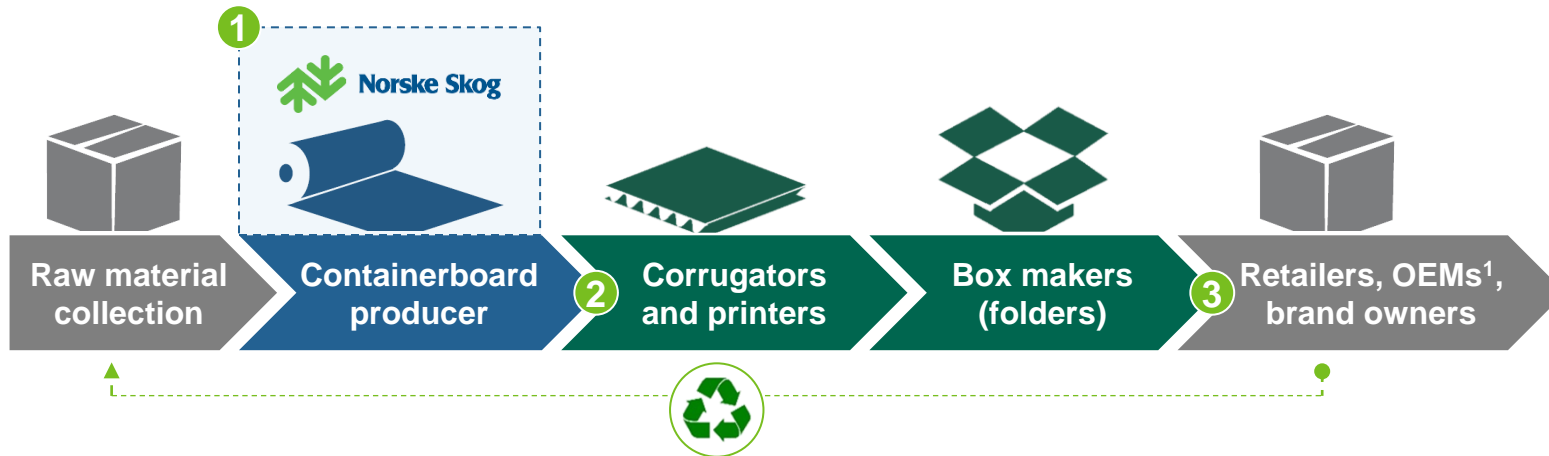


Fast growing market in need of additional capacity

# Norske Skog will become a leading European independent producer in a market with high degree of trading between producers

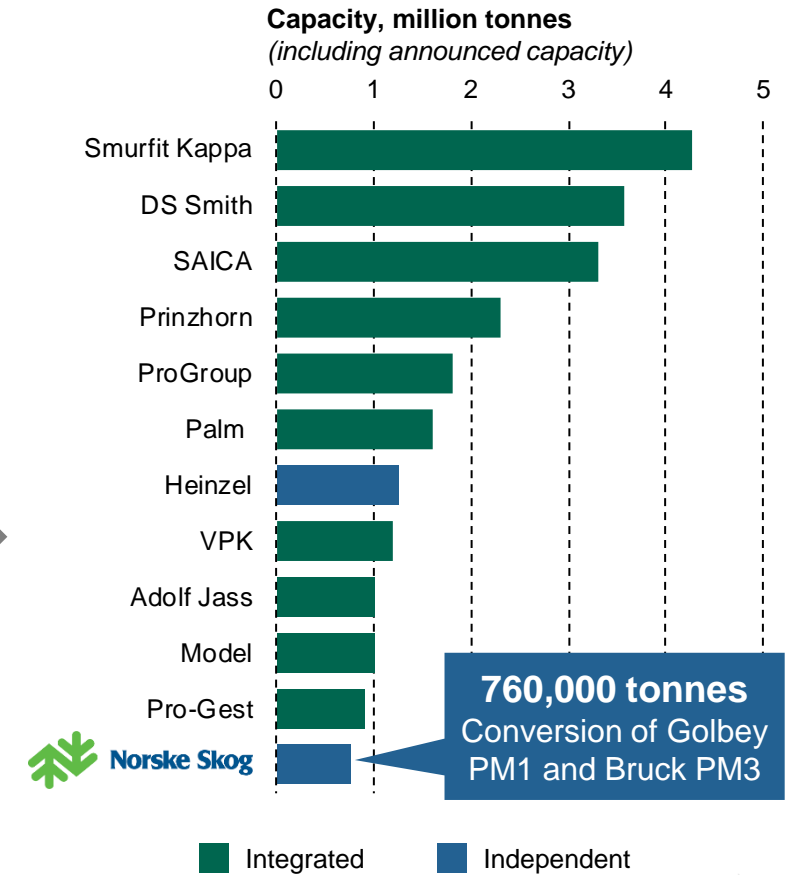
## Independent containerboard producers are a valued part of the containerboard market structure

- 1 Independent producers are attractive suppliers** for integrated and independent corrugators due to no competing downstream capacity
- 2 High degree of open market trading** to minimise transportation distance and get correct grades
- 3 Integrated producers develop demand** through close collaboration at the end-customer level



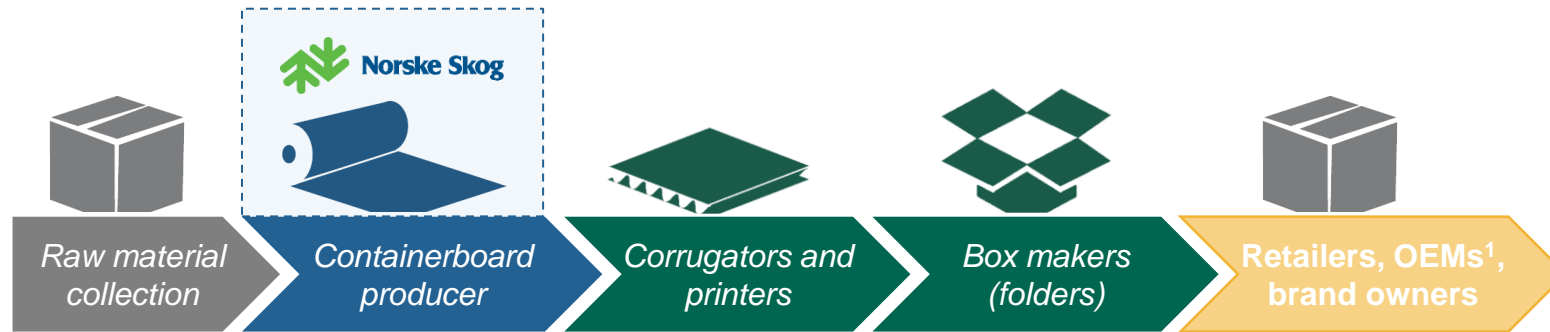
*Integrated producers are present within containerboard production, corrugation and printing, and box making. In addition, they may be partly integrated towards raw material collection, and retailers, OEMs<sup>1</sup> and brand owners*

## Top recycled containerboard producers in Europe





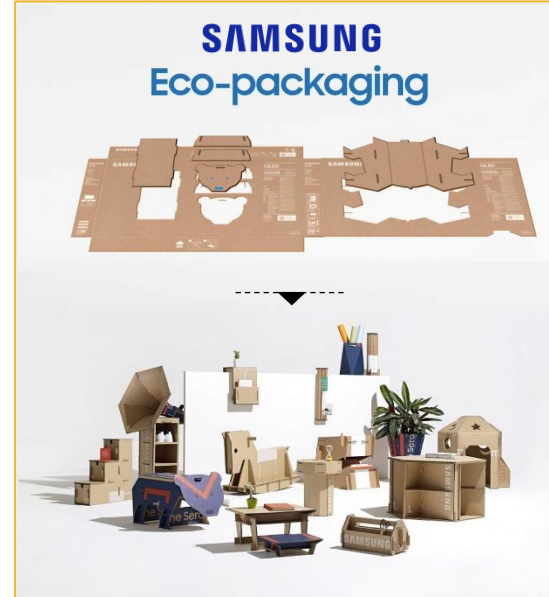
# Integrated producers work closely with the end-customer to drive packaging solution innovation and demand



High degree of innovation at the end-customer stage of the value chain



Example of brand owner packaging innovation



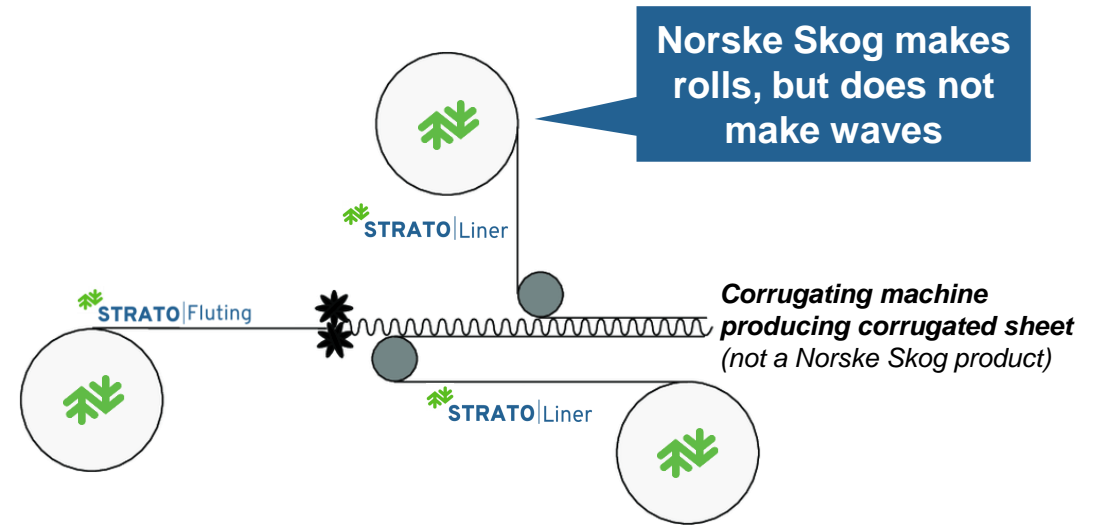
- Corrugated packaging has become **more than square boxes**
- **High degree of innovation** at the end-customer level (retailers, OEMs<sup>1</sup> and brand-owners)
- Large, integrated producers work closely with end-customers to **innovate and drive demand**
- **End-customer sets product requirements** for box makers and corrugators
- **Containerboard remains a standardised commodity product**

# The direct customers of Norske Skog's containerboard will be independent and integrated corrugators

## Introducing the STRATO containerboard brand



- Norske Skog will produce **lightweight and strong** testliner and fluting paper (containerboard)
- The direct customer of Norske Skog, the corrugator, will buy **rolls of packaging paper** (containerboard)
- Produced from **100% recycled fibre** (OCC<sup>1</sup>) and a **large share of green energy**
- Directly targeting both the high growth **e-commerce trend** and strong focus on **sustainable packaging**



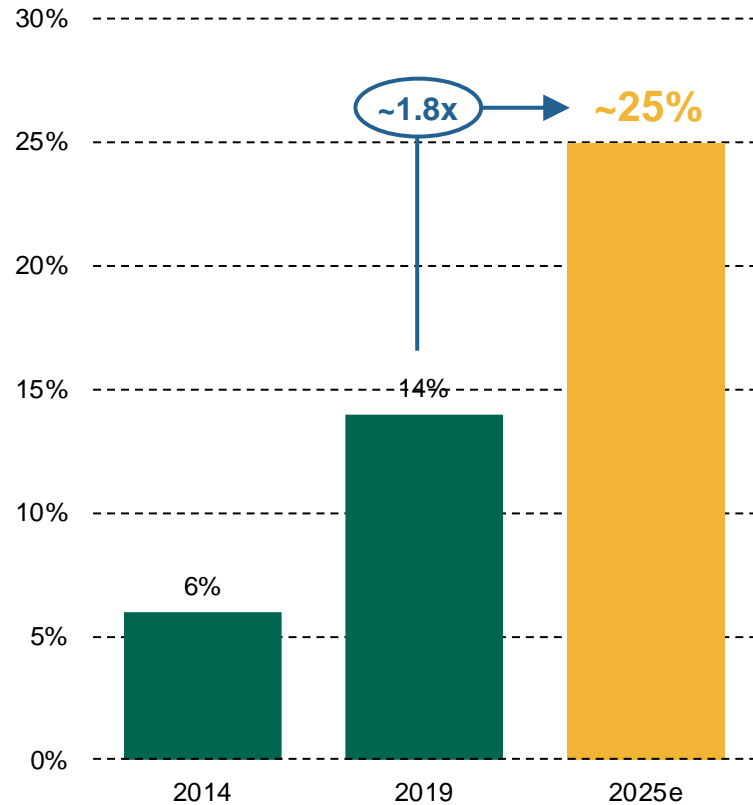
### Corrugators (future customer of Norske Skog)

- Produces single-walled (as above) or multiple-walled corrugated sheets depending on end-customer strength requirement
- Majority of corrugating machines with width of 2,500-2,800mm, requires 90-125k tonnes of containerboard per year per machine
- Currently ~650 corrugating machines across the size spectrum in Europe, and 15-20 new machines (2,800mm) expected 2022-24

# Major industry trends favour sustainable and lightweight packaging, perfectly aligned with the profile of Norske Skog

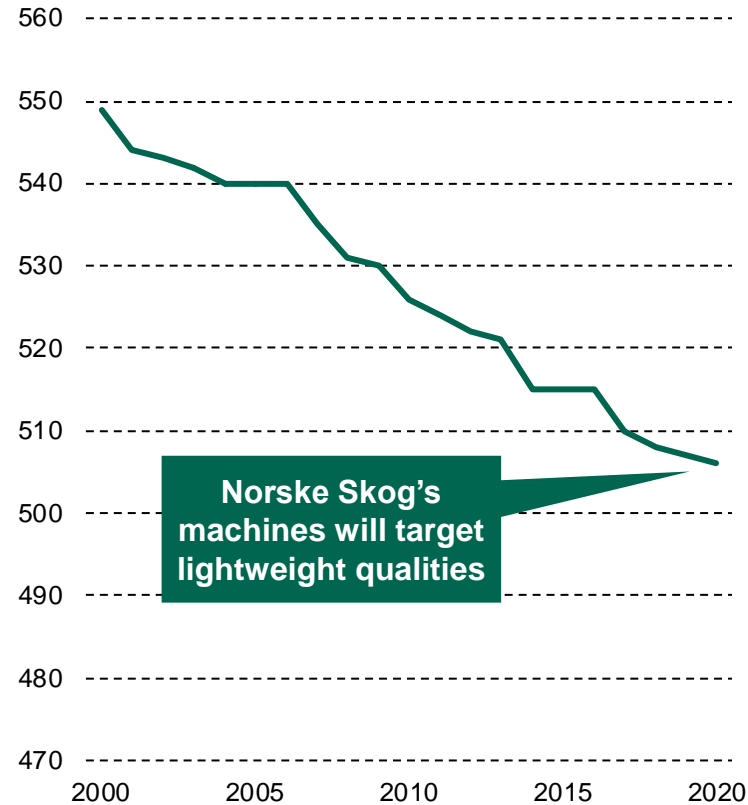
## E-commerce boom set to continue

Global e-commerce share of total retail sales, %



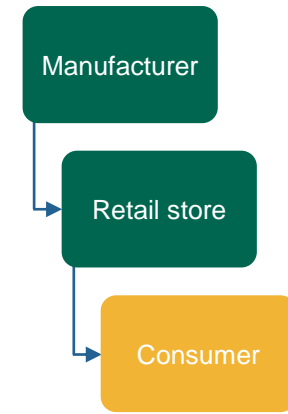
## High demand for lightweight paper in Europe

Avg. weight of corrugated sheet<sup>1</sup>, grams per sqm

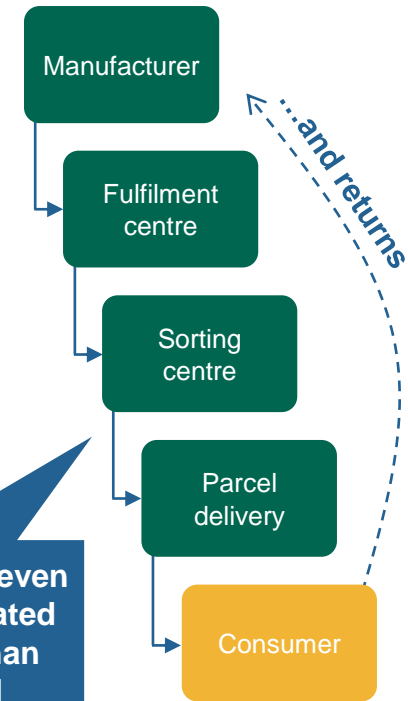


## E-commerce requires more packaging

Brick-and-mortar logistics



E-commerce logistics



E-commerce uses seven times more corrugated sheet per dollar than traditional retail



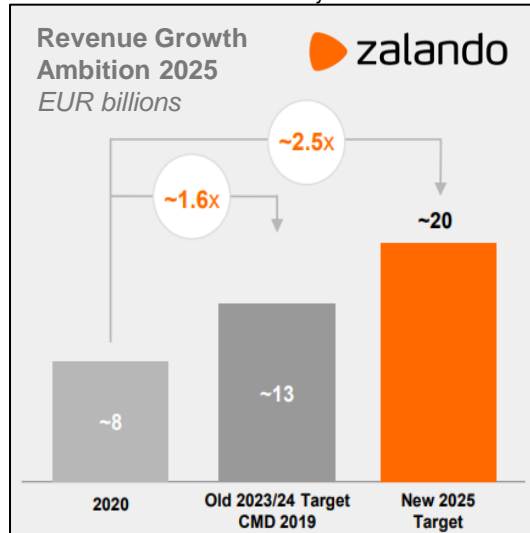
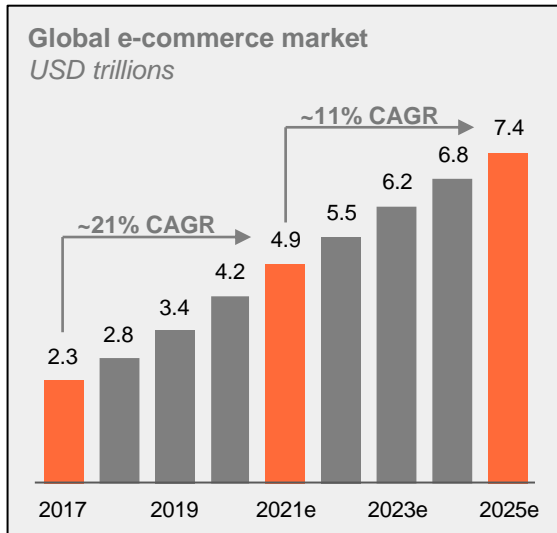
# Renewable logistics infrastructure for e-commerce giants



**Norske Skog will help enable the e-commerce economy**

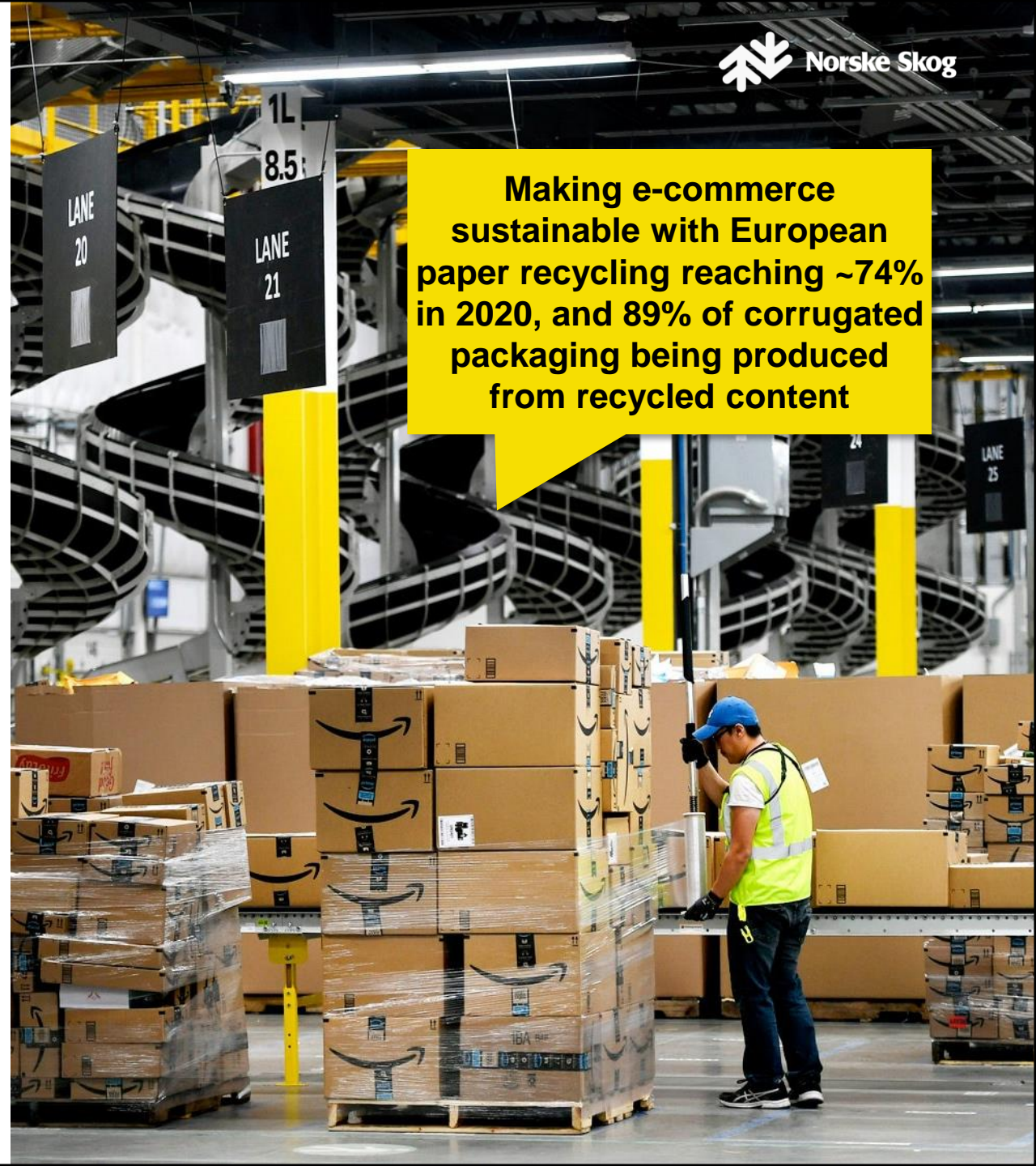
*The e-commerce, marketplace and classifieds economy requires significant amounts of sustainable packaging papers*

*Illustrative example of growth ambition for a major e-commerce retailer*



Above companies are illustrative examples of potential containerboard end-customers

**Making e-commerce sustainable with European paper recycling reaching ~74% in 2020, and 89% of corrugated packaging being produced from recycled content**



# Norske Skog is aligned with global sustainability ambitions, will produce packaging paper from 100% recycled materials



“Replacing plastic packaging with more sustainable sources, **preferably fibre based materials**, will help us decrease the amount of plastic packaging”



“Recycling, which saves more than 700m tonnes in CO<sub>2</sub> emissions every year, is one area in which P&G believes **packaging innovation** has the power to make a difference”



“**100% recyclable or reusable**. All packs designed for reuse or recycling in 2025”



“**100% recyclable packaging** by 2025. No fossil-based virgin plastic used in our packaging by 2030”



“Our brands will design 100% of our packaging to be **recyclable or reusable** by 2030”



zalando

“Target to design our packaging to **minimise waste** and eliminate single-use plastics by 2023”



“Our commitment is that 100% of our packaging is **recyclable or reusable** by 2025”



“By 2025 we will **halve the amount of virgin plastic** we use in our packaging”

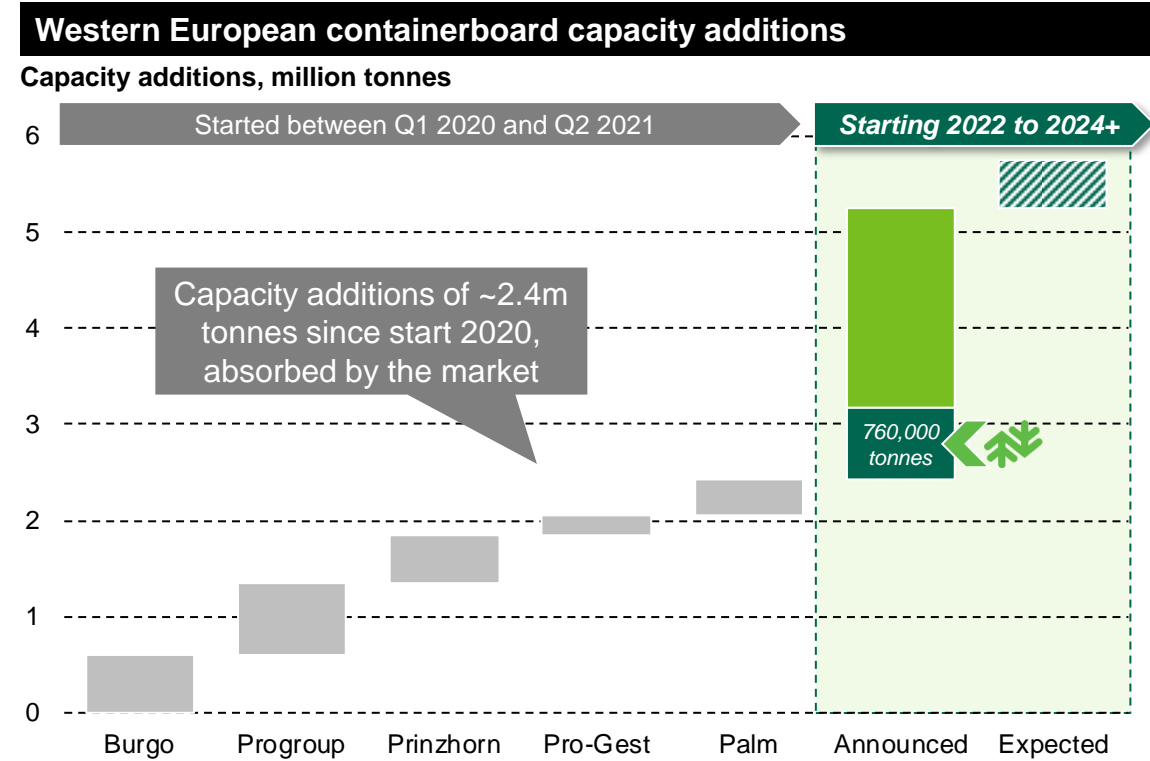
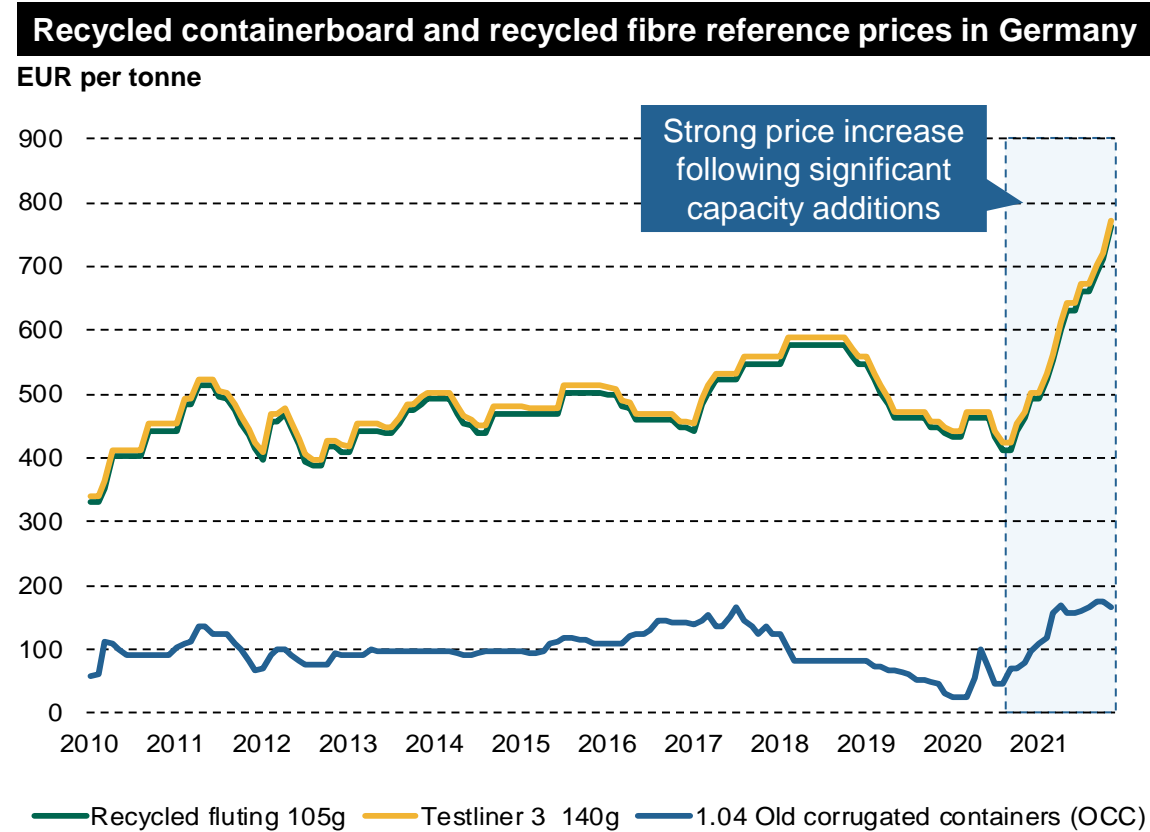


“All packaging placed on the EU market has to comply with essential requirements related to its manufacturing, composition, and **reusable or recoverable nature**”



“Responsible consumption and production. By 2030, substantially reduce waste generation through prevention, reduction, **recycling and reuse**”

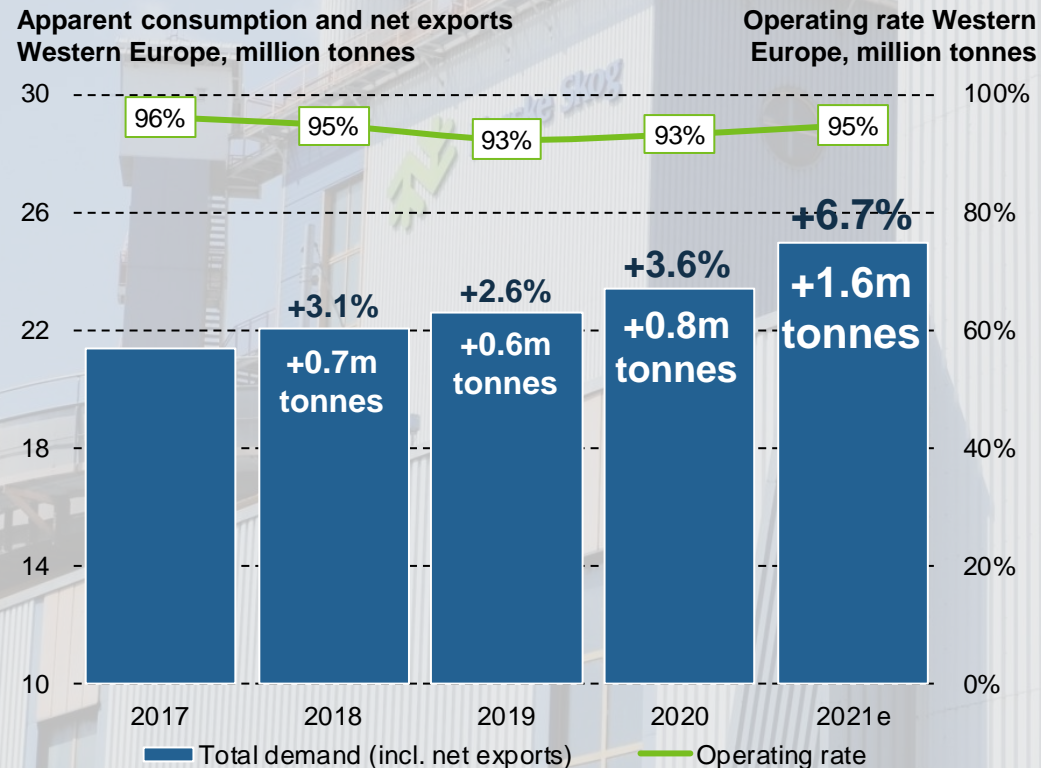
# Megatrend driven demand growth illustrated by surging containerboard prices amid significant capacity additions





# Entering a massive market in need of new capacity

## Strong recycled containerboard demand growth



- Strong growth in containerboard demand driven by **e-commerce and sustainability megatrends**
- Norske Skog will **sell to corrugating companies**, of which there are 350-400 in Europe
- **Extensive commercial work** in process executed by experienced personnel and consultants
- Customers will be a **mix of integrated and independent** corrugators
- The customer base typically comprise **50-70 unique customers**, large customers 4-5% of delivered volume
- Containerboard is a **bulky and regional product** where exports represent ~15% of demand

# Full steam ahead into the containerboard market

## Containerboard projects in progress

Site preparations and equipment orders underway

## Invested EUR ~20m as of Q3 2021

Project investment of EUR 350m (large share on contract)

## EUR 265m debt financing

ECA<sup>1</sup>-backed debt financing enables highly competitive interest rates

## Q4 2022 first production

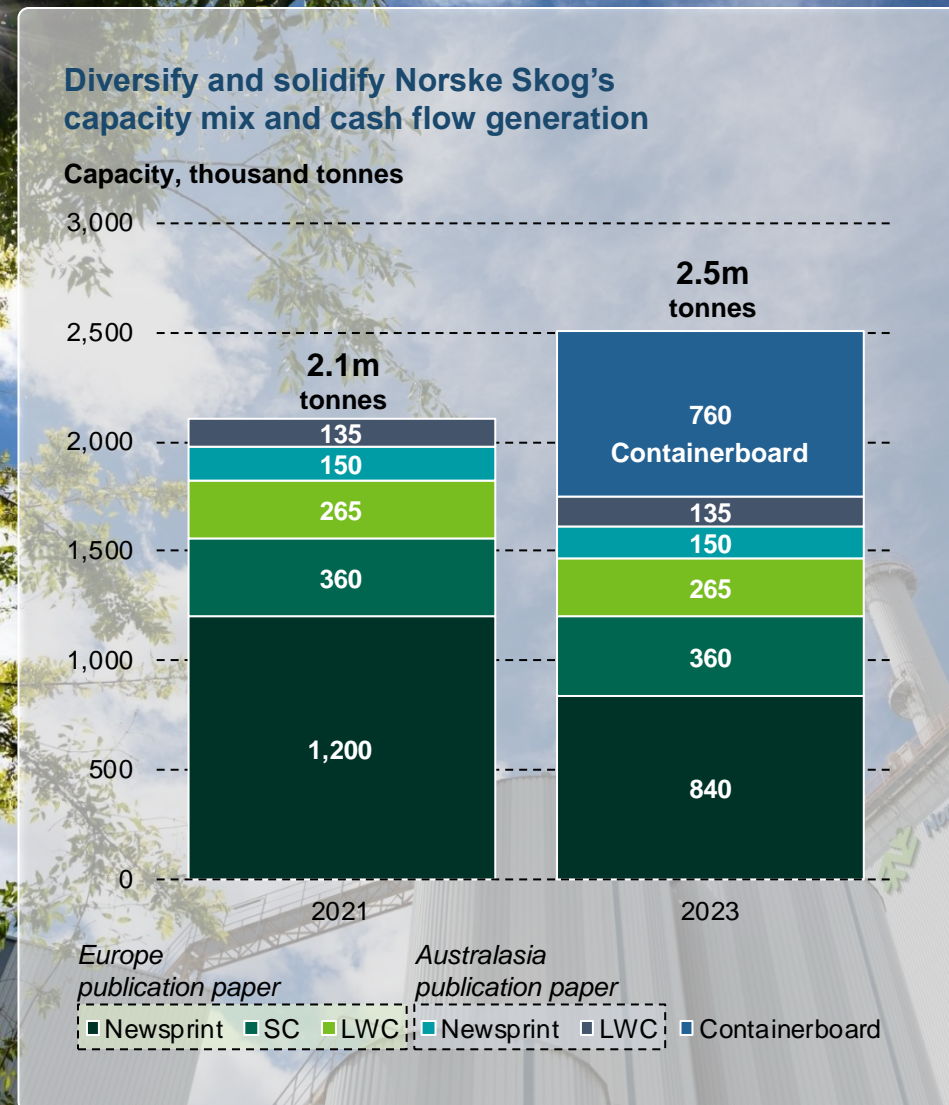
Stepwise introduction with Bruck in Q4 2022 and Golbey in Q4 2023

## 760,000 tonnes

Recycled containerboard production capacity

## Expected EBITDA of EUR 70-80m

Based on historical trend prices and full utilisation in 2025-26





# Working with leading suppliers and industry consultants to ensure high quality project execution in both conversions

## Norske Skog Golbey – France



### Paper Machine 1 (PM1)

- Today, 235k tonnes newsprint capacity
- Convert to 550k tonnes containerboard
- Stop newsprint production Q2 2023
- Start containerboard production Q4 2023
- Capex estimate of EUR ~250m



**VOITH**  
Valmet  
FORWARD

### Paper Machine 2 (PM2)

- 330k tonnes newsprint capacity
- Ongoing production during PM1 conversion
- Strong candidate for future conversion

## Norske Skog Bruck – Austria



### Paper Machine 3 (PM3)

- Today, 125k tonnes newsprint capacity
- Convert to 210k tonnes containerboard
- Stop newsprint production Q3 2022
- Start containerboard production Q4 2022
- Capex estimate of EUR ~100m



**BELLMER**

### Paper Machine 4 (PM4)

- 265k tonnes LWC magazine capacity
- Ongoing production during PM3 conversion
- Strong candidate for future conversion

### Four main deliverables in both Golbey and Bruck

1. Install production equipment in machine halls
2. Install off-the shelf recycled fibre (OCC<sup>1</sup>) pulp plant
3. Expansion of warehouse facilities
4. Expansion of water treatment facilities

### Project teams, main suppliers and engineering companies in place

- Majority of investment contracted with suppliers
- Contracts cover machinery and equipment deliveries
- Experienced and best-in-class suppliers
- Same suppliers in containerboard as publication paper
- Strong process and project competence locally

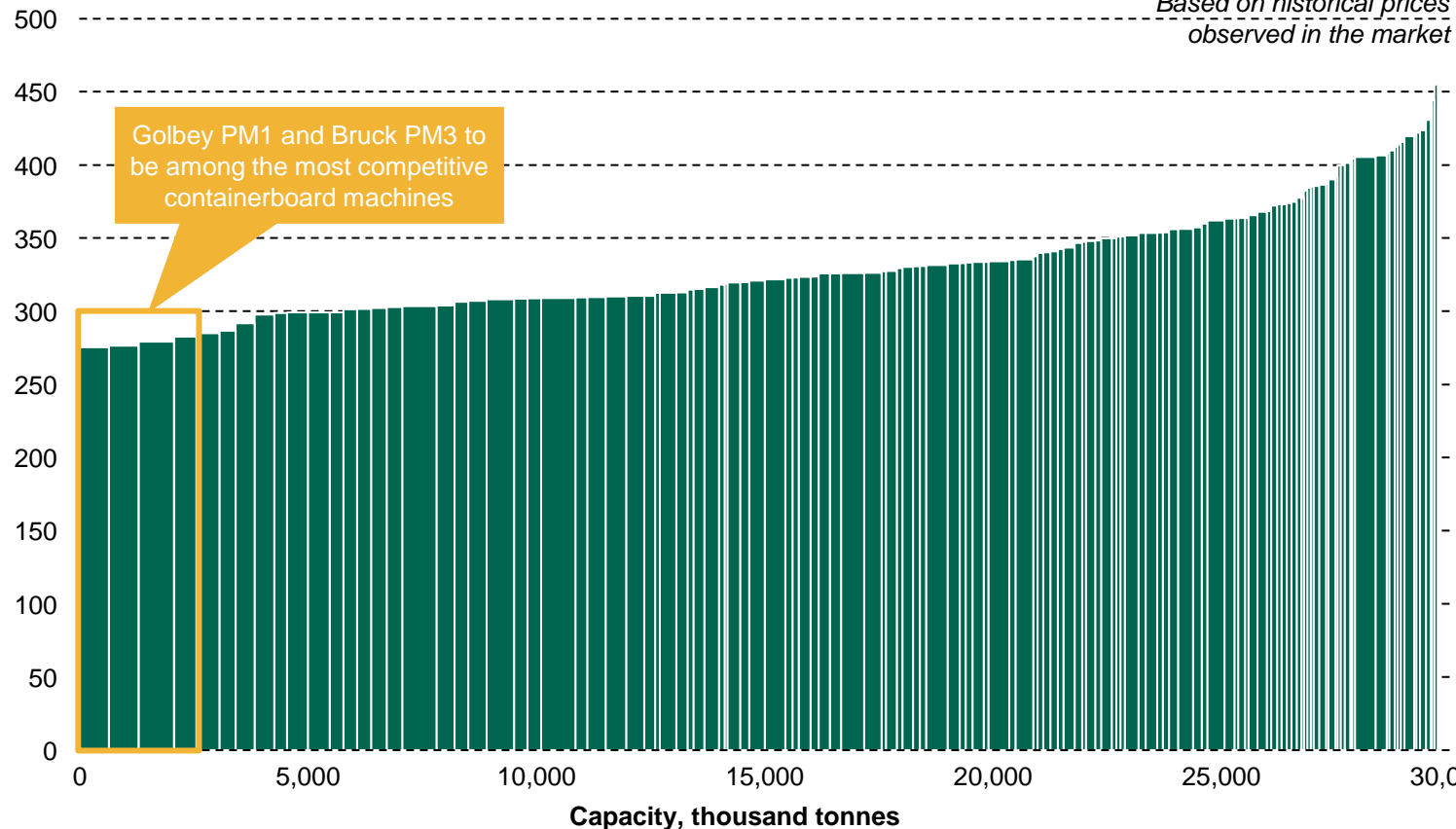
*Local project management teams supported by dedicated and experienced personnel from Oslo head office*



# Projects chosen on basis of first quartile cash cost position enabled by fundamental properties of the machines

## Cash cost delivered Frankfurt for all recycled containerboard machines in Europe<sup>1</sup>

EUR per tonne



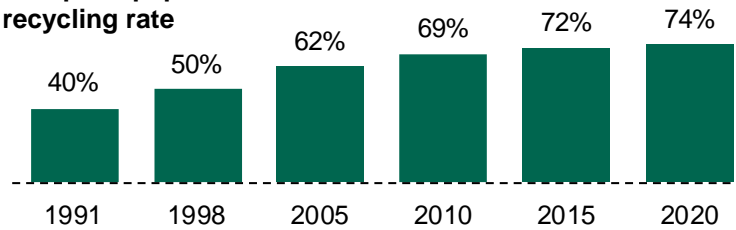
- ✓ Large industrial sites with **scale advantage** and established presence in raw materials markets
- ✓ Top brownfield opportunities in Europe, with machine speed and trim that enable **cost-leadership position**
- ✓ Centrally located in Europe enables low inbound and outbound **transportation costs**
- ✓ Biomass boiler in Golbey<sup>2</sup> and waste-to-energy boiler in Bruck secure sustainable and **competitive steam supply**

# Golbey and Bruck have short transportation distances and good access to both recycled fibre and corrugators

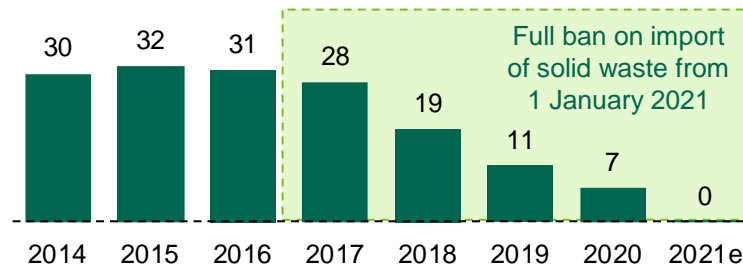
## Established access to recycled fibre markets

- ✓ Existing organisation and market relations
- ✓ ~55m tonnes collected paper for recycling
- ✓ France is a net exporter (Golbey key market)

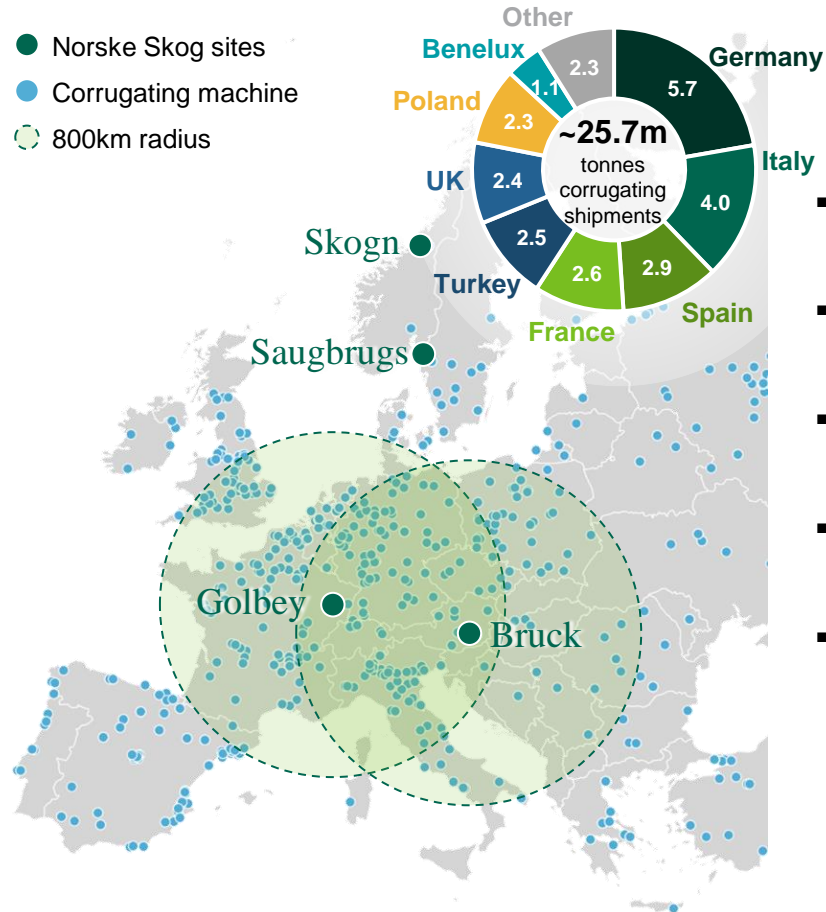
### European paper recycling rate



### Chinese imports of recycled fibre, million tonnes



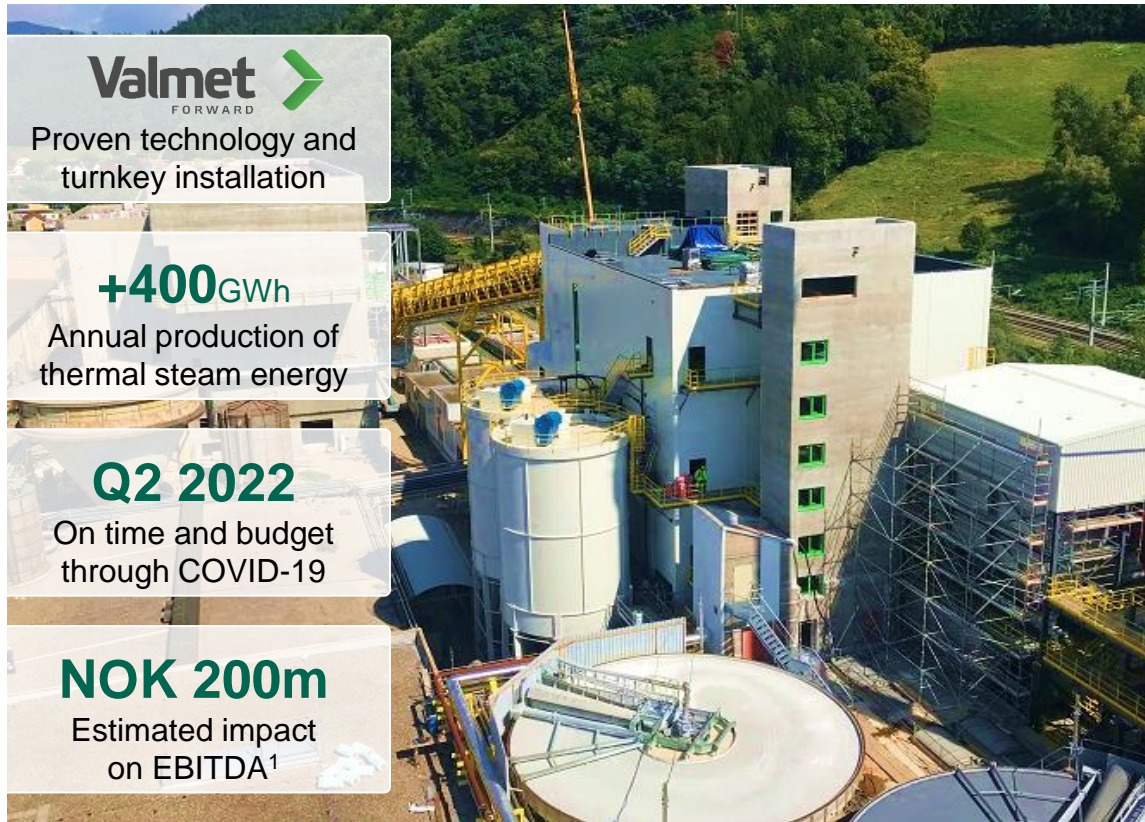
## Close to European corrugating machines



- Golbey and Bruck are located in Central / Western Europe (core market for recycled fibre and corrugators)
- Good and established access to recycled fibre at both Golbey and Bruck
- Significant corrugating capacity and demand within 800km radius
- Germany, Italy, France and Poland are major containerboard markets
- Norske Skog will be an independent supplier, well positioned to independent and integrated corrugators

# Bruck waste-to-energy start-up in five months, reduces gas consumption and supports packaging start-up seven months later

## Waste-to-energy plant close to completion in Bruck, Austria



**Valmet**  
FORWARD

Proven technology and turnkey installation

**+400GWh**

Annual production of thermal steam energy

**Q2 2022**

On time and budget through COVID-19

**NOK 200m**

Estimated impact on EBITDA<sup>1</sup>

### Gate fees

- Revenue: Gate fees for 160kt of waste (RDF<sup>2</sup>)
- Operating costs: Staffing, maintenance etc.
- Share of EBITDA impact: NOK ~100m annually

### Energy

- Reduces annual gas consumption by ~0.7 TWh
- Increases electricity consumption by ~0.2 TWh
- *Illustrative positive energy impact<sup>3</sup> in Q3 2021 of NOK ~40m*

### CO<sub>2</sub>

- Reduces annual CO<sub>2</sub> emissions by 150k tonnes
- Similar increase in net emission allowances
- *Illustrative positive CO<sub>2</sub> impact<sup>4</sup> in Q3 2021 of NOK 20-25m*

### Capital

- Invested EUR 55m to date of EUR 72m investment
- Drawn EUR 38m to date of EUR 54m loan facility



# Waste-to-energy facility delivered on time and on budget under highly challenging global circumstances





# Waste-to-energy investment improves green energy mix and contributes to solving the waste problem

## Clear EU ambition to reduce waste and improve waste management



## Waste-to-energy is part of the waste solution

- Increasing landfill and waste exports **restrictions drive demand for waste offtake**
- **Few viable alternatives** for waste that cannot be reused, recycled or recovered
- Drives **increasing need for waste-to-energy (WtE)** capacity in Europe
- Long project lead times and **extensive permitting processes for WtE**

## Bruck waste-to-energy facility

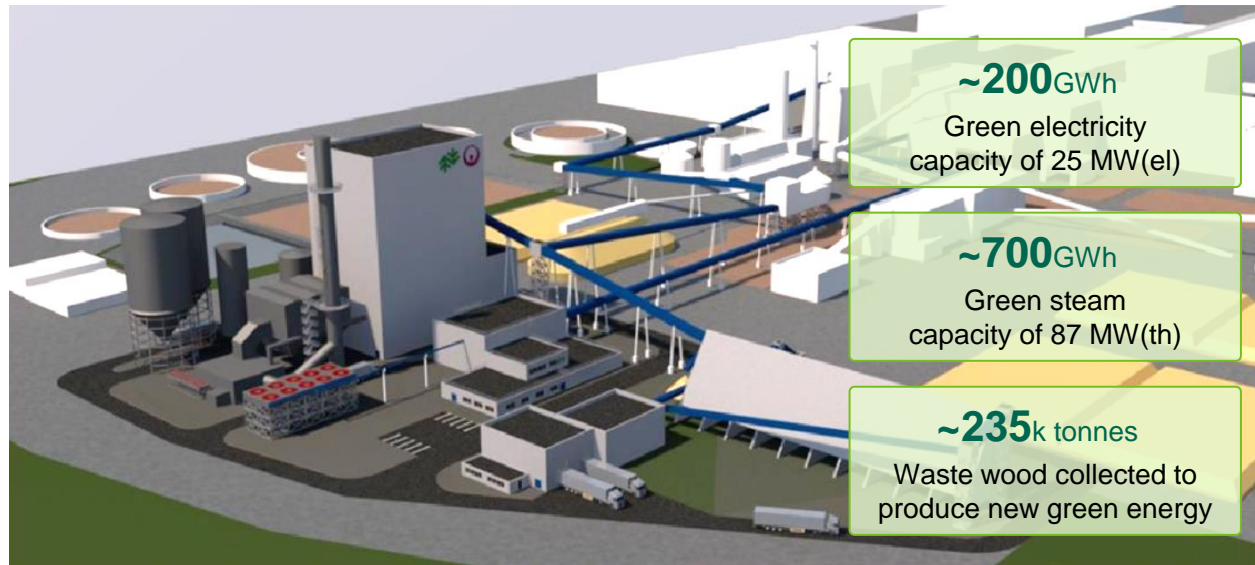
- **Huge positive environmental impact** by diverting 160kt waste (RDF<sup>1</sup>) from landfills
- **Removes 97% of waste received**, only 5k tonnes of hazardous ash waste remains
- Waste (RDF<sup>1</sup>) to be received from **10-15 suppliers within 200km**
- **Large share of household waste**, i.e., municipal solid waste (MSW)
- Can handle wide range of wastes, **enabling gate fee optimisation**

## EU Green Deal: Circular Economy Action Plan

Reduce landfill to a maximum of 10% of municipal waste generated by 2030

# Combined Heat & Power (CHP) plant located on Golbey industrial site enabling green energy transition in Europe

## Green Valley Energie (GVE) – Combined Heat and Power plant in Golbey



- Awarded CRE 5<sup>1</sup> tender and feed-in-premium for electricity production
- Sell green electricity to the French grid (EDF<sup>2</sup>) and green steam to Norske Skog Golbey with contracts to 2043
- Green Valley Energie biomass plant start-up in Q2 2024

## Partnership with significant biomass experience

Equity stake in Green Valley Energie

80% 

Private equity fund specialised in environmental infrastructure projects. Has financed 350 MW(e) (EUR ~1.4bn capex) worth of biomass plants (21 projects)

10% 

Global industrial company with long track record of developing and operating biomass plants. Responsible for O&M<sup>3</sup> activities until 2043, guarantee electricity and steam supply

10% 

Will invest EUR ~5m and provide offtake for all produced steam (~700 GWh). Will be responsible for sourcing ~235kt of biomass feedstock for the CHP plant through existing biomass purchasing organisation

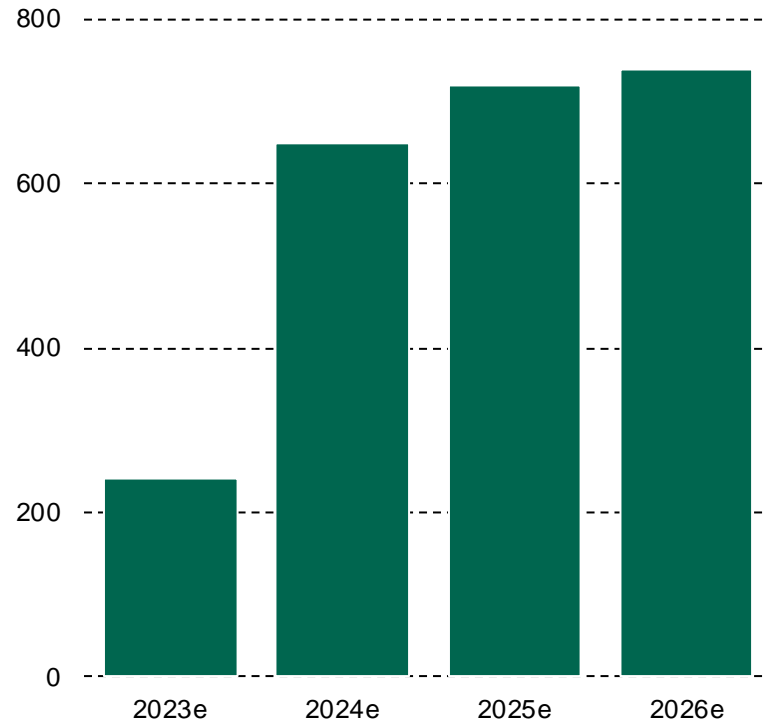
- ✓ Efficient and environmental use of waste wood and sludge (biomass)
- ✓ Enables high overall energy efficiency for Green Valley Energie
- ✓ Provides access to highly cost competitive steam supply for Norske Skog Golbey's packaging paper operations



# Containerboard EBITDA estimate of EUR ~70-80m not reflecting the very strong market environment

## Indicative ramp-up curve for containerboard

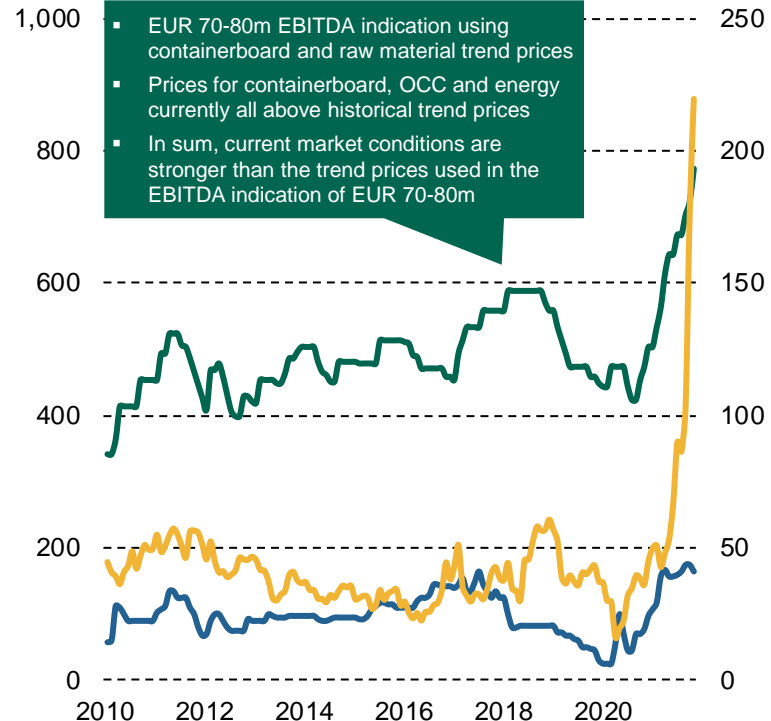
Estimated produced volume, thousand tonnes



## Testliner and raw material price development

Testliner and OCC, EUR per tonne

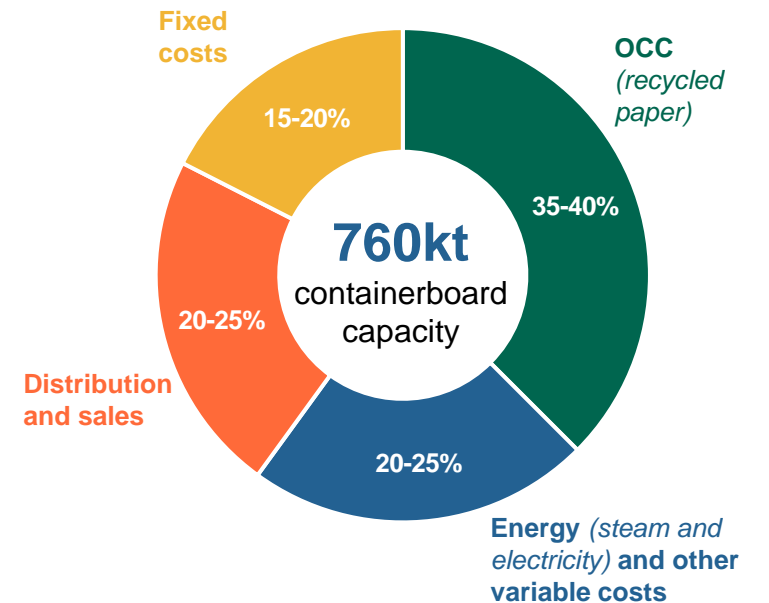
Electricity, EUR per MWh



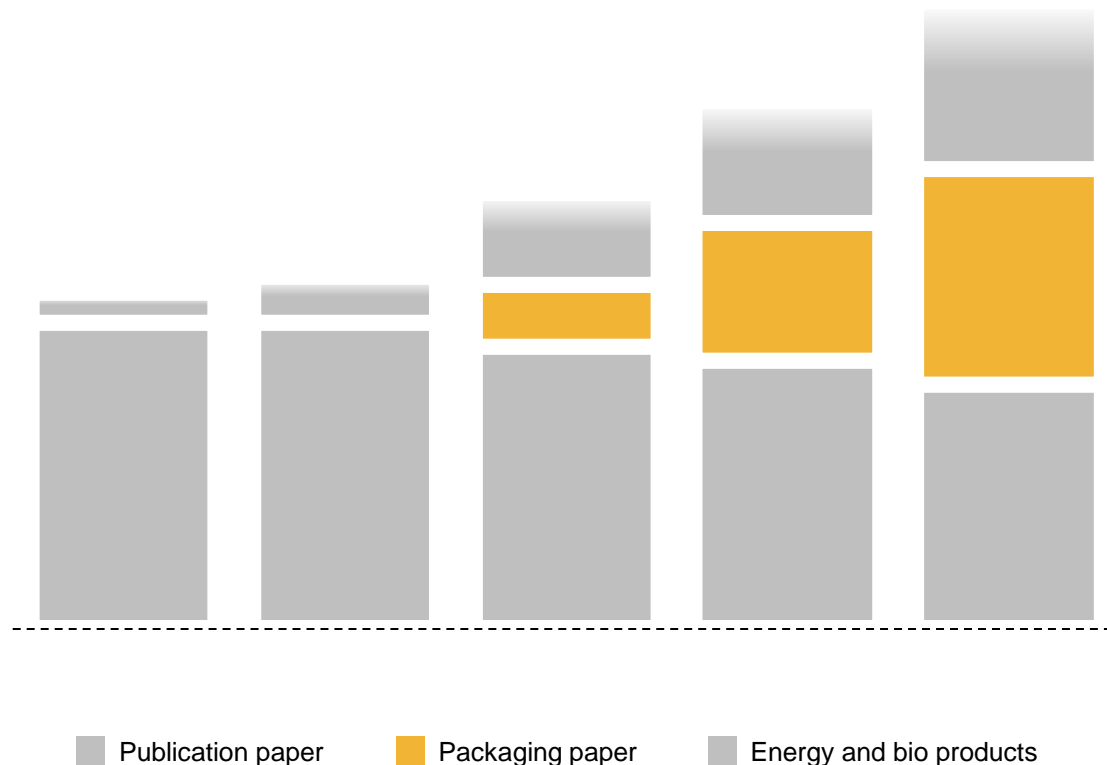
— Testliner<sup>1</sup> — OCC<sup>2</sup> — Electricity<sup>3</sup>

## Indicative cost structure for containerboard

Based on historical trend prices



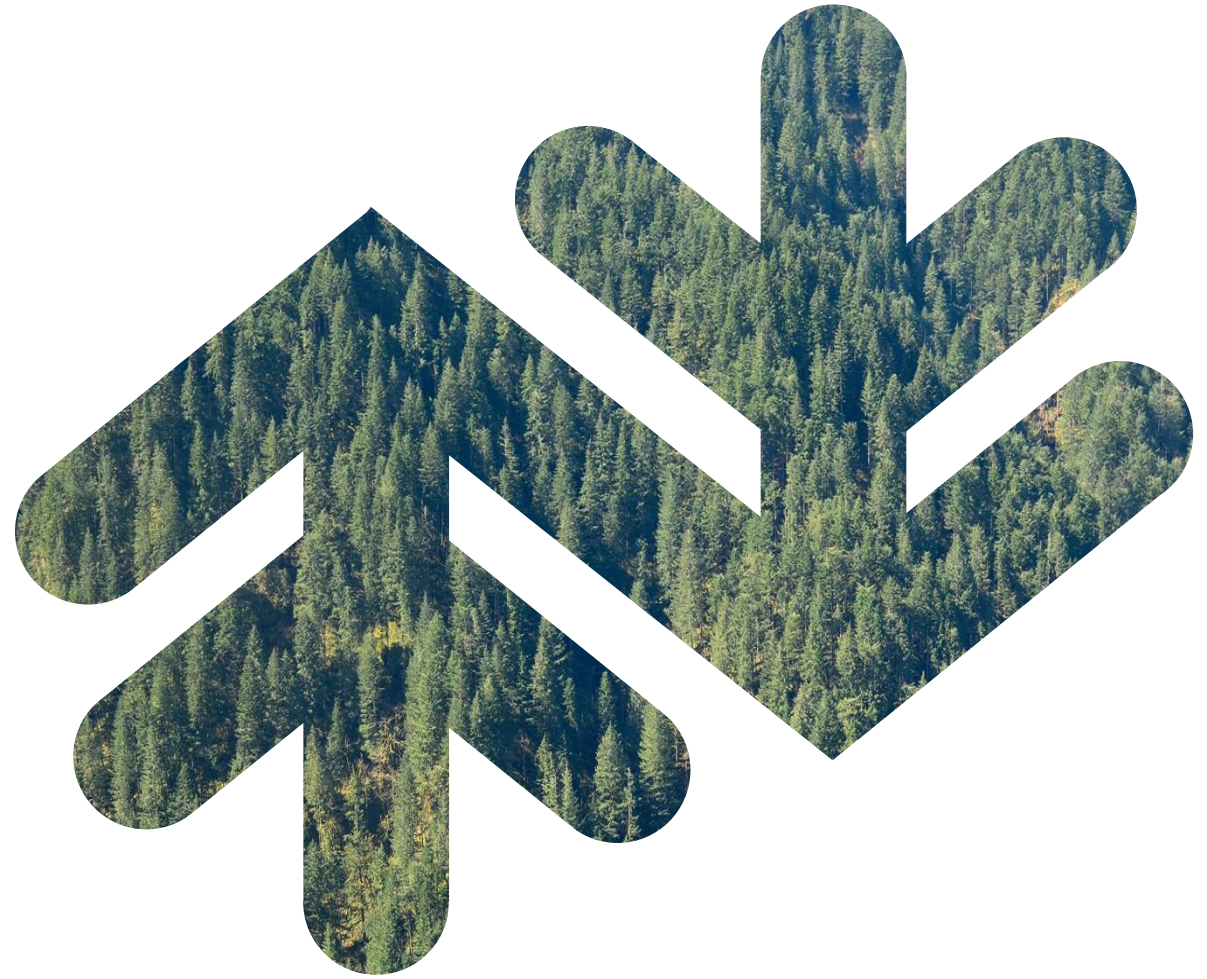
# Norske Skog to become a leading independent European producer of renewable packaging



- Value accretive containerboard projects in Bruck and Golbey
- Supported by investments in green energy production
- Recent demand growth of 4-7% (1-2m tonnes annually)
- Provide renewable logistics infrastructure for e-commerce
- 760kt of competitive capacity, first production in Q4 2022
- Investment of EUR 350m of which majority is contracted
- Solid financing of EUR 265m (~75% of investment)



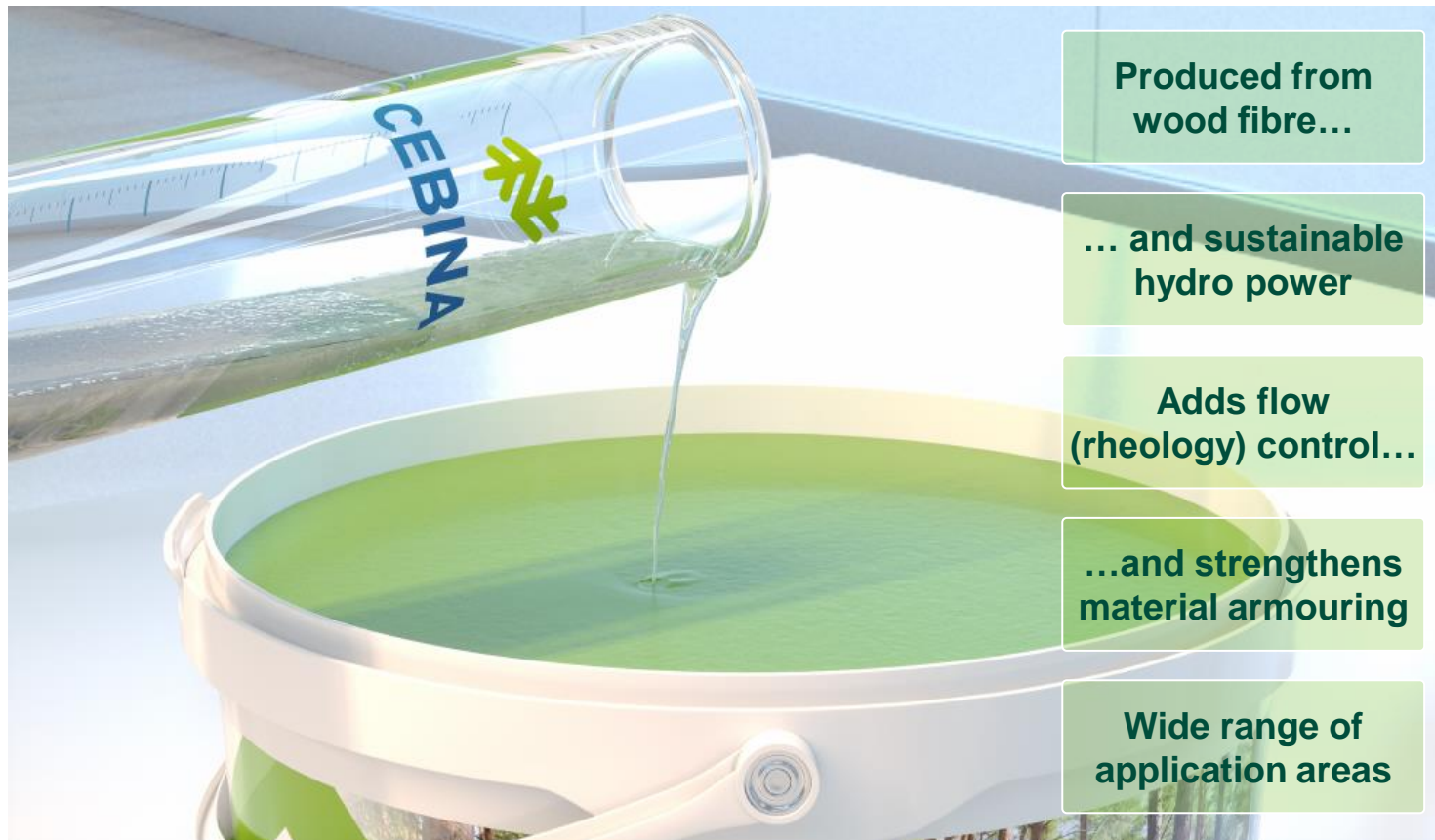
# Energy and bio products





# CEBINA aims to make global industries more sustainable with renewable wood fibre

CEBINA can be applied in modest quantities to improve several product properties



Introducing CEBINA as an alternative and sustainable input factor for large and established industries

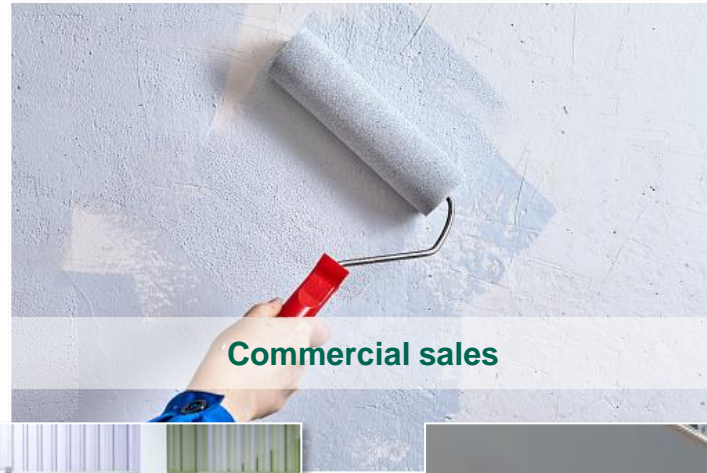
- Epoxy resins (~6m tonnes)
- Paints & coatings (~55m tonnes)
- Fillers (~75m tonnes)
- Glues & adhesives (~10m tonnes)
- Drilling and completion fluids

Achieved commercial sale of CEBINA  
(...) Estimated global industry size

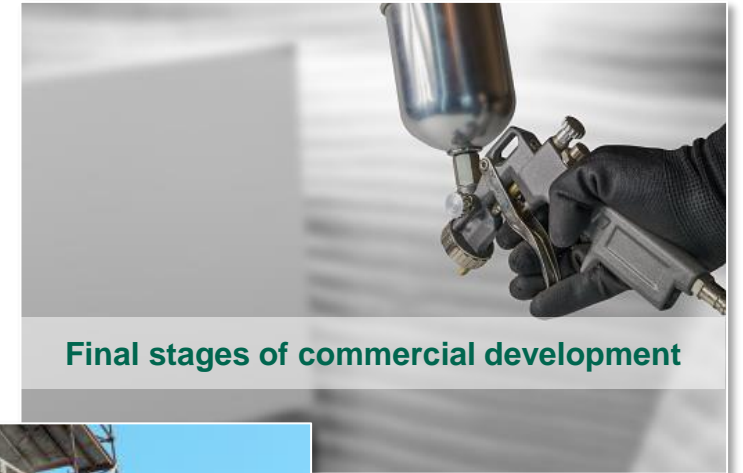
# CEBINA reduces time consumption, increases ease-of-use, and improves the environmental profile of the end-product



Commercial sales



Commercial sales



Final stages of commercial development



Commercial sales



Final stages of commercial development



# CEBICO represents a sustainable alternative to plastics

- Plastics remain a very useful product, but most are fossil-based and **take +500 years to degrade**
- Landfills contain 6bn tonnes of plastics and only **9% has been recycled**
- Plastics **recycling requires fresh plastics** to maintain product qualities
- Need solutions that can both **reduce the amount of plastics** and **increase recycling rates**

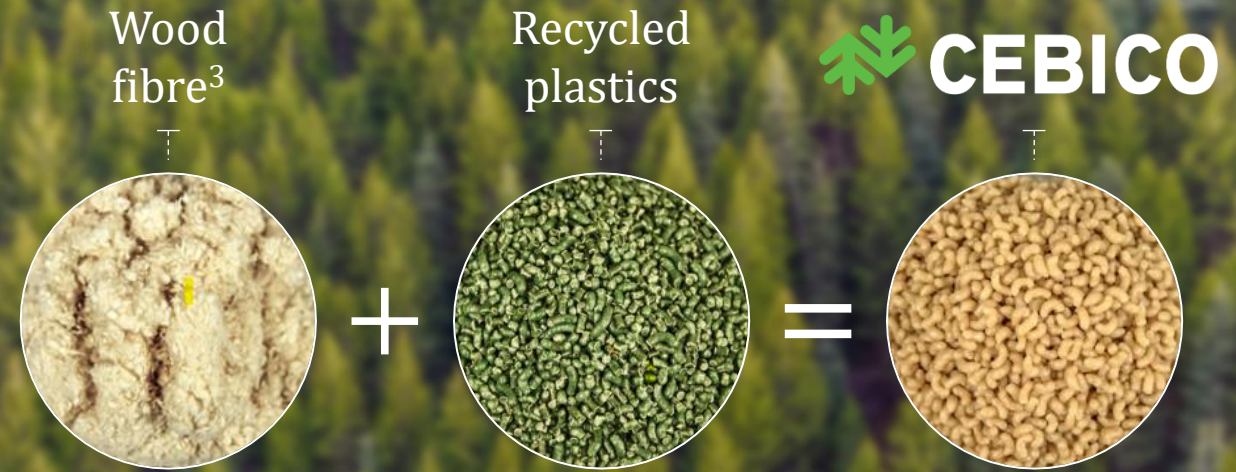
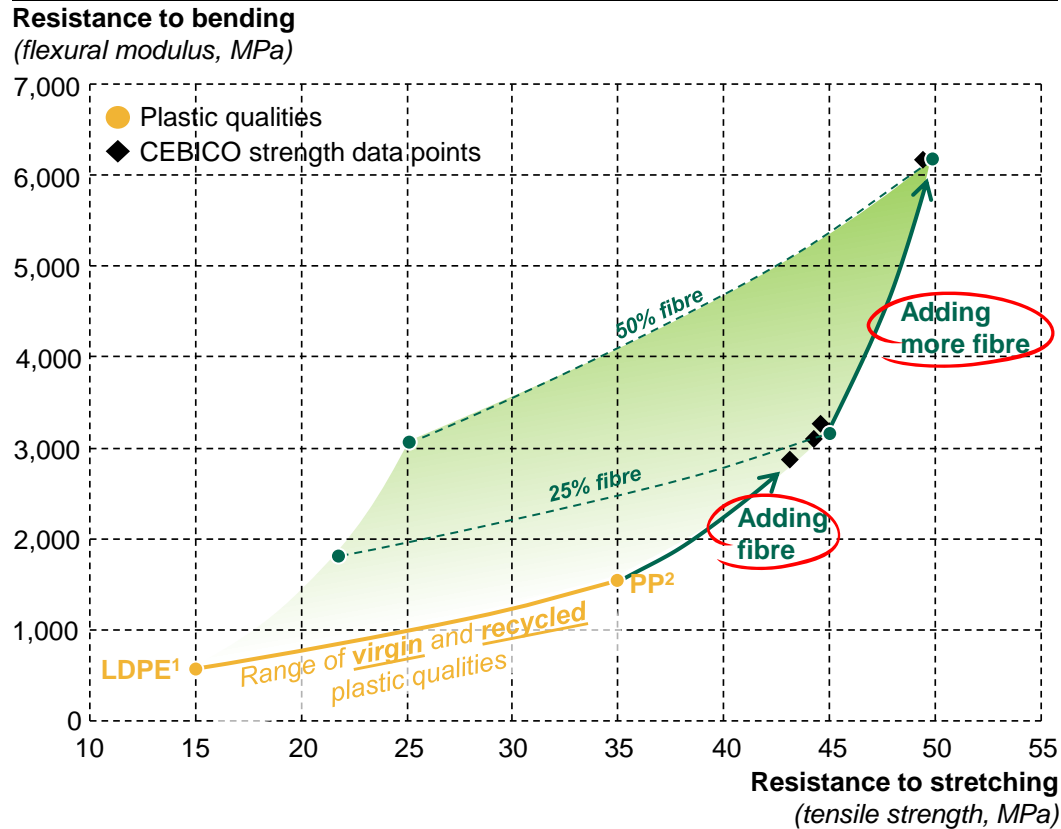
Replacing one kg of plastics with fibre  
**saves six kg of CO<sub>2</sub> emissions**





# CEBICO is a drop-in replacement in multiple plastics applications











## Opportunity to produce a wide range of CEBICO grades



- ✓ Improves strength in virgin and recycled plastics
- ✓ Increases value and lifetime of recycled plastics
- ✓ Reduces plastic consumption by up to 50%

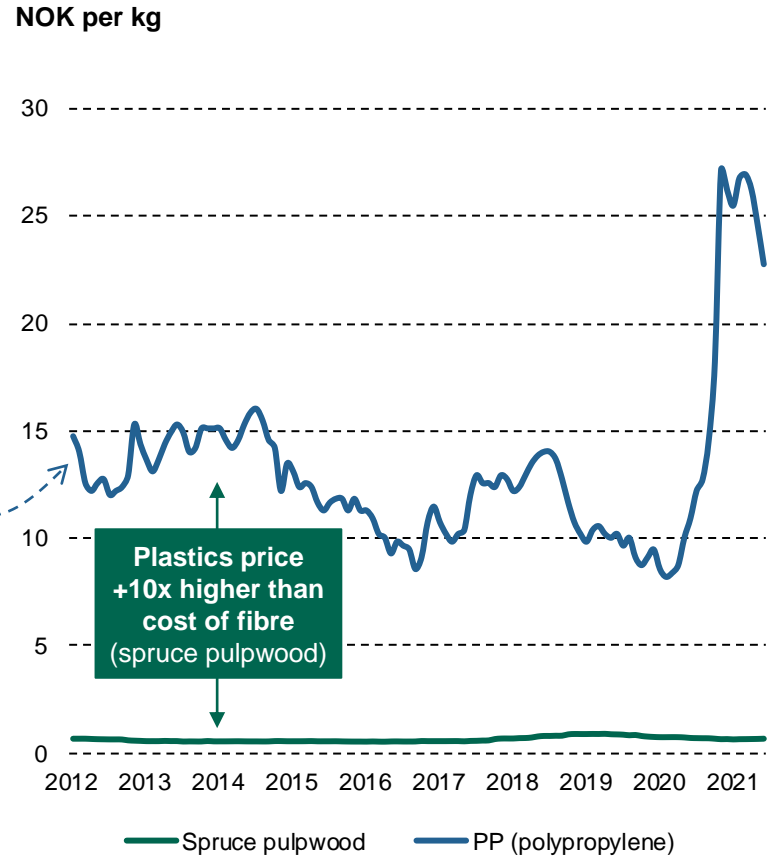
# CEBICO targets the large plastics market with a product that can reduce plastics consumption by up to 50%




## European plastics demand by grade

	PET		~4m tonnes (7.9%)
	HDPE <sup>1</sup>		~6m tonnes (12.4%)
	PVC		~5m tonnes (10.0%)
	LDPE <sup>2</sup>		~9m tonnes (17.4%)
	PP <sup>3</sup>		~10m tonnes (19.4%)
	PS		~3m tonnes (6.2%)
	O		~13m tonnes (26.7%)

 Plastic grade tested in CEBICO     European demand

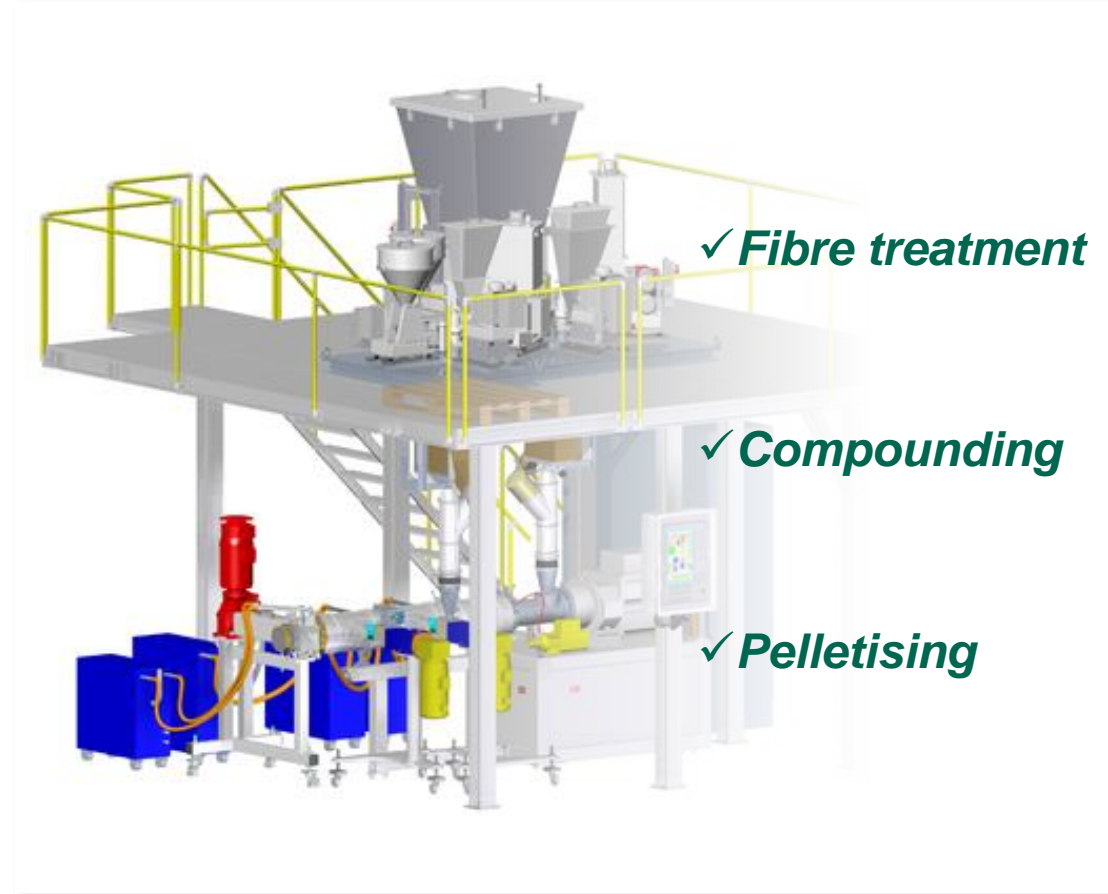
## Use of wood enables cost advantage



-  CEBICO can be produced from 50% fibre and 50% plastics
-  Fibre is processed before being applied in CEBICO
-  Drop-in product, large market and attractive margin potential



# CEBICO demonstration plant installed and ready to supply volumes for testing and commercial sales



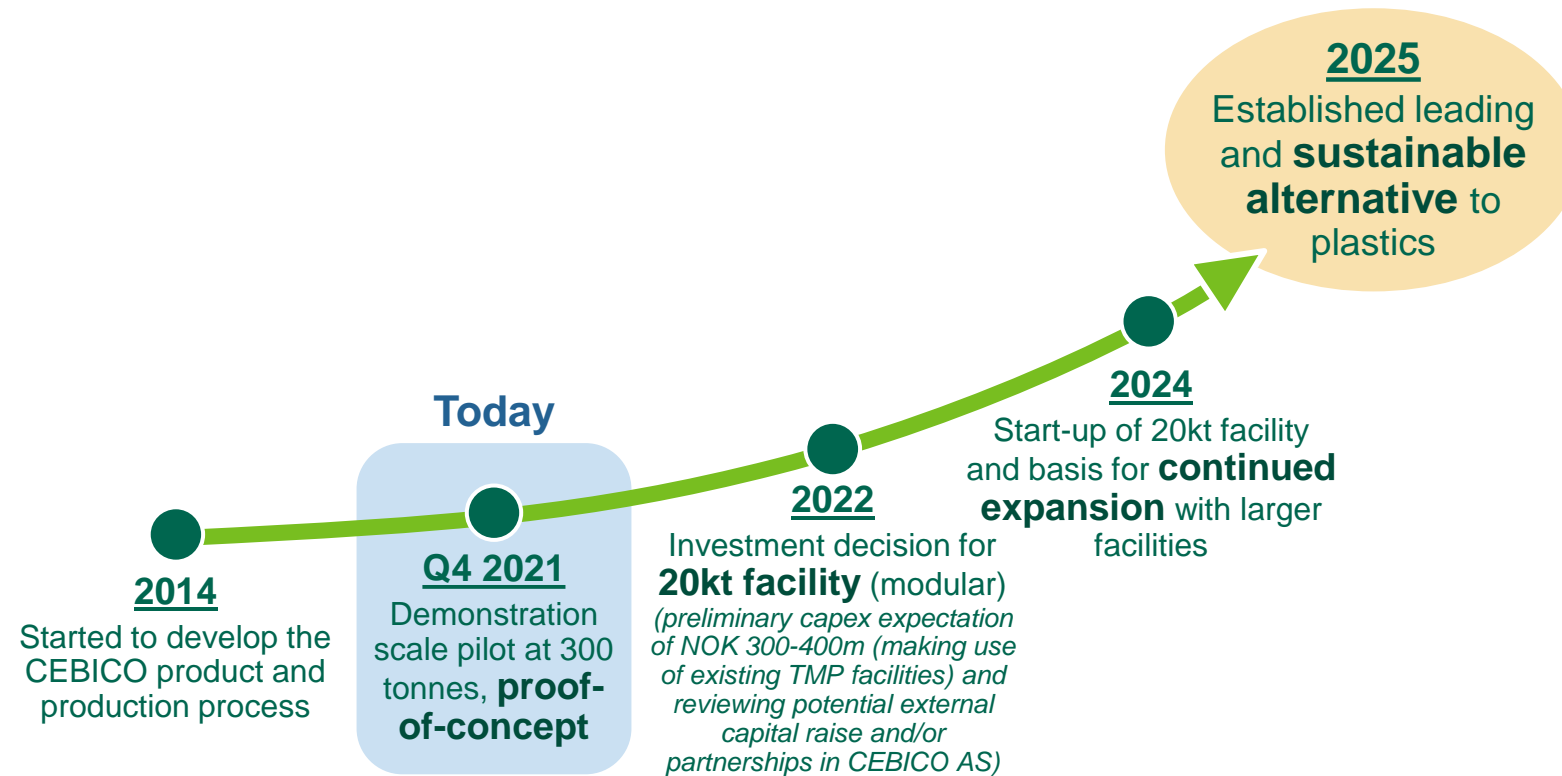
- Demonstration scale plant
- Located at Saugbrugs
- Start-up December 2021
- Capacity of ~300 tonnes
- Support from Innovation Norway of NOK ~15m



# Developing projects into businesses with high value fibre products improving sustainability of global industries



Intention and ambition to develop a leading position within bio composites



Developing an industrial input factor

- ✓ **Becoming a separate business**  
*Ambition to establish CEBINA as a separate business under Norske Skog*
- ✓ **Established commercial foundation**  
*Commercial sales with regular deliveries and revenue (multiple customers)*
- ✓ **Increasing commercial interest**  
*Several ongoing discussions with direct customers and international distributors*
- ✓ **Existing pilot capacity**  
*Capacity of 100-500 tonnes (depending on grade) enables commercial development*
- ✓ **Capital light expansion**  
*Modular concept requiring limited machinery and equipment, utilise existing infrastructure (does not require external capital)*

# Circa Group to become a leading provider of sustainable and non-toxic solvents

- Circa is a Euronext Growth listed company in the process to establish production of biobased solvents for the global chemicals markets
- Many existing solvents produced from fossil materials and are harmful to humans and therefore significantly restricted under REACH<sup>2</sup>
- Cyrene, developed by Circa, is the only known sustainable alternative
- Cyrene has received REACH<sup>2</sup> accreditation and EU grant funding
- Circa produces Cyrene at scale through a patented process
- Process verified through 15 years of research and five pilot plants
- Product distribution supported by among other leading international chemicals trading company Merck KGaA
- Strong and increasing commercial interest for Cyrene

**Norske Skog holds ~26% and will remain a long-term partner**



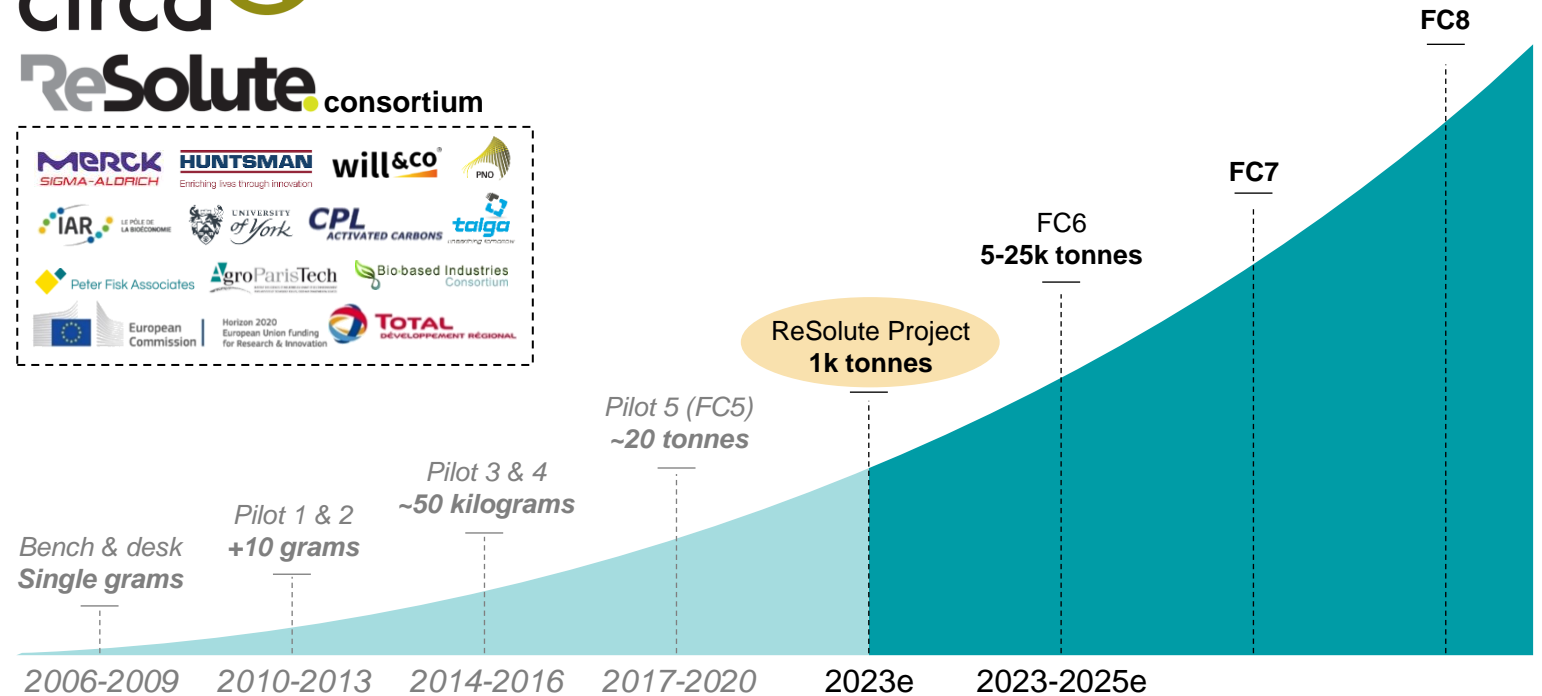
# ReSolute plant to serve as proof-of-concept for global expansion ambition

## ReSolute – Stepping stone for growth ambition

- Clear focus to engineer a robust and fit-for-purpose demonstration plant with key suppliers and consultants within updated cost estimates
- High interest and several ongoing vendor dialogues regarding reactor and equipment orders
- Seek to establish strong supplier partnerships to enable and de-risk future growth journey
- Investigate on site conversion of biochar to energy for ReSolute production process (proof-of-concept)
- Strengthened management team with European based Head of Manufacturing to realise growth journey
- International sales and marketing organisation fielding significant inbound customer interest

## Unique opportunity to become a leading provider of sustainable and non-toxic solvents

**circa**   
**ReSolute** consortium





# High quality and contracted production of sustainable wood pellets into rapidly growing Australasian market

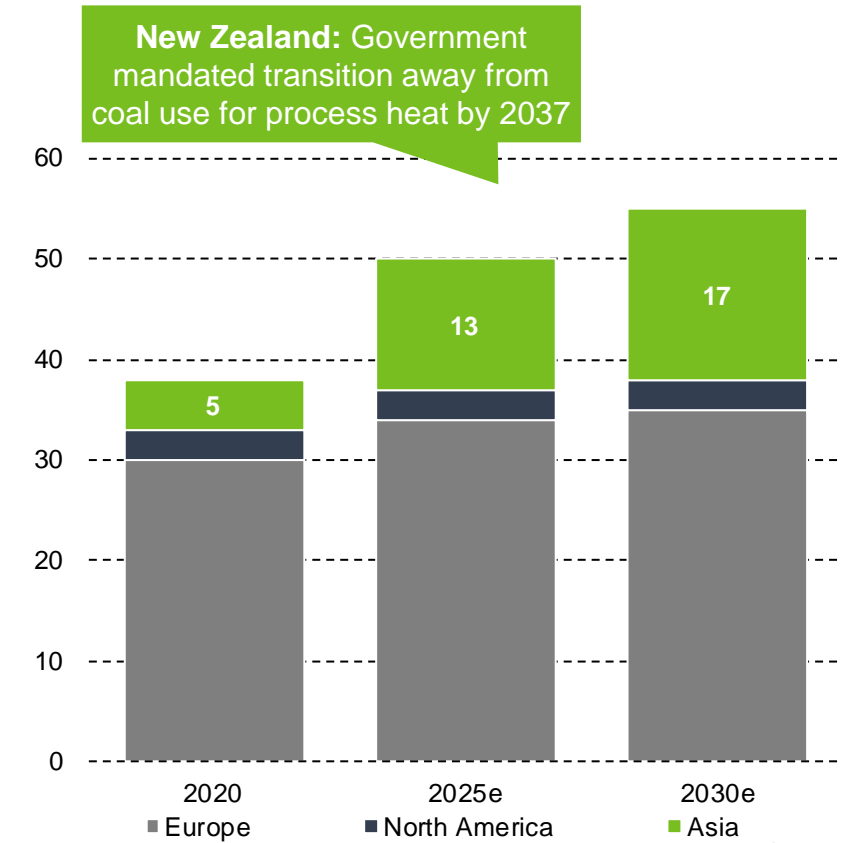
*Non-core asset in New Zealand, potential sale during 2022*

## Nature's Flame state-of-the-art wood pellet production facility in Taupo, New Zealand



## Biomass will be part of the green energy mix

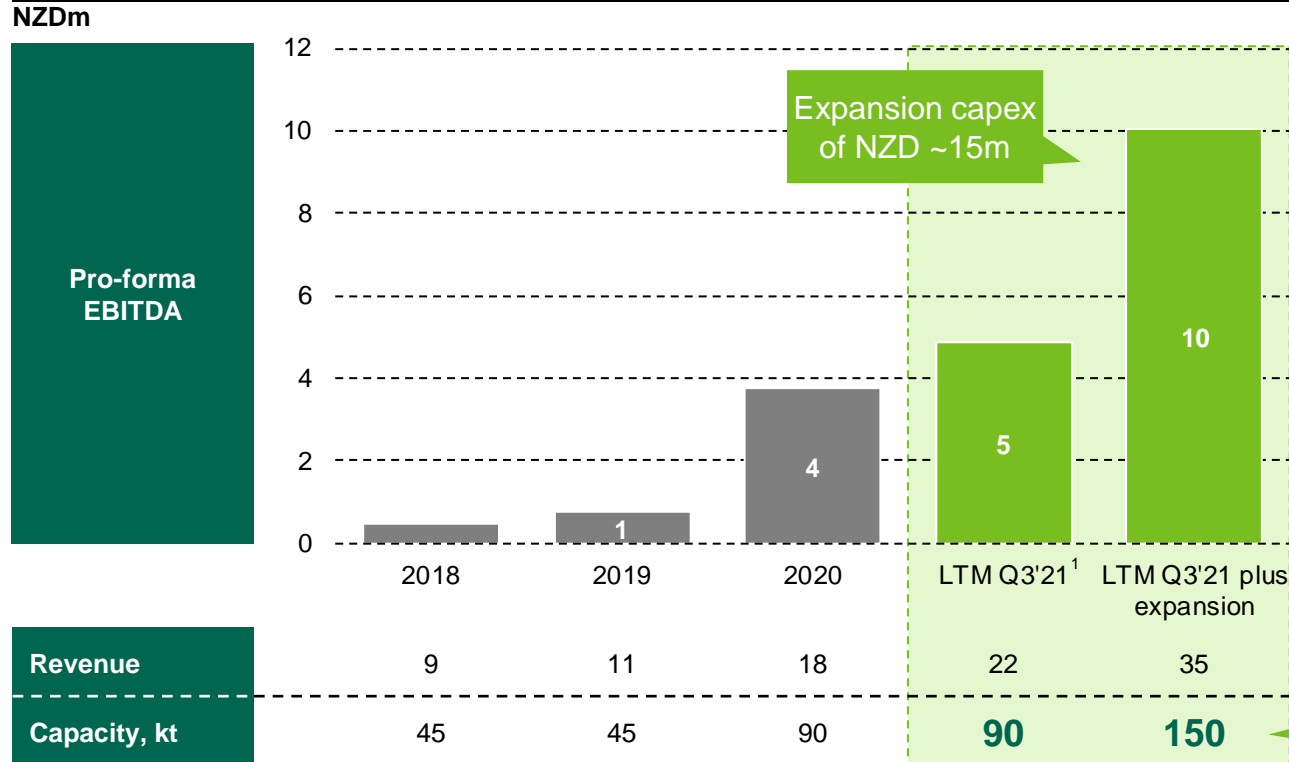
Wood pellets consumption, million tonnes



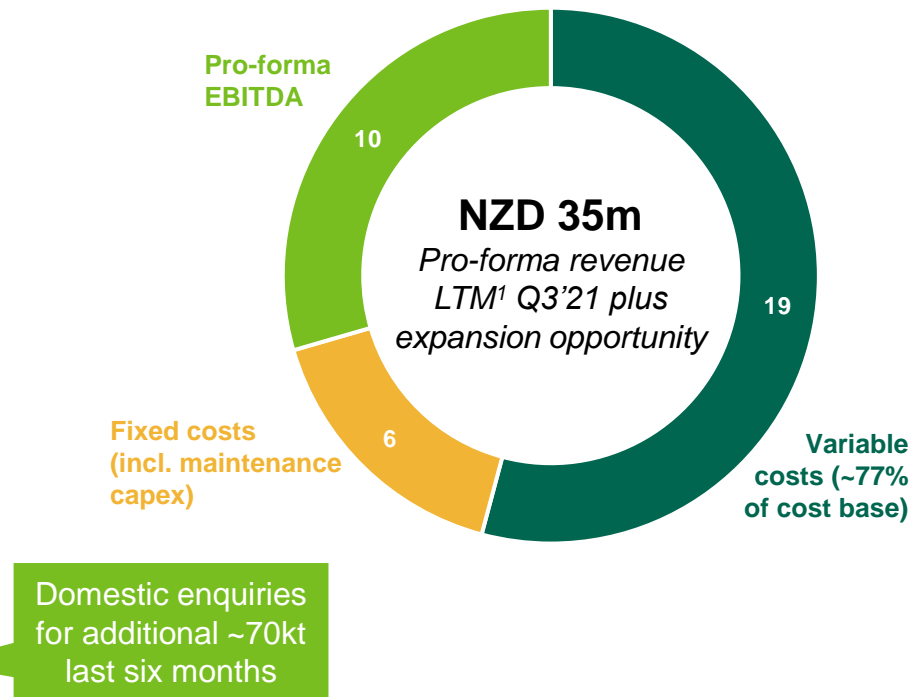
# Reviewing capacity expansion from 90kt to 150kt, possible within current plant design

*Non-core asset in New Zealand, potential sale during 2022*

## Nature's Flame financial performance



## Variable cost structure supporting stable margins over time

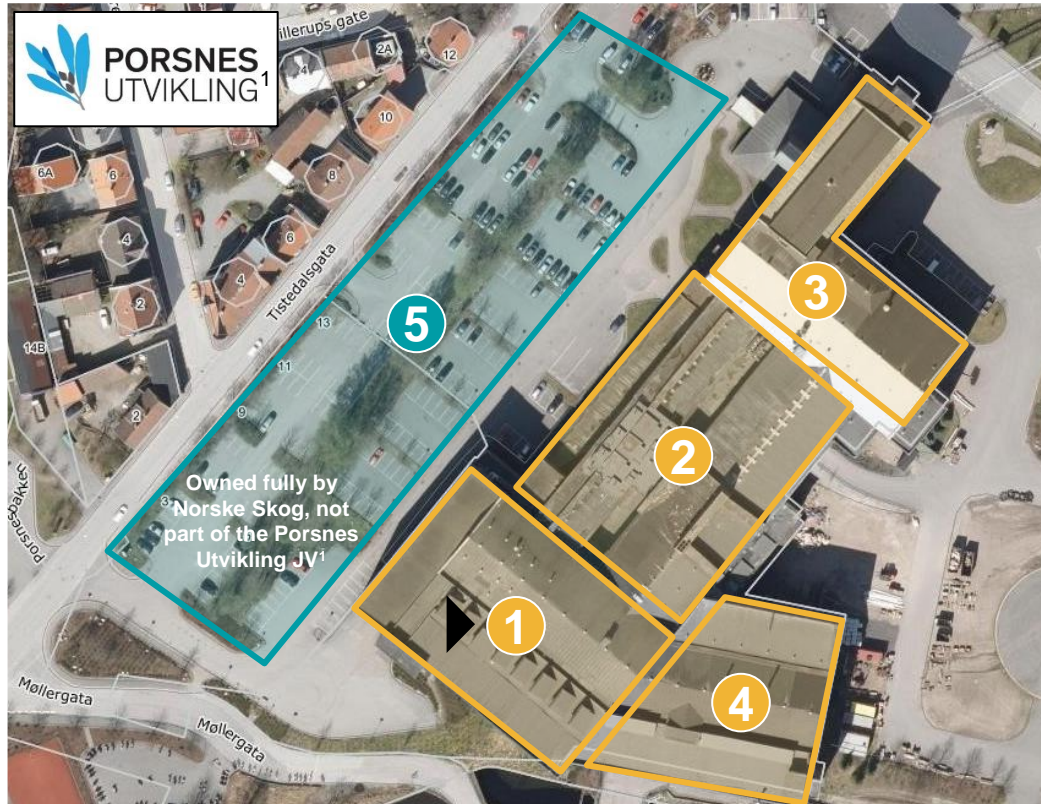




# Norske Skog in JV partnership<sup>1</sup> with local real estate developer regarding several properties and buildings at Saugbrugs

*Non-core assets in Norway, exploring ownership alternatives*

## Saugbrugs administration area being integrated in Halden city



- 1
  - Former Saugbrugs buildings will re-open as a high school in August 2022
  - 35 year municipality lease agreement with expected annual lease payment of NOK 25-30m, project debt-financing of NOK ~370m
- 2
  - Buildings removed and area cleared, exploring opportunities to develop offices or similarly business-oriented areas
  - Ground area of ~4k sqm of which limited amount required by Saugbrugs
- 3
  - Currently in exploration phase for property development opportunities for current Saugbrugs administration offices
  - Ground area of ~3k sqm
- 4
  - Currently in exploration phase for property development opportunities. Buildings remain in place
  - Ground area of ~3k sqm
- 5
  - Existing parking area increasingly attractive for surrounding suburbs and business region, owned fully by Norske Skog (not part of JV<sup>1</sup>)
  - Total area of ~6.5k sqm of which limited amount required by Saugbrugs



# New high school building close to completion and large areas cleared for future projects

*Non-core assets in Norway, exploring ownership alternatives*





# Exploring property development and partner opportunities for Sauøya in Halden

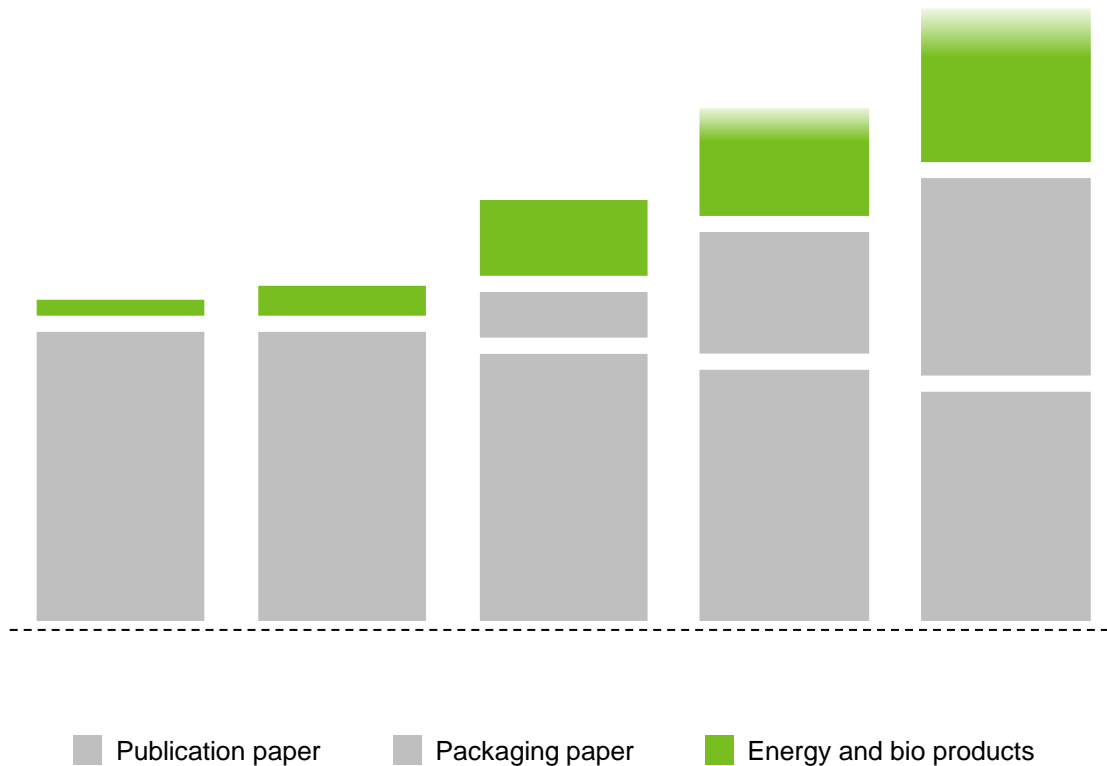
*Non-core asset in Norway, exploring ownership alternatives*

Overview of Sauøya 0.71 km<sup>2</sup>, Halden city, Norway



- Norske Skog owns most of Sauøya, which is situated south of Halden city in South East Norway
- The property is currently used for logistics operations by Norske Skog Saugbrugs, and also for some light industrial activity by external parties
- The island is regulated for use as nature area, sea port and business activities, but a re-regulation for housing purposes is in process
- Norske Skog will seek to identify one or more partners, with which to explore opportunities for how to realise the potential of Sauøya

# Create green value through innovation and industrial competence



- **Waste-to-energy facility:** Start-up in Q2 2022
- **CEBICO:** Strong commercial interest and review of scale-up
- **CEBINA:** Continued commercial traction
- **Circa:** Technology and Cyrene potential remains intact
- **Non-core:** Pellets facility with potential scale-up to 150k tonnes
- **Non-core:** Norwegian property development projects





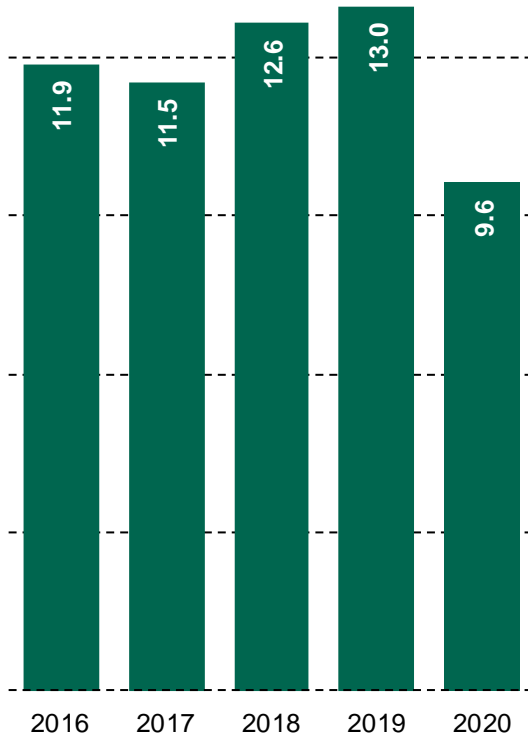
# Financial review



# Large existing business with ongoing strategic transition into growing and high-margin markets

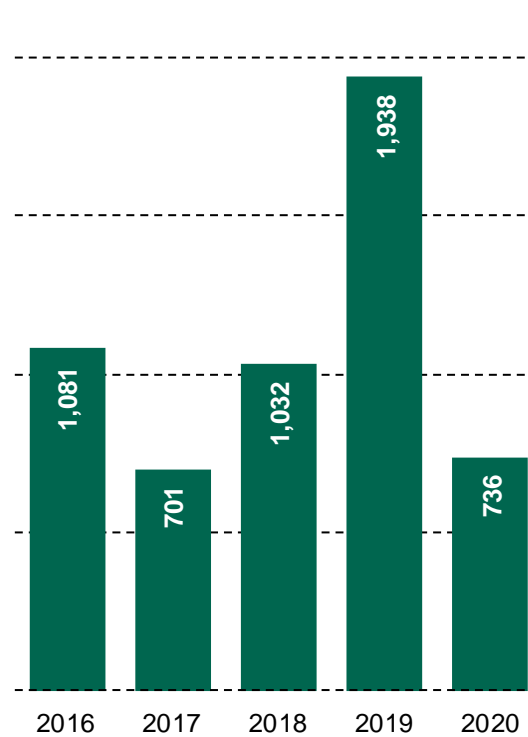
Revenue, NOKbn

*Historical financials for publication paper*



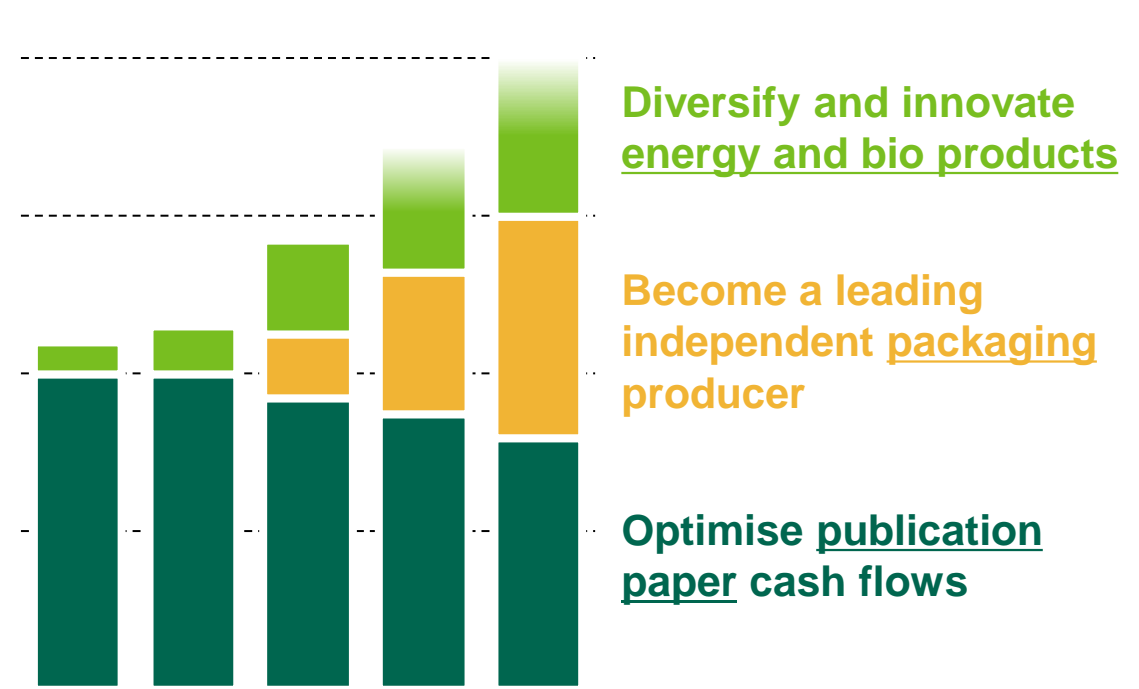
EBITDA, NOKm

*Historical financials for publication paper*



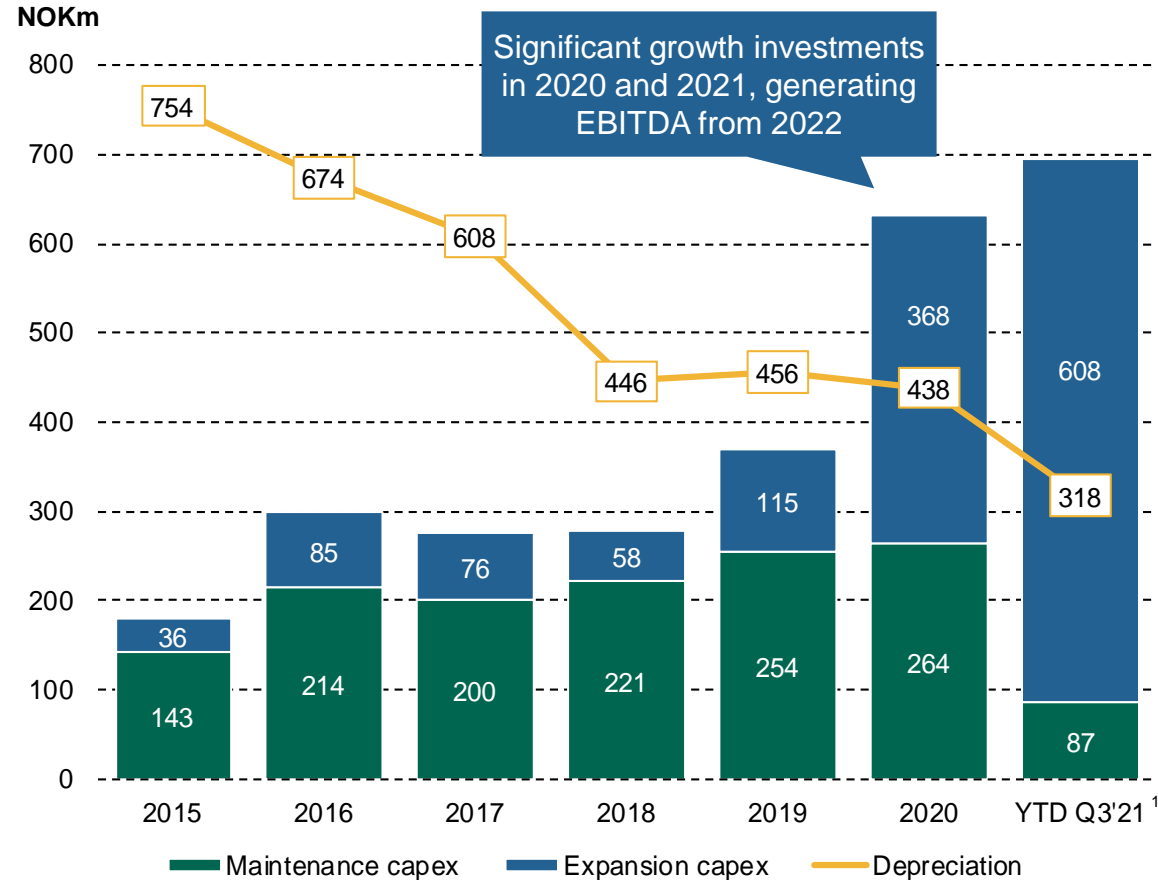
Strategic transition into growing and high-margin markets

*Illustrative*



# Containerboard projects will be visible in capital expenditures and depreciation for coming years

## Historical capital expenditures and depreciation



## High-level indication for future capital expenditures and depreciation

**Expansion capex**

- Remaining expansion capex for WtE<sup>2</sup> facility of EUR 17m, of which ~50% will be expensed in Q4 2021 and the remainder in H1 2022
- Remaining containerboard expansion capex of EUR 330m
  - **Q4'21: EUR 10m, 2022: EUR 230m, 2023: EUR 90m**

**Depreciation**

- Guided annual depreciation of NOK 400-450m for existing assets
- Investments in WtE<sup>2</sup> facility and containerboard machines (combined EUR 422m) to be depreciated over 20-25 years from start-up

**Maintenance capex**

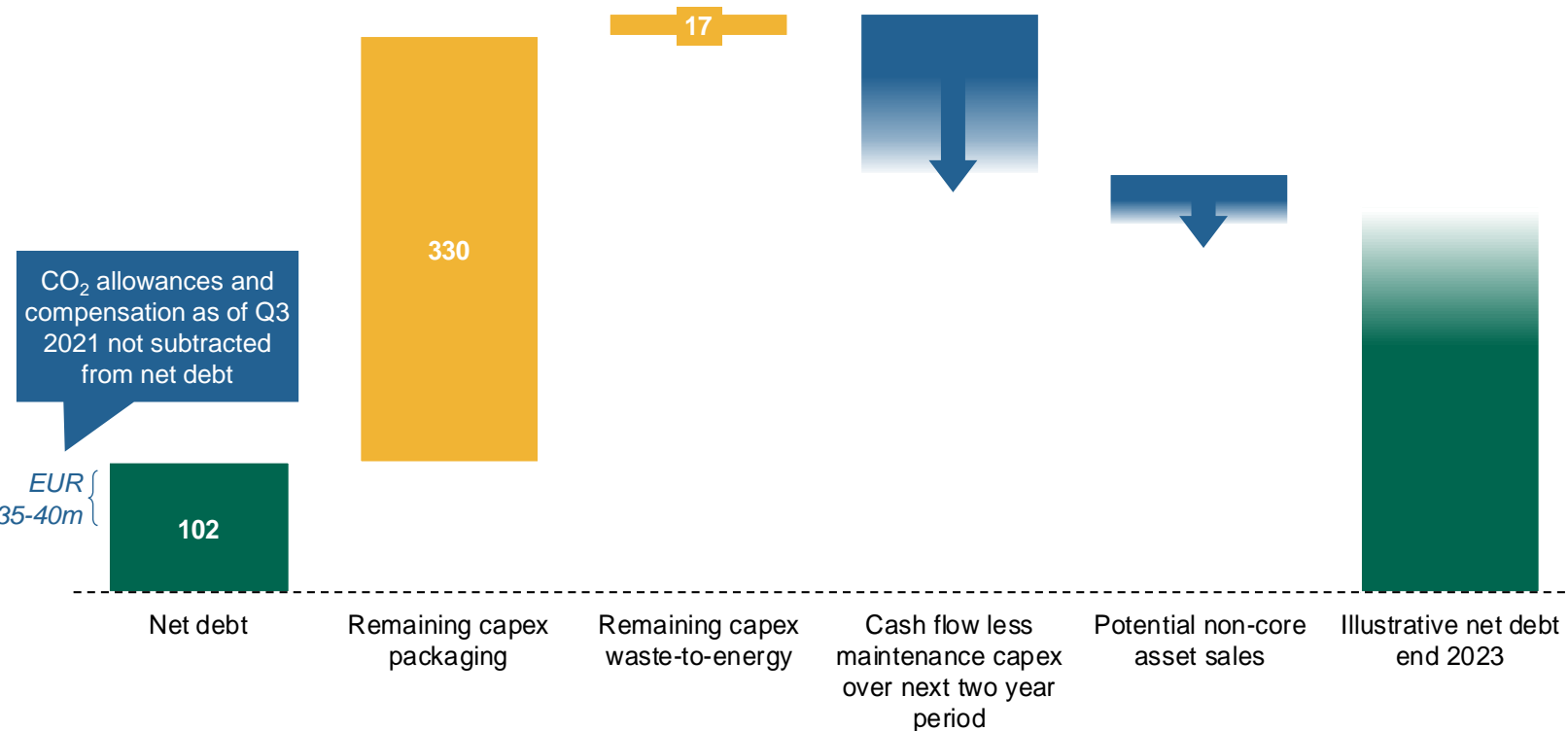
- Guided annual maintenance capex of NOK 150m for existing assets
- Maintenance capex expected to increase by NOK ~20m following start-up of WtE<sup>2</sup> facility and containerboard machines



# Leverage expected to peak end of 2023 as the Golbey containerboard project is completed

**Q3 2021 net debt plus remaining capital expenditure commitments less illustrative cash flows**

EURm

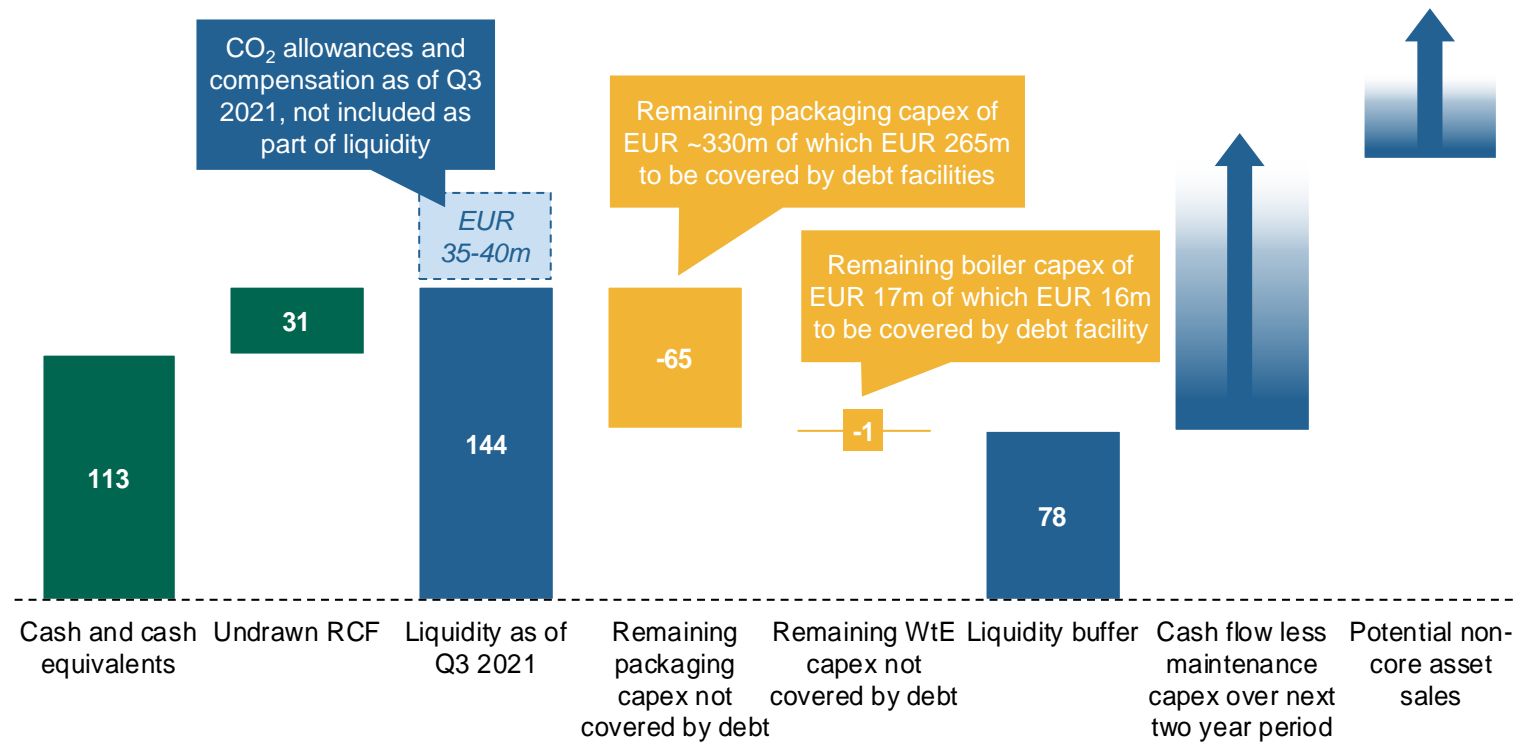


- Current net debt of EUR 102m and remaining capital expenditure commitments of EUR ~347m
- Operational cash flows less maintenance capex over next two-year period (2022-23) to alleviate capex commitments
- Further potential alleviation from non-core asset sales, including Nature's Flame, property projects and Tasman assets
- Emission allowances and CO<sub>2</sub> compensation of EUR 35-40m as of Q3 2021, not subtracted from net debt of EUR 102m

# Liquidity and financing in place to meet capital expenditure commitments over next two years

## Liquidity position as of Q3 2021 and remaining capital expenditure commitments

EURm

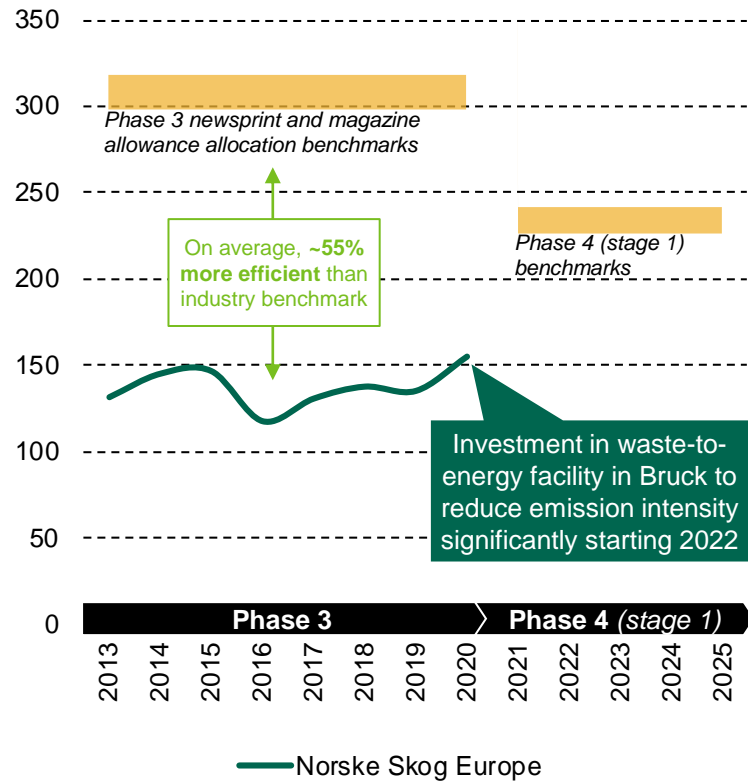


- EUR ~66m of remaining expansion capex that is not covered by debt facilities, well within existing liquidity of EUR 144m
- Additional liquidity expected from operational cash flow less maintenance capex over next two-year period
- Potential for further liquidity from asset sales, including Nature's Flame pellets facility, property projects and Tasman mill assets
- EUR 265m packaging financing (EUR 193m in Golbey and EUR 72m in Bruck), ~75% of investment amount
- Repayment expected to commence upon completion, with average maturity towards the end of 2030

# Historical and ongoing investments in green energy enables low CO<sub>2</sub> footprint and emission allowance surplus

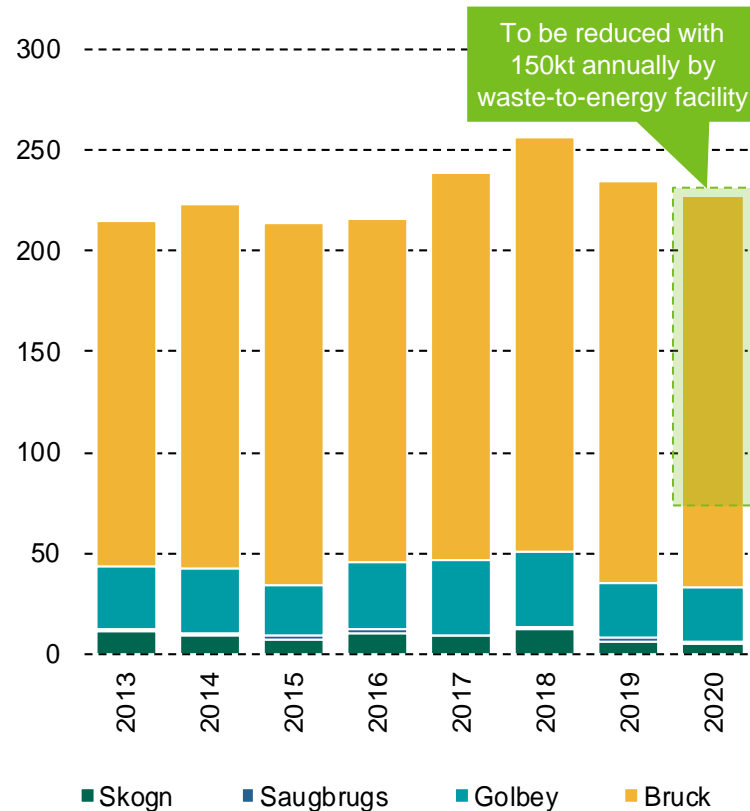
## Green energy investment yield low emissions

Fossil CO<sub>2</sub> emissions as defined under EU ETS<sup>1</sup>, kg emitted per tonne produced volume



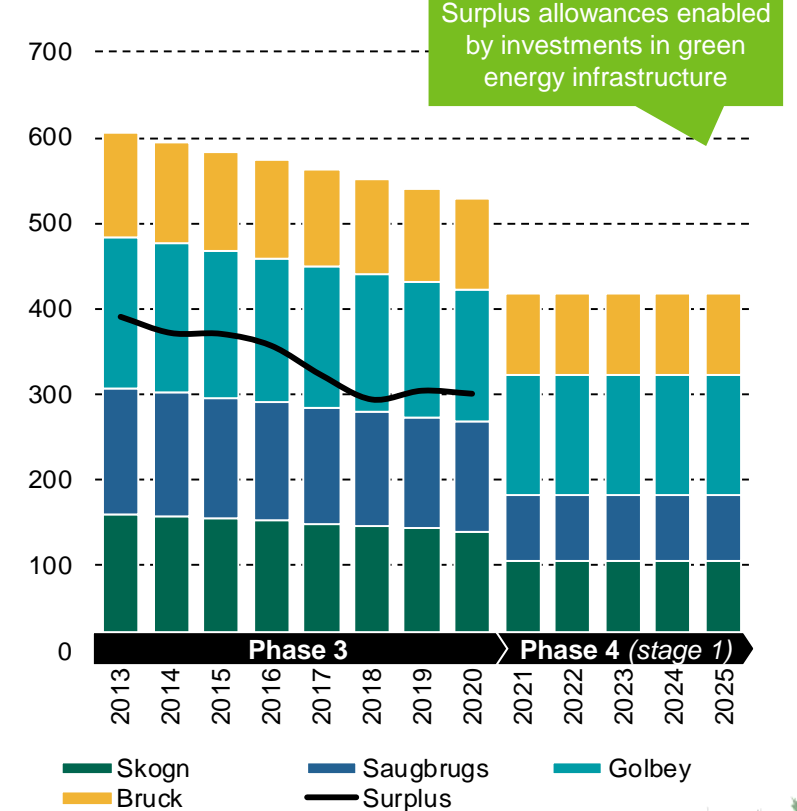
## Target last major European fossil CO<sub>2</sub> emissions

Fossil CO<sub>2</sub> emissions as defined under EU ETS<sup>1</sup>, thousand tonnes emitted



## Allowance surplus due to green energy mix

Allocated allowances and net surplus, thousand allowances

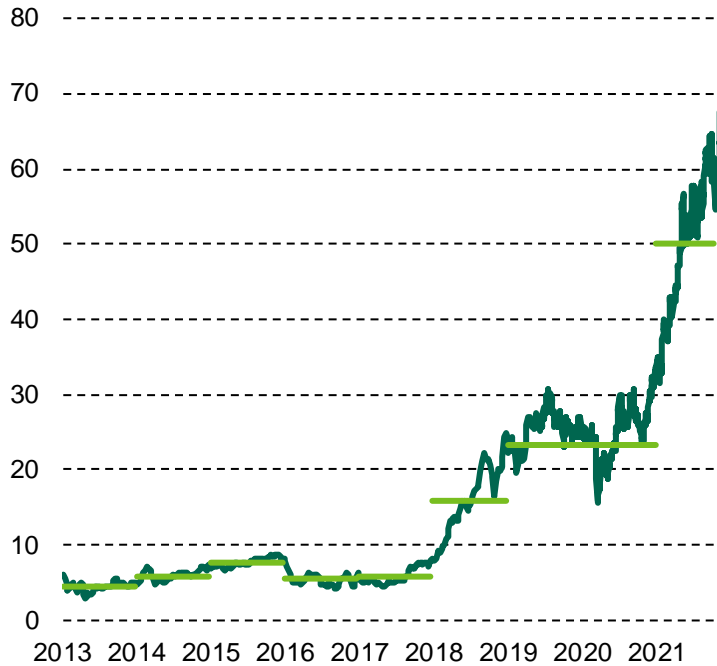




# Rapidly surging electricity prices with slight mitigation from electricity compensation under EU ETS

## CO<sub>2</sub> prices reflecting green shift ambition

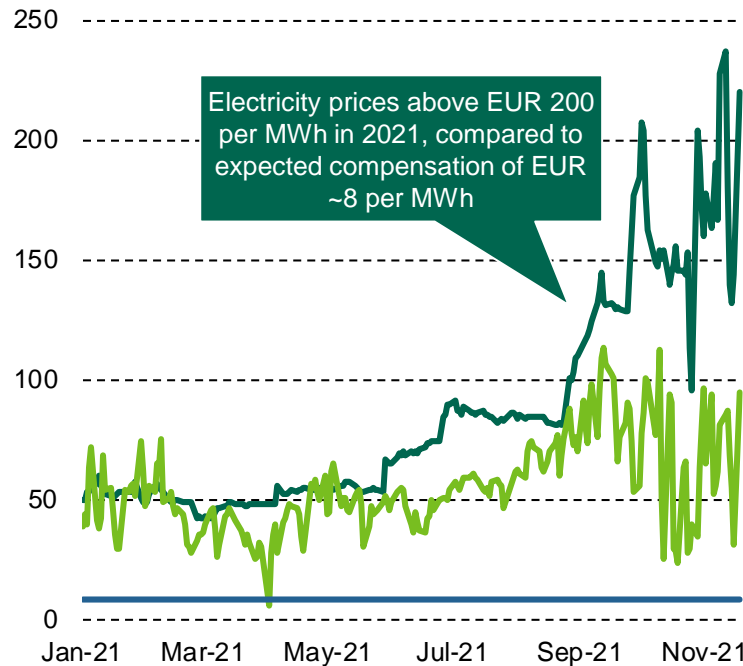
Price per allowance, EUR / allowance



■ Daily price ■ Annual average

## European electricity prices surging

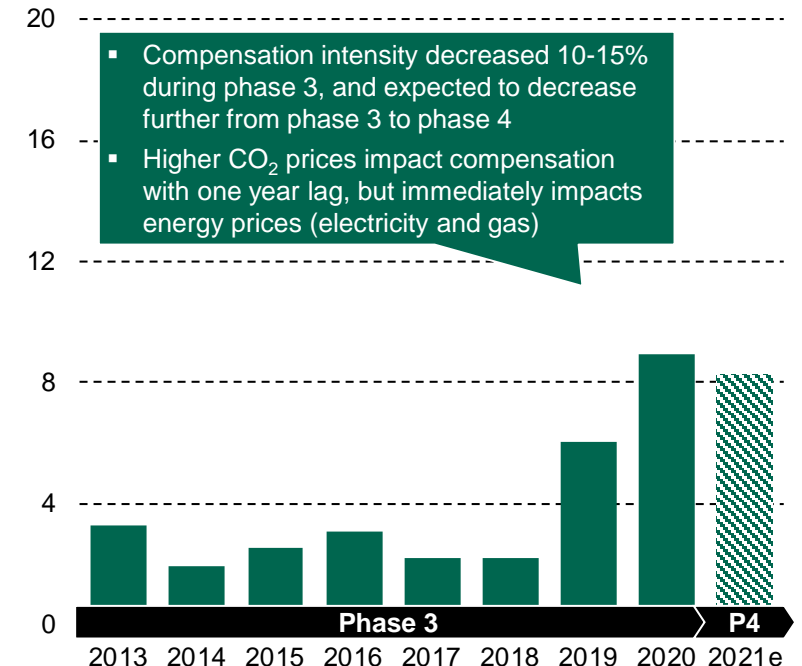
Electricity price, EUR / MWh



■ Nordics ■ Germany ■ Expected 2021 compensation per MWh

## Electricity cost compensation<sup>1</sup> under EU ETS

Theoretical compensation rate, EUR / MWh



2013 2014 2015 2016 2017 2018 2019 2020 2021e  
Phase 3 P4

# Business transition supported by re-investing earnings and strict adherence to established debt policy for all financings



## Norske Skog debt policy

- ✓ Financial flexibility to fund short and long-term capital requirements
- ✓ Maintain a capital structure that suits the group's strategy
- ✓ Access to a diversified range of capital sources
- ✓ Aim to have a leverage ratio less than 2.0x in the longer term
- ✓ Keep maturity profile on financing arrangements spread out

# Outlook

- **Publication paper** market expected to remain tight into 2022
- Entering the growing **packaging paper** market in less than one year
- Rapidly expanding across several **energy and bio products** initiatives

The effect of significant **industrial projects** and **bio product innovation** will rapidly become visible over **next 1-2 years**







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