



WELCOME TO BORREGAARD'S CAPITAL MARKETS DAY

Oslo
18 September 2018

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AGENDA

08:30-10:00

Welcome and opening
Status, strategy, sustainability
Financials

10:00 Coffee Break

10:15-12:00

Performance Chemicals
Speciality Cellulose
Cellulose Fibrils

12:00 Lunch





STATUS, STRATEGY, SUSTAINABILITY

Per A. Sørli
President & CEO



Borregaard is a global leader in biochemicals

*High value added through full raw materials utilisation
Borregaard's biochemicals are sustainable and environmentally
friendly substitutes for petrochemicals*

SPECIALITY
CELLULOSE
& CELLULOSE
FIBRILS
▲ 45% FIBRES



LIGNIN
& VANILLIN
▲ 30% BINDING MATERIAL

BIOETHANOL
▲ 25% SUGARS

Global niche player with a market driven organisation

PERFORMANCE CHEMICALS 47 %¹⁾



- Largest supplier and technology leader in lignin-based products with global market access

SPECIALITY CELLULOSE 37 %¹⁾



- Leading global speciality cellulose supplier
- Significant producer of 2nd generation bioethanol

OTHER BUSINESSES 16 %¹⁾



- **Ingredients**
Only producer of wood-based vanillin
- **Fine Chemicals**
Largest producer of C3 aminodiols for X-ray contrast media
- **Cellulose Fibrils**
Pioneer in microfibrillated cellulose

1) Segment revenue as a % of total revenues 2017

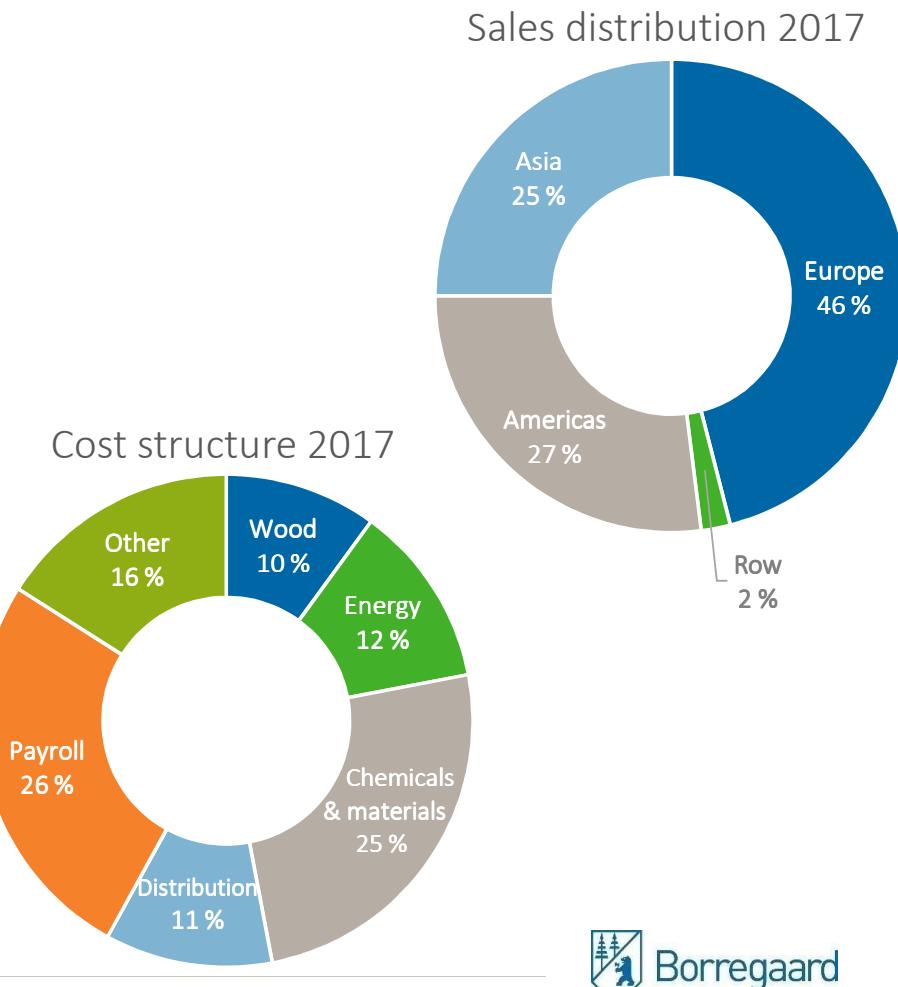
The specialisation strategy

- **Specialisation in global niches**
 - Markets with high barriers to entry
 - Leading market positions through application knowledge and proximity to markets
 - Diversified market strategy and global market positions secure maximum flexibility
- **Strong innovation efforts and continuous improvement**
 - Business driven innovation model that involves the entire organisation
 - Continuous productivity improvement through more efficient organisation, competence development and smart use of technology
- **Competence is the main competitive advantage**
 - Competence differentiates Borregaard from the competitors
 - Combination of competences in sales & marketing, R&D and production

The specialisation strategy

«Selling specialities & buying commodities»

- A global niche player in speciality chemicals
 - Global competitive arena
 - Value-based pricing philosophy for specialities
 - Changes in costs and effect of currency fluctuations rarely passed on to the market
 - Margin pressure when commodities peak
- Diversified business portfolio and cost structure
 - Many variables both on the revenue and the cost side
 - Payroll single largest input factor at 26%



Borregaard portfolio - strategic priorities

- Growth and specialisation within Performance Chemicals

- Increased sales of high-value lignin products
- Establish new lignin raw material sources
- Develop BALI¹⁾ as a strategic lignin raw material option

- Develop the unique biorefinery assets in Sarpsborg

- Leverage high-value raw material base in Performance Chemicals
- Continue specialisation of Speciality Cellulose, Bioethanol and Ingredients
- Strong focus on innovation and productivity efforts

- Establish Cellulose Fibrils as a new business area

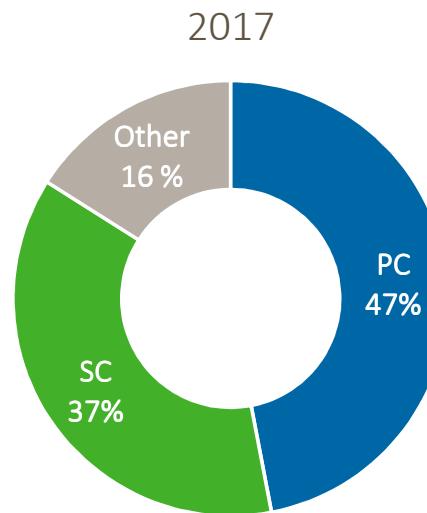
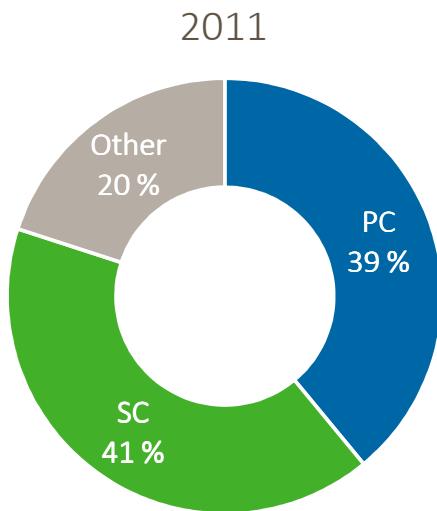
- Based on core competence within wood chemistry and fine chemistry
- Increased specialisation through high value added

1) Borregaard Advanced Lignin

Update on strategic priorities

- **Growth and specialisation within Performance Chemicals**
 - 50% volume growth in high-value lignin products from 2009 until 2017
 - Successful start-up of new Florida plant (1st phase) mid 2018
 - 500 mNOK upgrade and increased specialisation in Sarpsborg (2019)
 - Extension of joint venture agreement in South Africa to 2032
- **Develop the unique biorefinery assets in Sarpsborg**
 - Ice Bear project – speciality cellulose with ultra high purity (Q4-18)
 - High-end bioethanol expansion (Q1-18)
 - Debottlenecking in Fine Chemicals (2017)
 - Lignin operation upgrade and increased specialisation (2019)
- **Establish Cellulose Fibrils as a new business area**
 - Commercial-scale production facility in Sarpsborg completed in Q4-16
 - Exilva market introduction ongoing
 - SenseFi decision pending

Sales distribution - business areas



- Performance Chemicals has increased its share of Borregaard's revenues from 39% in 2012 to 47% in 2017

Innovation strategy

Existing businesses

- Drive specialisation and diversification
 - Focus on sulphite technology platform and niche products
- Sarpsborg biorefinery
 - Unique process based on calcium sulphite technology and softwood feedstock
- Performance Chemicals
 - Development of water soluble specialities in niche applications
 - Risk mitigation through market diversification
- Speciality Cellulose
 - Specialities in niche applications (ether, acetate, etc)

Innovation strategy

New business opportunities

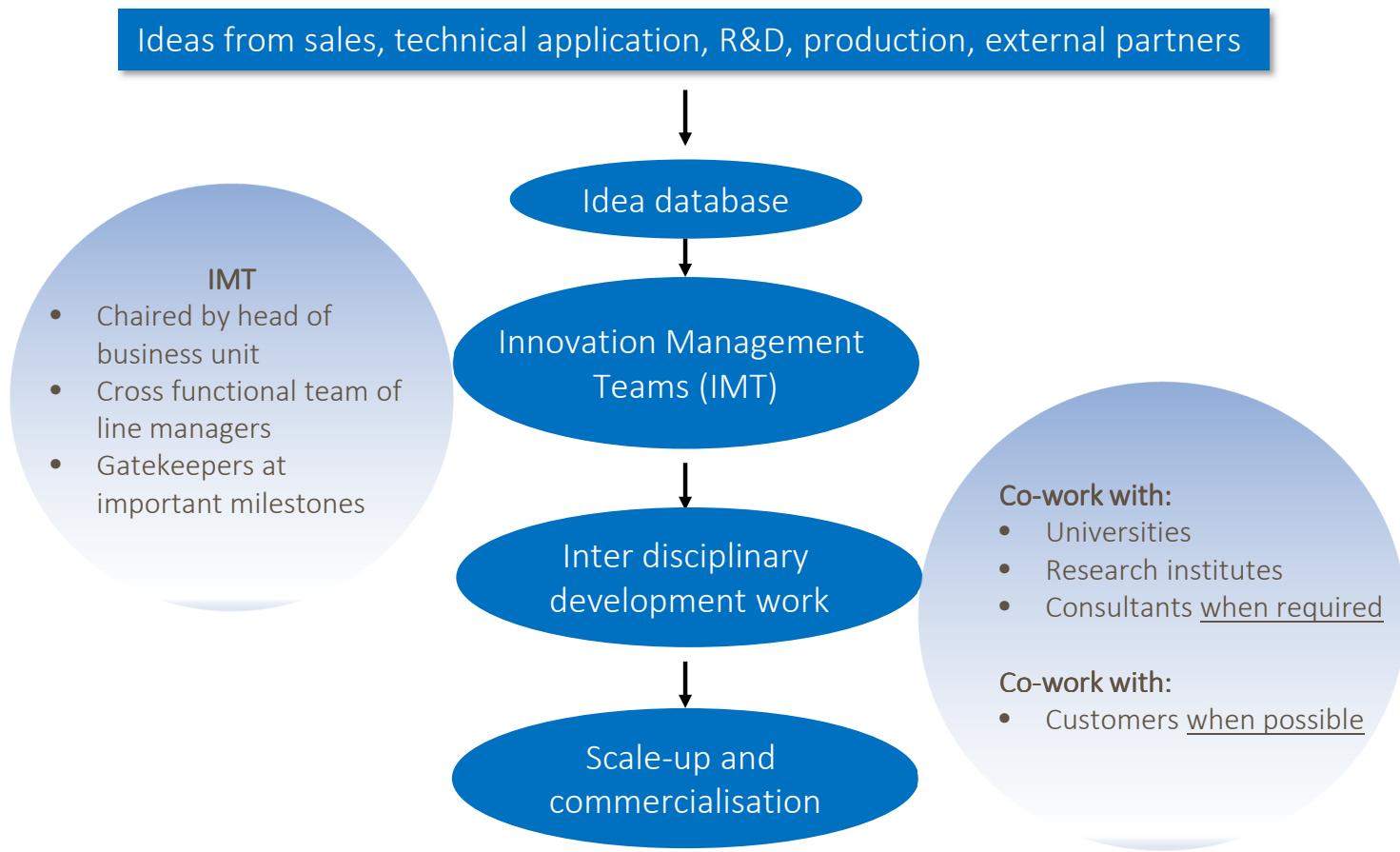
- Contribute to increased specialisation
 - Natural raw materials
 - Utilising existing core technology and competence
 - Potential synergies with established applications and markets

Examples

- Cellulose Fibrils
 - Radical innovation based on core competence within Speciality Cellulose and Fine Chemicals
 - Market development based on Borregaard's business system
- BALI
 - Technology and concept qualified as a long-term lignin raw material option
 - Development of chemicals from high purity sugars

Innovation strategy

Business driven innovation model



Sustainability

Key element of business mission

Borregaard shall provide sustainable solutions based on renewable raw materials and unique competence

Sustainability

One of three core values



Sustainability

- Green chemicals that substitute petrochemicals
- Sustainability demonstrated through life-cycle analysis
- Focus on EHS across the organisation
- Profitability is key to sustainability



Long-term perspective

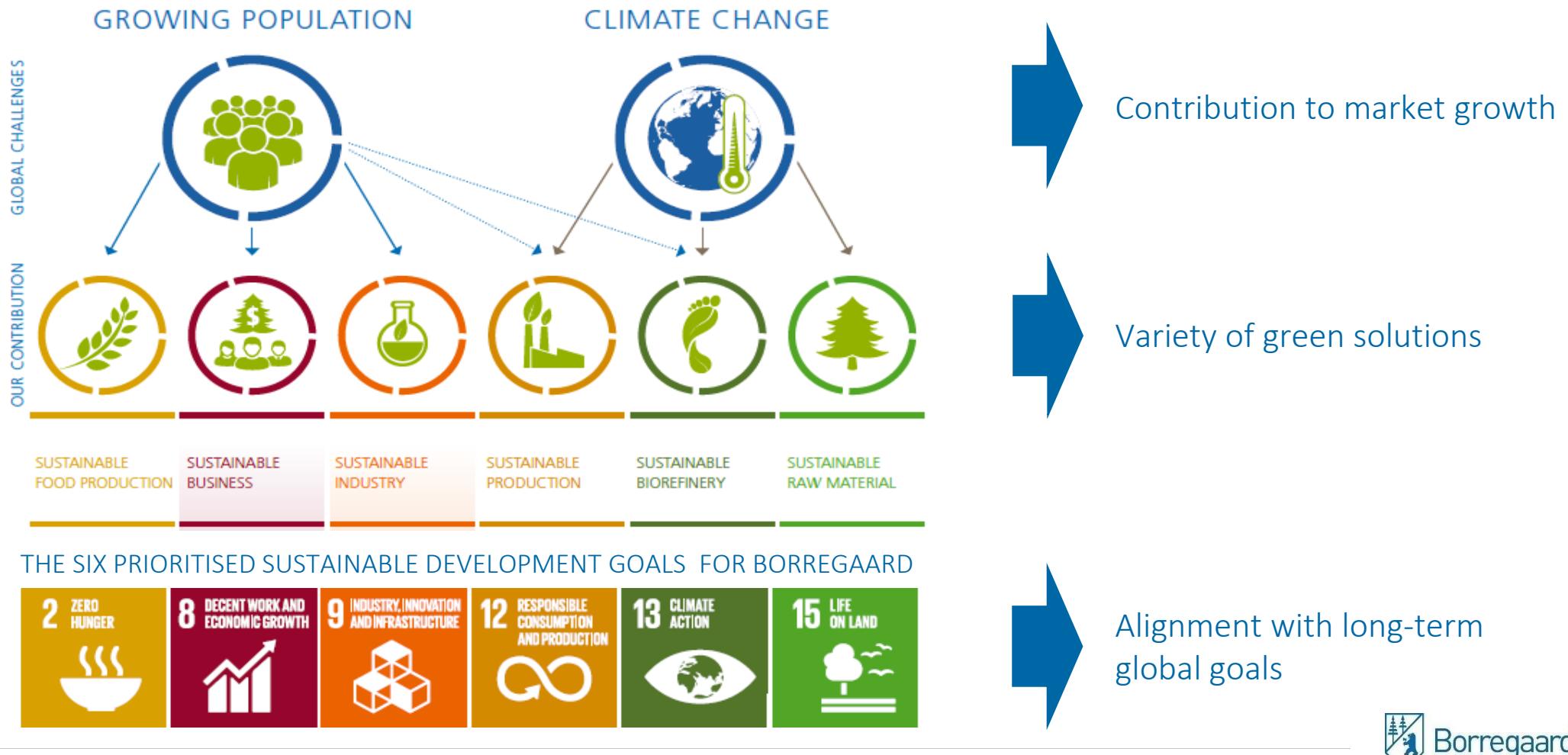
- Consistent strategy over time
- Long-term perspective on innovation, market development and investments
- Competence development through training programmes, organisational development and use of technology



Integrity

- High credibility through transparency, honesty and predictability
- Act responsibly in relation to stakeholders and exercise corporate responsibility
- Demonstrate respect for individuals and different cultures while maintaining integrity and adhering to the company's code of conduct

Sustainability Alignment with UN's Sustainable Development Goals



Sustainability

Integral part of market offering

RAW MATERIALS



Natural, renewable,
sustainable raw materials

PROCESSES



Efficient and sustainable
production and value chain

PRODUCTS



Sustainable
biochemicals

Sustainable and certified wood

- Documentation
- PEFC¹⁾ and FSC¹⁾ standards
- Lignin raw materials from certified forests

Reduced emissions improve LCA²⁾

- Target based CO₂-reductions
 - Energy conservations
 - New/Green energy sources
- Reduced emissions to water and air
- “Greener” logistical solutions

Products add sustainable value to customers

- **Climate:** LCA²⁾ shows favourable GHG footprint
- **Biobased:** Natural raw materials preferred
- **EHS³⁾:** Non-toxic, harmless products

1) PEFC: Programme for the Endorsement of Forest Certification, FSC: Forest Stewardship Council

2) Life Cycle Analysis

3) Environment, Health and Safety

Sustainability

Favourable climate footprint

Fuel – production and use

GHG emissions¹⁾



Borregaard 2G bioethanol



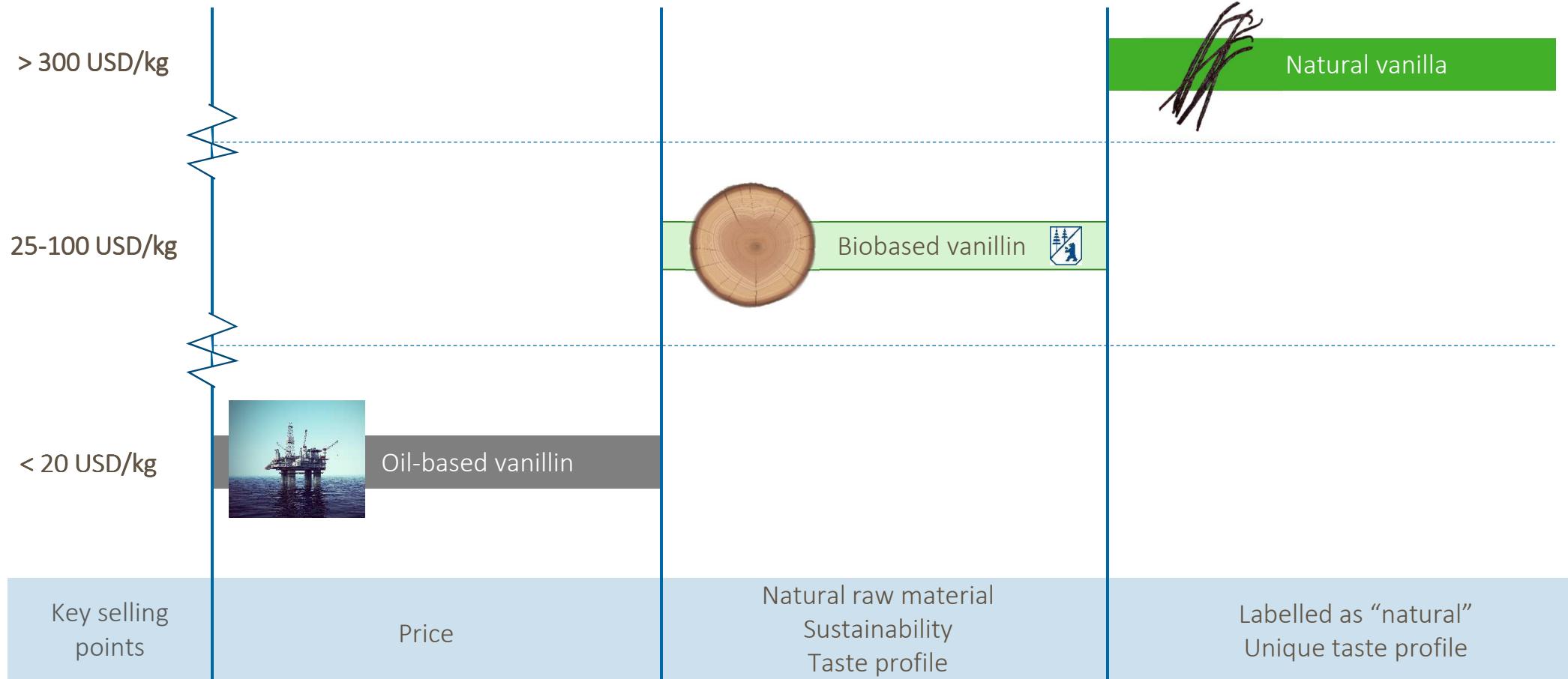
Gasoline

- 2nd generation bioethanol vs petroleum-based fuel
 - Increased demand in different countries due to incentives
- Most of Borregaard's products have favourable GHG footprint compared with alternatives

1) GHG emissions "cradle to grave", third party analysis based on ISO 14044/48

Sustainability

Positive trend for biobased vanillin



Sustainability

Positive EHS impact in crop protection



- Lignin products in crop protection have a favourable environmental impact
 - Water-based solutions as an alternative to solvent-based formulations
 - Good safety and health performance as binders (less dust) in crop protection granules

Strategic priorities – next steps

- Increased specialisation and volume growth
 - Successful market introduction of new lignin volumes from Florida
 - Ice Bear product range
 - Cellulose Fibrils
 - Grow specialities volume in Performance Chemicals and Speciality Cellulose
- Sustainability
 - Increase market awareness of Borregaard's biobased products
- Ongoing and potential expansion initiatives
 - Complete lignin operation upgrade and increased specialisation in Sarpsborg (2019)
 - Florida lignin expansion – 2nd phase (50,000 mtds)
 - Exilva (Cellulose Fibrils) – 2nd phase (1,000 mtds)
 - Explore other specialisation and capacity expansion opportunities



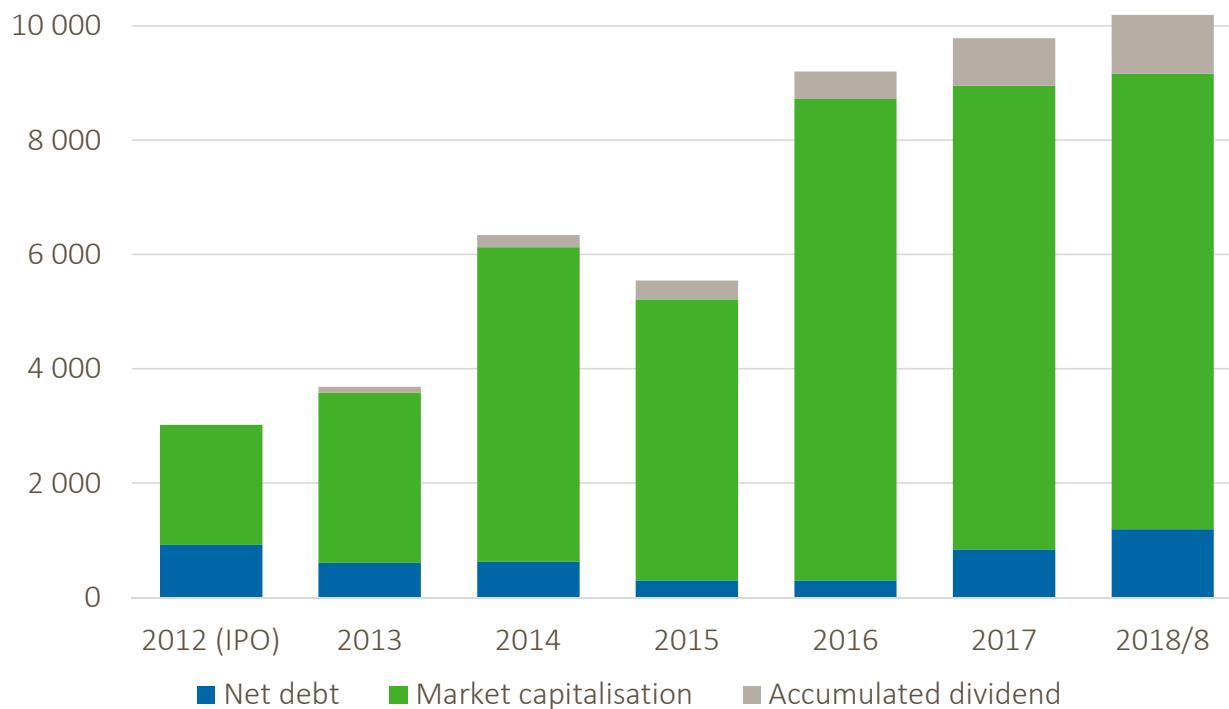
FINANCIALS

Per Bjarne Lyngstad
CFO



Value creation since IPO

mill NOK



CAGR

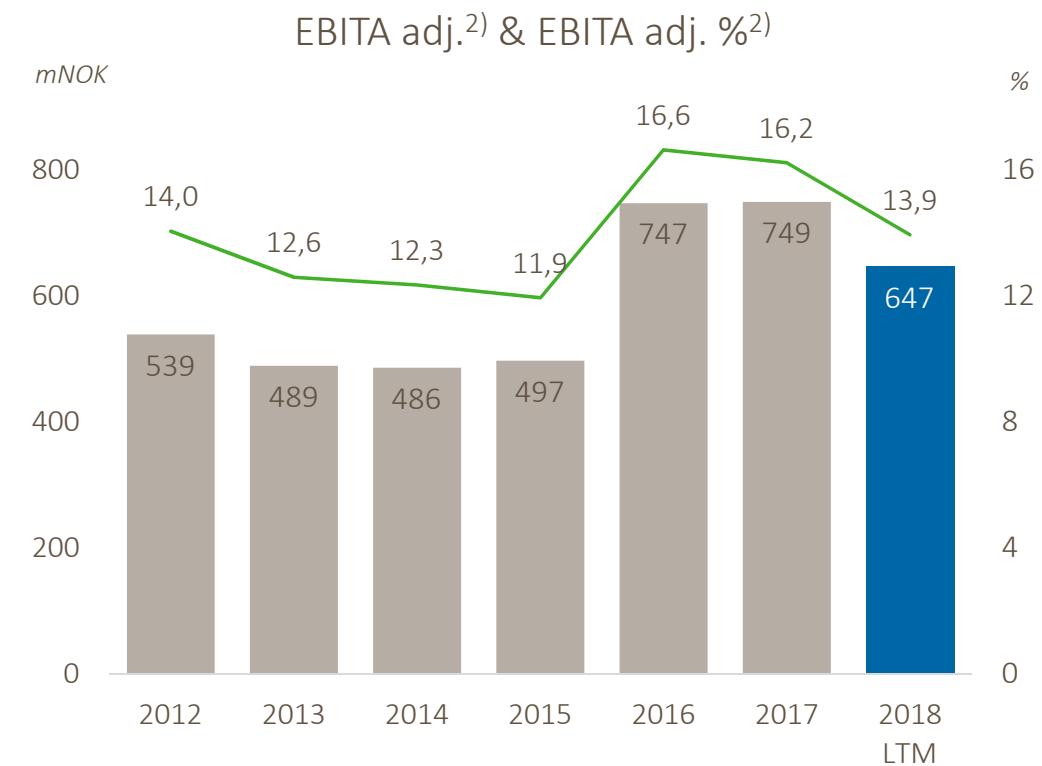
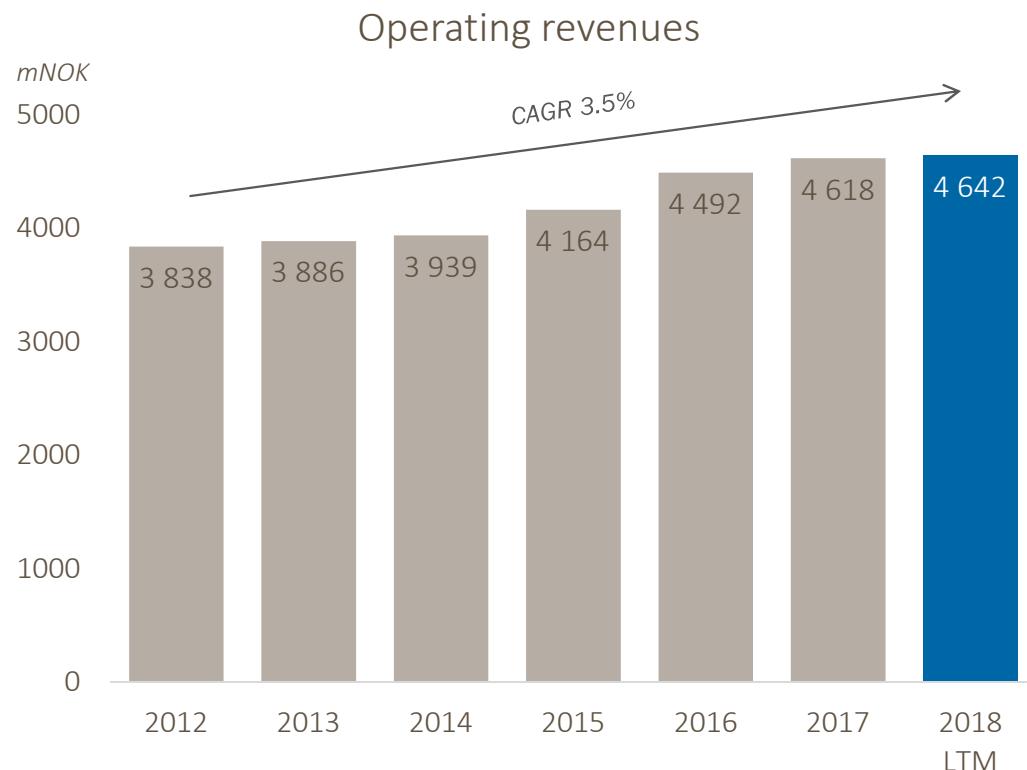
Share price, including
reinvestment of dividend

29,5%

Enterprise value =
market cap + net debt

20,8%

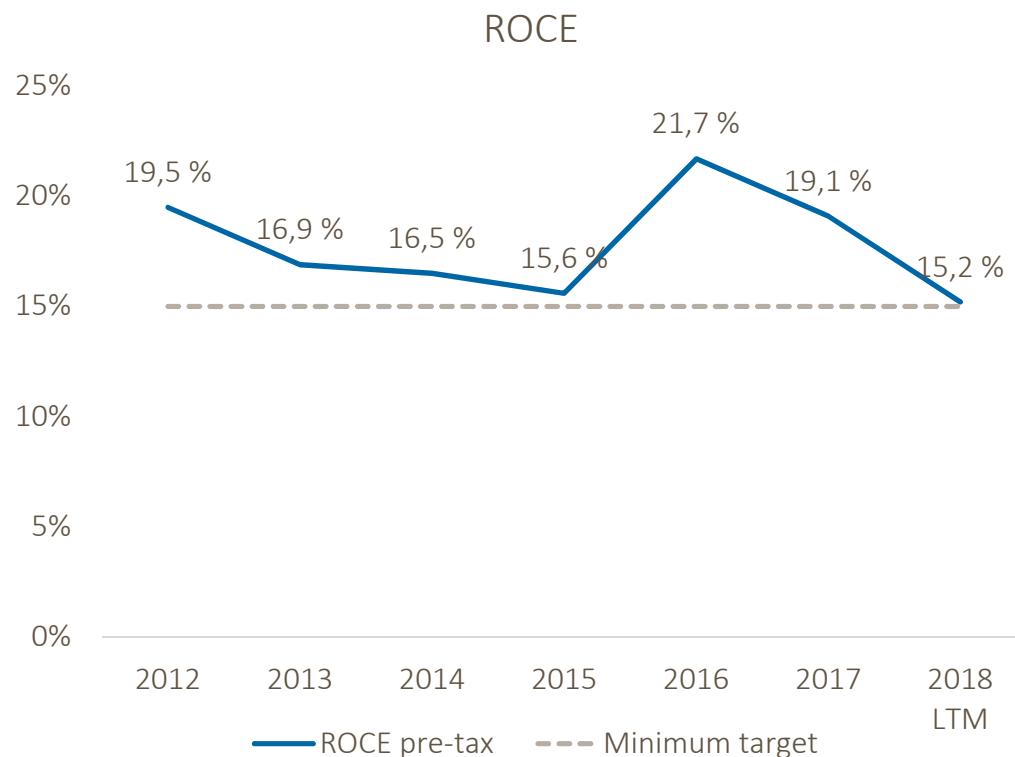
Key figures 2012 – 2018 LTM¹⁾



1) Last twelve months as per June 2018

2) Non-GAAP measures - see appendix

ROCE¹⁾ and profitability objectives

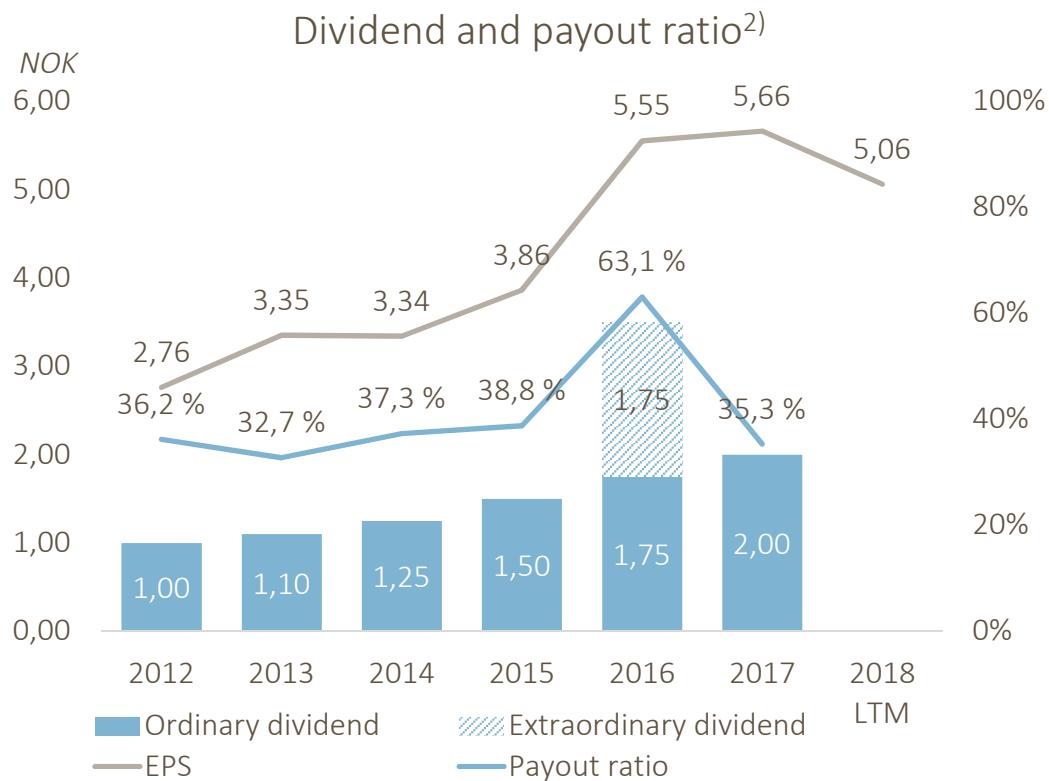


Profitability objectives

- ROCE >15% pre-tax over a business cycle
- IRR >15% pre-tax for expansion investments

1) Non-GAAP measure - see appendix

EPS¹⁾ and dividend



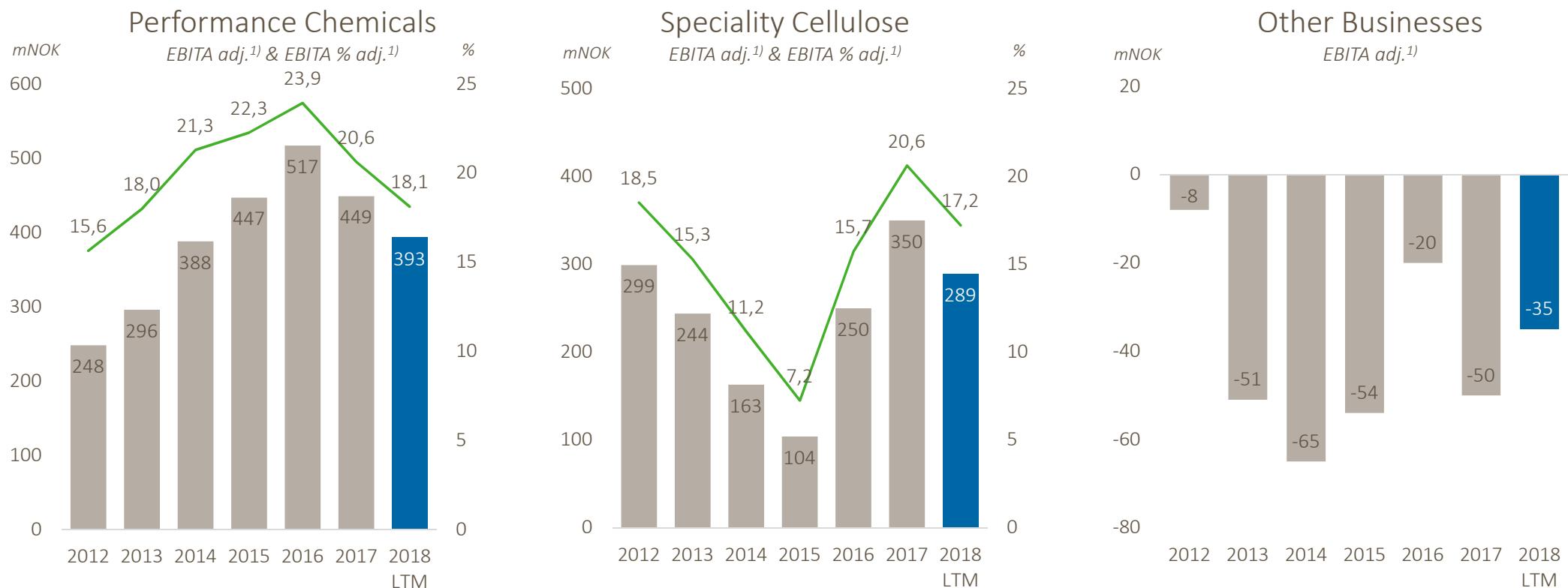
Dividend policy

- To pay regular and progressive dividends reflecting expected long-term earnings, free cash flow and expansion investments
- Annual dividend is targeted between 30% and 50% of net profit for the preceding fiscal year

1) Earnings per share

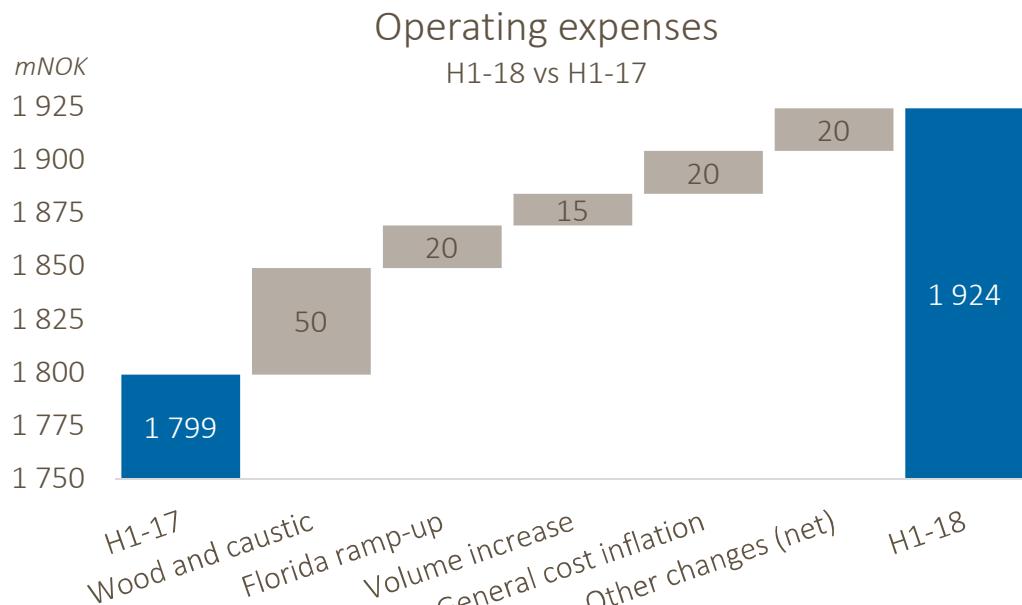
2) Total dividend per share divided by earnings per share

Key figures 2012 – 2018 LTM

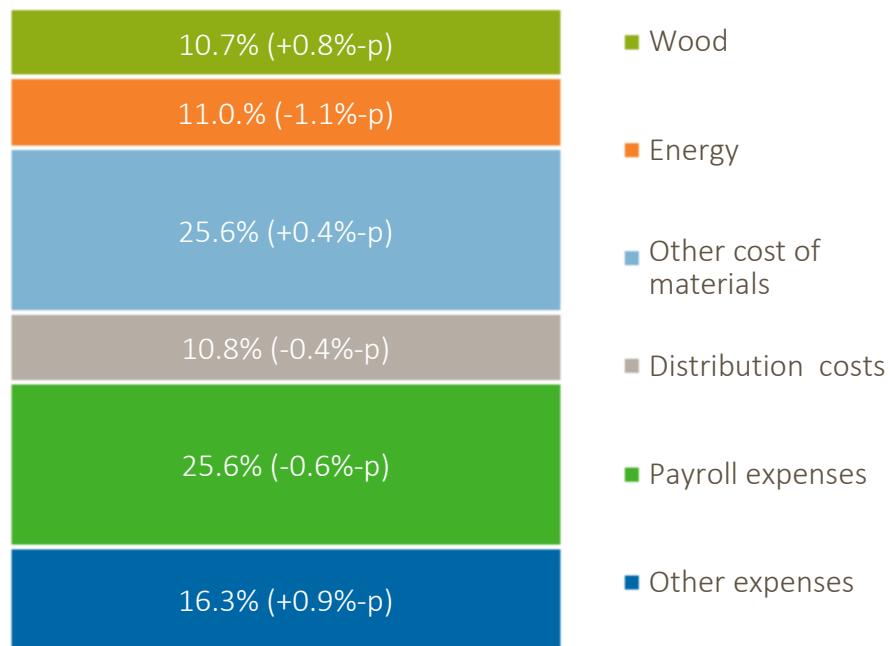


1) Non-GAAP measures – see appendix

Cost development

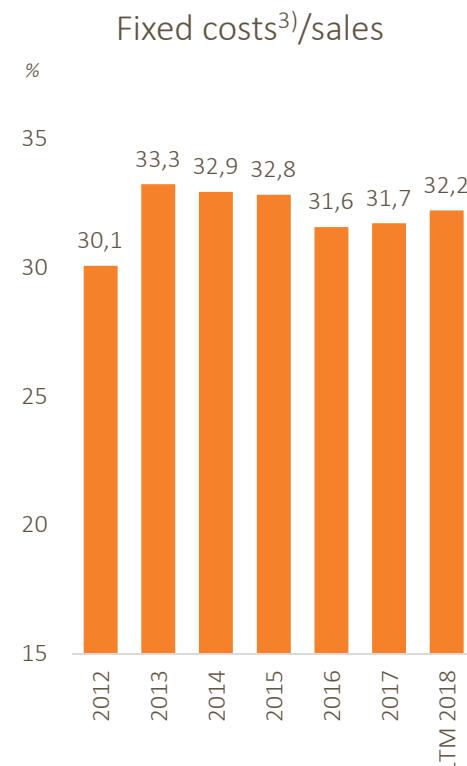
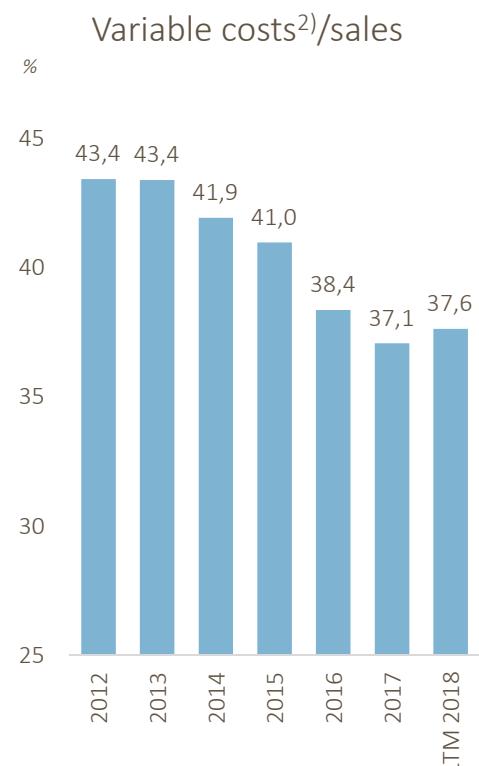
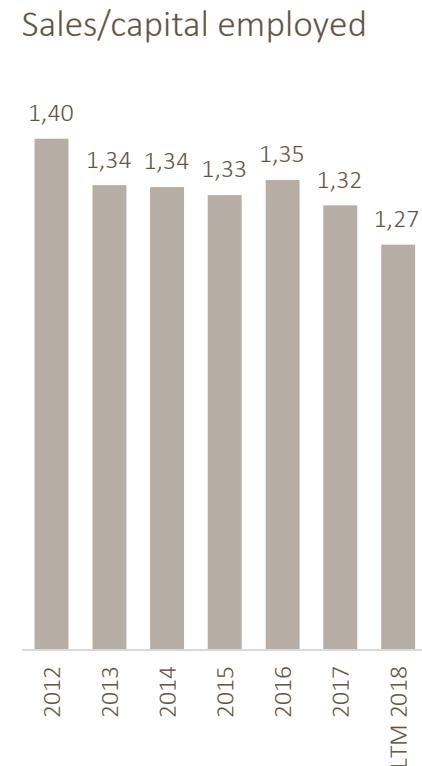
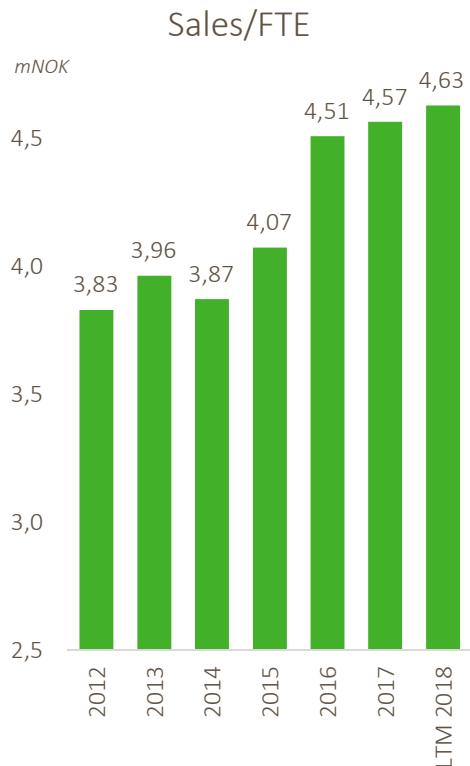


Cost distribution H1-18 (change from H1-17)



- Significant cost increases in H1-18
- No material change in relative cost composition
- Further wood price increase and full production costs in Florida in H2-18

Productivity¹⁾



1) Sales, FTE, capital employed, variable and fixed costs are adjusted for the direct impact from Cellulose Fibrils and LignoTech Florida

2) Variable costs are wood, energy and other cost of materials (ref previous slide)

3) Fixed costs are payroll expenses and other expenses (ref previous slide)



Continuous improvement

Projects completed in 2017 and 2018

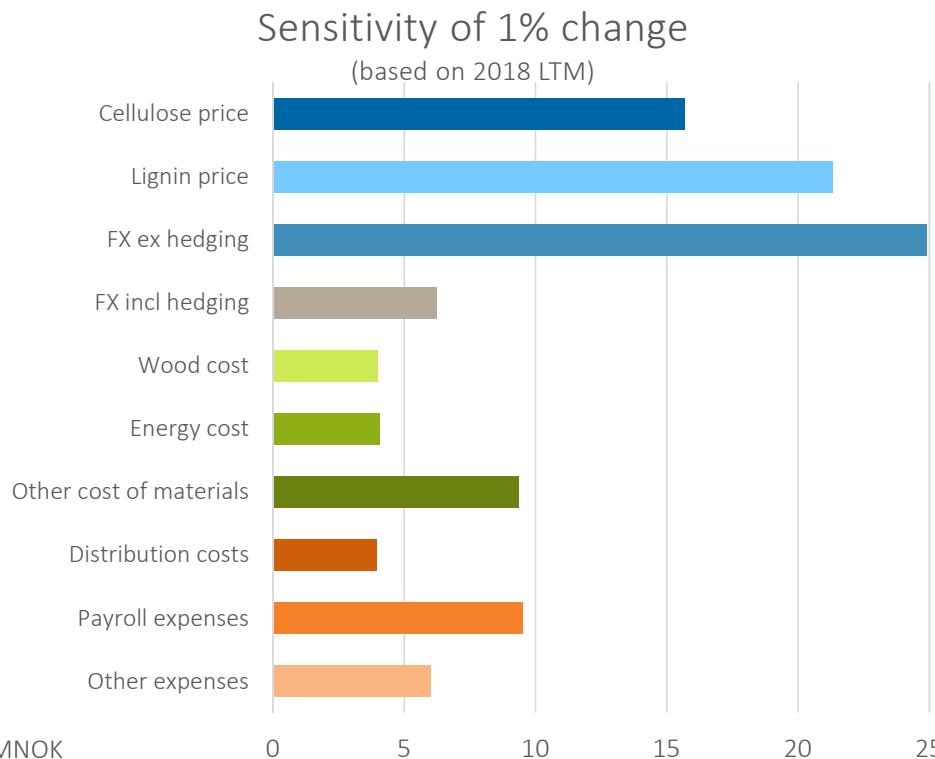
- Energy savings
 - ~125 GWh (base year 2014)
 - Full effect from late 2018
 - >10% reduction in heat energy consumption
 - ~45 mNOK in annual cost savings
 - Most projects supported by Enova¹⁾
- Increased throughput
 - Debottlenecking and further specialisation of lignin operation in Norway in 2017 and 2018, impact >50 mNOK from 2019
 - ~25% capacity increase for a key fine chemical product in 2017 and 2018

Ongoing and new initiatives

- Lignin operation upgrade in Sarpsborg
 - >40 mNOK in cost savings expected, full impact from 2021
- Sarpsborg site improvements
 - Several projects to increase volume and improve quality in 2018 and 2019, expected impact ~50 mNOK from 2020
 - Additional projects (energy savings, debottlenecking and further specialisation) in planning phase
- New lignin warehouse at Borg port
 - Optimise product flow and improve logistics
 - Reduce CO₂ emissions from road transport
- Digitalisation
 - New tools for maintenance and field operators
 - Inbound marketing
 - Robotics in administrative functions

1) Enova is a Norwegian government agency which promotes environmentally friendly restructuring of energy end-use, renewable energy production and new energy and climate technology

Sensitivity on EBITA adj.¹⁾



- Global presence, diversified product portfolio and GDP-driven demand reduce market risk
- Oil price affects demand and competition in certain markets, but main effect historically has been on NOK FX rate
- Significant FX exposure, softened by FX hedging²⁾ in the medium term
- No major single component in other cost of materials
- Distribution costs: Most products sold “delivered customer”
- Other expenses are repair and maintenance, external services, rental/leasing etc.

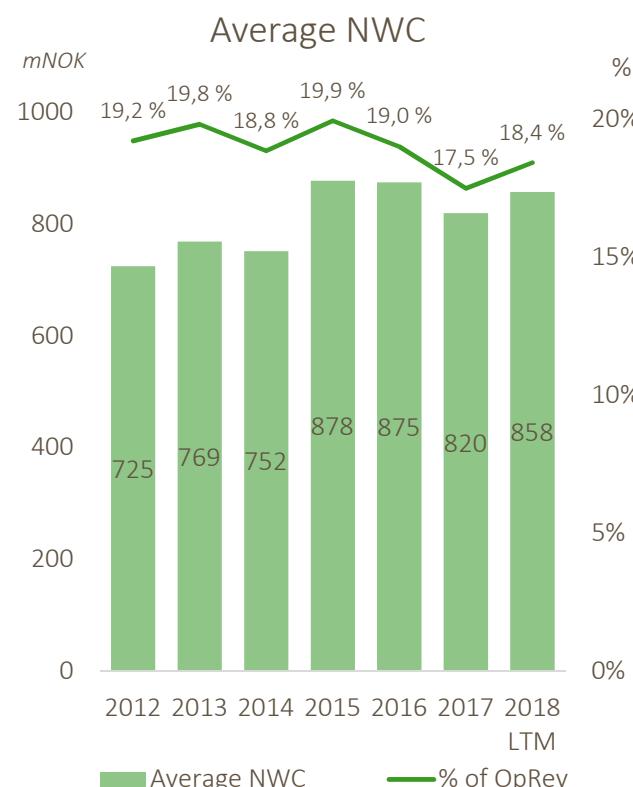
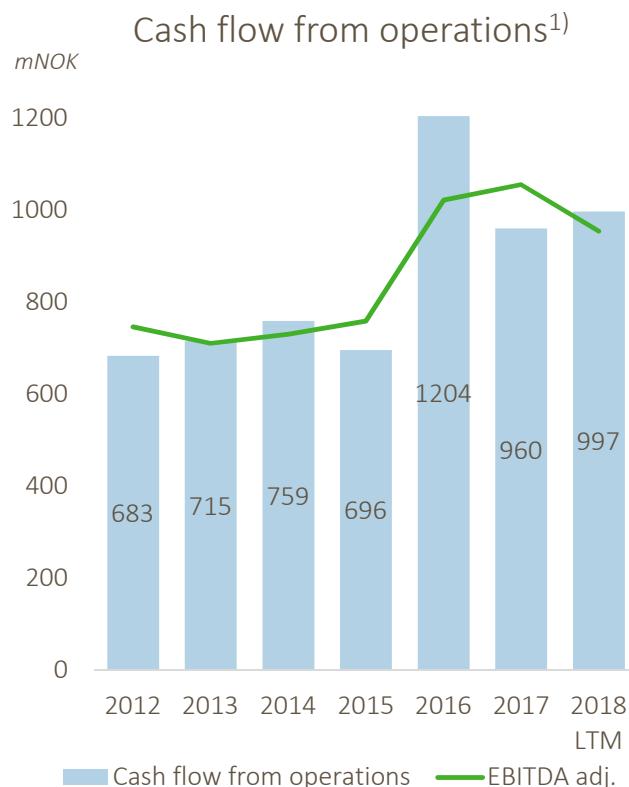
1) Non-GAAP measure – see appendix

2) Hedging based on expected net cash flow (EBITDA)

- **Base hedge** - 75%/50% on a rolling basis for 6/9 months for major currencies

- **Extended hedge** - 75%/50% of the next 24/36 months if USD and EUR are above predefined levels

Cash flow, NWC and investments



Cash flow targets: Average net working capital (NWC) at 20% of operating revenues, replacement investments at depreciation level

1) Non-GAAP measure – see appendix

Investment forecast 2018 – 2020

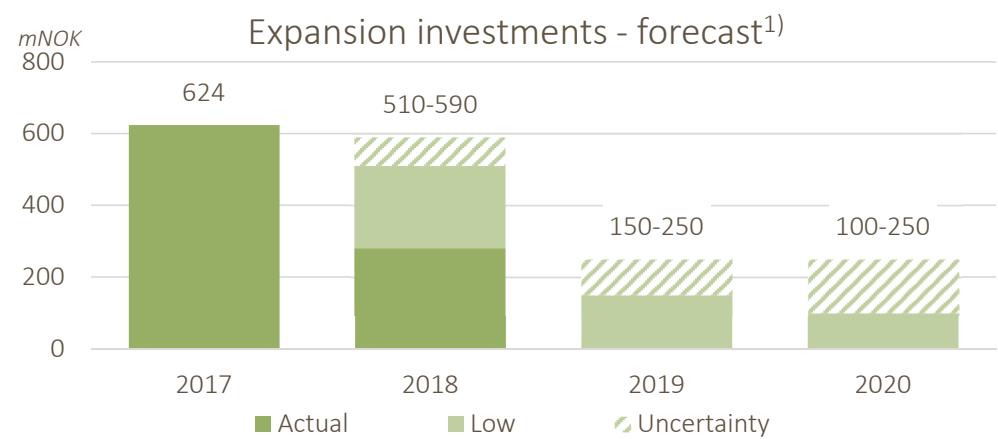
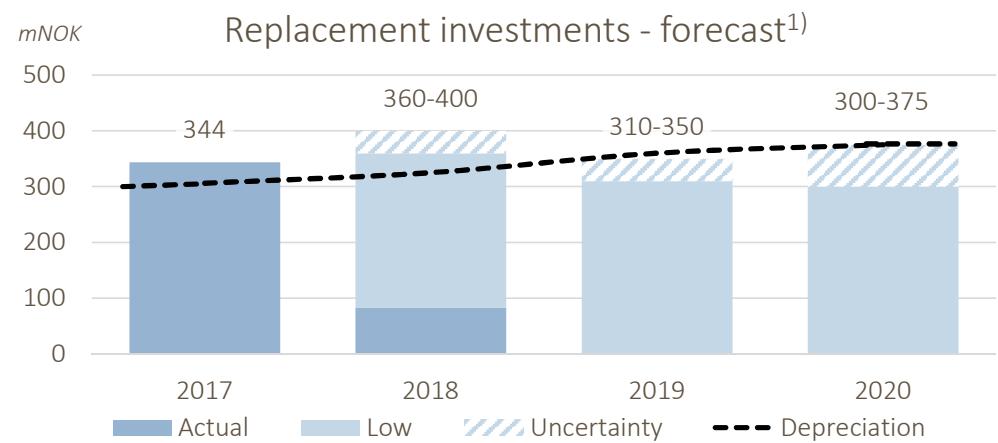
Replacement investments

- Targeted at depreciation level
 - Above target in 2017-2018 due to wood seasoning silos (covered by insurance) and part of lignin operation upgrade in Norway
- Expected at or below depreciation from 2019

Expansion investments

- Peak in 2017/2018
 - LignoTech Florida plant (phase 1): 110 mUSD (100%)
 - Ice Bear II project: 115 mNOK
 - Lignin operation upgrade Norway: 500 mNOK, 70% expansion, completion of investment programme expected Q3-19
 - Other projects (bioethanol plant upgrade, fine chemicals capacity, R&D activities)
- Expected to be at a lower level from 2019

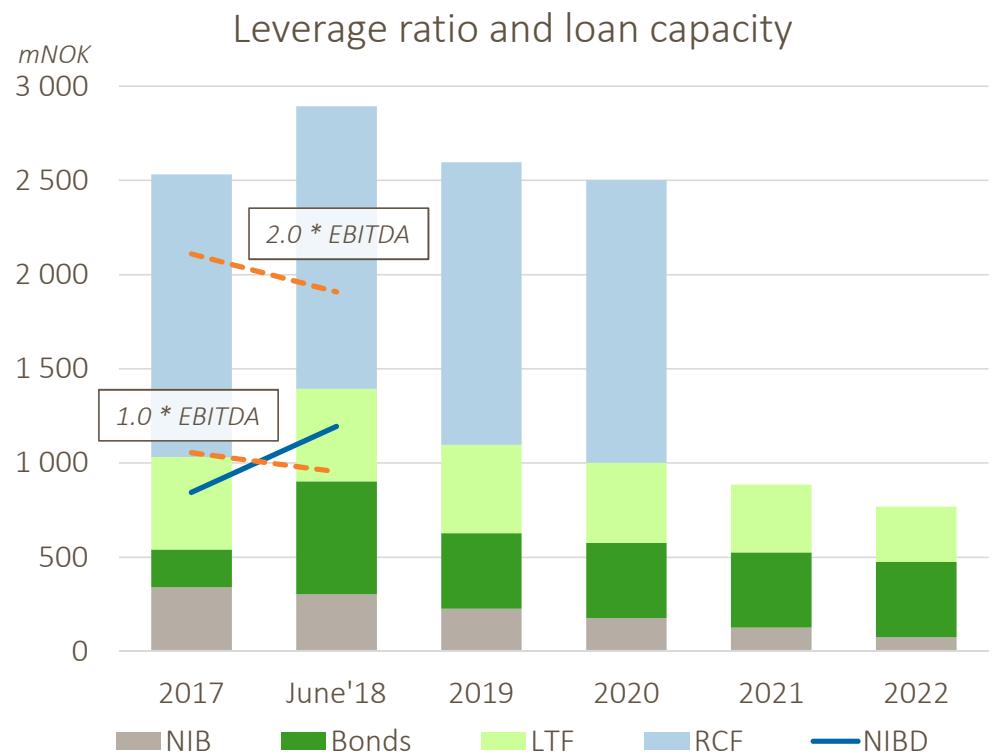
New projects may lead to additional investments



1) Uncertainty is related to final investment decisions, timing of investment payments, execution time, general risk and unexpected events

Capital structure

- Target for capital structure
 - Maintain key financial ratios corresponding to an investment grade rated company
 - Leverage ratio¹⁾ targeted between 1.0 and 2.0 over time
- Solid capital structure as per 30.06.18
 - Leverage ratio 1.25
 - Equity ratio¹⁾ 56.5%
- Borregaard has financial capacity for expansion
 - Revolving credit facilities (RCF), 1,500 mNOK, maturity 2021
 - 60mUSD term loan for LignoTech Florida (LTF), tenor 8.5 years from completion of project phase 1
 - Bond issues, 200 mNOK, maturity February 2019 400 mNOK, maturity June 2023
 - Nordic Investment Bank (NIB) loan, 40 mEUR, maturity 2024



1) Non-GAAP measures – see appendix

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Performance Chemicals
Speciality Cellulose
Cellulose Fibrils

12:00 Lunch





PERFORMANCE CHEMICALS

Morten Harlem
Executive Vice President



Overview

Market position

- Largest supplier with a global presence
- Unique technical and application expertise

Production

- Norway, USA, South Africa, Germany, Spain, Czech Republic, UK

Applications

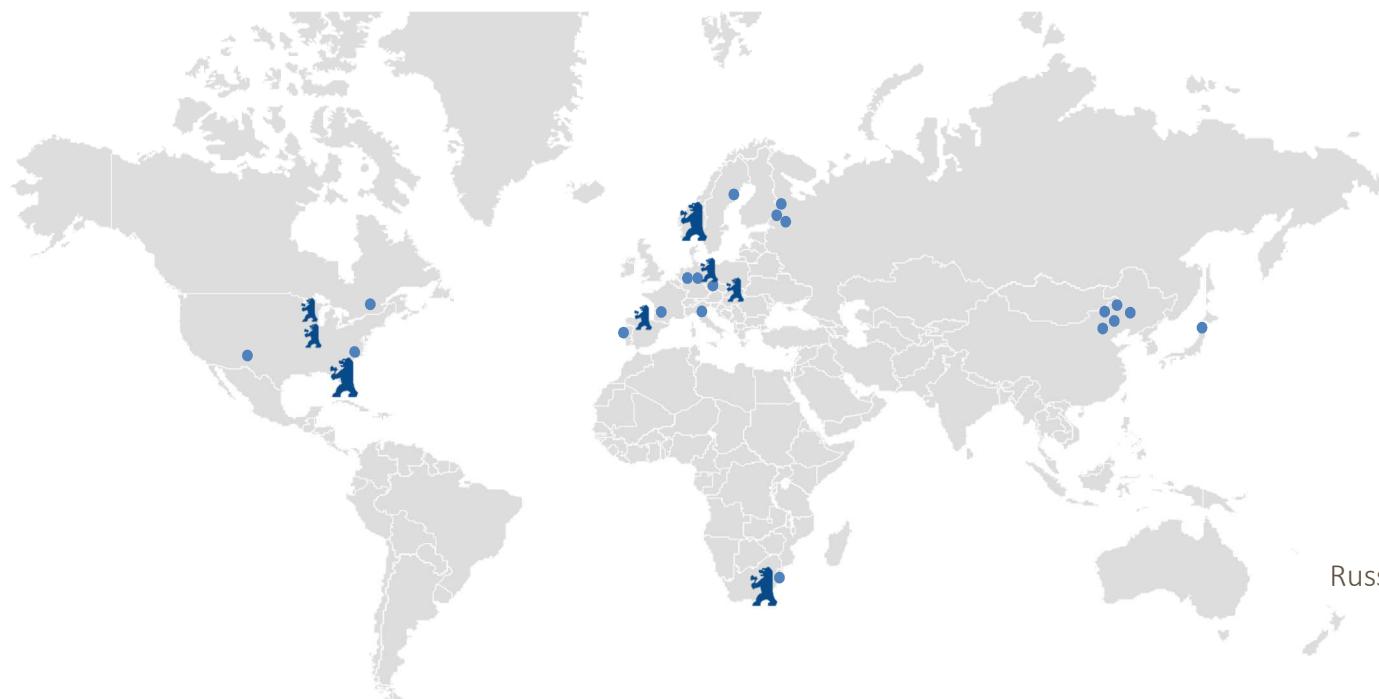
- Concrete admixtures
- Gypsum board
- Ceramics
- Animal feed
- Agro chemicals
- Soil conditioner
- Oil field chemicals
- Batteries



Key attractions

- A sustainable and broad product portfolio
- Large and diverse customer base
- High barriers to entry
- Operating revenues 2,176 mNOK (2017)

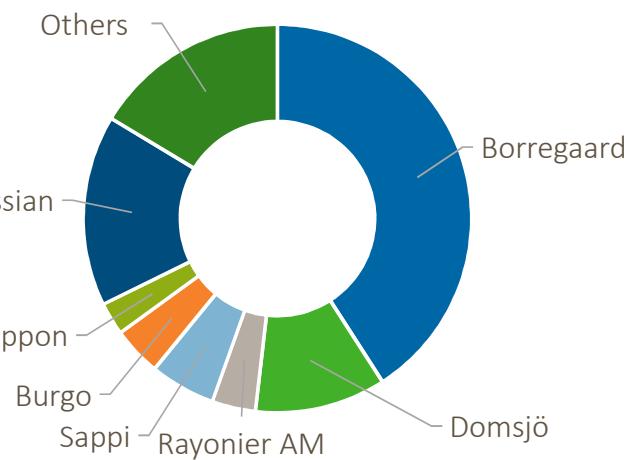
Lignin – the supply side



 *Borregaard manufacturing facilities*
Source: Borregaard estimates

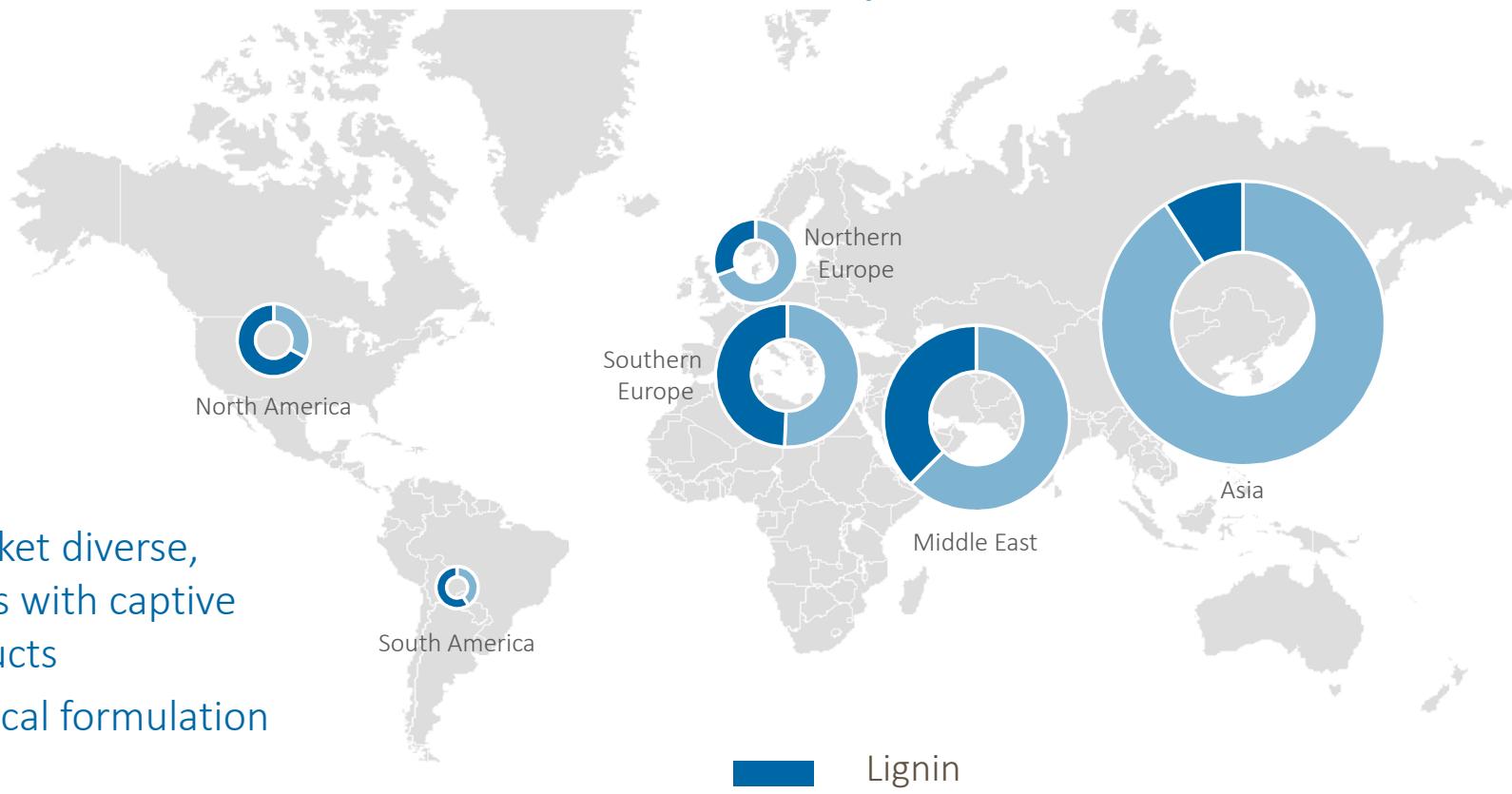
● *Others*

By sales volume 2017



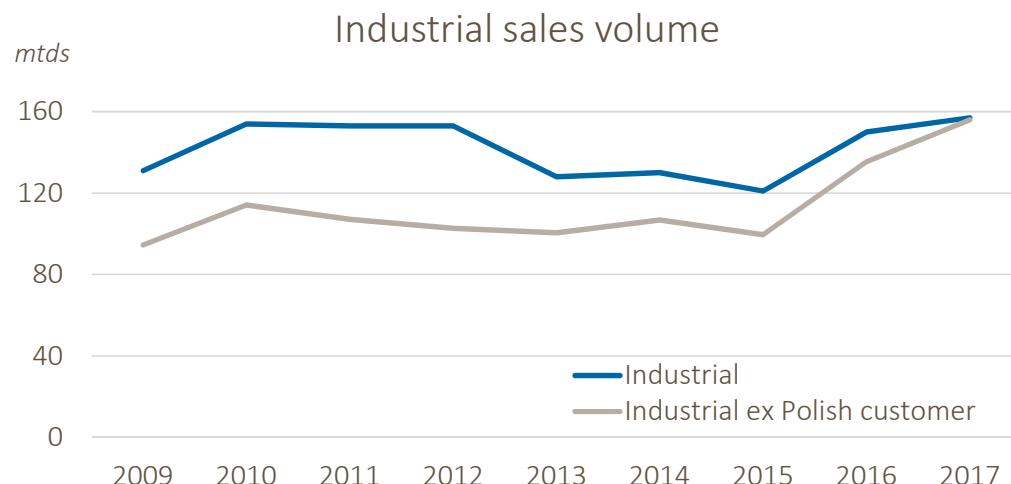
Concrete admixture formulation preferences

- Admixture market diverse, lignin competes with captive synthetic products
- Regional and local formulation preferences
- Climate influences formulation



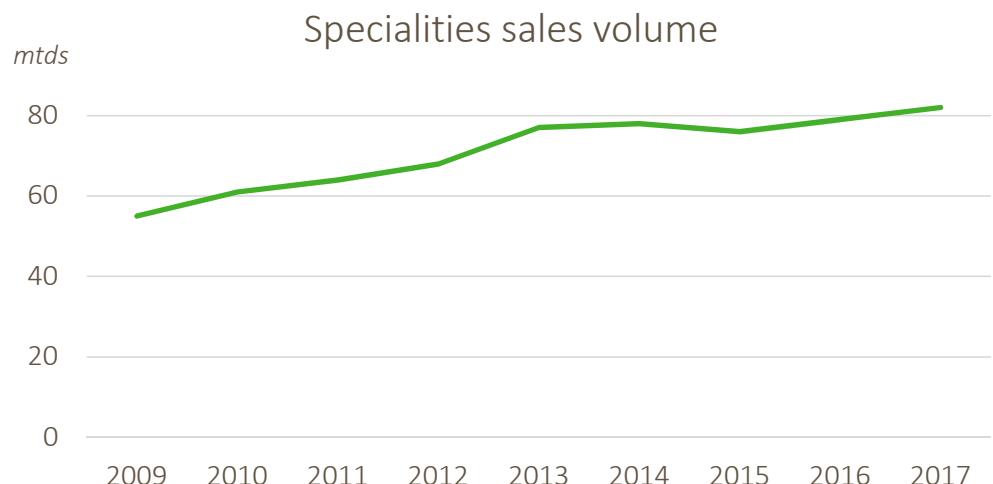
Sources: Global Cement Magazine, www.statista.com, www.polygongroup.com, Chemistry World, www.grandviewresearch.com, Deutsche Bauchemie, Association of Building Chemistry Producers, European Federation of Concrete Admixtures Associations, www.futuremarketinsights.com, Borregaard estimates

Industrial¹⁾ and Specialities



Industrial (previously Miscellaneous)

- Significant global volume growth since 2015 across a wide range of applications
- Demonstrates capabilities in innovation, market development and sales
- Robust and growing customer and application base



Specialities

- Volume growth based on capabilities in innovation, application development and sales
- Lead acid batteries for automotive and industrial applications on a steady growth path
- Increasing use of green alternatives in agrochemical applications

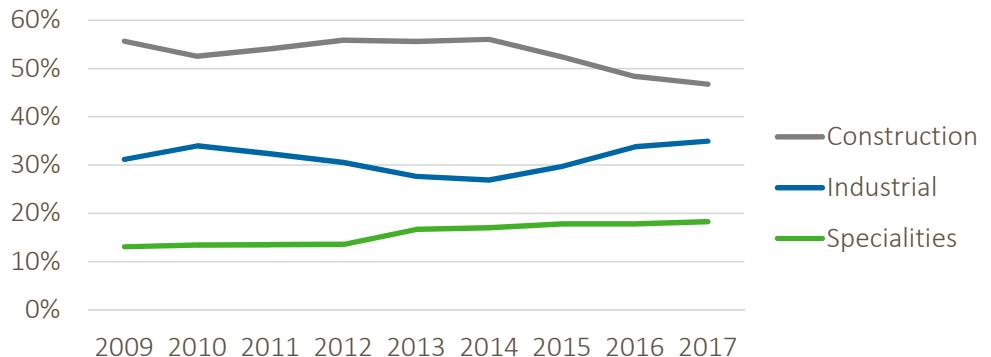
¹⁾ Segment renamed to Industrial, formerly reported as Miscellaneous

600 products to around 2,800 customers (2017)

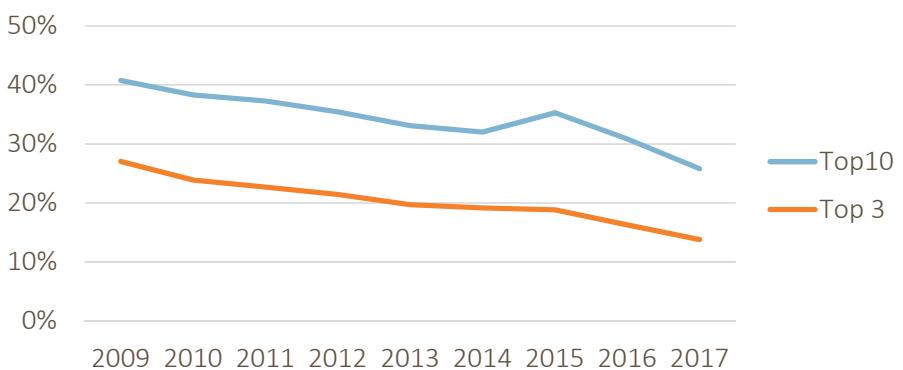
Lignosulfonate properties	
Properties	Applications
Binding agent	<ul style="list-style-type: none"> Feed binder Granulation aid Ceramic tiles Dust binder
Dispersing agent/ Rheology control	<ul style="list-style-type: none"> Concrete admixture Agrochemicals Dyestuffs Metals and minerals Carbon black and pigments Micronutrients
Crystal growth control	<ul style="list-style-type: none"> Battery expander Retardation of cement hydration Oil-well cementing
Functional additive	<ul style="list-style-type: none"> Phenol replacement UV-protection Antioxidant SoftAcid Soil conditioner Complexing agent



Split between segments (volume based)



Top 10 and top 3 customers in % of revenues



End markets growth forecast

Construction	Industrial	Specialities			
					
	Construction	Feed	Industry	Agro /Agchem	Automotive
EMEA	2 - 4%	2 - 4%	1 - 2%	3 - 5%	1 - 3%
Americas	0 - 3%	2 - 4%	1 - 3%	5 - 8%	+/- 0
Asia/Pacific	2 - 4%	3 - 7%	5 - 7%	6 - 10%	2 - 4%

*Indicative annual rates to 2021
based on 2.5% annual GDP growth rate*

Sources: IMF, BNP Paribas, LafargeHolcim, Heidelberg Cement, Portland Cement Association, Phillips McDougall, Agropages, DowDuPont, Syngenta, Bayer, Johnson Controls, Alltech, OECD-FAO, Borregaard estimates

LignoTech Florida



- The venture

- Located at Rayonier Advanced Materials' (RYAM) Fernandina Beach softwood sulphite pulp mill
- Borregaard (55%) and RYAM (45%) ownership
- Borregaard's know-how and technology

- New plant officially opened 26 June 2018

- Investment completed on time and cost
- Production commenced in June

- Commercialisation

- Diversified product and application portfolio established
- Sales volume developing according to plan

Upgrade and specialisation of Sarpsborg operation



- 500 mNOK investment programme
 - Partly expansion, partly replacement
 - Additional dryer with packaging capacity
 - Tanks for storage of liquid materials
 - Improved solutions for logistics, infrastructure and energy
 - Completion investment programme Q3-19
- Several benefits
 - Further specialisation on a unique raw material base
 - Reduced exposure to cyclical market segments
 - Optimisation of production campaigns, internal and outbound logistics
 - Substantial environmental and safety benefits

Economies of scale in operations



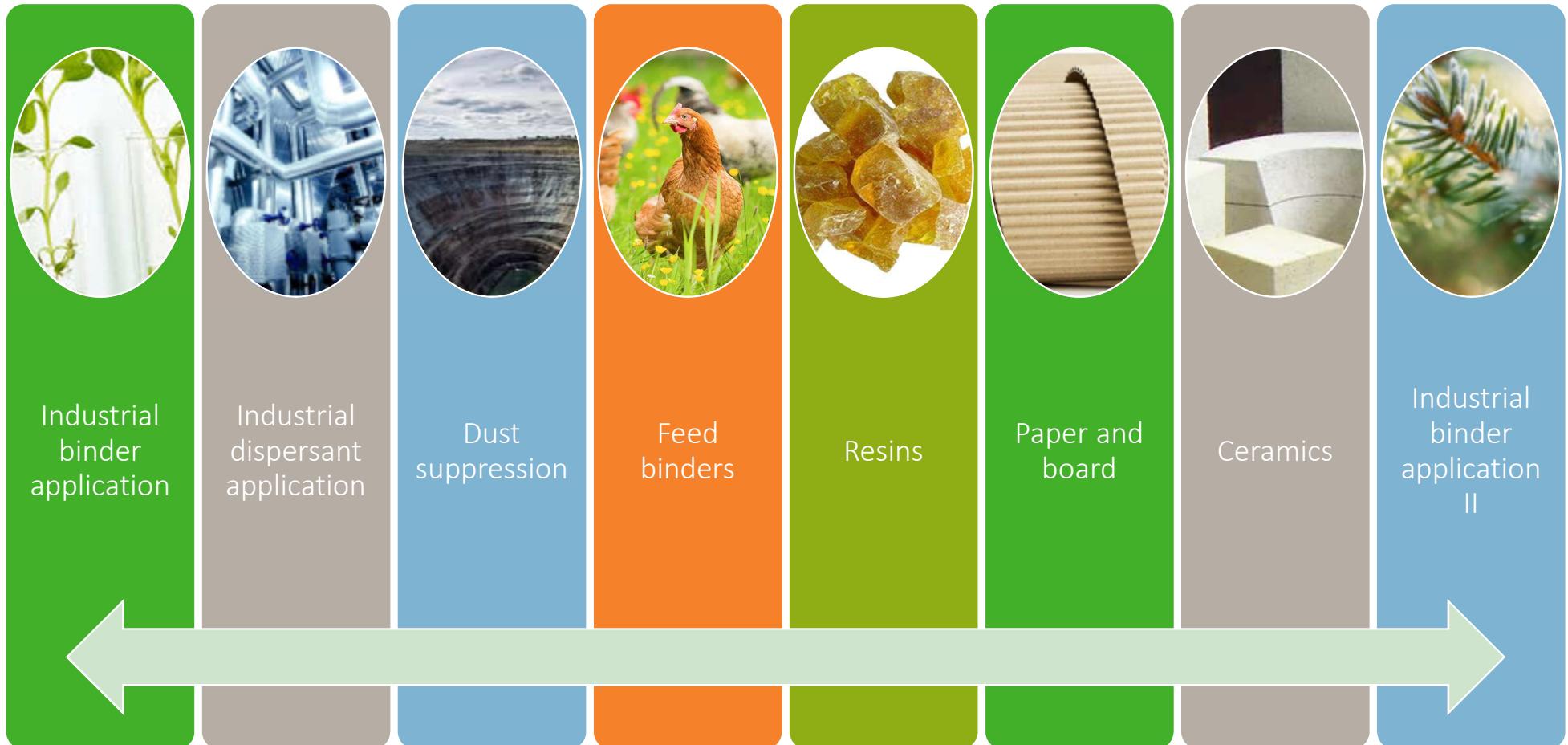
- Investments in added capacity and capabilities in USA and Norway will secure further specialisation and diversification
- 3 cornerstones (Norway, USA and South Africa) give ability to capture global market growth with improved cost efficiency
 - Reduced freight cost
 - Reduced warehouse and tank cost
 - Improved logistics set-up with reduced complexity
 - Improved environmental footprint
 - Increased flexibility
 - Elimination of bottlenecks
 - Reduced fixed cost
 - Benchmarking and sharing of best practice

Specialisation



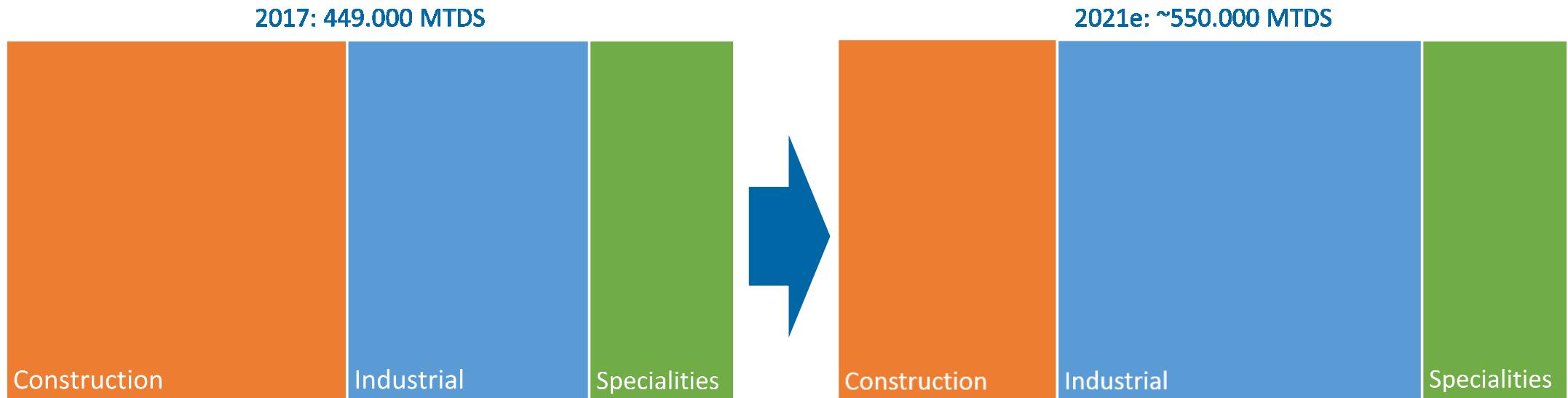
- Drive growth within agchem, plant nutrition and batteries
 - Growth through application development based on new and existing products
 - Innovation focused on improved properties for existing and adjacent niches
- Growth within other speciality areas
 - Sustainability drive within oilfield chemicals and dye industry
 - Develop, introduce and position new green products
 - Focus on compatibility and enhanced properties for certain niches
 - Tailor-made products for targeted end markets

Further diversification



Driving specialisation and diversification

Industrial and Specialities targeted to represent 70% of total sales volume by end 2021



Sustainability – feed additives

- Activation of immune system as an alternative to antibiotic growth promoters
- Organic acids function as antimicrobial agents
- Borregaard's patented SoftAcid technology
 - Organic acids combined with lignin derivative
 - Efficient, far less corrosive and safer to handle than organic acids in pure form



Sustainability – dye dispersants

- Dyes used for colouring textiles
- Borregaard products a sustainable and renewable alternative to synthetic dispersants
- Similar or improved performance
- GHG reduction



Sustainability – agchem

- Trend towards replacing conventional petrochemical (solvent-based) liquid formulations with water-based and granulated formulations
- Water-based suspension concentrates and water dispersible granules require a dispersing agent
- Lignin is a biobased, biodegradable, non-toxic alternative to petrochemical dispersants



Strategic priorities

- Specialisation and diversification
 - Bring new speciality products and applications to market
 - Continue growth in industrial applications based on hardwood and new softwood capacity
- Capacity reductions in hardwood reduce dependency on concrete admixtures
 - Target to increase Specialities and Industrial to 70% of total sales volume
- Structure and capacity
 - Florida plant ramp-up
 - Sarpsborg investment programme on time and cost
 - Economies of scale in operations
 - Tune organisation to reflect new manufacturing structure
- Sustainability
 - Increase awareness and recognition of Borregaard's biobased alternatives to synthetic binders and dispersants

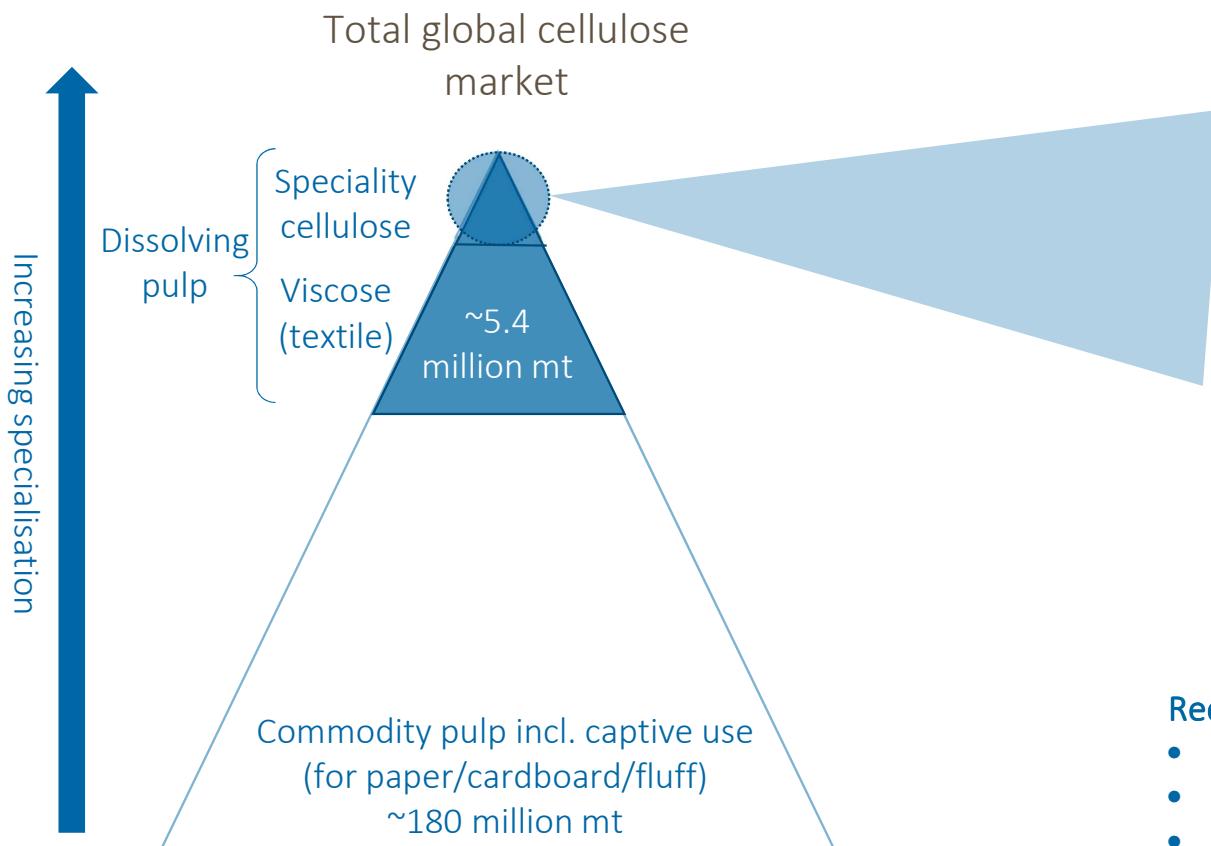


SPECIALITY CELLULOSE

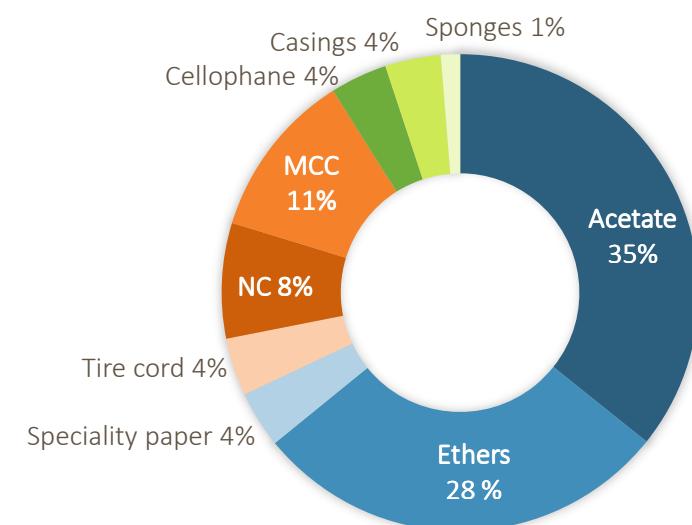
Tom Erik Foss-Jacobsen
Executive Vice President



The speciality cellulose market



Speciality cellulose market ~1.6 million mt



Recent trends

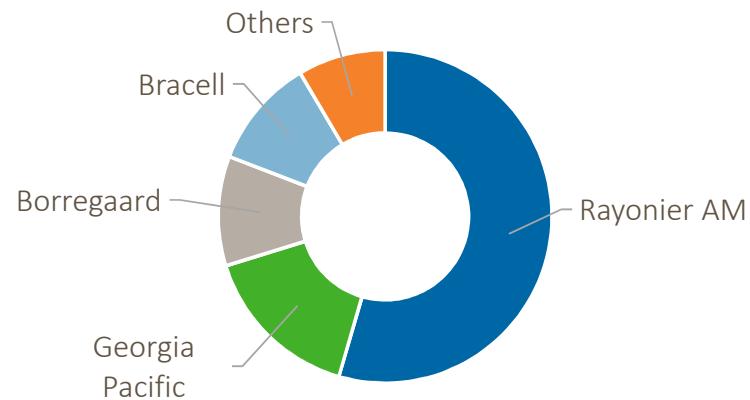
- Total speciality cellulose market relatively unchanged
- Viscose (textile) market growth 8.4% annually last 5 years
- Supply side restructuring

Source: Borregaard estimates, www.celco.ch, 2017, RISI 2016

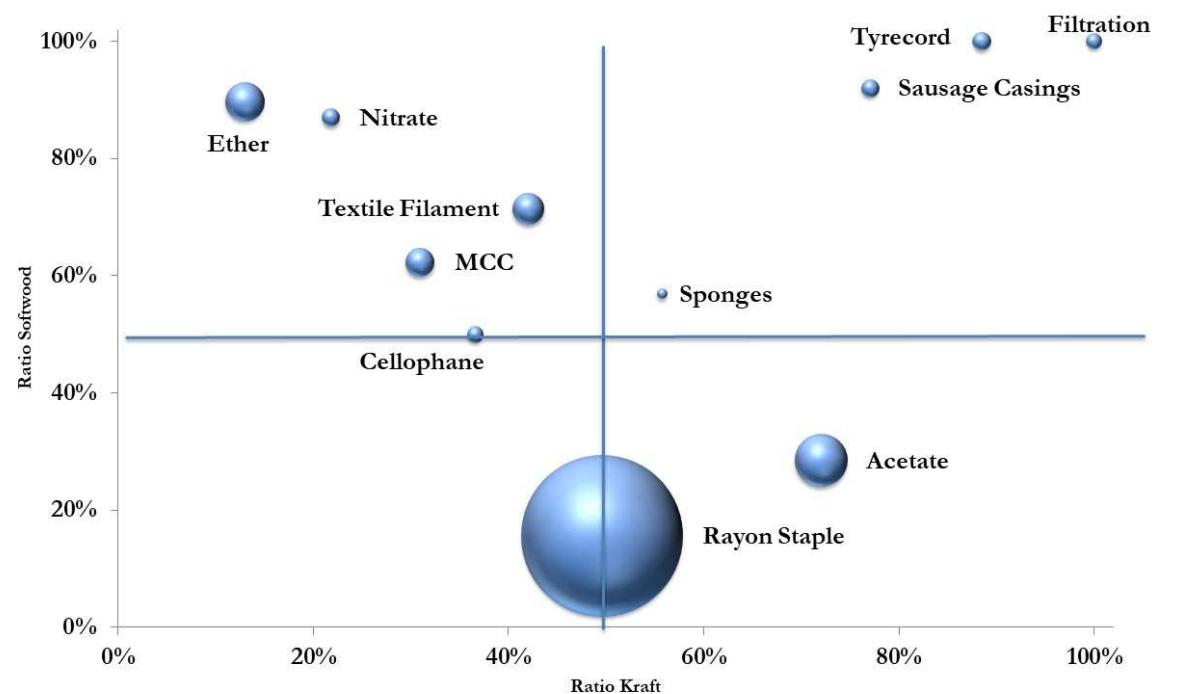
All figures in cellulose tonnes – wood pulp and cotton linter pulp/refined cotton. Dissolving pulp figures do not include fluff, and (modified) paper pulp

Speciality cellulose industry

Speciality cellulose sales volume by producer



Dissolving pulp segments by wood species and pulping process



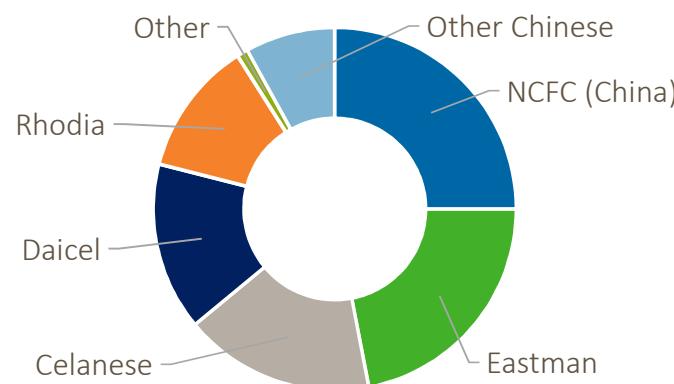
Top 4 speciality cellulose producers by wood species and pulping process

	Hardwood/ kraft	Softwood/ kraft	Hardwood/ sulphite	Softwood/ sulphite
Rayonier AM	✓	✓		✓
Georgia-Pacific		✓		
Bracell	✓			
Borregaard				✓

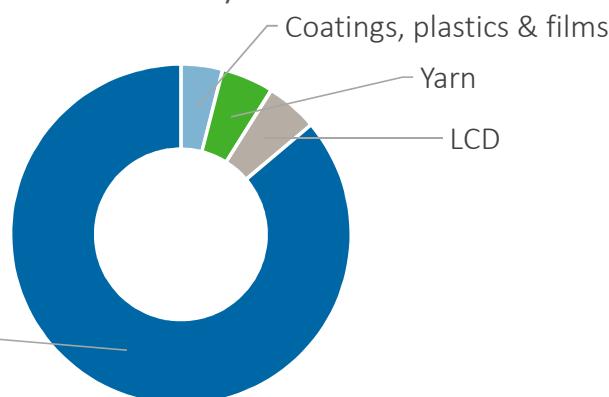
Source: Borregaard estimates, www.celco.ch

Acetate industry status and outlook

Acetate tow capacity by producer



Acetate sales by end-use

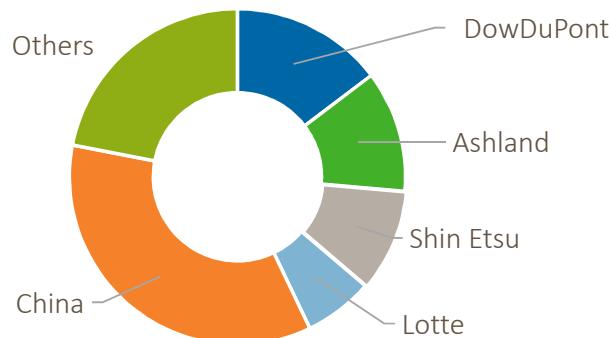


Source: Borregaard estimates, www.celco.ch, Celanese presentation June 2017

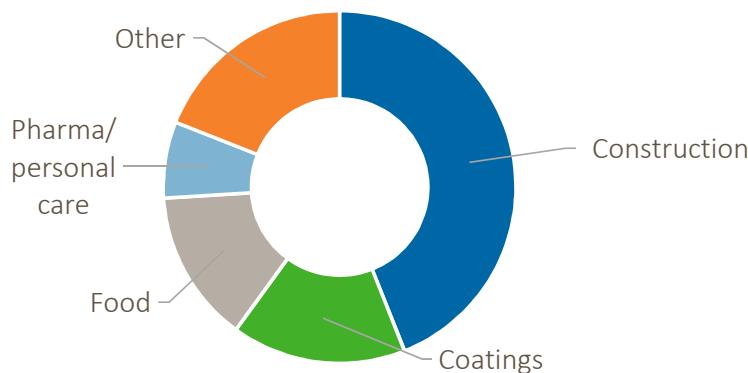
- Top 5 acetate tow producers represent >90% of global capacity
- Cigarette filter sales ~85% of total sales
- In 2012-17, demand for acetate pulp declined -2.6% annually, expected at -2-0% going forward
 - Slower cigarette consumption growth in China
 - Low capacity utilisation in acetate tow (~80%), rationalisation expected
 - Cost focus among acetate tow producers, looking for lower cost pulp options
- 'Heat-not-burn' cigarettes (e.g. PMI IQOS) becoming popular, still small share
- Ice Bear strategically important
 - Ability to offer higher purity products important to defend existing and compete for new/additional filter tow business
 - Potential for growth in other acetate segments

Ether industry status and outlook

Cellulose ether capacity¹⁾ by producer



Ether sales by end-use



Source: Borregaard estimates, www.celco.ch

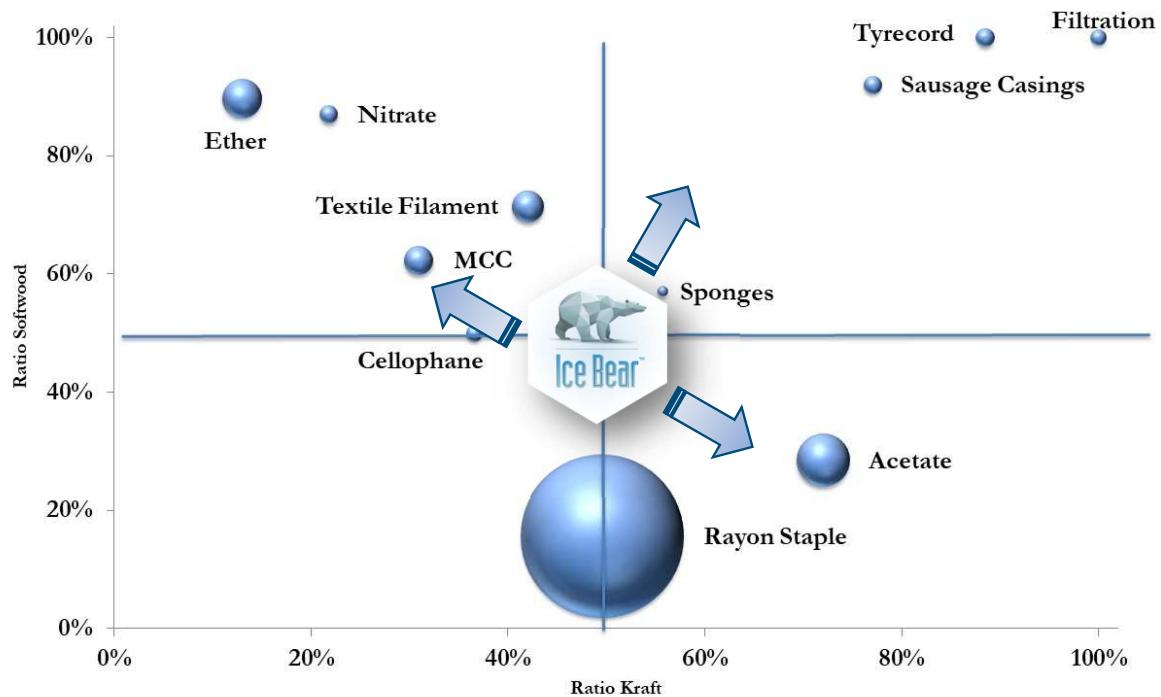
1) Cellulose ether capacity excl. technical grade CMC

- Top 4 ether producers represent ~45% of global capacity
- 1/3 of global capacity is in China
- Construction & coatings account for ~60% of total sales, sales to food, pharma and personal care ~20% of total sales
- In 2012-17, demand for ether pulp grew 4.3% annually
 - Solid growth in construction and new cellulose ether capacity under construction
 - Strong growth in food & pharma
 - Annual growth estimated at 3-4% towards 2021
- Potential for further growth and specialisation

Ice Bear status

- Strategic initiative enabling further specialisation and flexibility
 - Higher purity products important to defend existing and compete for new/additional filter tow business
 - Increasing interest from other speciality segments – “niches within the niches”
- Capacity expansion on time and cost
 - 115 mNOK investment completion Q4-18
 - 60,000 mt total capacity
- Ramp-up based on market demand
 - Estimated sales potential 20-30,000 mt in 2019

Dissolving pulp segments by wood species and pulp process



Source: Borregaard estimates, www.celco.ch

2nd generation bioethanol



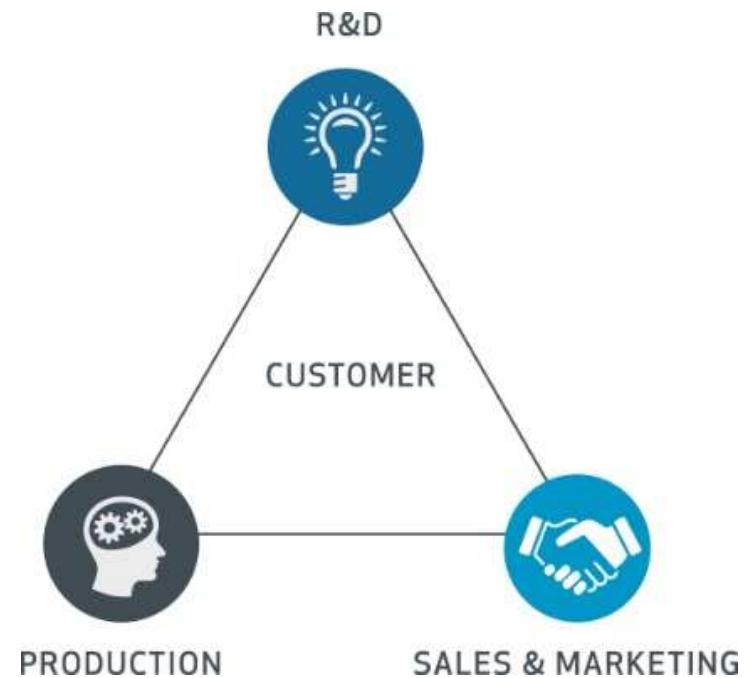
- Bioethanol contributes to the overall value creation in the biorefinery
 - 20 million litres capacity, delivered as 96% or 100% bioethanol
 - Life cycle analysis shows favourable environmental footprint compared with petrochemical substitutes
- Expansion project - new dehydration plant
 - 63 mNOK investment¹⁾, started up Q1-18
 - 30% investment grant from Enova²⁾
 - Full flexibility between 96% and 100% bioethanol
 - Political incentives drive specialisation and value
 - Significant growth in biofuel, taking major part of volume in 2018

1) Includes facility to capture and store biogas

2) Enova is a Norwegian government agency which promotes environmentally friendly restructuring of energy end-use, renewable energy production and new energy and climate technology

Speciality Cellulose - strategy

- Secure and further develop current strong positions
 - Leading supplier to cellulose ethers
 - A key supplier to cellulose acetate
 - Strong presence in other speciality segments
- Specialisation and innovation
 - Develop new business with sustainable price premium vs viscose (textile)
 - Ice Bear
 - “Niches within niches”
- Continuous improvement of productivity and product quality





CELLULOSE FIBRILS - STATUS AND OPPORTUNITIES

Pål Romberg
Executive Vice President

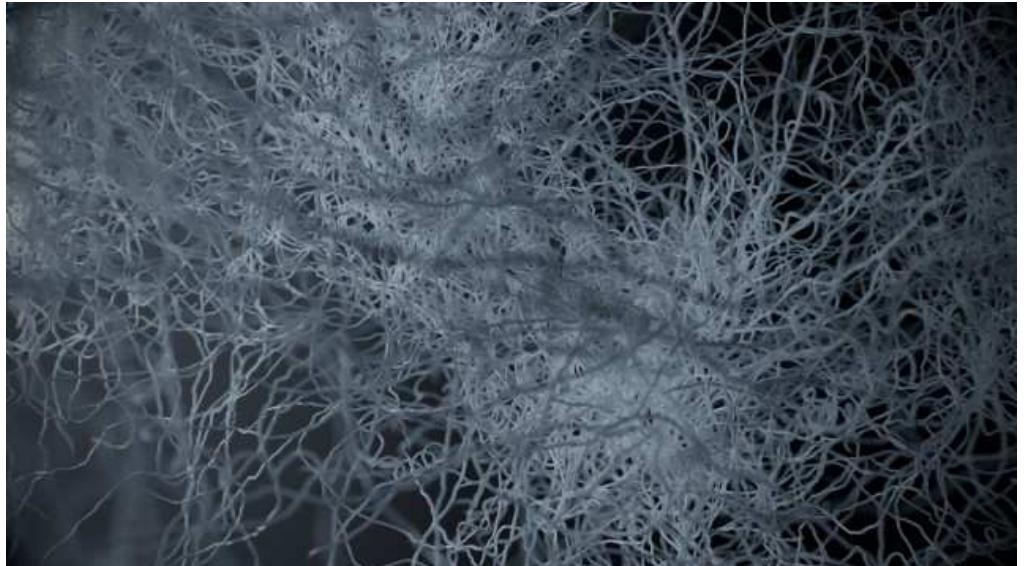
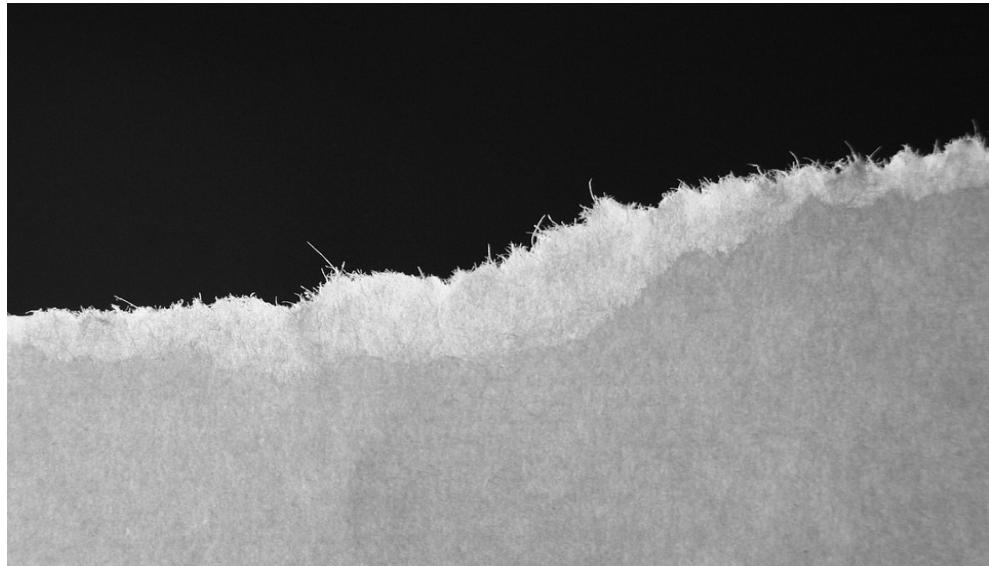


Cellulose Fibrils

- Two product categories
 - Exilva – additive for industrial applications
 - Commercial size plant in Norway
 - SenseFi – additive for food applications
 - Demonstration plant in the US



The Exilva technology



Cellulose fibres defibrillated into millions of tiny fibrils

Nanocellulose landscape

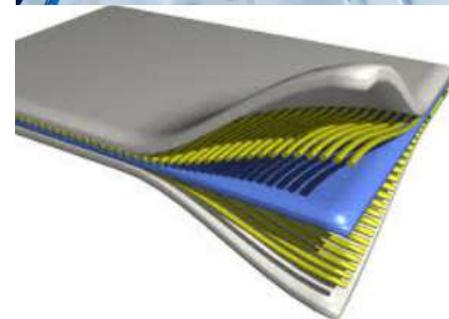
- Three main product categories
 - NCC/CNC - nano cellulose crystals
 - NFC/MFC - nano/microfibrillated cellulose
 - CNF - ionic cellulose nano fibrils
 - Significant variations within each product group
 - Few standards exist
- Typically more complementary than competing in use, some overlaps
- Crystals and ionic fibrils classified as nano by EU and USA (EPA), while NFC/MFC are not as they form micro clusters
- One commercial size plant exists in each category
 - NCC/CNC - Celluforce, Canada
 - NFC/MFC - Exilva, Norway
 - Several full-scale captive plants in pulp and paper
 - CNF - Nippon Paper, Japan
 - Many pilot plants with 5-30 mt capacity



NCC/CNC –
strength focus



NFC/MFC –
rheology focus



CNF –
composites focus

Nanocellulose market still embryonic

- Market analysts estimate that the nanocellulose market could grow to 700-1,000 mUSD by 2024¹⁾
 - NFC/MFC estimated to be 50%
 - Awareness a possible limitation
- NFC/MFC market today
 - Largest volumes in paper and packaging (captive)
- The rheology modifiers market is large (5 bnUSD), but complex and fragmented
 - Highest interest from Exilva prospects



HOME > PRESS RELEASE > NANOCELLULOSE MARKET WORTH OVER \$1BN BY 2024

Nanocellulose Market worth over \$1bn by 2024

Published Date: March 5, 2018 Author: Global Market Insights, Inc.

1) Markets Insider, Global Market Insight, Transparency Market Research

Why use Exilva – rheological properties

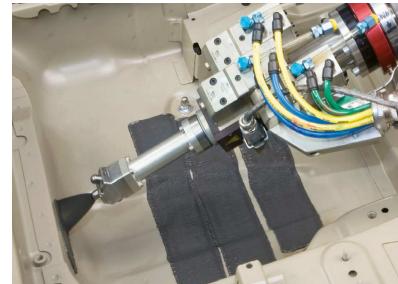
- Control or improve flow

- Thickening solutions
- Stability of solutions
- Becomes thin when force is applied
- Regains viscosity very fast

- Examples

- Glue application
- Prevent settling or separation
- Spray thicker or higher solids
- No sagging or dripping

<https://www.youtube.com/watch?v=y2sfGeEDi8Y>



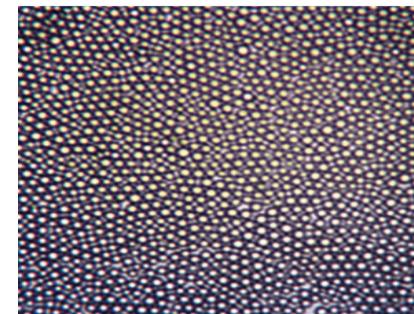
Why use Exilva – film forming properties

- Create a barrier or a film

- Block air and oil/grease
- Prevent cracking
- Increase strength
- Efficient distribution

- Examples

- Sound insulation or packaging material
- Coating edges or thicker layer
- Light weighting boards
- Large surface area, e.g. sunscreen



How do we sell it?

- Inbound marketing
 - Blogs, social media, Google AdWords
 - Potential customers initiate contact and take active part in innovation
 - Free samples programme
- Specialised distributors (>20)
 - Increased reach
- CRM tools
- Customer leads from patent analysis
 - 15-20 new nanocellulose patents every week
- Technical bulletins

Exilva A product by **Borregaard**
The leading blog on nanocellulose

Having trouble producing stable foams?

Posted by **Anni Karppinen** 28. February 2017

A BLOG FROM BORREGAARD
Exilva is **Borregaard's** innovative new additive within the field of Cellulose fibres / Microfibrillated cellulose (MFC). Exilva is a completely natural and infinitely sustainable performance enhancer that improves rheology and stability in product formulations.

Visit www.exilva.com

SUBSCRIBE TO OUR BLOG

Email*

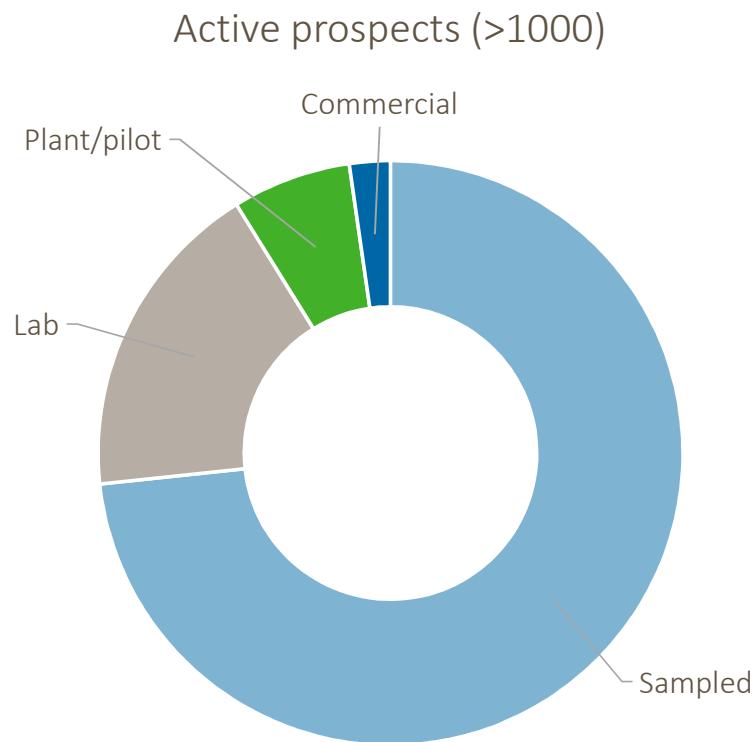
Main application area of interest
- Please Select -

Is it OK if we send you articles, tips and relevant info from time to time?
 OK, I agree.

We need your consent to store and process your personal data to respond to your request.
 OK, I agree.*

You may change your communications

Exilva pipeline status



- Active prospects
 - >20 applications
 - Coatings, adhesives, personal care and agchem constitute >60%
- Net increase ~50 prospects per month
- ~50% of prospects that provide feedback move forward
- Time to market (from sampled)
 - 3 years on average
 - + 1-2 if regulatory or capex required
- Challenges
 - Secrecy limits feedback and support
 - Handling, dosing, scheduling
 - Crowded IP landscape

Horizon 2020 support¹⁾

- 25 mEUR over a 3-year period
 - Covers 60% of total costs, including depreciation
 - Not covering costs outside EEA
 - Support period ends 30 April 2019
- Application to extend project period with 12 months
 - Decision pending



¹⁾ Exilva has received funding from the Bio-Based Industries Joint Undertaking (BBI) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 709746.

SenseFi



- Advanced texture system for food
 - Enables formulation of food products with reduced fat content without compromising mouthfeel, texture or taste
- Status
 - Pipeline >200 active prospects
 - Still in demonstration phase
 - Costs adjusted to activity level
 - Decision on commercial scale-up pending

For more information go to Exilva.com or Sensefi.com



The screenshot shows the Exilva website homepage. At the top, the Exilva logo is on the left, followed by the text "A product by" and the Borregaard logo. To the right is a search bar and social media links for Facebook and LinkedIn. A navigation bar below the header includes links for ABOUT US, APPLICATION AREAS, PRODUCTION, PRODUCT SAMPLES, NEWS, BLOG, EU H2020, and CONTACT US. The main content area features a large image of a modern industrial facility with the text "EXILVA" overlaid. Below the image, a caption reads "The world's first commercial production facility for Microfibrillated cellulose". At the bottom, there are four cards with icons and text: "APPLICATION AREAS" (water droplets icon), "SUSTAINABILITY" (leaf icon), "WHAT IS MFC?" (net icon), and "PRODUCT SAMPLES" (sample icon).



AGENDA

08:30-10:00

Welcome and opening
Status, strategy, sustainability
Financials

10:00 Coffee Break

10:15-12:00

Performance Chemicals
Speciality Cellulose
Cellulose Fibrils

12:00 Lunch



Appendix - Non-GAAP measures

In the discussion of the reported operating results, financial position and cash flows, Borregaard refers to certain measures which are not defined by generally accepted accounting principles (GAAP) such as IFRS. Borregaard management makes regular use of these non-GAAP measures and is of the opinion that this information, along with comparable GAAP measures, is useful to investors who wish to evaluate the company's operating performance, ability to repay debt and capability to pursue new business opportunities. Such non-GAAP measures should not be viewed in isolation or as an alternative to the equivalent GAAP measure.

- **Cash flow from operations:** Cash flow from operating activities (IFRS) + tax paid +/- net financial items +/- dividend (share of profit) from JV.
- **EBITA adjusted (EBITA adj.):** Operating profit before amortisation and other income and expenses.
- **EBITA adj. margin:** EBITA adj. divided by operating revenues
- **EBITDA adjusted (EBITDA adj.):** Operating profit before depreciation, amortisation and other income and expenses.
- **Equity ratio:** Equity (including non-controlling interests) divided by equity and liabilities.
- **Expansion investments:** Investments made in order to expand production capacity, produce new products or to improve the performance of existing products. Such investments include business acquisitions, pilot plants, capitalised R&D costs and new distribution set-ups.
- **Other income and expenses:** Non-recurring items or items related to other periods or to a discontinued business or activity. These items are not viewed as reliable indicators of future earnings based on the business areas' normal operations. These items will be included in the Group's operating profit.
- **Leverage ratio:** Net interest-bearing debt divided by last twelve months' (LTM) EBITDA adj.
- **Net interest-bearing debt (NIBD):** Interest-bearing liabilities minus interest-bearing assets (see slide 26)
- **Return on capital employed (ROCE):** Last twelve months' (LTM) EBITA adj. divided by average capital employed based on the ending balance of the last five quarters. Capital employed is defined by Borregaard as the total of net working capital, intangible assets, property, plant and equipment and investment in joint venture minus net pension liabilities.

