

SUSTAINABILITY  
AND  
CORPORATE  
RESPONSIBILITY

2018



Borregaard









## Sustainability and corporate responsibility

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2018



A person with short brown hair, wearing a light grey hoodie, dark trousers, and dark sneakers, stands with their back to the camera on a grassy mountain ridge. They are looking out over a vast, deep valley filled with dense green forests. In the distance, more mountain peaks are visible, some partially shrouded in mist. The scene is captured in a cinematic style with soft lighting. A semi-transparent white rectangular box is centered over the person's torso, containing the word 'HIGHLIGHTS' in bold, black, sans-serif capital letters. To the right of the person, there is a dashed white L-shaped line that forms a corner, extending vertically and horizontally across the right side of the image.

# HIGHLIGHTS



CERTIFIED RAW MATERIALS

92%

OF 1,000,000 M<sup>3</sup> WOOD



RESEARCH EFFORTS

190

MILL NOK



ENERGY

63%

RENEWABLE ENERGY



EMISSION REDUCTIONS

40%

REDUCTION IN CO<sub>2</sub>  
OVER THE LAST 10 YEARS



CLIMATE RATING

A

CDP'S CLIMATE CHANGE A LIST



DIVERSITY

25%

FEMALE EMPLOYEES





# RESPONSIBLE BUSINESS<sup>1</sup>

*Borregaard's main objective is to develop sustainable solutions based on renewable raw materials and its unique competence. Borregaard's entire business model centres around sustainability, and therefore this is always a natural component of its overarching goals. The company's Board of Directors emphasises the importance of sustainability as an integral part of the company's operations and development.*

## GLOBAL CHALLENGES AND SUSTAINABLE SOLUTIONS

Borregaard's innovative solutions can play an important role in addressing the world's greatest sustainable development challenges; population growth and climate change.

UN predicts population growth of 12% by 2030<sup>2</sup>, which will generate extraordinary demand for climate friendly solutions for infrastructure, housing, energy, jobs and food production.

One urgent challenge the world is currently facing is climate change<sup>3</sup>. The Paris Agreement and the UN Climate Panel have defined specific sustainability goals and measures within areas such as access to raw materials, energy, food and infrastructure. These initiatives are expected to increase demand for sustainable products, which will provide Borregaard with a broad platform for developing innovative solutions.

Borregaard will, as a company, take climate action and demonstrate how its business can help to advance sustainable development by both minimising negative environmental impacts and maximising positive environmental impacts. The Intergovernmental Panel on Climate Change (IPCC)<sup>4</sup> provides a clear description of the world's challenges through the Special Report where it stresses the dramatic difference between an increase in the global average temperature to 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above preindustrial levels.

Borregaard joined the Science Based Targets Initiative<sup>5</sup> in 2017 and has defined a science-based target that is in line

with the level required to keep the global temperature rise below 2°C compared with pre-industrial temperatures<sup>6</sup>. See page 15.

## BORREGAARD'S CONTRIBUTION TO THE UN'S 2030 AGENDA

Borregaard has prioritised six of the seventeen Sustainable Development Goals set out in the UN's 2030 Agenda for Sustainable Development. The priorities were selected based on the global challenges the world faces, as well as the solutions the company can contribute. The six prioritised Sustainable Development Goals are: (2) Zero hunger; (8) Decent work and economic growth; (9) Industry, innovation, and infrastructure; (12) Responsible consumption and production; (13) Climate action; and (15) Life on land. Borregaard can have an impact in these areas through its unique biorefinery concept and its sustainable products.

The six prioritised Sustainable Development Goals are closely linked to Borregaard's core operations and are in line with the company's business strategy. They are used as a framework for guiding, communicating and reporting on the company's strategy, goals and activities. Borregaard will continue its work on identifying future business opportunities associated with specific Sustainable Development Goals.

Specific targets and KPIs are presented in this report under the relevant topics. You will find a complete overview of Borregaard's contributions to all seventeen Sustainable Development Goals on pages 34 and 35.

<sup>1</sup> Borregaard ASA has a statutory duty to comply with the reporting requirements for corporate social responsibility in Section 3-3c of the Norwegian Accounting Act. This requires Borregaard to account for "what the company is doing to integrate respect for human rights, labour rights and social issues, the environment and anticorruption in their business strategies, in their daily operations and in their relationship with stakeholders."

<sup>2</sup> UN. Dugarova, Esuna & Gulasan, Nergis. (2017). *Global Trends: Challenges and Opportunities in the Implementation of the Sustainable Development Goals*.

<sup>3</sup> IPCC, 2013: Summary for Policymakers. In *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

The consolidated figures in Borregaard's Sustainability Report do not include figures from the Group's joint venture in South Africa. Borregaard in Sarpsborg accounts for about three-quarters of the Group's operations (revenues and employees) and thus faces the biggest challenges with respect to EHS, climate and social issues.

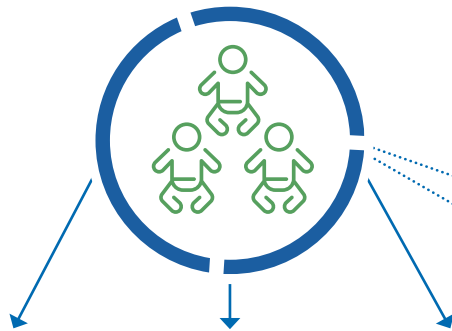
<sup>4</sup> IPCC, 2018: Summary for Policymakers. In: *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [V. Mas son-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

<sup>5</sup> Partnership between CDP, UN Global Compact, WRI and WWF.

<sup>6</sup> The Intergovernmental Panel on Climate Change (IPCC AR5), the Fifth Assessment Report.

## BORREGAARD'S CONTRIBUTION TO THE SDGS

## GROWING POPULATION

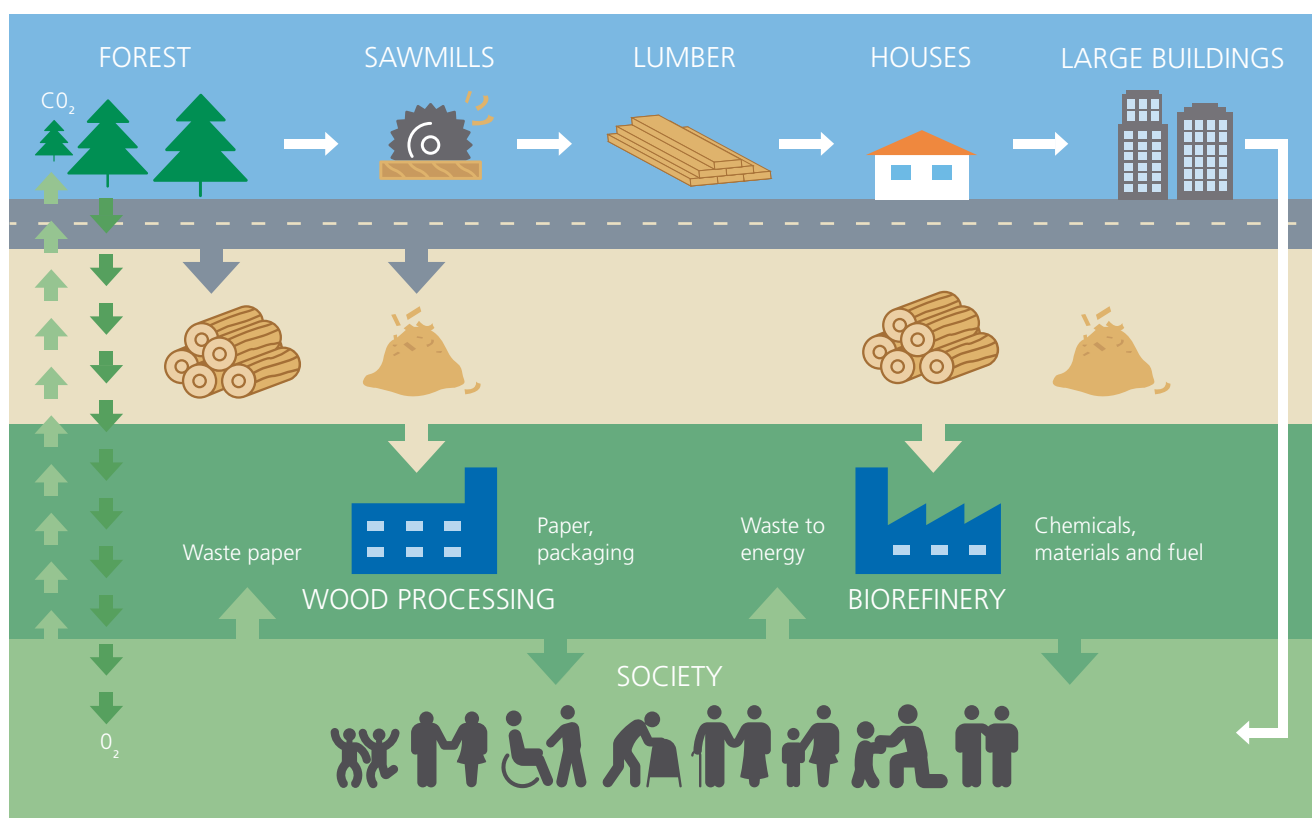


## CLIMATE CHANGE



## THE SIX PRIORITISED SUSTAINABLE DEVELOPMENT GOALS

2 ZERO HUNGER	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	15 LIFE ON LAND
SUSTAINABLE FOOD PRODUCTION	SUSTAINABLE BUSINESS	SUSTAINABLE INDUSTRY	SUSTAINABLE PRODUCTION	SUSTAINABLE BIOREFINERY	SUSTAINABLE RAW MATERIAL
<ul style="list-style-type: none"> <li>• Efficient and sustainable feed products</li> <li>• Growth stimulants for food plants</li> <li>• Improved and sustainable crop solutions and protection</li> <li>• Raw materials do not compete with food production</li> </ul>	<ul style="list-style-type: none"> <li>• Profitability as a prerequisite in addition to environmental and social dimensions in the sustainability scope</li> <li>• High value creation and local partners and suppliers create substantial ripple effects in society</li> <li>• Profitability allows investments, R&amp;D and competence development</li> </ul>	<ul style="list-style-type: none"> <li>• Market-driven innovation that involves the entire organisation</li> <li>• Uses a significant share of revenues on innovation</li> <li>• New and improved products with better performance</li> <li>• Delivers sustainable products and solutions to the construction industry</li> </ul>	<ul style="list-style-type: none"> <li>• Full utilisation of raw materials</li> <li>• Continuously improved life-cycle impact</li> <li>• Sustainable sourcing programme</li> <li>• Continuous productivity improvements, including digitalisation</li> <li>• Improved chemical safety</li> </ul>	<ul style="list-style-type: none"> <li>• The biorefinery concept with sustainable products is an essential part of the business model</li> <li>• Science-based target for reduced GHG footprint</li> <li>• Environmental/ climate impact part of investment project evaluation</li> <li>• Investments in renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>• Bio-based raw materials from responsibly managed and certified sources</li> <li>• Chain of Custody certified in accordance with FSC® and PEFC forest certification standards</li> </ul>



### THE CIRCULAR ECONOMY AND CASCADING USE OF BIOMASS IN BORREGAARD

In a circular economy, the aim is to make the best possible use of society's resources for as long as possible. This can be done by reducing the use of raw materials, waste, emissions and energy consumption, as well as by reusing products, either for their original purposes or for completely different purposes. One of the basic principles is to view waste as a resource and design products in a way that ensures materials can be recovered more efficiently.

The efficient utilisation of side streams and cascading use are cornerstones of a circular economy. In this context, cascading means that the biocarbon is utilised in several stages instead of it being emitted. In the final stage, the energy value of the products is utilised. This allows the raw materials and final products to be used for as long as possible by society before their life cycle ends.

Borregaard aims to develop and deliver sustainable solutions based on renewable raw materials and unique competence, and therefore both circular economy and cascading use

are natural components of Borregaard's operations. The company's most important raw material, Norway Spruce, is sustainable and harvested from certified forests with short transport routes. Borregaard utilises around 85% of a log for its products, and therefore has limited quantity of residual biomass for energy. At the biorefinery in Sarpsborg, Borregaard obtains energy from electricity as well as bioenergy from self-produced biogas and residual material from its bioproduction, the incineration of sorted household waste at two different waste incineration facilities connected to the biorefinery, from a boiler that burns biofuel and from a steam boiler fuelled by natural gas. Constantly increasing Borregaard's energy efficiency, as well as streamlining production, decreases the input factors per tonne of product produced and thus continually reduces the products' CO<sub>2</sub> footprint.

The wood-based industry is by its nature a circular bioeconomy. Wood from forests is sent to both sawmills and wood processing. Side streams such as wood chips, sawdust and bark from the sawmills end up in the pulp and paper industry, in the production of construction boards



and in energy production. Paper and packaging are returned to the industry for recovery once they are no longer of use elsewhere in society. Biorefineries such as Borregaard receive waste, which is used to generate energy for the operation of production facilities and to deliver a range of sustainable products back to society.

There are a number of ways in which the principle of cascading can be implemented. Products can be reused as they are, or transformed into new products, be sent to recovery and, ultimately, converted into energy via incineration or the production of biogas. The basic principle is that resources should be reused as materials for as long as possible before they are incinerated.

Wood chips represent a side stream from sawmills, but are an important raw material for Borregaard. A log consists of cellulose, lignin and sugar. The sugar and lignin, which are traditionally viewed as side streams from cellulose production, are used in the production of bioethanol, lignin products and vanillin, respectively. The residual streams that are left over are used as raw materials in the production of biogas, which is used as a source of energy in Borregaard's production processes.

Some side streams from production are also sold to other industries, which in turn use them as raw materials in their production. One example is knot pulp, which is removed from the cellulose and sold to manufacturers of packaging materials.

The residual energy from Borregaard's production processes is the main source of energy for the district heating plant in Sarpsborg, replacing oil heating. In this way, Borregaard, both internally and together with external suppliers and

customers, is part of an intricate and well-established cascading system for bio-based products, intermediate products and side streams. In other words, Borregaard's biorefinery is built on the principles of both cascading and circular use.

#### RISK MANAGEMENT

Identifying and managing risks and opportunities are integrated multidisciplinary parts of the Group's business processes. Borregaard has established a system for risk assessment and management in which climate risk comply with the Task Force on Climate-related Financial Disclosures (TCFD). Each member of the executive management team is responsible for internal control and risk assessments within their respective areas. Risk assessments are reviewed annually by the company's board of directors. Borregaard's physical, regulatory, market, cost, and legal risks associated with climate change are featured on page 16 of the Sustainability Report, as well as on Borregaard's webpage.

The stakeholders' perspective is taken into consideration when assessing and managing risks with potential environmental, social and economic impacts throughout the company's value chain.

#### DID YOU KNOW THAT...

Borregaard uses more than **85%** of a log of wood for products? The rest is used for bio-energy for the production processes.

**85%**

#### DID YOU KNOW THAT...

The international climate organisation CDP gave Borregaard an **A** for its contribution to positive climate change? Only 1.8% of the reporting companies received this grade globally.





## ORGANISATION AND RESPONSIBILITY

Borregaard must comply with a number of guidelines and reporting procedures as part of its corporate responsibilities. The main documents have been approved by the company's board of directors, which also sets the overarching goals for the areas covered by this report.

### Guidelines<sup>7</sup>:

- General Guidelines for Environment, Health, Safety and Climate
- Human Rights Policy
- Anti-Corruption Manual
- Corporate Responsibility
- Code of Conduct
- Corporate Governance Principles
- Responsible Sourcing Policy
- Competition Law Compliance Manual

The Group's executive management team bears overall responsibility for monitoring the company's goals, measures and results. Their daily implementation is a line management responsibility in Borregaard. This means that corporate responsibilities are an integral component of all of the operations of Borregaard's subsidiaries, as well as in various management teams, units and departments.

## SUSTAINABILITY BOARD

In 2017, Borregaard established the Sustainability Board. The board addresses and monitors important topics, and also initiates processes in which guidelines, goals and measures are developed within the areas covered by this report. The Sustainability Board reports to the CEO and is chaired by the Senior Vice President of Organisation and Public Affairs.

## STAKEHOLDER AND MATERIALITY ANALYSIS

Borregaard fulfils its corporate responsibilities by developing and running its operations profitably and in a manner that conforms with fundamental ethical values and respect for individual people, society as a whole and the environment.

This approach includes maintaining a dialogue with the Group's most important stakeholders. They are taken into account when running the business and when decisions are made. Maintaining contact with the company's various stakeholders is an important means of building trust in Borregaard, as well as understanding the role the company plays in local communities and society as a whole.

Borregaard has conducted a stakeholder and materiality analysis based on the Group's sustainability strategy. The analysis identifies the economic, social, climate and environmental consequences of the company's operations

that have the greatest impact on stakeholders' assessments and decisions.

As a basis for this analysis, Borregaard surveyed the groups, organisations and individuals that are either impacted by the company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement. Borregaard's stakeholders include investors and lenders, current and potential employees, the authorities, current and potential customers, suppliers, local communities and neighbours, partners, organisations and the media. The model below shows which groups of stakeholders are regarded as most important for Borregaard:



Borregaard has also identified the company's most important and relevant risks and opportunities based on the company's core operations and the geographical locations of its units, customers and suppliers. The results are based on Borregaard's values, guidelines, risk assessments and strategy, as well as how Borregaard as a company impacts its stakeholders financially, environmentally and socially. The areas also reflect the topics the company's stakeholders are interested in.

The focus areas defined as the most important are described in more detail in Borregaard's Sustainability Report, chapters A to E, and reflect the company's five main areas:

- A sustainable business model
- Climate, environment, health and safety
- Employee and competence development
- Suppliers and business partners
- Contribution to society

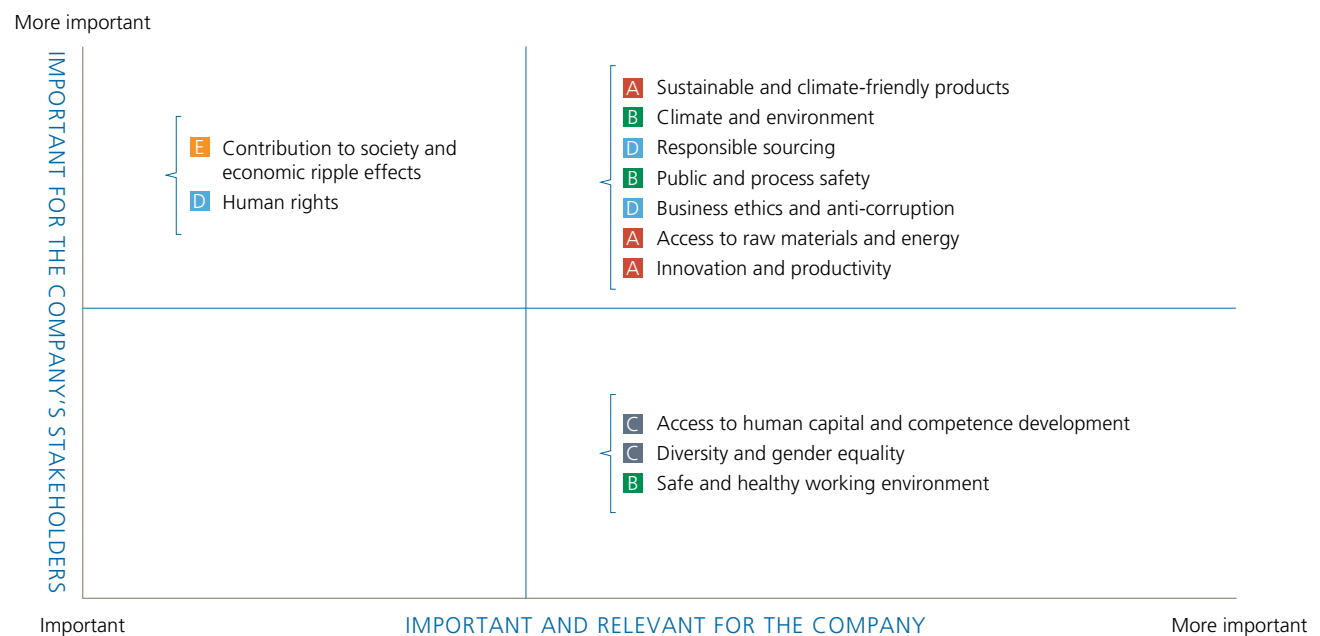
<sup>7</sup> Read more at: <https://www.borregaard.com/Sustainability/Corporate-responsibility/Policies>.



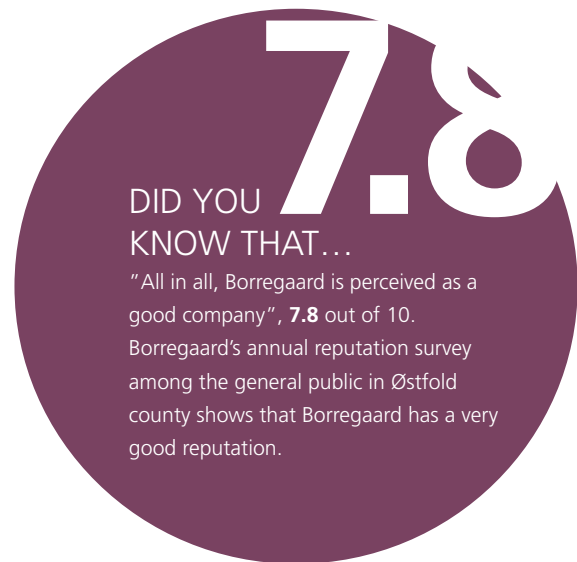
Each unit in the Borregaard Group must assess issues that are relevant to the relationship between the company and society as a whole, facilitate good dialogues and ensure that complaints and other enquiries from external stakeholders are dealt with in a proper manner. The need to implement improvement projects in areas with specific challenges must be assessed on an ongoing basis.

Based on the results from the stakeholder and materiality analysis, Borregaard has Sustainable Development Goals set out in the UN's 2030 Agenda for Sustainable Development. Borregaard has linked its strategy to the most important topics in the Sustainable Development Goals such that they are in line with the UN's 2030 Agenda (see the illustration on page 7).

The illustration below specifies the degree of importance for Borregaard's stakeholders, as well as what is important and relevant for Borregaard.



The coloured boxes refer to the main areas described in the Sustainability Report.









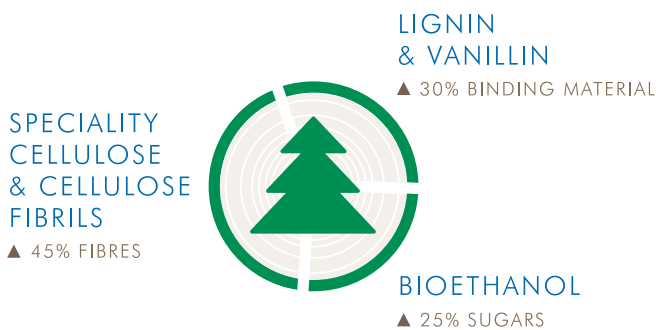
## MAIN AREAS

Sustainability and corporate responsibility is a broad concept that covers many areas. Based on the stakeholder

and materiality analysis, Borregaard has defined the following main areas:



### A SUSTAINABLE BUSINESS MODEL



#### BORREGAARD'S BUSINESS MODEL

- Renewable raw materials
- High raw material utilisation
- Environmentally friendly substitutes for petrochemicals

Borregaard's understanding of sustainability and corporate responsibility derives from the fact that the business model itself, how the Group is run and the company's products are sustainable and meet global needs. The world faces numerous different challenges associated with population growth and urbanisation in the years ahead. Borregaard's wood-based products are alternatives to oil-based products. The wood is harvested from sustainable sources and the company is constantly working to reduce its carbon footprint and the total environmental impact of its production processes. Innovation plays an important role in improvements, both in terms of reducing process emissions and improving product performance.

#### SUSTAINABLE RAW MATERIALS

Borregaard's biorefinery utilises bio-based raw materials that meet environmental and sustainability criteria. The Group attaches great importance to sourcing wood from forests that are managed in a proper, sustainable and eco-friendly manner.

The Group's production units outside Norway mainly obtain lignin raw materials from nearby cellulose plants. All of these suppliers use wood from certified (Forest Stewardship Council® (FSC)) sources. This is described in more detail in chapter D. Borregaard has also developed the patented BALI

concept, which could provide further lignin raw materials in the long-term. The concept is based on extracting lignin from various forms of biomass, including agricultural waste. The technology is not yet in commercial operation, but represents an option for the future.

#### CLEANTECH

Cleantech is an industry term used to describe products or services that improve operational performance, productivity or efficiency, while minimising costs, raw materials, energy consumption, waste or pollution. Borregaard is thus a good example of cleantech. The Group's bio-based products do well from a climate perspective when compared with petrochemical products. Borregaard has also made efforts to reduce greenhouse gas emissions in its production processes, including by elimination of heavy fuel oil and increasing the amount of energy supplied from more eco-friendly energy sources.

#### LIFE CYCLE ANALYSIS

Borregaard has engaged an independent third party, Ostfold Research, to conduct a life cycle assessment (LCA) based on the ISO 14044/48 standard. This analyses the environmental impacts Borregaard's products have from raw materials to finished products. The study was carried out for the first time in 2008 and has since been updated on several occasions,



most recently in 2015. The analysis confirms that the environmental and climate impacts of Borregaard's products have diminished over time.

Ostfold Research has conducted an analysis in which Borregaard's products were compared with competing products. All of the comparisons covered a number of environmental impact categories. The analysis confirmed that Borregaard's products provide better environmental performance than the alternatives in almost all environmental categories and indicate environmental benefits from replacing the alternatives with the company's products.

### RESEARCH AND DEVELOPMENT (R&D)

Innovation and R&D are important for renewing operations and also necessary to strengthen the company's financial and environmental sustainability.

Borregaard's R&D and innovation efforts in 2018 amounted to NOK 190 million. This represents 4% of the company's revenues.

Borregaard has an R&D team of 97 employees, including 34 PhDs. The R&D primarily takes place at the Group's research centre in Norway, which at year-end 2018 employed 67 people from nine different countries. R&D activities also take place at the sites in Spain, South Africa, India and the US. Some R&D work is carried out in partnership with customers, universities and research institutions in several countries.

In 2018, Borregaard recognised NOK 90 million (NOK 85 million) in support for ongoing R&D projects, mainly from the EU's Horizon 2020<sup>8</sup> programme, the Research Council of Norway, Innovation Norway and Skattefunn<sup>9</sup>.

### CONTINUOUS IMPROVEMENT AND DIGITALISATION

To maintain sustainable operations, continuous improvement is important and an integral part of Borregaard's strategy.

Productivity efforts lead to better ways of making products through new use of technology, competence development and a more efficient organisation.

Digitalisation is one important approach to productivity improvement. Borregaard has increased the use of new technology and digital solutions to monitor, control and analyse the production systems. In addition, new digital solutions are developed and implemented both within marketing and in financial and administrative processes. A number of digitalisation projects are ongoing, and Borregaard exchanges knowledge and solutions across production units. Training and organisational development are important parts of these improvement projects.

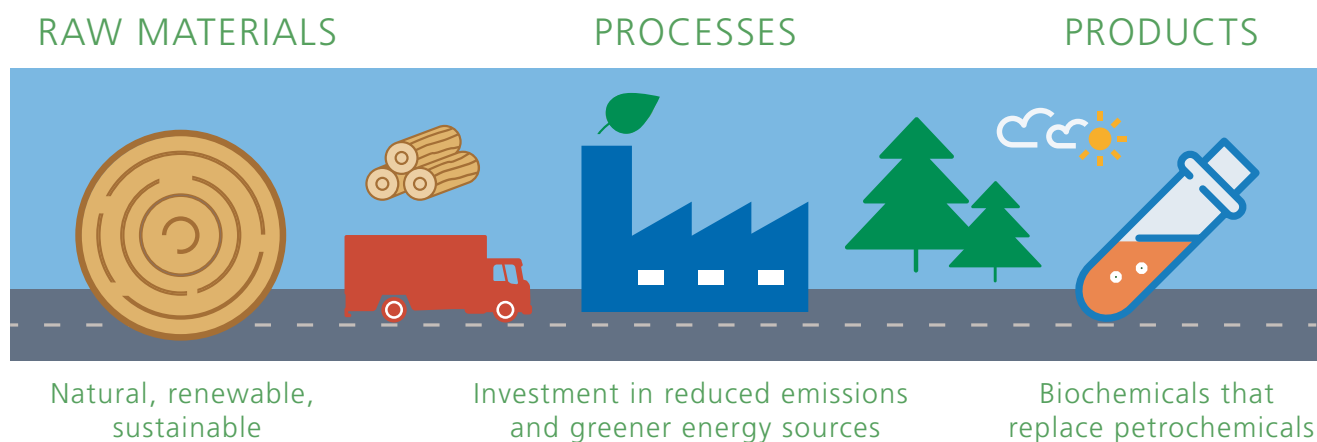
### KEY INITIATIVES AND RESULTS IN 2018

Reductions in emissions in most categories, as well as further development of new bio-based products, strengthened Borregaard's sustainability profile in 2018.

In 2018, Borregaard completed an upgrade of the production facility for bioethanol, as well as a facility for capturing and storing biogas. The upgrade has enabled Borregaard to increase its production volume of water-free bioethanol for fuel. This market is growing, driven mainly by increased demand for bioethanol as a fuel additive. The project involved the installation of modern production technology, which has substantially reduced the energy consumed in the production process. Energy consumption per litre of produced water-free bioethanol has fallen by 67% following the upgrade.

Innovation plays an important role in maintaining sustainable development. Borregaard measures the company's innovation rate as the proportion of revenues coming from new products launched in the past five years.

In 2018, Borregaard's innovation rate was 13% (13%). The average innovation rate for the last five years is 15% (15%).



<sup>8</sup> Support from the Bio-Based Industries Joint Undertaking (BBI) under the EU's Horizon 2020 research and innovation programme in grant agreement no. 709746.

<sup>9</sup> A government program designed to stimulate research and development (R&D) in Norwegian trade and industry.



KEY TARGETS 2018	RESULTS	COMMENTS
Further development of new bio-based products	On going	R&D efforts to develop bio-based sugars, improved lignin products and new cellulose-based products
Increased production capacity for bio-based products	Achieved	Completed investment in a 100,000 mtds lignin plant in Florida and increased capacity of fuel grade (100%) bioethanol
An innovation rate of 15%	Not achieved	13% in 2018, average innovation rate last 5 years is 15%
Improved sustainability from an LCA perspective	Achieved	Improved energy solution for bioethanol. No major changes in other production/transportation set-up

#### KEY TARGETS 2019

Continued development of new bio-based products
Increased sales and production of bio-based products
An innovation rate of 15%
Further improvement of sustainability from an LCA perspective

## B

## CLIMATE, ENVIRONMENT, HEALTH AND SAFETY



Environment, health, safety (EHS) and climate are an integrated part of both Borregaard's business model and its sustainability strategy. The Group is actively working on measures that can contribute to sound environmental and resource management. Borregaard's ambitions and guidelines within climate and EHS are set out in a separate policy document (see the overview on page 10). The General Guidelines for Environment, Health, Safety and Climate was updated in 2017 to underscore Borregaard's ambitions in this area. Borregaard's overall EHS and climate goals are that the company and its activities will contribute to sustainable solutions, with no harm to people or to the environment.

Borregaard has dedicated support functions for EHS and risk management. The stakeholder analysis provides important data for the risk assessment process and is therefore revised frequently. Risk management covers every aspect of Borregaard's activities and self-assessments are conducted in relation to EHS. The risk management process systematically identifies injury, fire, explosion and unwanted hazardous substances emission risks. The Board of Directors reviews the Group's risk picture at least once a year.

Borregaard monitors EHS and climate parameters and reports on these in monthly KPI reports, as well as in expanded interim reports. EHS and climate results are reported monthly to the company's board of directors. This is also a separate item on the agenda of each board meeting.

The Sustainability Board discusses ambitions and measures regarding EHS and climate to ensure common practices throughout the Borregaard Group.

### CLIMATE CHANGE – GREENHOUSE GAS EMISSIONS

Borregaard has chosen a target based on the most ambitious pathway for greenhouse gas cuts<sup>10</sup> (the IPCC's Representative Concentration Pathway (RCP) 2.655) which is in line with the Norwegian Climate Act, meaning that the Group will assume responsibility for its share of the reduction in greenhouse gases necessary to transition to a low-emission society. The target is also within the industry range which is specified in the Special Report, projected to be 65-90% lower in 2050 relative to 2010.

Borregaard aims to cut the direct and indirect emissions associated with the production of its products (scope 1 and scope 2) by 50% by 2030 and by 75% by 2050 (base year 2009). An assessment of Borregaard's future emissions indicates that it is possible to achieve this target by further reducing energy consumption and increasing the use of renewable energy. Direct and indirect emissions have been cut by around 34% since the base year. Emissions from activities in the value chain (scope 3) will be reduced by 75% by 2050 (base year 2017). Cuts will especially be made within transport solutions and the procurement of goods and services. The biorefinery's products are made from wood (a renewable raw material) and therefore generate no extra CO<sub>2</sub> emissions, either in their usage phase or the end of life treatment phase.

Borregaard has disclosed information to the CDP investor initiative since 2015. The initiative has evolved into an internationally leading system for climate and environmental reporting, and is backed by more than 800 institutional investors. The goal of CDP is to enable companies to measure and manage environmental impact. Borregaard has

<sup>10</sup> IPCC Representative Concentration Pathway 2.6.

been highlighted as a global leader on corporate climate action by environmental impact, achieving a place on the CDP Climate Change A List for its reporting for 2018.

Greenhouse gas emissions are reported in accordance with the Greenhouse Gas Protocol (GHG Protocol), which is a standard for calculating and reporting greenhouse gas emissions associated with operations, both direct and indirect, from the production of products, as well as from all activities in the value chain.

#### *Climate risks and opportunities*

One important element of Borregaard's operations involves utilising renewable raw materials for the production of climate-friendly alternatives to products from fossil raw materials. Wood-based products from sustainably managed forests are considered part of the solution to the climate challenges<sup>11</sup>.

As far as greenhouse gas emissions from a life cycle perspective are concerned, Borregaard's bio-based products are considered more climate-friendly than petrochemical alternatives. Borregaard's most important contribution will, therefore, be the further development of its business model in order to meet future demand for advanced, renewable and climate-friendly biochemicals and biomaterials. At the same time, greenhouse gas emissions in both production processes and throughout the value chain must be cut. Borregaard has set ambitious, science-based targets for this area. Society has established various support schemes to meet the needs of a low-emission society, and Borregaard already receives support for measures within both energy reduction and new products.

The potential impacts of climate change, such as extreme precipitation and drought, pose a relatively low operational

risk for Borregaard. However, milder winters could raise the cost of harvesting and transporting wood in the Nordic region. Costs could also increase as a result of increased competition for this raw material in connection with the transition to a more bio-based society. Borregaard sources wood from several different areas in order to reduce the risk. The Group also has well-established solutions for transporting wood by road, rail and sea, in addition to flexible storage of wood.

The most important transition risk is that the costs associated with greenhouse gas emissions will increase, for example as a result of the EU Emissions Trading System (EU ETS). Borregaard has managed this risk by establishing a long-term climate and energy strategy in which its use of renewable energy sources has increased, while energy consumption in production has decreased. In the last decade, Borregaard's operations in Sarpsborg has replaced the use of heavy oil with more climate and eco-friendly sources of energy. During this period, the Borregaard Group has reduced its direct CO<sub>2</sub> emissions by 40%. Given this, Borregaard will have surplus of free allowances until 2020. In the period 2020-2030, the EU ETS will provide fewer free allowances and it is likely that energy costs will increase. Borregaard's favourable position with respect to the use of renewable energy, as well as the Group's planned measures for cutting CO<sub>2</sub> in the long-term, have substantially reduced the risk associated with an increase in CO<sub>2</sub> costs.

Technologies for further reduction in energy consumption and availability of more renewable sources like electricity from hydropower and biogas are important tools to achieve the company's ambitious GHG emission reduction targets (science-based targets). Development in technologies for Carbon Capture and Storage (CCS) or sustainable Carbon Capture and Use (CCU) may be a prerequisite. Borregaard in Sarpsborg has signed an agreement with a cluster of companies in the region to make a possibility study regarding technologies and value chains for CCS and CCU.

#### *Energy consumption and greenhouse gas emissions*

Borregaard's direct emissions of the greenhouse gas CO<sub>2</sub> mainly stem from fossil fuels used in the production of heat energy.

93% of Borregaard's direct CO<sub>2</sub> emissions in 2018 originated from the operations in Sarpsborg, 5% from the German operations and the remaining 2% from the company's operations in the US, Spain, the Czech Republic and the UK. Borregaard's operations in Sarpsborg and Germany hold ISO 50001 certification for energy management. 98% of the Borregaard Group's total energy consumption is thus covered by certified management systems.



<sup>11</sup> <http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=167>



Borregaard's operation in Sarpsborg currently meets its base need for heat energy (base load) in the form of steam through energy recovery from waste, bioenergy and heat recovery from production. Borregaard stopped using heavy fuel oil for steam production in 2013 when a new multi-fuel boiler that mainly uses liquefied natural gas (LNG) was commenced. CO<sub>2</sub> emissions associated with LNG are 25% lower than those from heavy fuel oil. Peak load production is now based on a combination of LNG and electricity. The CO<sub>2</sub> emissions associated with the production of heat energy will, therefore, vary from year to year, depending on the energy source for peak load and production volume. In 2018 the main source for peak load was LNG.

Borregaard's operations in Germany and Florida use LNG in steam production and focus on energy optimisation.

#### Key initiatives and results in 2018

In 2017, Borregaard completed a three-year energy efficiency programme intended to reduce energy consumption at the plant in Sarpsborg by better utilisation of surplus heat. 2018 was the first year with the full effect of all of the measures and annual energy consumption was cut by 73 GWh. The programme received financial support from Enova<sup>12</sup> equivalent to 42% (NOK 46 million) of the total investment of NOK 107 million.

During the period 2016-2018, Borregaard also conducted an energy efficiency project in the company's fine chemicals operations in Sarpsborg, where three out of four projects were supported by Enova. The main objective was to increase heat recovery by improving heat exchangers and using heat pumps. In 2018, the project resulted in a saving of 20.6 GWh annually, compared with 2015. The project is expected to deliver further savings in 2019.

In 2018, Borregaard invested NOK 63 million in upgrading the bioethanol production plant. The project included a facility for storing biogas that will increase the amount of renewable energy used in Borregaard's processes. The project also involved the installation of modern production technology which has reduced specific energy use in this plant by 67%. The biogas project is showing promising results. The increased use of biogas has replaced propane as an energy source, equivalent to 45 GWh annually. The project received NOK 18.9 million in support from Enova and was completed in the first quarter of 2018.

Borregaard's bioboiler for liquefied fuels converts residues from production into steam. Waste oil was previously used as a supplementary fuel, which resulted in emissions of NO<sub>x</sub> and CO<sub>2</sub>. In 2018, Borregaard rebuilt the bioboiler and waste oil was replaced by LNG, a considerably more

eco-friendly source of energy. NO<sub>x</sub> cleaning, so-called Selective Non-Catalytic Reduction (SNCR) technology, will be implemented in 2019. Borregaard has two spray dryers that used propane and biogas as an energy source. In 2018, propane was replaced by LNG and the supply of biogas from Borregaard's water purification plant increased. The investment cost NOK 78 million and will receive NOK 25.9 million from Norwegian industry's NO<sub>x</sub> Fund.

In 2018, greenhouse gas emissions (scope 1 and scope 2) increased by 9% as more LNG than electricity was used for peak-load energy at the plant in Sarpsborg compared with previous years.

Overall, total energy consumption in Borregaard was reduced by 17% from 1,612 GWh in 2017 to 1,595 GWh in 2018. This was due to the effect of the energy efficiency programmes at the production site in Sarpsborg. The specific heat energy use at Borregaard in Sarpsborg fell 2%, in line with to the Group's target in 2018.

Borregaard supplies surplus heat from low-temperature water to the district heating system in the municipality of Sarpsborg. In 2018, Borregaard supplied 10.3 GWh (9.7 GWh).

Energy and climate results are shown in the table on page 25.

#### Initiatives in 2019

The science based targets for long-term GHG emission reductions will likely be approved within the first half of 2019. Borregaard will establish specific action plans based on climate scenario analyses in order to achieve the target for 2030.

A new spray dryer for lignin is under construction at Borregaard's plant in Sarpsborg. Thus, in 2019, more lignin will be dried at the plant in Sarpsborg, which will result in an increase in direct greenhouse gas emissions locally. However, the emissions associated with transport and drying elsewhere in the world will be cut, hence the net effect will result in reduced GHG emissions.

Borregaard is planning to carry out further rebuilding of the bioboiler so the proportion of renewable fuels can be increased. This project will potentially result in the capture of 33 GWh of bioenergy, which is equivalent to a reduction in CO<sub>2</sub> emissions of 1,320 tonnes.

#### Transport and greenhouse gas emissions

Borregaard aims to reduce the environmental impact from transport of raw materials and finished goods. Infrastructure

<sup>12</sup> Norwegian government agency that promotes eco-friendly changes in relation to energy use, renewable energy production and new energy and climate technology.



and capacity limitations will be overcome by a focus on non-traditional solutions. Production units for lignin on three continents reduce the need to transport both raw materials and finished products over long distances.

In 2018, Borregaard's operations in Sarpsborg transported 50% of its products by sea, 35% by road and 15% by rail.

Borregaard has commenced a study looking at options for future zero-emission solutions for transport between Borregaard in Sarpsborg and the Port of Borg in Fredrikstad. Following the study, Borregaard has set up an internal, interdisciplinary group tasked with surveying and assessing all aspects of, and opportunities for, implementing environmentally friendly transport solutions in Borregaard in the coming years. Based on this, the Group will suggest measures and targets for sustainable transport and report its progress to Borregaard's Sustainability Board.

Borregaard has committed to assuming its share of the effort needed for a green shift within heavy goods transport by signing the environmental organisation ZERO's declaration: "A green shift for renewable heavy goods transport". Borregaard's contracts with transport service providers require eco-friendly transport that uses engines that, as a minimum, satisfy the Euro 5 emission standard. In 2018, 100% of the Borregaard's inbound transport of logs and wood chips was transported by vehicles that satisfy the Euro 5 standard or higher. In 2018, this requirement was introduced for all inbound and outbound road transport from Borregaard in Sarpsborg.

Marine transport and combined transport solutions are integral parts of Borregaard's eco-friendly logistics solutions. Around 540,000 tonnes of Borregaard's transports are already on marine solutions, and efforts to increase use of the most environmental friendly alternatives will continue,

for instance by replacing road transport by multi-modal and seaborne transport options.

Rail transport has generally played a steadily smaller part in the design of the European transport network in recent decades. However, rail is important for Borregaard's transport of wood for its operations in Sarpsborg. In 2018, 190,000 tonnes (22%) of wood were transported by rail. The goal is to transport 23.5% by rail in 2019, which is equivalent to cutting greenhouse gas emissions by 1,700 tonnes.

Borregaard has increased its fleet of electric vehicles for local transport and has installed a number of EV charging stations at the company's site in Sarpsborg. In 2018, Borregaard installed sixteen EV charging stations to reduce CO<sub>2</sub> emissions associated with the employees' vehicle use.

## ENVIRONMENT

### *Environmental risks and opportunities*

Borregaard's bio-based products have a documented favourable environmental footprint in relation to oil-based or non-renewable alternatives. This position provides the company with opportunities in markets that value sustainability. Borregaard prioritises innovations and activities that can improve the products' environmental impact, such as water and waste management and energy efficiency. These processes are supported by certified eco-management systems. The highest-risk production units are certified by ISO 14001 Environmental Management (see the overview of certifications on page 32). Emissions from the various production units are also regulated by the authorities.

The highest environmental risk is associated with the main production facility in Sarpsborg. Emissions of organic matter to water (chemical oxygen demand (COD) or biological oxygen demand (BOD)) affect the aquatic environment in the river Glomma. Emissions of sulphur dioxide (SO<sub>2</sub>) to air affect local air quality. Borregaard has established action plans to cut these emissions, and substantial reductions in emissions have been achieved over time. Organic matter has been cut by around 40% and SO<sub>2</sub> has been cut by almost 90% in the past eight years.

### *Water management and emissions to water*

Borregaard has a sustainable water management system. Most of the water consumption and emissions are linked to Borregaard's operations in Sarpsborg. The plant is self-sufficient and has access to water from the river Glomma via its own water treatment facility. Water is important in Borregaard's production processes and is used for cooling, steam production and hot water production, as well as washing and transporting biomass in the production



processes. However, almost all of the water used is returned to the river Glomma. Opportunities for reducing water consumption are assessed in connection with investment projects. This is also motivated by the potential gains associated with energy savings and more efficient water treatment. A large proportion of the process water is treated to keep emission levels of halogenated organic compounds (AOX) and COD in line with Borregaard's discharge permits. The company's wastewater treatment facility reduces BOD by 98%.

The EU's BREF standards (best available technology (BAT)) apply to the Sarpsborg production plant and include limits on water and air emissions. Borregaard has submitted an assessment of the environmental technology at the site in Sarpsborg to the Norwegian Environment Agency.

This was done in compliance with the recently updated BREF standards for the industry. The assessment provided the basis for the authorities' revision of Borregaard's discharge permits. The discharge permits will apply from the second quarter of 2019 and contain stricter emission limits for a number of environmental parameters. The current discharge permit for COD is for 69 tonnes per 24-hour period. Emissions will be reduced to 59 tonnes per 24-hour period (on average over the year) in 2019 in order to comply with BAT levels for emissions to water and Borregaard's new discharge permit.

Borregaard and the Norwegian Institute for Water Research (NIVA) monitor the river Glomma in accordance with the requirements and standards in the EU Water Framework Directive (WFD). This monitoring shows that emissions of easily degradable organic matter (BOD) from Borregaard has caused a proliferation of bacteria covering riverbed sediments close to the plant. This causes poor oxygen conditions, which has implications for the growth conditions

for the river Glomma's wild salmon stock. As a result, its ecological status varies between poor and very poor. NIVA's measurements of chemical status in accordance with the WFD standards show a good status.

Borregaard's emissions of organic matter has been reduced by 40% since 2010. New analyses show that the conditions in the river Glomma downstream Borregaard has improved.

In partnership with two energy companies, Borregaard constructed and financed a salmon cultivation facility on its premises in 2012, due to low natural reproduction of salmon in the river. Borregaard has paid most of the operating costs associated with the facility since 2017. Surveys conducted by NIVA in 2018 shows that only 5% of the salmon in the river originated from the cultivation facility at Borregaard, which indicates that the natural reproduction of salmon in the river is high compared to 2012. In 2016, NIVA suggested continued operations as the natural reproduction still requires some assistance from the cultivation plant to make a sustainable salmon stock.

The long-term goal of the WFD regulation is to achieve a good ecological status in the river Glomma in 2027. Borregaard has identified both short-term and long-term goals for cuts in COD emissions. The first goal is to comply with the new permit for water which applies from 2019. The next step involves R&D activities in the field of sustainable water treatment solutions as well as technological improvements that will have a positive effect on the emissions of organic matter to water.

The water volumes used at Borregaard's facilities for lignin production outside Norway are relatively low, about 1% of the company's total water consumption. The water is sourced from public waterworks or adjoining industrial areas. Borregaard's lignin plant in Florida uses process water from a ground water source, the Floridan aquifer system, which is one of the world's most productive aquifers.

#### Results 2018

The Borregaard Group did not exceed any of its permits for emissions to water in 2018. The figures in the table on page 25 only show emissions from the plant in Sarpsborg, since the Group's other activities have no significant emissions to water.

Borregaard in Sarpsborg has reduced emissions of COD from 66 to 61 tonnes per 24-hour period. In 2018, emissions of lead, phosphorus and zinc were substantially reduced and were 80%, 20% and 50% lower, respectively.



### Initiatives for 2019

2019 will be the first year a new discharge permit from the Norwegian Environment Agency applies to Borregaard's plant in Sarpsborg. The company has drawn up a plan for the various measures that must be implemented to achieve the new requirements in the permit. The plan is intended to ensure compliance with the new discharge permit, which is expected to become effective from the third quarter of 2019.

### Emissions to air

Borregaard's emissions to air of SO<sub>2</sub>, NOx and dust particles affect local air conditions and derive from energy production, drying processes and the use of SO<sub>2</sub> in production processes (Sarpsborg). SO<sub>2</sub> emissions from production processes derive from the cooking acid used to separate lignin from cellulose. These emissions are generally cleaned in scrubbers, but also result in some diffuse emissions.

The authorities have set limits for SO<sub>2</sub> concentrations in the air. The municipality of Sarpsborg measures local air quality with respect to SO<sub>2</sub> content. The measurements show a general reduction in concentrations of SO<sub>2</sub>, and the air in Sarpsborg remains within current limits more than 98% of the time. Borregaard's programme for reducing SO<sub>2</sub> emissions from chimneys and scrubbers has reduced emissions by nearly 90% in the last eight years. Borregaard and the municipality of Sarpsborg maintain an ongoing dialogue regarding the implementation of corrective and preventive measures with respect to exceeding local air quality regulations. The target is zero instances of exceeding local air quality limits.

Burning fuels for heat energy produces NOx emissions. Switching from using heavy oil to more eco-friendly alternatives has reduced these emissions by around 50% in the last ten years. Spray drying lignin products results in some emissions of NOx (from the fuel) and dust particles (lignin).

### Results 2018

NOx emissions from Borregaard increased by 14% due to slightly higher emissions in the beginning of 2018 from the operations in Sarpsborg and from the start-up of the lignin plant in Florida. In October, the NOx emissions were reduced due to the transition from waste oil to LNG in the bioboiler at Borregaard in Sarpsborg.

In 2018, fifteen (six) incidents were registered where the hourly limits were exceeded and two (zero) incidents where the limits for a 24-hour period were exceeded for SO<sub>2</sub> levels in the air around Borregaard's plant in Sarpsborg. The increase was due to two individual incidents in the process control system of SO<sub>2</sub> gas in connection with stoppages in the plant. Corrective measures have been implemented.

In 2018, the total emissions of SO<sub>2</sub> was reduced by about 20% due to measures at the plant in Sarpsborg. The increase in total dust emissions of 4,3% was due to the increased production of lignin in powder form in connection with the new lignin facility in Florida and from increased production of powder at the operation in Sarpsborg.

### Initiatives for 2019

In 2019, Borregaard will invest in greater scrubber capacity in the bioethanol plant to reduce diffuse emissions of SO<sub>2</sub>.

A new lignin spray dryer with modern cleaning technology will be completed at the plant in Sarpsborg in the third quarter of 2019. The spray dryer will double lignin drying capacity. Depending on how much of this capacity is utilised, this will result in an increase in dust emissions, although they will remain within the applicable requirements for the air quality criteria for dust.

NOx cleaning with SNCR technology will be implemented on Borregaard's bioboiler in Sarpsborg in the first half of 2019. This is expected to further reduce NOx emissions from energy production by 24% in 2019.

### Waste management and recovery

Borregaard's waste management system covered by the ISO 14001 certification includes source separation. 99% of the waste from operations in Sarpsborg was source separated and processed by certified waste treatment providers in 2018. The plant has waste plans, both for the industrial facilities and the company's own harbour. Total waste amounted to 22,360 tonnes (18,360 tonnes) in 2018, while the amount of hazardous waste was 4,903 tonnes (3,316 tonnes). The energy and material recovery rate is high and was 70% in 2018. 80% of the hazardous waste is fly ash from the waste incineration plant. The main reason for increase in the hazardous waste is due to operational issues in this plant.

### Soil Pollution

Use of the Opsund landfill, a waste disposal site on Borregaard's premises in Sarpsborg, was discontinued in 2009. In 2015, a plan for permanent closure of the landfill by the end of 2019 was approved by the Norwegian Environment Agency. The closure project is progressing and the main part will be finished by the planned end date. The vegetation layer on the top of the landfill will be postponed until the spring of 2020.

From 1949 to 1997, Borregaard used mercury-based technology for chlor-alkali production at the site in Sarpsborg. This process led to pollution of the soil in the area surrounding the plant. In 1994, a ground water barrier was built, and a water monitoring programme was established. In 2015, an increased level of mercury was



detected. Borregaard has undertaken measures to improve the ground water barriers in order to prevent mercury leakage from the discontinued technology. During 2016, the Norwegian Environment Agency approved planned actions and Borregaard made a provision in the financial statements according to estimated costs. The concentration of mercury in ground water wells and in the sewerage systems has decreased due to these actions. Borregaard reports progress to the Norwegian Environment Agency every quarter. In 2019, areas downstream from the groundwater barriers will be cleaned to prevent the spreading of mercury.

The Industry Emission Directive (IED) obliges Borregaard's plant in Sarpsborg to submit baseline report for land and groundwater. Borregaard has conducted a number of surveys in the last 30 years. The company has a good overview of the plant's activity history and monitors contaminated areas. The industrial site is divided into five areas. The survey of the first area will be completed in 2019. The baseline report must be submitted to the Norwegian Environment Agency for approval.

#### PUBLIC AND PROCESS SAFETY

Process safety at Borregaard's facilities has increased over time due to the systematic monitoring of risk and the implementation of measures aimed at mitigating risk. Borregaard has focused on communication to create trust among people who live and work near the production facilities.

Sometimes risks can be eliminated through technical, organisational or business measures. Borregaard's elimination of chlorine risk by converting the elemental chlorine to hydrochloric acid, implemented in 2012, is one example of this.

Borregaard continuously assesses safety in relation to the wider community outside the company. This applies in particular to Borregaard's large plant in Sarpsborg, which is subject to the Norwegian Major Accident Regulations<sup>13</sup>. These are based on an EU Directive (Council Directive 96/82/EC ("Seveso III")) intended to prevent accidents that could potentially cause large-scale harm.

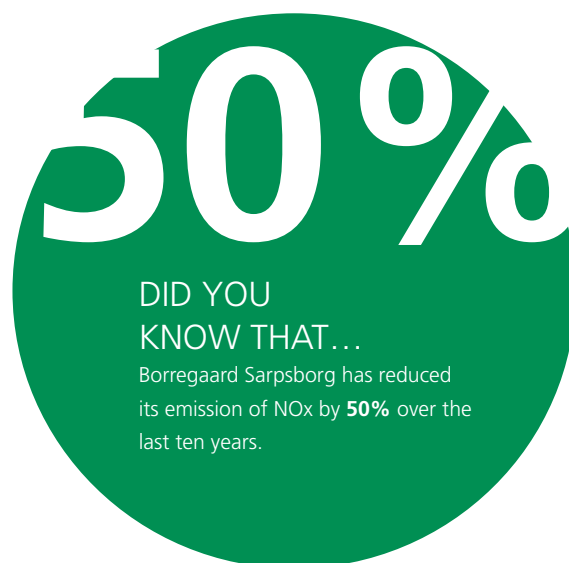
Borregaard, in cooperation with independent expertise, has carried out extensive risk assessments in line with guidelines from the Norwegian Directorate for Civil Protection (DSB). Based on this work, DSB has proposed consideration zones for the area surrounding Borregaard's operations in Sarpsborg. Borregaard, therefore, expects the long-term development of the area surrounding the plant to be harmonised in line with the expectations of the Seveso III.

In 2017, Borregaard updated its safety report based on the revision of Seveso III. The report provided an updated picture of the overall risk of major accidents at the plant in Sarpsborg and provides a basis for prioritising risk mitigation measures. Borregaard has also updated its strategy for preventing major accidents in line with Seveso III (Section 7, Annex 3) and is currently implementing an updated process safety management system.

SO<sub>2</sub> is an important input chemical in production processes in the biorefinery and cannot be replaced by other chemicals. Risk analyses show that a large discharge of sulphur dioxide could have serious consequences for third parties, especially from the storage of liquid sulphur dioxide. Borregaard has decided to introduce new technology that will substantially reduce the amount of SO<sub>2</sub>.

Borregaard has several lignin spray dryers in its facilities. The risk of a dust explosion has been surveyed and risk mitigation measures have been implemented.

The Norwegian Tank Regulations (Norwegian Pollution Regulations, Chapter 18) were introduced in Norway in 2014 with the intention of surveying and reducing the environmental risks associated with tank storage. All storage tanks had to be equipped with physical barriers for the collection of chemicals in case of accidents by 1 January 2019. Borregaard has assessed environmental risk for around 500 tanks with respect to the requirements of the Regulations. The projects that have been implemented include everything from upgrading existing tank reservoirs to building brand new tank storage facilities for some chemicals.



<sup>13</sup> The Council Directive 96/82/EC

## Results 2018

Borregaard reported one (three) fire in 2018. The fire resulted in minimal damage. The risk of fire will be further reduced through the implementation of a four-year plan (2017-2020) at the plant in Sarpsborg, which includes renewing fire alarm systems and improving standards in accordance with the Norwegian Fire Regulations.

The risk of incidents related to the storage and use of chemicals at the plant in Sarpsborg was reduced in 2018. Waste oil, as a supplemental fuel for the bioboiler, and propane, as a fuel for the spray dryers, have been replaced by LNG. Tank storage has been upgraded in accordance with the Tank Regulations' requirements for products such as ethanol, sulphuric acid and chlorine dioxide. Among other things, this has further improved process safety in the facilities.

Borregaard in Sarpsborg distributed updated information leaflets about plant safety to its neighbours in 2018.

## Initiatives for 2019

Borregaard will continue to implement an updated process safety management system. The company will prioritise the areas with the highest potential inherent risk in terms both of EHS and profitability. Process safety related to SO<sub>2</sub> will be prioritised. Borregaard has decided to introduce new technology that will substantially reduce the amount of SO<sub>2</sub> stored at the plant in Sarpsborg in order to further improve safety. This technology will be implemented in 2020.

## CHEMICALS AND PRODUCT SAFETY

Borregaard's main products are lignin and speciality cellulose, representing about 80% of the revenues. Both are exempted from registration under the REACH regulation, which means that they are associated with a low risk in use. About 20% of the revenues are from products that are subject to classification according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Substances which are subject to registration under the REACH regulation undergo a thorough hazard and risk assessment according to regulatory requirements. An electronic chemical health, environmental and safety system is used for the identification and monitoring of substances of concern (REACH Candidate List, REACH Authorisation List). Borregaard does not produce substances listed on these lists. The classification (according to the CLP Regulation) of all products placed on the market are being evaluated based on intrinsic properties of the ingredients and/or toxicological data on the product. The Safety Data Sheets are regularly revised and updated. The risk for hazardous conditions and unexpected exposure due to use of chemicals is considered as low.

International and national chemicals legislation require tests and registrations with the authorities before products can be safely and legally placed on the market. Animal testing might in some exceptional cases hence be necessary in order to ensure compliance with relevant directives. A procedure for approval and performance of animal testing is in place.

Borregaard has procedures to ensure that all new chemicals subject to labelling due to potential risk are assessed for possible substitution by a dedicated committee, before they are introduced in the production processes. The existing portfolio of chemicals is subject to periodical assessment for possible substitution. In the planning and development process for new products, substances used as input factors are evaluated with a view to risk and toxicity before they are approved.

## SAFE AND HEALTHY WORKING ENVIRONMENT

A safe and healthy working environment is a fundamental right for all employees, and essential for ensuring stable and efficient operations.

Borregaard's ambition is to promote a safety culture that results in the avoidance of injuries to employees or third parties, as well as material damage resulting from its activities. This will be achieved through good risk management, systematic efforts to prevent injuries and occupational diseases (both physical and mental), and the involvement of all employees. Safety is an integral component of all aspects of Borregaard's operations due to an proactive approach that involves safe job analyses, safety barriers and the principle of "safety first".

Some of Borregaard's units are certified pursuant to OHSAS 18001. Norwegian EHS legislation (Internal Control Regulations) includes a requirement for a management system that systematically monitors safety, identifies hazards and involves employees. Borregaard has also added its own requirements and guidelines to ensure high EHS standards for its operations.

Borregaard's overall target is zero lost time injuries (LTI). Some of Borregaard's production units have maintained a zero LTI level for many years.

The management has long prioritised a focus on safety in the workplace to eliminate injuries. Borregaard has a worldwide safety programme called Zero Harm. Important measures for eliminating injuries include basic EHS training to strengthen the safety culture, focusing on personal responsibility for one's own safety, clear safety management, reviews of rules for, and the practical use of, protective equipment, and requirements for order and tidiness in the workplace.



The Group has a systematic procedure for investigating the root causes of incidents, before corrective and preventive measures are implemented. This provides valuable input for the risk assessment process and documents the lessons learned.

Historically, exposure to chemicals has been the main category of injuries, but systematic efforts over many years to reduce chemical exposure through training and safety management are now showing results.

Borregaard in Sarpsborg holds a weekly safety meeting in which the management and employee representatives address various safety issues. One safety topic to which additional attention will be paid is selected each month. Topics include the risk associated with sharp objects, walking/tripping hazards in connection with slippery conditions or the risk of chemical exposure. This systematic procedure means that the entire organisation gets involved and is critical for improving the individual's understanding of risk.

Borregaard strives to ensure that working conditions are conducive to the good health of its employees. The company strives to ensure a good, inclusive working environment with meaningful tasks, support and feedback from colleagues and managers. The health of the employees is regularly monitored through medical examinations and working environment surveys. The working environment is generally considered to be good, and efforts are continually being made to improve it through various measures.

Borregaard particularly focuses on sick leave and has an ambitious goal of further reducing sick leave. This is why both preventive activities and initiatives have been introduced to reduce any stressful aspects in the working conditions. There is an emphasis on closely following up those on sick leave and on adapting tasks for individual employees. Temporary adaptations in the working environment, with suitable duties, or shorter working hours for a limited time, are examples of measures for employees with different needs. Training, health and lifestyle counselling, vaccinations and stress management are other examples.

The potential for exposure to substances that are harmful to health forms part of the risk assessment process. Measures are implemented to reduce or eliminate substances that may have a negative impact on health. The precautionary principle is fundamental and personal protective equipment is compulsory when a risk of exposure exists. In 2018, the Norwegian authorities introduced a new threshold value

for SO<sub>2</sub> in the workplace atmosphere. Complying with the requirements is demanding and Borregaard has, therefore, reinforced its action plan for reducing concentrations of SO<sub>2</sub> in the working environment.

#### Results 2018

There were no fatal or high consequence injuries in Borregaard in 2018 (zero). The number of absences resulting from injuries increased from 2017 to 2018. The increase was not linked to the actual operation of the facilities. There were seven absences due to injuries in the Group (two). An employee at the plant in Sarpsborg slipped on ice and broke a leg (absent for 20 days), another one crushed a finger (absent for seven days) and one injured their back when performing a heavy lift (absent for two days). There were two absences due to injuries at the sales office in Germany: one employee injured their thumb in a traffic accident (absent for ten days) while another slipped on a wet floor in a hotel and hurt their back (absent for 29 days). At the facility in Florida, an employee was splashed by hot liquid (absent for one day) and another at the Rothschild facility tore a tendon in their shoulder when tightening a bolt (absent for 19 days).

Proactive safety indicators show that the Group's safety culture is improving.

The sick leave rate<sup>14</sup> in Borregaard was reduced in 2018 and ended at 3.5% (3.8%).

#### Initiatives for 2019

In order to achieve the target of zero absences due to injuries, Borregaard will continue the work to ensure it has a motivated and proactive organisation in relation to safety, with a high degree of awareness of their responsibility to mitigate risk. The work on reporting, analysing underlying causes, implementing measures in connection with near-accidents and hazardous situations, as well as frequent inspections at the facilities, will continue in 2019.

Borregaard will continue its monthly safety topics programme with greater focus in 2019 in order to build a strong safety culture and increase the understanding of risk. The training for external workers who are working for Borregaard will be improved in 2019.

Borregaard will continue to focus on appropriate health promotion measures and preventive working environment measures in close cooperation with employee representatives in 2019. The long-term target for sick leave rate is 3.0%.

<sup>14</sup> Total hours of sick leave/possible work hours.

KEY TARGETS 2018	RESULTS	COMMENTS
<b>CLIMATE</b>		
Establish science-based target for long-term CO <sub>2</sub> emissions	Achieved	Target approval pending.
Reduce CO <sub>2</sub> emissions to 100 kg of CO <sub>2</sub> /MWh of energy consumption at Borregaard Sarpsborg	Not achieved	Not achieved due to the use of more LNG and less electricity in steam production.
<b>ENVIRONMENT</b>		
NOx reduction in Sarpsborg 40%	Not achieved	DeNox not commissioned due to technical difficulties.
COD emissions below 64 tonnes per 24-hour period	Achieved	61 tonnes
No instances of SO <sub>2</sub> exceeding local air quality limits	Not achieved	15 1-hour period and two 24-hour period exceedings
Reduce specific heat energy consumption pr tonnes of cellulose by 2% (Borregaard Sarpsborg)	Achieved	2%
<b>HEALTH AND SAFETY</b>		
Sick leave rate below 3.8%	Achieved	3.5
No absences resulting from injuries (LTI)	Not achieved	3.5
<b>TRANSPORT</b>		
Increase wood transport via rail to 23.5%	Not achieved	21%
Ship 50,000 tonnes to Europe via the sea in 2018	Not achieved	40,000 tonnes
All road transport using, as a minimum, Euro 5 engines	Achieved	100%
<b>KEY TARGETS 2019</b>		
<b>CLIMATE</b>		
Establish specific action plans in order to achieve the science based target for 2030 (Group)		
Reduce CO <sub>2</sub> emissions to 100 kg CO <sub>2</sub> /MWh of heat energy consumed Sarpsborg by 2025		
<b>ENVIRONMENT</b>		
NOx reduction Sarpsborg 24% run rate from base year 2018 to end 2019		
COD emissions below 59 mt/day (Sarpsborg)		
Zero exceedances of local air quality SO <sub>2</sub> Sarpsborg, average emissions pr hour		
<b>HEALTH AND SAFETY</b>		
Sick leave below 3.5% (Group)		
LTI rate of 0 Group		
<b>TRANSPORT</b>		
Increase rail transportation of logs to 23.5% (Sarpsborg)		
Surpass 40,000 mt by sea to Europe in 2019 (Sarpsborg)		
85% of road transport by minimum Euro 6 engines (Sarpsborg)		



GRI ref*		UNIT	2018	2017	2016
<b>302</b>	<b>ENERGY</b>				
302-1	Total energy consumption	GWh	1,593	1,612	1,618
302-1	Renewable energy part of total energy consumption	GWh	1,007	1,083	n/a
302-1	Heat energy part of total energy consumption	GWh	1,069	1,093	1,093
302-1	Electricity part of total energy consumption	GWh	524	519	525
302-4	Heat energy consumption at Borregaard Sarpsborg per tonne of cellulose	GWh/tonne cellulose	21.6	21.9	22.7
<b>303</b>	<b>WATER</b>				
303-1	Surface water usage Borregaard Sarpsborg (river Glomma)	mill m <sup>3</sup>	24.5	23.9	23.2
303-1	Ground water usage Borregaard Sarpsborg	mill m <sup>3</sup>	0	0	0
303-1	Surface water usage Borregaard other facilities	mill m <sup>3</sup>	0.09	n/a	n/a
303-1	Ground water usage Borregaard other facilities (Florida)	mill m <sup>3</sup>	0.15	n/a	n/a
<b>305</b>	<b>EMISSIONS TO AIR</b>				
305-1	Direct (Scope1) GHG emissions	mt CO <sub>2</sub> e	139,856	128,414	134,176
305-1	Direct biogenic GHG emissions	mt CO <sub>2</sub> e	129,303	108,258	108,152
	Direct GHG emissions within EU-ETS system	mt CO <sub>2</sub> e	126,284	114,259	121,639
305-2	Energy indirect (scope 2) GHG emissions	mt CO <sub>2</sub> e	58,484	58,213	60,785
305-3	Other indirect (scope 3) GHG emissions	mt CO <sub>2</sub> e	301,083	301,083	n/a
305-4	Direct and indirect GHG emission (scope 1 and scope 2) pr revenue	mtCO <sub>2</sub> e/mNOK	41	40	43
305-4	Direct and indirect GHG emission (scope 1 and scope 2) pr total energi consumption	mtCO <sub>2</sub> e/mNOK	115	106	112
305-5	Reduction of GHG emissions from basis year 2009 (total scope 1 and scope 2)	%	34	37	35
305-7	Emissions of SO <sub>2</sub>	mt	69	84	80
305-7	Emissions of NOx	mt	197	167	189
305-7	Emissions of dust particles	mt	70	67	50
<b>306</b>	<b>EFFLUENTS AND WASTE (BORREGAARD SARPSBORG)</b>				
306-1	Emissions of COD to water (organic material)	t/day	61	66	63
306-1	Emissions of AOX to water (halogenic organic material)	t/day	0.27	0.30	0.28
306-1	Emissions of suspended solids (fibers) to water	t/day	4.0	3.3	4.0
306-1	Emissions of phosphor to water	kg/day	36	37	35
306-1	Emissions of nitrogen to water	kg/day	369	436	409
306-2	Ordinary waste	t	17,457	15,044	16,756
306-2	Hazardous waste	t	4,903	3,316	3,105
306-2	Total amount of waste	t	22,360	18,360	19,861
306-2	Degree of waste sorting	%	99	98	97
306-2	Energy and material recovery rate of waste	%	70	71	61
<b>307</b>	<b>ENVIRONMENTAL COMPLIANCE</b>				
307-1	Non-compliance with environmental laws and regulations	Number	0	0	0
<b>403</b>	<b>OCCUPATIONAL HEALTH AND SAFETY</b>				
403-2	Number of fatal accidents	Number	0	0	0
403-2	LTI; Lost time injuries per million worked hours	Number	3.5	1.1	1.6
403-2	TRI; Total recordable injuries per million worked hours	Number	8.6	8	7.7
403-2	Number of injuries for independent contractors	Number	12	6	5
403-2	Lost days due to work related injuries	Number	87	46	66
403-2	Sickleave	%	3.5	3.8	4.0

\* GRI = Global Reporting Initiative.

## C

## EMPLOYEE AND COMPETENCE DEVELOPMENT



The total number of full-time equivalents (FTEs) in Borregaard was 1,097 at the end of 2018 (1,065). All of the Group's units experience generally low turnover. The turnover rate<sup>15</sup> in Sarpsborg was 2.8% in 2018.

#### CORPORATE CULTURE

Borregaard has developed a strong corporate culture over many years and through changing times, which helps create a common mindset, core values and an understanding of the business across functions, business areas and geographical boundaries. A sound corporate culture that supports Borregaard's objectives and strategies provides a vital basis for the development of the company and its employees.

Borregaard's culture and values, "The Borregaard Way", are an integral part of the various introduction and development programmes. The corporate culture and core values also include standards and objectives for sound business ethics. Borregaard has a set of guideline documents for corporate responsibility and ethical guidelines, as well as manuals and more specific guidelines for different areas such as anti-corruption, competition legislation, responsible sourcing, environment, health and safety, and human rights.

Borregaard's guidelines for corporate responsibility are integrated into the Group's introduction and managerial training programmes.

#### DEVELOPING CORE COMPETENCE

Borregaard's core competence lies within sales and marketing, R&D and production. Today, the Group's competence within these areas, and the interaction between them, is Borregaard's most important competitive advantage. Therefore, it is crucial that the Group manages to retain and strengthen this unique base of competence, both through recruitment and employee development. The Group's introduction programme provides new employees with an introduction into Borregaard's strategy, corporate governance, culture and values. New employees also take part in continuous improvement and innovation courses. 19 new employees from various parts of the Group took part in the main introduction programme in 2018.

Borregaard has set up internal training programmes within its areas of core competence. 14% of the company's employees work within sales, marketing and customer service. It is important to know the various customers' needs and the value of Borregaard's products and solutions. With a view to maintaining this knowledge, Borregaard operates, both an "Application Academy" and a "Sales Academy".

Since Borregaard's production processes are very complex and involve a high degree of integration, great importance is attached to knowledge and competence in the areas of production and biorefining. Borregaard arranges extensive training programmes for its operators and apprentices (Norway and Germany). The Group also has a "Knowledge Plant" for training. In 2017, Borregaard established a "Production Academy" based on the LEAN method that focuses on continuous improvement in all parts of the Group. The aim is to offer this training to all of Borregaard's employees in order to strengthen the company's corporate culture within continuous improvement. In 2018, 92 employees participated in the "Production Academy".

As part of Borregaard's commitment to competence building, the company implemented a new and comprehensive e-learning system in 2018.

Borregaard Innovation Conference, was held in the spring of 2018. This is a forum that is intended to contribute to inspiration and the exchange of ideas across internal R&D groups, departments and business areas. The conference lasts for two days and is arranged every two years. The next conference will be arranged in the spring of 2020.

The Group invests significant resources in management training. Borregaard's mission is to recruit most of its managers from within the company with the aid of career development plans and by having replacement candidates and programmes that combine management training and corporate culture development. In order to help increase the number of female managers and strengthen the company's international competence, women and managers from operations outside Norway are overrepresented in these programmes.

Borregaard underlines the importance of creating an internal job market and favours a high degree of job rotation and internal recruitment to fill vacancies. There were several examples of internal recruitment between divisions and business areas in 2018. This is an important element of strengthening competence, innovation and continuous improvement in the company, and also creates career opportunities for employees.

Two trainees were recruited to the trainee programme in 2018. The trainees work within R&D, marketing, sustainability and finance.

<sup>15</sup> The number of employees that left the company as a percentage of the total number of employees by year-end. Employees retired are not included in the numbers.



## RESTRUCTURING AND ORGANISATIONAL DEVELOPMENT

Borregaard strives specifically to maintain its global competitiveness through world-class innovation and productivity. Comprehensive training programmes, together with the introduction of new technologies and organisational development, are key elements of the company's continuous improvement work.

The Borregaard plant in Sarpsborg is also assuming greater responsibility for training skilled workers through targeted contact with and providing lessons in schools, as well as by increasing the number of apprentices it takes on. The company has a training and presentation centre, the "Knowledge Plant" available for this purpose.

Based on the current age composition of the workforce, Borregaard in Sarpsborg will experience a growing need for qualified employees in coming years. In order to meet these challenges, Borregaard has recruitment activities and school programmes to encourage interest in an industrial career and relevant qualifications.

Borregaard in Sarpsborg took on nineteen new apprentices in 2018. There were a total of 42 apprentices at the operations in Sarpsborg, as well as three apprentices at Borregaard's operations in Germany.

## DIVERSITY

Borregaard wishes to enhance diversity among its employees and is committed to avoiding discrimination based on gender, ethnicity, religion and age. The Group has specific guidelines for this area. Borregaard has, among other things, initiatives aimed at promoting the recruitment of female managers and employees.

The Group deliberately have a high proportion of women in management and technical programmes, as well as in the company's recruitment base.

In 2018, 25% (25%) of Borregaard's employees were women. 32% of all new employees were women in 2018. The lowest proportion of women is in production, while

the proportion of women in R&D, customer service, HR and finance is above 50%. Three of the members of the company's board of directors are women (43%). Overall, 25% (29%) of managers in Borregaard are women, while the executive management team includes one woman (11%).

Borregaard has gender-neutral guidelines and pay systems that contribute to equal pay for equal work. Borregaard has the same working hours for men and women. The degree of part-time employment is low.

In a survey conducted in 2018 by SHE community/EY, Borregaard was rated number eight out of fifty companies for gender equality reporting and performance at Oslo Stock Exchange.

Borregaard is a global organisation with people from 25 different nationalities. The company believes employing people with diverse ethnic and cultural backgrounds is a strength and uses diversity as a resource within the organisation. The diversity of nationalities also affects how the Group's training programmes are put together and staffed.

## WHISTLEBLOWING PROCEDURES

Borregaard wants transparency and a strong corporate culture to help ensure that difficult or undesirable situations are discussed and resolved. There may be situations where employees see or experience something that conflicts with the company's guidelines or expectations.

Ideally, the company would like these issues to be dealt with where they occur. However, situations may arise where reports from employees about adverse situations do not reach the right person or where they feel unfairly treated and cannot find a solution to their problems. In such circumstances, there are established procedures for and guidelines on whistleblowing, both to various specific functions in the organisation or via a dedicated telephone number or email address. These guidelines are translated into several languages and distributed to the company's units worldwide.

KEY TARGETS 2018	RESULTS	COMMENTS
Implement a senior executive programme	Achieved	One class with 11 participants completed
Implement the "Production Academy" at at least two units	Achieved	92 participants
Increase the proportion of female employees to 30% and female managers to 35% by 2022	In progress	32% of all new employees and 25% of all managers were women in 2018

KEY TARGETS 2019
Conduct 4 regional Sales Academies, including sustainability training
Conduct Production Academy at minimum two production sites
Increase the proportion of female employees to 30% and female managers to 35% by 2022

## D

## SUPPLIERS AND BUSINESS PARTNERS



### BORREGAARD'S APPROACH

Borregaard works with suppliers and business partners around the world. Some relationships are well-established and long-term. This contact and cooperation must be characterised by trust, integrity and mutual respect, and transactions and business practices must comply with the laws, regulations and internationally recognised ethical standards.

Borregaard strives to identify risks in relation to violations of labour rights, EHS conditions, environmental legislation and anti-corruption legislation by the Group's suppliers. When such violations are identified, the Group implements measures to improve the situation. In this way, Borregaard contributes to sustainable business operations, while reducing commercial risk and strengthening its long-term competitiveness.

Several guidelines have been drawn up to regulate matters and help employees cultivate good relationships and sound business practices. The guidelines cover corporate governance, anti-corruption, competition laws, and responsible purchasing.

Borregaard has conducted an assessment of the risk of corruption to ensure that relevant anti-corruption measures are in place and being complied with. No high-risk corruption factors were identified.

#### Training

In 2018, Borregaard provided selected employees with training in anti-corruption and competition legislation, as well as practical training within responsible sourcing.

### SUPPLIERS

The Supplier Code of Conduct (SCoC) is based on the principles of the UN Global Compact. Borregaard's suppliers are required to comply with SCoC or its equivalent, irrespective of their country of origin.

#### New suppliers

New suppliers are subject to approval in relation to written procedures and risk assessments. This involves answering a questionnaire covering quality assurance, the environment, corporate social responsibility and responsible sourcing.

Based on this risk assessment, suppliers are deemed either qualified or not qualified. Alternatively, suppliers are subjected to a more detailed analysis. Borregaard also assesses and approves relevant products or services. Everything is documented in a change management system.

#### Supplier evaluation

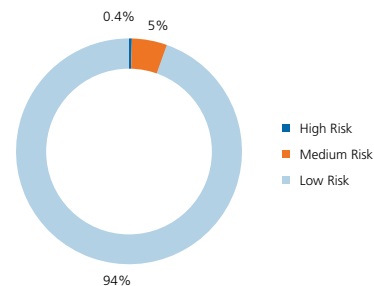
Borregaard conducts annual supplier evaluations. These evaluate registered suppliers' non-conformance and observations, any new legislation and specific areas for improvement. The evaluation is summarised in a report with an action and audit plan.

In 2018, Borregaard focused on EHS for independent contractors. Fourteen audits were planned and fourteen conducted. In 2019, the focus will be on the topic of the environment. Ten audits are planned for 2019.

#### Existing suppliers

On behalf of Borregaard, Sedex<sup>16</sup> conducted an advanced assessment of the company's suppliers. Fewer than 0.5% of the company's suppliers belonged to the high-risk group, while 94% were in the low-risk group.

#### PRELIMINARY RISK ASSESSMENT



Borregaard has encouraged high and medium-risk suppliers to register with Sedex, complete a questionnaire and share the information with Borregaard. Relationships with three suppliers were terminated in connection with this process; nine suppliers were approved and eight are still being evaluated.

In 2019, Borregaard will implement a tool for evaluating risks among the Group's suppliers and partners.

<sup>16</sup> Sedex is a collaborative platform for sharing responsible purchasing data in supply chains. The system is used by more than 43,000 members in over 150 countries to measure their performance in relation to labour rights, EHS and business ethics.



## SUSTAINABLE RAW MATERIALS

### Wood

Borregaard sources wood from forests that are managed in a proper, sustainable and eco-friendly manner. The company complies with the applicable guidelines, laws and regulations in the countries where the wood is sourced.

One million solid cubic metres of wood is purchased each year for Borregaard's biorefinery in Sarpsborg. In 2018, 79% of the wood came from Norway, 19% came from Sweden and the remaining 2% came from Germany. All the wood is harvested in accordance with the country of origin's laws on felling, silviculture and biodiversity. 92% of the wood purchased in 2018 was certified in accordance with PEFC/FSC<sup>17</sup>.

In November 2018, Borregaard became Chain of Custody (CoC) certified in accordance with the FSC and PEFC forest certification standards.

Borregaard does not purchase wood that is:

- harvested illegally
- felled in protected areas or areas that are subject to review, unless the harvesting clearly complies with national conservation regulations
- harvested in forests with a high conservation value defined by the Living Forest standard in Norway or by the High Conservation Value Resource Network (HCVRN)
- genetically modified (GMT/GMOs)

Borregaard's goal is to cut the greenhouse gas emissions associated with transporting wood by increasing payloads and transferring more goods from truck to railway, thereby utilising transport capacity more efficiently.

### Lignin

Borregaard's production units outside Norway receive lignin raw materials from adjacent pulp mills. All of them purchase wood from FSC certified sources. Supplies of lignin can be affected by a number of factors, such as the profitability of suppliers of raw materials and general market conditions, regulatory considerations, loss or closure of production, as well as a number of industry-specific factors, including the supply and cost of raw materials.

Producing the lignin feedstock Borregaard uses in production requires a sulphite pulping process. Only a limited number of pulp producers use this process. Some of Borregaard's former sources of lignin feedstock have ceased

production. In 2018, Borregaard and Rayonier Advanced Materials (RYAM) built a new lignin facility adjacent to RYAM's pulp mill in Florida, USA.

## OTHER BUSINESS PARTNERS

### LIGNOTECH SOUTH AFRICA

LignoTech South Africa (LTSA) is a 50:50 joint venture between Borregaard and Sappi. The company employed 107 FTE as of 31 December 2018, including trainees. Borregaard is represented on the board of the company. LTSA produces lignin products based on raw material from Sappi Saiccor's pulp mill.

The company has its own Social and Ethics Committee tasked with monitoring social and economic development, corporate citizenship, environment, health and public safety, customer relations and labour and employment issues. The Committee is composed of members of the company's management team and chaired by an LTSA director. LTSA subscribes to the OECD guidelines with respect to anti-corruption measures. In addition, the company has an Audit and Risk Committee composed of LTSA directors. The Committee is tasked with monitoring assurance arrangements, integrity of reporting, risk governance and delegation of financial responsibility to management.

The company has developed a comprehensive governance compliance programme to monitor legal and other compliance activities and staff retraining on key policies, standards and procedures is scheduled for 2019.

The company again organised its annual "Safety Day", demonstrating how to care for our people and planet by building and illustrating a Safety House concept consisting of actions as foundations and values as pillars. All new employees undergo hazard awareness training and testing, and sign a safety pledge when joining the company as preparation for being absorbed into the Zero Harm systems.

The company is involved in reducing the effects of the social and financial consequences of HIV/AIDS. One important area has been to prevent discrimination based on the disease, to disseminate information about the disease and its treatment, and to carry out voluntary counselling and testing for employees. In addition, the company supports education as a priority and supports local schools and day care centers for disadvantaged children and provides donor funding to the two largest universities in Durban for disadvantaged students.

<sup>17</sup> PEFC is an international non-profit organisation that promotes sustainable forest management. FSC is a global non-profit organisation that sets standards for responsible forest management.

LignoTech South Africa is consciously striving to ensure that the profile of its labour force reflects the country's demographics, with a particular focus on representation in management. The company is B-BBEE (Broad-Based Black Economic Empowerment) certified, with the common goal to distribute wealth across as broad a spectrum of previously disadvantaged South African society as possible. As part of the B-BBEE engagement, LignoTech South Africa has partnered with the Hope Factory initiative to support small and medium-sized enterprises and informal businesses to grow and develop. The company continued its financial support of the Hope Factory in 2018.

LignoTech South Africa paid income taxes totalling NOK 14 million in 2018.

Certifications in LignoTech South Africa:

- ISO 9001 (Quality Management)
- ISO 14001 (Environmental Management)
- GMP+ Production of Feed Additives and Premixes
- OHSAS 18001:2007 Health and Safety Management
- B-BBEE Broad-Based Black Economic Empowerment

#### KEY TARGETS 2018

	RESULTS	COMMENTS
All new suppliers must be approved in accordance with established guidelines and procedures	Achieved	
Fourteen supplier audits	Achieved	
Implement tools for assessing and managing financial and ethical risk among suppliers/partners	Not achieved	Postponed to 2019

#### KEY TARGETS 2019

All new suppliers subject to approval in accordance with established policies and procedures
10 supplier audits
Implement a tool for reviewing and addressing financial and compliance risk amongst suppliers/business partners
Improved documentation of environmental and climate footprint for raw materials



## E

## CONTRIBUTION TO SOCIETY



Profitable and sustainable jobs are a prerequisite for welfare and social security. This manifests itself through income and meaningful activity for individuals, as well as through financial contributions through taxes and duties that companies and their employees pay in the countries and local communities in which they operate. Those countries where Borregaard has production operations see significant ripple effects from suppliers and other activities around the plants.

As of 31 December 2018, Borregaard employed 1,097 FTEs in plants and sales offices in 16 countries. The Group has production units in Norway, the UK, Germany, Spain, the Czech Republic and the US, as well as a 50:50 joint venture in South Africa.

#### NOK 143 MILLION IN INCOME TAX PAYMENTS

Borregaard paid income taxes totalling NOK 143 million in 2018 (NOK 170 million). The income taxes paid in Norway amounted to NOK 129 million, while income taxes paid in the rest of Europe was NOK 3 million, NOK 7 million in the Americas, NOK 3 million in Asia and NOK 1 million in Africa.

Borregaard seeks to comply with the spirit as well as the letter of the tax law in countries where Borregaard has commercial activity. The company will not enter into arrangements which could be considered artificial or which have tax avoidance as their sole or main objective. Borregaard uses the OECD guidelines for internal pricing, which is an important factor in ensuring that profits and taxes are distributed fairly among different countries.

#### SHARED INTERESTS WITH LOCAL COMMUNITY

Borregaard's companies impact and interact with the local communities where they are located. The Group's plants outside Norway are relatively small, while Borregaard has been a cornerstone company in Sarpsborg for generations. Borregaard still plays an important role in the city and region as an employer, a customer of many suppliers, and a socio-economic contributor through taxes and duties from its operations.

#### SUPPORT FOR SOCIAL DEVELOPMENT

Borregaard has a broad contact network and many stakeholders in Sarpsborg and Østfold County. The company participates in various forums and organisations involved in urban and regional development, and has also provided venues for socially beneficial activities.

In 2018, the company contributed around NOK 4 million to support measures that benefit both the company and the region, with the overall goal of boosting the company's reputation as an employer. Borregaard's sponsorship strategy has two main pillars. One covers cultural and sports experiences and activities that help make the city and region more attractive. This is important to Borregaard in terms of creating a long-term source of recruitment. The other area supports measures intended to help young people understand and get interested in disciplines important to Borregaard and society as a whole. This is illustrated by Borregaard's support and cooperation with the Inspira Science Centre, the Young Entrepreneurship scheme and the company's own Knowledge Plant.

#### COLLABORATION WITH EDUCATIONAL INSTITUTIONS

Borregaard works closely with schools and educational institutions in the Sarpsborg area. The Group has established its own Knowledge Plant, which functions as both an in-house training centre and as a showroom and venue for school visits. It offers educational programmes that tie in with schools' curricula, using examples taken from the company. In 2018, 1,629 students visited the Knowledge Plant from schools taking part in an educational programme combining technical training, careers advice and a company presentation.

Borregaard also contributes to a University Educated Teacher II scheme within chemistry for upper secondary schools in Østfold County in which researchers from Borregaard have created a company-related teaching plan in chemistry. Every year, students from a number of higher education colleges and universities carry out practical tasks and projects or get internships at the company.

Borregaard has programmes and instructors for apprenticeship schemes involving cooperation with vocational schools in the region. These provide apprentices with relevant experience to supplement their theoretical training. In 2018, Borregaard had a total of 42 apprentices at the biorefinery in Sarpsborg and 3 at the plant in Germany.

#### AWARDS AND RECOGNITIONS

Borregaard has received several awards and honours from external bodies over the years. In 2018, Borregaard was named "Best Overall Investor Relations" by IR Magazine Awards Europe. The company was also ranked number

eight out of one hundred assessed companies in the field of sustainability communication by the Governance Group and the communication company BCW.

Borregaard conducts an annual reputation survey among the general public in Østfold County that looks at the local community's opinion of Borregaard as a place to work, environmental conditions, contribution to the community and people's general impressions of the company. The survey in 2018 produced the best reputation results ever with respect to Borregaard as a place to work. Besides a very good reputation as a sound company with good products and competitiveness, the company also has a good reputation within the areas of environmental conditions and positive contributions to the local community. The survey once again confirms the company's strong position in the local community around Borregaard's largest plant.

#### CERTIFICATION AND AFFILIATION

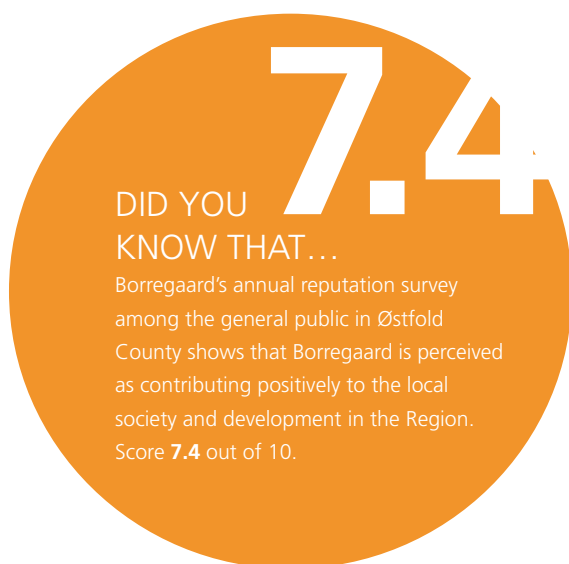
Borregaard has established links with various external schemes that contribute to tighter control, improvements and inspiring a systematic way of working. This also applies to issues and topics relating to corporate responsibility and sustainable development and operation. The company has committed to, among other things, the Responsible Care guidelines and objectives, which are the European chemical industry's environmental responsibility initiative.

Borregaard also subscribes to the services of EcoVadis<sup>18</sup> to enable its customers to monitor the Group's sustainability performance.

Borregaard is certified in accordance with several standards:

- ISO 9001 (Quality Management) (Norway, the US, Germany, Spain, the UK and Austria)
- ISO 14001 (Environmental Management) (Norway, Germany, Spain and Austria)
- ISO 50001 (Energy Management) (Norway and Germany)
- FSSC 22000 (Food Safety)
- GMP+ (Feed Additives) (Norway, Germany and Spain)
- SMETA (Ethical Trade)
- OHSAS 18001:2007 (Health and Safety) (Austria)
- Kosher certified (vanillin products, Norway)
- Halal certified (vanillin products, Norway)
- PEFC Chain of Custody (wood sourcing within speciality cellulose) (Norway)
- FSC Chain of Custody (wood sourcing within speciality cellulose) (Norway)

Borregaard is a member of the UN's Global Compact and through this supports universal principles on human rights, labour, the environment and anti-corruption. Borregaard also reports progress in line with the Global Compact. Borregaard intends to report in accordance with GRI from 2020.



<sup>18</sup> [www.ecovadis.com](http://www.ecovadis.com)



### THE TEN PRINCIPLES OF THE UN GLOBAL COMPACT

Borregaard complies with the UN Global Compact's ten principles of doing business in the areas of human rights, labour, environment and anti-corruption. The ten principles are derived from the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

#### Human Rights

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and

Principle 2: make sure that they are not complicit in human rights abuses.

#### Labour

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4: the elimination of all forms of forced and compulsory labour;

Principle 5: the effective abolition of child labour; and  
Principle 6: the elimination of discrimination in respect of employment and occupation.

#### Environment

Principle 7: Businesses should support a precautionary approach to environmental challenges;

Principle 8: undertake initiatives to promote greater environmental responsibility; and

Principle 9: encourage the development and diffusion of environmentally friendly technologies.

#### Anti-Corruption

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.



Per A. Sørli,  
President and CEO, Borregaard



## 1 NO POVERTY



### END POVERTY IN ALL ITS FORMS EVERYWHERE

- Borregaard and the rest of the industry generate high added value creation. Through its purchases of goods and services and tax contributions, the industry creates positive ripple effects in the form of direct and indirect jobs
- Substantial tax payments. In 2018, the Borregaard Group's tax payments amounted to NOK 143 million
- Jobs provide a route out of poverty. Borregaard employs 1,097 FTEs in 16 countries

## 2 ZERO HUNGER



### END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

- Effective and sustainable feed products
- Products for improved plant growth stimulants for food plants
- Improved and sustainable protection for crops
- Raw materials do not compete with food production

## 3 GOOD HEALTH AND WELL-BEING



### ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

- A number of Borregaard's products replace hazardous chemicals such as solvents
- Products that contribute to fat reduction
- Diagnostics (fine chemicals)
- Focus on the health and safety of employees

## 4 QUALITY EDUCATION



### ENSURE INCLUSIVE AND QUALITY EDUCATION FOR ALL AND PROMOTE LIFELONG LEARNING

- Prioritising employee training – many training programmes in the Group
- Cooperation with schools (education, equipment, visitor programmes)
- Supporting a science centre

## 5 GENDER EQUALITY



### ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

- Equal treatment rules. Active recruitment of women to all levels and positions.
- Overrepresentation of women in managerial development programmes
- 25% of Borregaard's employees were women in 2018

## 6 CLEAN WATER AND SANITATION



### ENSURE ACCESS TO WATER AND SANITATION FOR ALL

- A focus on reducing water consumption
- Working with, and investing in, emission cuts
- Producing products for use in water purification
- Own water treatment facility at the plant in Sarpsborg

## 7 AFFORDABLE AND CLEAN ENERGY



### ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

- Increased energy recovery from renewable sources
- Increased production of bioethanol for fuel in 2018
- Provides process heat for local district's heating system

## 8 DECENT WORK AND ECONOMIC GROWTH



### PROMOTE INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, EMPLOYMENT AND DECENT WORK FOR ALL

- Borregaard and the rest of the industry generate a high level of value creation and positive ripple effects in society. Borregaard employs 1,097 FTEs in 16 countries
- Substantial tax contributions
- Good working conditions and training programmes
- Over-recruitment of apprentices (in excess of internal needs)
- Financial sustainability secures investments, R&D and competence development

## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



### BUILD RESILIENT INFRASTRUCTURE, PROMOTE SUSTAINABLE INDUSTRIALISATION AND FOSTER INNOVATION

- Substantial investments in innovation using internal resources, as well as contributions from institutes and universities
- Sustainability is the main focus in innovation work
- Developing new, sustainable bio-based industry through the innovation projects Exilva and BALI
- Producing green chemicals used in the construction industry
- Spending a substantial proportion of turnover on innovation

**10 REDUCED INEQUALITIES****REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES**

- A high degree of collective welfare benefits in the company
- A high degree of mobility across the organisation – opportunities for all

**11 SUSTAINABLE CITIES AND COMMUNITIES****MAKE CITIES INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE**

- Social engagement in local areas
- Support for schools, recreational activities, social initiatives and urban development

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION****ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS**

- Sustainable business model with bio-based products
- Investments in renewable energy (sustainability)
- Energy strategy for increasing the use of green and renewable energy and energy efficiency
- Environmental investments to cut emissions and waste
- Improved chemical safety

**13 CLIMATE ACTION****TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS**

- The biorefinery concept is an integral part of the business model – an important climate measure
- Established EHS/climate and energy strategy
- Greenhouse gas emissions are assessed in relation to transport options
- Establishing science-based targets for cutting greenhouse gas emissions
- Investments in renewable energy

**14 LIFE BELOW WATER****CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES**

- Reduced emissions to water
- Utilisation of lignin from pulp mills has led to lower emissions to water
- Built and financed a salmon cultivation facility on own premises

**15 LIFE ON LAND****SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, HALT AND REVERSE LAND DEGRADATION, HALT BIODIVERSITY LOSS**

- Sustainability criteria are stressed when purchasing wood
- Active cooperation with stakeholders in the forest value chain
- Chain of Custody certified in accordance with FSC and PEFC forest certification standards

**16 PEACE, JUSTICE AND STRONG INSTITUTIONS****PROMOTE JUST, PEACEFUL AND INCLUSIVE SOCIETIES**

- Guidelines for ethics and corporate social responsibility
- Respect for the law and active contribution to good dialogue with the authorities

**17 PARTNERSHIPS FOR THE GOALS****REVITALISE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT**

- Member of the Global Compact and Responsible Care
- Environmental reporting: CDP, Global Compact and annual report
- Represented in various environmental forums, nationally and internationally





Borregaard

Borregaard ASA  
PO Box 162, 1701 Sarpsborg, Norway  
Telephone: (+47) 69 11 80 00 Fax: (+47) 69 11 87 70  
E-mail: [borregaard@borregaard.com](mailto:borregaard@borregaard.com) [www.borregaard.com](http://www.borregaard.com)