Borregaard ASA - Water Security 2021

W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Borregaard operates one of the world's most advanced biorefineries. The Group provides sustainable products and solutions based on renewable raw materials and unique competence.

A BIOREFINERY WITH HIGH VALUE-ADDED

The Group's business model is closely linked to the integrated nature of its biorefinery in Norway, which utilises the three key components of wood – cellulose fibres, lignin and sugars – to produce a diversified portfolio of products. The biorefinery utilises 82 percent of the feedstock to make biochemicals and biomaterials that can replace oil-based products. Most of the remaining biomass is converted to energy used in production processes. In addition to its biorefinery in Sarpsborg, Borregaard has five production sites outside Norway dedicated to producing lignin-based products. The company also has sales offices in 13 countries in Europe, Asia and the Americas serving its global customer base. At the end of 2020, the Group had 1,091 employees.

SPECIALISATION IN GLOBAL NICHES

Borregaard is a supplier of specialised biochemicals and biomaterials to a global customer base. The Group's main products are biopolymers and biovanillin from lignin, speciality cellulose, cellulose fibrils, fine chemical intermediates and second-generation bioethanol. The products are used in a variety of applications in sectors such as construction and building materials, feed and agriculture, food and pharma, personal care, batteries, biofuel, textiles and various other industries. The Group's strong market positions have been developed through in-depth understanding of its markets, production of advanced and specialised products and local presence in the form of a global sales and marketing organisation.

COMPETENCE AS THE MAIN COMPETITIVE ADVANTAGE

Borregaard is a competence-driven company with production, research and development (R&D) and sales and marketing as its core competencies. To maintain its leading position, Borregaard has a strong focus on training programmes and cooperation between the various disciplines. Borregaard has a leading research centre combining various chemicals disciplines, biotechnology and microbiology, developing new or improved products, applications and production technologies.

SUSTAINABLE BUSINESS MODEL

Sustainability, which include climate changes, is an integral part of Borregaard's business model.

This is reflected in the Group's main objective: Providing sustainable solutions based on renewable raw materials and unique competence. Sustainability is therefore a core element in our business model. Borregaard's understanding of sustainability and corporate responsibility derives from the fact that the business model itself and the company's products are sustainable and meets global needs.

The UN predicts population growth of more than 10% by 2030, which will generate resource scarcity and an extraordinary demand for climate friendly solutions for infrastructure, housing, energy, jobs and food production. 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 factors are expected to increase demand for sustainable products and will present opportunities for Borregaard's innovative solutions in terms of creating good lives within a sustainable framework.

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) 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 has joined the Science Based Targets Initiative and defined science-based targets that are in line with the ambitions in the Paris Agreement and well below the level required to limit the global temperature increase to 2°C.

Borregaard has engaged an independent third party, Norsus, to conduct a life cycle assessment (LCA) based on the ISO 14044/48 standard. The LCA analyses the environmental impacts of Borregaard's products, throughout their entire life cycle. The LCA confirms that the environmental and climate footprint of Borregaard's products have diminished over time. Borregaard's bio-based products do well from a climate perspective when compared with petrochemical alternatives. Borregaard has made efforts to reduce greenhouse gas emissions (42% from base year 2009) in its own processes, by elimination of heavy oil consumption and increasing the amount of energy derived from more eco-friendly energy sources.

W-CH0.1a

(W-CH0.1a) Which activities in the chemical sector does your organization engage in?

Bulk inorganic chemicals
Specialty organic chemicals

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1 2020	December 31 2020

W0.3

(W0.3) Select the countries/areas for which you will be supplying data.

Czechia
Germany
Norway
Spain
United Kingdom of Great Britain and Northern Ireland
United States of America

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

NOK

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which operational control is exercised

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Vital	Water is one of the main elements in a biorefinery manufacturing process. At Borregaard Norway (95% of total withdrawal), freshwater is used for cooling, steam production and hot water production, as well as washing and transporting biomass/fiber in the biorefinery/pulp production processes. Therefore, direct use importance rating is "vital". The site is self-sufficient and has access to freshwater from the river Glomma via its own water treatment facility. Since water is vital to Borregaard we have built our own water treatment facility. The facility was completed in 2004 and has the capacity to supply Borregaard with the necessary amount of water needed for the production process. Good quality of the water after treatment is vital due to that Borregaard has several products that require high quality water (food, pharma etc.) The production site in Czechia, Germany, Spain and two in USA uses less than 5% of the total withdrawal of water. The production process is mainly drying of liquid biopolymers in spray driers. The future water dependency is expected to be unchanged for the direct operations, because we plan to have the same type of production in the future. The indirect water use of good quality freshwater is rated vital, the reason for that is that Borregaard's production units outside Norway receive lignin raw material from adjacent pulp mills, and from the experience form our pulp mill/biorefinery in Norway we know that sufficient fresh water is vital for a pulp mill, see explanation above. The future water dependency for indirect operations is expected to remain vital as we anticipate that we will continue to source lignin raw material from pulp mills at the same extent as we do today.
Sufficient amounts of recycled, brackish and/or produced water available for use	Important	Important	In Borregaard for all 7 production sites there is only a minor primary use of brackish and/or produced water in direct and indirect operations. The main production site, Borregaard Norway is a biorefinery. One part of the biorefinery is a speciality cellulose pulp line, closed water circuits are used in the process of washing the pulp, which means that wash water is recycled to some extent. Thus we have selected the importance rating "important" for direct operations due to the use of recycled water in the closed water circuits in the pulp production line. AND The indirect water (used by our suppliers), use of recycled, brackish and/or produced water as "important". The reason for this is that Borregaard's production units outside Norway receive lignin raw material from adjacent pulp mills, and from the experience from our pulp mill/biorefinery in Norway we know that recycling of closed water circuits are used in the process of washing the pulp, which means that wash water is recycled to some extent. Recycling of water is important for energy efficiency, resource optimisation and cost in a pulp mill. Future water dependency will most likely not differ in the direct and indirect operations as long as there are no changes in geographic production sites and type of products produced.

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	Data are reported from all of Borregaard's 7 operational sites. Borregaard's water withdrawal volumes used in processes and for cooling purposes are measured in m3. Total water withdrawal is 55482 megaliters. The reason for measuring the total volumes is to be able to control the usage. The main water withdrawal volume is from the river Glomma at Borregaard's site in Norway (96% of total water withdrawals), where water withdrawal volumes are measured continuously with on-line measurement devices. The method of measurement is magnetic flow meter. It is also continuous volume flow measurement devices in the different production units, and a water accounting system is used to monitor the water usage for each production unit that the site consists of. The production sites in Czechia, Germany, Spain, UK and the two in USA uses less than 4% of the total withdrawal of water, and they report a yearly number of water withdrawal based on volume measurements and some estimates.
Water withdrawals – volumes by source	100%	Surface water 52240 megaliters, groundwater non-renewable 168 megaliters, produced water 571 megaliters and water from third parties 2503 megaliters. The reason for measure the volumes by source is to be able to report within Borregaard, and to report externally as several of our stakeholders expect. The main water withdrawal source is surface water from the river Glomma in Norway (94% of total water withdrawals), where water withdrawal volumes are measured continuously with on-line measurement devices. The method of measurement is magnetic flow meter. The production site in Czechia, Germany, Spain, UK and the two USA uses less than 4% of the total withdrawal of water, and they report at yearly number of water withdrawal based on volume measurements and some estimates. The production site in Florida, USA, uses ground water from the Floridan Aquifer. The water produced is calculated from raw material volumes times dry matter measurements in the raw materials, yearly calculation.
Entrained water associated with your metals & mining sector activities - total volumes [only metals and mining sector]	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	<Not Applicable>	<Not Applicable>
Water withdrawals quality	76-99	Data are reported from Borregaard operational site in Norway. Borregaard's site in Norway is 77% of Borregaard's total revenue/ operations (1 of 7 sites, and has 96% of the total water withdrawal). Water withdrawals consists of river water 98%, municipal water 1% and produced water from raw materials 1%. The quality of the water withdrawals from the river is monitored continuously at the water treatment facility, with daily water sampling and analysis of pH and turbidity. Water withdrawal from the river Glomma used for drinking quality follows the regulatory demands from the Norwegian Food Safety Authority. The reason for why Borregaard measures the quality is that it is a requirement for several of the products that are delivered to the food and pharma market.
Water discharges – total volumes	100%	Process wastewater 19420 megaliters, cooling water 35522 megaliters and 129 megaliters of sanitary wastewater. All of our operational sites are reporting their water discharge volumes. This is used to calculate the amount of substances in the water discharge, which is a requirement from environmental authorities. The main water discharge is from Borregaard Norway (95% of total water discharges) where discharge volumes are measured continuously with on-line measurement devices. The method of measurement is magnetic flow meter. The production site in Czechia, Germany, Spain, UK and the two USA discharges less than 5% of the total discharges of water, and they report yearly numbers of water discharges based on volume measurements and some estimates. To balance water accounting (total volumes), "water discharges not measured" is calculated: Water withdrawals - Water discharges measured - Water consumptions = 55482-545649-281=632 megaliters in 2020 (1% of total water discharges).
Water discharges – volumes by destination	100%	Water discharges to surface water 53577 megaliters and to third party destinations 1624 megaliters. Data are reported from all of Borregaard's operational sites. This is used to calculate the amount of substances in the water discharge per destination, which is a requirement from environmental authorities but also something some of our stakeholders expect us to do. The main water discharge is from Borregaard's site in Norway to river Glomma (95% of total water discharges) . The frequency of measurements at the production site in Norway is continuous, by volume flow measurements of water discharges to the river Glomma. The production sites in Czechia, Germany, Spain, UK and the two sites in USA discharges less than 5% of the total discharges of water, and they report yearly numbers of water discharges based on volume measurements and some estimates.
Water discharges – volumes by treatment method	100%	Data are reported from all of Borregaard's operational sites. Secondary treatment 5%, other internal treatment 6%, discharge to natural environment without treatment 86% and treatment at third parties 3%. At Borregaard's site in Norway 100% of process wastewater, incl. volumes treated by the wastewater treatment plant, are measured continuous. Automatic samplers in the effluent discharge pipes, take samples that are representative for the water discharge. Every 24 hours a sample is taken out from the sampler by a third party and brought to the laboratory at Borregaard for measuring of standard effluent parameters. The volumes of the discharge water is reported directly for the DCS-system to the digital emission accounting system. The production sites in Czechia, Germany, Spain, UK and the two sites in USA discharges less than 5% of the total discharges of water, and they report yearly numbers of water discharges based on some volume measurements and some estimates.
Water discharge quality – by standard effluent parameters	100%	Data are reported from all of Borregaard's operational sites. Water discharges is measured by standard effluent parameters, to meet the requirements of environmental permits of local authorities. COD, which is an indirect measure for the organic content in the effluent, is the main parameter in the emission monitoring program. The concentration of the effluent parameter is entered into the emission accounting, where the volume of discharged water times concentration gives the water discharge quality. Borregaard's site in Norway has 95% of the total water discharges. Several effluent parameters are measured daily/weekly from process wastewater: COD, BOD, AOX, S-TS, N, P and metals. Total COD emissions in process water discharged was 57 t/day in 2020. The permit for COD in the effluent is reduced from 69 tonnes to 59 tonnes per 24-hour period (on average over the year) to comply with BAT levels for emissions to water. Requirement in the emission permit from the authorities.
Water discharge quality – temperature	76-99	Temperature is measured continuous for some of the effluents at the production site in Norway. Borregaard's production site in Norway accounts for 77% of Borregaard's total revenue/operations (1 of 7 facilities, and has 95 % of the total water discharges). In the internal water circuits in the production process, as much heat is taken out as possible and used for the production of hot water energy. The 37oC wastewater from the wastewater treatment plant is cooled down to river temperature before it enters the recipient river Glomma, the energy is used for district heating in Sarpsborg, Norway. Temperature measurement is continuous and based on sensors measuring resistance. It is not known if temperature is monitored at the other production sites.
Water consumption – total volume	100%	Data are reported from all of Borregaard's operational sites. Water consumption volumes are calculated from production volumes times dry matter measurements in the products. Yearly calculation (=volume incorporated into products). Water consumption is reported in our environmental product datasheet (EPD's).
Water recycled/reused	76-99	Data are reported from Borregaard's operational site in Norway. The production site in Norway accounts for 77% of Borregaard's total revenue/operations (1 of 7 sites and has 95 % of the total water withdrawals). Borregaard's site in Norway recycles water in its production for saving heating energy and for reducing the amount of water used. There are several ways Borregaard is reusing water: 1) Closed water circuits are used in the process of washing the pulp, which means that wash water is recycled to some extent, limited by right product quality. 2) Condensates from evaporation units is used for washing. 3) Steam condensate is routed back to the boiler house to produce new steam. This extent of recycling is measured indirectly, the processes that recycle water is optimized to recycle as much as possible because this will be the most energy efficient/economic way. Several KPI's for energy efficiency is established, measuring temperature and flow to enhance recycling degree.
The provision of fully-functioning, safely managed WASH services to all workers	100%	100 % of Borregaard's workers have access to clean water supply, adequate sanitation and hygiene at all times. Facilities are located in areas where sanitation and WASH services are on a well managed level. The water use is measured and monitored, at least annually, through water use invoicing and is expected to stay on same level in future.

W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	55482	About the same	The volumetric data is obtained from measurements of water intake and summarized for all the 7 production sites. For cooling water there is done some estimates in the data. The total withdrawals are at the same level as previous years due to the same production volumes and the same amounts of water necessary for cooling processes. The water withdrawal is expected to be the same or lower in the next 3-5 years. The production volume is expected to remain more or less the same, but there are some initiatives planned to increase the amount of recycled water in the bleaching plant at Borregaard in Norway that might have an effect om the total water withdrawal. Comparison of total withdrawals with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%
Total discharges	55201	About the same	All of Borregaard's operational sites are reporting their water discharge volumes. The volumetric data is obtained from continuous measurements of water discharges. For cooling water there are done some estimates in the data. The total discharges are at the same level as previous year due to the same production volumes. The water discharges is expected to be the same or lower in the next 3-5 years. The production volume is expected to remain more or less the same, but there are some initiatives planned to increase the amount of recycled water in the bleaching plant at Borregaard in Norway, that might have an effect om the total water discharge. Comparison of total discharges with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%
Total consumption	281	About the same	Data are reported from all of Borregaard's operational sites. Water consumption volumes are calculated from production volumes times dry matter measurements in the products. (=Volume incorporated into products) The total consumption is at the same level as previous year due to same production volumes. The water consumption is expected to be the same or lower in the next 3-5 years. The production volume is expected to remain more or less the same, we might produce more dry lignin products for Borregaard in Norway, that might will give some reduction in consumption compared to if the product was delivered as 50 % moisture content. Comparison of total consumption with previous reporting year - threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Identification tool	Please explain
Row 1	No	<Not Applicable>	<Not Applicable>	WWF Water Risk Filter	Water scarcity risks have been evaluated for Borregaard’s operations using The WWF Water risk filter. The overall risk of physical, regulatory, and reputational risks is aligned with the UN Global Compact CEO Water Mandate framework. Physical risk includes scarcity, flooding, water quality and ecosystem status. Regulatory risk includes enabling environment, institutions and governance, management instruments, and infrastructure and finance. Whilst reputational risk includes cultural importance, biodiversity importance, media scrutiny and conflict. Most of the water withdrawal, discharge and consumption are linked to our biorefinery in Norway (95%). The river Glomma is the largest river in Norway and has an average water flow of 577 m3/sec. The Sarpsfossen waterfall, which is close to the biorefinery, is Europe’s largest waterfall (amount of water) and the overall water scarcity risk is low. Climate scenarios for the area around Borregaard’s biorefinery show a wetter climate with more precipitation. Thus, the average water flow in the river Glomma is likely to increase. The biorefinery has access to water from the river Glomma via its own water treatment facility. Due to the large amounts of water available, water withdrawal is considered sustainable compared to areas in the world where water scarcity represents a risk due to climate change. Our production units in USA (Florida and Wisconsin), Germany, The Czech Republic and UK use less than 5% of the total withdrawal of water at Borregaard. The water is sourced from public waterworks or adjacent industrial areas. Borregaard’s lignin plant in Florida withdraws water from a ground water source, the Floridan aquifer system, which is one of the world’s most productive aquifers. The WWF Water Risk Filter evaluates the water risk level of the area where our Florida plant is located to be moderate. The overall water scarcity risk is low to moderate at Borregaard’s other production units

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	52240	About the same	Borregaard's main water withdrawal source is fresh water from river Glomma. Therefore this aspect is relevant for Borregaard. The production site in Norway has almost all its water withdrawal from the river Glomma, 94 % of Borregaard's total water withdrawals (measured volumes). The water withdrawal was about the same in 2019 as in 2020 due to the same volume of products produced. The water withdrawal is expected to be the same or lower in the next 3-5 years. The production volumes will stay the same, but there is some plans to reduce the water withdrawal in some process units. The production sites in Czechia, Germany, Spain, UK and the two USA have less than 4 % of the water withdrawal and has water withdrawal from third party or ground water. Comparison with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%
Brackish surface water/Seawater	Not relevant	<Not Applicable>	<Not Applicable>	None of our production sites in Norway, Czechia, Germany, Spain, UK and the two in USA use brackish/seawater in their production.
Groundwater – renewable	Not relevant	<Not Applicable>	<Not Applicable>	None of our production sites in Norway, Czechia, Germany, Spain, UK and the two in USA use groundwater - renewable in their production.
Groundwater – non-renewable	Relevant	168	About the same	Borregaard's lignin plant in Florida has water withdrawal from a ground water source, the Floridan Aquifer System, which is one of the world's most productive aquifers (measured volumes). The amount of water used was about the same as in 2019 due to production process is being about the same. The volume of groundwater withdrawal in future is expected to be the same as the production volume is expected to be the same. Comparison with previous reporting year - threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%
Produced/Entrained water	Relevant	571	About the same	Borregaards operations in Norway uses wood as raw material and Borregaards operations in Czechia, Germany, Spain and the two USA use biopolymers in liquid solutions as main raw materials. The raw material contains water. The moisture content in the raw material is measured at a regular frequency. The produced water is calculated as weight of raw materials multiplied by moisture content. The amount of produced water volume was about the same in 2020 as in 2019, since the amount of raw materials used in 2019 and 2020 was about the same, and it is expected to be the same amount of raw material usages in the next 3-5 years. Comparison with previous reporting year - treshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%
Third party sources	Relevant	2503	About the same	Borregaard's production site in Norway receives some water from community water works. This could also be considered as a backup solution if for instance an incident as stop in power supply occurs. Borregaard's production site can supply Sarpsborg community with water if they have a temporarily break down in their supply. The production site in Czechia, Germany, Spain, UK, and the two in USA also uses third party water. The amount of water used from third party was about the same in 2020 compared to 2019 (measured volumes), mainly because there where no changes in the production volume between the two years. The price of the water from the community water works at Borregaard Norway is 10 times higher than own produced water. New measurements has recently been installed, and we are expected to reduce this the next 3-5 years, as own produced water are much cheaper. Comparison with previous reporting year, threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%

W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	53576	About the same	Process wastewater and cooling water is discharged to the river Glomma in Norway and some cooling water to the fresh water nearby our two operations in Florida and in Wisconsin. For Borregaard Norway the total volume of water is measured and in addition the concentration of substances in wastewater to be able to calculate the effluent to water in kg. The water discharge was about the same in 2019 as in 2020 due to same production process, but is expected lower in the next 3-5 years. The production volume is expected to remain more or less the same, but our strategy and plans is to increase the amount of recycled water in the bleaching plant at Borregaard Norway, that might have an effect om the total water discharge. In addition we plan to treat more of the process wastewater so more waste water will be routed to treatment instead of to the river Glomma. Comparison with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%
Brackish surface water/seawater	Not relevant	<Not Applicable>	<Not Applicable>	Water discharges to this particular destination is not relevant, because Borregaard is not supplying water discharges to brackish surface water/seawater.
Groundwater	Not relevant	<Not Applicable>	<Not Applicable>	Water discharges to this particular destination is not relevant, because Borregaard is not supplying water discharges to groundwater.
Third-party destinations	Relevant	1625	About the same	Borregaard is supplying about 3% of the wastewater to third party destinations: third-party process wastewater treatment plants and city sewers. The amount of water is measured by the third-party and Borregaard receives bill's for the treatment. The volume is about the same as previous year due to the same production process and is expected to be the same in the next 3-5 years as the production process will remain more or less the same. Comparison with previous reporting year - threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%

W1.2j

(W1.2j) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	By the nature of the discharges from Borregaards operation, tertiary treatment are not installed. The main component in the waste water effluent from Borregaard's processes is organic material (measured as COD). The organic material stems mainly from the washing and processing of biomass into advanced products. COD can be efficient treated in biological waste water treatment plant. For Borregaard's operations in Czechia, Germany, Spain and the two USA the COD containing part of the wastewater is treated in third-party biological secondary treatment plant. Borregaards operation in Norway has a anaerobic treatment plant that reduce the COD by more than 75%. Borregaard in Norway work with plans for further reduction of COD, but tertiary treamtment is not relevant. Tertiary treatment is not defined as a Best Available Technique (BAT) from our industry (Biorefinery/Pulp).
Secondary treatment	Relevant	2947	About the same	1-10	Borregaard in Norway has a wastewater treatment plant based on the anaerobic treatment technology using the Biobed EGSB (Expanded Granular Sludge Bed) process. The compact anaerobic process ensures an efficient reduction of organic matters in the waste water. The process produces biogas which has replaced use of mineral oil in our. The rationale for using this technology is that it has an effective reduction of low molecular organic material, measured as biological oxygen demand (BOD). The wastewater treatment facility reduces BOD by 98%. The waste water is monitored for COD, BOD, Phospor, Nitrogen and Copper, and has permits for the emissions. The emission of these compounds are reported to the Norwegian Environment Authorities. The future trend for the next 1 to two years will probably increase to high, as the treatment plant has more capacity than we utilise today, we are doing trial with new effluent streams to see if they can be treated in the anaerobic treatment plant. Comparison with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%. The threshold is also used for future trend.
Primary treatment only	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	The compounds in the emission to water are dissolved in the process water, and not present as particles. The rationale for using primary treatment to remove particles or sludge is not present, thus this technique is not used in our operations.
Discharge to the natural environment without treatment	Relevant	47071	About the same	81-90	Cooling water which is 35522 megaliters or 75% of the discharge to the natural environment without treatment. The rationale for not treating the water is that it is cooling water. The temperature of the cooling water is measured in most effluent streams and it does not affect the temperature in the receiving recipient. The river Glomma is the main receiver of cooling water from our operations and no effect of increased water temperature is registered. Volume is measured for cooling water and reported in our water accounting system. 25% of the water is process wastewater (11291 megaliters). The main part of this water is discharged from our operation at Borregaard in Norway. The main rationale for not treating this water has been that we have not find any water treatment technologies that can be used. Borregaard in Norway cannot use aerobic treatment as a decision from the authorities due to a legionella outbreak in 2005&2008. The waste water is monitored for COD, BOD, AOX, Phosphor, Nitrogen, Copper and some other compounds, and has permits for the emissions. The emission of these compounds are reported to the Norwegian Environment Authorities. We have planes to reduce the process waste water, both volume of water and the load. Thus we anticipate that the future trend, 2 to 5 years ahead is that the volume will decrease to lower. Reduction in cooling water volume is motivated by the potential gains associated with energy savings and but the volumes is high, thus the for the threshold selected the cooling water will be about the same for the next 2 to 5 years. Comparison with previous reporting year - threshold: About the same <5%, lower/higher 5-20%, much lower/higher >20%. The threshold is also used for future trend.
Discharge to a third party without treatment	Relevant	1624	Higher	1-10	Used sanitary water is treated are sent to city sanitary sewers for treatment. The method has the rationale to treat the water according to the requirement of the local authorities. The sanitary treatment plant operated by Sarpsborg community, Alvim, treat the sewer water for phosphor and organic material (COD), and operate according to the permit from the local environmental authorities (County Governor of Oslo og Viken) Used process water from our operation in USA (Florida and Wisconsin), send its process water to the treatment plan operated by the nearby pulp mill RYAM (Florida) and Domtar(Wisconsin). The rational of the treatment method for the process water is to reduce the organic material, measured as Biological Oxygen Demand (BOD), the company held a permit for BOD. The discharge of 3 party water increased with 22%, compared to last year, which is a defined as higher change. The reason is the increased production activity at our new facility in Florida(build in 2018), we anticipate that the future trend is about the same, because we have reached the planned production volume at the operation in Florida. Comparison with previous reporting year - threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50% . The threshold is also used for future trend.
Other	Relevant	3558	Higher	1-10	At Borregaard in Norway we have to treatment methods that are classified as other. One method has the rationale to reduce the absorbable halogenated organic component(AOX) in the effluent from the bleaching plant with alkali treatment at high temperature in a reactor. The other method has the rationale to to treat mercury polluted ground water polluted from the former use of mercury in the chlor alkali plant. Ione exchange technology is used to remove the mercury. Treated water from both the technology is monitored for volume of water and content of AOX/mercury after treatment, and are reported to the authorities as required from the the emission permit. Due to a new pipeline to the AOX reactor from the bleaching plant it was possible to increase the amount of treated water, thus the amount of treated water increased by 22%, which is considered as high. The future trend will be about the same, since we have no further plans for improvement of this technology. Comparison with previous reporting year - threshold: About the same <20%, lower/higher 20-50%, much lower/higher >50% . The threshold is also used for future trend.

W-CH1.3

(W-CH1.3) Do you calculate water intensity for your activities in the chemical sector?

Yes

W-CH1.3a

(W-CH1.3a) For your top five products by production weight/volume, provide the following water intensity information associated with your activities in the chemical sector.

Product type

Specialty organic chemicals

Product name

Speciality cellulose

Water intensity value (m3)

88

Numerator: water aspect

Total water withdrawals

Denominator
Other, please specify (TAD (Air-dried ton))

Comparison with previous reporting year
Lower

Please explain
Borregaard is a market and competence driven supplier of high purity specialty cellulose manufactured at our production site in Sarpsborg, Norway. Specialty cellulose was chosen because this is one of our main products, both in value and in volume. The denominator is TAD, which is the measure used for selling of specialty cellulose. Total water withdrawal was used to indicate not only process water but also cooling water used to produce cellulose, thus showing the total burden from water withdrawal, and because more efficient cooling process with less water will save energy, and less process water will result in less waste water to collect and treat, the last one is an important part of our strategy to reduce the amount of process water to implement more efficient waste water treatment. Water withdrawal is calculated from measurements in the water accounting system. The water withdrawal is from the river Glomma, and the water is treated in Borregaard's water treatment plant to receive the right quality before it is used. To decide the trend for water intensity we have evaluated the changes from year to year, to obtain what is normal variation and the accuracy in the dataset from measurements and calculations/assumptions, thus less than 10% change is a about the same level. Comparison with previous reporting year - threshold: About the same <10%, lower/higher 10-30%, much lower/higher >30% Compared to last year the intensity was lower. The reason was that the production volume of cellulose increased, and the amount of water withdrawal decreased. The reason for the changes was issues in the previous year with leakage from water pipes which again resulted in production stops. Thus this year represent a normal production year both when it comes to volume of water and of product. For the future we anticipated that the trend for water intensity will decrease as a result from our strategy of reduced need for process water due to planned for reducing the amount of fresh water used in the bleaching plant at the pulp line at Borregaard in Sarpsborg, in the to first bleaching stages a the amount of fresh water will be reduced by adding a dewatering unit, thus our strategy of implementing improved waste water technique can be conducted. The production volume is expected to remain the same for the next years.

Product type
Specialty organic chemicals

Product name
Lignin biopolymers

Water intensity value (m3)
60

Numerator: water aspect
Total water withdrawals

Denominator
Other, please specify (mtds (metric tonnes dry substance))

Comparison with previous reporting year
About the same

Please explain
Borregaard’s lignin-based biopolymers are renewable, wood-based alternatives to fossil-based chemicals and polymers used in a broad range of industries, and sustainability is well documented in LCA analysis. Lignin biopolymers was chosen because this is one of our main products, both in value and in volume and because our strategy is to improve sustainability. The denominator is mtds(metric tonnes dry substance), which is the measure used in sales of lignin biopolymers. We have used the lignin biopolymers produced at the biorefinery in Norway for this calculation, because in this unit we produce the products all the way from wood to specialised biopolymers. In our other operation we buy lignin raw material from suppliers that have produced it from wood. By choosing the operation in Norway for this calculation we get the full picture for the total water withdrawal intensity used for production of lignin biopolymers. Total water withdrawal was selected to indicate the total volume of water, including both process water, cooling water and ejector water from evaporation plant used to produce lignin biopolymers and because more efficient cooling process with less water will save energy, and less process water will result in less waste water to collect and treat. The volume of water is calculated from measurements in the water accounting system . The water withdrawal is from the river Glomma, and the water is treated in Borregaard's water treatment plant. To decide the trend for water intensity we have evaluated the changes from year to year, to obtain what is normal variation and the accuracy in the dataset from measurements and calculations/assumptions, thus less than 10% change is a about the same level. Comparison with previous reporting year - threshold: About the same <10%, lower/higher 10-30%, much lower/higher >30% Compared to last year the intensity was about the same. The reason was that the both production volume and total water withdrawal remained unchanged For the future we anticipated that the trend for water intensity will decrease in the next to to five years as a result from our strategy of reduced need for process water due to planned projects, the strategy is to decrease the time the lignin spray dryers is operated on only water and not product and to install a new an more efficient washing filter in the lignin production facility at Borregaard in Norway. The production volume is expected to remain the same for the next years.

Product type
Specialty organic chemicals

Product name
Bioethanol

Water intensity value (m3)
363

Numerator: water aspect
Total water withdrawals

Denominator
Ton

Comparison with previous reporting year
Lower

Please explain
Borregaard’s bioethanol are renewable second generation bioethanol, used as biofuel or in the cosmetic industry, and sustainability is well documented in LCA analysis. Borregaard has produced bioethanol for more than fifty years as a by-product of our cellulose production at Borregaard's production site in Norway. Bioethanol was chosen because this is one of our main products in value, it has a relatively high water withdrawal intensity and because our strategy is to continuously improve sustainability of the bioethanol. The denominator used is ton produced bioethanol. Total water withdrawal was selected to indicate the total volume of water, including both process water, cooling water and ejector water and is calculated from measurements in the water accounting system, because more efficient cooling process with less water will save energy, and less process water will result in less waste water to collect and treat. The water withdrawal is from the river Glomma, and the water is treated in Borregaard's water treatment plant, the water withdrawal pr ton of bioethanol is high compared to lignin biopolymers, the reason for this is that a relatively high amount of cooling water is necessary and the fact that the bioethanol plant produces hot water in addition to bioethanol. Withdrawal of cooling water and ejector water is returned directly back to the river. To decide the trend for water intensity we have evaluated the changes from year to year, to obtain what is normal variation and the accuracy in the dataset from

measurements and calculations/assumptions, thus less than 10% change is a about the same level. Comparison with previous reporting year - threshold: About the same <10%, lower/higher 10-30%, much lower/higher >30% Compared to last year the intensity was lower. The reason was a combination of increase in production volume and reduction in total water withdrawal. The reason for the reduction in total water withdrawal was a energy efficiency project conducted in the ethanol plant. For the future we anticipated that for the next 2 to five year the trend for water intensity will decrease as a result of our strategy of increasing the efficiency of the production of hot water in the ethanol plant. The production volume is expected to increase in 2021 and then remain the same for the next years.

Product type
Bulk inorganic chemicals

Product name
HCl -hydrochloric acid

Water intensity value (m3)
12

Numerator: water aspect
Total water withdrawals

Denominator
Ton

Comparison with previous reporting year
About the same

Please explain
Borregaard in Norway produces hydrochloric acid (HCl) in its chloralkali plant. HCl was chosen because the production requires high volumes of water withdrawal as cooling water. The denominator used is ton produced of HCl (36%), which is the same that is used for selling of the product. Total water withdrawal was selected to indicate the total volume of water, most of the water is used as cooling water that is returned to the recipient after cooling but because more efficient cooling process with less cooling water will save energy and improve the sustainability of the HCl. In some addition water withdrawal ends up in the product (HCl 36%) and will be included in the products water consumption. Water withdrawal is calculated from measurements in the water accounting system. The water withdrawal is from the river Glomma, and the water is treated in Borregaard's water treatment plant. To decide the trend for water intensity we have evaluated the changes from year to year, to obtain what is normal variation and the accuracy in the dataset from measurements and calculations/assumptions, thus less than 10% change is a about the same level. Comparison with previous reporting year - threshold: About the same <10%, lower/higher 10-30%, much lower/higher >30% Compared to last year the intensity was about the same. Both the production volume and the water withdrawal volume increased. For the future we anticipated in the next 2 to 5 years that the trend for water intensity will decrease as a result of our strategy of more efficient production due to ongoing investment in the chloralkali plant. The production volume is expected to increase in 2022 and then remain the same for the next years. The measure of success from this activities is when at 10-30% reduction in water withdrawal is achieved.

Product type
Bulk inorganic chemicals

Product name
NaOH - sodium hydroxide

Water intensity value (m3)
5

Numerator: water aspect
Total water withdrawals

Denominator
Other, please specify (dry metric tonnes)

Comparison with previous reporting year
About the same

Please explain
Borregaard in Norway produces sodium hydroxide(NaOH)in its chloralkali plant. NaOH was chosen because the production requires high volumes of water withdrawal as cooling water. The denominator used is dry metrics ton produced of NaOH, which is the same that is used for selling of the product. Total water withdrawal was selected to indicate the total volume of water, most of the water is used as cooling water that is returned to the recipient after cooling, but because more efficient cooling process with less cooling water will save energy and improve the sustainability of the HCl. Water withdrawal is calculated from measurements in the water accounting system. The water withdrawal is from the river Glomma, and the water is treated in Borregaard's water treatment plant. To decide the trend for water intensity we have evaluated the changes from year to year, to obtain what is normal variation and the accuracy in the dataset from measurements and calculations/assumptions, thus less than 10% change is a about the same level. Comparison with previous reporting year - threshold: About the same <10%, lower/higher 10-30%, much lower/higher >30% Compared to last year the intensity was about the same. Both the production volume and the water withdrawal volume increased. For the future we anticipated that the trend for water intensity will decrease as a result of our strategy of more efficient production. An ongoing investment in the chloralkali plant will reduce the energy and cooling water. The production volume is expected to increase in 2022 and then remain the same for the next years. The measure of success from this activities is when at 10-30% reduction in water withdrawal is achieved.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?
Yes, our suppliers
Yes, our customers or other value chain partners

W1.4a

(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?

Row 1

% of suppliers by number

1-25

% of total procurement spend

1-25

Rationale for this coverage

Borregaard transforms forest raw material into high value-added sustainable products that can replace oil-based products. Because the products are made from a renewable source, they have a low carbon footprint. Wood is one of the few renewable raw materials that can be produced in large quantities. The transition to a more bio-based society as well as a growing demand for wood-based products makes the sourcing of sustainable wood raw material increasingly important to Borregaard, as a prerequisite to realize the opportunities within the market for wood based products. It is expected that the requirements linked to the management of the forests and harvesting operations will be stricter to secure biodiversity and ecological standards including standard for water impact. However, if forests are managed in a sustainable way, they can represent an everlasting resource. Borregaard recognize the 2019 UN Special Report on Climate Change and Land that shows that land use plays a vital role in the climate system. The main raw material in Borregaard is wood from sustainable forests and certified according to the PEFC standard. The standard has 28 requirements, one of them is that sustainable forestry should have no negative impact on the water (river, lakes) in the forests. In Norway Borregaard are one of the main buyer of wood and have impact as being a major customer in the supply chain. Thus water-risk from forestry can be impacted, thus suppliers of wood are the suppliers that we have requested to report on the water risk and management information in our water related supplier engagement, this is above 1% of our supplies and about 10% of our procurement. The forests are natural, and uses only water from precipitating or ground and are not from forest plantations, thus asking for water use is not relevant for the suppliers of wood. Borregaard has taken the decision to buy 100% certified wood, to be sure that all the aspects of the forest are taken care of, including the forests impact on water and role in the water circuit. Thus Borregaard will source wood only from suppliers that can offer 100% certified wood, the suppliers are requested report to the certification body on their water related impact and measures according to the requirement in the certificate.

Impact of the engagement and measures of success

All the wood is harvested in accordance with the country of origin's laws on felling, silviculture and biodiversity. Borregaard is Chain of Custody (CoC) certified in accordance with the FSC® and PEFC forest certification standards. In 2020, 98% of the purchased wood was certified. The rest of the purchased wood is controlled in accordance with PEFC15 and/or FSC®16 standards. Borregaard's production units outside Norway receive lignin raw material from adjacent pulp mills which purchase FSC®and/or PEFC certified or controlled wood. We are sourcing wood related raw material from Norway, Sweden, Germany, Latvia and US. For our mill in Norway were in 2020 sourcing from: Norway 754.000cbm Sweden 200.000cbm Germany 19.000cbm Latvia 3.000cbm Total 976.000cbm For our two mills in the US: 205.255 BDMT is from US where we receive lignin raw material from adjacent pulp mill DOMTAR that purchase all their wood material in the US. 329.915 BDMT is from US where we receive lignin raw material from adjacent pulp mill RYAM that purchase all their wood material in the US. For the 976.000cbm harvested for the mill in Norway we have a potential impact of water estimated to a area of 500.000 hectare (calculated from a yearly growth of 2cbm/hectare). The total area of productive forest in Norway is 8,3 mill hectare, thus Borregaard had in 2020 an impact of engagement on water in forests calculated to 5 % of the productive forest area (calculated from 754.000 cbm bought in Norway in 2020). Since this is a ongoing requirement in the years to come our impact is much higher, i.e for the next five years it will adds up to have an impact on water risk for 23% of the productive forest in Norway. Thus suppliers of 23% of productive forests will have to report that they handle water risk according to the certificate requirement. The certification standards are under revision, we are supporting the work and are aware that the demand on sustainable forestry will increase, including how water is impacted and water related risk are dealt with in the forest and during harvesting. Our measuring of success is when target to increase certified wood from 98% to 100% is achieved, thus all our wood suppliers are accounting for their water related impacts, and we know that they are using the standard required to have a sustainable impact on water from forestry.

Comment

W1.4b

(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement
Onboarding & compliance

Details of engagement
Requirement to set and meet minimum standards for treatment of discharge

% of suppliers by number
1-25

% of total procurement spend
1-25

Rationale for the coverage of your engagement
Borregaard transforms forest raw material into high value-added sustainable products that can replace oil-based products. Because the products are made from a renewable source, they have a low carbon footprint. Wood is one of the few renewable raw materials that can be produced in large quantities. The transition to a more bio-based society as well as a growing demand for wood-based products makes the sourcing of sustainable wood raw material increasingly important to Borregaard, a prerequisite to realize the opportunities within the market for wood based products. It is expected that the requirements linked to the management of the forests and harvesting operations will be stricter to secure biodiversity and ecological standards including standard for water impact. However, if forests are managed in a sustainable way, they can represent an everlasting resource. Borregaard recognize the 2019 UN Special Report on Climate Change and Land that shows that land use plays a vital role in the climate system. To minimise the impact from felling, Borregaard attaches great importance to sourcing wood from forests that are certified and managed in a proper, sustainable, and eco-friendly manner, including measures to maintain biodiversity and water related impact. Our engagement with the wood suppliers is to ensures that the comply with the applicable guidelines, laws, and regulations in the countries where the wood is sourced. Borregaard has taken the decision to buy 100% certified wood, to be sure that all the aspects of the forest are taken care of, including the forests impact on water and role in the water circuit and requirement to set and meet minimum standards for treatment of water discharge. In Norway Borregaard can influence supplies of wood as being one of the main buyer of wood in Norway. Thus be requesting that wood are certified in accordance with the FSC® and PEFC forest certification, all aspects of sustainable forestry including impact on water from forestry is handled, thus we have selected suppliers of wood for our water related supplier engagement. Wood suppliers is slightly above 1% of our supplies and about 10% of our procurement.

Impact of the engagement and measures of success
Requirement to set and meet minimum standards for treatment of water discharge in forestry is impacted by requiring that the purchased wood are certified in accordance with FSC® and PEFC forest certification. The Norwegian PEFC forest standard has 28 requirement and point 24 is about water: Forestry shall preserve or develop a vegetation belt against water, rivers and streams with year-round water flow, to make sure that water is filtered before it enters the waterbody, so that organic material from humus and nutrition remains in the forests. During harvesting several measures must be taken to make sure that the water will not be polluted. When Borregaard buys 100% certified wood we are sure that all this aspects are taken care of. Borregaard are not a forest owner our selves but we engage with the forest owners to inform them that sustainable forestry are important for Borregaard. For the 976.000cbm harvested for the mill in Norway we have a potential impact of water estimated to a area of 500.000 hectare (calculated from a yearly growth of 2cbm/hectare). The total area of productive forest in Norway is 8,3 mill hectare, thus Borregaard had in 2020 an impact of engagement on water in forests calculated to 5 % of the productive forest area (calculated from 754.000 cbm bought in Norway in 2020). Since this is a ongoing requirement in the years to come our impact is much higher, i.e for the next five years it will adds up to have an impact on standards for treatment of water impact in forestry for 23% of the productive forest in Norway. Thus suppliers of 23% of productive forests will have to report that they handle water discharge from forestry according to the certificate requirement (i.e. vegetation belts). The certification standards are under revision, we are supporting the work and are aware that the demand on sustainable forestry will increase, including how water is impacted in the forest and during harvesting. Our target and our measure of success is to increase the percentage of certified wood from 98% to 100%. The information of certified wood is used to document our sustainability. We use life cycle analysis to document sustainability of our products, impacts from forests is included in the life cycle assessment.

Comment

W1.4c

(W1.4c) What is your organization's rationale and strategy for prioritizing engagements with customers or other partners in its value chain?

Many of Borregaards current and future B2B customers sell products/chemcials into water intensive industries like agriculture, mining and oilfield. Borregaard consider this as an opportunity for our specialised lignin biopolymer products, and a growing market, as our customers get more aware of the water-related risks, and look for more sustainable alternatives. Borregaards R&D department has received funding from the Norwegian Research Council of 19 MNOK and will cooperate and engage with different Universities to find new and better solutions in our lignin biopolymer applications for water intensives industries.

We will engage with customers that sells products into water intensive industries to be relevant because Borregaard have lignin biopolymers that have the potential for reducing their water-related risk in different applications for agriculture, mining and oilfield. Our engagement with the customers will increase as the progress in the project are going forward. For our lignin biopolymer products this will represent new and more sustainable applications and we expect our future price premium for the product to increase.

Borregaards R&D department together with different Universities, will cooperate to find new and better solutions in our lignin biopolymer applications in water intensive industries. The plan for realization is to finish the project in 2023, following the approved project plan from the Norwegian Research Council. Then there is an estimated ramp up in sales volume in a mid-term time perspective (2030), meaning that customer engagement will increase.

How engagement success measured :

Liban aims to directly address this innovation-gap between sustainable and petroleum-based performance additives by understanding: (1) how to modify lignin to produce new diverse structures and functionality, and; (2) how optimize performance in targeted water-intensive applications. In the mid-term future they represent a positive impact on the EBITDA.

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

No

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

No

W3. Procedures

W-CH3.1

(W-CH3.1) How does your organization identify and classify potential water pollutants associated with its activities in the chemical sector that could have a detrimental impact on water ecosystems or human health?

Our main impact on water ecosystems is from our production units. Our biggest operational unit, the biorefinery in Norway has the major share of the impacts, 95%. The other units are much smaller and are processing lignin raw material into various biopolymer products, as liquid or powder. Emissions from the various production units are regulated by national and/or local authorities, in process of setting permits risk of emission of water pollutant is evaluated based on the potential of emission of pollutants from process, the barriers for avoiding emission to water and if best available treatment technologies (BAT) are installed. Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates and pollutants that must be regulated. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. The new permit (www.norskeutslipp.no) for organic material to water (COD) in the effluent is reduced from 69 tonnes to 59 tonnes per 24-hour period (on average over the year) in order to comply with BAT levels for emissions to water. Components in the effluents to water are measured after Norwegian standards or International standards. The most important parameters to water from our operations are organic material (COD, BOD, suspend solids/fibers), Adsorbable Organic Halogen (AOX), Copper and some other metals, Nutrients (Nitrogen and Phosphor).

Our operation in Norway and in Germany are certified by the environmental management system ISO 14001, to ensure that water related risks from pollutants and their regulatory requirements are handled in a systematic way in our management system. A program for measuring all pollutants, stating the frequency based on the environmental risk, are installed and reported in the emission accounting system to control the level of pollutants to the requirement in the emission permit.

Borregaard in Norway 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) , and the reports from the monitoring are public.

This monitoring shows that emissions of easily degradable organic matter (BOD) from our biorefinery have caused a proliferation of bacteria covering riverbed sediments close to the plant. This causes poor oxygen conditions, which has implications for the growth of the river Glomma's wild salmon stock. As a result, its ecological status is classified as poor and can be defined as a river with water stress. NIVA's measurements of chemical status in accordance with the WFD standards show a good status. New analyses show that the conditions in the river Glomma downstream from Borregaard have improved, which shows that the reduction in emissions of several substances has had an effect.

The potential environmental impact of Borregaard's process wastewater has recently been investigated, and the report has been sent to the Norwegian Environment Authorities (Reference: Environmental impacts of Borregaard's process wastewater in Glomma Year: 2021 Author(s): Sissel B. Ranneklev, André Staalstrøm, Markus Lindholm og Øyvind Garmo Source: Norwegian Institute for Water Research, ISBN 978-82-577-7305-2) . Of Borregaard's regulated discharge components to water, it is the discharge easily metabolizable organic material, measured as BOF and KOF, that has the greatest negative environmental impact on the aquatic environment outside Borregaard. The other regulated discharge components were well diluted and mixed into Glomma. After mixing, most concentrations, except Cadmium (Cd), were below the environmental quality standard (AA-EQS) approx. 50 m from the discharge points. For Cd, the concentrations in the process wastewater were equal to AA-EQS about 150 m from the discharge point to Glomma . Borregaard will improve the discharge water quality by cutting the effluents of COD. A plan for how to cut the effluents is sent to the Norwegian Environmental Authorities. The Plant Director of Borregaard (Chief operating officer) is responsible for the plan for cutting effluents of COD.

Chronic, acute toxicity, coverage, persistence or bioaccumulation are not characteristics of the impact on the river Glomma from the process waste water.

W-CH3.1a

(W-CH3.1a) Describe how your organization minimizes adverse impacts of potential water pollutants on water ecosystems or human health. Report up to ten potential pollutants associated with your activities in the chemical sector.

Potential water pollutant	Value chain stage	Description of water pollutant and potential impacts	Management procedures	Please explain
COD, Chemical Oxygen Demand	Direct operations	Effluents of organic material to water, measured as COD, impact the water quality in the river Glomma negatively. According to the definition in GRI 303, the impact of the effluent on the ecological status of the river is defined as water stress. The EHS policy guides the water-related risk the impact discharge of effluents has on the ecological status in the river Glomma. Borregaard and The Norwegian Institute of 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 (COD/BOD) from our biorefinery have caused a proliferation of bacteria covering riverbed sediments close to the plant. This causes poor oxygen conditions, which has implications for the growth of the river Glomma's wild salmon stock. As a result, its ecological status is classified as poor and can be defined as a river with water stress. (Ref: ISBN 978-82-577-7305-2)	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	This explanation is for Borregaards operation in Norway. Compliance: Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. The new permit (www.norskeutslipp.no) for COD in the effluent is reduced from 69 tonnes to 59 tonnes per 24-hour period (on average over the year) in order to comply with BAT levels for emissions to water. Components in the effluents to water are measured after Norwegian standards or International standards. Measures: Borregaard will improve the discharge water quality by cutting the effluents of COD more, this will be done both with measures to prevent spillages but also with new treatment techniques. A plan for how to cut the effluents has been sent to the Norwegian Environment Authorities. The measure of success is when COD is reduced in to a 25-30% lower level in 2025 compared today level (average 58 tons COD/day).
Cu, Copper	Direct operations	Borregaard Norway uses copper as a catalyst in the production process. We have reduced our emissions of copper during 2020, and the recovery rate is more than 80%. Copper is classified as a priority substance that the Environmental Authorities will reduce, thus the emissions should be as low as possible. Copper in high concentrations is toxic to aquatic environment. Copper in the emissions from Borregaard is well below environmental quality standard values (EQS-values) for copper, meaning that the concentration of cobber is lower than the environmental impact concentration, thus the chemical status of the river Glomma according to the Water Frame directive is classified as good status. Even if there is no negative impact from the copper emission to the river Glomma, Borregaard's strategy is to reduce the emission has much as possible. (Ref: ISBN 978-82-577-7305-2)	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	This explanation is for Borregaards operation in Norway Compliance: Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. The new emission permit for copper is demanding and we exceeded the short-term limits 35 times in 2020. Measures: Copper in the waste water is measured according to the requirement from the Environment Authorities. Environmental investments and process measures resulted in reduced copper emissions in 2020 and the emissions are expected to be reduced further in 2021, a 35% reduction compared to 2019 (from 11.6 kg/day to 7.5 kg/day), thus our measure of success will be achieved in 2021.
AOX, Adsorbable Organic Halids	Direct operations	Adsorbable Organic Halides (AOX) is a measure of the organic halogen load at a sampling of waste water. The procedure measures chlorine, bromine, and iodine as equivalent halogens. The AOX in the waste water sample stems from the use of chlorine dioxide in the bleaching plant, to remove lignin from the cellulose by selective oxidation of lignin. This result in some low molecular chlorinated lignin structures in the waste water. These structures has the potential for ending up as priority substances like dioxines. Thus the concentration is kept as low as possible. Mussels in the sea close to the operation will be monitored for the content of dioxines according to the WFD, it is expected that the results will be low and in accordance with environmental quality standards.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	This explanation is for Borregaard's operation in Norway. Compliance: Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. Borregaard comply with the permit for AOX. Measures: AOX in the waste water is measured according to the requirement from the Environment Authorities. To remove some of the AOX the waste water is treated in a AOX reactor with alkali. Measures to optimize the recipes to use less chlorine dioxide is also ongoing, this could be done by improving process control and washing sequences. The measure of success is when AOX is reduced in to a 25% lower level in 2025 compared with today level (average 0.27 tons day to a level below 0.2 tons pr day).
N, Nitrogen	Direct operations	The function of nitrogen in waste water is that it is a nutrient for organisms mainly in the sea water. Thus we are not measuring any effect from Nitrogen directly in the river Glomma. Nitrogen in the waste water to the river Glomma stems from nitrogen containing raw materials. In the sea there is several sources for nitrogen emission, from communities, industry and farming. Excess nitrogen can cause overstimulation of growth of aquatic plants and algae.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	This explanation is for Borregaards operation in Norway Compliance: Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. Borregaard comply with the permit for Nitrogen. Measures: Nitrogen in the waste water is measured according to the requirement from the Environment Authorities. Borregaard will reduce the nitrogen level in the effluents further by increased treatment for some of the waste water that have the highest content of Nitrogen. The measure of success is when Nitrogen is reduced in to a 22 % lower level in 2025 compared today level today (average 321 kg/day to a level below 250 kg/ pr day).
P, Phosphor	Direct operations	Phosphor is a nutrient for living organisms, and occur naturally in our main raw material wood, but is also added in the waste water treatment plant and in the ethanol plant. Phosphor in the waste water can result in eutrophication of the river Glomma. The eutrophication index, PIT, for periphyton is primarily affected by phosphorus, falling from "Good" ecological status upstream of Borregaard to "Moderate" outside Borregaard. The main reason is assumingly the decay of the thick mats of the bacteria, that release a surplus of nutrients to the periphyton, hence favoring eutrophic species. This is a indirect effect of the organic material in the waste water, thus Borregaard will prioritize the reduction of COD and have less focus on phosphor. (Ref: ISBN 978-82-577-7305-2 .)	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	This explanation is for Borregaards operation in Norway Compliance: Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. Borregaard comply with the permit for Phosphor. Phosphor in the waste water is measured according to the requirement from the Environment Authorities. Measures: In the recent years we have done several measures to reduce the content of phosphor in our emissions. The major activity was the changes from waste oil to liquid natural gas as support fuel in the bio boiler, waste oil contains phosphor. Since 2010 the phosphor content in the waste water has been reduced by 73%. We have already achieved a lot for our emission reduction of phosphor, our future over measure of success is thus modest, and is achieved when Phosphor is reduced in to a 10 % lower level in 2025 compared today level today (average 20 kg/day to a level below 18 kg/ pr day).

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Direct operations

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
Annually

How far into the future are risks considered?
More than 6 years

Type of tools and methods used
Tools on the market
Enterprise Risk Management
International methodologies

Tools and methods used
WWF Water Risk Filter
ISO 31000 Risk Management Standard
Environmental Impact Assessment
Life Cycle Assessment

Comment
Risks are managed through established management procedures and loss prevention programmes (ISO 31000). To evaluate possible water availability risks, Borregaard has conducted a company-wide water scarcity risk assessment of all facilities. In regards of local risks at its main operating unit in Sarpsborg, Norway, Borregaard uses ISO 14001 as tool to manage operations. Borregaard also conduct Life Cycle Assessment of our products, water use and impact on water is a part of the assesment.

Supply chain

Coverage
Partial

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
Annually

How far into the future are risks considered?
3 to 6 years

Type of tools and methods used
International methodologies

Tools and methods used
Life Cycle Assessment
Other, please specify (Certification standards for wood supply, PFEC og FEC.)

Comment
Risks are managed through established management procedures and loss prevention programmes (ISO 31000). Emphasis is on impacts of Borregaards most important raw material, wood, must be sustainable sourced, hence we have focus on impact on water from forestry. Water availability is considered from hydropower generation point of view, climate scenario analysis indicate that more water will be available for hydro power production in Norway/Norden part of Europe. Sourcing of renewable hydro power is an important part of Borregaards sciencebased target reduction plan for GHG emissions.

Other stages of the value chain

Coverage
None

Risk assessment procedure
<Not Applicable>

Frequency of assessment
<Not Applicable>

How far into the future are risks considered?
<Not Applicable>

Type of tools and methods used
<Not Applicable>

Tools and methods used
<Not Applicable>

Comment
Not relevant

W3.3b

(W3.3b) Which of the following contextual issues are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	We consider water availability at a basin/catchment level a highly relevant contextual issue for our organisation across all stages of our operations and value chain. This is why it is included in our water-related risk assessment. We use the WWF water risk filter to evaluate the risk in the areas we operate. Due to the large amounts of water available, water withdrawal is considered sustainable compared to areas in the world where water scarcity represents a risk due to climate change. The overall water scarcity risk is low to moderate at Borregaard's other production units. Value chain: Operation Freshwater availability is essential for Borregaard direct operations because without fresh water mill production processes cannot be operated. Therefore, availability is considered as vital parameter. The river Glomma is the largest river in Norway and has an average water flow of 577 m3/sec. Climate scenarios for the area around Borregaard's biorefinery in Norway show a wetter climate with more precipitation. Thus, the average water flow in the river Glomma is likely to increase, we expect water to be abundant as current but also in the future. The water used by Borregaard is treated in our own water treatment plant before it is used due to high quality requirement, thus Borregaard has a agreement with the local community that we can receive water in a back up situation. Water availability is monitored by our EHS department at Borregaard in Norway, which also have global function for monitoring total water availability in Borregaard. Water withdrawal is measured and an accounting or reporting system is implemented to be able to assess the amount of water in the risk assessment process. WWF risk filter is used for monitoring the the risk of change in future water availability. Value chain: Suppliers Water availability are important for forest to growth. Borregaard buy certified wood, FSC and PEFC certification are used in all forest management and wood sourcing operations to manage water-related risks from our main raw material. The relevance is defined as in our the standard risk matrix Borregaard uses for the evaluation of the the magnitude of impact on profitability and environment. This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned, a 4 times 4 matrix.
Water quality at a basin/catchment level	Relevant, always included	We consider water quality at a basin/catchment level a highly relevant contextual issue for our organisation across all stages of our operations and value chain. This is why water quality at basin level is included in our water-related risk assessment. Freshwater quality is important in the direct operation, and the in-taken freshwater is analyzed in laboratories and online, and purified mechanically and chemically before used in the processes. Quality of incoming fresh water is important for product quality. Many products that are produces in Borregaard are within the food and pharma business. Water quality is monitored by our EHS department at Borregaard in Norway, and from water supplier at our sites outside Norway. Parameters like pH, turbidity, biological factors are analysed. Hazard Analysis Critical Control (HACCP) management system, which is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product, is implemented to control that the right processes are in place to get the right quality of the water, i.e. treatment methods and measurements. We are expecting that our demand for water quality will remain the same in the future, as long as we are not aware of new requirement for water quality. Our HACCP risk management method will be updated if there will be coming requirement. The relevance is defined as in the standard risk matrix Borregaard uses for the evaluation of the the magnitude of impact on profitability and environment, a 4 times 4 matrix. This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, always included	The river Glomma where our main production unit, Borregaard in Sarpsborg is situated, is an important river for natural cultivation of Atlantic Salmon. Previous studies have shown that the discharges of readily available organic material from Borregaard have caused a proliferation of the filamentous bacterium, Sphaerotilus natans in the river. The bacterium covers bottom sediments, and as a result, the exchange of oxygen between the open water and sediments decreases. Former reports have revealed declined densities of fish in key spawning and nursery areas and benthic composition indicating organic load in the recipient. This is why stakeholder conflicts concerning water resources at basin level is included in our water-related risk assessment. In 2013, Borregaard installed an anaerobic treatment plant to reduce discharges of readily available organic material to the River Glomma and has continued to reduce the emission of COD, more than 40% since the installation. . Borregaard contributed to financing a salmon cultivation facility in 2012 and we have since covered a major part of the operating costs. The facility is operated by the NGO for local salmon fishing (NFOFA). In 2020 electro fishing was conducted in the river Glomma at Borregaard, mainly to investigate densities of Atlantic salmon in the assumed spawning and nursery areas and to monitor recruitment of salmon. Electro fishing was conducted at six stations. This information was used as an input to our risk assessment. The surveys showed that the natural reproduction in the river has increased and contributes substantially to the young fish population. But the salmon is vulnerable, thus it is necessary to reduce the emission of organic material to the river further and continue to operate the salmon cultivation facility at our premises. The potential for future stakeholder conflicts is difficult to forecast, but we engage our local stakeholders in information and consultation sessions from the project planning to operation, and grievances mechanisms are installed to easily get in contact with the relevant responsible at Borregaard. The relevance in risk process is defined as in the standard risk matrix Borregaard uses for the evaluation of the the magnitude of impact on profitability and environment, a 4 times 4 matrix. This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned.
Implications of water on your key commodities/raw materials	Relevant, always included	In regards of key raw materials, wood is by far the most important material for Borregaard. Growing wood in forests requires regular rain water. This is why wood raw material is included in our water-related risk assessment. Borregaard's wood sourcing areas are located in Northern part of Europe, which is a water-abundant region, and no implications are faced currently or foreseen in near future (WWF water risk filter). Borregaard has a wide range of chemical pulp suppliers (general risk management) and suppliers of lignin raw material. So, for example, if drought at one region would reduce availability from supplier located on the area, Borregaard would have alternative suppliers available. It is expected that EU's forest strategy will be reviewed due to the EU Green Deal, and in addition the certification system for sustainable forests, FCS/PEFCS will be reviews. We are preparing for higher importance in how water issus in forestry will develop and we are engaging with wood suppliers, and changes will therefore be a key component in our risk assessment procedures. The relevance is defined as in the standard risk matrix Borregaard uses for the evaluation of the the magnitude of impact on profitability and environment, a 4 times 4 matrix. This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned.
Water-related regulatory frameworks	Relevant, always included	We consider water-related regulatory framework as a highly relevant contextual issue for our operations, because emission to water is regulated from the authorities by permits. This is why it is included in our water-related risk assessment. Borregaard in Norway which have 99 % of the emission to water and has a permit from the Norwegian Environment Authorities. The Groups other operations have permits from local or national environmental authorities. Best available Techniques Reference Document standards (BREF's) are used for emission permit settings in EU/EEA countries, the documents describe different manufacturing processes, their respective operating conditions and emission rates. Based on the latest review of these standards, Borregaard's operations in Norway received a new discharge permit from 01.07.2019. The permit has stricter limits for several substances in the effluent, including sub-streams, in shorter average periods. This means that the number of single limits in the permit has increased. The new permit (Norske utslipp, Virksomhet) for COD in the effluent is reduced from 69 tonnes to 59 tonnes per 24-hour period (on average over the year) in order to comply with BAT levels for emissions to water. Components in the effluents to water are measured after Norwegian standards or International standards. The most important parameters to water from our operations are COD, AOX (Adsorbable Organic Halogen), Copper, Suspended Solids (fibers), Nitrogen and Phosphor. The data are feed in the emission accounting system, and the results are compared to the permit, both long term and short term. We use information gathered in the emission accounting system in the our risk assessment. It is expected that legislation/BREF's will be reviewed due to the EU Green Deal and the EU Zero Pollution plan. We are preparing for this by engaging with authorities and with national associations, river basin and local policy makers and stakeholders about future changes to regulatory frameworks are therefore a key component in our risk assessment procedures. For the evaluation of the the magnitude of impact on environment, a 4 times 4 matrix is used , the highest risk is defines as a long term non-compliance, the next is non-compliance of a shorter period permit, then we have is not complying with internal target, and the lowest level is now risk . This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned.
Status of ecosystems and habitats	Relevant, always included	The emission to water of organic matter (measured as COD) in the water discharge from the direct operation at Borregaard in Norway impact the water quality in the river Glomma negatively. According to the definition in GRI 303, the impact of the effluent on the ecological status of the river is defined as water stress. This is status of ecosystems is included in our water-related risk assessment. The Water Framework Directive requires all European surface water – lakes, rivers, transitional and coastal water, and groundwater – to reach "good status" by 2027. The implementation of WFD in Norway is organised in local areas that has common interest in a special river or lake area, Borregaard participates in a working group organised by the nearby municipalities, called "Glomma Sør". 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). The biological quality elements benthic macroinvertebrates (ASPT index), periphyton (PIT index) and heterotrophic growth (HBI and HBI2 index) capture loads from Borregaard's discharges of nutrients and so-called easily metabolizable dissolved organic material, measured as BOD(biological oxygen demand) and COD. On the reference monitoring station upstream of Borregaard, the ecological status of these quality elements is classified as "High" or "Good". Directly downstream of Sarpsfossen, the ecological status deteriorates, and the environmental objective of "Good" ecological status according to the EU WFD is not achieved. The monitoring are done yearly at several stations in the river Glomma and the results are used in risk assessment. It is expected that WFD will be more integrated with Industrial Emission Directive (IED) and will be reviewed due to the EU Green Deal and the EU Zero Pollution plan. We are preparing for this by engaging with authorities and with national associations, river basin and local policy makers and stakeholders about future changes the regulation of ecological status of ecosystems, and are therefore a key component in our risk assessment procedures. For the evaluation of the the magnitude of impact on profitability and environment, a 4 times 4 matrix is used. This information is compiled into our Enterprise Risk Management system which is ISO 31000 aligned.
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	Borregaard has no tolerance for breakage of human rights principles, this is a prerequisite for a sustainable business model with a high focus on ESG. In our company wide human right policy we have stated the right to safely managed WASH service. Human rights are a minor issue for Borregaard since our operations and most of our suppliers are in low risk countries (OECD countries). As long as our operations are unchanged we expect that the current situation will remain. According to our values (Integrity and respect for individuals) as well as laws and regulations, it is important for Borregaard to maintain compliance within human rights issues. Borregaard has a human right policy with guiding principles for handling human and workers' rights which we see as having relevance for our daily operations. We define human rights as the human rights enshrined in the Universal Declaration of Human Rights and the workers' rights set out in the International Labour Organization's Declaration on Fundamental Principles and Rights at Work. Borregaard monitors and follow up compliance with the requirements through internal sustainability reporting and internal audit processes. The status of the companies' human rights activities is reviewed annually as part of the business areas' board meetings. Any cases on Human Rights breakages reported to legal head will be reported to the Compliance Board and to the Board. In 2020, we have conducted a survey to a selection of employees to evaluate knowledge about Borregaard's human rights policy and whistleblowing routines. When incidents are reported, Borregaard will follow up through our whistleblowing channel.
Other contextual issues, please specify	Relevant, always included	We consider how our biochemicals have positive impact in water intensive industries that either use a large amount of water or have impact on water basins as a highly relevant contextual issue for our organisation towards our customers. As the population of the world increases and economies develop, industrial demands on water are becoming ever more intensive. Chemical run-off from industries such as agriculture, mining, and fossil fuel extraction have an outsized impact on the environment and jeopardize local water supplies and ecosystems. The use of chemicals in water-intensive industrial processes will only increase as we are forced to further improve efficiencies to meet increasing demand from dwindling resources. In recent years, water intensive industries have come under particular pressure to improve the sustainability of their operations, driving them to seek sustainable renewable chemical alternatives for use in their processes. There is currently lacking tailor-made chemical solutions that can compete with established petrochemical additives on a cost-performance metric, and meet the high volumes that are required in water-intensive processes. Although water-intensive processes offer a lucrative market for new sustainable performance chemicals, the barrier to entry is high and requires a large investment in R&D to deliver competitive new products. To meet this opportunity Borregaard has started a R&D initiatives together with several other research organisations and univeristies, the program is fundet by the Norwegian Research Council by 19 MNOK. The work addresses this problem by developing new sustainable high-performance chemicals for water-intensive industries based on a uniquely abundant and versatile raw material – lignin.

W3.3c

(W3.3c) Which of the following stakeholders are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Customers	Relevant, always included	Many of Borregaards current and future B2B customers sell products/chemcials into water intensive industries like agriculture, mining and oilfield. Borregaard consider this as an opportunity for our specialised lignin biopolymer products, and a growing market, as our customers get more aware of the water-related risks, and look for more sustainable alternatives. Borregaards R&D department has received funding from the Norwegian Research Council of 19 MNOK and will cooperate with different Universities to find new and better solutions in our lignin biopolymer applications for water intensives. We have assessed customers that sells products into water intensive industries to be relevant because Borregaard have lignin biopolymers that have the potential for reducing their water-related risk in different applications for agriculture, mining and oilfield. This group is relevant because in the mid-term future they represent a positive impact on the EBITDA. Our engagement with the customers will increase as the progress in the project are going forward. For our lignin biopolymer products this will represent new and more sustainable applications and we expect our future price premium for the product to increase. Relevance in risk assessment: If we do not have the right processes in place to take the opportunity to develop new products that our B2B customers can use to provide better and more sustainable applications. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, customers are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment. In the value chain both direct operation and customers are covered, due to i.e changes in recipes for direct operation due to R&D activities, and new customers/improved product to existing customers. The method of engagement: •Borregaards R&D department together with different Universities, will cooperate to find new and better solutions in our lignin biopolymer applications in water intensive industries. The plan for realization is to finish the project in 2023, following the approved project plan from the Norwegian Research Council. Then there is an estimated ram up in sales volume in a mid-term time perspective (2030), meaning that customer engagement will increase.
Employees	Relevant, always included	To maintain and development our position as a sustainable and climate friendly company are important and relevant for Borregaard. Borregaards' main objective is to offer sustainable products and solutions to our customers based on renewable raw materials and unique competence. For attracting motivated and highly skilled employees we will maintain but also continue to develop new sustainable products and handle our risk and opportunities within water-related issues. High competence is one of the key elements in Borregaard's specialisation and sustainability strategy. The combination of unique competence in sales&marketing, R&D and production drives the specialisation strategy and differentiates Borregaard from our competitors. Relevance in risk assessment: If we do not have the right processes in place to maintain and develop our sustainable business model, could results in difficult to attract competent new employees and increase the turnover of our unique competence. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, employees are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment. Method of engagement: •Training programs for employees in Borregaards sustainability business model. • Borregaard analyse feedback from the recruiting process. When interviewing new employees, several employees says that Borregaards sustainability performance is one reason for application for a job. • KPI for turnover, turnover has been low for several years. • Borregaard measure the reputation in its neighborhood, the results show that the reputation has changed in a positive way our the last years • Analysis of the stock price of a Borregaard share at Oslo Stock exchange, shows that the share price positively influenced by a strong and positive sustainability reputation. •
Investors	Relevant, always included	To maintain and development our position as a sustainable and climate friendly company are important and relevant for Borregaard. Borregaards' main objective is to offer sustainable products and solutions to our customers. One aspect of the investors' trust in Borregaard is that we maintain this, but also continue to develop new sustainable products and handle our risk and opportunities within water-related issues. Relevance in risk assessment: If we do not have the right processes in place to maintain and develop our sustainable business model, could results in reduced price premium/not achieving financial targets and reduced stock price of the Borregaard share. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, investors are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment. Method of engagement: • Our risk management process as identified water-related risks and opportunities that are dealt with in relevant areas in the company, we have an open communication with our investors about the risks and opportunities in our Annual Report/Sustainability report and we report more detailed about this issues to CDP water, the last one up on initiatives from investors. • Borregaard has an active stakeholder dialog with our investor regarding sustainability- dedicated functions in Borregaard. • Borregaard documents the sustainability and environmental impact of its products. LCA analysis of the products that document sustainability and including water impact from our operations and upstream value chain. We invest in R&D to produce even better products and solutions (increased investor trust) • Borregaard has made financial commitments linked to our main sustainability targets by entering sustainability linked financing agreements with financial institutions. The facilities are linked to Borregaard's sustainability targets and the margins can be adjusted based on our progress on three parameters, one of them is keeping emissions of organic compounds to the Glomma river below certain levels(increased investor trust) • Analysis of the stock price of a Borregaard share at Oslo Stock exchange, shows that the share price positively influenced by a strong and positive sustainability reputation.
Local communities	Relevant, always included	Borregaard impacts and interacts with the local communities where we are located. Our plants outside Norway are relatively small, while Borregaard has been a cornerstone company in Sarpsborg for generations. To maintain and development our position as a sustainable and climate friendly company it is necessary that we understand water- related issues in the local communities. For the the local community in Sarpsborg the river Glomma is very important both as drinking water source, fishing and outdoor life, the water falls represent an tourist attraction, but also a source for producing renewable electricity in the hydro powerplant and the river is important for transportation of goods. Thus to understand how we impact the river by using the water both for transport, electricity , water withdrawal and water discharge and how this affect the local community is an important aspect in our risk assessment. Relevance in risk assessment: If we do not have the right processes in place to understand the local communities and their engagement or interest in water-related issues that we have impact on, it can result in a negative reputation which is not compatible with our policy of being a sustainable business, and can impact share price, employee recruitment and the dialog/process with authorities which requires local community opinions in hearing processes, and it can impact our use of the river Glomma. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, local communities are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment. Method of engagement: • Open communication about our water-related impact like emissions to the river Glomma. • Borregaard has a participant in the local group that monitor progress in the work of implementation of the Water Frame Directive in the region where Sarpsborg is located. • All inquiries from the communities will be handled/answered by dedicated people in the organisation. We have established a preparedness organisation that can follow up on acute issues. • Borregaard measure the reputation in its neighborhood, the results show that the reputation has changed in a positive way our the last years
NGOs	Relevant, always included	To maintain and development our position as a sustainable and climate friendly company it is necessary that we understand water- related issues in the among our NFO's. For some NGO's the river Glomma close to our operation in Norway is important, especially the environmental impact on the river from our activities. Production of more renewable electricity form hydropower is another important water-related aspect that we have dialog with NGO's. Thus to understand how our use of use for water both for transport (rivers), electricity , water withdrawal and water discharge and how this impact the NGO's is important, both sheared interests and where we have different opinions. Relevance in risk assessment: If we do not have the right processes in place to understand our NGO's and their engagement or interest in water-related issues that we have impact on, it can result in that the dialog/process with authorities which requires NGO's opinions in hearing processes can be difficult, but it can also represent and opportunity if we have identified our sheared interests. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, NGO's are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment. Method of engagement: • Open communication about our water-related impact like emissions to the river Glomma and the plans for how we work to reduce emissions. •NGO's that are interested in water-related issues, like the organisation for the local salmon fisher's, local environmental organisations and national environmental organisations are identified, and active stakeholder dialog are established. • Borregaard has a participant in the local group that monitor progress in the work of implementation of the Water Frame Directive in the region where Sarpsborg is located. • Example of engagement: Due to low natural reproduction of salmon in the river Glomma, Borregaard contributed to financing a salmon cultivation facility in 2012 and we have since covered a major part of the operating costs. The facility is operated by the NGO for local salmon fishing (NFOFA). •Stakeholder analysis are review yearly to check if there is changes and if its necessary to improve stakeholder dialogue or include new NGO's.
Other water users at a basin/catchment level	Not relevant, included	The river Glomma is the largest river in Norway and has an average water flow of 577 m3/sec. There is several users of the water Borregaard in Norway is a main user of the river Glomma If we do not have the right processes in place to identify other water users and their engagement or interest in water-related issues that we have impact on, it can result in conflicts or lost opportunities. Borregaard survey the stakeholders that are either impacted by our company's operations or which, in a variety of ways, have an impact on the company's strategy and goal achievement, at the moment local communities are identified as a key stakeholder for water-related issues. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment, it is evaluated if there is changes and if its necessary to improve stakeholder dialogue or include new NGO's.
Regulators	Relevant, always included	Regulators of water emission permits are of high relevance in our stakeholder dialog and are included in our risk assessment, because they give us important frame conditions for our operations. Borregaard in Norway which have 99 % of the Company's emission to water, the river Glomma, has a permit from the Norwegian Environment Authorities. The Groups other operations have permits from local or national environmental authorities. Method of engagement: •We have dialogue meetings with regulators when necessary, i.e when a permit is updated or to inform on progress in emission reducing activities. •We participates in environmental conferences where we know the regulators participate, i.e to learn more about new requirement and views from the regulators. •Regulators do audits or inspections at our sites, the result is an important input in our risk assessment, an environmental management system ISO 14001 is implemented in our sites in Norway and Germany to have a systematic approach to regulatory requirement and that non-compliance is handled. •To communicate our view on changes in regulatory issues, Borregaard is active in public consultation submissions and we participate in industry NGO's and special interest organisations to have dialog on environmental and water-related issues. •We report to regulators our environmental performance, and according to our permit. •The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment to evaluate if there is changes and if its necessary to improve/change stakeholder dialogue with regulators.

	Relevance & inclusion	Please explain
River basin management authorities	Not relevant, included	Borregaard in Norway which have 99 % of the Company's emission to water, the river Glomma, has a permit from the Norwegian Environment Authorities. In Norway the Norwegian Environment Authorities are the regulator both for the emission permit and for the river basin management. Thus river basin management authorities are included, but not relevant because it is the same as regulators. The method of engagement is the same as for regulators above. The stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment to evaluate if there is changes and if its necessary to improve/change stakeholder dialogue with river basin management authorities.
Statutory special interest groups at a local level	Not relevant, included	Borregaard do not have any statutory special interest group at local level other than NGO's and local communities mentioned in the stakeholder dialogue above. Method of engagement with the stakeholder The Company's stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment, to evaluate if there is changes and if its necessary to improve/change stakeholder dialogue with statutory special interest groups at local level.
Suppliers	Relevant, always included	Suppliers of wood raw materials are included in our risk assessment, they are supplier of our main raw material (25% of suppliers), and sustainable sourcing of wood is fundamental to our business model. Wood was 11% of our total cost in 2020, risk of increased cost for wood supply due to climate change is included in risk assessment. Method of engagement with the suppliers of wood: •When Borregaard buys 100% certified wood we are sure that all the sustainability aspects including water are taken care of. Borregaard are not a forest owner our selves but we engage with the forest owners to inform them that sustainable forestry are important for Borregaard. The Norwegian PEFC forest standard has requirement for water (in point 24): Forestry shall preserve or develop a vegetation belt against water, rivers and streams with year-round water flow, to make sure that water is filtered before it enters the waterbody, so that organic material from humus and nutrition remains in the forests. During harvesting several measures must be taken to make sure that the water will not be polluted. •The PEFC standard for Norwegian conditions, where we sources 77% of our wood from in 2020 is now being updated, we expect that issues regarding water will be stricter. •Due to physical climate changes, mild and rainy winters may increase the cost of harvesting and transportation of wood in the Nordic region. This means that the big and heavy harvesting machines cannot be used because they will destroy the wet forest floor to much, and are unable to move around. This will limit the operating time for harvesting of wood to periods when the forest floor is dry enough or frozen to carry the weight of the machines. Dry summers could also occur more frequent (according to climate scenario analysis for Norway), this will increase the risk of fire from mechanical activities during the harvesting process. For Borregaard wood will need to be supplied from areas far away or harvest at lower capacity with other methods like more light harvesting machinery. Both alternatives will give increased cost of wood. We have dialog with our suppliers in these issues. •The Company's stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment, to evaluate if there is changes and if its necessary to improve/change stakeholder dialogue with suppliers of wood raw material or new suppliers with water-related risk.
Water utilities at a local level	Relevant, always included	Our main water site, Borregaard in Norway has 96% of the water withdrawal in the company. The water utilities at local level is from the river Glomma, mainly for our own water treatment facility. As back-up facility Borregaard sources water from the water treatment facility belonging to the Sarpsborg community. We have included water utility from Sarpsborg community in our risk assessment, to secure redundancy of water supply to our main site. Method of engagement with the stakeholder: Contingency plans for water supply are updated on a regular basis, the Sarpsborg community facility and our own facility are back up for each other. A minor water withdrawal from the Sarpsborg community facility is supplied continuously, we have dialog regarding measurements and invoicing, the last couple of years we have installed new volume measurements to increase the accuracy of water volume. The Company's stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment, to evaluate if there is changes and if its necessary to improve/change stakeholder dialogue with water utilities at local level.
Other stakeholder, please specify	Not relevant, explanation provided	Borregaard do not have any other stakeholders that are relevant, than those stakeholders mentioned above. Method of engagement with the stakeholder: The Company's stakeholder analysis is updated yearly as an input to the company's risk management process and materiality assessment, for evaluating if there is changes and if its necessary to improve/change stakeholder dialogue or include new stakeholders that have not been relevant to our stakeholder analysis before.

W3.3d

(W3.3d) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

Water-related risks have been evaluated for Borregaard's operations using The WWF Water risk filter, the risk filter was selected because it is an well know and established method to get a reasonable overview of water related risks in areas where we operate. The overall risk of physical, regulatory, and reputational risks is aligned with the UN Global Compact CEO Water Mandate framework. Physical risk includes scarcity, flooding, water quality and ecosystem status. Regulatory risk includes enabling environment, institutions and governance, management instruments, and infrastructure and finance. Whilst reputational risk includes cultural importance, biodiversity importance, media scrutiny and conflict.

Most of the water withdrawal, discharge and consumption are linked to our biorefinery in Norway. The river Glomma is the largest river in Norway and has an average water flow of 577 m3/sec, the overall water scarcity risk is low. Climate scenarios for the area around Borregaard's biorefinery show a wetter climate with more precipitation. Thus, the average water flow in the river Glomma is likely to increase. The biorefinery has access to water from the river Glomma via its own water treatment facility. Due to the large amounts of water available, water withdrawal is considered sustainable compared to areas in the world where water scarcity represents a risk due to climate change. Our production units in USA (Florida and Wisconsin), Germany, The Czech Republic and UK use less than 5% of the total withdrawal of water at Borregaard. The water is sourced from public waterworks or adjacent industrial areas. Our lignin plant in Florida withdraws water from a ground water source, the Floridan aquifer system, which is one of the world's most productive aquifers. The WWF Water Risk Filter evaluates the water risk level of the area where our Florida plant is located to be moderate. The overall water scarcity risk is low to moderate at Borregaard's other production units. Our highest water related risk is the emission of organic material (COD)from the Borregaard in Norway to the river Glomma.

The level of coverage in our water-related risk assessment is the operational units, because we consider them to have the highest risk. For sourcing of critical raw materials we have several suppliers. Borregaard has more than 700 different product that are sold into agriculture, feed, pharma, personal care, construction, binders, coatings and several other, some products could be impacted by water-related risk, but due to the high amount of products and markets the water-related risk in our markets will be low.

A central risk management function has been established in Borregaard headed by the Chief Risk Officer (CRO), who is responsible for Borregaard's risk management model (ISO 30001) and the implementation support for this multi-disciplinary risk management process, contribute to the identification, analysis and handling of risks across business areas and disciplines. Each member of the Group Executive Management is responsible for identifying water-related risks within their respective areas. The assessment process is done by the responsible member of the Group Executive Management.

A risk matrix of 3X3 is used when evaluating the change in the strategic period in the level for profitabiliy (i.e financial impact from water-related risk) and for Environment, Health and Safety (i.e. physical impact from water related risk) is used to evaluate the risk. The aggregate risk picture is consolidated by the CRO and reviewed by the Group Executive Management before it is submitted to the Audit Committee and finally to the Board. The Board conducts a review of the Group's risk picture at least annually.

Borregaard has identified processes to collect relevant data and seek information on contextual and stakeholder issues/from partners in the value chain to secure an updated risk assessment, the stakeholder and materiality analysis is updated yearly and is an important input to the risk management process. Relevant KPI's are evaluated on a regular basis in management meetings and at Board level, especially the KPI for CPD to the river Glomma is followed closely in management meetings and at Board level.

The response to the risk is within the responsibility of each member of the Group Executive Management or the one that has got the responsibility delegated

• Targets of relevant KPI's is monitored

• Update progress plans in all areas to mitigate water-related risks and capitalize opportunities, at least in the annual budget process.

• Comprehensive risk assessments related to either operations or projects are carried out on an ongoing basis in all units and reported to the next management level, and significant risks aggregates into an overall risk picture.

For the emissions of COD to the river Glomma we have established a strategy on how to reduce the emissions, and planned several projects.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, both in direct operations and the rest of our value chain

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

The Substantive financial impact definition for Borregaard Group:

EBITDA (earnings before interest, taxes, depreciation, and amortisation) is defined by Borregaard as operating profit before depreciation, amortisation and other income and expenses. In 2020 EBITDA was 1,132 mill NOK and in 2019, 1,007 mill NOK. The financial impact is defined as substantial within a short-term (3-years) period for the following quantifiable indicators

Low EBITDA effect: 0-25 mill NOK (green consequence in strategic risk matrix)

Medium EBITDA effect: 25-50 mill NOK (yellow consequence in strategic risk matrix)

High EBITDA effect: > 50 mill NOK (red consequence in strategic risk matrix)

In 2020 a loss in EBITDA of 50 mill NOK would have reduced the EBITDA margin by 0.90%-points from 21.2% to 20.3 %. A close to 1%-point drop (or increase) in Borregaard's total EBITDA margin from a single indicator is, in the company's opinion, a substantive impact. Borregaard's different business units are closely linked together as they mainly are different parts of the large integrated biorefinery in Norway. As a consequence, it makes sense for Borregaard, as well as for shareholders and customers, to primarily consider the size of the impact on the totality instead of the different business units.

The definition is valid for impacts in the whole value chain that the Borregaard Group operates in. In a medium-term and long-term perspective, impacts considered as a substantive financial impact could be higher than the range used for short-term. Risk reducing activities will be taken to reduce the future negative impact, according to the Groups risk management system.

The substantive change definition for Borregaard Group:

The strategic process in Borregaard covers a period of 3 years ahead from reporting year. The strategy is updated yearly when the risk picture is updated and reviewed, and approved by the Board. Risk mitigation actions have to be defined in the strategic process for risks with over 50 mill NOK impact. However, mitigation actions are carried out also below this threshold to avoid a substantial risk. The current situation, the strategic measures and the threats and opportunities are described for each risk in the strategic impact diagram/matrix.

To identify a substantive **change** in the strategic period a risk matrix of 3X3 is used for evaluating the impact on the level for profitabiliy (i.e financial impact from water-related risk) in the strategic period. Consequence and probability is marked as red in the matrix for row 3, column 2 and 3 and row 2, column 3. When a risk is moved to the red area, the change is defined as substantial. A high consequence and substantive change will (red part of risk matrix) have more than a > 50 mill NOK loss in profitability (EBTDA).

Borregaard's highest water related risk is the emission of organic material (COD) from the Borregaard manufacturing site in Norway to the river Glomma which has negative impact on the ecological status of the river. A capex plan has been identified in the strategic period to reduce the emission of COD to a level where ecological status will improve, as the emission will be reduced by 20-30%. A substantive change, i.e the authorities dose not accept our risk mitigation plan for reduction in emissions, and we have to speed up capex or reduce/change production. Another identified change with substantive impact would be a major spill to water, i.e. hazard risk at pulp mill causing disruption of operations and possible penalties and recovery payments and reputation loss.

The definition of substantial impact applies to the whole value chain. Borregaard suppliers' usage of water in their operations depends the type of raw material/chemical, for our commodities and main raw materials we have several suppliers. In sourcing of wood, Borregaard buy mainly FSC/PEFC forest certificated wood, thus water management is taken care of. In 2020, 98% of wood came from certified sources, and our target is to get all wood as certified (from 2022).

For water-related risk we have used WWF risk filter for our operations and in addition the topic are included in climate scenario analysis. Many of Borregaards current and future B2B customers sell products/chemcials into water intensive industries like agriculture, mining and oilfield. Borregaard consider this as an opportunity and a growing market for our specialised lignin biopolymer products, as our customers get more aware of the water-related risks and look for more sustainable alternatives, this could represent a long term substantial change in opportunities for new products.

W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	1	1-25	The number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on our business is 1 of 7 production facilities (14%) in Borregaard. This is the production facility in Norway, and represent above 75% of the revenues in the company, and is our main production unit. The production site in Sarpsborg has the main withdrawal of water, 96% of the companies total withdrawal, the production site is a biorefinery where water is an important resource in the production process. Water is used for cooling, steam production, washing and transportation of pulp/biomass. The production site in Czechia, Germany, Spain and two in USA uses 4% of the total withdrawal of water. The production process is mainly drying of liquid biopolymers in spray driers. At the production site in Florida sufficient amount of ground water from the Floridan aquifer is available. The exposure to water risk and the potential to have substantive or strategic impact from water risk is considered to be low. The potential business impact associated with the site in Sarpsborg results from negative impact the effluent discharge has on ecological status in the river Glomma. According to the EU Water Framework Directive (WFD) the ecological status is classified as poor. The river Glomma also represent a positive business impact, due to the large amounts of water available from the river, water withdrawal is sustainable and represents an opportunity for producing sustainable products, compared to areas in the world where water scarcity is an risk/or increasing risk due to climate change.

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

Norway	Gloma

Number of facilities exposed to water risk
1

% company-wide facilities this represents
1-25

Production value for the metals & mining activities associated with these facilities
<Not Applicable>

% company's annual electricity generation that could be affected by these facilities
<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities
<Not Applicable>

% company's total global revenue that could be affected
71-80

Comment
The number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on our business is 1 of 7 production facilities (14 % of facilities) . This is the production facility in Norway, and represent above 75% of the revenues in the company, and is our main production unit. The production site in Sarpsborg has the main withdrawal of water, 96% of the companies total withdrawal, the production site is a biorefinery where water is an important resource in the production process. Water is used for cooling, steam production, washing and transportation of pulp/biomass. The production site in Czechia, Germany, Spain and two in USA uses 4% of the total withdrawal of water. The production process is mainly drying of liquid biopolymers in spray driers. At the production site in Florida sufficient amount of ground water from the Floridan aquifer is available. The potential business impact associated with the site in Sarpsborg results from negative impact the effluent discharge has on ecological status in the river Glomma. According to the EU Water Framework Directive (WFD) the ecological status is classified as poor. Bad ecological status can be counted as "water stress", because according to the definition, water stress can refer to the availability, quality, or accessibility of water. The long-term goal of the WFD regulation is to achieve a good ecological status in the river Glomma in 2027, thus Borregaard's long term goal is to reduce the ecological water stress, and achieve a good ecological status in the river Glomma in 2027. The river Glomma also represent a positive business impact, due to the large amounts of water available from the river, water withdrawal is sustainable without any water stress when it comes to availability and accessibility, and represents an opportunity for producing sustainable products, compared to areas in the world where water scarcity is an risk/or increasing risk due to climate change.

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Norway	Gloma

Type of risk & Primary risk driver

Regulatory	Regulation of discharge quality/volumes

Primary potential impact
Increased cost of capital

Company-specific description
Borregaard's biorefinery in Norway generates emissions of organic matter (measured as COD) to the river Glomma. Emissions of organic compounds to water (chemical oxygen demand (COD) or biological oxygen demand (BOD)) affect the aquatic environment in the river Glomma. The organic material stems mainly from the washing and processing of biomass into advanced products. Discharge quality to the river Glomma is regulated in the emission permit for Borregaard in Norway, which was updated in 2019 and is according to the regulatory demands in the the EU's IPPC directive and described in the relevant BREF standards (Best Available Technique Reference). But regulatory compliance to the EU Water Framework Directive (WFD) was not met. Borregaard and the Norwegian Institute for Water Research (NIVA) monitor the river Glomma in accordance with the requirements and standards in WFD. This monitoring shows that emissions of easily degradable organic matter (BOD) from Borregaard have caused a proliferation of bacteria covering riverbed sediments close to the plant. This causes poor oxygen conditions, which has implications for the growth of the river Glomma's wild salmon stock. As a result, its ecological status is classified as poor. Due to the ecological status in Glomma and the requirements in WFD, the Norwegian Environment Authorities asked Borregaard to send a plan for how the emission of organic material, measured as COD, can be reduced and the capex to reduce the COD. Borregaard has sent the plan to the Norwegian Environment Authorities on how the emission can be cut to a 25-30% lower level in 2025 compared today level (average 58 tons COD/day). It is to early to tell if the cuts are sufficient to be compliant with the requirement in the WFD, so in addition to the plan sent to the authorities we have started to elaborate new projects to reduce the emission of COD further.

Timeframe
4-6 years

Magnitude of potential impact
Low

Likelihood
Very likely

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
121000000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
We have identified several projects, smaller and larger, and in different production units at Borregaard site in Norway, that can reduce emission of COD to the river Glomma. Some projects are in the study phase and for some the project phase have started, thus there is still some uncertainty both the potential for emission reduction and in the capex. In total it is 6 different project is identified and will be finished before 2025, the emission target of a reduction between 25% to 30 % from the level inn 2020 will be achieved in the end of 2025. The plan is public and is sent to the Norwegian Environmental Authorities. Capex for emission reduction projects: Spill collection in to plants, 2 projects : NOK 11 mill Incineration of waste water in Borregaard waste incineration plant: NOK 10 mill Improved waste water to anaerobic treatment plant: NOK5 mill Improved evaporation: NOK 80 mill New wash filter for improved washing: NOK 15 mill The total Capex of all projects: NOK 121 mill The magnitude of potential impact: Some of the capex for the project is within annual depreciation, capex will have impact on return of capital employed (ROCE) and Earnings before interest, taxes, and amortization (EBITA). But, substantive financial impact definition for Borregaard Group is defined as impact on EBITDA in 4.1.a and this effect will be in the low range.

Primary response to risk
Comply with local regulatory requirements

Description of response
Borregaard in Norway has established a cross functional team with resources from R&D and process experts from production that have made a plan to reduce the emission of COD to the river Glomma. Borregaard has identified both short-term and long-term activities for cuts in COD emissions. A steering committee chaired by the Plant Director of Borregaard's Sarpsborg site (Member of Executive Management Group), review the progress at a regular frequency and make investment decisions. Borregaard has sent an action plan to the Norwegian Environmental Authorities with estimated capex, effect on COD/emissions and time to implement for for each activity. We will follow up the effect of the implementation both with measurement of the actual reduction of COD and measurements of the response for the ecological status. We will continue to work with new emission reduction activities and evaluate the potential for further reduction, beyond the activity plan sent to the Norwegian Environmental Authorities.

Cost of response
631000

Explanation of cost of response
The cost of response is the cost of the studies with emission reduction activities, (Preproject and project cost are a part of the capex), this is done without extra FTE. Thus we have calculated the cost for external consultants and the cost for preparing the report to Norwegian Environmental Authorities Cost External consultant: Monitoring program and evaluation of effect from emissions from Borregaard in the river Glomma: 0,581 MNOK Internal cost for preparing the report to Norwegian Environment Authorities: 0,05 MNOK

W4.2a

(W4.2a) Provide details of risks identified within your value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Norway	Gloma

Stage of value chain
Supply chain

Type of risk & Primary risk driver

Physical	Flooding

Primary potential impact
Increased operating costs

Company-specific description
The river Glomma is important for supply of raw materials to Borregaards site in Norway by boat. Raw materials like salt, wood, limestone, sodium hydroxide and sulphuric acid is supplied by boat to Borregaards own port, Melløs. In Norway, where Borregaard's biorefinery is located, the precipitation will increase through the whole year, and the frequency of the acute physical risk of flooding in the river Glomma will increase. (Ref: Vormoor, K., Lawrence, D., Schlichting, L., Wilson, D. & Wong, W.K. (2016) Evidence for changes in the magnitude and frequency of observed rainfall vs. snow melt driven floods in Norway Journal of Hydrology, 538, 33–48, doi:10.1016/j.jhydrol.2016.03.066). Borregaard own port at the site, Melløs, in the river Glomma, will be closed more days during the year, not only spring time where risk of flooding is higher due to snow melting in the mountains, but also in autumn due to increased precipitation. The average flow of the river Glomma is 577 cbm/sec, the port is closed when the flow increases to 1500 cbm/sec. Flooding impact the the logistic cost (operating cost) for the supply of raw materials, which increase when the port Melløs closes. Ships have to go to other ports, and we will have extra cost from unloading, handling and transportation of the goods by trucks to Borregaard site in Sarpsborg, from other ports. For some raw materials/chemicals this is not possible, and it will be risk of shortage that can result in production downtime. As a part of the contingency plant it is also possible to increase storage volume for some of the raw materials, if we know early enough that it is likely that flooding might occur. At our operation(plant for spray drying of lignin) in Germany, Karlsruhe, which is close to the river Rhine, we have experienced that the opposite phenome to flooding, drought has resulted in increased operating cost. Some of the transportation is on the river Rhine. In dry summers, like 2018, the water level was too low to enable transportation and the transportation cost increased. We expect that this will occur more frequent in the future. In our contingency plan we have identified that we can source from Borregaards other lignin plants in Europe or North America.

Timeframe
More than 6 years

Magnitude of potential impact
Low

Likelihood
About as likely as not

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
4400000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The potential financial impact is calculated from increased unloading and transportation costs at Borregaard in Sarpsborg, the main production site and the risk of flooding in the river Glomma. Costs will increase, because the Borregaard's port in the river Glomma will be closed more days during the year, not only spring time, but also in autumn. The port closes at a water flow of 1500 cbm/Sec. At the current situation the number of days closed are for the 3 last years 2.87 days in average. Extra costs for unloading ship in another port downstream the river and transportation to the site in Sarpsborg is in average 200,000 NOK per boat. We assume that number of days increases with 7 days to total of 10 days, and one boat each day in a medium term horizon. Cost calculation: 200,0000 NOK pr Boat * 7 extra days = 1,4 M NOK. Potential increased storage cost close to the plant is estimated to 3 mill NOK/year (rent of more storage capacity). The total financial impact is then: Increased unloading cost 1 mill NOK + Increased storage cost 3,4 mill NOK = 4 ,4 mill NOK Borregaard have different sources for lignin raw material in Europe and North America, so when its not possible to get raw material to the plant in Germany, it is possible to dry the lignin raw material elsewhere, so in this case we have calculated the financial impact of drought in the river Rhine as negligible.

Primary response to risk

Direct operations	Include in Business Continuity Plan

Description of response
Borregaard's primary response for mitigating the risk of increased transport cost of raw materials and chemicals due to acute physical incidents is have a business continuity plan with alternative logistic solutions, extra capacity to increase storage volumes and alternative suppliers. Example Plan/Activities: The logistic manager at Borregaard's operations in Sarpsborg, Norway is responsible for the logistics at the site and are responsible for the contingency plan for managing the impact of flooding on our direct operations from supply chain. Planning of storage volume and backup transportation solutions in correlation with the prognoses of water flow in Glomma. This information is received by The Norwegian Water Resources and Energy Directorate, they are monitoring the long term trend (weeks), and will provide Borregaard with prognosis. As alternatives other ports will be used or transportation with rail/truck.

Cost of response
500000

Explanation of cost of response
Cost calculation: The risk process and the operation of the logistics will be covered within normal operation for logistics. The management cost of handling the contingency plan is estimated to 0,5 FTE which is 500,000 NOK. Total cost: 0,5 FTE NOK 0,5 mill

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity

Resilience

Primary water-related opportunity

Increased resilience to impacts of climate change

Company-specific description & strategy to realize opportunity

Borregaards production site in Sarpsborg is a biorefinery and is located at the river Glomma, the biggest river in Norway with an average water flow of 577 m3/sec. Water is an important resource for the production, water is used for cooling, steam production and hot water production, as well as washing and transporting biomass/fiber in the biorefinery production processes. One of Borregaards strategic priorities is to increase value added from the unique biorefinery in Sarpsborg, by specialisation of product to increase value added, to have strong focus on innovation of new products and productivity efforts (currently more than 75% of revenues). Water supply to the biorefinery in necessary amounts is available, climate scenario analysis confirm that water will be abundant also in the future, thus this strategic priority will not be impacted by water scarcity in the future. From this strategy Borregaard will increase its resilience to impact from climate change. Due to the large amounts of water available, water withdrawal is sustainable without any water stress when it comes to availability and accessibility, and represents an opportunity for producing sustainable products, compared to areas in the world where water scarcity is an risk/or increasing risk due to climate change. The strategy to realize the opportunity has been to secure that the site is self-sufficient and has access to water from the river Glomma via its own water treatment facility. Most of the water used is returned to the river Glomma. Polluted water are treated. Disclosure of water related issues in the Sustainability reporting, is also a part of the strategy to realize the opportunity.

Estimated timeframe for realization

Current - up to 1 year

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

516915800

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact

The internal price for water from Borregaard's own water treatment facility is about 0,85 NOK/m3. If we should have both all the water we need from the local community the price 10,6 NOK /m3. In 2020 the water withdrawal from our own water treatment facility was 53017 megaliters/year, hence the potential financial impact is 53017000m3/year * (10,6 NOK/m3- 0,85NOK/m3)= 516915800 NOK. Europe has the highest water costs in the world and this trend is likely to continue (https://www.dailyscandinavian.com/highest-water-prices-in-the-world/). Germany and Denmark pay the highest prices for water on the Continent, at $1.78 and $1.72 per cubic meter, respectively. Rates in the United Kingdom, France, Belgium and The Netherlands were all above $1 per cubic meter of water The financial impact will probably increase in the future due to the opportunity of increased competitiveness of Borregaards products because water usage is sustainable and not a scarcity at our main operating unit, this impact has not yet been evaluated.

Type of opportunity

Products and services

Primary water-related opportunity

Sales of new products/services

Company-specific description & strategy to realize opportunity

In 2014, Borregaard decided to invest in a facility for the production of Exilva microfibrillar cellulose (MFC) at Borregaard in Sarpsborg. The investment was NOK 225 million and was finished in 2016. Worlds growing population together with climate changes gives opportunities for more sustainable crop solution and protection. One of Borregaard's strategic priorities is to develop Exilva MFC into business that can meet this opportunity, and is considered as a response to market opportunities resulting from changes in climate and needs for improved water security in water intensive industries like agriculture. As our customers get more aware of the water-related risks and look for more sustainable alternatives, this could represent a long term substantial change in opportunities for new products (EBITDA >50 MNOK). Exilva MFC can be used for pesticides, performing as a multi-functional additive in agricultural chemicals, as well as increasing formulation efficiency and reducing the impact on water in the downstream value chain. Organic solvent systems can be changed with water-based solutions. Through extensive testing, Exilva MFC has shown that it can boost the effect of many herbicides and is powerful against impermeable weeds. Unstable tank mixes and clogging of nozzles are the key challenges when trying to make the fertilizer and pesticide mixes. Borregaard has, together with a US partner, developed an additive with Exilva that overcomes these issues. Large scale field trials and regulatory registrations are currently ongoing. Exilva MFC is a completely natural product, making it safer to use and providing you with a new world of performance enhancement within agricultural chemicals. Exilva MFC is completely natural and infinitely sustainable and trough extensive testing, and the impact on the water recipients in the areas where Exilva MFC is used will be reduced. Also, using Exilva MFC in forest plantation helps retain water close to seedlings and slow down its release, which increases the humidification time of seedlings that will become industrial forests. Moreover, Exilva MFC can replace 100% of the traditional irrigation additives that are widely used during adverse weather conditions and periods of drought and, hence, plays the same role as synthetic additives that change the viscosity of water.

Estimated timeframe for realization

4 to 6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
50000000

Potential financial impact figure – maximum (currency)
100000000

Explanation of financial impact
Sales will gradually increase, but long lead times for conversion of sales prospects are expected. The financial impact is uncertain at present, but the decision to invest NOK 225 mill in a plant for 1,000 tons (dry matter) of Exilva MFC was under the assumption of minimum 15% IRR pre-tax, which means an annual EBITDA (operating profit before depreciation for Borregaard Group) above 35 mill NOK when the capacity is fully utilised. The contribution margin will increase in the short-term period (2024) due to increased sales volume. Based on two scenarios for sales volume and fixed cost, we have estimated a range for the financial impact on the annual EBITDA improvement in the end of the short-term period to NOK 50-100 mill. The fixed cost range is NOK 75 – 100 mill NOK per year. In the calculation of potential financial figure minimum, we have used the lowest expected sales volume times sales price minus the highest expected fixed cost of NOK 100 mill, which gives a positive effect on EBITDA of NOK 50 mill. For the potential financial figure maximum, we have used the highest expected sales volume times sales price minus the lowest expected fixed cost of NOK 75 mill, which gives a positive effect on EBITDA of NOK 100 mill.

W5. Facility-level water accounting

W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number
Facility 1

Facility name (optional)
Borregaard Norway

Country/Area & River basin

Norway	Gloma

Latitude
59.277403

Longitude
11.115526

Located in area with water stress
No

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
<Not Applicable>

Total water withdrawals at this facility (megaliters/year)
53017

Comparison of total withdrawals with previous reporting year
About the same

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
52240

Withdrawals from brackish surface water/seawater
0

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
438

Withdrawals from third party sources
339

Total water discharges at this facility (megaliters/year)
52842

Comparison of total discharges with previous reporting year
About the same

Discharges to fresh surface water
52713

Discharges to brackish surface water/seawater
0

Discharges to groundwater
0

Discharges to third party destinations
129

Total water consumption at this facility (megaliters/year)
175

Comparison of total consumption with previous reporting year
About the same

Please explain
Withdrawals from fresh surface water is from the river Glomma. The volume of water withdrawal has been at the same level for several years. The third party withdrawal sources' is a municipal supplier, Sarpsborg community and the third party discharge destination is the municipal waste water treatment plant, operated by Sarpsborg community. It is zero volume discharge to brackish surface water/seawater, because the Sarpsborg site has its discharge to the river Glomma, which is 12 km away from the sea. It is sufficient amount of fresh water available from the river Glomma, thus the withdrawal of ground water is zero volume(both reneweable and non-renewable considered). Water consumption is calculated from production volumes times dry matter measurements in the products. Withdrawals, discharges and consumption figures balance . Comparison of total withdrawals/discharges with previous reporting year - treshold: About the same <5%, lower/higher 5-20%, much lower/higher >20% Comparison of total consumption with previous reporting year - treshold: About the same <20%, lower/higher 20-50%, much lower/higher >50%

W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been externally verified?

Water withdrawals – total volumes

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. GRI indicator for water withdrawal, data verified: - GRI 303-3 Total water withdrawal, Borregaard Norway (facility 1) Scope: 100% coverage

Water withdrawals – volume by source

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. GRI indicator for water withdrawal, data verified: - GRI 303-3 Total water withdrawal, source river Glomma (=facility 1 in W5.1) Scope: 100% coverage

Water withdrawals – quality

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI standards. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. Scope: 100% coverage

Water discharges – total volumes

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI standard. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. GRI indicator for water discharge, data verified: - GRI 303-4 Total water discharge, Borregaard Norway(facility 1) Scope: 100% coverage.

Water discharges – volume by destination

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI standard. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. GRI indicator for water discharge, data verified: - GRI 303-4 Total water discharge, destination river Glomma (facility 1) Scope: 100% coverage.

Water discharges – volume by treatment method

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: EY (Ernst&Young) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information. - GRI standard. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. Data verified: Water accounting Borregaard Norway (facility 1). Includes volumes to wastewater treatment facilities. Scope: 100% coverage.

Water discharge quality – quality by standard effluent parameters

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI standard. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. Effluent parameters. Company specific indicators, data verified: COD, BOD, AOX, suspended solids, phosphor, nitrogen, copper (facility 1) Scope: 100% coverage.

Water discharge quality – temperature

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water consumption – total volume

% verified
76-100

What standard and methodology was used?
Verification report: "Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020" Independent third party: Ernst&Young (EY) Standards: - ISAE 3000. The engagement was conducted in accordance with the International Standard for Assurance Engagements on Assurance Engagements Other than Audits or Reviews of Historical Financial Information - GRI standard. In preparing the Sustainability reporting, Borregaard ASA applied relevant criteria from the Global Reporting Initiative (GRI) sustainability reporting standards, "Core" option. GRI indicator for water consumption, data verified: 303-5 Total water consumption, Borregaard Norway (facility 1) Scope: 100% coverage.

Water recycled/reused

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?
Yes, we have a documented water policy that is publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water Description of business impact on water Description of water-related standards for procurement Reference to international standards and widely-recognized water initiatives Company water targets and goals Commitment to align with public policy initiatives, such as the SDGs Commitments beyond regulatory compliance Commitment to water-related innovation Commitment to water stewardship and/or collective action Acknowledgement of the human right to water and sanitation Recognition of environmental linkages, for example, due to climate change	We have selected the Company-wide scope, because Borregaard has a company wide EHS and climate policy, which include the water policy (file attached). The water policy are rooted in the company's business model, corporate culture and values. The aim of the guidelines is to enhance commitment, awareness and continuous improvement in these areas and determine the company's specific procedures and practices. Water has a crucial role in Borregaard's operations, water is a vital resource for transportation, washing and cooling in our industry. Most of our operations are in areas where water is abundant, but water quality is important for the water systems and environment. Borregaard's ambition is to continuously reduce its business impact on the connected water systems and the company will report on water related issues and measures to our stakeholders. For procurement of our main raw material, wood, we have stated in our policy that our water- standard is to source FSC/PEFC forest certificated wood. In 2020, 98% of wood came from certified sources, the target for 2022 is 100% certified wood, thus water-related impact are handled. The policy has reference widely-recognized water initiatives, like the the European water frame directive (WFD). The policy says that targets and goal for water-related risk needs to be identified. Borregaard has identified both short-term and long-term targets for cuts in COD emissions in the discharge effluent to the river Glomma, which is our highest ranged water related risk. Borregaard has prioritized six of the seventeen Sustainable Development Goals (SDGs), which we commit to align to. SDG12, is selected to emphasize the responsibility for reduced impact on water from our direct operations and SDG 2 for sustainable food production, i.e less impact on water. As a signatory of the UN Global Compact's we follow recognized principles in water stewardship. In our business model innovation of new sustainable products is a key and in the policy we commit to consider water-related impact in new innovations into our long-term strategic plans. Recognition of environmental linkages due to climate change is fundamental to our business model, and we support international efforts to mitigate climate change. Borregaard recognise that clean water is of substantial importance for societies. Acknowledgement of the human right to water and sanitation is stated in the company wide Human Right policy (file attached) General guidelines for environment climate health and safety engagement - Borregaard .pdf Human Rights Policy - Borregaard.pdf

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Director on board	The Board of Directors is responsible for the decision of the overall water-related goals at Borregaard in the yearly strategical processes. A water-related decision has been to establish a cross functional team with resources from R&D and process experts from production to establish a plan to reduce the emissions to the river Glomma: Borregaard has identified both short-term and long-term activities for cuts in COD emissions. A steering committee chaired by the Chief Operating Officer of Borregaard's Sarpsborg site (Member of Executive Management Group), reviews the progress at a regular frequency and make investment decisions. The first goal of complying with the requirements in the new water permit from 2019 has been achieved. The next step involves more R&D activities in the field of sustainable water treatment solutions as well as technological improvements that will have a positive effect on emissions of organic matter to water. Borregaard has sent an action plan to the Norwegian Environmental Authorities with estimated cost, effects on COD/emissions and time to implement for each activity.
Chief Operating Officer (COO)	The Chief Operating Officer is responsible for managing and assessing water-related risks and opportunities. He is responsible for the companies main water-related challenge, the emission of organic material, COD to the river Glomma. A water-related decision has been to mitigate the risk by establishing a action plan to the to the Norwegian Environmental Authorities. To implement the plan resources have been dedicated, a task force has been established and a investment plan has been approved. Process owners are responsible for the reduction of COD within their plant. A steering committee chaired by the Plant Director (Member of Executive Management Group), review the progress at a regular frequency, are responsible for development of a long-term plan for cuts in COD. The progress is evaluated as a part of the management review process. The results from 2020 was to continue with action plan for reduction in COD and to identify capex for the long-term reduction plan.
Other C-Suite Officer	Senior Vice President, Organisation and Public Affairs, and member of the Executive Management Group is in charge of the Sustainability board at Borregaard, and responsible for corporate sustainability activities in the company. The Sustainability Board has the responsibility for assessing the Groups initiatives within sustainability including water related issues and for coordinating this work in the value chain, for presenting progress to the board and for writing Borregaard's Sustainability report. In 2020 several measures has been implemented to strengthen and develop the Groups business model from a sustainable perspective in the whole value chain. A water-related decision has been to increase the number of employees that have sustainability as their main responsibility, to increase focus on climate-and water-related issues and sustainable communication of the products, life cycle analysis of the products and increased sustainability reporting according to new requirements from stakeholders and in line with the development in the EU Green Deal regulations. To extend reporting to CDP to include reporting on forests and water is example of one decision. The number of FTE working with sustainability within the company has been increased with 2 more FTE's.

W6.2b

(W6.2b) Provide further details on the board's oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	Monitoring implementation and performance Overseeing major capital expenditures Providing employee incentives Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Setting performance objectives	The water-related Key Performance Indicators (KPI's) for the Borregaard Group are reviewed in each Board meeting.The KPI's show the Borregaard's progress against goals and targets for addressing water-related issues. In the yearly meeting, the Board decides the overall water-related goals at Borregaard, and monitors the progress towards the mid-term and long term goals. Status of implementation and performance of projects are presented to the Board for approval. The goals, progress and new investment plans are communicated externally in Borregaard's Sustainability report. Strategies, plans, policies and budgets are reviewed in some Board meetings, this also includes water-related issues within these topics.

W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)
Chief Operating Officer (COO)

Responsibility
Both assessing and managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues
Quarterly

Please explain
The Chief Operating Officer (COO) is responsible for Borregaard's operations in Sarpsborg, Norway. COO is reporting to President and CEO in Borregaard. Managing and assessing water-related risks is within his responsibility. Our highest rated water related risk , the emission of organic material (COD)from the Borregaard in Norway to the river Glomma, is within his responsibility. Emissions to water of COD has high focus in the daily operations and are monitored and reported on a daily frequency, and several operational activities, including a capex plan is identified and progress are reported monthly. The COO is a member of the Executive Management Team, and report to the Executive Management Team monthly. The KPI for controlling the risk of emission to water is the emission level of Chemical Oxygen Demand, COD. The status of the KPI is reported to the Board quarterly.

Name of the position(s) and/or committee(s)
Sustainability committee

Responsibility
Assessing water-related risks and opportunities

Frequency of reporting to the board on water-related issues
Annually

Please explain
The sustainability committee (The Sustainability Board) will address and follow up on important topics and initiate processes aimed at developing policies, actions and goals within the sustainability area, on climate, forest and water. The Board reports to the President and CEO. The member of the board represents the whole value chain of Borregaard and have relevant background and experience within sustainability aspects in Borregaard, and three of the members are also member of The Group Executive Management. SVP Organisation and Public Affairs is Chair of the Sustainability Board. The Sustainability Board will address and follow up on important topics and initiate processes aimed at developing policies, actions and goals within the sustainability area. The Stakeholder and materiality analysis for Borregaard that specifies what is important for and relevant for Borregaard and its stakeholders is updated yearly by the Sustainability Board. The Board reports to the President and CEO.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	The members of The Group Executive Management have a bonus program, as published in the company's annual report. The bonus elements are linked to the goals of the company and each member has mandatory sustainability target as one of their personal targets.The company has a share option programme with approx. 30 participants every year. Options can be allocated to leading employees who have achieved good results and where the company wants to make a long-term commitment with the employee. Sustainability/ESG performance is one of the criteria's for nominating employees for the programme. .

W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Chief Operating Officer (COO)	Improvements in waste water quality - direct operations	Plant Director of Borregaard's Sarpsborg site in Norway, member of The Group Executive Management, has a bonus linked to improvements in the waste water quality, in 2020 this bonus program gave around 50.000 NOK. The rational for giving a monetary reward for this is that waste water quality to the river Glomma is the highest rated water related risk. The emission of organic material (COD)from the Borregaard in Norway to the river Glomma, is within his responsibility. The target that released the the monetary reward was that the internal target for the site emission of COD in the waste water to the river Glomma was achieved.
Non-monetary reward	No one is entitled to these incentives	<Not Applicable>	All rewards are considered monetary incentives .

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?
Yes, trade associations

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

There is a process implemented to make sure that direct and indirect activities are consistent with Borregaards overall water strategy.

Sustainability Board (SB) is established to coordinate all the sustainability activities within the company including direct and indirect activities that influence policy and report progress to the Board of Directors. This ensures that the communications with customers, authorities and other stakeholders are consistent. If inconsistency is detected we will have dialogue with stakeholders to correct the issue. The SB is responsible for writing the yearly Sustainability report, internally the report is used to communicate the latest progress within water-related activities. EHS and Sustainability Manager has the responsibility for the process to collect water-related data at company level. The water volume and emission data are collected from all the company units/production sites. The quality of the data is checked before they are reported. The data is used as input to water-related targets, as input to LCA analysis and used in projects for prioritisation or applications for grants. The environmental product data sheets (EPD) of the product are kept updated and communicated to the sales organisation for use in customer communication. EHS and Sustainability Manager is a member of the SB and chairs the Environmental committee of The Federation of Norwegian Industries, and is a member of the CEPI Environmental Committee.

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	5-10	In the strategy for achieving long-term business plan a water-related issue of emission to water of COD from the operation at Borregaard in Norway are integrated. The long-term business objectives, is to reduce the emission of COD to the river Glomma from the production site at Borregaard in Sarpsborg. The long term goal for the river Glomma according to the European Water Frame Directive is to achieve good ecological status in 2027. Monitoring of the river shows that emission COD to Glomma from Borregaard, influence the ecological status negatively. Thus Borregaard has put this issue into its long-term business objective since 2010 and emission to water of COD has been linked to Borregaard contribution to SDG 12, responsible consumption and production Example: How emission of COD are integrated into the long-term business objective: • The company's multidisciplinary risk assessment process has identified emission of COD as a main risk. •The Stakeholder and Materiality analysis of has identified emission of COD as a material topic, and one of Borregaard main four challenges. •Responsibility's for goals and reduction plans has been identified, from 2010 to 2020 COD has been reduced with 42% •Disclosure emission data according to the GRI standard 303 water and effluents (2018). •Borregaard disclose of the status emission to its stakeholders in the Sustainability report and to CDP water.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	5-10	In the strategy for achieving long-term objectives, water-related issue of emission to water of COD from the operation at Borregaard in Norway is integrated. The strategy for R&D has been influenced: Prioritize innovations and activities that can improve the product's environmental impact, such as the water-related issue of emissions of COD to water from the discharge of effluents in the production process. The decision was taken more than 10 years ago, but the effort has gradually increased. The strategy for investment has been influenced: Borregaard has identified both short-term and long-term goals for cuts in COD emissions to the river Glomma. The first goal was to comply with the new water permit which applied from 2019. The next step involves R&D activities and exploration of new technology in the field of sustainable water treatment solutions as well as technological improvements that will have a positive effect on emissions of organic matter to water. Borregaard has submitted an action plan to the Norwegian Environmental Authorities with estimated cost, effect on COD and time to implement each activity. The decision on how this plan will be implemented was taken in 2020. The strategy for operations has been influenced: System for on-line monitoring of emission of COD, improved processes and operation supported by a certified environmental management system, ISO140001. The decision was taken more than 10 years ago, but the effort has gradually increased.
Financial planning	Yes, water-related issues are integrated	5-10	In the financial planning, water-related issue of emission to water of COD from the operation at Borregaard in Norway, is integrated. How financial planning of Capital Expenditure has been influenced: A plan to reduce the emission of COD to Glomma to a level of 30-40 % lower emission compared to today has been approved by The Board of Directors and submitted to the Norwegian Environmental Authorities with estimated cost, effect on COD and time to implement each activity. Progress in emission of COD is reported to the Board of Directors quarterly. Financial target; Capex within the annual depreciation for the company. How financial planning of indirect cost (operating cost) has been influenced: 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 COD have caused a proliferation of bacteria covering riverbed sediments close to the plant. This causes poor oxygen conditions, which has implications for the growth of the river Glomma's wild salmon stock. Due to low natural reproduction of salmon in the river, Borregaard contributed to financing a salmon cultivation facility in 2012 and we have since covered a major part of the operating costs. In addition the indirect cost in the plant has increased due to changes in recipes and washing procedures.

W7.2

(W7.2) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Row 1

Water-related CAPEX (+/- % change)

-1

Anticipated forward trend for CAPEX (+/- % change)

50

Water-related OPEX (+/- % change)

-1

Anticipated forward trend for OPEX (+/- % change)

0

Please explain

The CAPEX and OPEX data is calculated for Borregaard in Norway. We selected this scope, because this site has 94% of the water withdrawal and 95% of the water discharge of the total in Borregaard. The site has also the major part of emission of COD to the river Glomma. The CAPEX is the investment in emissions to water and other water related activities. The CAPEX was almost the same in 2019 and 2020, due to same activity level, but we have established an investment plan for reduction of emission to water, and the forward trend for the next 5 years is that the CAPEX will increase with 50%. The OPEX was almost the same in 2019 as in 2020, due to same cost for operation of for the water purification plant and the waster water treatment plant, fees for third party water treatment, cost of analysis of emissions to water and the cost of measuring impact on the river Glomma. We expect the OPEX cost to remain unchanged in the next 5 years.

W7.3

(W7.3) Does your organization use climate-related scenario analysis to inform its business strategy?

	Use of climate-related scenario analysis	Comment
Row 1	Yes	

W7.3a

(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?

Yes

W7.3b

(W7.3b) What water-related outcomes were identified from the use of climate-related scenario analysis, and what was your organization's response?

	Climate-related scenarios and models applied	Description of possible water-related outcomes	Company response to possible water-related outcomes
Row 1	RCP 2.6 IEA Sustainable Development Scenario	Transition risk: IEA In this scenario the need for renewable electrical power will increase, both for Borregaard and many other energy intensive industries. Precipitation, wind and temperature are important drivers for the electricity price, and consequently important cost factors for Borregaard in Norway. Increased precipitation will increase the electricity production from hydro power. Physical: RCP 2.6 For physical scenarios the longer time perspective is more relevant as more significant impacts are expected in long-term. Mild and rainy winters may increase the cost of harvesting of wood in the Nordic region. Big and heavy harvesting machines cannot be used because they will destroy the wet forest floor. Dry summers will also occur more frequent, this will increase the risk of fire from mechanical activities during the harvesting process. Water availability is considered from hydro power generation point of view, and will increase in the Nordic region. To achieve Borregaard's Science Based targets (SBT) for GHG emission in 2050, increased use of electricity to reduce fossil fuel for heat energy production is an important measure, thus more water represent an opportunity for increased electricity from hydropower. In areas like central/southern part of Europe, Middle East and Africa water scarcity will increase, thus development of solutions that use less water in industrial applications can represent an opportunity for Borregaard to develop new products.	The results of the scenario analysis are used in our long term strategic planning at company level to understand the business risks and opportunities from climate change. The limited the operating time for harvesting of wood to periods when the forest floor is dry enough or frozen to carry the weight of the machines or in summer when it is no risk of fire from mechanical operations, will increase the harvesting cost of wood. For Borregaard, wood will need to be supplied from areas far away or harvest at lower capacity with other methods like more light harvesting machinery. Both alternatives will give increased cost of wood in Borregaard operations. The scenario analysis shows that precipitation in the Nordic areas in Europe will increase, thus we know that electricity from hydro power will be an increasing resource in the future. Thus Borregaard have taken the strategic decision to use more electricity in the production in the plan for our SBT 2030 and 2050 targets. Many of Borregaards current and future B2B customers sell products/chemicals into water intensive industries like agriculture and mining. We consider this as an opportunity for our specialised lignin biopolymer products, and a growing market, as our customers get more aware of water scarcity as a probably climate scenario. Our response to this scenario is to innovate lignin biopolymer products that reduces the water consumption and water impact in agricultural and mining industries in those areas.

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

Yes

Please explain

At our site at Borregaard in Norway that uses 94% of the water withdrawal an internal price on water is used by your organization. We have different cost of cooling water and process water. Process water 0,97 NOK/m3 Cooling water 0,74 NOK/m3 Compared to the water we are charged from the water treatment plant operated by Sarpsborg community, our own water cost ten times less, thus we strive to use as little as possible from the external water source. The calculation of the water price pr m3 of water is done by taking the actual operating cost for the water treatment plant minus the chemical cost and divide it with the amount of water produced. For 2020 that cost was 0,74 NOK/m3 water. This is the cost for the cooling water. Then we add the cost of chemicals for treatment of the process water and divide on the total volume of process water produced, for 2020 we obtained 0,97 NOK pr/m3.

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Company-wide targets and goals Basin specific targets and/or goals	Targets are monitored at the corporate level Goals are monitored at the corporate level	The EHS and climate policy which include the water policy guides the long term goal of Borregaard for these issues. Borregaard's overall EHS and climate objective is that the company and its activities should contribute to sustainable solutions without harm to human health and the environment (including climate). A central risk management function has been established in Borregaard headed by the Chief Risk Officer (CRO), who is responsible for Borregaard's risk management model (ISO 30001) and the implementation support for this multi-disciplinary risk management process, contribute to the identification, analysis and handling of risks across business areas and disciplines. Input on water-related risks comes from using WWF water risk filter, from stakeholder dialogue, from environmental risk assessment of our operations (ISO 14001), from regulatory compliance Borregaard has a strategy period with 3 years horizon, in the strategy process goals are set. Every years there is an update of the strategy to check if adjustment is necessary. Main targets for next year are updated yearly and approved by the Board during the process of approval of the annual report and Sustainability report. The main water related target are emissions of organic material to the river Glomma, measured as chemical oxygen demand, COD. The approach to set a target for COD for the production site in Sarpsborg is to evaluate the results from the risk assessment process together with the strategy and the evaluation of the target from the last period. It is the Chief Operating Officer in Borregaard that is responsible for the target. The major focus in 2019 has been to comply with the new emission permit for COD at Borregaard's site in Sarsborg, Norway Monitoring of COD and other water related emission parameters are done one a daily basis at Borregaards site in Sarpsborg.. A monitoring program is established, and the program describes methods for analyzing, frequency for sampling, responsibility and response to unnormal results.

W8.1a

(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.

Target reference number
Target 1

Category of target
Water pollution reduction

Level
Site/facility

Primary motivation
Reduced environmental impact

Description of target
Borregaard's biorefinery in Norway generates emissions of organic compound (measured as chemical oxygen demand (COD) or biological oxygen demand (BOD)) to the river Glomma. Emissions of COD or BOD to water affect the aquatic environment in the river Glomma. Borregaard and the Norwegian Institute for Water Research (NIVA) monitor the river in accordance with the requirements and standards in EU water frame directive (WFD). This monitoring shows that emissions of easily degradable organic matter from us have caused a proliferation of bacteria covering riverbed sediments close to the plant. As a result, its ecological status is classified as poor. A new anaerobic treatment was installed in 2013, and COD was reduced to 69 ton/day from 2014. Several smaller measures has been done to reduce the emission further and now we have sent a plan to the Norwegian Environment Authorities on how the COD can be cut to a level in 2025 of 40-46 ton/day(average 43) from the level in 2014, 69 ton /day.

Quantitative metric
% reduction in concentration of pollutants

Baseline year
2014

Start year
2014

Target year
2025

% of target achieved
46

Please explain
2014 is selected as the baseline year and start year. This was the first full year with operation of the new anaerobic treatment plant at Borregaard in Norway, and a new permit for emission of COD from the Norwegian Environment Authorities was given. In 2014 the emission of COD was 69 ton/day, and in compliance with the new permit. The emission in 2020 was 57 ton/day. The target is to reduce the emission to an average of 43 ton/day in 2025. Calculation of % target achieved in 2020: (57-69/43-69)*100 = 46% The major focus in 2020 has been to map and evaluate all activities or project in the different plant that can be done to reduce COD further. The projects with highest impact has been prioritized and a capex plan for the next five years has been approved and sent to the Norwegian Environment authorities. Measurements of the reduction in COD and improvements in the river will be conducted.

W8.1b

(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.

Goal
Other, please specify (European water frame directive has a target of good ecological status in the river Glomma in 2027.)

Level
Site/facility

Motivation
Reduced environmental impact

Description of goal
Borregaard's biorefinery in Norway generates emissions of organic compound (measured as chemical oxygen demand (COD) or biological oxygen demand (BOD)) to the river Glomma. The effluent discharge of COD, has negative impact on the ecological status in the river Glomma. The goal is to achieve good ecological status in river Glomma in 2027, as defined by the European Water frame Directive(WFD), now the status is classified as poor. The WFD requires all European surface water – lakes, rivers, transitional and coastal water, and groundwater – to reach "good status" by 2027, thus this is a common goal for Europe. It is likely that there will be surface water that are not able to reach the goal in 2027 due to technical and/or economic reasons. The WDF was taken into the Norwegian (EEA country) from 01.01.2007. Borregaard are considering this more as a goal than a target because it is not known how much the emission of COD needs to be reduced and if its technical and/or economic possible to reach the goal of good ecological status in the river Glomma.

Baseline year
2014

Start year
2014

End year
2027

Progress
2014 is selected as the baseline year and start year. This was the first full year with operation of the new anaerobic treatment plant at Borregaard in Norway, and a new permit for emission of COD from the Norwegian Environment Authorities was given. 2027 is selected as end year because this is the goal for achievement of good ecological status for this river basin according to EU WFD and the Norwegian Environment Authorities. As a requirement in our emission permit (from 2014), the Norwegian Institute for Water Research (NIVA) does yearly monitoring of the river Glomma down streams from Borregaard in accordance with the requirements and standards in the WFD and to check the progress towards the long term goal of good ecological status for Glomma. The most recent analysis of the progress show that the conditions in the river has improved which shows that the reductions in emissions COD has had some effect in certain areas of Glomma downstream from Borregaard. The results/progress are reported to the Norwegian Environment Agency yearly. The progress is also reported at company level and are an input to our risk management process. In 2020 this resulted in that a investment plan for further progress was made.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?
Yes

W9.1a

(W9.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W1 Current state	W1.2b: - Water withdrawals, total volumes Borregaard ASA - Water discharges, total volumes Borregaard ASA - Water consumption, total volumes Borregaard ASA	ISAE 3000	"Independent accountant's assurance report on Borregaard ASA's Sustainability reporting for 2020." Ernst&Young (EY) has undertaken a limited assurance engagement of the Borregaard ASA's Sustainability reporting for the period from 1 January 2020 to 31 December 2020. This comprise a review of Borregaard ASA's 14 most material sustainability topics, presented in the annual report and is shown in the company's overview of reporting on GRI indicators (as shown in the document "GRI Content Index Borregaard Group 2020", available at https://www.borregaard.com/sustainability/sustainability-documentation/.) GRI indicators for water and effluents, data verified: GRI 303-3 Total water withdrawal GRI 303-4 Total water discharge GRI 303-5 Total water consumption

W10. Sign off

W-FI

(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

W10.1

(W10.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	President and Chief Executive Officer, CEO, of Borregaard	Chief Executive Officer (CEO)

W10.2

(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].

Yes

SW. Supply chain module

SW0.1

(SW0.1) What is your organization's annual revenue for the reporting period?

	Annual revenue
Row 1	5328000000

SW0.2

(SW0.2) Do you have an ISIN for your organization that you are willing to share with CDP?

Yes

SW0.2a

(SW0.2a) Please share your ISIN in the table below.

	ISIN country code	ISIN numeric identifier (including single check digit)
Row 1	NO	0011009029

SW1.1

(SW1.1) Could any of your facilities reported in W5.1 have an impact on a requesting CDP supply chain member?

SW1.2

(SW1.2) Are you able to provide geolocation data for your facilities?

	Are you able to provide geolocation data for your facilities?	Comment
Row 1	Yes, for all facilities	

SW1.2a

(SW1.2a) Please provide all available geolocation data for your facilities.

Identifier	Latitude	Longitude	Comment
Borregaard UK	53.431999	-2.518186	
Lignotech Ibérica	43.348202	-4.046235	
Borregaard Czech	49.717969	18.294605	
Borregaard Deutschland	49.04618	8.3127	
Borregaard USA	44.89155	-89.623801	
Lignotech Florida	30.660181	-81.475165	
Borregaard Norway	59.277403	11.115526	

SW2.1

(SW2.1) Please propose any mutually beneficial water-related projects you could collaborate on with specific CDP supply chain members.

SW2.2

(SW2.2) Have any water projects been implemented due to CDP supply chain member engagement?

SW3.1

(SW3.1) Provide any available water intensity values for your organization's products or services.

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain questions?
I am submitting my response	Investors Customers	Public	Yes, I will submit the Supply Chain questions now

Please confirm below

I have read and accept the applicable Terms