

W0. Introduction

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W0.1

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

LyondellBasell is a leader in the global chemical industry creating solutions for everyday sustainable living. Through advanced technology and focused investments, we are enabling a circular and low carbon economy. Across all we do, we aim to unlock value for our customers, investors and society. We have the potential—and responsibility—to use our scale and reach to make a positive impact across our value chains. That’s why we are working to deliver meaningful progress to address some of the world’s most pressing challenges such as helping end plastic waste in the environment, taking climate action and supporting a thriving society for our employees, the communities where we operate and for the people who depend on our products.

LyondellBasell produces materials and products that are key to advancing solutions to modern challenges like enhancing food safety through lightweight and flexible packaging, protecting the purity of water supplies through stronger and more versatile pipes, improving the safety, comfort, and fuel efficiency of many of the cars and trucks on the road, and ensuring the safe and effective functionality of electronics and appliances.

We sell products into more than 100 countries and are the world’s largest producer of polypropylene compounds. We participate globally across the petrochemical value chain and are an industry leader in many of our product lines. Our chemicals businesses consist primarily of large processing plants that convert liquid and gaseous hydrocarbon feedstocks into polymer resins and other chemicals.

Our customers use our polymers and chemicals to manufacture a wide range of products that people use in their everyday lives, including food packaging, home furnishings, automotive components, paints and coatings. Our refining business consists of our Houston refinery, which processes crude oil into refined products such as gasoline, diesel and jet fuel. We also develop and license chemical and polyolefin process technologies and manufacture and sell polyolefin catalysts.

W-CH0.1a

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

- Bulk organic chemicals
- Bulk inorganic chemicals
- Specialty organic chemicals

W0.2

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**(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 2022	December 31 2022

W0.3

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**(W0.3) Select the countries/areas in which you operate.**

- Australia
- Belgium
- Brazil
- China
- France
- Germany
- India
- Indonesia
- Italy
- Malaysia
- Mexico
- Netherlands
- Poland
- Spain
- Sweden
- Thailand
- Turkey
- United Kingdom of Great Britain and Northern Ireland
- United States of America

W0.4

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

USD

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

W0.7

(W0.7) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, an ISIN code	NL0009434992

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	Important	<p>Water is an essential resource for our operations. We use water in operations (primarily cooling towers and steam production), so the water must be of good quality to maintain the integrity of our equipment and systems at our plants, and we also require potable water for drinking and sanitary use at our sites and offices.</p> <p>Many of our manufacturing sites reuse water to reduce the amount of groundwater and freshwater withdrawn. For example, the majority of our large sites use recirculating water systems for cooling.</p> <p>The World Resources Institute (WRI) Aqueduct Tool (Aqueduct) was chosen for assessment due to its wide acceptance and alignment with CDP, GRI, UN Global Compact etc. and seen as the best tool to measure and understand our water related risks. According to Aqueduct, over 75% of our sites are classified as low and low-medium overall water risk, aggregated and weighted in accordance with the tool's chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world are in India, Indonesia, and China, and comprised less than 0.06% of our estimated total water consumption in 2022.</p> <p>Indirect water use is important to our operations. Importance varies by sector, since some sectors rely on supplied materials that can be freshwater intensive, while other sectors do not. Indirect water uses vary as well. Much of the water use is from extraction or processing of raw materials and further processing of materials into final products.</p> <p>In the future, water use can be expected to become more important for regions LyondellBasell operates in which are water stressed or considered vulnerable to water use restrictions. LyondellBasell plans to assess these risks further within the next 2 years.</p>
Sufficient amounts of recycled, brackish and/or produced water available for use	Not very important	Not very important	<p>Two of our sites withdraw seawater for cooling and discharge the same amount.</p> <p>The two sites represent only a small percentage (&lt; 5%) of total enterprise-wide production of our products. Therefore direct use of sea water is not considered important at the enterprise level.</p> <p>Use of "low quality water for which the source can be easily substituted" (CDP, 2022 Water Security Full Reporting Guidance, page 21) is considered by LyondellBasell to be not very important since we primarily rely on good quality water for production and expect indirect uses to have similar needs.</p>

W1.2

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

	% of sites/facilities/operations	Frequency of measurement	Method of measurement	Please explain
Water withdrawals – total volumes	100%	Yearly	Water withdrawals are measured at the sites, typically by metering, either directly on site or via a municipal or local water supplier. Meters provide continuous, cumulative quantity output. Data is collected from meters by various methods such as direct manual readings or electronic means.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.

	% of sites/facilities/operations	Frequency of measurement	Method of measurement	Please explain
Water withdrawals – volumes by source	100%	Yearly	We track water withdrawals by the following intake sources: freshwater, groundwater, brackish/seawater, and intake from third party sources.  Water withdrawals are measured at the sites, typically by metering, either directly on site or via a municipal or local water supplier. Meters provide continuous, cumulative quantity output. Data is collected from meters by various methods such as direct manual readings or electronic means.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.
Entrained water associated with your metals & mining and/or coal sector activities - total volumes [only metals and mining and coal sectors]	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Water withdrawals quality	76-99	Yearly	We measure and monitor withdrawal water quality as required by local regulations for potable water supply, as applicable, and also to assure suitability for specific industrial water uses. We confirm water supplies delivered from municipalities or other third party suppliers are monitored for quality before distribution to our sites.  Withdrawal quality is typically analyzed using locally approved test methods.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually. Our Operational Excellence systems support ongoing compliance with withdrawal water quality requirements.
Water discharges – total volumes	100%	Yearly	Water discharges are measured at the sites, either directly on site or via a municipality. Measurement methods include frequent gauging of the water levels within discharge structures and metering. Meters provide continuous, cumulative quantity output. Volume data is calculated using water level data or collected from meters by various methods. In some cases, municipalities choose to estimate discharge volumes based on the volume of water supplied to their customers.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.
Water discharges – volumes by destination	100%	Yearly	We track water discharge by the following destinations: fresh surface water, groundwater, onsite treatment, seawater/brackish water, and other destinations. Measurement methods include frequent gauging of the water levels within discharge structures and metering. Volume data is calculated using water level data or collected from meters by various methods. In some cases, municipalities choose to estimate discharge volumes based on the volume of water supplied to their customers.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.
Water discharges – volumes by treatment method	76-99	Yearly	LyondellBasell wastewaters are treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewater discharges are sent directly to a 3rd party facility for treatment.  Some water is used for cooling but does not come into contact with production activity. Therefore, no treatment is required for these streams prior to discharge.  Measurement methods include frequent gauging of the water levels within discharge structures.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.  We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence system supports ongoing compliance. Operational Excellence is the management system we use to deliver safety, environmental responsibility and reliability in everything we do. It sets out clear requirements for how we work, includes explicit requirements for people, process and product safety, and applies to our employees and contractors.
Water discharge quality – by standard effluent parameters	100%	Yearly	Where applicable, our sites monitor effluent conditions, and report on water treatment, monitoring, and pollution prevention, at a frequency required by the jurisdiction. For situations where our water is delivered to a third party, we confirm those entities perform water quality testing before discharging their treated water. Potential wastewater pollutants are identified and evaluated at the site-level. Discharge quality is typically analyzed using locally approved test methods.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.  LyondellBasell requires sites that analyze for Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) for wastewater discharges to a receiving water body provide the weighted-average results for these parameters annually.  We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence system supports ongoing compliance.
Water discharge quality – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)	26-50	Yearly	Where applicable, our sites monitor effluent conditions, including nitrates, phosphates, pesticides, at a frequency required by the jurisdiction. We ask sites to list parameters monitored. The percentage entered represents the averaged proportion of our sites that reported nitrates, phosphates, and pesticides as monitored parameters.  Discharge quality is typically analyzed using locally approved test methods.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.  We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence system supports ongoing compliance.
Water discharge quality – temperature	51-75	Yearly	Where applicable, our sites monitor effluent conditions, including temperature, maintain and monitor pollution prevention measures, at a frequency required by the jurisdiction. We ask sites to list parameters monitored. The percentage entered represents the proportion of our sites that reported temperature as a monitored parameter. Discharge quality is typically analyzed using locally approved test methods.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually.  We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence systems support ongoing compliance with water discharge quality requirements.
Water consumption – total volume	100%	Yearly	LyondellBasell calculates total water consumption volume based on the annual site estimates of water withdrawals and water discharges.  Water withdrawals are measured at the sites, typically by metering or via a municipal or local water supplier.  Measurement methods for water discharges include frequent gauging of the water levels within structures and metering. In some cases, municipalities choose to estimate discharge volumes based on the volume of water supplied to their customers.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell calculates and reports this data annually.

	% of sites/facilities/operations	Frequency of measurement	Method of measurement	Please explain
Water recycled/reused	51-75	Yearly	Some sites are required by permit or other mechanism to measure and monitor recycled water use, such as for use in cooling water systems. In remaining cases, sites estimate the volumes based on assumptions about cycles, pump curve data, or other reasonable means to estimate.	We recycle our supply of water, when feasible, to limit the amount we draw from regional supplies. LyondellBasell collects site-specific estimates of recycled/reused water on an annual basis.
The provision of fully-functioning, safely managed WASH services to all workers	76-99	Yearly	Water withdrawals for potable use are measured at the sites, typically by metering, either directly on site or via a municipal or local water supplier.  We measure and monitor withdrawal water quality as required by local regulations for potable water supply. We confirm water supplies delivered from municipalities or other third-party suppliers are monitored for quality before distribution to our sites.  Withdrawal quality is typically analyzed using locally approved test methods.	This water aspect is relevant to our operations. At the enterprise level, LyondellBasell collects and reports this data annually. Our Operational Excellence systems support ongoing compliance with WASH services requirements.

## W1.2b

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

	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Please explain
Total withdrawals	271550	About the same	Increase/decrease in business activity	About the same	Increase/decrease in business activity	2022 withdrawals were about the same as 2021 total withdrawals of 270,679 megaliters*. The variation between years can be attributed to normal fluctuations in global production. We anticipate future withdrawals to be about the same as current year withdrawals.  * 2021 withdrawal data includes a correction from the volume reported in the prior CDP-Water questionnaire.
Total discharges	161034	About the same	Increase/decrease in business activity	About the same	Increase/decrease in business activity	2022 discharges were about the same as the 2021 total discharges of 164,878 megaliters*. The variation between years can be attributed to normal fluctuations in global production. We anticipate future discharges to be about the same as current year discharges.  * 2021 discharge data includes a correction from the volume reported in the prior CDP-Water questionnaire.
Total consumption	110515	About the same	Increase/decrease in business activity	About the same	Increase/decrease in business activity	LyondellBasell calculates total consumption as the difference in withdrawals and discharges. Consumption was about the same in 2022 compared to 105,801 megaliters* in 2021. The variation between years can be attributed to normal fluctuations in global production. We anticipate future consumption to be about the same as current year consumption.  * 2021 consumption data includes a correction from the volume reported in the prior CDP-Water questionnaire, due to corrected water withdrawal data. The corrected value was reported in our 2022 Sustainability Report.

## W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress, provide the proportion, how it compares with the previous reporting year, and how it is forecasted to change.

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Identification tool	Please explain
Row 1	Yes	Less than 1%	About the same	Increase/decrease in business activity	About the same	Increase/decrease in business activity	WRI Aqueduct	In 2020, we conducted a baseline water risk assessment of our manufacturing sites using the World Resources Institute (WRI) Aqueduct Water Risk Atlas tool. In 2022, we applied the 3.0 version of the tool, which included updated data and hydrological modeling. According to Aqueduct, the majority of our sites are classified as low overall water risk, aggregated and weighted in accordance with the tool's chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world comprised less than 0.06% of our estimated total water consumption in 2022.  Also in 2022, we engaged a third party expert to complete a water use and risk assessment as a supplement to the Aqueduct assessment. The assessment focused on our large manufacturing facilities encompassing over 98% of our global water consumption, based on 2022 estimates. None of these sites were identified as high or extremely high overall risk in the Aqueduct assessment. Results of the assessment will be used to help guide possible watershed-specific targets, approaches and improvements.

## W1.2h

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	141616	About the same	Increase/decrease in business activity	Fresh surface water withdrawals made up 47.6% of our 2022 water withdrawals across the enterprise. Surface water withdrawal was about the same in 2022 compared to 144,940 megaliters withdrawn in 2021. The variation between years can be attributed to normal fluctuations in global production. We anticipate future withdrawals from fresh surface water to be about the same as current year withdrawals.
Brackish surface water/Seawater	Relevant	44415	About the same	Increase/decrease in business activity	Brackish surface and sea water made up 23.8% of our 2022 water withdrawals across the enterprise, and were associated with two manufacturing sites. Brackish surface and sea water withdrawals were about the same in 2022 as in 2021 brackish / sea water withdrawal of 41,491 megaliters*. The variation between years can be attributed to normal fluctuations in production. We anticipate future withdrawals to be about the same as current year withdrawals.  * 2021 brackish/seawater intake data includes a correction from the volume reported in the prior CDP-Water questionnaire.
Groundwater – renewable	Relevant	23234	About the same	Increase/decrease in business activity	Renewable groundwater withdrawals made up 7.8% of our 2022 water withdrawals. Renewable groundwater withdrawals in 2022 were about the same as the 2021 total renewable groundwater withdrawal of 24,261 megaliters. The variation between years can be attributed to normal fluctuations in global production. We anticipate future withdrawals to be about the same as current year.
Groundwater – non-renewable	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	LyondellBasell did not identify any of its existing groundwater withdrawals as non-renewable. Reviews of the classification of groundwater sources were completed by local site Environmental specialists for applicable sites and included inquiry with local authorities in some cases. We do not anticipate future changes to this initial assessment.
Produced/Entrained water	Relevant	210	About the same	Increase/decrease in business activity	2022 produced water withdrawals were about 12% lower than the 2021 total produced water withdrawal of 240, primarily due to a temporary shutdown of our Maasvlakte site. We anticipate future withdrawals to be about the same as 2021.  LyondellBasell reports produced water withdrawals at two sites. Reviews of the classification of sources as produced/entrained water were completed by local site Environmental specialists and entries for this category will be reviewed for alignment in future data request cycles.
Third party sources	Relevant	62075	About the same	Increase/decrease in business activity	LyondellBasell received about the same amount of water from third party sources in 2022 as in 2021 (59,747 megaliters in 2021, based on adjusted reporting). The variation between years can be attributed to normal fluctuations in global production.  This category of CDP-Water withdrawal by third party source includes water categorized as "Other Water" in our 2022 Sustainability Report, since waters in the "Other Water" category also originate from third party sources.

W1.2i

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water	Relevant	37967	About the same	Increase/decrease in business activity	Fresh surface water discharge makes up about 20% of our total water discharge across the enterprise.  Lyondell discharged about the same amount to freshwater surfaces in 2022 as compared to prior years. 2021 discharge was slightly higher (45,354 megaliters)*. The variation between years can be attributed to normal fluctuations in production. We anticipate future discharges to fresh surface water at the enterprise level to be about the same as current year discharges.  *2021 fresh surface water data includes a corrected destination category for discharges at one of our sites.
Brackish surface water/seawater	Relevant	54259	About the same	Increase/decrease in business activity	LyondellBasell discharged about the same to seawater sources in 2022 (compared with 45,809 megaliters in 2021*). The variation between years can be attributed to normal fluctuations in global production. We anticipate future discharges to be about the same as current year discharges.  * 2021 brackish water data includes a corrected destination category for discharges at one of our sites as well a correction in volume from the prior CDP-water questionnaire.
Groundwater	Relevant	132	About the same	Increase/decrease in business activity	LyondellBasell water volume discharged to groundwater in 2022 was about the same as 2021 (137 megaliters). The variation between years can be attributed to normal fluctuations in production. We anticipate future discharges to groundwater to be about the same as current year discharges at that site.
Third-party destinations	Relevant	68676	About the same	Increase/decrease in business activity	LyondellBasell discharged about 7% less water to third-party sources in 2022 compared with 73,578 megaliters in 2021, primarily attributable to a planned outage which decreased production at one of our larger sites.  We anticipate future discharges at the enterprise level to be about the same as current year discharges.  * 2021 discharge data includes a correction from the volume reported in the prior CDP-Water questionnaire. The corrected value was reported in our 2022 Sustainability Report.

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	Primary reason for comparison with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Relevant	23786	This is our first year of measurement	Other, please specify (First year to measure this data at the enterprise level)	1-10	<p>LyondellBasell wastewaters are typically treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewaters are discharged directly to a publicly-owned treatment works (POTW) facility for treatment.</p> <p>We require LyondellBasell-operated sites to apply our Operational Excellence standards including requirements to appropriately select and modify water treatment methods. Sites must also comply with local regulatory requirements regarding water discharge, and apply the level of treatment necessary to reliably meet effluent discharge requirements. Water treatment at a tertiary level is typically applied to complex wastewater streams.</p> <p>Sites track and monitor treatment systems and maintain treatment effectiveness records as necessary based on local requirements. This is the first year of tracking water discharge volume by treatment method at the enterprise level.</p>
Secondary treatment	Relevant	33601	This is our first year of measurement	Other, please specify (First year to measure this data at the enterprise level. )	11-20	<p>LyondellBasell wastewaters are typically treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewaters are discharged directly to a publicly-owned treatment works (POTW) facility for treatment.</p> <p>We require LyondellBasell-operated sites to apply our Operational Excellence standards including requirements to appropriately select and modify water treatment methods. Sites must also comply with local regulatory requirements regarding water discharge, and apply the level of treatment necessary to reliably meet effluent discharge requirements. Water treatment at a secondary level is typically applied to moderately complex wastewater streams.</p> <p>Sites track and monitor treatment systems and maintain treatment effectiveness records as necessary based on local requirements. This is the first year of tracking water discharge volume by treatment method at the enterprise level.</p>
Primary treatment only	Relevant	7928	This is our first year of measurement	Other, please specify (First year to measure this data at the enterprise level. )	11-20	<p>LyondellBasell wastewaters are typically treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewaters are discharged directly to a publicly-owned treatment works (POTW) facility for treatment. Water treatment at a primary level is typically applied to simple wastewater streams.</p> <p>We require LyondellBasell-operated sites to apply our Operational Excellence standards including requirements to appropriately select and modify water treatment methods.</p> <p>Sites must also comply with local regulatory requirements regarding water discharge, and apply the level of treatment necessary to reliably meet effluent discharge requirements. Sites track and monitor treatment systems and maintain treatment effectiveness records as necessary based on local requirements. This is the first year of tracking water discharge volume by treatment method at the enterprise level.</p>
Discharge to the natural environment without treatment	Relevant	43745	This is our first year of measurement	Other, please specify (First year to measure this data at the enterprise level. )	1-10	<p>LyondellBasell wastewaters are typically treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewaters are discharged directly to a publicly-owned treatment works (POTW) facility for treatment. This category represents water that is used for cooling but does not come into contact with production activity. Therefore, no treatment is required for these streams prior to discharge. We require LyondellBasell-operated sites to apply our Operational Excellence standards including requirements to appropriately select and modify water treatment methods.</p> <p>Sites must also comply with local regulatory requirements regarding water discharge, and apply the level of treatment necessary to reliably meet effluent discharge requirements. Sites track and monitor treatment systems and maintain treatment effectiveness records as necessary based on local requirements. This is the first year of tracking water discharge volume by treatment method at the enterprise level.</p>
Discharge to a third party without treatment	Relevant	51974	This is our first year of measurement	Other, please specify (First year to measure this data at the enterprise level. )	51-60	<p>LyondellBasell wastewaters are typically treated via one or more biological, physical, or chemical treatment methods before being discharged, or wastewaters are discharged directly to a publicly-owned treatment works (POTW) facility for treatment. Some of our sites direct wastewater to a third party for treatment. Third party treatment facilities are obligated to meet local requirements regarding water treatment and discharge. Treatment by the third party includes the level required by those local requirements, often to a tertiary level of treatment. Sites track and monitor wastewater as obligated by the third party and maintain compliance records based on local requirements.</p> <p>We require LyondellBasell-operated sites to apply our Operational Excellence standards including requirements to appropriately select and modify water treatment methods.</p> <p>Sites must also comply with local regulatory requirements regarding water discharge, and apply the level of treatment necessary to reliably meet effluent discharge requirements. Sites track and monitor treatment systems and maintain treatment effectiveness records as necessary based on local requirements. This is the first year of tracking water discharge volume by treatment method at the enterprise level.</p>
Other	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>	LyondellBasell does not have another treatment method to disclose.

W1.2k

**(W1.2k) Provide details of your organization's emissions of nitrates, phosphates, pesticides, and other priority substances to water in the reporting year.**

	Emissions to water in the reporting year (metric tonnes)	Category(ies) of substances included	List the specific substances included	Please explain
Row 1	0	Nitrates Phosphates Pesticides	<Not Applicable>	This water aspect is relevant to our operations. At the enterprise level, we ask sites to list parameters monitored, including for nitrates, phosphates, and pesticides.  Within the next two years we plan to collect and report nitrate, phosphate, and pesticide emission data.

**W1.3**

**(W1.3) Provide a figure for your organization's total water withdrawal efficiency.**

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1	5045100000	297800	169412.35728677	Our 2022 water withdrawal efficiency calculation was 10% higher in 2022 than in 2021. We anticipate future withdrawals at the enterprise level to be about the same as current year withdrawals.

**W-CH1.3**

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

No, and we have no plans to do so in the next two years

**W1.4**

**(W1.4) Do any of your products contain substances classified as hazardous by a regulatory authority?**

	Products contain hazardous substances	Comment
Row 1	Yes	<Not Applicable>

**W1.4a**

**(W1.4a) What percentage of your company's revenue is associated with products containing substances classified as hazardous by a regulatory authority?**

Regulatory classification of hazardous substances	% of revenue associated with products containing substances in this list	Please explain
Candidate List of Substances of Very High Concern for Authorisation above 0.1% by weight (EU Regulation)	Less than 10%	Based on 2022 sales, less than 10% by revenue, contained substances on the Candidate List of substances of very high concern (SVHC) for Authorization above 0.1% by weight, under EU regulation. These products were placed on the market almost exclusively for Intermediate and Professional uses (> 99.9% by revenue).  This estimate is based on candidate list downloaded July 3rd, 2023. Absence was determined either through (i) non-use of the substance, (ii) mass balance calculation, or (iii) specific testing where applicable.

**W1.5**

**(W1.5) Do you engage with your value chain on water-related issues?**

	Engagement	Primary reason for no engagement	Please explain
Suppliers	Yes	<Not Applicable>	<Not Applicable>
Other value chain partners (e.g., customers)	No	Important but not an immediate business priority	To help our carriers, distributors and customers maintain high safety and environmental standards, we provide technical assistance, training and logistics support as well as support related to environmental issues.

**W1.5a**

**(W1.5a) Do you assess your suppliers according to their impact on water security?**

**Row 1**

**Assessment of supplier impact**

No, we do not assess the impact of our suppliers and have no plans to do so within the next two years

**Considered in assessment**

<Not Applicable>

**Number of suppliers identified as having a substantive impact**

<Not Applicable>

**% of total suppliers identified as having a substantive impact**

<Not Applicable>

**Please explain**

Sustainability is an important element of our procurement strategy and is incorporated in our supplier relationship management processes. As a responsible business, we expect our suppliers to comply with applicable laws and internationally recognized standards, conduct business ethically, including assessing their potential for water-related impacts, and share the principles set out in our Supplier Code of Conduct.

To further our goal to assess our key suppliers using sustainability performance criteria, we utilized EcoVadis assessments and joined Together for Sustainability (TfS). EcoVadis is a globally recognized platform that provides corporate social responsibility monitoring and ratings used by companies to help better understand how their suppliers measure up. It also provides suggestions for improvement in the form of corrective action plans.

**W1.5b**

**(W1.5b) Do your suppliers have to meet water-related requirements as part of your organization's purchasing process?**

	Suppliers have to meet specific water-related requirements	Comment
Row 1	Yes, water-related requirements are included in our supplier contracts	<Not Applicable>

**W1.5c**

**(W1.5c) Provide details of the water-related requirements that suppliers have to meet as part of your organization's purchasing process, and the compliance measures in place.**

**Water-related requirement**

Reporting against a sustainability index with water-related factors (e.g., DJSI, CDP Water Security questionnaire, etc.)

**% of suppliers with a substantive impact required to comply with this water-related requirement**

<Not Applicable>

**% of suppliers with a substantive impact in compliance with this water-related requirement**

<Not Applicable>

**Mechanisms for monitoring compliance with this water-related requirement**

Supplier scorecard or rating

**Response to supplier non-compliance with this water-related requirement**

Retain and engage

**Comment**

To further our goal to assess our key suppliers using sustainability performance criteria, we utilized EcoVadis assessments and joined Together for Sustainability (TfS). EcoVadis is a globally recognized platform that provides corporate monitoring and ratings used by companies to help better understand how their suppliers measure up. TfS is a flagship initiative launched by companies in our industry that helps to drive sustainability in our supply chain through a shared infrastructure. Participating companies also share best practices to drive continuous improvement. We set a target to assess 470 suppliers globally in 2022. We exceeded our plan and achieved 140% of our 2022 supplier assessment target. A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.

**W1.5d**



**(W1.5d) Provide details of any other water-related supplier engagement activity.**

**Type of engagement**

Information collection

**Details of engagement**

Collect water quantity information at least annually from suppliers (e.g., withdrawal and discharge volumes)

Collect water quality information at least annually from suppliers (e.g., discharge quality, pollution incidents, hazardous substances)

**% of suppliers by number**

Unknown

**% of suppliers with a substantive impact**

<Not Applicable>

**Rationale for your engagement**

Sustainability is an important element of our procurement strategy and is incorporated in our supplier relationship management processes. As a responsible business, we expect our suppliers to comply with applicable laws and internationally recognized standards, conduct business ethically and share the principles set out in our Supplier Code of Conduct.

To further our goal to assess our key suppliers using sustainability performance criteria, we utilized EcoVadis assessments and joined Together for Sustainability (TfS). EcoVadis is a globally recognized platform that provides corporate social responsibility monitoring and ratings used by companies to help better understand how their suppliers measure up. It also provides suggestions for improvement in the form of corrective action plans.

TfS is a flagship initiative launched by companies in our industry that helps to drive sustainability in our supply chain through a shared infrastructure. Participating companies also share best practices to drive continuous improvement. We set a target to assess 470 suppliers globally in 2022. We exceeded our plan and achieved 140% of our 2022 supplier assessment target. A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.

**Impact of the engagement and measures of success**

We set a target to assess 470 suppliers globally in 2022. We exceeded our plan and achieved 140% of our 2022 supplier assessment target.

**Comment**

A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.

**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?**

	Water-related regulatory violations	Fines, enforcement orders, and/or other penalties	Comment
Row 1	Yes	Fines, but none that are considered as significant Enforcement orders or other penalties but none that are considered as significant	We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence system supports ongoing compliance. Potential wastewater pollutants are identified and evaluated at the site-level, and we maintain appropriate treatment and monitoring. We also maintain and comply with permits issued by local authorities and third party treatment entities.  In 2022, we were issued a fine for prior period instances of non-compliance with water permits at one of our sites. The fine amount was less than 10,000 USD.

**W2.2a**

**(W2.2a) Provide the total number and financial value of all water-related fines.**

**Row 1**

**Total number of fines**

1

**Total value of fines**

7095

**% of total facilities/operations associated**

1.1

**Number of fines compared to previous reporting year**

About the same

**Comment**

In 2022, LyondellBasell paid a fine and fee associated with permit exceedances identified during a record review at its La Porte facility.

**W3. Procedures**

**W3.1**

**(W3.1) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?**

	Identification and classification of potential water pollutants	How potential water pollutants are identified and classified	Please explain
Row 1	Yes, we identify and classify our potential water pollutants	<p>The LyondellBasell HSE&amp;S policy states we conduct "...the systematic identification of risks...consistent with our Operational Excellence (OE) program." The OE program is our management system approach. It includes an Incident Reporting Standard, which requires sites to report any incidents of water pollution, exceedances of discharge limits, deviations from requirements of permits, or from regulatory obligations. The OE program also includes an Environmental Management System Standard, which requires sites to establish, document, communicate and monitor pollution prevention and resource optimization objectives to achieve compliance through science based risk management of environmental releases.</p> <p>Our management system is consistent with ISO 14001. Most of our sites are ISO 14001 certified and/or participate in the US chemical industry Responsible Care program. We also identify potential pollutants to ensure compliance with permitting and/or pre-treatment requirements.</p> <p>Our sites' primary potential wastewater pollutants are 'conventional pollutants', as defined in US Clean Water Act section 304(a)(4) and Federal Register § 401.16.</p> <p>Where applicable, our sites monitor effluent conditions, operate, maintain and monitor pollution prevention measures, investigate and take corrective actions for any excursions, and report on water treatment, monitoring, and pollution prevention, at a frequency required by the jurisdiction, but no less frequent than annually.</p>	<Not Applicable>

**W3.1a**

**(W3.1a) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.**

**Water pollutant category**

Other nutrients and oxygen demanding pollutants

**Description of water pollutant and potential impacts**

LyondellBasell refers to the definition of conventional pollutants and their potential impacts in US Clean Water Act section 304(a)(4), Federal Register § 401.16. and other specific references listed below.

BOD: "Certain environmental stresses can lessen the amount of dissolved oxygen in a water body, resulting in stresses on the local aquatic life"

**Value chain stage**

Direct operations

**Actions and procedures to minimize adverse impacts**

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience  
 Provision of best practice instructions on product use  
 Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

**Please explain**

Infrastructure and Storage: We manage the risks of release for materials that cause BOD through reducing the quantity of pollutants that cause BOD, by providing appropriate containment, by specifying correct handling, storage, and treatment, and by limiting the quantity of such materials from entering wastewater conveyance systems. Our Incident Reporting Standard requires investigations into the root causes and corrective actions for any exceedances of permit or regulatory limits. General equipment integrity is managed through a risk-based inspection and repair program, informed by learnings from past investigations.

Instructions on Product Use: Compliance with applicable product safety data informs protective actions. For example, we refer to Safety Data Sheets for recommended storage and handling instructions.

Sector-specific Processes: Most of our sites are ISO 14001 certified or participate in the Responsible Care program. We also identify pollutants to ensure compliance with permitting requirements and/or applicable pre-treatment regulations. LYB's HSE&S policy states LYB conducts "...the systematic identification of risks...consistent with our Operational Excellence (OE) program." Success is measured and evaluated through monitoring and reporting against limits specific to permits and local requirements.

**Water pollutant category**

Other physical pollutants

#### Description of water pollutant and potential impacts

TSS: "Sediment in rivers can ... shorten the lifespan of dams and reservoirs....Reservoirs slowly fill up with sediment and mud, eventually making them unusable for their intended purposes."

#### Value chain stage

Direct operations

#### Actions and procedures to minimize adverse impacts

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience

Provision of best practice instructions on product use

Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

#### Please explain

Infrastructure and Storage: We manage the risks of release of wastewater containing Total Suspended Solids (TSS) through reducing the quantity of solids in the wastewater, by providing appropriate containment, and by specifying correct handling, storage, and treatment. Our Incident Reporting Standard requires investigations into the root causes and corrective actions for any exceedances of permit or regulatory limits. General equipment integrity is managed through a risk-based inspection program, informed by learnings from past investigations.

Instructions on Product Use: Compliance with applicable product safety data informs protective actions. For example, we refer to Safety Data for recommended storage and handling procedures.

Sector-specific Processes: Most of our sites are ISO 14001 certified or participate in the Responsible Care program. We also identify pollutants to ensure compliance with permitting and/or pre-treatment regulatory requirements. LYB's HSE&S policy states LYB conducts "...the systematic identification of risks...consistent with our Operational Excellence (OE) program." Success is measured and evaluated through monitoring and reporting against limits specific to permits and local requirements.

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#### Water pollutant category

Oil

#### Description of water pollutant and potential impacts

Source: United States 43 Federal Register 32857: Oil and Grease

"It is common practice to install oil and grease removal equipment for by-product recovery purposes or to prevent disruption of subsequent wastewater treatment.

Substances found in this group of pollutants also represent oxygen demanding material and are of concern in wastewater treatment."

#### Value chain stage

Direct operations

#### Actions and procedures to minimize adverse impacts

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience

Provision of best practice instructions on product use

Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

#### Please explain

Infrastructure and Storage: We manage the risks of release of wastewater containing oil through reducing the quantity of oil in the wastewater, by providing appropriate containment, and by specifying correct handling, storage, and treatment. General equipment integrity is managed through a risk-based inspection program, informed by learnings from past investigations.

Instructions on Product Use: Compliance with applicable product safety data informs protective actions. For example, we refer to Safety Data Sheets for recommended storage and handling instructions.

Sector-specific Processes: Most of our sites are ISO 14001 certified or participate in the Responsible Care program. We also identify pollutants to ensure compliance with permitting and/or pre-treatment requirements. LYB's HSE&S policy states LYB conducts "...the systematic identification of risks...consistent with our Operational Excellence (OE) program." Success is measured and evaluated through monitoring and reporting against limits specific to permits and local requirements.

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#### Water pollutant category

Microplastics and plastic particles

#### Description of water pollutant and potential impacts

LyondellBasell believes ending plastic waste in the environment is a critical issue of our time. We are committed to helping eliminate plastic waste and are engaged in collaborative efforts across the value chain to direct action where it is needed most. We are a founding member of the Alliance to End Plastic Waste which aims to divert millions of metric tons of plastic waste from the environment. We are also a member of Operation Clean Sweep® (OCS), the plastics industry's global initiative that promotes collaboration, training and education in controlling and reducing the loss of pellets, flakes and powders. In 2019, we committed to OCS Blue, a U.S. program that enhances management and reporting requirements.

#### Value chain stage

Direct operations

#### Actions and procedures to minimize adverse impacts

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience

Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

#### Please explain

Infrastructure and Storage: We manage the risks of release of polymeric solids by providing appropriate containment, preventing spills, and specifying correct handling, storage, and treatment.

Sector-specific Processes: We are committed to zero polymeric pellet loss to the environment and being transparent about our performance. We monitor and report pellet loss in accordance with American Chemistry Council (ACC) guidance. We clean spills and conduct investigations to prevent similar incidents in the future. We conduct annual assessments of our operations to evaluate and improve pellet loss efforts, including monitoring, handling, recycling, safe disposal, cleaning and containment. We also have tools to identify opportunities to prevent pellet loss and emphasize educating and empowering our employees in their continuing support of this effort.

W3.3

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

Yes, water-related risks are assessed

W3.3a

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

**Value chain stage**

Direct operations

**Coverage**

Full

**Risk assessment procedure**

Water risks are assessed as a standalone issue

**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

**Tools and methods used**

WRI Aqueduct

**Contextual issues considered**

Water availability at a basin/catchment level

Water regulatory frameworks

**Stakeholders considered**

Regulators

Water utilities at a local level

**Comment**

In 2020, we conducted a baseline water risk assessment of our manufacturing sites using the World Resources Institute (WRI) Aqueduct Water Risk Atlas tool (AqueductTM). Aqueduct rates geographic locations worldwide on a scale from low to extremely high overall water risk based on watershed data related to water quantity, quality and regional factors. In 2022, we applied the 3.0 version of the tool, which included updated data and hydrological modeling. According to Aqueduct, the majority of our sites are classified as low overall water risk, aggregated and weighted in accordance with the tool's chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world comprised less than 0.06% of our estimated total water consumption in 2022.

LyondellBasell has in prior years assessed water risks on a regional and/or site-specific basis in response to potential water-related regulatory change evaluations. For example, LyondellBasell generated a Houston Area Mitigation Plan to address steps necessary if curtailment were realized.

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**Value chain stage**

Supply chain

**Coverage**

Partial

**Risk assessment procedure**

Water risks are assessed as part of an established enterprise risk management framework

**Frequency of assessment**

Annually

**How far into the future are risks considered?**

Unknown

**Type of tools and methods used**

Tools on the market

**Tools and methods used**

EcoVadis

**Contextual issues considered**

Implications of water on your key commodities/raw materials

**Stakeholders considered**

Suppliers

**Comment**

We assess our key suppliers using EcoVadis assessments, amongst other approaches. EcoVadis is a globally recognized platform that provides corporate social responsibility monitoring and ratings used by companies to help better understand how their suppliers measure up. Covering water-related environmental issues amongst other items, the EcoVadis assessment rates policies, actions and results. It also provides suggestions for improvement in the form of corrective action plans. LyondellBasell has access to over 10,000 existing EcoVadis supplier sustainability ratings. Participating companies also share best practices to drive continuous improvement. We set a target to assess 470 suppliers globally in 2022. We derived the target from a holistic assessment of our supplier risk profiles (country and industry risk) and procurement risk (spend and category criticality). We exceeded our plan and achieved 140% of our 2022 supplier assessment target. A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.

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**W3.3b**

**(W3.3b) 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.**

	Rationale for approach to risk assessment	Explanation of contextual issues considered	Explanation of stakeholders considered	Decision-making process for risk response
Row 1	<p>Direct Operations</p> <p>In 2022, we applied the 3.0 version of the World Resources Institute (WRI) Aqueduct Water Risk Atlas tool (AqueductTM). According to Aqueduct, the majority of our sites are classified as low overall water risk, aggregated and weighted in accordance with the tool’s chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world comprised less than 0.06% of our estimated total water consumption in 2022.</p> <p>Value Chain</p> <p>To further our goal to assess our key suppliers using sustainability performance criteria, we utilized EcoVadis assessments. EcoVadis is a globally recognized platform that provides corporate social responsibility monitoring and ratings used by companies to help better understand how their suppliers measure up. We set a target to assess 470 suppliers globally in 2022.</p> <p>We derived our scope of coverage from a holistic assessment of our supplier risk profiles (country and industry risk) and procurement risk (spend and category criticality), to define a population of key suppliers to focus on in this initial phase of our sustainable procurement program. This population includes a total of approximately 3,500 suppliers which we have rated as key, representing 93% of our procurement spend.</p>	<p>Direct Operations</p> <p>The WRI Aqueduct Water Risk Atlas tool assessed water availability at the basin level which is important for our understanding and engagement with water utilities at the local level. In addition, LyondellBasell has assessed water risks on a regional and/or site-specific basis in response to, and aligned with, water regulatory frameworks, regulators and potential water-related change evaluations or community initiatives. e.g. LyondellBasell generated a Houston Area Mitigation Plan that includes possible actions to take under water use curtailment scenarios.</p> <p>Value Chain</p> <p>One of EcoVadis’ 21 sustainability criteria is water, covered in the environment section. The EcoVadis water questions require our suppliers to provide information on water management including recycle/reuse, water accounting or auditing, water stress assessments, quality assessments, and key performance indicators such as water consumption.</p>	<p>Direct Operations</p> <p>With regard to Stakeholders considered (W3.3a)</p> <ul style="list-style-type: none"> <li>● Regulators</li> <li>● Water utilities at a local level</li> </ul> <p>Value Chain</p> <p>With regard to Stakeholders considered (W3.3a)</p> <ul style="list-style-type: none"> <li>● Suppliers</li> </ul> <p>We use EcoVadis to assess our suppliers’ sustainability performance. We assessed over 650 suppliers in 2022.</p>	<p>Direct Operations</p> <p>In 2022, we engaged a third party expert to complete a water use and risk assessment as a supplement to the Aqueduct assessment. The assessment focused on our large manufacturing facilities encompassing over 98% of our global water consumption, based on 2022 estimates. None of these sites were identified as high or extremely high overall risk in the Aqueduct assessment. Results of the assessment will be used to help guide possible watershed-specific targets, approaches and improvements.</p> <p>Value Chain</p> <p>Regarding our supplier engagement, we exceeded our plan and achieved 140% of our 2022 supplier assessment target. A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.</p>

**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?**

No

**W4.1a**

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

LyondellBasell evaluates risk through our Enterprise Risk Management (ERM) Program. Water-related substantive risks or opportunities in the context of this question 4.1a are defined by the following thresholds:

1. Substantive financial risk: EBIDTA loss of at least 100MM USD, and/or increase in operating or capital costs of at least 2% of annual budgeted spend,
2. Substantive financial opportunity: Financial gains or increase in savings and efficiencies above 10MM USD, and
3. Substantive strategic opportunity: Contributes to competitive advantage, and/or progresses a corporate strategic goal.

**W4.2b**

**(W4.2b) Why does your organization not consider itself exposed to water risks in its direct operations with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	<p>Evaluation in progress</p>	<p>In 2022, we conducted a water risk assessment of our manufacturing sites using the World Resources Institute (WRI) Aqueduct Water Risk Atlas tool (AqueductTM). Aqueduct rates geographic locations worldwide on a scale from low to extremely high overall water risk based on watershed data related to water quantity, quality and regional factors. In 2022, we applied the 3.0 version of the tool, which included updated data and hydrological modeling. According to Aqueduct, the majority of our sites are classified as low overall water risk, aggregated and weighted in accordance with the tool’s chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world comprised less than 0.06% of our estimated total water consumption in 2022.</p> <p>Also in 2022, we engaged a third party expert to complete a water use and risk assessment as a supplement to the Aqueduct assessment. The assessment focused on our large manufacturing facilities encompassing over 98% of our global water consumption, based on 2022 estimates. None of these sites were identified as high or extremely high overall risk in the Aqueduct assessment. We have completed this assessment in 2023. Results of the assessment will be used to help guide future possible watershed-specific targets, approaches and improvements.</p>

## W4.2c

**(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	Not yet evaluated	LyondellBasell has not yet evaluated water risk beyond our direct operations.

## 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**

Products and services

**Primary water-related opportunity**

Increased sales of existing products/services

**Company-specific description & strategy to realize opportunity**

Many of the chemicals and plastics we supply help create innovative products that meet the needs of modern society and contribute to sustainable development. Our products are found in nearly every sector of the economy. Our products make irrigation more efficient, reducing water leakage as well as make pipes that are lighter and more durable; making installation faster and easier, reducing water use, preventing water leakage, and protecting water purity.

**Estimated timeframe for realization**

Unknown

**Magnitude of potential financial impact**

Unknown

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact**

While we know of myriad water-related uses of our products, we do not as yet specify which of our products are water-related for tracking purposes in our enterprise management systems.

## W6. Governance

### W6.1

**(W6.1) Does your organization have a water policy?**

No, but we plan to develop one within the next 2 years

### 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 or committee	Responsibilities for water-related issues
Board-level committee	Our Board leads our commitment to sustainability and maintains oversight of the company's ESG profile. Management reports on key sustainability topics and initiatives at each regularly scheduled Board meeting, and directors participate in a deep dive on sustainability strategy and actions at least annually. The Board's Committees provide guidance regarding specific ESG issues in accordance with their charters and responsibilities. The Health, Safety, Environmental & Sustainability (HSE&S) Committee of the Board is responsible for providing oversight of the company's sustainability programs, initiatives and activities, reviewing with management relevant sustainability risks and trends, including water-related issues, and monitoring the company's progress on sustainability targets, ambitions, and reporting at least annually. As part of its responsibilities with respect to our health, safety and environmental (HSE) programs, the HSE&S Committee assists the Board in its oversight responsibilities by reviewing and monitoring the company's HSE policies and performance results, including processes to ensure compliance with applicable laws and regulations; reviewing with management environment, health, safety, and product stewardship issues that can have a material impact on the company; and reviewing the status of related policies, programs, and practices. The HSE&S Committee comprises five independent directors.

**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	Sporadic - as important matters arise	Monitoring implementation and performance Reviewing and guiding business plans Reviewing and guiding corporate responsibility strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy	Our Board leads our commitment to sustainability and maintains oversight of the Company's ESG profile. Management reports on key sustainability topics and initiatives at each regularly scheduled Board meeting, and directors participate in a deep dive on sustainability strategy and actions at least annually.

**W6.2d**

**(W6.2d) Does your organization have at least one board member with competence on water-related issues?**

	Board member(s) have competence on water-related issues	Criteria used to assess competence of board member(s) on water-related issues	Primary reason for no board-level competence on water-related issues	Explain why your organization does not have at least one board member with competence on water-related issues and any plans to address board-level competence in the future
Row 1	Not assessed	<Not Applicable>	<Not Applicable>	<Not Applicable>

**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 Executive Officer (CEO)

**Water-related responsibilities of this position**

Assessing water-related risks and opportunities  
Managing water-related risks and opportunities  
Setting water-related corporate targets

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

As important matters arise

**Please explain**

Our Chief Executive Officer (CEO) has overall responsibility for our water program as part of our wider health, safety, environmental and sustainability ("HSE&S") strategy. The CEO heads the company's Executive Committee, many members of which play an active role in addressing strategic or operational matters concerning HSE&S.

In this role, our CEO reports to the Board, and oversees our progress through regular reporting and discussion on key topics and initiatives with direct reports. The CEO receives reports from and directs our CSO, who is responsible for the steering and monitoring of our HSE&S programs, including water-related issues. The CSO is responsible for informing company leadership, as well as the Board, about HSE&S performance, strategy, and programs, including water-related information. The CSO is supported by a global team of employees.

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

Sustainability committee

**Water-related responsibilities of this position**

Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

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

As important matters arise

**Please explain**

The specific sustainability responsibilities of the HSE&S Committee are summarized below:

Review and monitor the company's health, safety and environmental policies and performance results, including processes to ensure compliance with applicable laws and regulations; review with management environment, health, safety, and product stewardship issues that can have a material impact on the company; review the status of related policies, programs and practices; provide oversight of the company's sustainability programs, initiatives and activities; review with management relevant sustainability risks and trends; and monitor the company's progress on sustainability targets, ambitions and reporting.

The CSO reports to the HSE&S Committee and is responsible for the steering and monitoring of our sustainability programs, including water-related issues.

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	No, and we do not plan to introduce them in the next two years	We do not provide incentives to C-suite employees or board members for management of water-related issues.

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?

No

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	Water is an essential resource for our operations. We use water both in operations (primarily cooling towers and steam production) and as potable water for drinking and sanitary use at our sites and offices. Our manufacturing sites reuse water to reduce the amount of ground and freshwater withdrawn. For example, the majority of our large sites use recirculating water systems for cooling. We manage water in accordance with permitted limits for discharge destination and water quality, and our Operational Excellence systems support ongoing compliance. Many of our larger sites operate their own wastewater treatment facilities, which allows for increased control over our water efficiency and quality of our discharges.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	5-10	Long range plans are reviewed annually and adjusted as required for path forward targets and goals. No changes were deemed necessary based on the 2022 review, since the plans continue to be consistent from a long-term horizon. For example, we continue to examine reuse of reverse osmosis reject water to reduce water withdrawal at our sites.
Financial planning	Yes, water-related issues are integrated	5-10	Long-range budget planning for project approval and priority is reviewed annually and adjusted as required based on needs and priority. Changes are common during this process as projects mature over their design and execution cycle. For example, improving process control projects to increase efficient use of water are given budgeting priority.

**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)**

10.5

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

10

**Water-related OPEX (+/- % change)**

40

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

10

**Please explain**

The increased spending in 2022 can be attributed to normal wide fluctuations in global projects activity. From time to time we undertake large asset replacements which drive significant CAPEX spending changes. Changes of this magnitude are not expected to continue year over year, but may happen as major assets age. For example, in 2021 and early 2022 we replaced 2 large cooling towers at our Channelview Complex, which should increase water use efficiency. OPEX for our company is an incomplete accounting for water-related spending. We have engaged our suppliers who often cover a large part of our OPEX as part of our service agreements and therefore OPEX spending amounts and trends do not accurately reflect our activities in this space. For example, one of our suppliers recently installed a control system for a cooling tower at no cost to us with the benefit of greater water efficiency.

**W7.3**

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

	Use of scenario analysis	Comment
Row 1	Yes	As part of our internal Enterprise Risk Management process for climate risk, water stress/scarcity is under evaluation. The analysis considers potential causes and consequences. In addition the analysis considers the Velocity of the issue – how fast it is changing; Vulnerability – the ability to adapt; Time Horizon; and Financial Impact under given scenarios.

**W7.3a**

(W7.3a) Provide details of the scenario analysis, what water-related outcomes were identified, and how they have influenced your organization's business strategy.

	Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy
Row 1	Water-related Climate-related	Climate change impacts may put pressure on the availability of freshwater needed for various manufacturing processes. Limited availability of water resources may result in the price of water going up, which could increase operational costs.	Climate change impacts may put pressure on the availability of freshwater needed for various manufacturing processes. Scarcity of freshwater could result in an increase in the price of water and, as a result, an increase in operational cost.  In more extreme scenarios (such as government-mandated use restrictions, or restrictions on river transportation), the scarcity of freshwater could negatively impact our operations, including by impacting our ability to produce or transport our products.	Freshwater supplies for cooling and process needs influence the siting, expansion and on-going operation considerations of manufacturing plants. Scarcity of freshwater could result in an increase in the price of water and, as a result, an increase in operational cost. In more extreme scenarios (such as government-mandated use restrictions, or restrictions on river transportation), the scarcity of freshwater could negatively impact our operations, including by impacting our ability to produce or transport our products.

## W7.4

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

Row 1

Does your company use an internal price on water?

No, and we do not anticipate doing so within the next two years

Please explain

A water management strategy is being developed which will include consideration of current state; furthering our risk assessment for water stress in the value chain; opportunity identification; target setting; and monitoring.

## W7.5

(W7.5) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Definition used to classify low water impact	Primary reason for not classifying any of your current products and/or services as low water impact	Please explain
Row 1	No, and we do not plan to address this within the next two years	<Not Applicable>	Judged to be unimportant, explanation provided	While we are undertaking life cycle assessment studies to support customer information needs on the sustainability attributes of our products and technologies, we do not classify low water impact as a primary sustainability driver for our products.

## W8. Targets

### W8.1

(W8.1) Do you have any water-related targets?

Yes

### W8.1a

(W8.1a) Indicate whether you have targets relating to water pollution, water withdrawals, WASH, or other water-related categories.

	Target set in this category	Please explain
Water pollution	Yes	<Not Applicable>
Water withdrawals	No, and we do not plan to within the next two years	Important but not an immediate business priority.
Water, Sanitation, and Hygiene (WASH) services	Yes	<Not Applicable>
Other	Yes	<Not Applicable>

### W8.1b

(W8.1b) Provide details of your water-related targets and the progress made.

Target reference number

Target 1

**Category of target**

Water pollution

**Target coverage**

Company-wide (direct operations only)

**Quantitative metric**

Other, please specify (Zero instances of environmental incidents. An environmental incident includes instances of water pollution excursions related to water discharges and water quality.)

**Year target was set**

2022

**Base year**

2022

**Base year figure**

7

**Target year**

2022

**Target year figure**

0

**Reporting year figure**

7

**% of target achieved relative to base year**

0

**Target status in reporting year**

Underway

**Please explain**

Target not met since zero instances not achieved. Corrective actions have been assigned for the excursion instances in the reporting year.

A key tenant of our culture is what we call GoalZERO. GoalZERO is our commitment to operating safely with zero injuries and zero process safety, product safety and environmental incidents, including water pollution-related incidents. We cultivate a GoalZERO mindset with clear standards, regular communication, training, targeted campaigns and events. We monitor water pollution-related incidents continuously using a performance dashboard.

Our manufacturing sites are required to:

- Report incidents of water pollution, including any time when discharge limits have been exceeded, or requirements of permits or regulatory obligations have not been met.
- Establish, document, communicate and monitor pollution prevention and resource optimization objectives, and assess and manage the risk of onsite and offsite releases to water.
- Perform periodic audits to verify Operational Excellence processes are in place and fully implemented.

We also set sanitation water quality goals for our potable water systems. Exceptions are reported in our incident reporting system. We set sanitation water quality targets in our open evaporative cooling towers for Legionella. Exceptions are reported in our incident reporting system.

**Target reference number**

Target 2

**Category of target**

Water recycling/reuse

**Target coverage**

Business division

**Quantitative metric**

Other, please specify (Number of Cooling Water Cycles)

**Year target was set**

2022

**Base year**

2022

**Base year figure**

1

**Target year**

2022

**Target year figure**

3

**Reporting year figure**

3

**% of target achieved relative to base year**

100

**Target status in reporting year**

Achieved

**Please explain**

The target achieved matches expectations, maintaining at least 3 cycles at included sites. We set a target for the company overall to be above 90% within specified limits of related water quality, and report out this metric to management quarterly.

This target is set for reliability and cost efficiency; however, it does impact the efficient use of water.

**Target reference number**

Target 3

**Category of target**

Water use efficiency

**Target coverage**

Business division

**Quantitative metric**

Other, please specify (Water Quality Parameters, Percentage Meeting Specifications)

**Year target was set**

2022

**Base year**

2022

**Base year figure**

0

**Target year**

2022

**Target year figure**

90

**Reporting year figure**

90

**% of target achieved relative to base year**

100

**Target status in reporting year**

Achieved

**Please explain**

The target achieved matches expectations. We set a target for the company overall to be above 90% in specification and report this metric to management quarterly.

This target is set for reliability and cost efficiency; however, it does impact the efficient use of water.

**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	We have verified water withdrawal, discharge, and consumption data for 2022.	ISAE 3000	We chose the withdrawal, discharge, and consumption for independent verification, since this data forms the core of our current water use. We plan to complete this verification annually.

**W10. Plastics**

**W10.1**

**(W10.1) Have you mapped where in your value chain plastics are used and/or produced?**

	Plastics mapping	Value chain stage	Please explain
Row 1	Yes	Direct operations	<p>LyondellBasell sells polymer products in the form of pellets, flakes and powders, which are handled at multiple points from creation to customer delivery. As of December 31, 2022, we had 75 polymer manufacturing, research and technical sites that produce or handle polymers with a total production capacity of 12.3 million metric tons annually.</p> <p>We track our polymer production, sales, and procurement activity at a site, unit, and product level with an enterprise resource planning tool (SAP).</p> <p>Plastics are essential in providing solutions to tomorrow's challenges. As lightweight, hygienic and durable materials, they play a vital role in products used around the globe, every day. Innovative plastic materials help to keep food fresh longer so it can be safely stored and transported long distances, reducing food waste. These materials also provide safe, high-quality solutions for healthcare. Plastics are key to the energy transition, from the latest automotive components that enable vehicle lightweighting, to integral components for wind turbines and solar panels.</p>

**W10.2**

**(W10.2) Across your value chain, have you assessed the potential environmental and human health impacts of your use and/or production of plastics?**

	Impact assessment	Value chain stage	Please explain
Row 1	Yes	Direct operations Supply chain	<p>LyondellBasell sells polymer products in the form of pellets, flakes and powders, which are handled at multiple points from creation to customer delivery. As of December 31, 2022, we had 75 polymer manufacturing, research and technical sites that produce or handle polymers with a total production capacity of 12.3 million metric tons annually.</p> <p>We are committed to zero pellet loss to the environment and being transparent about our performance. LyondellBasell is a member of Operation Clean Sweep® (OCS) (<a href="https://www.opcleansweep.org/">https://www.opcleansweep.org/</a>), the plastics industry's global initiative to promote collaboration, training and education in controlling and reducing the loss of pellets, flakes and powders. We monitor and report pellet loss in accordance with American Chemistry Council (ACC) guidance. LyondellBasell participates in voluntary assessments of environmental impacts of plastic loss at operating locations through participation in third party audits, such as ISO 14001, Responsible Care and through our participation in regional trade associations' OCS programs.</p> <p>To help our suppliers, carriers, distributors and customers maintain high safety and environmental standards, including alignment with ACC pellet loss guidance, we provide technical assistance, training and logistics support.</p> <p>Plastics are essential in providing solutions to tomorrow's challenges. Plastics are key to the energy transition, from the latest automotive components that enable vehicle lightweighting, to integral components for wind turbines and solar panels.</p> <p>Unfortunately, the mismanagement of plastic waste has reached a tipping point. Society, governments and industry are accelerating efforts to close the loop and prevent plastic leakage to the environment, keeping plastics circulating in the economy through recycling and reuse. We believe circularity is critical to helping end plastic waste, and it also offers strong economic, social and climate benefits.</p>

**W10.3**

**(W10.3) Across your value chain, are you exposed to plastics-related risks with the potential to have a substantive financial or strategic impact on your business? If so, provide details.**

	Risk exposure	Value chain stage	Type of risk	Please explain
Row 1	Yes	Direct operations Supply chain	Regulatory Reputational Technology	<p>Plastics are essential in providing solutions to tomorrow's challenges. Plastics are key to the energy transition, from the latest automotive components that enable vehicle lightweighting, to integral components for wind turbines and solar panels.</p> <p>Unfortunately, the mismanagement of plastic waste has reached a tipping point. We believe circularity is critical to helping end plastic waste, and it also offers strong economic, social and climate benefit.</p> <p>Increased regulation or deselection of plastic could lead to a decrease in demand growth for some of our products. There is a growing concern with the accumulation of plastic, including microplastics, and plastic waste in the environment, including waterways and oceans. Consumer deselection, increased regulation of, or prohibition on, the manufacturing or use of plastic or plastic products could limit the use of these products or increase the costs incurred by our customers to use such products, and could lead to a decrease in demand for polymer products we make. Such a decrease in demand could adversely affect our business, operating results, and financial condition.</p> <p>In September 2020, we announced a circularity goal of marketing at least two million metric tons of recycled and renewable-based polymers annually by 2030. Many of our customers also have goals to increase the recycled and renewable content in their own products and packaging. Our ability to achieve this goal depends on many factors, including the availability of collection and sortation infrastructure, evolving regulations on chemical recycling and recycled content, our ability to grow our circular and low carbon solutions business established in 2022, make investments in new technologies, expand the global footprint of our recycling facilities and joint ventures, secure access to feedstock, and manufacture recycled and low carbon products at commercial scale.</p>

**W10.4**

**(W10.4) Do you have plastics-related targets, and if so what type?**

	Targets in place	Target type	Target metric	Please explain
Row 1	Yes	Plastic polymers	Other, please specify (Produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030)	<p>In September 2022, we announced our new Circular and Low Carbon Solutions business to deliver on our ambition to produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030.</p> <p>Our approach:</p> <ul style="list-style-type: none"> <li>• Expand our recycling capacity globally</li> <li>• Accelerate the development and implementation of scalable recycling technologies, including our advanced recycling technology, MoReTec</li> <li>• Optimize the value chain for circularity by building integrated regional hubs to access and supply plastic waste feedstock</li> <li>• Invest along our value chain to become a full-solution provider for customers and brand owners</li> <li>• Grow our Circulen portfolio of recycled and renewable-based products</li> </ul>

**W10.5**

**(W10.5) Indicate whether your organization engages in the following activities.**

	Activity applies	Comment
Production of plastic polymers	Yes	We produce Polypropylene, polyethylene, and compounds. We have other operations that could be considered engaging in activities associated with the other categories in this table. We plan to evaluate those operations and their materiality within the next two years.
Production of durable plastic components	No	We produce Polypropylene, polyethylene, and compounds. We have other operations that could be considered engaging in activities associated with the other categories in this table. We plan to evaluate those operations and their materiality within the next two years.
Production / commercialization of durable plastic goods (including mixed materials)	No	We do not produce these goods.
Production / commercialization of plastic packaging	No	We produce Polypropylene, polyethylene, and compounds. We have other operations that could be considered engaging in activities associated with the other categories in this table. We plan to evaluate those operations and their materiality within the next two years.
Production of goods packaged in plastics	No	We do not produce these goods.
Provision / commercialization of services or goods that use plastic packaging (e.g., retail and food services)	No	We do not produce these goods.

**W10.6**

**(W10.6) Provide the total weight of plastic polymers sold and indicate the raw material content.**

**Row 1**

**Total weight of plastic polymers sold during the reporting year (Metric tonnes)**

0

**Raw material content percentages available to report**

None

**% virgin fossil-based content**

<Not Applicable>

**% virgin renewable content**

<Not Applicable>

**% post-industrial recycled content**

<Not Applicable>

**% post-consumer recycled content**

<Not Applicable>

**Please explain**

In 2022, we took steps to increase our plastics recycling capacity to tackle the challenge of plastic waste and make progress on our goal to produce and market at least 2 million metric tons (MMT) of polymers from recycled or renewable-based sources annually by 2030. Since 2019 through the end of 2022, we have produced and marketed more than 175,000 metric tons of these polymers.

**W11. 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.**

NA

W11.1

(W11.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	Chief Executive Officer (CEO)	Chief Executive Officer (CEO)

SW. Supply chain module

SW0.1

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

	Annual revenue
Row 1	

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	Please select	

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 understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please indicate your consent for CDP to share contact details with the Pacific Institute to support content for its Water Action Hub website.

Yes, CDP may share our Main User contact details with the Pacific Institute

Please confirm below

I have read and accept the applicable Terms