Welcome to your CDP Water Security Questionnaire 2022

W0. Introduction

W0.1

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

Braskem S.A. is a global petrochemical company, committed to a circular economy and carbon neutrality, that believes and invests in innovation as an enabler pillar of its business plan, whose purpose is to improve people's lives by creating sustainable solutions in chemicals and plastics.

Founded in 2002 in Brazil, it is currently the sixth-largest petrochemical company in the world in the production of thermoplastic resins, and leader in Americas, with clients in more than 71 countries, and a market leader and pioneer in the industrial-scale production of bio-polymers (plastic made from renewable raw materials).

We are the largest producer of polypropylene in the Americas, based on the annual production capacity of our plants in Brazil and the United States of America. We are the only integrated petrochemical company that produces basic chemicals and polymers in Brazil, and the largest producer of PE in Mexico and PP in the United States. We produce a diverse portfolio of petrochemicals and thermoplastics, including polyethylene, green polyethylene (biopolymer), polypropylene and PVC. Our products are typically used in high-volume applications and we benefit from our world-scale plants to increase our competitiveness.

Our clients use our plastics and chemical products to produce a wide variety of products that people employ in their daily lives to meet their essential needs in food packaging, home furnishings, industrial and automotive components, paints and coatings. We believe that the transformation of plastics and chemical production from raw fossil materials to sustainable renewable sources represents one of the key growth and sustainability opportunities in the global chemical industry. We are a global leader in the production of green polyethylene (green PE) and benefit from our proximity to one of the world's largest renewable energy producers, Brazil.

W-CH0.1a

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

Bulk organic chemicals

Specialty organic chemicals

W0.2

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

	Start date	End date
Reporting year	January 1, 2021	December 31, 2021

W0.3

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

Brazil
Germany
Mexico
United States of America

W0.4

(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, a Ticker symbol	BRKM5

W1. Current state

W1.1

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

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Vital	The primary use of freshwater in Braskem's direct operations is throughout the production process. Among its main uses, as a very water intensive industry (chemical / petrochemical) we highlight the use of freshwater for cooling systems and steam generation and consumption in processes. Therefore, the lack of water can affect operational costs and ultimately cease operations (dependency is high in present and future scenarios), explaining why it is vital for operations. In the future, we will remain dependent on water, as it is vital for our process, however, we will implement water reuse projects through desalination of salt water and effluent reuse, reducing the need for fresh water withdraw in the future. As Braskem is a chemical/petrochemical industry, a significant part of our suppliers require a similar use of water (e.g. cooling, steam), especially considering that Braskem’s main raw material is petrochemical naphtha. The lack of water can affect/interrupt their operations (indirect use), explaining why importance is vital. This results in impacts for Braskem as well, in present and in scenarios up to 2040, according to internal climate risk assessments. In the value chain, water will remain vital in the future, so we will undertake supplier engagement activities and possibly include criteria that will guarantee water security in the critical suppliers' contracts.
Sufficient amounts of recycled, brackish and/or	Vital	Vital	In "water stress" areas, water reuse is an alternative to maintain operations under normal conditions (mitigate / neutralize impact) and avoid competing for freshwater. Its primary use in Braskem's direct operations is throughout the production process. It is

produced water available for use			important to emphasize that due to the essentiality of water for cooling and steam production, the availability of water for reuse becomes even more important in regions of water stress. Therefore, the lack of water can affect operational costs and ultimately cease operations (dependency is high in present and future scenarios), explaining why it is vital for operations. Considering indirect use, as Braskem is a chemical / petrochemical industry, a part of our suppliers has a similar use of recycled water (e.g. cooling, steam). The lack of water can affect / interrupt their operations (indirect use), explaining why importance is vital. This results in impacts for Braskem as well, in present and scenarios up to 2040, according to internal climate risk assessments. As for future scenarios, considering the direct operations, recycled/reused water will become more important as in some regions there are potential future scenarios of severe droughts. Therefore, Braskem already has an action plan and indicators with targets until 2030 to guarantee water security, including water reuse projects. Similarly, for indirect operations, recycles water will become more important due to some of the critical suppliers being located in water stress regions. Braskem is strengthening its supply chain engagement.

W1.2

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

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	Braskem measures and monitors for 100% of sites. The total water intake volume refers to the consumption of 41 industrial facilities located in Brazil (29), U.S. (6), and Germany (2) and Mexico (4) measured monthly and recorded in the SAP system. The volume is obtained through a meter inserted directly into the pipe, which transports water, performing the measurement and sending the result through a transmitter to the centralized control system.

		Monitored daily and consolidated monthly on-site by HSE focal point.
Water withdrawals – volumes by source	100%	Braskem measures and monitors for 100% of sites. The total water intake volume per source is summed up once per year, because of the closing of annual results report. The volume is obtained through a meter inserted directly into the pipe, which transports water, performing the measurement and sending the result through a transmitter to the centralized control system. Monitored daily and consolidated monthly on-site by HSE focal point.
Water withdrawals quality	100%	Braskem measures and monitors for 100% of sites. Water quality refer to 41 industrial facilities located in Brazil (29), U.S. (6), and Germany (2) and Mexico (4). The quality is measured by chemical analysis in a laboratory to check turbidity, alkalinity, solids, among others. The results are recorded in the SAP system, monitored monthly and consolidated on-site by HSE focal point.
Water discharges – total volumes	100%	Braskem measures and monitors for 100% of sites. The total water intake volume refers to the consumption of 41 industrial facilities located in Brazil (29), U.S. (6), and Germany (2) and Mexico (4) measured monthly and recorded in the SAP system. The volume is obtained through a meter inserted directly into the pipe, which transports water, performing the measurement and sending the result through a transmitter to the centralized control system. Monitored daily and consolidated monthly on-site by HSE focal point.
Water discharges – volumes by destination	100%	Braskem measures and monitors for 100% of sites. The total wastewater generated per source is summed up once per year, on the closing of the annual results report. The volume is obtained through a meter installed in the effluent drainage channel, taking the measurement and sending the result through a transmitter to the centralized control system. Monitored daily for attend environmental standards and consolidated monthly on-site by HSE focal point. Braskem uses two types of disposal for its effluents: Fresh surface water

		and third-party destinations. Destination is chosen according to operational and economic viability, and by the obtaining of legal permits.
Water discharges – volumes by treatment method	100%	Braskem measures and monitors for 100% of sites. The total treated wastewater is assessed monthly by measuring four different sources of wastewater: inorganic, organic, sanitary effluent (domestic sewage), and non-contaminated rainwater. An annual wastewater disposal assessment is made according to the treatments: Separation of oil and water, physical, neutralization, biological, chlorination, etc. The volume is obtained through a meter installed in the effluent drainage channel, taking the measurement and sending the result through a transmitter to the centralized control system. The volumes are monitored and consolidated on-site by HSE focal point
Water discharge quality – by standard effluent parameters	100%	Braskem measures and monitors for 100% of sites. The quality of the measured wastewater varies for each of the manufacturing facilities, taking into account local operating requirements and the local legislation in which the facilities are located. Quality is measured by chemical laboratory analysis to check parameters such as COD and COB, which are measured regularly (monthly). Some industrial units perform chemical analyses in their own laboratory or for an external laboratory. The volume is obtained through a meter installed in the effluent drainage channel, taking the measurement and sending the result through a transmitter to the centralized control system. The results are monitored monthly and consolidated on-site by HSE focal point.
Water discharge quality – temperature	76-99	Braskem currently measures and monitors water temperatures in 87% of the sites. In Brazilian operations, our largest operations, we measure in 100%. In the US, Germany and Mexico, the measurement is made in compliance with legal requirements. The temperature measurement is obtained through a sensor installed in the effluent drainage channel, performing the measurement and sending the result through a transmitter to the centralized control system.

		Monitored monthly and consolidated on-site by HSE focal point.
Water consumption – total volume	100%	Braskem measures and monitors for 100% of sites. The total water consumption refers to the 41 industrial facilities located in Brazil (29), U.S. (6), Germany (2) and Mexico (4); The volumes vary according the production's demand. The volume is obtained through a meter inserted directly into the tube, which transports water, at the main entrance of the pipe that feeds the industrial unit, taking the measurement and sending the result through a transmitter to the centralized control system. Monitored daily and consolidated monthly, recorded in the SAP system, on-site by HSE focal point.
Water recycled/reused	100%	Braskem monitors 100% of its facilities that have implemented water recycled/reused technologies, 67% of the 41 facilities on an annual basis; the remaining 33% do not currently make use of recycled/reused waters due to technological projects or financial viability. The volume is obtained through a meter inserted directly into the pipe, which transports water, performing the measurement and sending the result through a transmitter to the centralized control system. Monitored and consolidated monthly by HSE focal point.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Braskem measures and monitors for 100% of sites. Water for personal hygiene is provided by local water utilities, in accordance with the quality standards defined by current laws in the regions. We perform semiannual analyses at the drinking fountains of all areas and water taps in restaurants, analyzing the microbiological parameters of total coliforms and some bacteria to check the quality of drinking water provided for human consumption in filters and drinking fountains. The volumes are monitored and consolidated onsite by HSE focal point.

W1.2b

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

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	70,932	Lower	Total water withdrawals decresed by 0.7% in comparison to 2020. As a new plant was added, we assumed the 2021 volume for 2020 to have the same basis for comparison. The withdraw volume for the new plant was 2,661 megaliters, therefore, the total withdraw volume in 2020 was considered to be 71,415 megaliters. From the 2021 total withdraw volume,186.68 magaliters refers to rainwater collected in the PE8 industrial unit. There was the resumption the clorine-soda and dichloroethane production in its Maceió unit, which halted in May 2019. Thus, the company went back to producing PVC and caustic soda in an integrated manner, i.e., from the raw material (chlorine, MVC, and EDC) to the final product (PVC) contributing to a 6% increase in production observed. Since 2015, Braskem invested more than BRL 48 million in projects to improve water efficiency at its plants, with an accumulated economy of more than BRL 2 million in cost reduction with treatment of liquid effluents and operating costs with water consumption. Future water withdrawal tends to decrease due to the initiatives of alternative sources of water withdrawal under study at Braskem, but are still susceptible to external events and variations in production that might affect efficiency. The equation W = D + C is respected considering that consumption of water is associated with incorporation and evaporation of water throughout the chemical process Criteria: Much lower = reduction above 10%; Lower = reduction up to 10%; Higher = increase up to 10%; Much higher = increase above 10%
Total discharges	20,479	Higher	Discharges increased by 2.3% in comparison to 2020. As a new plant was added, we assumed

			the 2021 volume for 2020 to have the same basis for comparison. The discharge volume for the new plant was 0,99 megaliters, therefore, the total discharge volume in 2020 was considered to be 20.020 megaliters. There was the resumption the clorine-soda and dichloroethane production in its Maceió unit, which halted in May 2019. Thus, the company went back to producing PVC and caustic soda in an integrated manner, i.e., from the raw material (chlorine, MVC, and EDC) to the final product (PVC) contributing to a 6% increase in production observed. Positive actions continued to be implemented, such as increasing the concentration cycle in cooling towers, optimizing operational procedures with consequent reuse of water currents and reduction of losses. Reducing the consumption of water used in cooling towers has always been a challenge for Q1 BA team in Brazil. This scenario, however, has changed after the implementation of the Cooling Water Loss Reduction project. The initiative saved more than 300 million liters of water, equivalent to the consumption of around 9,000 people in six months. Future discharge tends to decrease due to the initiatives of water reuse and recycling internally. The equation W = D + C is respected considering that consumption of water is associated with incorporation and evaporation of water throughout the chemical process Criteria: Much lower = reduction above 10%; Lower = reduction up to 10%; Higher = increase up to 10%; Much higher = increase above 10%
Total consumption	50,445	Lower	The total consumption decreased by 1.8% in comparison to 2020. As a new plant was added, we assumed the 2021 volume for 2020 to have the same basis for comparison. The consumption volume for the new plant was 1,663 megaliters, therefore, the total consumption volume in 2020 was considered to

			be 51,395 megaliters. There was the resumption the clorine-soda and dichloroethane production in its Maceió unit, which halted in May 2019. Thus, the company went back to producing PVC and caustic soda in an integrated manner, i.e., from the raw material (chlorine, MVC, and EDC) to the final product (PVC) contributing to a 6% increase in production observed. Future consumption tends to decrease due to the initiatives of water efficiency under implementation at Braskem. The equation W = D + C is respected considering that consumption of water is associated with incorporation and evaporation of water throughout the chemical process Criteria: Much lower = reduction above 10%; Lower = reduction up to 10%; Higher = increase up to 10%; Much higher = increase above 10%

W1.2d

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

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Identification tool	Please explain
Row 1	Yes	11-25	About the same	WRI Aqueduct	Specific assessment developed by Trucost based on aqueduct, climate scenarios and local data to quantify the risk of every watershed Braskem operates. From that, the company defined the risk areas. According to Trucost's assessment based on the WRI aqueduct tool, high-risk means that the annual demand of water is over 20% of the long-term average annual supply.

					This criterion was used to define whether the water has been withdrawn from stressed areas. Once defined, the risk areas strategies started to be developed to mitigate or eliminate the risk, such as adopting reuse and/or desalination water. The reuse index was reduced 5.5% from last year (2020). However, this reduction was not in absolute values, but due to the change in methodology used to calculate the indicator. In 2021, the global water security index was 70%, with 4 percentage points of reduction compared to 2020. This reduction occurred mainly due to the reduction of water consumption from safe sources in the regions of Bahia and ABC/SP, both in Brazil. In Bahia, this reduction was due to the lower resource availability, so there was a greater uptake of surface water. In ABC, the reason was interruption of the unit due to maintenance shutdown, thus reducing absolute consumption of water in this region, for which Aquapolo is the main supplier and the major contributor for our water security in the region

W1.2h

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

	Relevance	Volume (megaliters/year)	Comparison with previous	Please explain

			reporting year	
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	9,491.11	Higher	Braskem uses only fresh surface water/rivers. Volume increased from 2021 by 2% as the plants in Bahia increased the volumes from freshwater as it was more available 2021 and reduced groundwater. This was possible because 2021 was not a year of severe droughts. Water source are chosen according to availability, in both quality and quantity to supply operations and according to operational and economic viability, varying from site to site depending on geography. Most of our sites are located close by rivers (US plants, Mexico, Brazil – Rio Grande do Sul, São Paulo, Rio de Janeiro and Alagoas) justifying the relevance of this source. From this withdraw volume, 182.22 megaliters refers to rainwater collected in the PE8 industrial unit. Future water withdrawal tends to decrease due to the initiatives of alternative sources of water withdrawal under study in Braskem (increase of third-party source and reduction of this source).
Brackish surface water/Seawater	Not relevant			Braskem does not source water from non-fresh surface water/seawater, but other sources indicated sufficed per the company's requirements

				(that is why 'Not relevant' was chosen). Considering future uses, the company assessed the possibility of using desalination plants in high-risk water stress areas. So far, there is no viability to implement such projects.
Groundwater – renewable	Relevant	2,690.56	Much lower	The industrial plants located in Alagoas and Bahia, in Brazil, source their water supply from renewable groundwater. In the previous year, the source of groundwater was misclassified, as it was "renewable", and not "non-renewable". Furthermore, as a new plant was added in Braskem, we assumed the 2021 volume for 2020 to have the same basis for comparison. The withdraw volume for the new plant was 2,661 megaliters, therefore, the 2020 updated value for groundwater was: 3,183 megaliters.
Groundwater – non-renewable	Not relevant			Braskem does not source water from Groundwater- non-renewable, but other sources indicated sufficed per the company's requirements (that is why 'Not relevant' was chosen). In the previous year, the source of groundwater was misclassified, as it was "renewable", and not "non-renewable". 2020 updated value: 0 m^3

Produced/Entrained water	Not relevant			Braskem does not source from Produced/Entrained water, but other sources indicated sufficed per the company's requirements (that is why 'Not relevant' was chosen). There is no future expectation of consuming water from this source.
Third party sources	Relevant	58,750.79	Lower	Water consumption from third parties decreased by 0.3% in 2021 in comparison to 2020. These results are connected with optimization implemented by reducing leaks and improving the cycles of concentration in the cooling towers. Much of the water supply to Braskem in 2021 came from the company that acquired the water treatment facilities from Braskem itself. It is relevant because it is our most important source of water (in volume withdrawal). Water sources are chosen according to availability, in both quality and quantity to supply operations and according to operational and economic viability, varying from site to site. From this withdraw volume, 4.46 refers to rainwater collected in the PE8 industrial unit. Future withdrawal from this source tends to increase due to the initiatives of alternative sources of water abstraction under study in Braskem

				(Reuse water projects such as Aquapolo, for instance, is considered a third-party source).

W1.2i

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	5,294.91	Lower	Discharge to this destination decreased by 9% from last year, due to the water quality better being in the entrance of the process increasing efficiency and production reduction in some industrial units. Destination is chosen according to operational and economic viability, and by the obtaining of legal permits. Now, fresh water it is the second most important destination (in volume), explaining why it is relevant. Future discharge tends to decrease from this source due to the initiatives of water efficiency under implementation.
Brackish surface water/seawater	Not relevant			Braskem does not discharge effluents in brackish surface water/seawater, explaining why 'Not relevant' was chosen. Last year Braskem did not discharge water from this type of destination either. Braskem does not intend to

				discharge in this destination in the future.
Groundwater	Not relevant			Braskem does not discharge effluents in Groundwater, explaining why 'Not relevant' was chosen. Braskem does not intend to discharge in this destination in the future.
Third-party destinations	Relevant	14,909.17	Higher	Braskem had a 5% increase, from 2020, in water discharge from third party destinations. These results are associated from increased temperatures requiring more water in the cooling towers and the increase of rain water. As a new plant was added, we assumed the 2021 volume for 2020 to have the same basis for comparison. The discharge volume for the new plant was 0,99 megaliters, therefore, the discharge volume to third party destinations in 2020 was considered to be 14,221.62 megaliters. Destination is chosen according to operational and economic viability, and by the obtaining of legal permits. It is the most important (in terms of volume) destination of discharge, explaining why it is relevant. Future discharge tends to decrease from this source due to the initiatives of water efficiency under implementation in Braskem.

W1.2j

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

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Relevant	5,356	Higher	11-20	The industrial units located in the south of Brazil use tertiary treament. This level of treatment was chosen because Braskem is in compliance with the local effluent standards required by law in each municipality/state/country where it operates and the requirements of the environmental operational licence. The value for 2020 was adjusted, so the volume was compared with the updated value for 2020: 4,250 megaliters.
Secondary treatment	Relevant	20,229.34	Higher	91-99	Most industrial units carry out this phase before final disposal. Braskem is in compliance with the local effluent standards required by law in each municipality/state/cou

					ntry where it operates and the requirements of the environmental operational licence. Due to the resumption of the CS1 unit, the value for 2020 was adjusted, so the volume was compared with the updated value for 2020: 19,787 megaliters.
Primary treatment only	Not relevant				All of Braskem's industrial units use either secondary or tertiary treatment.
Discharge to the natural environment without treatment	Not relevant				Braskem doesn't discharge to the natural environment without treatment.
Discharge to a third party without treatment	Relevant	250	Higher	1-10	This type of treatment is carried out by the two industrial units in Europe.
Other	Not relevant				Braskem has no other type of treatment, only those presented, primary, secondary, tertiary and discharge to a third party.

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	22,751,825,185.18	70,932	320,755.444442283	There are two types of reuse: internal current and domestic effluent through partnerships. Our goal is to increase safe water withdrawal, one of the options being reuse of water. We expect to replace part of the withdrawal with reuse, consequently improving our withdrawal efficiency. Based on our macro financial equation (MEF - 22 to 26), we expect a 6% reduction for this indicator. Production indicator is used to estimate revenues. 186.68 megaliters refers to rainwater collected in PE8.

W-CH1.3

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

Yes

W-CH1.3a

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

Product type

Specialty organic chemicals

Product name

Polypropylene

Water intensity value (m3)

2.23

Numerator: water aspect

Total water consumption

Denominator

Ton

Comparison with previous reporting year

Higher

Please explain

Braskem produced about 3.83 million tons of polypropylene in 2021, 5.4% higher than 2020 and with water intensity at about 6% higher than last year, due to the 11% increase in water consumption compared to the previous year.
These values help the company measure performance in terms of water efficiency per ton in comparison to previous years and follow up on its consumption goals (publicly disclosed commitments).

Braskem is constantly seeking to improve processes that save water, investing to reduce consumption at cooling towers for example, and also proposing challenges to our innovation area that researches start-ups for new solutions.

The metrics are monitored internally at the facility level by the HSE Corporate team. Critical analysis of the deviations is made on a monthly basis, comparing with Braskem's targets.

Based on our MEF (Macro Financial Equation) for the coming years (2022-2026), we expect a reduction of 6% in this water intensity indicator.

Product type

Specialty organic chemicals

Product name

Polyethylene

Water intensity value (m3)

3.23

Numerator: water aspect

Total water consumption

Denominator

Ton

Comparison with previous reporting year

Higher

Please explain

Braskem produced about 3.13 million tons of polyethylene in 2021, 7% lower than 2020. Company water intensity is 5.7% higher than last year, because water consumption was reduced by 3%, i.e. it did not follow the production reduction profile.

Braskem is constantly seeking to improve processes that save water, investing to reduce consumption at cooling towers for example, and also proposing challenges to our innovation area that researches start-ups for new solutions.

These values help the company measure performance in terms of water efficiency per ton in comparison to previous years and follow up on its consumption goals (publicly

disclosed commitments).

The metrics are monitored internally at the facility level by the HSE Corporate team. Critical analysis of the deviations is made on a monthly basis, comparing with Braskem's targets.

Based on our MEF for the coming years (2022-2026), we expect a reduction of 3% in this water intensity indicator.

Product type

Bulk organic chemicals

Product name

Chemicals and specialties

Water intensity value (m3)

4.93

Numerator: water aspect

Total water consumption

Denominator

Ton

Comparison with previous reporting year

Lower

Please explain

Braskem produced about 8.59 million tons of chemicals and specialties in 2021, 4% higher than 2020 and with water intensity at 6.3% lower than last year, because water consumption was 3% less than last year.
The implementation of initiatives to reduce water consumption contributed positively to this indicator.

These values help the company measure performance in terms of water efficiency per ton in comparison to previous years and follow up on its consumption goals (publicly disclosed commitments).

Braskem is constantly seeking to improve processes that save water, investing to reduce consumption at cooling towers for example, and also proposing challenges to our innovation area that researches start-ups for new solutions.

The metrics are monitored internally at the facility level by the HSE Corporate team. Critical analysis of the deviations is made on a monthly basis, comparing with Braskem's targets.

For the future, considering the period of 2022 to 2026, we expect a reduction of 9% in this water intensity indicator.

Product type

Specialty organic chemicals

Product name

PVC

Water intensity value (m3)

11.3

Numerator: water aspect

Total water consumption

Denominator

Ton

Comparison with previous reporting year

Lower

Please explain

Braskem produced about 0.48 million tons of PVC in 2021, 3.1% higher than 2020 and with water intensity at 7.60% lower than last year, due to the implementation of initiatives to reduce water consumption and also investments in efficiency. Keeping water consumption at the same level as the previous year, despite the increase in production.

These values help the company measure performance in terms of water efficiency per ton in comparison to previous years and follow up on its consumption goals (publicly disclosed commitments).

Braskem is constantly seeking to improve processes that save water, investing to reduce consumption at cooling towers for example, and also proposing challenges to our innovation area that researches start-ups for new solutions.

The metrics are monitored internally at the facility level by the HSE Corporate team. Critical analysis of the deviations is made on a monthly basis, comparing with Braskem's targets.

Based on our MEF for the coming years (2022-2026), we expect a reduction of 1% in this water intensity indicator.

Product type

Specialty organic chemicals

Product name

Chlorine-soda

Water intensity value (m3)

3.8

Numerator: water aspect

Total water consumption

Denominator

Ton

Comparison with previous reporting year

Much lower

Please explain

Braskem produced about 0.7 million tons of chlorine-soda in 2021, 1,814% higher than 2020 and with water intensity at 79% lower than last year, due to the resumption of operations of the plant in Alagoas and, consequently, an increase in production. These values help the company measure performance in terms of water efficiency per ton in comparison to previous years and follow up on its consumption goals (publicly disclosed commitments).

Braskem is constantly seeking to improve processes that save water, investing to reduce consumption at cooling towers for example, and also proposing challenges to our innovation area that researches start-ups for new solutions.

The metrics are monitored internally at the facility level by the HSE Corporate team. Critical analysis of the deviations is made on a monthly basis, comparing with Braskem's targets.

Based on our MEF for the coming years (2022-2026), we expect a reduction of 5% in this water intensity indicator.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?

Yes, our suppliers

W1.4a

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

Row 1

% of suppliers by number

76-100

% of total procurement spend

76-100

Rationale for this coverage

Braskem monitors 100% of its supply chain, for key suppliers, and then uses the criteria of geographic location against the risk of water stress for that particular watershed, using data from a climate risk study developed internally in partnership with ERM to select those inserted in high-risk areas. Those are then requested to reply to the CDP Supply Chain. 100% of Braskem's key suppliers goes through this selection process, considering they might suffer impacts that could indirectly affect Braskem as well (e.g. production disruption). The suppliers are incentivized to report through sensitization and training steps (workshops) organized by Braskem with the support of CDP. Suppliers also receive individual support and Braskem evaluates the results to identify potential opportunities for collaborative actions.

Impact of the engagement and measures of success

The information requested from suppliers is the one requested by the CDP Supply Chain questionnaire. Braskem requests the reporting of the water management strategy, established goals and identified risks and opportunities in water use, indicators and evolution.

In 2021, Braskem has invited 154 suppliers to report the CDP Supply Chain Water questionnaire and achieved a 79% rate of engagement. Braskem integrates the risks and opportunities identified by its suppliers in its analysis of risks and opportunities, using a framework developed by FGV (Fundação Getulio Vargas). The result of this process is the development of a robust adaptation plan, as part of a business strategy. In addition, Braskem procurement area monitors the evolution of each supplier. Success is measured through the percentage of the Water Security Plan completion and the percentage of suppliers engaged every year.

Comment

Suppliers are invited to participate in CDP events, workshops and training, join the Action Exchange and are contacted for support in the questionnaire (e.g. help identify initiatives to reduce impacts/costs).

W1.4b

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

Type of engagement

Incentivizing for improved water management and stewardship

Details of engagement

Demonstrable progress against water-related targets is incentivized in your supplier relationship management

Water management and stewardship action is integrated into your supplier evaluation

Water management and stewardship is featured in supplier awards scheme

% of suppliers by number

76-100

% of total procurement spend

76-100

Rationale for the coverage of your engagement

Braskem has developed a series of assessments of water security risks, and from this point on, the company started a series of policies and actions to prevent water risks from affecting production. Being aware of the water risks, Braskem has a prevention program, called IP (Braskem Prevention Index) that considers environmental aspects, including water resources, defining activities that must be carried out by suppliers, such as weekly dialogues for awareness, and planning meeting for evaluation of results and deviations in the treatment process.

All of these topics are reviewed, resulting in a score for each supplier, thus stimulating them to invest in water monitoring, assessments, and also seeking to identify actions to reduce their water impact. The score is used to select suppliers that will be recognized in the annual supplier HSE recognition program.

In 2021, we strengthened a partnership with EcoVadis, one of the largest sustainability rating companies for global supply chains, to assess supplier environmental, social and governance management. We completed the pilot assessment of 108 suppliers considered critical from an operational, environmental and social point of view.

To encourage other agents in our value chain to adopt practices linked to ESG criteria in their actions, Braskem created the Braskem Supplier Sustainability Recognition, an event that recognized suppliers that are references in these issues.

The ’76-100’ were chosen because every Braskem supplier that is located in a stressed water area is invited to the CDP Supply Chain and IP program.

Impact of the engagement and measures of success

There are 2 types of benefits: awareness of the environmental aspects and management of water resources (suppliers can replicate these practices in their processes), and the reduction of the water impact on Braskem's operations, as several suppliers work at Braskem's facilities.

The measure of success is the percentage of suppliers engaged in the program (IP). Considering suppliers with more than 10 employees, and a long-term contract (more than 6 months), the engagement rate is 100% in regions of potential water stress.

Comment

The IP considers activities to protect health, safety and the environment in all operations, including the southeast and northeast of Brazil. Water resources management is considered in the environmental dimension. This program applies to all Braskem employees and relevant suppliers. Each program activity has a weight to compose the result of the supplier’s prevention index. 5% - weekly awareness dialogue; 10% - planned performance evaluation meeting; and 15% - deviation treatment process.

W2. Business impacts

W2.1

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

No

W2.2

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

No

W3. Procedures

W-CH3.1

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

Due to the nature of Braskem's operations, the company is legally obliged to undertake a series of monitoring in its liquid discharges (parameters such as pH, temperature, OBD, sediments, oils, floating materials, benzene, among several others). Those obligations and monitoring are followed up and enforced by governmental environmental agencies through periodic reports and oversight, after being identified in a risk analysis as port of an Environmental Impact Assessment. Every Braskem business has its own specific parameters matrix of what to monitor and thus consider as pollutants. Determined in the environmental operation permit, those parameters have as a minimum requirement what is predicted in country regulations such as the CONAMA Resolution nº 430/2011 in Brazil. Non-compliance may lead to fines and prohibition to discharge effluents. Depending on the business and its risks, the company may make additional monitoring (beyond legal norms) by its own initiative, as is the case for BTX concentration in effluents, following regulations and norms from the Labor Ministry, National and International Accords. All effluents receive proper treatment before a final discharge and samples are analyzed in specific laboratories (allowing identification of the potential water pollutants), and results are submitted to regulatory agencies. However, in some cases, the effluent is not even discharged in water bodies, such as the case for our plants in the state of Rio Grande do Sul where after 3 levels of treatment the effluent is discharged on soil in a specific area of 200 hectares. As a petrochemical company, the plants deal with specific pollutants such as BTX, organochloride and heavy metals. Those specific pollutants can have serious effects such as intoxication, potential cancer, and insomnia, among others. Therefore they are under intense control and are neutralized by the company's best practices and procedures. Braskem has internal documented procedures on exposition control, including biological, and control/preventive measures.

The impacts caused by our direct operation are water quality degradation impacting freshwater treatment and distribution to the population; increased treatment costs for use to both society and business; damage to property value in the margins of the rivers; lower oxygen in the water leading to biodiversity losses. Others include eutrophication leading to an excessive amount of algae, killing biodiversity by the removal of oxygen and preventing light penetration. Some elements can cause intoxication and bioaccumulation, such as heavy metals, and others such as oil can cause cancer and harm biodiversity in several ways (suffocation, prevent photosynthesis, intoxicate, etc.). PH can cause corrosion and damage to plants and agriculture; BTX may cause cancer and less severe effects such as sickness, vomiting, and sleepiness. Other such as BTX can have a diffused impact due to its volatility characteristic.

Our main suppliers are oil and gas companies that present the same conditions of effluent generation and potential impacts and are subjected to the same regulations and permits. The most impactful substances are not carried through our clients and do not represent risk to consumers.

W-CH3.1a

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

Potential water pollutant	Value chain stage	Description of water pollutant and potential impacts	Management procedures	Please explain
OBD, OBC, pH, BTX, Organochloride, heavy metals	Direct operations Supply chain	The impacts caused by our direct operation and supply chain (petrochemical suppliers) are water quality degradation impacting freshwater treatment and distribution to the population; increased treatment costs for use to both society and business; damage to property value in the margins of the rivers; lower oxygen in the water leading to biodiversity losses. Others include eutrophication leading to an excessive amount of algae, killing biodiversity by the removal of oxygen and preventing light penetration. Some	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages	How the selected procedures manage the risks of the potential impacts outlined: All the plants use a series of treatments in all 3 levels to prevent the main pollutants to reach nature in values in discordance with the legal norms and that are instead safe for the environment and human health. At first, level processes use gravitational separators, especially to deal with oil in the water. The second stage uses neutralization, coagulation, filtration and flotation technics and at level 3, the company

		elements can cause intoxication and bioaccumulation, such as heavy metals, and others such as oil can cause cancer and harm biodiversity in several ways (suffocation, prevent photosynthesis, intoxicate, etc.). PH can cause corrosion and damage to plants and agriculture; BTX may cause cancer and less severe effects such as sickness, vomiting, and sleepiness; Impacts in general are regional (scale), with a low-to-medium probability and medium-to-high magnitude. Some chemicals such as heavy metals can have a persistent effect and bioaccumulate. Other such as BTX can have a diffused impact due to its volatility characteristic.		uses, depending on the plant, solutions such as biological filers, oxidation towers, reverse osmosis and specific solutions to remove BTX and organochloride. Braskem requires main suppliers to respond to the CDP water and monitor compliance with legal requirements and standards. In general, the company's main suppliers are engaged in oil & gas and ethanol production and refining, thus adopting practices from the chemical industry. They, as well as Braskem, use a series of treatments in all 3 levels to prevent the main pollutants to reach nature in values in discordance with the legal norms and that are instead safe for the environment and human health. At first, level processes use gravitational separators, especially to deal with oil in the water. The second stage uses neutralization, coagulation, filtration and flotation technics and at level 3, the company uses, depending on the plant, solutions such as biological filers, oxidation towers, and reverse osmosis. How success is measured and evaluated:

				Braskem follows the best practices from the chemical industry and the standard quality of effluent discharge determined by the environmental agencies in all regions in which we operate. Depending on the effluent, it never reaches the bodies of water, being discharged at a specific site of 200 hectares of soil. Therefore, success is measured when the standard quality of effluent discharge fulfills the requirements imposed by regulations. Periodic analyses and reports are issued to regulation agencies. Success is evaluated when the supplier complies with industry standards. This is guaranteed during the procurement procedure.

W3.3

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

Yes, water-related risks are assessed

W3.3a

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

Value chain stage

Direct operations

Supply chain

Coverage

Full

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?

More than 6 years

Type of tools and methods used

Tools on the market
Enterprise risk management
International methodologies and standards
Other

Tools and methods used

WRI Aqueduct
External consultants
Other, please specify
FGV - UKCIP/INCAE Wizard & DEVESE

Contextual issues considered

Water availability at a basin/catchment level
Stakeholder conflicts concerning water resources at a basin/catchment level
Water regulatory frameworks

Stakeholders considered

Local communities
Suppliers
Other water users at the basin/catchment level

Comment

Braskem developed a Climate Change & Adaptation Study in 2016, mapping and prioritizing risks (including Drought and flooding) and opportunities for the company's operational sites until 2040 (Horizon). The study originated action plans measured through a PMO. In 2017, a new indicator called 'Water Safety Index' was defined and approved.
The study is reviewed approximately every 5 years and it is currently being updated. This water security indicator is part of the company's Sustainable Development macro objectives and is evaluated annually.

For the supply chain assessment, we consider the "full" option for coverage, as 100% of key suppliers in regions of potential water stress are considered. At the end of each annual engagement cycle through the CDP Supply Chain, Braskem has identified suppliers who reported a high water risk, with the aim of supporting them in identifying

risk mitigation actions. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact.

We considered "frequency of assessment" as anually because this is evaluated through the CDP Supply Chain programme.

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.

For direct operations, the application of the WRI Aqueduct was used to assess water risks in watersheds, with level coverage and practical implementation in operations in Brazil, Texas in the United States and Mexico. The application of the FGV - UKCIP/INCAE Wizard & DEVESE The FGV tool was used to assess climate risks, including the risk of severe droughts, with a level of coverage and practical implementation in 100% of Braskem's operations. The application of the External consultants was used to assess climate risks and assess water risks, using the tools provided by these consultancies, with a level of coverage and practical implementation in 100% of Braskem's operations.
Reports are generated with the results of risk assessments to inform the leaders of the industrial areas involved, who are responsible for the internal decision-making process. Water availability in the watershed was included in the risk assessment, as water is essential for our process, and the climate risk study identified regions with potential water stress. Potential conflicts with stakeholders in relation to water resources were included in the risk analysis, aiming to identify actions to avoid these conflicts and protect these resources for these stakeholders. Water Regulation was included in the risk analysis because depending on the status of this issue in the region, the positive or negative impact may be greater or lesser, according to on the level of regulation of the topic. Local communities were included in risk analyses, in order to identify the impact on them, and identify actions to mitigate potential conflicts. Other users of watershed were included, in order to understand their participation in the use of water resources and also how they can contribute to the collective solution.

For the Supply Chain, the WRi Aqueduct tool was used in the risk assessment of watersheds, and thus, for all watersheds with high risk, all key suppliers are included in Braskem’s engagement program via CDP Supply Chain. The outcomes of the supplier engagement program are used to identify suppliers with high water risk, but do not yet have action to mitigate water risk. And so it encourages suppliers to identify these actions to mitigate these risks. The water regulatory framework and availability were considered in the risk assessment, regarding suppliers, since these two aspects might impact the supply of products or services, by interruption or increase in costs. The water resources are material for Braskem; when we assess the chain this impact is more significant. Thus, customers and suppliers are our priorities in terms of engagement and identification of measures to mitigate these impacts, due to their high participation in contributing to this impact. We started with the suppliers because we already have structured programs for their engagement.

W4. Risks and opportunities

W4.1

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

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

W4.1a

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

Braskem developed an adaptation study to identify the impacts of climate change in its global operations. One of the goals of the study was the mapping and prioritization of risks and opportunities.
Through this methodology, it was defined that a substantive strategic impact is noticed when the following thresholds are reached for any of the categories listed below (e.g. Financial, Environmental, Social).

Impact Measurement (with respective Thresholds):

a) Financial: Above 'Losses above USD 100,000.00' (Threshold)
b) Environmental: Above 'Impact of considerable magnitude, but reversible with mitigation actions restricted to the company's area; and/or absence of impact on sensitive species/habitats.' (Threshold)
c) Health and Safety: Above 'Injury/disorder with medical leave, or injury/disorder without medical leave with restriction.' (Threshold)
d) Social: Above 'Complaints submitted to user/consumer/society service.' (Threshold)
e) Image/Reputation: Above 'Report on media at local (municipal or state) level; concern/complaints of specific groups/organizations (e.g. NGOs).' (Threshold)
f) Infrastructure: Above 'Frequent partial reduction of production process.' (Threshold

Metrics and indicator used:

a) Metrics: The metric used was the cross between probability of occurrence (frequency) and impact measurement of each climate event for every category listed above. With these results, it was possible to classify the risks in low, medium and high by the crossing of the frequency with the impact measurement.
b) Indicators: The indicator used was the risk classification (low, medium and high). The risks classified as high are the ones that represent substantive change in our business and were the ones prioritized in the definition of adaptation actions.

The analysis is valid for Braskem' s direct operation. For suppliers, the methodology follows the CDP Supply Chain standard where suppliers themselves report the risks with their magnitude of impact and likelihood according to their own methodology.

As an example, our Climate Risk and Adaptation Assessment considered 3 areas (in the states of Bahia, Rio de Janeiro and Alagoas) where Braskem has operations of high risk for water scarcity. This risk was classified as 'High' for these three regions because the Financial impact measurement surpasses the USD 100,000.00 threshold. Once those areas were identified, the company developed a study with FGV to better understand the risks and analyses scenarios, with solutions such as reuse. Now the company is working on action plans with the operations from those areas to mitigate/eliminate water scarcity risks by adopting alternatives such as reuse, desalination and safe source of groundwater.

The risk of water scarcity is crucial for Braskem's operations, thus the importance of rating direct and indirect use of water is vital. Freshwater and reuse water is used throughout the entire production process, in processes such as cooling, steam generation, effluent treatment. Therefore, the lack of water can affect operational costs and ultimately cease operations. Because Braskem is a chemical industry, a significant part of our suppliers use water in a similar way to our processes, especially considering that Braskem's main raw material is petrochemical naphtha.

W4.1b

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

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	10	1-25	Despite representing about 24% of the total facilities these operations, represent 17.1% of the water withdrawal, so we can assume that this is the percentage under risk.

W4.1c

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

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Number of facilities exposed to water risk

3

% company-wide facilities this represents

1-25

% company's total global revenue that could be affected

1-10

Comment

According to Trucost, using the tool from WRI Aqueduct, the Guandu Basin presents a medium risk by 2040. Braskem is already studying an action plan to implement alternatives such as water reuse and desalination for its plants in the area (Chemicals 4; PE 9 and PP 5). The company is also engaging with other companies and stakeholders to invest in the potential alternatives.

To calculate the revenue that could be affected, Braskem considered a series of potential scenarios (9 in total). For this questionnaire we adopted one of the scenarios that involves a 30% reduction in the water withdrawal permit, leading to a calculated reduction in production for the duration of the withdrawal restriction (12 months).

Country/Area & River basin

United States of America

Other, please specify

Seadrift River, Victoria, Texas, United States

Number of facilities exposed to water risk

3

% company-wide facilities this represents

1-25

% company's total global revenue that could be affected

1-10

Comment

Trucost analyzed the full value of water for three of Braskem's locations and calculated potential revenue at risk due to water risks. The analysis conveyed that Braskem has significant water risk across these facilities. This study was recently completed, and Braskem is evaluating the results in order to define the necessary mitigation actions.

To calculate the revenue that could be affected, Braskem considered a series of potential scenarios (9 in total). For this questionnaire we adopted one of the scenarios that involves a 30% reduction in the water withdrawal permit, leading to a calculated reduction in production for the duration of the withdrawal restriction (12 months).

Country/Area & River basin

Brazil

Other, please specify

Baixada Santista (São Paulo / Cubatão)

Number of facilities exposed to water risk

1

% company-wide facilities this represents

1-25

% company's total global revenue that could be affected

Less than 1%

Comment

According to Trucost, using the tool from WRI Aqueduct, the Baixada Santista Basin in 2040 presents a low-to-medium scarcity risk. Braskem is already studying an action plan to implement alternatives such as water reuse in the area (in PE 8 plant). The company is also engaging with other companies and stakeholders to invest in water alternatives and security in the same area.

To calculate the revenue that could be affected, Braskem considered a series of potential scenarios (9 in total). For this questionnaire we adopted one of the scenarios that involves a 30% reduction in the water withdrawal permit, leading to a calculated reduction in production for the duration of the withdrawal restriction (12 months).

Country/Area & River basin

Brazil

Other, please specify

Piracicaba, Capivari, Jundiaí (SP)

Number of facilities exposed to water risk

1

% company-wide facilities this represents

1-25

% company's total global revenue that could be affected

1-10

Comment

According to Trucost, using the tool from WRI Aqueduct, Rios Piracicaba, Capivari and Jundiaí Basin in 2040 presents a low to medium scarcity risk. Braskem is already studying an action plan to implement alternatives such as water reuse in the area (PP 3 plant). The company is also engaging with other companies and stakeholders to invest in water alternatives and security in the same area.

To calculate the revenue that could be affected, Braskem considered a series of potential scenarios (9 in total). For this questionnaire we adopted one of the scenarios that involves a 30% reduction in the water withdrawal permit, leading to a calculated reduction in production for the duration of the withdrawal restriction (12 months).

Country/Area & River basin

Brazil

Other, please specify

Remédios (Alagoas)

Number of facilities exposed to water risk

2

% company-wide facilities this represents

1-25

% company's total global revenue that could be affected

1-10

Comment

According to Trucost, using the tool from WRI Aqueduct, the CELMM Basin in 2040 presents a medium-to-high scarcity risk. Braskem is already studying an action plan to implement alternatives such as water reuse and desalination in the area (plants CS 1 and PVC 2). The company is also engaging with other companies and stakeholders to invest in water alternatives and security in the same area.

To calculate the revenue that could be affected, Braskem considered a series of potential scenarios (9 in total). For this questionnaire we adopted one of the scenarios that involves a 30% reduction in the water withdrawal permit, leading to a calculated reduction in production for the duration of the withdrawal restriction (12 months).

W4.2

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

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event

every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity.

The plants located in Duque de Caxias (Chemicals 4, PE 9 and PP 5) are part of the Atlantic Forest biome of the State of Rio de Janeiro. Although the increase in temperature and reduction of precipitation are less impacting than in the other South-eastern biomes, the next years will tend to be hotter and drier with reduced rainfall periods.

This impact can affect our direct operations as the water availability of plants may be reduced in the short and long term, resulting from an increase in temperature and consequent evaporation of water bodies. The potential impacts: (1) DCX units - Operational / structural impacts: Reducing water availability causing unscheduled outages impacting industrial processes and electricity generation, especially considering Brazilian energy matrix characteristics (major contribution of hydro-electric energy). (2) DCX units - Financial impacts: water scarcity increasing the price of water can generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

32,707,774

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Based on a series of 9 potential climate scenarios, using DEVESE methodology, and with 2040 as the timescale, the value represents the potential impact of one of the scenarios. In this case, it was considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Secure alternative water supply

Description of response

The Climate Change and Adaptation Plan developed by Braskem indicated water scarcity as the primary potential risk for the company's operations. The same plan complemented by specific high-risk basins studies (developed using DEVESE methodology), including Guandu, indicated the need to find new/alternative water sources to mitigate/neutralize the impacts of water scarcity as the main primary response to risk. Using DEVESE, the company estimated an internal price on water and the costs to invest in alternatives such as water reuse, and desalination among others, considering future water scarcity scenarios leading to restrictions on the water withdrawal permit. Braskem is currently developing action plans (2017/2030) to find these new/alternative sources of water.

For the Guandu plants (Chemicals 4, PE 9 and PP 5) the company is already in contact with the regional sanitation company (CEDAE) to locate sewage treatment plants that can supply Braskem with reuse water in the scale that it needs. In 2018, the company started a conversation with PETROBRAS to potentially establish a partnership for a great reuse project including two industrial districts.

Cost of response

3,488,807

Explanation of cost of response

The cost represents the difference between purchasing freshwater and purchasing reuse water at a price similar to Aquapolo (ABC reuse project - around 6.74 BRL/m3), to supply 100% of the region's operations. The cost is recurring annually (long-term contract to make alternative viable to the local sanitation company). For Guandu plants, Braskem is currently evaluating long-term contracts in a partnership with the State Industry Federation (FIRJAN) and companies of the Duque de Caxias Complex.

Country/Area & River basin

United States of America

Other, please specify

Seadrift River, Victoria, Texas, USA

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river

basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction of or disruption in production capacity.

This impact can affect our direct operations as the water availability of plants may be reduced in the short and long term, resulting from an increase in temperature and consequent evaporation of water bodies. The potential impacts: (1) Texas units Operational / structural impacts: Reducing water availability (2) Texas units Financial impacts: water scarcity increasing the price of water can generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,930,175

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Trucost analyzed the full value of water for three of Braskem's locations and calculated potential revenue at risk due to water risks. The analysis conveyed that Braskem has significant water risk across these facilities. The full value of water ranges from 4x the current market price to 11.3x the current market price. Braskem's total risk adjusted water bill is USD 5,930,175 or 8.35x higher than its current water bill.

Primary response to risk

Secure alternative water supply

Description of response

The Climate Change and Adaptation Plan developed by Braskem indicated water scarcity as the primary potential risk for the company's operations. The same plan complemented by specific high-risk basins studies (developed using DEVESE methodology), indicated the need to find new/alternative water sources to

mitigate/neutralize the impacts of water scarcity as the main primary response to risk. Using DEVESE, the company estimated an internal price on water and the costs to invest in alternatives such as water reuse, and desalination among others, considering future water scarcity scenarios leading to restrictions on the water withdrawal permit. Braskem is currently developing action plans (2017/2030) to find these new/alternative sources of water.
For the industrial units in USA, as water risk assessment was recently completed, Braskem is evaluating the results in order to define the necessary mitigation actions.

Cost of response

100,000

Explanation of cost of response

As the water risk assessment was recently completed, Braskem is evaluating the results to define the necessary mitigation actions. We have considered the costs related to the studies concluded. After the actions are defined we will update the total costs.

Country/Area & River basin

Brazil

Other, please specify

Baixada Santista (São Paulo/Cubatão)

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity.

This impact can affect our direct operations as the water availability of the plant (PE 8), located in the Atlantic Forest biome, may be reduced in the short and long term, resulting from a reduction in the amount of rainfall combined with an increase in temperature and consequent evaporation of bodies of water. The PE 8 industrial plant produces polyethylene that supplies the Brazilian market, and represents around 5% of the global production of this product at Braskem The potential impacts: (1) Cubatao unit Operational / structural impacts: Reducing water availability causing unscheduled outages impacting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydro-electric). (2) Cubatao unit Financial impacts: water scarcity increasing the price of water can generate financial impact for the plant. There

may be changes in legislation regarding the water withdrawal leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

Low

Likelihood

Unlikely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,545,576

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Based on a series of 9 potential climate scenarios, using DEVESE methodology, and with 2040 as the timescale, the value represents the potential impact of one of the scenarios. In this case, it was considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Secure alternative water supply

Description of response

The Climate Change and Adaptation Plan developed by Braskem indicated water scarcity as the primary potential risk for the company's operations. The same plan complemented by specific high-risk basins studies (developed using DEVESE methodology), including Baixada Santista basin, indicated the need to find new/alternative water sources to mitigate/neutralize the impacts of water scarcity as the main primary response to risk. Using DEVESE, the company estimated an internal price on water and the costs to invest in alternatives such as water reuse, and desalination among others, considering future water scarcity scenarios leading to restrictions on the water withdrawal permit. Braskem is currently developing action plans (2017/2030) to find these new/alternative sources of water.

Baixada Santista Basin is close to ABC, where some of our plants are covered by the largest industrial reuse plant in Latin America– Aquapolo, which Braskem helped to establish. This plant is the main water withdrawal source for the company's local

operations and Braskem is analyzing the possibility to link it to the Aquapolo system. Other alternatives, such as the use of rainwater, are under development in some of our plants.

Cost of response

662,797

Explanation of cost of response

The cost represents the difference between purchasing freshwater and purchasing reuse water at a price similar to Aquapolo (ABC reuse project - around 6.74 BRL/m3), to supply 100% of the region operations. The cost is recurring annually (long-term contract to make alternative viable to the local sanitation company). For the plants in Baixada Santista basin, Braskem is currently evaluating long-term contracts in a partnership with local companies.

Country/Area & River basin

Brazil

Other, please specify

Piracicaba, Capivari, Jundiaí (SP)

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity.

This impact can affect our direct operations as the water availability of the plant (PP 3), located in the Atlantic Forest biome, may be reduced in the short and long term, resulting from a reduction in the amount of rainfall combined with an increase in temperature and consequent evaporation of bodies of water. The PP 3 industrial plant produces polypropylene that supplies the Brazilian market, and represents around 9% of the global production of this product at Braskem. The potential impacts: (1) Paulinia unit Operational / structural impacts: Reducing water availability causing unscheduled outages impacting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydro-electric). (2) Paulinia unit Financial impacts: water scarcity increasing the price of water can generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal leading to an increase in the price

of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

Medium

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,015,817

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Based on a series of 9 potential climate scenarios, using DEVESE methodology, and with 2040 as the timescale, the value represents the potential impact of one of the scenarios. In this case, it was considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Secure alternative water supply

Description of response

The Climate Change and Adaptation Plan developed by Braskem indicated water scarcity as the primary potential risk for the company's operations. The same plan complemented by specific high-risk basins studies (developed using DEVESE methodology), including Piracicaba, Capivari and Jundiaí River Basin, indicated the need to find new/alternative water sources to mitigate/neutralize the impacts of water scarcity as the main primary response to risk. Using DEVESE, the company estimated an internal price on water and the costs to invest in alternatives such as water reuse, and desalination among others, considering future water scarcity scenarios leading to restrictions on the water withdrawal permit. Braskem is currently developing action plans (2017/2030) to find these new/alternative sources of water.

The company is already in contact with the local sanitation company responsible for the Piracicaba, Capivari and Jundiaí River Basin (São Paulo/Paulínia) area to locate sewage treatment plants with reuse potential and groundwater alternatives for the

industrial district where Braskem operates. Other alternatives, such as the use of rainwater, are under development in some of our plants.

Cost of response

609,433

Explanation of cost of response

The cost represents the difference between purchasing freshwater and purchasing reuse water at a price similar to Aquapolo (ABC reuse project - around 6.74 BRL/m3), to supply 100% of the region's operations. The cost is recurring annually (long-term contract to make alternative viable to the local sanitation company). For the plants in Piracicaba, Capivari and Jundiaí River Basin, Braskem is currently evaluating long-term contracts in a partnership with local companies.

Country/Area & River basin

Brazil

Other, please specify

Remédios (Alagoas)

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity.

This impact can affect our direct operations as the plants located in Alagoas (CS 1 and PVC 2) are part of the Atlantic Forest biome of the State of Alagoas. The increase in temperature and reduction of precipitation are less impacting than in the Caatinga biome, but the next years still tend to be hotter and drier with reduced rainfall periods. Although located near the Mundaú-Manguaba estuary, the water availability of the plant may be reduced in the short and long term, resulting from an increase in temperature and consequent evaporation of water bodies. The potential impacts: (1) Algoas units Operational/structural impacts: Reducing water availability, causing unscheduled outages impacting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydro-electric). (2) Alagoas units Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal, leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Virtually certain

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

47,989,276

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Based on a series of 9 potential climate scenarios, using DEVESE methodology, and with 2040 as the timescale, the value represents the potential impact of one of the scenarios. In this case, it was considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Secure alternative water supply

Description of response

The Climate Change and Adaptation Plan developed by Braskem indicated water scarcity as the primary potential risk for the company's operations. The same plan complemented by specific high-risk basins studies (developed using DEVESE methodology), including Remédios River Basin, indicated the need to find new/alternative water sources to mitigate/neutralize the impacts of water scarcity as the main primary response to risk. Using DEVESE, the company estimated an internal price on water and the costs to invest in alternatives such as water reuse, and desalination among others, considering future water scarcity scenarios leading to restrictions on the water withdrawal permit. Braskem is currently developing action plans (2017/2030) to find these new/alternative sources of water.

The company is already in contact with the sanitation company responsible for the Remédios Basin (Alagoas) and already located a sewage treatment plant with reuse potential near where Braskem operates. Now the company is finalizing a series of cost benefit analyses to check the viability of projects.

Cost of response

5,980,618

Explanation of cost of response

The cost represents the difference between purchasing freshwater and purchasing reuse water at a price similar to Aquapolo (ABC reuse project - around 6.74 BRL/m3), to supply 100% of the region's operations. The cost is recurring annually (long-term contract to make alternative viable to the local sanitation company). For the Remédios River Basin plants, Braskem is currently evaluating long-term contracts in a partnership with local companies.

W4.2a

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

Country/Area & River basin

Brazil

Other, please specify

Alto Tietê (São Paulo)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction of or disruption in production capacity. Based on the assessment, all those who supply Braskem's operations and are located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (36 suppliers total in Alto Tietê). Suppliers fed by this water basin can be affected in the short term, due to a combination of factors such as the reduction of rainfall, increase in temperature and consequent evaporation of bodies of water and increased demand by a growing population and economy. In terms of financial impacts, it should be noted that water scarcity might increase the price of water, generating financial impact for Braskem and for the supplier. It could also lead to disruption of supply of raw material to our company.

However, those connected to the Aquapolo reuse plant might not be affected by the crisis, as was the case in the drought of 2014 and 2015.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

81,508,042

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement
Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. What's more, Braskem develops workshops every year to train its suppliers in reporting to CDP SC. In 2017 and 2018, Braskem in São Paulo and Triunfo arranged workshops with more than 15 participating suppliers. Braskem has organized workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.
In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of

water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

50,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity. Based on the assessment, all those who supply to Braskem's operations and are located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (3 suppliers total in Guandu).

Although the increase in temperature and reduction of precipitation are less impacting than in the other Southeastern biomes, the next years will tend to be hotter and drier with reduced rainfall periods that combined with population increase can affect suppliers. The potential impacts: (1) Operational/structural impacts: Reducing water availability, causing unscheduled outages, affecting industrial processes and electricity

generation (Brazilian energy matrix is predominantly hydroelectric). (2) Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal, leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

32,702,774

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement

Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. What's more, Braskem develops workshops every year to train its suppliers in reporting to CDP SC. In 2017 and 2018, workshops were arranged by Braskem in São Paulo and Triunfo, with more than 15 suppliers participating. Braskem has organized workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.

In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

50,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

Country/Area & River basin

Brazil

Other, please specify

Recôncavo & Inhambupe (Bahia)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity. Based on the assessment, all those who supply to Braskem's operations and are located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (7 suppliers total in Recôncavo & Inhambupe).

Despite being located between two large reservoirs, the water availability of the suppliers may be reduced in the short term, resulting from reduced rainfall periods, increase in temperature, evaporation and demand by a growing population and

economy. The potential impacts: (1) Operational/structural impacts: Reducing water availability, causing unscheduled outages, affecting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydroelectric). (2) Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal, leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

182,868,632

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement

Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. Also, Braskem develops workshops every year to train its suppliers in reporting to CDP SC. In 2017 and 2018, workshops were arranged by Braskem in São Paulo and Triunfo, with more than 15 suppliers participating. Braskem has organized

workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.
In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

50,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

Country/Area & River basin

Brazil
Other, please specify
Baixada Santista (São Paulo/Cubatão)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical
Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction or disruption in production capacity. Based on the assessment, all those who supply to Braskem's operations and are located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (36 suppliers total in Baixada Santista).

Suppliers fed by this water basin can be affected in the short term, due to a combination

of factors such as the reduction of rainfall, increase in temperature and consequent evaporation of bodies of water and increased demand by a growing population and economy. In terms of financial impacts, it should be noted that water scarcity might increase the price of water, generating financial impact for Braskem and for the supplier. It could also lead to disruption of supply of raw material to our company. However, those connected to the Aquapolo reuse plant might not be affected by the crisis, as was the case in the drought of 2014 and 2015.

Timeframe

More than 6 years

Magnitude of potential impact

Low

Likelihood

Unlikely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,545,576

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement

Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. Also, Braskem develops workshops every year to train its suppliers in

reporting to CDP SC. In 2017 and 2018, workshops were arranged by Braskem in São Paulo and Triunfo, with more than 15 suppliers participating. Braskem has organized workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.
In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

50,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

Country/Area & River basin

Brazil

Other, please specify

Piracicaba, Capivari, Jundiaí (SP)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction of or disruption in production capacity. Based on the assessment, all those who supply Braskem's operations and are located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (36 suppliers total in Piracicaba, Capivari and Jundiaí).

Suppliers fed by this basin can be affected in the short term since years tend to be hotter and drier with reduced rainfall periods. This region is one of the most industrialized in the country and consumption might exceed the demand by 22% if investments are not made. The potential impacts: (1) Operational/structural impacts: Reducing water availability, causing unscheduled outages, affecting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydroelectric). (2) Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal, leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

Medium

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,015,817

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement

Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free

consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. Also, Braskem develops workshops every year to train its suppliers in reporting to CDP SC. In 2017 and 2018, workshops were arranged by Braskem in São Paulo and Triunfo, with more than 15 suppliers participating. Braskem has organized workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.
In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

50,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

Country/Area & River basin

Brazil

Other, please specify

Remédios (Alagoas)

Stage of value chain

Supply chain

Type of risk & Primary risk driver

Chronic physical

Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Primary risk driver was identified through Braskem Climate Change and Adaptation study in partnership with ERM and Trucost, followed by the analysis of specific river basin scenarios, considering 2040 as timeframe and factors such as one drought event every five years lasting for 12 months among other variables. Such drought would lead the company to its primary potential impact – reduction of or disruption in production capacity. Based on the assessment, all those who supply Braskem's operations and are

located in this same region of high risk were considered at risk of product disruption as well, because they do not have access to alternative sources of water (2 suppliers total in Remédios).

Suppliers fed by this water basin can be affected in the short term, due to increase in demand, temperature and reduction of precipitation and consequent evaporation. The potential impacts: (1) Operational/structural impacts: Reducing water availability, causing unscheduled outages, affecting industrial processes and electricity generation (Brazilian energy matrix is predominantly hydroelectric). (2) Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant. There may be changes in legislation regarding the water withdrawal, leading to an increase in the price of water, and consequently in the costs of operation.

Timeframe

More than 6 years

Magnitude of potential impact

High

Likelihood

Virtually certain

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

47,989,276

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Supply issues have the same impact as reduction in direct operations, thus the same value also based on a series of 9 potential scenarios with 2040 as the timescale. In this case, the scenario considered a 30% reduction in the water permit withdrawal for 12 months in a 5-year period that could lead to a calculated reduction in production directly affecting the regional plant's load (reflecting on the plant's EBITDA). This potential financial impact was calculated based on historical data.

Primary response to risk

Supplier engagement

Increase supplier reporting on water

Description of response

Braskem encourages its suppliers to report by inviting and encouraging them to participate in CDP events, workshops and training, as well as direct contact for support in the questionnaire response process. Braskem reinforces the invitation from the CDP

Supply Chain so that all suppliers participate in the Action Exchange, obtaining a free consultation to identify initiatives to reduce impacts and costs. In addition, in the supplier evaluation process, Braskem inserted a bonus in the score of those who join the CDP Supply Chain. What's more, Braskem develops workshops every year to train its suppliers in reporting to CDP SC. In 2017 and 2018, workshops were arranged by Braskem in São Paulo and Triunfo, with more than 15 suppliers participating. Braskem has organized workshops on water risk and evaluation where, in partnership with stakeholders, building capacity for its suppliers on the Water Risk Monetizer tool.
In 2019, the Procurement area, supported by Braskem's Sustainable Development area, held the first event to recognize suppliers with the best performance in management of water resources and climate change issues. The event had 96 participants, including suppliers, speakers and Team Members. The initiative is relevant because, within our risk matrix, water and climate have a high potential for impact. Thus, we select only the most critical suppliers that can be impacted by the potential scenarios of severe droughts or extreme climate change events. The criterion for recognizing suppliers was the performance in 2018.

Cost of response

500,000

Explanation of cost of response

Costs to engage in the CDP Supply chain program, including benefits such as inviting suppliers; individual support with gap analysis; consultancy with identification of improvement opportunities and participation in Latin American discussions. Costs also include CDP workshops. The cost is recurring annually.

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

Efficiency

Primary water-related opportunity

Cost savings

Company-specific description & strategy to realize opportunity

Save costs by reducing the amount of water used in the Companies Toilets.

In 2016, the Piipee project was one of the participants in the Braskem Labs Scale, an

acceleration program for entrepreneurs, and then concretized its partnership as a Braskem supplier. Braskem plants have been using new technology that allows us to reduce the consumption of water by thousands of liters per month. Installed in bathrooms, the Piipee is a device that saves up to 75% of water in toilet bowls. The device uses a biodegradable additive, removing odor and color from urine, avoiding the need to flush the toilet. Piipee – the company responsible for developing the solution – estimates that the technology has the potential to save over 60 million liters of water per year in all of Braskem's plants in Brazil. The initiative was already implemented in Bahia (installation of the Piipee device in every toilet), covering 6 industrial sites (Q1, PE1, PE2, PE3, PVC1, CS2), and the idea is that the implementation is expanded to every other Braskem facility in the next couple of years (strategy to realize the opportunity).

Estimated timeframe for realization

Current - up to 1 year

Magnitude of potential financial impact

Low-medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

It is estimated that, on average, 7 to 20 liters of drinking water are wasted down the drain when a toilet is flushed. The innovation significantly reduces water consumption, saving up to 75% of water in toilet bowls. When this savings (using Braskem data) is multiplied by the cost of water, we reach the potential financial impact. This potential financial impact was calculated based on historical data. The approach used to calculate the financial impact covered 6 industrial facilities (Q1, PE1, PE2, PE3, PVC1, CS2) in Bahia, Brazil.

W5. Facility-level water accounting

W5.1

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

Facility reference number

Facility 1

Facility name (optional)

Chemicals 4

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Latitude

-22.713099

Longitude

-43.242728

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

3,533.16

Comparison of total withdrawals with previous reporting year

Lower

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

3,533.16

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

503.56

Comparison of total discharges with previous reporting year

Lower

Discharges to fresh surface water

503.56

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

3,029.6

Comparison of total consumption with previous reporting year

Lower

Please explain

Water withdrawals decreased 7.7% due to the larger availability of feedstock and the reserve osmosis operation, that also decreased effluent discharges (8.0%).

Facility reference number

Facility 2

Facility name (optional)

PE 9

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Latitude

-22.713099

Longitude

-43.242728

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

763.74

Comparison of total withdrawals with previous reporting year

Lower

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

763.74

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

26.92

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

26.92

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

736.82

Comparison of total consumption with previous reporting year

Lower

Please explain

Water withdrawals decreased (11.5%) due to a decrease in production (-1,62%). So, consequently, water discharge is almost the same when compared to the last year.

Facility reference number

Facility 3

Facility name (optional)

PP 5

Country/Area & River basin

Brazil

Other, please specify

Guandu (Rio de Janeiro)

Latitude

-22.713099

Longitude

-43.242728

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

323.68

Comparison of total withdrawals with previous reporting year

Higher

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

323.68

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

23.62

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

23.62

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

300.06

Comparison of total consumption with previous reporting year

Higher

Please explain

Water withdrawals increased (2%) due to increase in production (3%), which leads to an increase in effluent discharges (7%).

Facility reference number

Facility 4

Facility name (optional)

PP8

Country/Area & River basin

United States of America

Other, please specify

River San Jacinto

Latitude

29.89

Longitude

-95.1

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

1,775.24

Comparison of total withdrawals with previous reporting year

Much higher

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

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

1,775.24

Total water discharges at this facility (megaliters/year)

563.54

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

563.54

Total water consumption at this facility (megaliters/year)

1,211.7

Comparison of total consumption with previous reporting year

Higher

Please explain

Water withdrawals increased (66%) due to increase in production (41%).

Facility reference number

Facility 5

Facility name (optional)

PP10

Country/Area & River basin

United States of America

Other, please specify

River Seadrift

Latitude

30.95

Longitude

-96.76

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

1,028.68

Comparison of total withdrawals with previous reporting year

Higher

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

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

1,028.68

Total water discharges at this facility (megaliters/year)

303.32

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

303.32

Total water consumption at this facility (megaliters/year)

725.36

Comparison of total consumption with previous reporting year

Higher

Please explain

Water withdrawals increased (14%) so there is a higher consumption in the product and in the process. Consequently, there is no impact on the effluents.

Facility reference number

Facility 6

Facility name (optional)

PP13

Country/Area & River basin

United States of America

Other, please specify

River Seadrift

Latitude

30.95

Longitude

-96.76

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

913.84

Comparison of total withdrawals with previous reporting year

Higher

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

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

913.84

Total water discharges at this facility (megaliters/year)

162.42

Comparison of total discharges with previous reporting year

Lower

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

162.42

Total water consumption at this facility (megaliters/year)

751.42

Comparison of total consumption with previous reporting year

Higher

Please explain

Water withdraws increased (14%) due to the increase in production (16%). Consequently there was an increase in water discharge.

Facility reference number

Facility 7

Facility name (optional)

PE 8

Country/Area & River basin

Brazil

Other, please specify

Baixada Santista (São Paulo - Cubatão)

Latitude

-23.856066

Longitude

-46.413245

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

413.2

Comparison of total withdrawals with previous reporting year

Much higher

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

403.34

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

9.86

Total water discharges at this facility (megaliters/year)

275.36

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

137.84

Comparison of total consumption with previous reporting year

Lower

Please explain

From the total withdraw volume, 186.68 megaliters refers to rainwater, causing an increase in volume compared to 2020.

Facility reference number

Facility 8

Facility name (optional)

PP 3

Country/Area & River basin

Brazil

Other, please specify

Piracicaba, Capivari, Jundiaí (SP)

Latitude

-22.7181

Longitude

-47.1343

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

425.39

Comparison of total withdrawals with previous reporting year

Lower

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

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

425.39

Total water discharges at this facility (megaliters/year)

70.93

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

70.93

Total water consumption at this facility (megaliters/year)

354.45

Comparison of total consumption with previous reporting year

Lower

Please explain

Water withdrawals decreased (10%) due to the decrease in production (17%).

Facility reference number

Facility 9

Facility name (optional)

CS1

Country/Area & River basin

Brazil

Other, please specify

Remédios (Alagoas)

Latitude

-9.672095

Longitude

-35.746608

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

2,661.02

Comparison of total withdrawals with previous reporting year

Much higher

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

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

2,661.02

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

998.03

Comparison of total discharges with previous reporting year

Much higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

998.03

Total water consumption at this facility (megaliters/year)

1,663

Comparison of total consumption with previous reporting year

Much higher

Please explain

Increase in withdrawal and discharges as the plant did not operate in 2020 and in 2021 it operated at 2/3 of capacity.

Facility reference number

Facility 10

Facility name (optional)

PVC 2

Country/Area & River basin

Brazil

Other, please specify

Remédios (Alagoas)

Latitude

-9.669779

Longitude

-35.824888

Located in area with water stress

Yes

Total water withdrawals at this facility (megaliters/year)

3,878.33

Comparison of total withdrawals with previous reporting year

Higher

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

3,878.33

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,732.96

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

1,732.96

Total water consumption at this facility (megaliters/year)

2,145.37

Comparison of total consumption with previous reporting year

Lower

Please explain

Water withdrawals increased (3%) due to increase of production (1%), which led to an increase in discharges (8.6%).

W5.1a

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

Water withdrawals – total volumes

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water withdrawals – volume by source

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water withdrawals – quality by standard water quality parameters

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water discharges – total volumes

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water discharges – volume by destination

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water discharges – volume by final treatment level

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water discharges – quality by standard water quality parameters

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

Water consumption – total volume

% verified

76-100

Verification standard used

Braskem plants are ISO 14.000 certified and thus pass through an auditing process where water and effluent parameters integrate the evaluation to maintain the certification. If any non-conformities in these parameters are found, they generate a report and a deadline to solve the issue. KPMG also verified data using ISAE 3000 standard yearly.

W6. Governance

W6.1

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

Yes, we have a documented water policy that is publicly available

W6.1a

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

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water Description of business impact on water Description of water-related performance standards for direct operations	Braskem is a petrochemical industry, intensive in water use thus very dependable/impacting on water and susceptible to its issues (e.g. scarcity causing production disruption and millions in losses). And so, water is present in public company-wide policies (Sustainability and HSE), macro objectives (Operational Eco-efficiency-monitored by the Board), in our ERM (Enterprise Risk Management) overseen by the CEO. Braskem established goals (reduce production intensity m3/ton; increase reuse percentage and reduce effluent

		Description of water-related standards for procurement Reference to international standards and widely-recognized water initiatives Company water targets and goals Commitment to align with public policy initiatives, such as the SDGs Commitments beyond regulatory compliance Commitment to water-related innovation Commitment to stakeholder awareness and education Commitment to water stewardship and/or collective action Acknowledgement of the human right to water and sanitation Recognition of environmental linkages, for example, due to climate change	generation m3/ton) and indicators (e.g. “Water Safety Index”). All our goals are voluntary, beyond legal requirements, aligned with the SDG6 and WASH targets. Company respond to CDP Water and incentive (procurement bonus) supply chain to do so. Braskem also leads important water groups in forums such as CEBDS (e.g. water security commitment), UNGC CEO Water Mandate and UNGC Brazil, participating on collective and awareness actions and investing in innovation (Braskem Labs). HSE also issues water guidelines and standards. In defining its Water Security strategy, Braskem takes CEO Water Mandate requirements as a reference, focusing on its direct operations, the supply chain and water basins management, as well as collective actions, among others. Braskem joined throughout 2021 the WRC – Water Resilience Coalition, of the Global Compact, and the “Race to Resilience”, of the UN Framework Convention on Change Climate Change (UNFCC). The latter is an initiative that seeks to accelerate, by 2030, the actions of non-governmental organizations in the fight against climate change. The focus is on helping the most vulnerable communities on this topic by implementing initiatives that build resilience and mitigate the physical impacts of changes, such as extreme heat, drought and floods. These initiatives strengthen our water security strategy, as the projects that we intend to engage will be developed in high water risk basins in the regions of our operations.

W6.2

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

Yes

W6.2a

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

Position of individual	Please explain

Chief Operating Officer (COO)	Water has an important position in Braskem's materiality matrix and is thus on of the strategic items that integrates our Macro goals that are systematically followed up by the Committees, where leaders and experts participate. The Brazil Manufacturing & Global Industrial Operations Vice President (COO) is the operational eco-efficiency Macro Objective sponsor and the person responsible for enforcing the implementation of all the actions to achieve the macro objectives, including water efficiency (for which the goal is to reduce water consumption index (m3/t), among others). The COO was chosen because he leads an area with a relevant impact on the company's eco-efficiency results. An example of the action taken was the approval of the water security plan in Bahia, where through new sources of water withdrawal and other strategic actions, it reduced the risk of these operations.
Board-level committee	The Board committee regularly monitors and manages the company's main business risks, including water risks associated with climate risks. The Board of Directors is responsible for water-related issues, since one of its roles is to oversight the matters related to Sustainability. Water efficiency is a material aspect to Braskem, being one of the highlighted items in Braskem's Sustainable Development Policy. An example of the action taken was the approval / recognition of the potential high water risk in the DCX region, within the corporate risk strategy, thus authorizing the industrial director to start the project to identify alternative sources of water withdrawal.

W6.2b

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

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - all meetings	Monitoring implementation and performance Overseeing acquisitions and divestiture Overseeing major capital expenditures Providing employee incentives Reviewing and guiding annual budgets	From the Macro Goal Operational Eco- Efficiency, water risk was inserted into the Enterprise Risk Management (ERM) as one of the critical criteria for action plans, company's strategies and investments. A water efficiency indicator supports the evaluation of plants exposed to high water risks leading to implementation and optimization of water use in the plants; and to analyze investments in reuse/desalination technologies to mitigate risks. All enforced by Braskem HSE and Sustainable Development policies that lead to Corporate Responsibility and Innovation projects (Braskem Labs). Performance targets direct investments in water efficiency and are publicly disclosed in the

		Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Reviewing and guiding corporate responsibility strategy Reviewing innovation/R&D priorities Setting performance objectives	company's annual report. All the information is presented to the board through a specific achievement indicator of the Macro Objectives, and actions are undertaken by the company to achieve this result. The Brazil Manufacturing & Global Industrial Operations Vice President (COO), Sponsor of Operational ECO-Efficiency MO, reports periodically on the status of the progress of water stewardship to the board of directors; this being the main governance mechanism that allows constant oversight of water issues. Monitored are the evolution of the action plan of the macro objective and the water security index, which is the main indicator. Our goal for 2030 is that 100% of the water collected for use in our operations comes from safe sources. That is, that industrial units have guaranteed sustainable access to adequate amounts of water of acceptable quality, using the resource in a socially fair way that is environmentally sustainable and economically beneficial.

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
Row 1	Yes	The criteria include: participation as a member in ESG committees; participation in academic activities in areas related to water or environmental solutions.

W6.3

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

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

Chief Operating Officer (COO)

Responsibility

Assessing future trends in water demand
Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

Half-yearly

Please explain

Braskem's COO who is responsible for achieving the goals approved by the company's board. In the case of water, the sponsor is the Brazil Manufacturing & Global Industrial Operations Vice President (COO), the COO reports directly to the President of the company (CEO). His duty is therefore to enforce and guarantee the implementation of all the actions to achieve the water macro objectives.
Management is carried out through a technical and strategic committee, in which leaders from all the technical areas involved (Directors and Vice Presidents) participate, who assess and define the main short and long-term challenges. The Corporate Environment area reports water issues to the COO. The COO reports water issues to the board, annually, that are the short- and long-term plans and goals, as well as compliance and evolution.
The industrial directors responsible for water security action plans, periodically report the progress for the COO.

W6.4

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

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	Incentives for the management of water issues are considered in the achievement of goals to reduce water risk.

W6.4a

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

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Chief Operating Officer (COO)	Reduction in consumption volumes	The leaders (VPs), among them the COO, have Compliance targets, one of which is to implement actions to reduce exposure to risks, and the environmental/climate risks assessed as a priority, under their responsibility, are included. Therefore, the climate

			risk is associated to the M&GO leader because the adaptation plan includes water risk due to severe droughts. The goals are evaluated through an indicator related to the achievement of the adaptation plan. The indicator was chosen because Braskem is a water-intensive industry and severe drought scenarios due to water scarcity can stop operations and generate conflicts with society. The assessment of compliance following the results: 0% - not achieved, 50% -partial achievement, 100% - total achievement. It is recommended that each target value be at least 5% of the variable remuneration. Thus, it reached the goal: 5% is obtained; partially reached 2.5%; did not reach, 0.
Non-monetary reward	No one is entitled to these incentives		

W6.5

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

Yes, trade associations

Yes, funding research organizations

Yes, other

W6.5a

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

Annually, we verify commitments, results and alignment with long-term goals. For example, we have a goal of achieving 100% water security in our operations by 2030, which is why we have engaged in the water resilience coalition and race to resilience movements to identify collective actions to strengthen our strategy and results. These actions are monitored in technical groups, where we seek to evaluate and encourage public policies that strengthen these collective actions.

If an inconsistency is discovered in any action or initiative taken, that action or initiative is suspended immediately, and will only continue after eliminating the inconsistency and ensuring alignment with the company's long-term commitments and goals.

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)

Braskem-Relatorio-Integrado-2021-ENG-02-06.pdf

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	> 30	Braskem developed a climate risk and adaptation plan considering 2040 AS THE HORIZON. Based on these scenarios, critical areas for WATER SCARCITY AND FLOODS (ISSUES) that impact business objectives were established with Trucost & DEVESE. The Company then started developing action plans to mitigate and/or finding alternatives to avoid production losses due to water security issues. These plans are considering alternatives such as water reuse and desalination. TO DEFINE THE BETTER ALTERNATIVE TO AVOID SCARCITY ISSUES BRASKEM CALCULATED AN INTERNAL PRICE ON WATER CONSIDERING CLIMATE MODELS UP TO 2040 (WHY). The Company already have a successful reuse model that is the Aquapolo (project allowed the company to pass through the São Paulo water crisis without production losses - on the contrary, production increased). The possibility to replicate this model is currently associated with long-term business strategies to avoid production and financial losses. The company has established a goal of becoming a reference for the chemical sector in water efficiency use and will increase water reuse to reach 30% in 2025 and 50% in 2030. The goal is aligned with the general long-term business objective to be a reference company in sustainability for the chemical sector and a company that provides

			sustainable products and solutions through thermoplastic resins.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	> 30	Since 2017, Braskem has been developing ACTION PLANS FOR ALL THE PLANTS LOCATED IN HIGH-RISK WATER BASINS (HOW), according to our climate impact and adaptation study to MITIGATE AND/OR FINDING ALTERNATIVES TO AVOID PRODUCTION LOSSES (WHY) DUE TO WATER SCARCITY ISSUES (WHICH). These plans are considering alternatives such as water reuse and desalination, including assessments in partnership with local sanitation companies and, depending on location, a partnership with other businesses. A reuse model for the company is Aquapolo, a project that allowed the company to pass through the São Paulo water crisis without production losses; on the contrary, production was able to increase. The period for reuse contracts is 40 years, and the CLIMATE SCENARIOS CONSIDERED REACH UP TO 2040 (HORIZON). The action plans are also aligned with the goal to increase water reuse to reach 30% in 2025 and 50% in 2030. The studies and action plans are strategies aligned with the general long-term business objective to be a reference company in sustainability for the chemical sector and be a company that provides sustainable products and solutions through thermoplastic resins.
Financial planning	Yes, water-related issues are integrated	> 30	ALL INVESTMENTS ARE MADE BASED ON THE SCENARIOS (SCARCITY) PRESENTED BY THE 2040 CLIMATE RISK AND ADAPTATION STUDY (HORIZON). In line with this scenario and since 2002, Braskem has INVESTED MORE THAN 78 MILLION IN WATER RELATED PROJECTS (HOW), 18 being in the last 2 years. In this last 2-year period the company has avoided 10 million in costs due to water efficiency improvements. ACTIONS PLANS FOR THE HIGH-RISK WATER SECURITY/SCARCITY AREAS (WHICH) are now being developed based on an internal price on water, defined by DEVESE methodology, and are driving our financial planning to invest in water reuse and/or desalination that will help define water contracts for the next 40 years. COSTS PRESENTED MAKE VIABLE THE STUDIES AND ACTION PLANS THAT FORM BRASKEM STRATEGIES (WHY) aligned with the general long-term objective to be a reference company in sustainability for the chemical sector and be a company that provides sustainable products and solutions through thermoplastic

			resins.

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)

49

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

-6

Water-related OPEX (+/- % change)

271

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

73

Please explain

The capital expenditure and operational expenditure comes up due to demands or initiatives. OPEX is calculated based on cost to withdraw and treat water and cost do treat and dispose effluents. For OPEX, there was an increase of 49% in relation to 2020 due to the increase of production and it is expected to reduce by 6% for 2022. CAPEX considers all investments in water and effluent treatment infrastructure, water efficiency equipment, and alternative sources such as reuse and rainwater. For CAPEX, there was an increase of 271% in relation to 2020 due to the elaboration of new water efficiency initiatives/projects. The expectation for 2022 is an increase of 73%.

W7.3

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

	Use of scenario analysis	Comment
Row 1	Yes	Braskem with the support of ERM launched in 2016 a climate risk and adaptation study, based on scenarios until 2040. This study is helping the company with its strategies and action plans.

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	Parameters: GDP and demographic variables. Assumptions: changing precipitation patterns; Analytical choices: time horizon 2040, data sources Aqueduct . Indicate whether the scenario(s) are mix (quantitative and qualitative).	Main outcomes from the scenarios analysed by the ERM and Braskem study considering 2040 as the final date are: - Brazilian plants: potential risks identified area associated with severe droughts, especially in the plants located in Rio de Janeiro, Alagoas and Bahia and electric discharges in the northeastern operations; - United States Operations: increased intensity in hurricanes are the potential risk for the Texas operations. Some plants also have drought risks; - Germany: risk identified is the change in raining patterns leading to flooding.	For Brazil and the United States, actions were defined and approved to identify new sources of water withdrawal, increasing the water security index of these regions. For Germany, an update of the climate risk study is being perfomed in 2022. Since severe droughts, floods and other water risks are arising from and/or impacted by climate change, we use the same scenarios for water and climate risks. Thus, we use more optimistic scenarios that seek net-zero 250 and other scenarios where current policies are followed. The results of the scenario analysis, after evaluation, bring us the most relevant risks focused on the 2050 and 2030 time horizon, and these results guide Braskem's strategy. Of these risks, we selected those that can impact the operation of the plants, relevant economic and environmental impacts, or impacts that affect other relevant stakeholders (communities, customers). Severe droughts were identified as one of the main risks associated with the company's business and that is why in the action plan for mitigating these risks the company defined actions to reduce the risks from. "high" to "low" or "moderate" by 2030.

W7.4

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

Row 1

Does your company use an internal price on water?

Yes

Please explain

Once Braskem developed a water risk analysis for the river basin, where it operates, and identified the ones with high risk (Rio de Janeiro, Alagoas and Bahia), it developed an internal price on water based on the Getulio Vargas Foundation methodology – DEVESE. The price considered potential losses in production and revenue considering a disruption (reduction of water grant) caused by a drought scenario such as one serious drought event in a five-year period and a 12-month duration, plus 3 other, different scenarios. Now with that price calculated, the company can compare with prices from reuse (using Aquapolo as the referral case) and desalination that would be alternatives. These would counter the disruption and loss of production risks/impacts and support the decision to implement projects to access safe alternative sources of water.

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	Please explain
Row 1	Yes	The volume water consumption in the production phase of the product divided by the mass produced (m3/t)	The company manufactures products with different technologies and water intensities, with the main products being: basic chemicals, PVC, PE, chlorine soda. As water is extremely relevant to our process, we use indicators associated with water resources to evaluate the eco-efficiency of the products and also the comparability between them. The water efficiency indicator is one of the most important indicators because it allows us to identify the industrial units with the best performance and the ones where improvements are needed.

W8. Targets

W8.1

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

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Company-wide targets and goals Business level specific targets and/or goals Activity level specific targets and/or goals Brand/product specific targets and/or goals Basin specific targets and/or goals	Targets are monitored at the corporate level Goals are monitored at the corporate level	Braskem set the goal to be a global benchmark in the use of water for the chemical industry, not only in terms of consumption but also in terms of reuse. Not only that but based on the climate scenarios and analysis of the company's operation water risks, it included water in one of the 7 priorities of the materiality matrix, thus becoming a macro goal to be overseen by the Board of Directors. Braskem has created a specific water risk indicator that evaluates how much of our water withdrawal is under risk, and subsequently the production. The main company and business targets are associated with reducing the amount of water per amount of product and amount of effluent. These goals related to water consumption, effluent generation and water reuse are validated and monitored annually at the industrial committee, composed of the directors of all the company's industrial units. Plants inserted in high-risk basins have as targets and action plans to implement water alternatives (e.g. reuse and desalination) that are not vulnerable to water droughts. The Company also uses Life Cycle Assessments to support clients to develop more efficient products, including water efficiency. Braskem also joined forums with the goal to contribute to collective actions/projects at a basin level.

W8.1a

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

Target reference number

Target 1

Category of target

Product water intensity

Level

Company-wide

Primary motivation

Climate change adaptation and mitigation strategiess

Description of target

In 2021, water consumption (4.19 m³/ton of product) achieved 98% of the goal set for the 2021 year (4.26 m³/ton of product) . The results was due to initiatives implemented in the period to reduce this environmental impact.

The lack of water can impact operational costs and ultimately cease operations, explaining why this resource is extremely important for Braskem's cost and competitiveness. Consequently, to ensure reliable operation, Braskem needs to ensure sufficient water (either reuse or freshwater) for abstraction and consumption in the production process. Therefore, setting targets and implementing improvements related to water consumption intensity is directly aligned with this understanding.

Quantitative metric

% reduction per product

Baseline year

2020

Start year

2020

Target year

2021

% of target achieved

98

Please explain

The current results were due to initiatives implemented in the period to reduce this environmental impact.

Target reference number

Target 2

Category of target

Other, please specify

Water security index

Level

Company-wide

Primary motivation

Commitment to the UN Sustainable Development Goals

Description of target

Water is a fundamental resource for our operations, as it is used for cooling and steam generation throughout the petrochemical process and is incorporated into our products. In this way, scarcity, potentially caused by climate change resulting from GHG (Greenhouse Gas) emissions, presents a risk to our business, as it can have a

significant impact on the continuity of operations and incur increased costs. For these reasons, this risk is integrated into the corporate risk matrix and the mitigation actions of the long-term strategy. Our goal for 2030 is that 100% of the water collected for use in our operations comes from safe sources. That is, that industrial units have guaranteed sustainable access to adequate amounts of water of acceptable quality, using the resource in a socially fair way that is environmentally sustainable and economically beneficial.

Quantitative metric

Other, please specify

% of water withdrawal collected for use in our operations comes from safe sources.

Baseline year

2020

Start year

2021

Target year

2030

% of target achieved

70

Please explain

In 2021, the global water security index was 70%, with a 4 percentage point reduction compared to 2020. This reduction occurred mainly due to the reduction of water consumption from safe sources in the regions of Bahia and ABC/SP, both in Brazil. In Bahia, this reduction was due to the lower resource availability, so there was a greater uptake of surface water. In ABC, the reason was interruption of the unit due to maintenance shutdown, thus reducing absolute consumption of water in this region, for which Aquapolo is the main supplier and the major contributor for our water security in the region.

Braskem takes CEO Water Mandate requirements as a reference, focusing on its direct operations, the supply chain and water basin management. In 2021, Braskem also joined the Global Compact's WRC – Water Resilience Coalition – and the UNFCC's "Race to Resilience". This initiative seeks to accelerate, by 2030, the actions of NGOs in the fight against climate change.

W8.1b

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

Goal

Other, please specify

Eliminate all risks classified as high in our operations by 2030

Level

Company-wide

Motivation

Risk mitigation

Description of goal

Braskem performed the study of climate risks in the 2040 timeframe and identified all the water risks that could impact our operations. After classifying the risks, the most relevant risks were identified and actions to mitigate them were defined. This action plan is monitored and the goal is to implement 100% of the actions to reduce the number of high risks to zero.

The company is implementing the goal of risk mitigation by integrating it to the global enterprise risk process. Climate risk management is carried out through a risk management team and is reported periodically to the board. These risks are incorporated into a global management process that must be implemented in all units. For each risk mitigation action/goal, there is a person (director or vice president) responsible for implementation.

Baseline year

2016

Start year

2016

End year

2030

Progress

The indicator used to evaluate progress is the percentage of compliance with the risk mitigation action plan. Braskem considers as a success if the 90% of the actions scheduled for each year are achieved. This way, we can assure the plan will be achieved by 2030.

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
W8 Targets	All data provided in the annual report, based on the GRI framework, and including company's policies, governance, targets and macro goals. It was also verified water, energy and climate targets and data.	AA1000AS	Braskem has water as a material aspect of its operation and thus answers to specific GRI disclosures in its annual report alongside the basic GRI information on governance, goals, targets, operations, stakeholders, among others. The company annual report is assured yearly by KPMG (using the referral standards – AA1000AS and ISAE3000).
W1 Current state	All data provided in the annual report, based on the GRI framework, and including company's policies, governance, targets and macro goals. It was also verified water, energy and climate targets and data	AA1000AS	Braskem has water as a material aspect of its operation and thus answers to specific GRI disclosures in its annual report alongside the basic GRI information on governance, goals, targets, operations, stakeholders, among others. The company annual report is assured yearly by KPMG (using the referral standards – AA1000AS and ISAE3000).

W10. Sign off

W-FI

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

-

W10.1

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

	Job title	Corresponding job category
Row 1	Vice President Executive Officer, Chief Financial Officer and Director of Investor Relations.	Chief Financial Officer (CFO)

W10.2

(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water

Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].

Yes

SW. Supply chain module

SW0.1

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

	Annual revenue
Row 1	19,600,000,000

SW1.1

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

Yes, CDP supply chain members buy goods or services from facilities listed in W5.1

SW1.1a

(SW1.1a) Indicate which of the facilities referenced in W5.1 could impact a requesting CDP supply chain member.

Facility reference number

Facility 9

Facility name

CS1

Requesting member

The LEGO Group

Description of potential impact on member

Although located between two large reservoirs, the water availability of the plant may be reduced in the short term, resulting from an increase in temperature and consequent evaporation of bodies of water. The potential impacts identified as NEGATIVE are listed below: - Operational/structural impacts: Reducing water availability could cause unscheduled outages due to lack of water, both for human consumption, and for processes and lack of electricity from the national grid. - Financial impacts: water scarcity may increase the price of water, which will generate financial impact for the plant. In addition to the increase in the price of water, there may be changes in the legislation regarding the abstraction of water in wells and loss of concessions, which may lead to an increase in the cost of the liter of water abstracted.

Comment

Braskem has in place and is expanding, in partnership with the local utilities company - CETREL, the use of groundwater from new sources and has also put in place a reuse initiative called Agua Viva. The latest is also expanding. This initiatives are part of the company adaptation plan to improve water security.

Facility reference number

Facility 8

Facility name

PP3

Requesting member

Electrolux

Description of potential impact on member

Water availability to the plant may be reduced in the short term, resulting from a reduction in the amount of rainfall combined with the increase in temperature and consequent evaporation of bodies of water. The potential impacts identified as NEGATIVE are listed below: - Operational/structural impacts: reducing water availability could cause unscheduled outages due to lack of water for both human consumption and lack of electricity from the national grid, disrupting the supply of product. - Financial impacts: water scarcity may increase the price of water, which will generate financial impact for the plant, affecting the price of product as well

Comment

PP 3 are implementing, as part of its climate change adaptation plan, 2 actions to increase its water security - a rainwater harvesting and an internal reuse process

SW1.2

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

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

SW1.2a

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

Identifier	Latitude	Longitude	Comment
Q 4 DCX	-22.713099	-43.242728	This Asset is located in Brazil.
PE 9 DCX	-22.713099	-43.242728	This Asset is located in Brazil.
PP 5 DCX	-22.714783	-43.240188	This Asset is located in Brazil.
Q 1 BA	-12.663054	-38.328438	This Asset is located in Brazil.
PE 1 BA	-12.662917	-38.324718	This Asset is located in Brazil.
PE 2 BA	-12.649768	-38.316281	This Asset is located in Brazil.

PE 3 BA	-12.65387	-38.319307	This Asset is located in Brazil.
CS 2 BA	-12.655718	-38.307192	This Asset is located in Brazil.
PVC 1 BA	-12.653599	-38.316587	This Asset is located in Brazil.
PE 8 CUB	-23.856066	-46.413245	This Asset is located in Brazil.
Q 3 ABC	-23.639331	-46.486444	This Asset is located in Brazil.
PE 7 ABC	-23.646045	-46.487657	This Asset is located in Brazil.
PP 4 ABC	-23.640301	-46.465745	This Asset is located in Brazil.
CS 1 AL	-9.672095	-35.746608	This Asset is located in Brazil.
PVC 2 AL	-9.669779	-35.824888	This Asset is located in Brazil.
PP 3 PLN	-22.7181	-47.1343	This Asset is located in Brazil.
Q 2 RS	-29.8774	-51.382	This Asset is located in Brazil.
PP 1 RS	-29.8858	-51.3937	This Asset is located in Brazil.
PP 2 RS	-29.873	-51.3989	This Asset is located in Brazil.
PE 5 RS	-29.873	-51.3989	This Asset is located in Brazil.
PE 4 RS	-29.872	-51.3992	This Asset is located in Brazil.
PE 6 RS	-29.872	-51.3992	This Asset is located in Brazil.
PP LA Porte USA	29.7024	-95.0803	This Asset is located in USA.
PP Marcus Hook USA	39.8149	-75.4267	This Asset is located in USA.
PP Neal USA	38.3298	-82.5837	This Asset is located in USA.
PP Seadrift USA	28.615	-96.6261	This Asset is located in USA.
PP Oyster Creek USA	28.9338	-95.3361	This Asset is located in USA.
PP 11 GER	50.8423	6.9455	This Asset is located in Germany.
PP 12 GER	51.3945	11.974	This Asset is located in Germany.

SW2.1

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

Requesting member

Ambev S.A

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

CIA ULTRAGAZ S/A

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

Colgate Palmolive Company

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

Electrolux

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

Givaudan SA

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

L'Oréal

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

Prysmian SpA

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

Suzano Papel & Celulose

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

Requesting member

The LEGO Group

Category of project

Promote river basin collective action

Type of project

Invite customer to collaborate with other users in their river basins to reduce impact

Motivation

Improve watershed management, seeking to reduce water risk through our participation in watershed management committees.

Estimated timeframe for achieving project

4 to 5 years

Details of project

Identify the hydrographic basins in which both companies are common users and develop an action plan to improve participation in the management committees of these basins.

Projected outcome

The main outcome will be an action plan for engagement in watershed.

SW2.2

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

No

SW3.1

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

Product name

Polyethylene

Water intensity value

3.23

Numerator: Water aspect

Water consumed

Denominator

Tons

Comment

The value presented refers to the m3/ton used by Braskem to measure its performance. Numbers are constantly updated, 3.23 refers to 2021.

Product name

Polypropylene

Water intensity value

2.23

Numerator: Water aspect

Water consumed

Denominator

Tons

Comment

The value presented refers to the m3/ton used by Braskem to measure its performance. Numbers are constantly updated, 2.23 refers to 2021.

Submit your response

In which language are you submitting your response?

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 confirm below