Welcome to your CDP Climate Change Questionnaire 2023

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Braskem S.A. is a global petrochemical company, a leader in the production of biopolymers manufactured from ethanol produced on an industrial scale from sustainably sourced sugarcane. As the largest plastics producer in the Americas, we are committed to the circular economy and carbon neutrality and believe in innovation as the strategic pillar of our actions. Founded in 2002 in Brazil, it is currently the sixth-largest petrochemical company in the world in the production of thermoplastic resins, and a market leader and pioneer in the industrial-scale production of bio-polymers (plastic made from bio-based 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.

Our purpose is to create sustainable solutions through chemicals and plastics. To that end, we have adopted a business strategy integrated with sustainable development, strengthening our commitment to economic growth, conservation of the environment and social justice. We have a human perspective and encourage leadership in all our team members, who work daily to develop a broad and diverse portfolio, with products and solutions that serve our customers in more than 71 countries.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data and indicate whether you will be providing emissions data for past reporting years.

Reporting year

Start date

January 1, 2022

End date

December 31, 2022

Indicate if you are providing emissions data for past reporting years

No

C0.3

(C0.3) Select the countries/areas in which you operate.

Brazil
Germany
Mexico
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

BRL

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals

Lower olefins (cracking)
Aromatics
Polymers

Bulk inorganic chemicals

Chlorine and Sodium hydroxide

Other chemicals

Specialty chemicals

C0.8

(C0.8) 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

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual or committee	Responsibilities for climate-related issues
Board-level committee	The Board of Directors is responsible for climate-related issues, since one of its roles is the oversight of matters related to Sustainability. Climate Change is a material aspect to Braskem, being one of the highlighted items in Braskem's Sustainable Development Policy, a corporate risk monitored by the Board and the Executive Committee. As an example of what is monitored, the most relevant climatic risks, high risk, are monitored periodically, as well as the evolution of the action plan to mitigate these risks. One of the decisions already taken was the decision to implement internal carbon pricing in the company, as well as the approval of the long-term emission reduction target.
President	Braskem's Business Leader (CEO) is the head of the Global Sustainable Development Committee. The committee is composed of ten working groups, one for each of the seven Macro Objectives and three structuring ones. Each of these working groups is led by a company vice president, who has the direct support of a director.
Other, please specify Vice Presidents	Vice presidents are part of the Global Sustainable Development Committee, which is an executive level responsible to discuss and monitor the company's sustainable development strategy and is led by the CEO. The Committee convenes quarterly and was created at an executive level to ensure that Braskem is discussing and monitoring the sustainable development strategy deployment in

	a high level of management and taking the appropriate alignments and approvals to evolve with business plans that support it. To support the Committee's discussion, Braskem created workstream groups for each of the goals established in the sustainable development strategy and for structural functions that support the evolution of the strategy. Each of the workstreams are led by a specific Vice-president, who is responsible to ensure that their Braskem team is working on solutions and the evolution of the established action plans to achieve the target. As Braskem sustainable development strategy has long-term goals for combating climate change, there is a specific workstream group for this topic and a specific Vice-President that leads it. Braskem's Europe/Asia Vice President is the head of the Global Climate Change workstream. Initiatives to focus have been defined at the Committee establishment, for example: global net-zero plan management, industrial decarbonization program, biochemicals and biopolymers portfolio and global adaptation Plan. All the targets and follow-up activities, defined until 2030, have focal points with directors of the most strongly related areas of each theme. The evolution of these initiatives is monitored in this workstream.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding annual budgets Overseeing major capital expenditures Overseeing acquisitions, mergers, and divestitures Reviewing innovation/R&D priorities Overseeing and guiding employee incentives Reviewing and guiding strategy Overseeing and guiding the development of a transition plan	The Board is responsible for climate-related issues in two ways: (i) by monitoring and discussing Braskem initiatives related to Environmental, Social and Governance ("ESG") factors; (ii) by monitoring and discussing corporate risks both mapped and approved, which include those linked to climate change threats. Both attributions are incorporated in the Board of Directors internal rules. The Communication, Strategy and ESG Committee (CECESG) provides support to the Board of Directors regarding discussions over ESG initiatives and risks mapped. It is composed of a limited number of directors from the board and has the role of overseeing the implementation of Sustainable Development Global Policy, including actions to address the fixed material topic of climate change. After a discussion of ESG initiatives and risks, it brings to the Board of Directors the relevant topics to be monitored and discussed at a Board of Directors level. Here follow some examples of discussions held by the

	Monitoring the implementation of a transition plan Overseeing the setting of corporate targets Monitoring progress towards corporate targets Reviewing and guiding the risk management process	Board of Directors regarding the two topics mentioned in the first paragraph: (i): one of the decisions taken in the last two years was the decision to implement internal carbon pricing in the company, as well as the approval of the long-term GHG emission reduction target; and (ii) the most relevant climatic risks monitored by the board is Water Scarcity, considered as a high risk, in which the evolution of action plans to mitigate that risk are periodically assessed.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	The criteria to assess the competence was based in whether the Board member have participated in regional/municipal councils or secretaries related to climate change; participated in academic initiatives related to environmental topics and/or climate change; or participated in the board of directors of companies coordinating or being a member of ESG committees.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Position or committee

Chief Executive Officer (CEO)

Climate-related responsibilities of this position

Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
Integrating climate-related issues into the strategy
Setting climate-related corporate targets
Monitoring progress against climate-related corporate targets
Assessing climate-related risks and opportunities
Managing climate-related risks and opportunities

Coverage of responsibilities

Reporting line

Reports to the board directly

Frequency of reporting to the board on climate-related issues via this reporting line

More frequently than quarterly

Please explain

Our Board of Directors (BoD) is the highest governance body, and its powers include to resolve on the company's Business Plan and on the objectives related to compliance and the environmental, social, and governance aspects (ESG), including Climate Change issues. Since 2021, the BoD has periodically evaluated the trends and evolution of the practices adopted by Braskem. During 2022, 25 meetings in all were held, including ordinary and extraordinary meetings, the main topics discussed being the monitoring of risk assessment, the discussion, approval and launch of investments and projects in line with the 2030 and 2050 sustainability commitments.

Position or committee

Other, please specify

Strategy, Communication and ESG Committee (CECESG)

Climate-related responsibilities of this position

Providing climate-related employee incentives
Integrating climate-related issues into the strategy
Setting climate-related corporate targets
Monitoring progress against climate-related corporate targets
Assessing climate-related risks and opportunities
Managing climate-related risks and opportunities

Coverage of responsibilities

Reporting line

Reports to the board directly

Frequency of reporting to the board on climate-related issues via this reporting line

As important matters arise

Please explain

The Strategy, Communication, and ESG Committee (CECESG) is composed of three members of the BoD, one of which is independent. The CECESG is responsible for supporting the Board of Directors in the evaluation of the strategic direction, which shall observe Braskem's sustainable development guidelines, and for monitoring and evaluating the initiatives and goals assumed by the Company with respect to its corporate sustainability and the ESG criteria. Its duties include, without limitation, to monitor ESG aspects existing in the strategy and in the corporate policies relating to the disclosure of information, sustainable development, health and safety, environment, quality, and productivity. Climate Change is one of the aspects that is monitored by the CECESG.

Position or committee

Chief Operating Officer (COO)

Climate-related responsibilities of this position

Managing annual budgets for climate mitigation activities
Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
Implementing a climate transition plan
Monitoring progress against climate-related corporate targets

Coverage of responsibilities

Reporting line

CEO reporting line

Frequency of reporting to the board on climate-related issues via this reporting line

More frequently than quarterly

Please explain

Braskem's Vice President of Global Industrial Manufacturing and Operations (COO), owner of the industrial decarbonization strategy, reports directly to Braskem's CEO. Mitigation measures are monitored by the COO on a frequent basis and part of his performance is evaluated considering the decarbonization plan implementation. Operational risks related to climate issues are also discussed, which represents challenges to adapt to climate change and mitigate GHG emissions in the industrial facilities, including aspects such as improve energy efficiency and the use of renewable energy sources.

Position or committee

Other C-Suite Officer, please specify
Innovation, Technology and Sustainable Development Vice-President

Climate-related responsibilities of this position

Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
Managing climate-related acquisitions, mergers, and divestitures
Developing a climate transition plan
Implementing a climate transition plan
Integrating climate-related issues into the strategy

Coverage of responsibilities

Reporting line

CEO reporting line

Frequency of reporting to the board on climate-related issues via this reporting line

More frequently than quarterly

Please explain

Braskem's Vice President (VP) of Innovation, Technology and Sustainable Development, owner of the climate change strategy, reports directly to Braskem's CEO. The Climate Change transition plan is approved and monitored by this VP on a frequent basis and part of his performance is evaluated considering the transition plan implementation.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Incentives for the management of climate issues are considered for example in the achievement of goals to reduce GHG emissions in operations.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive

Chief Executive Officer (CEO)

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target
Implementation of an emissions reduction initiative
Reduction in absolute emissions

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

Braskem has an annual performance evaluation process that is based on an Action Program (PA) with corporate and individual targets and behavioural competencies, aligned with the company's culture. All members of the company – including the business leader – have a year base PA in place and performance in the PA (score is from 0-100) defines the variable remuneration (profit sharing) according to a pre-defined maximum bonus value.

Since the establishment of Braskem´s emissions reduction target of 15% by 2030, a corporate and shared goal was put in place to map and implement decarbonization levers throughout the year that contribute to a predetermined amount of reduction per year in GHG emissions (scopes 1 and 2). This is a target that was part of the CEO´s PA in 2022.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

Reward is directly linked to Braskem´s 2030 and 2050 emission reduction and net-zero targets since the target is to reduce a predetermined amount of emissions per year at Braskem´s global operations.

Entitled to incentive

Other, please specify

Industrial Operations Vice President

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target
Implementation of an emissions reduction initiative
Reduction in absolute emissions

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

Braskem has an annual performance evaluation process that is based on an Action Program (PA) with corporate and individual targets and behavioural competencies, aligned with the company's culture. All members of the company – including the business leaders – have a year base PA in place and performance in the PA (score is from 0-100) defines the variable remuneration (profit sharing) based on a pre-defined maximum value.

Since the establishment of Braskem´s emissions reduction target of 15% by 2030, a corporate and shared goal was put in place to map and implement decarbonization levers throughout the year that contribute to a predetermined amount of reduction per year in GHG emissions (scopes 1 and 2). This is a target that was part of the CCO´s PA in 2022.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

Reward is directly linked to Braskem´s 2030 and 2050 emission reduction and net-zero targets, since the target is to reduce a predetermined amount of emissions per year at Braskem´s global operations.

Entitled to incentive

Other, please specify

Europe/Asia Vice President

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

Braskem has an annual performance evaluation process that is based on an Action Program (PA) with corporate and individual targets and behavioural competencies, aligned with the company's culture. All members of the company – including the business leaders – have a year base PA in place and performance in the PA (score is from 0-100) defines the variable remuneration (profit sharing) based on a pre-defined maximum value.

In 2022, the Europe/Asia VP had a target in its PA to increase the production capacity of biopolymers made from bio-based feedstock that serve as a pool where carbon from biogenic removal processes on land can be transferred to.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

Reward is directly linked to Braskem´s 2050 net-zero targets, since the target is related to our removal medium- and long-term strategies.

Entitled to incentive

Environment/Sustainability manager

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target
Implementation of an emissions reduction initiative
Reduction in absolute emissions
Company performance against a climate-related sustainability index (e.g., DJSI, CDP Climate Change score etc.)

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

Braskem has an annual performance evaluation process that is based on an Action Program (PA) with corporate and individual targets and behavioural competencies, aligned with the company's culture. All members of the company – including the business leaders – have a year base PA in place and performance in the PA (score is from 0-100) defines the variable remuneration (profit sharing) based on a pre-defined maximum value.
Since the establishment of Braskem´s emissions reduction target of 15% by 2030, a corporate and shared goal was put in place to map and implement decarbonization levers throughout the year that contribute to a predetermined amount of reduction per year in GHG emissions (scopes 1 and 2). This is a target that was part of the Sustainability and Energy managers´ PA in 2022.
Also, the sustainability manager has a target to strengthening Braskem´s reputation through improvements in the Brazil B3 ISE, Global DJSI Yearbook, Ecovadis index and others.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

Reward is directly linked to Braskem´s 2030 and 2050 emission reduction and net-zero targets, since the target is to reduce a predetermined amount of emissions per year at Braskem´s global operations.

Entitled to incentive

Other, please specify
Sustainability Director and Energy Director

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target
Implementation of an emissions reduction initiative
Reduction in absolute emissions
Company performance against a climate-related sustainability index (e.g., DJSI, CDP Climate Change score etc.)

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

Braskem has an annual performance evaluation process that is based on an Action Program (PA) with corporate and individual targets and behavioural competencies, aligned with the company's culture. All members of the company – including the business leaders – have a year base PA in place and performance in the PA (score is from 0-100) defines the variable remuneration (profit sharing) based on a pre-defined maximum value.
Since the establishment of Braskem´s emissions reduction target of 15% by 2030, a corporate and shared goal was put in place to map and implement decarbonization levers throughout the year that contribute to a predetermined amount of reduction per year in GHG emissions (scopes 1 and 2). This is a target that was part of the Sustainability and Energy directors´ PA in 2022.
Also, the sustainability director has a target to strengthening Braskem´s reputation through improvements in the Brazil B3 ISE, Global DJSI Yearbook, Ecovadis index and others.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

Reward is directly linked to Braskem´s 2030 and 2050 emission reduction and net-zero targets, since the target is to reduce a predetermined amount of emissions per year at Braskem´s global operations.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment

Short-term	0	5	Braskem considers the present as a short-term time horizon.
Medium-term	5	10	Braskem considers the timeframe used in most studies required by the company to generate data projections, following the timeframe used by environmental bodies like INPE, in Brazil, for example.
Long-term	10	30	Braskem considers the timeframe used in most studies required by the company to generate data projections.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

To evaluate the magnitude of the impact, both positive and negative, the following criteria are considered depending on if it is an opportunity or risk impact on people, considering the seriousness of the injury; in the environment, considering if the impact is internal or external, reversible or not and how extensive it is; in operations, if there is a partial or total interruption, frequent or not, including that which ends up stopping an operation; financial impact; and reputation, if the repercussions are in the internal, local, regional or international media. For opportunities, positive impacts are verified such as development of a new product, development of a new market, increase in market share and impacts that improve the company's profits.

There is a procedure that assesses the following items: people's health and safety, social context, environmental impact, impact on infrastructure, reputation and financial impact. For each of them, there is a 4-level scale that varies from low, moderate, critical and higher. As a final result, cross-referencing impacts with frequencies leads to quantified risk and opportunity results. The risks and opportunities, according to the quantitative result, can be located in one of the four regions in the risk matrix:

- green = should be followed-up/monitored (risk classified as low).
- yellow = should have an action plan and implement all the actions identified (risk classified as moderate)
- red = should have a strategy and implementation should be immediate (risk classified as high).

In this analysis, financial losses above BRL 50,000,000 are considered as a substantial financial impact. However, not only this value is used during prioritization. Considering the combination of the magnitude of this financial impact with the probability of the event occurring, scenarios with a low financial impact, but high probability, might also be classified as high-risk scenarios.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Analysis at company level:
Braskem identifies the physical and transition risks and opportunities (with support from external consulting and internal technical teams) with a potential impact on 100% of its industrial operations, in Brazil, Mexico, Germany and USA. Analysis is conducted in a cooperative way, considering the climate models and the IPCC scenarios, identifying the impacts and vulnerabilities of our operations in the present time horizon (Short-term), year 2030 (Medium-term) and year 2050 (Long-term).
Compliance with the risk mitigation action plan is evaluated annually and a new assessment of the most relevant climate risks is performed.
Periodically, these studies are updated for reassessment of scenarios and residual risks and maximized opportunities. For risks associated with the value chain, Braskem uses the CDP Supply Chain to identify these risks and opportunities.

Analysis at asset level:
The identification of risks and opportunities at the asset level focuses on the present and the future. Focal points of all industrial sites and strategic areas work together with Braskem's Sustainable Development team to identify current or potential new climate risks and opportunities. .
To evaluate the magnitude of the impact, both positive and negative, the following criteria are considered depending on if it is an opportunity or risk impact on people, considering the seriousness of the injury; in the environment, considering if the impact is internal or external, reversible or not and how extensive it is; in operations, if there is a partial or total interruption, frequent or not, including that which ends up stopping an operation; financial impact; and reputation, if the repercussions are in the internal, local, regional or international media. For opportunities, positive impacts are verified such as development of a new product, development of a new market, increase in market share and impacts that improve the company's profits.
To identify future frequency, the results of IPCC and climate scenario models are considered, and for current frequency, plant histories are considered.
As a final result, cross-referencing impacts with frequencies leads to quantified risk and opportunity results.
The risks and opportunities, according to the quantitative result, can be located in one of the four regions in the risk matrix:

- green = should be followed-up /monitored (risk classified as low).
- yellow = should have an action plan and implement all of the actions identified (risk classified as moderate)
- red = should have a strategy and implementation should be immediate (risk classified as high).

In this analysis, financial losses above BRL 50,000,000 are considered as a substantial financial impact. However, not only this value is used during prioritization. Considering the combination of the magnitude of this financial impact with the probability of the event occurring, scenarios with a low financial impact, but high probability, might also be classified as high-risk scenarios.

Considering that all climate risks and opportunities were identified and classified as low, moderate or high, for every high risk or opportunity, it is mandatory to identify an action to mitigate or eliminate the risk or an action to keep the opportunity in the ‘high’ position. All actions validated are approved and its implementation is monitored according to its approved schedule.
Management of these actions is made by monitoring the accomplishment percentage of the action plan and by the reduction of high-risk scenarios. The achievement of these measures is now evaluated according to an achievement projection, considering that plants achieve measures’ goals in a linear tendency throughout the years.

Regarding physical risks, a case study:
Situation: There is the risk of strong winds in the Q2 industrial unit, located in the South of Brazil.
Task: Identifying adaptation actions to reduce the impact of these extreme events, increasing the resilience of industrial units and mitigating climate risk.
Action: Adaptation measures were defined, such as review of contingency and emergency plans, reassessment of permanent and temporary physical facilities and engagement of critical suppliers.
Result: Industrial unit Q2 is better prepared to monitor preventively and is more resilient to these extreme weather events.
Time horizon covered: Year 2030.
Stage of the covered value chain: Own operations and logistics for receiving products and raw materials and delivering products

For transitional risks, there is case study:
Situation: the risk of a mandatory carbon-pricing instrument being implemented in regions where Braskem operates, mainly Brazil and Mexico.
Task: Consider emission impact assessment in decision criteria to prioritize projects that reduce emissions.
Action: In order to prepare for this scenario, Braskem implemented the internal carbon-pricing strategy in 100% of its operations in Brazil, Mexico, Germany and USA.
Result: Projects and initiatives, which reduce emissions, approved and implemented in industrial units, such as Q3, Q1, Q2 and others.
Time horizon covered: Year 2030.
Stage of the covered value chain: Own operations and the entire value chain (scope 1, 2 and 3).

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current regulatory risks are considered when it comes to local policies on climate-related issues, such as the National Policy on Climate Change in Brazil, the Fossil Fuel Use Tax in Mexico and the European Trading System (EU ETS) for our operations in Germany. These risks are assessed in the climate risk study, that discuss changes to the current regulatory system and provide input on the subject. Risk example: an example of a current regulation risk would be the increase in cost or scope of emission permission in EU ETS, as it related to Braskem's operations in Germany. The risk is considered as a risk for the company because it can negatively impact the result of the industrial unit in Germany as it might reduce our profit margin over time
Emerging regulation	Relevant, always included	Braskem considers the possibility of the implementation of economic instruments for carbon-pricing, in countries where the company operates (Brazil and Mexico), in the future. Braskem assesses this risk by taking part in national and international forums and events on the matter, gathering information on this possible regulation and by evaluating measures taken by other companies. Risk example: an example of an emerging regulation risk would be the implementation of an economic instrument for carbon pricing in the regions where the company operates, such as the creation of an additional tax for the company. The risk is considered as such for the company because Braskem is a contributor to industrial emissions (especially in Brazil). In the scenario of creating a carbon tax, it can potentially create a negative impact as it might reduce our profit margin over time.
Technology	Relevant, always included	The areas of innovation, technology, and energy in Braskem have specialists who monitor technological risks and identify actions or projects for mitigation. To guarantee its competitiveness in the market during extreme scenarios, Braskem includes power supply generation, renewable sources and similar subjects in its risk assessment. An example of technological risk is associated with the company's capacity to adapt to the consumption of renewable energy (wind and solar), once they use more modern, continuous and clean technology. It is considered a risk because the company consumes part of its energy from sources that can be discontinued, such as hydraulics, which in periods of severe drought reduce the supply. With the migration to other safe-energy sources, the company will be guaranteed the continuity of energy use. This risk is important, because in some industrial units the energy consumption is high, and if the company does not adapt to being

		supplied by these renewable sources, it may impact operating costs and might reduce our profit margin over time. One example of technological improvement related to energy generation is VESTA's project, an initiative to optimize steam generation in our Q3 plant approved in 2018, in partnership with Siemens
Legal	Relevant, always included	Braskem has ongoing consultancy support to assess compliance with current and future legislation. In the monitoring of draft laws, potential regulatory risks are assessed, including those that may impact the licenses of its operations. At Brazil's Rio de Janeiro site, for the renewal of the operating license, a target for reducing emissions in the state was included for other companies. Legal risks are considered since it is expected that environmental agencies include emissions management requirements in the licensing processes of the regions that we have operations.
Market	Relevant, always included	This type of risk is integrated in the assessment with studies from a hired consultancy agency and is periodically updated. Market risks are considered when we evaluate the possible change in market logic. That is, considering oil products as an input, consumers can reduce the consumption of oil products, consequently impacting the market reduction for our products. In response, Braskem has already been working with a strategy of diversifying the product portfolio, as an example the production of green PE, with bio-based raw material, the company is the largest producer in the world.
Reputation	Relevant, always included	This type of risk is integrated in the assessment with studies from a hired consultancy agency and is periodically updated. Reputational risks in Braskem are considered within other risks, like the possibility of articles and news registered by the media and complaints from groups like NGOs, created by the risk of a severe water scarcity, especially in the Southeast and Northeast of Brazil.
Acute physical	Relevant, always included	This type of risk is integrated in the assessment with studies from a hired consultancy agency and is periodically updated. The process safety team, after evaluating the consultancy study, assesses the impacts on all Braskem operations, considering the acute physical risk. An important example is the occurrence of fires in regions of potential water stress, mainly in external areas and pipelines, where the lack of water could impact the operation of the firefighting system. The risk of fires could negatively affect the operation. To mitigate this risk, Braskem has an action to review the emergency procedure in all regions where these risks were identified.
Chronic physical	Relevant, always included	This type of risk is integrated in the assessment with studies from a hired consultancy agency and is periodically updated. It is important to emphasize that for this type of risk, the health and safety team, after evaluating the consultancy study, assesses the

		impacts on all Braskem operations, considering the chronic risk. An example is in Braskem's risk assessment by the evaluation of heat waves and increased days of severe drought risks, especially at the Mexican industrial site, where the impact of chronic risk refers to the need to assess the adequacy of some facilities, including those that may impact the ergonomics/health of employees.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical

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

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

The increase in average global temperatures disturbs the balance of climatic systems, intensifying phenomena that directly impact Braskem's activities, such as water availability. In Brazil, INPE indicates that by 2040, for Brazilian regions where Braskem operates, the average precipitation in the summer could be reduced to 2.3 mm/day in the RCP 4.5 scenario and 3.7 mm/day in the RCP 8.5 scenario.

A primary risk driver was identified through Braskem Climate Change study, followed by the analysis of specific watershed scenarios, considering 2040 as a 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, considering the current technology.

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. The water availability of plants may be reduced in the short and long term, resulting from an increase in temperature and consequent evaporation of bodies of water. The potential impacts: (i) 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). (ii) Financial impacts: water scarcity increasing the price of water will generate financial impact for the plant.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Based on a series of 9 potential climate scenarios and using business guidelines for economic evaluation of ecosystem services at FGV-São Paulo, the value represents the potential impact of one of the scenarios. In this scenario, we 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 potential financial losses considering the reduction in production at the industrial unit.

Potential impact cost = quantity of product produced during 12 months * 30% * loss of profit
*Production at the industrial unit Q4, Rio de Janeiro, Brazil
**30% because we consider 30% reduction in the water permit withdrawal

The value was limited to US$10 MM due to the criterion of significant impact for physical risk, since any loss (for physical risk) above US$10 MM is considered as the most relevant impact in the risk classification matrix.

Cost of response to risk

17,500,000

Description of response and explanation of cost calculation

The Climate Change Adaptation Plan indicated droughts as the main potential risk to the company's operations. One of the main actions to mitigate the risk of water scarcity is the identification and implementation of a new sustainable source of water withdrawal, replacing the current water withdrawal in a hydrographic basin with high risk.
Braskem has studied seawater desalination and sewage reuse options for this region, and is in the final stages of this project, defining the best solution for approval in 2023 and planning to start implementing this project next year, 2024. This will reduce the risk as well as bring the water security index in that region to 100%.
The cost represents the difference between purchasing freshwater and purchasing reuse water at a price like Aquapolo (ABC reuse project - around 6.74 BRL/m3), to supply 100% of the region's operations (values refer to the year of 2020).

Formula: Cost of Response to Risk = B*D - A*C
A = Annual amount of water consumed by 3 industrial units surface water withdrawal (m3)
B = Annual amount of water consumed by 3 industrial units' withdrawal from third-party reuse water (m3)
C = Cost of fresh water (BRL/m3)
D = Cost of reuse water (BRL/m3)

Comment

For Guandu industrial plants (RJ, Brazil), Braskem is currently evaluating long-term contracts.

The potential financial impact is based on a series of potential hypotheticals climate scenarios and using business guidelines for economic evaluation of ecosystem services at FGV-São Paulo. The value represents the potential impact of one of the scenarios, and is subject to risks and uncertainties which include, but are not limited to: advancement, availability, development and affordability of technology necessary to mitigate this impact; unforeseen design, operational and technological difficulties; availability of necessary materials and components; adapting products to customer preferences and customer acceptance of sustainable supply chain solutions; changes in public sentiment and political leadership; our ability to comply with changing regulations, taxes, mandates or requirements related to greenhouse gas emissions or other climate-related matters. The value was limited to US$10 MM due to the criterion of significant impact for physical risk, since any loss (for physical risk) above US$10 MM is considered as the most relevant impact in the risk classification matrix.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Primary potential financial impact

Other, please specify

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

Company-specific description

The demand for products with better circular standards and from renewable sources, opening space for the development of products and markets. Braskem seeks to understand the change in consumer behaviour in this regard to adapt and develop new solutions. Examples of outcomes of this process are the bio-based polymers, that today are produced by the industrial units in Brazil. The Green PE for example is a polymer produced with a bio-based feedstock (from sugarcane ethanol), at the industrials units in southern Brazil, therefore promoting the storage of biogenic carbon that is removed during the bio-based feedstock production (in this case, sugarcane).

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

192,780,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The potential financial impact was calculated based on the historical revenue growth rate of the Green PE applied to revenue obtained with the sales of this resin in 2018.
The financial implications associated with the opportunities indicate that the introduction of green products in the market adds value and increases profitability in a sustainable way. As the world's largest producer of biopolymers, in 2018 we started to supply our I'm green™ Green Polyethylene for the production of botanical elements such as the trees, shrubs and leaves of the Lego Group. A partnership that reinforces our successful strategy of investing in sustainable and innovative products.
The potential financial impact was calculated considering the growth in demand for Green PE and thus, the company increasing its revenue for this product.
Potential impact formula: annual revenue from Green PE * sales prospecting (based on historical data)

Cost to realize opportunity

50,400,000

Strategy to realize opportunity and explanation of cost calculation

Situation: The use of bio-based feedstock characterizes a unique opportunity for the reduction of Braskem's products' Carbon Footprint, resulting in greater acceptance in national markets and greater access to international regulated markets.
Task: Braskem's goal in the development of green products is to take advantage of the opportunities identified and of the growing demand for these products in the market. The first Green PE plant started its operations during the second semester of 2010. Among its sustainable products portfolio, Braskem has improved the placement of Green Polyethylene, closing deals with important clients.
Action: Braskem announced in 2021 the expansion of current green ethylene capacity at the Triunfo petrochemical complex in Rio Grande do Sul (Brazil) from 200 kt/year to 260 kt/year, with an estimated investment of US$87 million, which is expected to start operating in the second half of 2023. We also continue to study the feasibility of expanding green ethylene production to Thailand, in partnership with SCG Chemicals – during 2023, we expect to reach project milestones such as investment approval.
Results: In 2022, we formalized our partnership with Lummus for licensing technology to produce green ethylene. The partnership will accelerate the use of bioethanol for the production of chemicals and plastics.
The cost of this opportunity refers to: 22% of investments in laboratories and technology and innovation centers and 78% in progress in research in renewables and others.

Comment

The green ethylene plant located in Triunfo, state of Rio Grande do Sul, Brazil, demanded BRL 500 million in investments from 2008-2010. This plant has the capacity to produce 200,000 tons of ethylene per year. In 2019, Braskem invested more than BRL 50 million in Innovation and Technology. Part of this quantity is directed to the development of resins from bio-based feedstock

The potential financial impact is based on a series of potential hypotheticals climate scenarios and using business guidelines for economic evaluation of ecosystem services at FGV-São Paulo. The value represents the potential impact of one of the scenarios, and is subject to risks and uncertainties which include, but are not limited to: advancement, availability, development and affordability of technology necessary to mitigate this impact; unforeseen design, operational and technological difficulties; availability of necessary materials and components; adapting products to customer preferences and customer acceptance of sustainable supply chain solutions; changes in public sentiment and political leadership; our ability to comply with changing regulations, taxes, mandates or requirements related to greenhouse gas emissions or other climate-related matters. The value was limited to US$10 MM due to the criterion of significant impact for physical risk, since any loss (for physical risk) above US$10 MM is considered as the most relevant impact in the risk classification matrix.

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a climate transition plan that aligns with a 1.5°C world?

Row 1

Climate transition plan

Yes, we have a climate transition plan which aligns with a 1.5°C world

Publicly available climate transition plan

Yes

Mechanism by which feedback is collected from shareholders on your climate transition plan

We have a different feedback mechanism in place

Description of feedback mechanism

All medium and long-term strategies are approved by the Board of Directors, composed by representatives of the main shareholders.

Frequency of feedback collection

Annually

Attach any relevant documents which detail your climate transition plan (optional)

Braskem's 2022 Integrated Report

Braskem-Relatorio-Integrado-2022-ENG-12-04.pdf

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy
Row 1	Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization’s use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Physical climate scenarios Customized publicly available physical scenario	Company-wide	1.6ºC – 2ºC	IPCC AR6 SSP1-2.6 (temperature target 2100); quantitative analysis
Physical climate scenarios Customized publicly available physical scenario	Company-wide	2.1ºC - 3ºC	IPCC AR6 SSP2-4.5 (temperature target 2100); quantitative analysis
Physical climate scenarios Customized publicly available physical scenario	Company-wide	3.1ºC - 4ºC	IPCC AR6 SSP3-7.0 (temperature target 2100); quantitative analysis
Transition scenarios IEA NZE 2050	Company-wide		NGFS NET ZERO 2050 (SSP1-1.9) This scenario imposes the goal of limiting the temperature increase to 1.5°C by the end of the 21st century, projecting the efforts that would be necessary for the transition to a low carbon economy. It assumes that the most ambitious climate policies are introduced early and gradually

			become more stringent, in an orderly fashion and across different countries and sectors. In this scenario, net carbon emissions are neutralized around 2050.
Transition scenarios IEA APS	Company-wide		NGFS BELOW 2°C (SSP1-2.6) This scenario imposes the goal of limiting the temperature increase to 2°C during the 21st century, projecting the efforts that would be necessary for the transition to a low carbon economy. It assumes that the most ambitious climate policies are introduced early and gradually become more stringent, in an orderly fashion and across different countries and sectors. In this scenario, net carbon emissions are neutralized around 2075.
Transition scenarios IEA STEPS (previously IEA NPS)	Company-wide		NGFS NDCs (SSP2-4.5) This scenario predicts that the unconditional NDCs promised by 2020 will be fully implemented and the respective energy and emissions targets in 2025 and 2030 will be achieved in all countries. The extrapolation of policy ambition levels over the 2030-2100 period is, however, subject to great uncertainties. In this scenario, it is also considered that there is no "transition" to the low carbon economy, as efforts are insufficient and, consequently, physical risks will be more severe.
Transition scenarios IEA CPS	Company-wide		NGFS CURRENT POLICIES Existing climate policies until 2020 remain in place, but there is no strengthening of the ambition level of these policies. Thus, it is considered that there is no "transition" to the low carbon economy, as efforts are insufficient to limit the increase in the global average temperature and, consequently, the physical risks will be more severe.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

By using climate-related scenarios, Braskem seeks to identify with better accuracy the risks and opportunities that are more relevant and adherent to the business, by using an analysis with more pessimistic scenarios and more optimistic ones.

Results of the climate-related scenario analysis with respect to the focal questions

The analyses of physical climate scenarios helped identify the priority regions where Braskem is investing more resources to mitigate the risks, as they were shown to be more significant. Among the industrial units, those located in Brazil presented the highest incidence, where extreme climate events, such as severe droughts, heavy rains and floods, can occur. For each of the risks, classified as high, we prepared action plans with adaptation measures. As an example, Braskem has invested in actions to search for alternative sources of water withdrawal in the Northeast and Southeast regions of Brazil due to the threat of severe droughts. Similarly, for the transition risks, the analyses of climate-related scenarios provided a better support for prioritization of opportunities and risks with their respective action plans. As an example, we have implemented and revised our internal carbon pricing process to make sure that all material initiatives and projects that are being evaluated considers the financial impact of GHG emissions, for both risks (emissions increase) and opportunities (emissions reduction/removal).

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	The demand for better processes, products and services with lower environmental impacts gave Braskem the chance to expand its product portfolio, by creating new products that follow this demand. From a global emission perspective, we understand that biopolymers are an important solution for the petrochemical industry towards carbon neutrality. In fact, the raw material used for the production thereof contains carbon of biogenic origin, for example, removed from the atmosphere during the plant photosynthesis process. Because they retain biogenic carbon molecules for dozens of years, biopolymers can be considered as long-term stocks for biogenic carbon. For that reason, we announced in 2021 the expansion of current green ethylene capacity at the Triunfo petrochemical complex in Rio Grande do Sul (Brazil) from 200 kt/year to 260 kt/year, with an estimated investment of US$87 million,

		which is expected to start operating in the second half of 2023. As expected for 2022, we also continue to study the feasibility of expanding green ethylene production to Thailand, in partnership with SCG Chemicals – during 2023, we expect to reach project milestones such as investment approval. The year 2022 also marked the launch of Sustainea, a joint venture with Japan's Sojitz focused on the production and sale of monoethylene glycol (bioMEG) and monopropylene glycol (bioMPG) made from bio-based raw materials. By means of this joint venture, the business plan contemplates the implementation of three industrial plants. Sustainea will also establish a production chain to ensure bio-based and competitive raw material supply, as well as a logistics operation that enables the smallest possible carbon footprint. The expectation is that once the technology is approved, the plants will have a combined production capacity of up to 700,000 tons of bioMEG per year.
Supply chain and/or value chain	Yes	Braskem's strategy and commitments related to climate change have direct impact on our entire value chain, both upstream (suppliers) and downstream (clients). Climate change has been pressing our customers for demanding products with a lower environmental footprint and/or from bio-based sources. This was seen by Braskem as a business opportunity to create shared value in the long term, by offering more sustainable products that can help our clients to decrease their negative impact on climate change. Hence, our carbon-neutral ambition is closely related to the expansion of the sale of products made with raw materials of bio-based origin. Other products such as Maxio resins also play a role: when compared to equivalents, Maxio products typically reduce energy consumption and associated emissions by 10-50%. From a supply chain perspective, our bet on bio-based raw materials intensifies our partnership with sugar cane suppliers for our I'm green™ products, which represents a major change in our supply chain strategy. Also, our emissions reduction goals are pushing us to find new energy suppliers focused on renewable energy.
Investment in R&D	Yes	Braskem sees Innovation and R&D as tools to build a more sustainable future. In 2022, 85% of our Opex investments in R&D are focused on sustainability. We are investing in the development of carbon capture technologies for storage and use as raw materials for chemical production. Our Innovation team is working with a

		pipeline where 170 ideas have been identified, 15 of which have been developed, becoming research already at various stages of development. Among the projects are a partnership with Northwestern University in the development of a co-electrolysis technology, which simultaneously transforms CO2 captured in CO and ethylene into ethylene oxide. With the University of São Paulo and the Federal University of São Carlos (UFSCar), we worked on creating a new technology to convert CO2 into light olefins or linear alpha-olefins. Together, we are also developing an electrocatalytic system to convert CO2 and water into ethanol. With New Iridium, a startup from Colorado, United States, we are supporting the development of a photocatalytic system that uses light energy to promote the conversion reaction of CO2e into organic acids. In addition to the projects to convert CO2, we also have a partnership for the development of capture technologies with membrane in cooperation with Compact Membrane Systems (CMS). With respect to the project of University of Illinois, from Chicago, initiated in 2019, we have obtained positive results, with the conclusion of the development of the technology in laboratory, and we are evaluating the commencement of the pilot plant to continue the development of the technology in larger scale.
Operations	Yes	In order to achieve our climate-related commitments, reduce operational risks and capitalize on opportunities, we invest in energy efficiency and renewable energy projects in our plants, and we seek long-term partnerships for energy supply. In October 2022, we launched Voqen - new Braskem company, being one of its focus the energy transition in our industry. Voqen already manages a portfolio of more than R$3 billion per year, will help us in the energy transition process and provide support to the entire chemical and petrochemical chain. We will offer our customers and partners all knowledge of the energy and gas markets we gathered over the years, as well as customize renewable energy solutions and new business models. For the international operations, in 2022 Braskem Europe commenced to implement its strategy of purchase of energy with renewable certificate for 100% of its consumption of electricity. In the United States, we signed a renewable electric energy purchase agreement for a term of ten years for the plant in Neal (West Virginia), which becomes effective in 2025. It has also entered into clean energy

		agreements for the plant in Marcus Hook (Pennsylvania), until 2027. Finally, it has acquired Renewable Energy Certificates (RECs) for the Texas plants. In Brazil, since 2018, we initiated a sequence of long-term agreements for the purchase of renewable energy. Since then, we signed agreements with an average term of 20 years. As a result, in 2022 82% of the electricity consumed in our brazilian operations were from renewable sources.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Assets	From the beginning of our operations in 2002, we have been committed to aligning our business strategy with the goal of improving people's lives based on sustainable solutions from chemicals and plastics. To this end, we follow our Global Sustainable Development Policy, which assesses and meets the needs and demands of all stakeholders, in order to promote economic growth aligned with environmental preservation, work and process, and safety and social justice in all of our business activities, services, investments, relationships and products. To align our growth plan with the development of products, processes and solutions that improve environmental and social impacts, following our Global Sustainable Development Policy, we set goals and aspirations also considering our Materiality Matrix, which guides the relevance of the topics of sustainability within our 2030 business strategy. Revenue: In 2022 we reached the mark of 178,538 tons sold, with a green ethylene utilization rate of 95%. Our commitment is to increase the production capacity of bioproducts to 1 million tons by 2030. Indirect costs (operating): In 2014/2015, in the region of São Paulo, Brazil, due to the scenario of drought, many plants from other companies had to interrupt their operations due to water scarcity. However, Braskem's units in this area kept 100% operational during the whole time, as an adaptation measure was already implemented: a project of water reuse, which reuses 100% of the water consumed in this reuse unit. Therefore, one can say that Braskem has actually been impacted in a positive way regarding its operations, since a risk management measure was implemented before any losses had occurred. In order to guarantee that these plants keep operational under

		other drought scenarios, Braskem has an annual cost of BRL 76,918,180. Capital Expenditures: In 2022 Braskem invested US$ 92 million in projects related to Climate Change. The key projects were the expansion of biopolymer capacity in our operations in Rio Grande do Sul (BR), initiatives to reduce CO2e emissions in our operations with projects related to energy efficiency. Acquisitions and divestments: our main climate change investment related to risks and opportunities management in 2022 was Sustainea, a joint venture with Japan's Sojitz focused on the production and sale of monoethylene glycol (bioMEG) and monopropylene glycol (bioMPG) made from bio-based raw materials. By means of this joint venture, the business plan contemplates the implementation of three industrial plants. Sustainea will also establish a production chain to ensure bio-based and competitive raw material supply, as well as a logistics operation that enables the smallest possible carbon footprint. The expectation is that once the technology is approved, the plants will have a combined production capacity of up to 700,000 tons of bioMEG per year. Assets: in 2021 we started the expansion of the green ethylene capacity at the Triunfo petrochemical complex in Rio Grande do Sul (Brazil) from 200 kt/year to 260 kt/year, with an estimated investment of US$87 million, which is expected to start operating in the second half of 2023.

C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

	Identification of spending/revenue that is aligned with your organization's climate transition
Row 1	Yes, we identify alignment with our climate transition plan

C3.5a

(C3.5a) Quantify the percentage share of your spending/revenue that is aligned with your organization's climate transition.

Financial Metric

CAPEX

Type of alignment being reported for this financial metric

Alignment with our climate transition plan

Taxonomy under which information is being reported

Objective under which alignment is being reported

Amount of selected financial metric that is aligned in the reporting year (unit currency as selected in C0.4)

472,000,000

Percentage share of selected financial metric aligned in the reporting year (%)

10

Percentage share of selected financial metric planned to align in 2025 (%)

22

Percentage share of selected financial metric planned to align in 2030 (%)

41

Describe the methodology used to identify spending/revenue that is aligned

In 2022, Braskem spent US$ 929 million in corporate investments out of which US$ 149 million were in projects related to the seven dimensions of our sustainable development strategy (investments by dimension do not consider investments in scheduled maintenance shutdowns, spare parts for equipment, among others). Form this US$149 million, US$92 million were allocated under the 'Combating Climate Change' dimension. The main contributor to this number was the investment in the expansion of the biopolymer’s capacity in Triunfo plant. The future percentage share was estimated based on the evolution of the production indicator of Green PE from 2022 to 2030. A market growth of fossil PE was not considered in the estimation, only the substitution of fossil PE by Green PE. The share estimated for 2025 was calculated based on the premise of a linear production growth to achieve Braskem's 2030 production goal. Currently, the medium and long-term strategic planning is being reviewed. Therefore, these investment share estimates for 2025 and 2030 may be updated.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number
Abs 1

Is this a science-based target?
No, but we are reporting another target that is science-based

Target ambition

Year target was set
2020

Target coverage
Company-wide

Scope(s)
Scope 1
Scope 2

Scope 2 accounting method
Market-based

Scope 3 category(ies)

Base year
2020

Base year Scope 1 emissions covered by target (metric tons CO2e)
9,988,101.89

Base year Scope 2 emissions covered by target (metric tons CO2e)
766,314.79

Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)

Base year Scope 3, Other (upstream) emissions covered by target (metric tons CO2e)

Base year Scope 3, Other (downstream) emissions covered by target (metric tons CO2e)

Base year total Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

10,754,416.68

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)

Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)

Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)

Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)

Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)

Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)

Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)

Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)

Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)

Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)

Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2030

Targeted reduction from base year (%)

15

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

9,141,254.178

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

10,104,170.37

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

607,634.06

Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Other (upstream) emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Other (downstream) emissions in reporting year covered by target (metric tons CO2e)

Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

10,711,804.43

Does this target cover any land-related emissions?

No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

% of target achieved relative to base year [auto-calculated]

2.64153487

Target status in reporting year

Underway

Please explain target coverage and identify any exclusions

Braskem's climate-related targets are divided into two main steps: (i) a short-term to reduce greenhouse gas emissions in scopes 1 and 2 by 15% by 2030, and (ii) achieve carbon neutrality by 2050.

Our short-term target covers 100% of our Scopes 1 and 2 emissions (market-based), thus no exclusions considering the boundaries of these scopes are applicable. Braskem currently uses an average of Scope 1+2 emissions from 2018 to 2020 as a base for its emission reduction goals. Scopes 1+2 emissions from base years are as follows: 2018 (10,924,277 tCO2e), 2019 (10,552,495 tCO2e) and 2020 (10,786,478 tCO2e).

Our short-term target does not include any scope 3 emissions since there are some methodological uncertainties related to the most appropriate method to estimate possible reduction/removal scenarios considering our bio-based products. We expect to start a more in-depth analysis on Scope 3 target set as soon as the Removal Guidance from GHG Protocol is officially published.

Plan for achieving target, and progress made to the end of the reporting year

To achieve the 2030 mitigation target, a decarbonization area was created within the Energy corporate area, which is responsible for managing initiatives to reduce GHG emissions. Each year, a corporate goal of reducing GHG emissions is defined for all leaders involved, with an impact on their variable remuneration. Thus, a budget is set aside for investments in these initiatives. As an example, in 2022 BRL 127,000,000 was allocated to climate change mitigation.

Also, in 2022, we mapped potential projects to achieve the commitment by means of the development of a Marginal Abatement Cost Curve (MAC curve). Based on this study, we developed a global route of initiatives of various levels of maturity and complexity, with different expected development horizons. The initiative mapped 161 projects by 2030 out of which 69 were prioritized. Energy efficiency and energy matrix replacement are the main fronts of the decarbonization portfolio, followed by the use of bio-based raw materials as feedstock.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production
Net-zero target(s)

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number
Low 1

Year target was set
2021

Target coverage
Company-wide

Target type: energy carrier
Electricity

Target type: activity
Consumption

Target type: energy source
Renewable energy source(s) only

Base year
2020

Consumption or production of selected energy carrier in base year (MWh)
3,374,729.7

% share of low-carbon or renewable energy in base year
73

Target year
2030

% share of low-carbon or renewable energy in target year
85

% share of low-carbon or renewable energy in reporting year
82

% of target achieved relative to base year [auto-calculated]
75

Target status in reporting year
Underway

Is this target part of an emissions target?
Yes, it is part of target 'Abs1' as of our commitment to reduce Scopes 1+2 emissions by 15% by 2030. More specifically, our scope 2 market-based emissions.

Is this target part of an overarching initiative?
No, it’s not part of an overarching initiative

Please explain target coverage and identify any exclusions
The target covers all electricity consumption of our operations in Brazil, Mexico, USA and Germany. No exclusions are applicable considering our operation boundaries.

Plan for achieving target, and progress made to the end of the reporting year
In 2018, we initiated a sequence of long-term agreements for the purchase of renewable energy. Since then, we signed agreements with an average term of 20 years, for the supply of electric energy from wind and solar sources. In Brazil, our agreements represent 40% of the energy we purchase in the country and account more than 220 average megawatts. Also enable the construction of new ventures that contribute to the expansion of the electric system and the country's development, especially in the regions where we are located.
Also in 2022 we executed an agreement with Veolia to produce energy with the use of biomass-based steam. As from 2023, the operation will be carried out in Marechal Deodoro (AL), generating up to 900 thousand tons of steam/year, in 20 years, avoiding approximately 150 thousand tons of CO2e in the long term.
Considering our operations in Germany and USA, we are also investing in renewable and clean electricity contracts (PPA).

List the actions which contributed most to achieving this target

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number
NZ1

Target coverage
Company-wide

Absolute/intensity emission target(s) linked to this net-zero target
Abs1

Target year for achieving net zero
2050

Is this a science-based target?
Yes, we consider this a science-based target, but we have not committed to seek validation of this target by the Science Based Targets initiative within the next two years

Please explain target coverage and identify any exclusions
Braskem considers this target equivalent to SBT since the percentage of annual emission reduction to reach the target will be higher than the 2.1% required by the SBTi to limit average temperature rise by 2°C. Over the years, Braskem has implemented several actions to foster energy efficiency and expand the use of renewable energy sources to achieve our goal of carbon neutrality by 2050. Our strategy to face climate change is divided into three pillars. In terms of reducing emissions, we are working on expanding the use of renewable energy in our operations while constantly improving our energy efficiency. As a result, in 2022 we have reached the mark of 82% of renewable electricity consumption worldwide. This effort will help us achieve our intermediate target of reducing direct emissions (scopes 1 and 2) by 15% by 2030. The second front is carbon removal with product storage, that we have committed to a target of 1 billion tons of bio-based polymers production by 2030. On the third front, carbon capture storage and use, 15 initiatives are being developed, becoming research already at various stages of development.
The execution and achievement of these goals within currently projected costs and timeframes expectations are also subject to risks and uncertainties that include, but are not limited to: progress, availability, development and accessibility of the technology necessary to achieve these commitments.

Do you intend to neutralize any unabated emissions with permanent carbon removals at the target year?
Yes

Planned milestones and/or near-term investments for neutralization at target year
In order to achieve the target, the company's strategy is divided in three main pillars: i. investing to reduce emissions with a focus on energy efficiency, as well as increasing the use of renewable energy in current operations, establishing partnerships aimed at innovation and technology; ii. removal of CO2 emissions with product storage via investments in the production of biopolymers from bio-based sources and iii. capture of CO2 emissions through research and development to use carbon as a raw material for chemical production.
In the removal pillar, our target is to produce 1 million tons of bio-based polymers by 2030. We believe in this strategy for neutralization.

Planned actions to mitigate emissions beyond your value chain (optional)

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	97	
To be implemented*	41	521,965.96
Implementation commenced*	11	33,046.73
Implemented*	21	470,398.76
Not to be implemented	0	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

134,907.23

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

13,254,000

Investment required (unit currency – as specified in C0.4)

120,380,000

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

Our Energy Efficiency Program was created in 2019 to accelerate energy initiatives and boost our competitiveness while reducing our CO2e emissions. In 2022, there were 18 initiatives focused on process optimization that led to emissions reductions, and the most relevant ones were implemented in the Brazilian industrial facilities (Q1 in Bahia and Q4 in Rio de Janeiro).

Initiative category & Initiative type

Low-carbon energy consumption
Low-carbon electricity mix

Estimated annual CO2e savings (metric tonnes CO2e)

335,491.53

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

118,500,000

Payback period

No payback

Estimated lifetime of the initiative

21-30 years

Comment

In 2018, we initiated a sequence of long-term agreements for the purchase of renewable energy. Since then, we signed agreements with an average term of 20 years, for the supply of electric energy from wind and solar sources. In Brazil, our agreements represent 40% of the energy we purchase in the country and account more than 220 average megawatts. Also enable the construction of new ventures that contribute to the expansion of the electric system and the country's development, especially in the regions where we are located.
Considering our operations in Germany and USA, we are also investing in renewable

and clean electricity contracts (PPA).
With the purchase of clean and renewable electricity in Brazil, Germany and the United States via PPAs, in 2022 there was an 355,491.53 tCO2e reduction compared to 2021 due to the consumption of an additional 465 thousand MWh of renewable and clean electricity.
Emissions reductions were also impacted by improvements in the local electricity grids that we have operation, especially in Brazil.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Braskem follows climate related regulatory developments closely and in a recurrent manner.
Dedicated budget for low-carbon product R&D	Braskem allocates budget in its research and technology area for the development of low carbon products. Examples of the success of the decision is the introduction of products such as Green PE, Green Isoprene, Green Butadiene and ETBE.
Dedicated budget for energy efficiency	In 2021, Braskem created a specific investment group entitled “Decarbonization” with funds allocated to energy efficiency and emissions-reduction initiatives. In this case, initiatives are considered that become more attractive when evaluated regarding economic aspects and the reduction of CO2e emissions.
Other Qualitative criteria for ESG investments	Braskem created a new nature of investments called ESG to consider and prioritize projects related to aspects related to Environment, Social and Governance, including Climate Change aspects.
Internal price on carbon	Aiming to benefit from projects that present a reduction in GHG emissions, Braskem has developed a tool to calculate the virtual cost of carbon in its investments. The tool calculates the virtual cost of carbon as an anticipatory way for future impact regulation, identifying the positive and negative contributions to projects. In this way, the economic values, positive or negative, corresponding to the environmental impact caused by the emissions are calculated for those projects that reduce or generate emissions. This process now enters the monitoring phase to evaluate the effectiveness of the defined price in relation to changing the eligibility of projects in the decision-making process.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

No taxonomy used to classify product(s) or service(s) as low carbon

Type of product(s) or service(s)

Chemicals and plastics

Other, please specify

CO2 removal during sugarcane growth for ethanol production with product storage. Ethanol from sugarcane is used as feedstock for green PE production.

Description of product(s) or service(s)

Today, Braskem is the largest global producer of biopolymers, with an annual production capacity of 200,000 tons of I'm green™ Polyethylene produced from sugarcane ethanol, a source that is 100% renewable. This Bio-based products do not directly sequester carbon from the atmosphere, instead they serve as a pool where carbon from biogenic removal processes on land can be transferred to. Storing removed carbon in products can contribute to slowing down the rate of global warming and delaying accumulation of emissions in the atmosphere. The industrial unit where Green PE is produced is currently being expanded and the production capacity will be up to 260,000 tons by 2030.

Considering its lifecycle, Braskem's Green PE has a potential to store 3.09 tCO2e per tons of product. Braskem does not release the revenue of individual products, therefore, the % of revenue generated reported in this form corresponds to the sum of revenue from green PE and ETBE additive, another bio-based product produced by Braskem.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Yes

Methodology used to calculate avoided emissions

Other, please specify

Addressing the Avoided Emissions Challenge - ICCA (https://icca-chem.org/wp-content/uploads/2020/05/Addressing-the-Avoided-Emissions-Challenge.pdf)

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Cradle-to-gate

Functional unit used

ton of green PE produced

Reference product/service or baseline scenario used

PE produced from fossil feedstock

Life cycle stage(s) covered for the reference product/service or baseline scenario

Cradle-to-gate

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

3.09

Explain your calculation of avoided emissions, including any assumptions

I'm green™ PE life cycle includes all stages, from harvesting to PE production. The sugarcane bagasse is used to generate heat and power and supply the mill's energy demands. The surplus electricity is sold to the Brazilian integrated electrical system to supply the operational margin of this system. The ethanol is then transported by rail (a small amount can also be delivered by truck) to the Braskem facilities in Triunfo, Brazil where it will be dehydrated to produce ethylene. This ethylene is then polymerized to produce the I'm green™ PE.
As for the Fossil PE, the life cycle begins with oil extraction and refining. Naphtha, which is one of the derivatives produced in the refineries, is transported by ducts to the petrochemical complexes where it will be cracked to produce ethylene and many co-products. The ethylene is then polymerized to produce PE. Since there is no surplus electricity generated in this system, it is assumed that surplus electricity will be supplied by a thermoelectric power plant, making both product systems comparable.

More information regarding emission factors and other methodology can be found at: https://www.braskem.com.br/portal/imgreen/arquivos/LCA%20PE%20I%27m%20green%20bio-based_FINAL%20EN.pdf

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

4.5

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

No

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?
Row 1	No

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start

January 1, 2020

Base year end

December 31, 2020

Base year emissions (metric tons CO2e)

9,988,101.89

Comment

Braskem currently uses an average of Scope 1 emissions from 2018 to 2020 as a base for its emission reduction goals. The Scope 1 emissions are as follows: 2018 (10,192,253 tCO2e), 2019 (9,750,862 tCO2e) and 2020 (10.021.191 tCO2e).

Scope 2 (location-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Braskem uses Scope 2 market-based in its targets;

Scope 2 (market-based)

Base year start

January 1, 2020

Base year end

December 31, 2020

Base year emissions (metric tons CO2e)

766,314.79

Comment

Braskem currently uses an average of Scope 2 emissions from 2018 to 2020. The Scope 2 emissions are as follows: 2018 (732,025 tCO2e) , 2019 (801,633 tCO2e) and 2020 (765,287 tCO2e).

Scope 3 category 1: Purchased goods and services

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

13,079,946.57

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 2: Capital goods

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

499,612.58

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

787,530.64

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 4: Upstream transportation and distribution

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

1,056,346.5

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 5: Waste generated in operations

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

38,188.88

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 6: Business travel

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

1,773.99

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 7: Employee commuting

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

9,620.05

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 8: Upstream leased assets

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

0.61

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 9: Downstream transportation and distribution

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

273,426.71

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 10: Processing of sold products

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

8,438,264.43

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 11: Use of sold products

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

3,759,706.87

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 12: End of life treatment of sold products

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

1,910,766.84

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3 category 13: Downstream leased assets

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

0

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance. Even though we currently don't have emissions related to Downstream leased assets, emissions from this category are treated, monitored, and if applicable quantified, and included in the inventory annually.

Scope 3 category 14: Franchises

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

0

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance. Even though we currently don't have emissions related to Downstream leased assets, emissions from this category are treated, monitored, and if applicable quantified, and included in the inventory annually.

Scope 3 category 15: Investments

Base year start

January 1, 2021

Base year end

December 31, 2021

Base year emissions (metric tons CO2e)

265,517.13

Comment

Braskem applies the rolling base year method for Scope 3, always considering the previous year to measure performance.

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
Brazil GHG Protocol Programme
Defra Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance, 2019
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol: Scope 2 Guidance
The Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Standard
US EPA Emissions & Generation Resource Integrated Database (eGRID)
Other, please specify
IPCC Guidelines for National Greenhouse Gas Inventories, 2019

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

10,104,170.368

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

Although we have purchased electricity from the free market, it was only in 2019 that we decided to officially report market-based emissions from our operations.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

731,735.56

Scope 2, market-based (if applicable)

607,634.06

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1, Scope 2 or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

12,222,291.969

Emissions calculation methodology

Supplier-specific method

Hybrid method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Data Source: primary data gathered from Braskem's database of purchased goods and services
Emission Factors: Cradle to Gate emission factors from Ecoinvent and specific regional emission factors developed by CarbonMinds
Boundaries: considers 91% (materiality principle) of all good and services purchased by Braskem in 2022 in total volume

Capital goods

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

0

Emissions calculation methodology

Spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

There were no material emissions for this category in 2022.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

822,129.368

Emissions calculation methodology

Supplier-specific method
Fuel-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's operations
Emission Factors: Cradle to Gate emission factors from Ecoinvent and UK Defra databases and official electricity grid emissions factor and losses reported by Energy Agencies from the countries that we have operations

Boundaries: considers 100% of Braskem's Fuel-and energy-related activities from categories A, C and D

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

758,113.856

Emissions calculation methodology

Fuel-based method

Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Data Source: primary data gathered from Braskem's internal database, considering total distance and total volume transported by product type and fleet type

Emission Factors: T.KM emission factors from UK Defra; KM emission factors from UK Defra; Direct fuel consumption emission factors from ship suppliers.

Boundaries: considers 100% of Braskem's upstream transportation and distribution

Waste generated in operations

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

17,436.927

Emissions calculation methodology

Waste-type-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's industrial facilities

Emission Factors: IPCC 2019 Guidelines.

Boundaries: considers 100% of Braskem's operations waste and wastewater disposal and treatment

Business travel

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

3,190.98

Emissions calculation methodology

Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's travel agency
Emission Factors: UK Defra
Boundaries: considers 100% of Braskem's business travels

Employee commuting

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

7,199.27

Emissions calculation methodology

Fuel-based method
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's human resources database
Emission Factors: GHG Protocol Brazilian Program (IPCC)
Boundaries: considers only Braskem's chartered buses transportation within Brazilian industrial facilities

Upstream leased assets

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

140.343

Emissions calculation methodology

Lessor-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's facility's management database
Emission Factors: Brazilian national GRID
Boundaries: considers only the electricity consumed in Braskem's leased distribution centers

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

259,381.146

Emissions calculation methodology

Fuel-based method
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Data Source: primary data gathered from Braskem's internal database, considering total distance and total volume transported by product type and fleet type
Emission Factors: T.KM emission factors from UK Defra; KM emission factors from UK Defra; Direct fuel consumption emission factors from ship suppliers.
Boundaries: considers 100% of Braskem's downstream transportation and distribution

Processing of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

6,989,176.026

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's database of total sold products; secondary categorization of sales volume allocation per type of plastics transformation processes
Emission Factors: Gate to Gate emission factors from Ecoinvent considering four types of production process for plastics transformation

Boundaries: considers 100% of Braskem sold resins (chemicals products are not included - not material and too heterogeneous)

Use of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

4,012,773.799

Emissions calculation methodology

Methodology for direct use phase emissions, please specify

total volume of fuels sold by type multiplied by fuel emission factors from IPCC 2019.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's database of total volume of fuels sold by type.
Emission Factors: Fuel emission factors from IPCC 2019.
Boundaries: considers more than 90% (materiality principle) of all sold fuels

End of life treatment of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

2,104,810.23

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: primary data gathered from Braskem's database of total volume, type and geography destination of resins sold; secondary data of plastics recycling, incineration and landfilled rates by geography destiny
Emission Factors: Cradle to Gate emission factors from Ecoinvent for each type of resin and destination
Boundaries: considers 100% of Braskem sold resins (chemicals products are not material and too heterogeneous

Downstream leased assets

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

0

Emissions calculation methodology

Lessor-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Not applicable to Braskem in 2022

Franchises

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

0

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Not applicable to Braskem in 2022

Investments

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

85,123.161

Emissions calculation methodology

Investment-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Data Source: secondary data considering company’s financial statements (revenue).
Emission Factors: secondary data based on industry average of tCO2e emitted per

dollars.
Boundaries: all companies that Braskem has participation but not operational control

Other (upstream)

Evaluation status

Please explain

Other (downstream)

Evaluation status

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000111

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

10,711,804.43

Metric denominator

unit total revenue

Metric denominator: Unit total

96,519,000,000

Scope 2 figure used

Market-based

% change from previous year

6.73

Direction of change

Increased

Reason(s) for change

Change in output

Change in revenue

Please explain

We ended 2022 with recurring EBITDA of US$2.1 billion, 64% lower than 2021, an amount explained by factors such as the drop in international spreads of PE, PP and PVC in Brazil, PP in the United States and Europe, and PE in Mexico, as well as the lower volume of sales of major chemicals in the Brazil and PP segment in the United States and Europe.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
N2O	33,988.26	IPCC Fifth Assessment Report (AR5 – 100 year)
CO2	9,807,092.332	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	35,672.619	IPCC Fifth Assessment Report (AR5 – 100 year)
SF6	341.594	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	227,075.563	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/area/region.

Country/area/region	Scope 1 emissions (metric tons CO2e)
Brazil	8,798,653.999

United States of America	128,146.93
Germany	6,174.905
Mexico	1,171,194.534

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

By facility

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Crackers	9,007,319.977
Polypropylene	186,986.238
Polyethylene	131,045.712
Vinyls and Chloride	717,679.641
Others	61,138.801

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Q 1 BA	3,029,055.088	-12.663	-38.3284
Q2 RS	2,759,978.524	-29.8774	-51.382
Q3 ABC	1,567,338.697	-23.6393	-46.4864
Q4 DCX/PE 9 DCX	506,081.482	-22.713	-43.2427
PVC 1 BA	126,296.976	-12.6535	-38.3165
PVC 2 AL	375,941.895	-9.6697	-35.8248
CS 2 BA	233.321	-12.6557	-38.3071
CS 1 AL	215,207.448	-9.672	-35.7466
PE 1 BA	13,490.766	-12.6629	-38.3247
PE 2 BA	31,549.907	-12.6497	-38.3162
PE 3 BA	29,313.615	-12.6538	-38.3193
PP 5 DCX	264.262	-22.713	-43.2427
PE 8 CUB	1,402.74	-23.856	-46.4132
PP 3 PLN	6,334.21	-22.7181	-47.1343

PE 7 ABC	2,975.533	-23.6458	-46.4885
PP 4 ABC	27,899.615	-23.6392	-46.467
PP 1 RS	15,522.569	-29.8858	-51.3937
PP 2 RS	2,643.746	-29.873	-51.3989
PE 4 RS	8,498.772	-29.872	-51.3992
PP 7 USA	28,952.022	38.3298	-82.5837
PP 8 USA	72,489.007	29.7024	-95.0803
PP 9 USA	13,985.307	39.8149	-75.4267
PP 10 USA	9,125.511	28.615	-96.6261
PP 11 GER	1,006.471	50.8423	6.9455
PP 12 GER	5,168.434	51.3945	11.974
PP 13 USA	3,595.084	28.9338	-95.3361
Braskem BI MX	1,171,194.534	18.1348	-94.3698
Corporate	2,147.144	-23.5711	-46.7032
PE 5 RS	16,904.267	-29.873	-51.3989
PE 6 RS	581.764	-29.872	-51.3992
CETREL/DAC	58,991.657	-12.708029	-38.317329

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization’s total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities	10,045,178.71	Almost 100% of our Scope 1 emissions are for chemical production activities. The only exception are the emissions from CETREL, a wastewater and waste treatment facility.

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/area/region.

Country/area/region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Germany	73,267.858	17,968.582

United States of America	326,623.44	296,161.116
Brazil	278,193.016	239,853.111
Mexico	53,651.249	53,651.249

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

By facility

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Crackers	85,443.409	80,107.886
Polypropylene	431,061.9	340,011.619
Polyethylene	166,228.7	150,726.011
Vinyls and Chloride	46,407.989	34,194.977
Others	2,593.565	2,593.565

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Q1 BA	633.449	0
Q2 RS	3,517.903	2,579.305
Q3 ABC	40,820.534	38,336.693
Q4 DCX/PE9 DCX	11,440.62	8,358.47
PVC 1 BA	3,665.18	2,730.66
PVC 2 AL	8,627.656	6,315.52
CS 2 BA	3.707	3.707
CS 1 AL	34,111.442	25,145.088
PE 1 BA	3,225.67	2,362.93
PE 2 BA	1,937.42	1,429.03

PE 3 BA	7,075.99	5,435.74
PP 5 DCX	2,695.18	1,965.35
PE 8 CUB	92,971.507	91,906.24
PP 3 PLN	15,898.609	14,751.875
PE 7 ABC	6,801.79	4,975.04
PP 4 ABC	4,294.098	3,111.381
PP 1 RS	5,997.88	4,384.45
PP 2 RS	2,284.83	1,668.86
PE 4 RS	12,754.56	9,471.41
PP 7 USA	36,099.761	36,099.761
PP 8 USA	98,618.201	87,758.548
PP 9 USA	126,194.196	108,780.397
PP 10 USA	22,973.907	20,785.035
PP 11 GER	32,098.002	6,569.637
PP 12 GER	41,169.855	11,398.945
PP 13 USA	42,737.376	42,737.376
Braskem BI MX	53,651.25	53,651.25
Corporate	661.306	661.306
PE 5 RS	11,043.351	8,077.127
PE 6 RS	5,798.07	4,250.66
CETREL/ DAC	1,932.259	1,932.259

C7.7

(C7.7) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?

Yes

C7.7a

(C7.7a) Break down your gross Scope 1 and Scope 2 emissions by subsidiary.

Subsidiary name

CETREL/ DAC

Primary activity

Waste water management

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)

58,991.657

Scope 2, location-based emissions (metric tons CO2e)

1,932.259

Scope 2, market-based emissions (metric tons CO2e)

1,932.259

Comment

Subsidiary name

Braskem Idesa

Primary activity

Plastic products

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)
1,171,194.534

Scope 2, location-based emissions (metric tons CO2e)
53,651.25

Scope 2, market-based emissions (metric tons CO2e)
53,651.25

Comment
Braskem Idesa is controlled by Braskem that holds 75% of Braskem's stake, while Idesa is a partner of Braskem in the project and holds 25% of the stake.

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Chemicals production activities	729,803.304	605,701.799	Almost 100% of our Scope 2 emissions are for chemical production activities. The only exception are the emissions from CETREL, a wastewater and waste treatment facility.

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Naphtha	51	Naphtha is one the most relevant feedstocks for Braskem´s operations. Considering the amount consumed and emission factors provided by Ecoinvent, emissions from Naphtha were calculated (around 6,283 thousand tCO2e) and divided by total Category 1 emissions.
Propane gas	30	Propane is the sum of all propane and propene acquired by Braskem in the reporting year (liquid or gas). Considering the amount consumed and emission factors provided by Ecoinvent, emissions from these feedstocks were calculated (3,705 thousand tCO2e) and divided by total Category 1 emissions.
Ethane	10	Ethane is the sum of all ethane and ethylene acquired by Braskem in the reporting year. Considering the amount consumed and emission factors provided by Ecoinvent, emissions from these feedstocks were calculated (around 1,268 thousand tCO2e) and divided by total Category 1 emissions
Ethanol	1.4	Ethanol is the sum of all ethanol acquired by Braskem in the reporting year. Considering the amount consumed and emission factors provided by Ecoinvent, emissions from these feedstocks were calculated (around 168 thousand tCO2e) and divided by total Category 1 emissions
Other (please specify) sodium chloride, dichlorethane and other minor additives	7.6	Considering the amount consumed and emission factors provided by Ecoinvent, emissions from these feedstocks were calculated (797 thousand tCO2e) and divided by total Category 1 emissions.

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	Braskem does not produce any CO2 for selling purposes.

Methane (CH_4)	0	Braskem does not produce any CH4 for selling purposes.
Nitrous oxide (N_2O)	0	Braskem does not produce any N2O for selling purposes.
Hydrofluorocarbons (HFC)	0	Braskem does not produce any HFC for selling purposes.
Perfluorocarbons (PFC)	0	Braskem does not produce any PFC for selling purposes.
Sulphur hexafluoride (SF_6)	0	Braskem does not produce any SF6 for selling purposes.
Nitrogen trifluoride (NF_3)	0	Braskem does not produce any NF3 for selling purposes.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change in emissions	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	335,491.53	Decreased	3.1	There was an 355,491.53 tCO2e reduction compared to 2021 due to the consumption of an additional 465 thousand MWh of renewable electricity. The total Scope 1+2 emissions of 2022 are 10,711,804 tCO2e, therefore we arrived at 3.1% through (355,491.53/10,711,804) * 100 = 3.1%.
Other emissions reduction activities	135,000	Decreased	1.3	No material change in emissions due to the reduction activities implemented in 2022. This is because the increase that we had because of worst efficiency was equated to the emissions reductions from energy efficiency projects reported under question 4.3a and 4.3b (-135 ktCO2e). The total Scope 1+2 emissions of 2022

				are 10,711,804 tCO2e, therefore we arrived at 1.3% through (135,000/10,711,804) * 100 = 1.3%.
Divestment	0	No change	0	No divestments in 2022
Acquisitions	0	No change	0	No material acquisitions in 2022
Mergers	0	No change	0	No material mergers in 2022
Change in output	0	No change	0	No material change in output in 2022
Change in methodology	0	No change	0	No change in methodology in 2022
Change in boundary	0	No change	0	No material change in boundary in 2022
Change in physical operating conditions	0	No change	0	No material change is physical operating conditions
Unidentified	0	No change	0	not applicable in 2022
Other	0	No change	0	not applicable in 2022

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 5% but less than or equal to 10%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes

Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	3,872.81	46,712,056.14	46,715,928.95
Consumption of purchased or acquired electricity		3,487,702.23	732,097.8	4,219,800.03
Consumption of purchased or acquired steam		0	1,111,948.31	1,111,948.31
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		3,491,575.04	48,556,102.25	52,047,677.29

C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

Consumption of fuel (excluding feedstocks)

Heating value

LHV (lower heating value)

MWh consumed from renewable sources inside chemical sector boundary

3,872.81

MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

46,712,056.14

MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

46,715,928.95

Consumption of purchased or acquired electricity

MWh consumed from renewable sources inside chemical sector boundary

3,487,702.23

MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

732,097.8

MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

4,219,800.03

Consumption of purchased or acquired steam

MWh consumed from renewable sources inside chemical sector boundary

0

MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

1,111,948.31

MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

1,111,948.31

Consumption of self-generated non-fuel renewable energy

MWh consumed from renewable sources inside chemical sector boundary

0

MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

0

MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

0

Total energy consumption

MWh consumed from renewable sources inside chemical sector boundary

3,491,575.04

MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

48,556,102.25

MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

52,047,677.29

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

In 2022 Braskem consumed biomass only for tests for a biomass boiler project.

Other biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

In 2022 Braskem consumed biomass only for tests for a biomass boiler project.

Other renewable fuels (e.g. renewable hydrogen)

Heating value

LHV

Total fuel MWh consumed by the organization

3,872.81

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

3,872.81

Comment

Other renewable fuel is basically from the ethanol sump derived from our green PE production process

Coal

Heating value

LHV

Total fuel MWh consumed by the organization

2,081,980.45

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

2,081,980.45

Comment

-

Oil

Heating value

LHV

Total fuel MWh consumed by the organization

2,909,977.34

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

2,909,977.34

Comment

-

Gas

Heating value

LHV

Total fuel MWh consumed by the organization

41,292,118.8

MWh fuel consumed for self-generation of electricity

5,767,743.78

MWh fuel consumed for self-generation of heat

9,083,712.35

MWh fuel consumed for self-generation of steam

26,440,662.66

Comment

Gas is for natural gas purchased and residual fuel gas from the process

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

LHV

Total fuel MWh consumed by the organization

427,979.55

MWh fuel consumed for self-generation of electricity

59,780.81

MWh fuel consumed for self-generation of heat

94,149.76

MWh fuel consumed for self-generation of steam

274,048.64

Comment

Other residual fuels from the process

Total fuel

Heating value

LHV

Total fuel MWh consumed by the organization

46,715,928.95

MWh fuel consumed for self-generation of electricity

5,827,524.59

MWh fuel consumed for self-generation of heat

9,177,862.11

MWh fuel consumed for self-generation of steam

31,710,524.25

Comment

-

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	1,607,724.56	1,607,724.56	0	0
Heat	9,177,862.11	9,177,862.11	0	0
Steam	22,782,776.39	22,782,776.39	0	0
Cooling	0	0	0	0

C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

Electricity

Total gross generation inside chemicals sector boundary (MWh)

1,607,724.56

Generation that is consumed inside chemicals sector boundary (MWh)

1,607,724.56

Generation from renewable sources inside chemical sector boundary (MWh)

0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

Heat

Total gross generation inside chemicals sector boundary (MWh)

9,177,862.11

Generation that is consumed inside chemicals sector boundary (MWh)

9,177,862.11

Generation from renewable sources inside chemical sector boundary (MWh)

0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

Steam

Total gross generation inside chemicals sector boundary (MWh)

22,782,776.39

Generation that is consumed inside chemicals sector boundary (MWh)

22,782,776.39

Generation from renewable sources inside chemical sector boundary (MWh)

0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

Cooling

Total gross generation inside chemicals sector boundary (MWh)

0

Generation that is consumed inside chemicals sector boundary (MWh)

0

Generation from renewable sources inside chemical sector boundary (MWh)

0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

Country/area of low-carbon energy consumption

Brazil

Sourcing method

Purchase from an on-site installation owned by a third party (on-site PPA)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

Wind and Solar

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

676,121.39

Tracking instrument used

I-REC

Country/area of origin (generation) of the low-carbon energy or energy attribute

Brazil

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

-

Country/area of low-carbon energy consumption

Brazil

Sourcing method

Unbundled procurement of energy attribute certificates (EACs)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

Wind and Hydropower

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

218,460

Tracking instrument used

I-REC

Country/area of origin (generation) of the low-carbon energy or energy attribute

Brazil

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

-

Country/area of low-carbon energy consumption

United States of America

Sourcing method

Unbundled procurement of energy attribute certificates (EACs)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

Wind and Solar

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

35,000

Tracking instrument used

I-REC

Country/area of origin (generation) of the low-carbon energy or energy attribute

United States of America

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

-

Country/area of low-carbon energy consumption

United States of America

Sourcing method

Default delivered electricity from the grid (e.g. standard product offering by an energy supplier) from a grid that is 95% or more low-carbon and where there is no mechanism for specifically allocating low-carbon electricity

Energy carrier

Electricity

Low-carbon technology type

Nuclear

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

58,580.63

Tracking instrument used

Other, please specify

EFEECs

Country/area of origin (generation) of the low-carbon energy or energy attribute

United States of America

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

-

Country/area of low-carbon energy consumption

Germany

Sourcing method

Unbundled procurement of energy attribute certificates (EACs)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

Wind and Solar

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

137,560.39

Tracking instrument used

I-REC

Country/area of origin (generation) of the low-carbon energy or energy attribute

Germany

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

I-RECs are from the European Union (not in the list)

C8.2g

(C8.2g) Provide a breakdown by country/area of your non-fuel energy consumption in the reporting year.

Country/area

Brazil

Consumption of purchased electricity (MWh)

3,315,242.86

Consumption of self-generated electricity (MWh)

1,052,480.76

Consumption of purchased heat, steam, and cooling (MWh)

611,098.52

Consumption of self-generated heat, steam, and cooling (MWh)

893,702.49

Total non-fuel energy consumption (MWh) [Auto-calculated]

5,872,524.63

Country/area
Mexico

Consumption of purchased electricity (MWh)
84,472.58

Consumption of self-generated electricity (MWh)
0

Consumption of purchased heat, steam, and cooling (MWh)
0

Consumption of self-generated heat, steam, and cooling (MWh)
145,330.06

Total non-fuel energy consumption (MWh) [Auto-calculated]

229,802.64

Country/area
United States of America

Consumption of purchased electricity (MWh)
640,161.68

Consumption of self-generated electricity (MWh)
0

Consumption of purchased heat, steam, and cooling (MWh)
407,332.79

Consumption of self-generated heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]

1,047,494.47

Country/area
Germany

Consumption of purchased electricity (MWh)
137,560.39

Consumption of self-generated electricity (MWh)
0

Consumption of purchased heat, steam, and cooling (MWh)

93,517

Consumption of self-generated heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

231,077.39

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

Yes

C-CH8.3a

(C-CH8.3a) Disclose details on your organization's consumption of fuels as feedstocks for chemical production activities.

Fuels used as feedstocks

Naphtha

Total consumption

8,456,944.23

Total consumption unit

metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

0.73

Heating value of feedstock, MWh per consumption unit

0

Heating value

Unable to confirm heating value

Comment

Naphtha is the sum of all naphtha and condensate feedstock that is used in our chemical process in the crackers units in Brazil.

Fuels used as feedstocks

Liquid biofuel

Total consumption
501,286.55

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
0.33

Heating value of feedstock, MWh per consumption unit
0

Heating value
Unable to confirm heating value

Comment
Ethanol feedstock use in our chemical process at Q1 and Q2 industrial sites in Brazil.

Fuels used as feedstocks
Ethane

Total consumption
1,495,678.02

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
0.79

Heating value of feedstock, MWh per consumption unit
0

Heating value
Unable to confirm heating value

Comment
Ethane is the sum of all ethane and ethene feedstock that is used in our chemical process.

Fuels used as feedstocks
Propane gas

Total consumption
3,044,518.18

Total consumption unit

metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

0.77

Heating value of feedstock, MWh per consumption unit

0

Heating value

Unable to confirm heating value

Comment

Sum of propane and propylene feedstock use in our chemical process.

C-CH8.3b

(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	61.1
Natural Gas	35.2
Coal	0
Biomass	3.6
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Energy usage

Metric value

52,047,677

Metric numerator

Total Energy Consumption (MWh)

Metric denominator (intensity metric only)

% change from previous year

3.9

Direction of change

Decreased

Please explain

In 2022, total energy consumption was 3.9% lower than in 2021 due to a decrease in total production and also because of some energy efficiency projects implemented during the year.

Description

Other, please specify

Water Safety Index

Metric value

65.3

Metric numerator

Percentage of water use from safe sources (%)

Metric denominator (intensity metric only)

% change from previous year

1.2

Direction of change

Increased

Please explain

Among our goals for this topic is the use in our operations of 100% of water from safe sources by 2030. In 2022, the global water security index was 65.3%, a increase of 1,2% when compared to 2021 (64.5%). The main improvement in the safety index was related a memorandum of understanding that was signed with the concessionaire Águas do Rio (Aegea Group) for a project to supply Rio de Janeiro´s industrial facilities with reused water. The project is aligned with the climate adaptation objectives, with a focus on achieving 100% water security for its industrial units by the year 2030.

C-CH9.3a

(C-CH9.3a) Provide details on your organization’s chemical products.

Output product
High Value Chemicals (Steam cracking)

Production (metric tons)
8,468,000

Capacity (metric tons)
10,718,000

Direct emissions intensity (metric tons CO2e per metric ton of product)
1.064

Electricity intensity (MWh per metric ton of product)
0.05

Steam intensity (MWh per metric ton of product)
0.038

Steam/ heat recovered (MWh per metric ton of product)
0

Comment
HVC include ethylene, propene, butadiene, aromatics and others. Emissions intensity include Scope 1 emissions only.

Output product
Polymers

Production (metric tons)
7,193,390

Capacity (metric tons)
9,311,000

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.114

Electricity intensity (MWh per metric ton of product)
0.587

Steam intensity (MWh per metric ton of product)
0.155

Steam/ heat recovered (MWh per metric ton of product)
0

Comment
Polymers include polyvinyl chloride, polyethylene and polypropylene. Emissions intensity include Scope 1 emissions only.

Output product
Other base chemicals

Production (metric tons)
728,643

Capacity (metric tons)
1,380,000

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.296

Electricity intensity (MWh per metric ton of product)
1.07

Steam intensity (MWh per metric ton of product)
0

Steam/ heat recovered (MWh per metric ton of product)
0

Comment
Other base chemicals include caustic soda, chlorine and others. Emissions intensity include Scope 1 emissions only

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	Braskem sees Innovation and R&D as tools to build a more sustainable future. Throughout 2022, investments in innovation and technology (I&T), including operating expenses and fixed assets, totalled R$514 million, up 69.8% compared to 2021. Of the total fixed expenses, 85% were dedicated to innovation for sustainability. We are investing in the development of carbon capture technologies for storage and use as raw materials for chemical production. Our Innovation team is working with a pipeline where 170 ideas have been identified, 15 of which have been developed, becoming research already at various stages of development. Among the projects are a partnership with Northwestern University in the development of a coelectrolysis technology, which simultaneously transforms

		CO2 captured in CO and ethylene into ethylene oxide. With the University of São Paulo and the Federal University of São Carlos (UFSCar), we worked on creating a new technology to convert CO2 into light olefins or linear alpha-olefins. Together, we are also developing an electrocatalytic system to convert CO2 and water into ethanol. With New Iridium, a startup from Colorado, United States, we are supporting the development of a photocatalytic system that uses light energy to promote the conversion reaction of CO2e into organic acids. In addition to the projects to convert CO2, we also have a partnership for the development of capture technologies with membrane in cooperation with Compact Membrane Systems (CMS). With respect to the project of University of Illinois, from Chicago, initiated in 2019, we have obtained positive results, with the conclusion of the development of the technology in laboratory, and we are evaluating the commencement of the pilot plant to continue the development of the technology in larger scale.

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area

Carbon capture, utilization, and storage (CCUS)

Stage of development in the reporting year

Applied research and development

Average % of total R&D investment over the last 3 years

30

R&D investment figure in the reporting year (unit currency as selected in C0.4) (optional)

186,913,114

Average % of total R&D investment planned over the next 5 years

35

Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan

At Braskem, innovation is a fundamental pillar to evolve with our long-term commitments. Our transformation through innovation began with the implementation of the Sustainability Index for all innovation projects and the creation of platforms that focus on circular and low-carbon solutions: performance materials, transformation of biomass into chemicals, recycling, next generation process, and conversion of CO2 into chemicals.

In 2022, Braskem spent US$ 929 million in corporate investments out of which US$ 85

million were in spending and investment in innovation and technology related to the seven dimensions of our sustainable development strategy.
We ended 2022 with 179 projects in innovation and technology, with 131 assessed against the Sustainability Index and 111 with positive impact. This represents an 85% Sustainability Index. The positive impacts of these initiatives are related to: water and/or energy savings, chemical safety (process/product), greenhouse gas emissions and circularity.
CO2 to Chemicals
In line with our net-zero target by 2050, we are investing in the development of carbon capture technologies for storage and use as raw materials for chemical production. Our Innovation team is working with a pipeline where 170 ideas have been identified, 15 of which have been developed, becoming research already at various stages of development.
Among the projects are a partnership with Northwestern University in the development of a coelectrolysis technology, which simultaneously transforms CO2 captured in CO and ethylene into ethylene oxide. With the University of São Paulo and the Federal University of São Carlos (UFSCar), we worked on creating a new technology to convert CO2 into light olefins or linear alpha-olefins. Together, we are also developing an electrocatalytic system to convert CO2 and water into ethanol.
In addition to the projects to convert CO2, we also have a partnership for the development of capture technologies with membrane in cooperation with Compact Membrane Systems (CMS).
With respect to the project of University of Illinois, from Chicago, initiated in 2019, we have obtained positive results, with the conclusion of the development of the technology in laboratory, and we are evaluating the commencement of the pilot plant to continue the development of the technology in larger scale.
The execution of these projects within currently projected costs and timeframes expectations are also subject to other risks and uncertainties.

Technology area

Bio technology

Stage of development in the reporting year

Full/commercial-scale demonstration

Average % of total R&D investment over the last 3 years

30

R&D investment figure in the reporting year (unit currency as selected in C0.4) (optional)

186,913,114

Average % of total R&D investment planned over the next 5 years

35

Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan

At Braskem, innovation is a fundamental pillar to evolve with our long-term commitments. Our transformation through innovation began with the implementation of the Sustainability Index for all innovation projects and the creation of platforms that focus on circular and low-carbon solutions: performance materials, transformation of biomass into chemicals, recycling, next generation process, and conversion of CO_2 into chemicals.
In 2022, Braskem spent US$ 929 million in corporate investments out of which US$ 85 million were in spending and investment in innovation and technology related to the seven dimensions of our sustainable development strategy.
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New innovation center in Boston
Accelerate the innovation of renewable chemicals and sustainable materials. This is the goal of the new renewable innovation center that Braskem is building in the US city of Lexington, in the Boston metropolitan area.
With more than 3,250 square meters and an investment of approximately US$4.4 million, the site will expand our opportunities and capabilities in biotechnology, catalysis, process engineering and open innovation. One of the main focuses will be early stage science and engineering related to converting biomass-based raw materials (sugars, cellulose, vegetable oils and lignin) into sustainable chemicals and materials. The facility is expected to be ready in the second half of 2023 after obtaining final validation and commissioning.

Technology area

Bio technology

Stage of development in the reporting year

Large scale commercial deployment

Average % of total R&D investment over the last 3 years

30

R&D investment figure in the reporting year (unit currency as selected in C0.4) (optional)

186,913,114

Average % of total R&D investment planned over the next 5 years

35

Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan

At Braskem, innovation is a fundamental pillar to evolve with our long-term commitments. Our transformation through innovation began with the implementation of

the Sustainability Index for all innovation projects and the creation of platforms that focus on circular and low-carbon solutions: performance materials, transformation of biomass into chemicals, recycling, next generation process, and conversion of CO_2 into chemicals.
In 2022, Braskem spent US$ 929 million in corporate investments out of which US$ 85 million were in spending and investment in innovation and technology related to the seven dimensions of our sustainable development strategy.
We ended 2022 with 179 projects in innovation and technology, with 131 assessed against the Sustainability Index and 111 with positive impact. This represents an 85% Sustainability Index. The positive impacts of these initiatives are related to: water and/or energy savings, chemical safety (process/product), greenhouse gas emissions and circularity.

Diversification into bioproducts
We announced in 2021 the expansion of current green ethylene capacity at the Triunfo petrochemical complex in Rio Grande do Sul (Brazil) from 200 kt/year to 260 kt/year, with an estimated investment of US$87 million, which is expected to start operating in the second half of 2023. As expected for 2022, we also continue to study the feasibility of expanding green ethylene production to Thailand, in partnership with SCG Chemicals – during 2023, we expect to reach project milestones such as investment approval.
In 2022, we formalized our partnership with Lummus for licensing technology to produce green ethylene. The partnership will accelerate the use of bioethanol for the production of chemicals and plastics.
The year 2022 also marked the launch of Sustainea, a joint venture with Japan's Sojitz focused on the production and sale of monoethylene glycol (bioMEG) and monopropylene glycol (bioMPG) made from bio-based raw materials. By means of this joint venture, the business plan contemplates the implementation of three industrial plants, with start-up of the first unit in 2025. Sustainea will also establish a production chain to ensure renewable and competitive raw material supply, as well as a logistics operation that enables the smallest possible carbon footprint. The expectation is that once the technology is approved, the plants will have a combined production capacity of up to 700,000 tons of bioMEG per year.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1208065 - 01 - 1208065 - 01 - CDP-verification-BRASKEM-2023 - 002.docx_CLIENTE.pdf

Page/ section reference

All Pages

Relevant standard

ABNT NBR ISO 14064-3:2007 (Associação Brasileira de Normas Técnicas)

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

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Page/ section reference

All Pages

Relevant standard

ABNT NBR ISO 14064-3:2007 (Associação Brasileira de Normas Técnicas)

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

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Page/ section reference

All pages

Relevant standard

ABNT NBR ISO 14064-3:2007 (Associação Brasileira de Normas Técnicas)

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Purchased goods and services
Scope 3: Capital goods
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

Scope 3: Upstream transportation and distribution
Scope 3: Waste generated in operations
Scope 3: Business travel
Scope 3: Employee commuting
Scope 3: Upstream leased assets
Scope 3: Investments
Scope 3: Downstream transportation and distribution
Scope 3: Processing of sold products
Scope 3: Use of sold products
Scope 3: End-of-life treatment of sold products
Scope 3: Downstream leased assets
Scope 3: Franchises

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

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Page/section reference

All pages

Relevant standard

ABNT NBR ISO 14064-3:2007 (Associação Brasileira de Normas Técnicas)

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module	Data verified	Verification standard	Please explain

verification relates to			
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISSO 14064-3	KPMG also verified the information of Braskem's integrated annual report. Therefore all information concerning GHG emissions was observed [1]
C8. Energy	Renewable energy products	Programa Brasileiro GHG Protocol	KPMG verified our energy contracts, renewable energy declarations from the provider and energy bills during the certification process of our Market-based calculations. [2]

[1]Braskem-Relatorio-Integrado-2022-ENG-12-04.pdf

[2]1208065 - 01 - 1208065 - 01 - CDP-verification-BRASKEM-2023 - 002.docx_CLIENTE.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

0.1

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2022

Period end date

December 31, 2022

Allowances allocated

561

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

1,919

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

1919 t CO2e emissions audited in 2022 - 805 Wesseling site, 1114 Schkpoau site .
Only for Stationary Combustion emissions.
No allowances purchases in 2022.
Installation Name/ Aircraft Operator Code: Braskem Europe Wesseling/ Polypropylen-Anlage Schkopau

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Situation: It is predicted that in the next 3 years we will be able to have an economic carbon pricing instrument in Brazil. In Mexico, it already exists in an emissions trading system pilot and the Braskem unit is participating.
Task: We needed to implement a process to introduce the impact of carbon into investment decision-making.
Action: Braskem implemented an internal carbon pricing strategy.
Result: some projects that reduce GHG emissions have been and are being approved, supporting the achievement of mitigation targets, as well as preparing the company for future regulatory scenarios

C11.2

(C11.2) Has your organization canceled any project-based carbon credits within the reporting year?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Type of internal carbon price

Implicit price

How the price is determined

Cost of required measures to achieve emissions reduction targets

Objective(s) for implementing this internal carbon price

Drive low-carbon investment

Identify and seize low-carbon opportunities

Scope(s) covered

Scope 1

Scope 2

Pricing approach used – spatial variance

Uniform

Pricing approach used – temporal variance

Static

Indicate how you expect the price to change over time

Actual price(s) used – minimum (currency as specified in C0.4 per metric ton CO2e)

200

Actual price(s) used – maximum (currency as specified in C0.4 per metric ton CO2e)

200

Business decision-making processes this internal carbon price is applied to

Capital expenditure

Operations

Product and R&D

Mandatory enforcement of this internal carbon price within these business decision-making processes

Yes, for some decision-making processes, please specify

For Capital expenditure all projects must consider the carbon price in the NPV

Explain how this internal carbon price has contributed to the implementation of your organization’s climate commitments and/or climate transition plan

Internal carbon pricing is used in the investment decision-making process. All projects must be evaluated to identify those that impact, positively or negatively, GHG emissions. There is a tool that calculates the carbon impact with the project data, and with the assigned price per ton of CO2e calculates this result (positive or negative), considering the economic flow of the project and composing the project's NPV. Projects are selected annually to compose the portfolio for the following year. For selection of the best projects there are economic and ESG criteria, NPV is one of these criteria, and thus projects that reduce emissions participate with a better score due to a higher NPV, as consequence of internal carbon pricing.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers/clients
Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect GHG emissions data at least annually from suppliers
Collect climate-related risk and opportunity information at least annually from suppliers

% of suppliers by number

82

% total procurement spend (direct and indirect)

60

% of supplier-related Scope 3 emissions as reported in C6.5

40

Rationale for the coverage of your engagement

Braskem has two ways to collect carbon data from suppliers:
(i) CDP Supply Chain Program - to select suppliers, Braskem uses two criteria: Suppliers in our target key categories (logistics, feedstock and procurement general categories which are relevant according to our ESG Matrix and represents at least 80% of our expenditure in that category). Braskem has used the CDP Supply Chain as a key element to manage their suppliers on climate change.

(ii) Ecovadis Platform – we have been working with internal engagement with our Procurement team, defining goals for Procurement leaders to bring more suppliers at the platform.

Impact of engagement, including measures of success

As of our most recent report from 2022, 213 suppliers joined the CDP Supply Chain Program and were engaged and 282 suppliers were engaged through Ecovadis Platform.
% of selected suppliers for CDP Supply Chain Program engaged: 82%

Comment

The information of risks and opportunities of suppliers feed the climate risk management of Braskem. By having the data on Braskem suppliers' GHG emissions and climate change strategies, it is also possible to use tools such as Life Cycle Analysis (LCA) and Carbon Footprint, to calculate the environmental impact of its main products, offering these to customers and suppliers. As a measure of success, one can point out the percentage coverage of Scope 3 emissions from Suppliers through the CDP Supply Program.
Another measure of success is the number of critical suppliers with defined actions to mitigate the high climatic risks identified, the result for the last year is 5 suppliers.
Throughout 2022, we continue to motivate the engagement of our Key Suppliers to the issues of Climate Change. This joint effort increases the chain's power through initiatives such as reporting targets to reduce emissions and the Suppliers themselves voluntarily pass on this commitment to their partners. We encourage our Suppliers to join the Action Exchange, of the CDP Supply Chain, a free consultancy that identifies opportunities to reduce costs, emissions and energy consumption in the processes.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Climate change performance is featured in supplier awards scheme

% of suppliers by number

82

% total procurement spend (direct and indirect)

60

% of supplier-related Scope 3 emissions as reported in C6.5

40

Rationale for the coverage of your engagement

Braskem has a supplier recognition program that is carried out annually. To be eligible to the recognition program, suppliers must meet three main requirements:
(i) Compliance and documentation analysis: previous compliance analysis is performed to evaluate supplier´s basic status in relation to Braskem´s policies;
(ii) Ecovadis performance: performance criteria of at least 45 in the CSR KPIs; and

(iii) CDP performance: have a minimum score "B" in Climate and/or Water CDP. Also, for CDP Climate and Water suppliers, besides having a minimum score B, they must at least present the same performance as in the previous year. For example, if a supplier had a score A in year 1 and a score B in year 2, it won´t be able to classify for the recognition program.
If all three requirements are met, the supplier is eligible to participate at the recognition engagement program.

Impact of engagement, including measures of success

We understand that this type of engagement has several positive impacts, such as increasing our value chain's power through initiatives such as reporting targets to reduce emissions or reducing climate change impacts exposures. Also, the Suppliers themselves voluntarily passes on these commitments to their chains.
As a measure of success, we use the number of suppliers awarded with the recognition. In 2022, 24 suppliers were recognized in 5 categories: ESG Best Performance, Labor and Human Rights, Environment, Ethics and Sustainable Procurement.

Comment

In 2022, 24 suppliers were recognized at the event. We also encourage our Suppliers to join the Action Exchange, of the CDP Supply Chain, a free consultancy that identifies opportunities to reduce costs, emissions and energy consumption in the processes.

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement & Details of engagement

Collaboration & innovation
Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

2

% of customer - related Scope 3 emissions as reported in C6.5

42

Please explain the rationale for selecting this group of customers and scope of engagement

Using the Life Cycle Analysis (LCA) tool, Braskem selects clients that show the best opportunities for developing new products or solutions that prove to be a better option with a lower environmental impact. We prioritize this group because there are more opportunities to reduce emissions, through redesign of packaging and products, bringing environmental benefits, including the reduction of emissions.

Impact of engagement, including measures of success

In relation to customers, Braskem use tools such as Life Cycle Analysis (LCA) and Carbon Footprint to calculate results of its main products, offering these to all customers that ask for them. In addition, the company offers carbon footprint calculation to any customer that requests it.
To measure the success of this type of engagement, Braskem evaluates the number of LCA studies performed and provided to its customers. Throughout 2022, we completed 12 life cycle assessment studies. By 2022, Braskem had completed 116 LCA projects in partnership with its customers. Braskem also publishes its GHG inventory annually to customers. For some customers, Braskem even registers GHG emissions (from the plant where the purchased products were produced) on the customer system itself.
In 2022, Braskem inaugurated Cazoolo, Brazil's first packaging development center for the circular economy. The space, which is located in São Paulo (SP), is the result of an investment of R$20 million and functions as a packaging innovation hub. Its main goal is to design and develop improvements for the entire packaging journey – from conception to post-consumer.
There Braskem wants to bring together all the links in the production chain, such as clients, brand owners, designers, startups and universities, so that they can create and co-create projects that aim at the complete circularity of their products, reducing environmental impacts and leveraging innovations with technology. The initiative has already started to reap good results, with packaging solutions developed and available for the market. This is the case of the Stand Up Pouch, a mono-material developed in partnership with Antilhas; the mono-material tube created in conjunction with C-Pack; and the mono-material solution in BOPP. The LCA methodology keeps being part of the Cazoolo strategy and tools on their Packaging Day challenge.
Braskem has also participated in various events throughout the year, including Expobor, Agrishow, Abrafat, all in Brazil, and K Fair, in Germany, to strength the relationship with clients. At the K Fair, Braskem launched Wenew, a global circular economy ecosystem that encompasses circular technologies and products, and education initiatives on conscious consumption and proper disposal.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

ENERGY:
Reducing energy consumption and using renewable energy are key to reducing our carbon emissions. We invest in energy efficiency projects at our factories and seek long-term partnerships in our purchasing of clean energy. Currently, at least 82% of all the electricity we purchase globally comes from renewable sources. In 2022, Braskem and Veolia have partnered on a project to use biomass-based steam as a renewable energy source for the operations in Marechal Deodoro (AL) from 2023 onwards. In addition, the wind power complex in Bahia went into operation in 2021, the result of the partnership with EDF Renewables. Since 2018, we have negotiated and signed several long-term agreements to purchase renewable energy that will avoid around 3.3 million tons of CO_2e over the duration of the contracts.
PLASTIC WASTE:

On plastic waste, Braskem signed a contract to acquire new shares of Wise Plásticos S.A. (currently 61.1% owned by Braskem), a company in the mechanical recycling sector focused on polypropylene (PP) and polyethylene (PE) resins, with an agreement to double the current production capacity to 50,000 tons of recycled products by 2026. Braskem also inaugurated in partnership with Valoren the first mechanical recycling plant in Brazil. The unit is expected to transform 250 million PE and PP post-consumer packaging into 14,000 tons of high-quality recycled content resin annually. Finally, Braskem formed in 2022 a Braskem-controlled joint-venture with ER Plastics in the Netherlands, which can create final products from low-quality plastic waste. The ER Plastics has a nominal mechanical recycling capacity of 23,000 tons per year, that transforms mixed plastic waste into compression-moulded parts (plates for use in construction and pallets). Additionally, Braskem launched Wenew, a new circularity ecosystem to consolidate its circular products (resins and chemicals), environmental education and proper disposal initiatives, technologies, and circular design. Braskem has reached 40 grades of resins with recycled content in its portfolio, with 42 grades under development. In addition, we expanded global sales of resins with recycled content, growing 144% compared to 2021, to a total of 54 kilotons sold.
CARBON CAPTURE:
Braskem is investing in the development of carbon capture technologies for storage and use as raw materials for chemical production. Our Innovation team is working with a pipeline where 170 ideas have been identified, 15 of which have been developed, becoming research already at various stages of development.
Among the projects are a partnership with Northwestern University in the development of a co-electrolysis technology, which simultaneously transforms CO_2 captured in CO and ethylene into ethylene oxide. With the University of São Paulo and the Federal University of São Carlos (UFSCar), we worked on creating a new technology to convert CO_2 into light olefins or linear alpha-olefins.
Together, we are also developing an electrocatalytic system to convert CO_2 and water into ethanol. With New Iridium, a startup from Colorado, United States, Braskem supports the development of a photocatalytic system that uses light energy to promote the conversion reaction of CO_2e into organic acids. In addition to the projects to convert CO_2, we also have a partnership for the development of capture technologies with membrane in cooperation with Compact Membrane Systems (CMS).
With respect to the project of University of Illinois, from Chicago, initiated in 2019, we have obtained positive results, with the conclusion of the development of the technology in laboratory, and we are evaluating the commencement of the pilot plant to continue the development of the technology in larger scale.
CARBON TRADING DESK :
Braskem offers to its clients the option to compensate for greenhouse gas emissions from the transportation of products via the acquisition of carbon offsets, sourced from high integrity projects recognized by international certification agencies. This way, we will compensate the carbon footprint of logistic operations that are hard to decarbonize in the short term, supporting environmental projects all over the world. This initiative is an effort to promote a more sustainable value chain together with our clients.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

Yes, suppliers have to meet climate-related requirements, but they are not included in our supplier contracts

C12.2a

(C12.2a) Provide details of the climate-related requirements that suppliers have to meet as part of your organization's purchasing process and the compliance mechanisms in place.

Climate-related requirement

Climate-related disclosure through a non-public platform

Description of this climate related requirement

During the selection process, all critical suppliers (108 suppliers) from a commercial point of view must respond to a questionnaire via Ecovadis platform that addresses various sustainability issues, including Climate Change. Although not mandatory, the results of this questionnaire allow us to assess the level of management in relation to each subject evaluated and, if applicable, anticipate any related risk.

% suppliers by procurement spend that have to comply with this climate-related requirement

85

% suppliers by procurement spend in compliance with this climate-related requirement

100

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment
Supplier scorecard or rating

Response to supplier non-compliance with this climate-related requirement

Retain and engage

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers
Yes, our membership of/engagement with trade associations could influence policy, law, or regulation that may impact the climate

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

Yes

Attach commitment or position statement(s)

Brazilian chemical industry positioning on carbon pricing

PosicionamentoCarbono+abiquim+v5.pdf

Describe the process(es) your organization has in place to ensure that your external engagement activities are consistent with your climate commitments and/or climate transition plan

Braskem has participated in a multidisciplinary committee in the association that evaluates new legislation, new public policies, among others. This way, we've had the opportunity to evaluate, together with the other companies and the association in alignment with our strategy and policy of sustainable development. One of the results was the Brazilian chemical industry positioning on carbon pricing that we built together.

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Draft proposed by the Brazilian Ministry of Development, Industry and Commerce for the regulation of the carbon market in Brazil.

Category of policy, law, or regulation that may impact the climate

Carbon pricing, taxes, and subsidies

Focus area of policy, law, or regulation that may impact the climate

Emissions trading schemes
Carbon offsets

Policy, law, or regulation geographic coverage

National

Country/area/region the policy, law, or regulation applies to

Brazil

Your organization's position on the policy, law, or regulation

Support with minor exceptions

Description of engagement with policy makers

Participation in meetings and discussion forums with executive and legislative authorities to present the position of the industry in relation to the draft proposed presented and the objectives pursued. Braskem's contributions were sent both through class associations entities, as well as through a direct channel with an executive branch inside the Government.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Braskem supports the regulation of a carbon market in Brazil, with the aim of facilitating the transition to a low-carbon economy. Therefore, we reinforce that the regulation includes important aspects such as:
(i) Sectoral Agreements: It is important that the definition of the emissions cap, defined by the "emission quotas", be done together with the private sector, through sectoral agreements, for example. The text of the draft is silent on this aspect.
(ii) Double Counting and Safeguards: the absence of a forecast about some pillars considered structuring can generate insecurity and call into question the integrity and fungibility of Brazilian carbon credits, such as the absence of mention to the prohibition of double counting and omission in deal with safeguards. Predicting safeguards is crucial when encouraging projects that bring socio-environmental benefits.
(iii) Interaction with the Voluntary Market: the draft does not provide for how the voluntary market will interact with the regulated market in order to meet the targets. It would be important, for example, to predict whether voluntary market credit will only be eligible for use in the regulated market if it meets certain requirements.
(iv) Price stabilization: addressing this topic more expressly can bring more security to important players, such as investors.
(v) Boundary Adjustment Mechanism: it is important to already foresee the Boundary Adjustment Mechanism in the draft, given that the main emissions markets around the world already have this concern and widely discuss the implementation of these mechanisms.

Have you evaluated whether your organization's engagement on this policy, law, or regulation is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Please explain whether this policy, law or regulation is central to the achievement of your climate transition plan and, if so, how?

Braskem supports the creation of a regulated carbon market based on a cap-and-trade system, as we understand that carbon pricing is necessary to drive climate change mitigation projects in the industry that we operate.

C12.3b

(C12.3b) Provide details of the trade associations your organization is a member of, or engages with, which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association

Other, please specify

Brazilian Chemical Industry Association (ABIQUIM)

Is your organization’s position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization’s position is consistent with or differs from the trade association’s position, and any actions taken to influence their position

We agree with the entity's position on the need for a regulation of a cap-and-trade carbon market in Brazil with the aim of implementing a support mechanism for the country in the transition to a low-carbon economy. Braskem supported Abiquim, along with other associated companies, to build a position on carbon pricing for the chemical industry in Brazil.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

8,904,425.01

Describe the aim of your organization’s funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the sector´s interest.

Have you evaluated whether your organization’s engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

Technical Chamber on Climate Change of the National Confederation of the Industry (CNI)

Is your organization’s position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization’s position is consistent with or differs from the trade association’s position, and any actions taken to influence their position

The position of the trade association is favorable to the creation of an emissions trading system, following certain criteria to maintain the competitiveness of the industry. We agree with this position.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

0

Describe the aim of your organization’s funding

Have you evaluated whether your organization’s engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável (CEBDS)

Is your organization’s position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization’s position is consistent with or differs from the trade association’s position, and any actions taken to influence their position

We agree with the entity's position on the need for a regulation of a cap-and-trade carbon market in Brazil with the aim of implementing a support mechanism for the country in the transition to a low-carbon economy.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

268,136.11

Describe the aim of your organization’s funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the private sector´s interest.

Have you evaluated whether your organization’s engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

Brazilian Institute of Oil and Gas (IBP)

Is your organization's position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

We agree with the entity's position on the need for a regulation of a cap-and-trade carbon market in Brazil with the aim of implementing a support mechanism for the country in the transition to a low-carbon economy.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

2,256,220.39

Describe the aim of your organization's funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the sector´s interest.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

Brazilian Association of Bioinnovation (ABBI)

Is your organization's position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

We agree with the entity's position on the need for a regulation of a cap-and-trade carbon market in Brazil with the aim of implementing a support mechanism for the country in the transition to a low-carbon economy.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

286,000

Describe the aim of your organization's funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the sector´s interest.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

International Chamber of Commerce (ICC)

Is your organization's position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

We agree with the entity's position on the need for a regulation of a cap-and-trade carbon market in Brazil with the aim of implementing a support mechanism for the country in the transition to a low-carbon economy. Braskem also partners with ICC´s COP engagements.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

65,806

Describe the aim of your organization's funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the sector´s interest, more specifically, the Climate UNFCCC COPs.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

American Chemistry Council

Is your organization's position on climate change policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

In the context of climate change, we are aligned with the entity's position in the search for solutions for industrial decarbonization.

Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)

7,981,022.51

Describe the aim of your organization's funding

Participate in general thematic forums discussion and count on the support of the entity in defending topics of the sector´s interest.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

Braskem-Relatorio-Integrado-2022-ENG-12-04.pdf

Page/Section reference

Pages 22, 58 to 65

Content elements

Governance
Strategy
Emissions figures
Emission targets

Comment

Our 2022 Integrated Report can be found at https://www.braskem.com.br/2022integratedreport. In it, it is possible to find all the company's new projects, actions and results regarding climate change strategy.

C12.5

(C12.5) Indicate the collaborative frameworks, initiatives and/or commitments related to environmental issues for which you are a signatory/member.

	Environmental collaborative framework, initiative and/or commitment	Describe your organization's role within each framework, initiative and/or commitment
Row 1	UN Global Compact World Business Council for Sustainable Development (WBCSD)	At the WBCSD Braskem is a member of the Climate Imperative, that supports company to operationalise credible climate action rapidly and at scale across all GHG emission scopes considering two working groups: Accelerating Climate Action – SOS 1.5 and Tackling Scope 3 Transparency – PACT. At the Global Compact we currently have a seat on the Board at the Brazilian Global Compact initiative. Braskem Sustainability Director is responsible for the related activities.

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues
Row 1	

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	

C15.3

(C15.3) Does your organization assess the impacts and dependencies of its value chain on biodiversity?

Impacts on biodiversity

Indicate whether your organization undertakes this type of assessment

Dependencies on biodiversity

Indicate whether your organization undertakes this type of assessment

C15.4

(C15.4) Does your organization have activities located in or near to biodiversity-sensitive areas in the reporting year?

C15.5

(C15.5) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?
Row 1	

C15.6

(C15.6) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance

Row 1		

C15.7

(C15.7) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located

C16. Signoff

C-FI

(C-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.

In addition to the CDP, Braskem reports its Climate Change strategy and results in its website, in the Integrated Report and in the Brazilian GHG Protocol Program.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

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

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Braskem has evolved in recent years in the Environmental Report, considering its role as supplier and customer.
As a supplier, Braskem provides, at the request of its direct customers, information on its environmental management, focusing on the allocation of emissions/water consumption and the identification of risks and opportunities regarding climate and water stewardship.
As a customer, Braskem engages its suppliers through the CDP Supply Chain program with a strategic stance, seeking to encourage its suppliers to participate in the program, involving them in the stages of awareness raising, training and decision making. Together with CDP,

Braskem monitors how successful is the engagement of its suppliers, and tries every year to improve the percentage of suppliers that complete all steps of both programs.
One way that Braskem uses to measure the engagement success is by calculating the % of company's Scope 3 that the engaged suppliers represent, as well as the evolution of this value each year. Braskem also uses the responses from these suppliers and the feedback provided to identify risk and opportunities regarding climate and water that involve one or both companies (supplier and customer). Through the use of this information, the company aims to develop action plans and enhance relationships with its suppliers and increase the network of companies engaged in sustainability. The information about risks and opportunities of suppliers are used for climate risk management and pass through the same prioritization process that occurs with the risks and opportunities identified by Braskem.
By having the data on Braskem suppliers' GHG emissions, water consumption and climate change/water stewardship strategies, it is also possible to use tools such as Life Cycle Analysis (LCA) and Carbon/Water Footprint to calculate the environmental impact of its main products, offering these to customers and suppliers.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	96,519,000,000

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

Ambev S.A

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

2,677.72

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

9,107.91

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

ALPLA

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

417.4

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

16,300.93

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product

purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO_2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member
ARKEMA

Scope of emissions
Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level
Facility

Allocation level detail
The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO_2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e
2,476.51

Uncertainty (±%)
5

Major sources of emissions
Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified
Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

2,500.06

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.
E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

CIA ULTRAGAZ S/A

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

5,801.16

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

5,856.33

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Clorox Company

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

39.16

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

3,795.01

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product

purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.
E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member
Colgate Palmolive Company

Scope of emissions
Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level
Facility

Allocation level detail
The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e
59.62

Uncertainty (±%)
5

Major sources of emissions
Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

2,574.5

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Electrolux

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

580.01

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

17,020.88

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Gerdau S/A

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

700.36

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

2,382.18

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.
E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Givaudan SA

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

473.18

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

477.68

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.
E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Greiner AG

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

10.08

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

357.5

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector’s publication (IPIECA, OGP and API) “Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions”, from

December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

KAUTEX TEXTRON GMBH & CO. KG

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

9.85

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

712.25

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Petróleo Brasileiro SA - Petrobras

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

56,751.28

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant. There are no emissions from Scope 2, since electricity and steam are produced by the facility.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

57,291.02

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO_2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO_2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Pirelli

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

560.47

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

565.8

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the

plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Prysmian SpA

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

1,529.89

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

7,312.75

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Suzano Papel & Celulose

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO_2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

13,540.83

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

46,057.25

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

Suzano Papel & Celulose

Scope of emissions

Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

1,582.13

Uncertainty (±%)

5

Major sources of emissions

Electricity and steam purchased by the facility

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

46,057.25

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

The Dow Chemical Company

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

61,229.2

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

67,566.86

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

The Dow Chemical Company

Scope of emissions

Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

298.61

Uncertainty (±%)

5

Major sources of emissions

Electricity and steam purchased by the facility

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

67,566.86

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.

Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.

All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

Requesting member

The LEGO Group

Scope of emissions

Scope 1

Scope 2 accounting method

Scope 3 category(ies)

Allocation level

Facility

Allocation level detail

The GHG emissions were calculated taking into account the industrial site intensity of GHG emissions (tCO2e/t) and the quantity of product (t) acquired by customer through a mass allocation method.

Emissions in metric tonnes of CO2e

28.72

Uncertainty (±%)

5

Major sources of emissions

Emissions from all Scope 1 emissions´categories applicable for the unit: stationary sources, mobile sources, industrial processes, fugitive emissions and wastewater treatment plant.

Verified

Yes

Allocation method

Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member

763.98

Unit for market value or quantity of goods/services supplied

Metric tons

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Braskem monitors the quantity and the industrial site that provides product for each of its customers. Based on these data, it was possible to estimate the emissions associated with each customer through an allocation based on mass of product purchased. The emission intensity of each site that supplies customers was multiplied by the quantity of product purchased to obtain the total emissions.

E_client j=Σ (i=1 ->; n) [emission intensity_industrial site i (tCO_2e/t) * quantity of product purchased by client j from industrial site i (t)] Where: E_client j is the total emissions (tCO_2e) associated with client j, and n is equal to the number of industrial sites that supply client j. By using the emission intensity in the calculation, it is assumed that the plant emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the plant.
Braskem adopts the oil & gas sector's publication (IPIECA, OGP and API) "Oil Industry Guidelines for the communication of Greenhouse Effect Gases Emissions", from December/2003, as a reference to determine the global uncertainty level in the Emissions calculation.
All emission data is extracted from Braskem's GHG Inventory. Braskem develops its Inventory every year, audited by an independent third party. The results are published annually in external reports, such as Annual Report (GRI Standard), CDP Climate Change, Dow Jones Sustainability Index and Bovespa/ICO2.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

Braskem uses its own (primary) data in answering question SC1.1.

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	Braskem is able to track emissions to the customer level, and also know exactly which product was sold to each client and which was the industrial site that produced that specific product. By using the industrial site emission intensity in the calculation, it is assumed that the industrial site emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the site. In the case of polymers, it also does not consider emissions from the upstream production of raw material (from the crackers).

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

By using the industrial site emission intensity in the calculation, it is assumed that the industrial site emits the same amount per ton of product sold, although this indicator varies (in theory) for each type of product produced by the site.
So, the next challenge is to allocate the emissions to each product of each plant that Braskem operates. In order to achieve this goal, Braskem intends to develop a GHG Emissions Footprint for every plastic resin produced.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

Requesting member

ALPLA

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Ambev S.A

Group type of project

Other, please specify
Risk and opportunity management

Type of project
Other, please specify
Integration of risk management in the chain

Emissions targeted
Other, please specify
Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized
3-5 years

Estimated lifetime CO2e savings
0

Estimated payback
Other, please specify
No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member
ARKEMA

Group type of project
Other, please specify
Risk and opportunity management

Type of project
Other, please specify
Integration of risk management in the chain

Emissions targeted
Other, please specify
Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized
3-5 years

Estimated lifetime CO2e savings
0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

British American Tobacco

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

CIA ULTRAGAZ S/A

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Clorox Company

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Colgate Palmolive Company

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Electrolux

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

Gerdau S/A

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Givaudan SA

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements.

Requesting member

Greiner AG

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

KAUTEX TEXTRON GMBH & CO. KG

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

Requesting member

L'Oréal

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

OMV AG

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

Petróleo Brasileiro SA - Petrobras

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

Pirelli

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

Prysmian SpA

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

No Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

Suzano Papel & Celulose

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

The Dow Chemical Company

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify

No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

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Requesting member

The LEGO Group

Group type of project

Other, please specify

Risk and opportunity management

Type of project

Other, please specify

Integration of risk management in the chain

Emissions targeted

Other, please specify

Climate Change risk and opportunities management

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

0

Estimated payback

Other, please specify
No investments required

Details of proposal

Participation in meetings to share practices on managing climate risks and opportunities. Each company presents its management process, actions related to the supply chain and main challenges to fully implement the TCFD requirements

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms