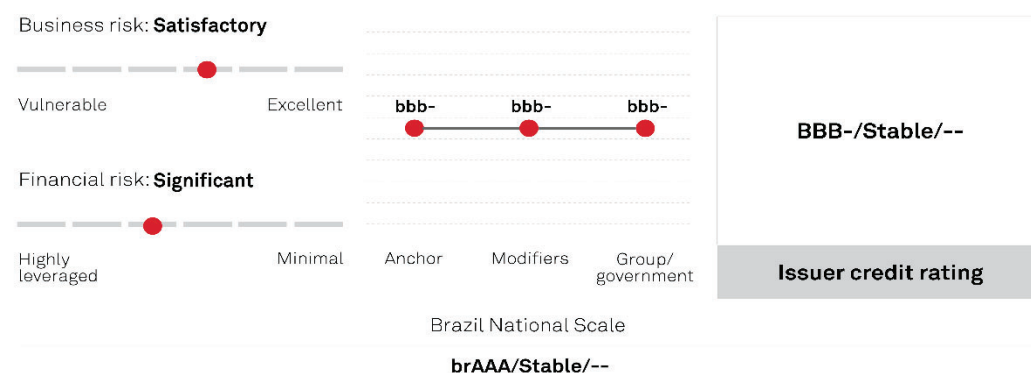


Braskem S.A.

December 14, 2022

Ratings Score Snapshot



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Credit Highlights

Overview

Key strengths

One of the world's largest thermoplastics resin producers with a leading position in the Americas.

Geographic diversification of end markets and raw-material supplies.

Strong liquidity with broad access to credit.

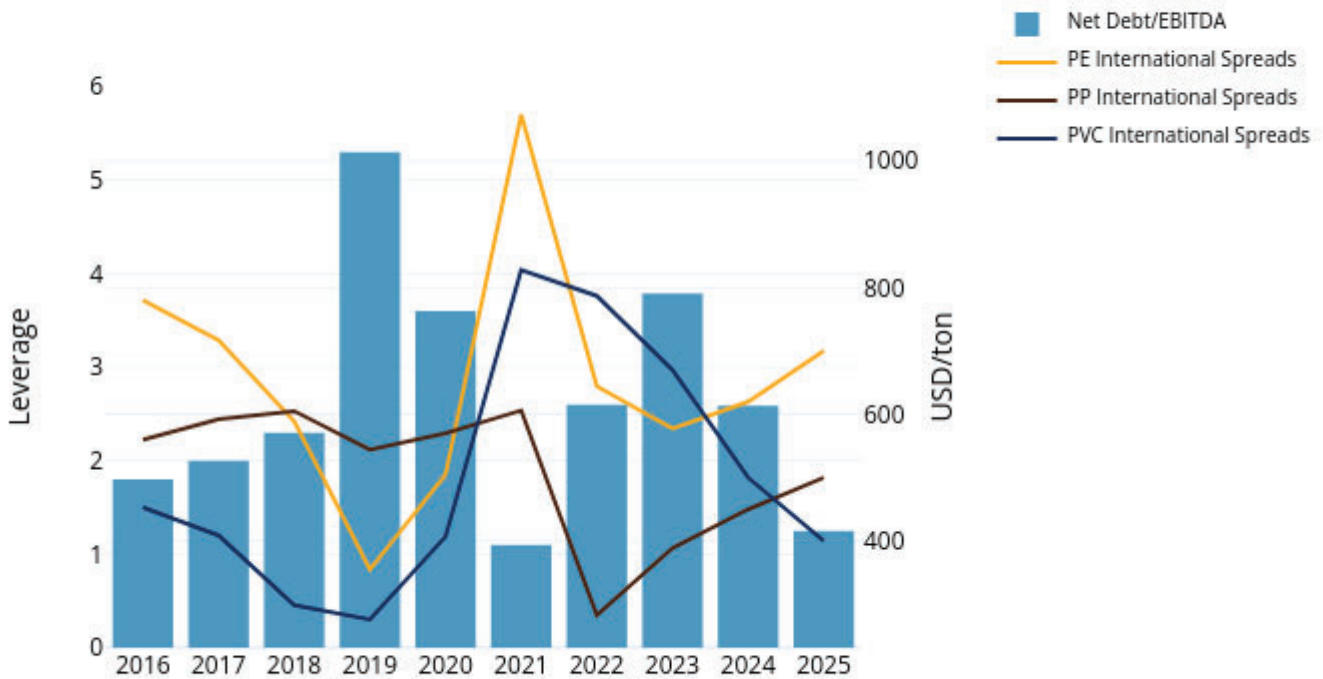
Key risks

Exposure to the cyclical and volatile petrochemical industry.

Weaker global demand and high costs pressuring profitability and leverage in the near term.

Global economic slowdown resulting in uncertain demand for Braskem's products and in weaker spreads. After a period of sound petrochemical spreads in 2021 and higher-than-average levels in the first half of 2022, the trend sharply reversed starting in the third quarter of 2022. This was because of a combination of factors: on the supply side, new petrochemical capacity entering the market (mainly polyethylene [PE] and polypropylene [PP]) and high input prices and inflation increasing production costs; and on the demand side, weaker global demand due to economic slowdown and persistent lockdowns in China. Given that we expect the demand pressures to remain during 2023, and with some additional production capacity to come online next year, we forecast revenue decline and weaker profitability for Braskem in 2023, with EBITDA margin of 9%-10% compared with close to 15% in the 12 months ended September 2022 and very high level of 26.7% in 2021. Due to weaker EBITDA and relatively stable debt levels, the company's leverage will increase, but we expect it to remain below 4.0x in 2023 and below 3.5x in a three-year average under our forecasts. This is also supported by the view that demand and supply imbalances will diminish in 2024 with no capacity additions, allowing for higher spreads, and consequently, higher profitability.

Petrochemical spreads and leverage
2016-2025



Downside risks could intensify pressures on credit metrics, but we expect management to respond relatively quickly. We believe risks to our base-case scenario are on the downside, mainly in terms of weaker-than-expected global economic growth and/or persistent high inflation and interest rates further reducing demand for petrochemicals and limiting improvements in spreads. Still, we expect Braskem's management to maintain a prudent approach to leverage, as seen in the recent past through the application of countercyclical measures to mitigate cash-flow pressures. This could be done mainly through working capital management and capex reduction, allowing the company to maintain a solid cash position, with adjusted net leverage not deviating significantly from the expected peak of 3.5x-4.0x in 2023.

Change of control could occur in the short term. Braskem's shareholders, Novonor S.A. (not rated) and Petróleo Brasileiro S.A. – Petrobras (BB-/Stable/--), are in the process of selling their stakes in the company. They attempted to do so through a secondary public offering in early 2022, but it was cancelled due to adverse market conditions. More recently, Braskem indicated that it will likely engage in conversations with potential buyers, at Novonor's request. We currently assess Braskem as insulated and delinked from the credit quality of its controlling shareholders, because we view its financial performance as independent and separate from both, given the existing shareholders' agreement. If the sale is finalized to a new single controlling shareholder, we will need to assess its credit quality and/or if it will change Braskem's strategies and financial policies in a manner that could change our view of Braskem's current credit quality. Potential buyers and the sale's timing are uncertain at this point. Petrobras has been including Braskem in its list of non-core assets up for sale, but this might change under a likely change in its board of directors in the next few months, once the country's new administration takes office in January 2023. Petrobras could decide to sell its stake in Braskem together with Novonor, maintain its stake, or eventually buy Novonor's stake and assume Braskem's control.

Outlook

The stable outlook reflects our expectation that the company's financial performance will remain in line with the rating despite currently challenging industry conditions, with low petrochemicals spreads leading to weaker profitability. We expect Braskem to control its cash outflows, allowing it to maintain debt to EBITDA below 4.0x until the end of 2023. In the medium term, we expect Braskem to maintain leverage at about 2.5x, with a prudent approach to dividend payments and investments, as seen in the past.

Downside scenario

We could lower the ratings in the next two years if the three-year moving average debt to EBITDA is about 3.5x or above. This could result from one or more of the following factors:

- Deeper contraction in petrochemical spreads amid weaker global demand;
- Substantial increases in dividend payments; and
- New sizable provisions related to Alagoas geological damage, which we currently believe are unlikely.

Upside scenario

An upgrade is unlikely in the medium term because the ratings on Braskem are capped at one notch above our transfer and convertibility (T&C) assessment of Brazil, which is currently at 'BB+'. An upgrade would also depend on an upward revision of Braskem's stand-alone credit profile (SACP). This could happen if we see lower volatility in leverage metrics on a three-year moving average. For that to occur, we expect a commitment to a more prudent capital structure, even factoring in the volatility in commodity markets, with average mid-cycle debt to EBITDA at 1.5x-2.5x and funds from operations (FFO) to debt at 35%-45%. The upgrade would also depend on the maintenance of strong liquidity and a prudent approach to capital expenditures (capex), dividend payouts, or other debt-financed initiatives.

Our Base-Case Scenario

Assumptions

- An average exchange rate of R\$5.13 per \$1 in 2022, R\$5.18 in 2023, and R\$5.23 in 2024.
- Brent crude prices of about \$100 per barrel (bbl) in 2022, \$90 in 2023, and \$80 in 2024.
- Volume growth of 1%-3% in the next two to three years.
- Spreads in 2022 for PE and PP on average of 50% below 2021 levels, while those for polyvinyl chloride (PVC) about 5% below 2021 levels.
- For 2023, we assume further declines of 10%-15% in spreads for PE and PVC, but growth in PP spreads on faster rebound in demand and no substantial capacity additions. For 2024, we assume an increase of 5%-15% from the 2023 level for PE and PP, while that for PVC would still decline 20%-25% to levels closer to historical average.
- Cash outflows related to Alagoas geological event of about R\$4.4 billion in 2022, about R\$4 billion in 2023, and falling to about R\$1.4 billion in 2024.
- Dividend payout of 25% of previous-year net income.
- We don't consolidate Braskem Idesa S.A.P.I. in our financial analysis and forecasts for Braskem.

Key metrics

Braskem S.A.--Key Metrics*

Bil. R\$	2020a	2021a	2022e	2023f	2024f
Revenue	55.8	101.4	95.0-100.0	85.0-95.0	80.0-100.0
EBITDA	9.0	27.1	10.5-11.5	8.5-9.5	9.0-13.0
EBITDA margin (%)	16.2	26.7	11.0-12.0	9.0-11.0	11.0-15.0
Funds from operations (FFO)	5.8	21.3	6.0-7.5	4.0-6.0	5.0-10.0
Capex	2.4	3.0	~5.0	~3.0	5.0-5.5
Debt	32.3	29.1	28.0-30.0	29.0-32.0	28.0-32.0
Debt to EBITDA (x)	3.6	1.1	2.5-3.0	3.0-4.0	2.0-3.0
FFO to debt (%)	17.9	73.3	20-25	12-20	20-30
FOCF to debt (%)	14.8	31.9	15-20	5-15	5-15

*All figures adjusted by S&P Global Ratings. a--Actual. e--Estimate. f--Forecast.

Moderating investments amid lower spreads. Amid expectations of weaker operating cash flows, we assume that the company will reduce capex to about R\$3 billion in 2023 (excluding Braskem Idesa's capex) from about R\$4.6 billion in 2022. This would be mainly for maintenance and some small investments more in line with company's environmental goals. Considering a rebound in petrochemical spreads in 2024, we expect somewhat higher investments, close to or above R\$5 billion.

Company Description

Braskem is the leading thermoplastic resins producer in the Americas and among the world's top 10 sector players, with leading positions in PE (low density [LDPE], high density [HDPE], and linear low density [LLDPE]), PP, and PVC. The company integrates the first and second generations of the Brazilian petrochemicals industry, consisting of the naphtha or ethane cracking function (basic petrochemicals) and thermoplastics production (polyolefin and PVC). Braskem registered record-high revenue of R\$101.5 billion (almost \$19 billion) in 2021. Novonor (formerly Odebrecht S.A.) controls 38.3% of Braskem's total shares (50.1% of voting shares), and Petroleo Brasileiro S.A. - Petrobras (BB-/Stable/--) owns 36.1% of total shares (47% of voting). The company's remaining shares trade on Bovespa and Latibex and NYSE.

Peer Comparison

Dow Chemical Corp. has a sizable and leading presence in the commodity chemicals segment and in specialty chemicals product categories. Dow's revenue is three times larger than that of Braskem, along with wide geographic and product diversification and its presence in various end-markets. LyondellBasell Industries N.V. is among the largest producers of ethylene and propylene derivatives, having broader diversification of products, geographies, and end-markets. LyondellBasell is also vertically integrated, participating in the entire petrochemical value chain from refining of crude oil to the production of downstream differentiated chemicals. Orbia Advance Corp. S.A.B. de C.V. is Braskem's regional peer. Orbia has a narrower range of products and smaller scale than Braskem, but wider geographic diversification and has posted less volatile credit metrics than Braskem in the past few years.

Braskem S.A.--Peer Comparisons

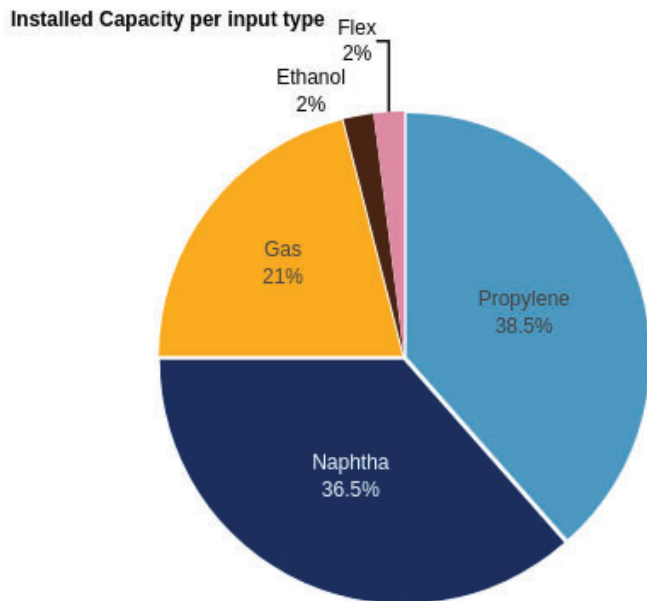
	Braskem S.A.	Dow Chemical Co. (The)	LyondellBasell Industries N.V.	Orbia Advance Corp. S.A.B. de C.V.	Eastman Chemical Co.
Foreign currency issuer credit rating	BBB-/Stable/--	BBB/Positive/A-2	BBB/Stable/A-2	BBB-/Stable/A-3	BBB/Stable/A-2
Local currency issuer credit rating	BBB-/Stable/--	BBB/Positive/A-2	BBB/Stable/A-2	BBB-/Stable/A-3	BBB/Stable/A-2
Period	Annual	Annual	Annual	Annual	Annual
Period ending	2021-12-31	2021-12-31	2021-12-31	2020-12-31	2021-12-31
Mil.	R\$	R\$	R\$	R\$	R\$
Revenue	101,448	306,256	257,254	33,339	58,367
EBITDA	27,104	65,900	53,436	6,903	11,695
Funds from operations (FFO)	21,321	57,001	47,687	4,243	10,011
Interest	2,830	4,759	3,767	1,255	1,177
Cash interest paid	3,076	4,826	4,023	1,202	1,004
Operating cash flow (OCF)	12,328	42,175	43,486	4,526	8,863
Capital expenditure	3,057	13,132	10,374	1,224	3,192
Free operating cash flow (FOCF)	9,271	29,043	33,111	3,302	5,671
Discretionary cash flow (DCF)	3,278	10,384	22,252	1,889	(1,990)
Cash and short-term investments	9,548	16,648	8,251	4,545	2,557
Gross available cash	9,548	16,648	8,251	4,545	2,557

Braskem S.A.--Peer Comparisons

Debt	29,080	143,732	74,882	16,979	32,672
Equity	9,717	106,021	66,791	16,512	32,248
EBITDA margin (%)	26.7	21.5	20.8	20.7	20.0
Return on capital (%)	70.5	20.1	31.8	11.5	11.9
EBITDA interest coverage (x)	9.6	13.8	14.2	5.5	9.9
FFO cash interest coverage (x)	7.9	12.8	12.9	4.5	11.0
Debt/EBITDA (x)	1.1	2.2	1.4	2.5	2.8
FFO/debt (%)	73.3	39.7	63.7	25.0	30.6
OCF/debt (%)	42.4	29.3	58.1	26.7	27.1
FOCF/debt (%)	31.9	20.2	44.2	19.4	17.4
DCF/debt (%)	11.3	7.2	29.7	11.1	(6.1)

Business Risk

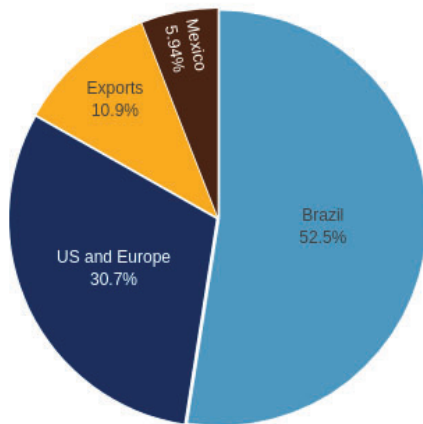
Braskem has a leading position in the thermoplastic resins industry in the Americas, and it's the only producer of PE and PP in Brazil and a leading supplier of PVC. The company has maintained a sound market share of about 70% in the Brazilian market historically. We expect Braskem to maintain this dominant position in Brazil, which allows it to pass through the impact of inflation and FX movements in the cost base to its products. This also provides a favorable position to negotiate long-term raw material supply agreements. Braskem integrates the first and second generations of Brazil's petrochemical industry, consisting of the naphtha or ethane cracking function (basic petrochemicals) and thermoplastics production (polyolefin and PVC). The company's balanced mix in its production facilities in terms of feedstock, using both naphtha (oil derivative) and gas, allows it to manage its costs depending on prices of natural gas and oil. This allows the company to mitigate volatility in margins to a greater degree than producers that are only gas- or oil-based.



Source: Company's filings and S&P Global

In 2020, Braskem has established a global efficiency program, Transform for Value, through which management has been reviewing the company's fixed- and variable-cost structure to identify and implement several cost saving measures. With those already in place, Braskem expects to reach \$302 million of recurring savings per year until the end of 2022 and up to \$400 million until 2023 (these savings include continuous improvement efforts and measures to avoid productivity losses), which should protect company's profitability and cash flows mainly during weaker industry conditions such as those currently. Braskem has also wide diversification of end markets and customers for its various products and with production facilities in several countries (Brazil, the U.S., Germany, and Mexico). This allows the company to adjust production (dedicating some plants to specific grades) and exports according to demand and logistics, mitigating exposure to demand fluctuations.

Sales by geography
2021



Source: Company's presentations.

Management indicated that Braskem's investment strategy will remain focused on innovation and capacity expansion related to energy transition and reducing its carbon footprint. These investments could be acquisitions of small companies or start-ups, joint ventures (JVs) or partnerships, aligned with company's announcements over the past several months. For instance, Braskem signed some small M&A transactions focused on recycling (Nexus Circular, Wise Plásticos). These are in line with the company's long-term objectives that include a commitment to sell 300,000 tons of products with recycled content per year by 2025 and increase to 1 million tons per year by 2030. Until 2030, Braskem also has the commitment to recover 1.5 million tons per year of plastic waste. Braskem also signed a memorandum of understanding with SCG Chemicals for a JV for a potential joint investment in a new production facility in Thailand of green ethylene that uses sugarcane ethanol as input. This project would likely double Braskem's installed capacity of green PE, which is still small compared with total capacity, but has important advantages in terms of demand and pricing. This is in line with company's long-term commitment to increase bioproduct capacity to 1 million tons by 2030. We don't believe Braskem would undertake any large investment or acquisition on its own, given its prudent approach to capex and leverage, but we expect to see increasing activity in these segments over the next few years.

Financial Risk

Braskem used its strong cash generation in 2021 to reduce debt by more than R\$9 billion, repurchasing some of its outstanding bonds and prepaying commercial notes and credit lines that carried higher costs or that matured in the short to medium term. The company maintained a similar approach during 2022, issuing new long-term debt (maturing in 7-10 years) and prepaying debt that would mature in 2023 and 2024. As a result, currently almost 80% of total debt will mature after 2028, with an average debt term of more than 13 years. Currently about 90% of Braskem's debt is in dollars. According to the company's financial policies, it needs to maintain at least 70% of net debt in U.S. dollars, which allows for a natural hedge as sales in Brazil (still more than half of the company's total revenues) are referenced in the same currency. Most of the company's costs are also pegged to the dollar, but a part

Braskem S.A.

of its costs and capex are in Brazilian reals. Braskem's hedging policy also includes the use of dollar call and put options to protect from currency mismatch risks.

We expect the company to maintain a prudent approach towards dividends distribution over the next few years. After a large dividend payout of R\$6 billion at the end of 2021, given strong cash flows and low leverage, we now expect the company to maintain the minimum payout of 25% of net income. This is because Braskem only approves complementary distributions, above 25%, if after the dividend payment the company would still maintain leverage below 2.5x in the current year and subsequent two years to incorporate the risks related to industry cyclicality.

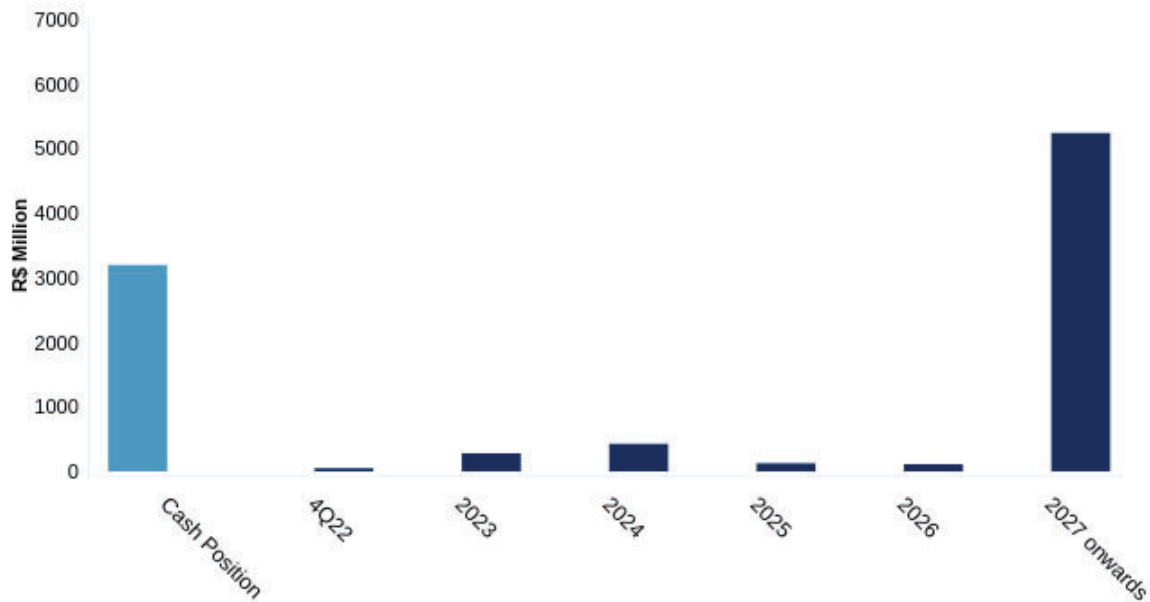
Braskem has provisioned liabilities of about R\$13 billion related to the geological damage from its salt mining operations in the Brazilian state of Alagoas. The company has disbursed more than R\$6 billion since May 2019. As of September 2022, provision liabilities totaled R\$7.2 billion, with close to R\$5 billion expected to be disbursed in the short term. The amounts are for relocating and compensating the residents and owners of the properties located in the damaged area, for closing and monitoring of salt wells as well as for socio-urbanistic measures. Based on sonar and technical studies, Braskem has defined stabilization and monitoring actions for all 35 existing salt mining wells. We don't adjust provisions as equivalent to debt, but we incorporate future cash outflows in our forecasts. There are still some pending discussions that could require additional provisions, mainly related to a discussion with the municipality and with the train operator. Still, we don't expect these potential additional amounts to be material. Also, we expect Braskem to be partly compensated through the \$300 million insurance claims.

We don't consolidate Braskem Idesa's financials in our analysis of Braskem's financial risk profile and credit metrics, because we believe the JV prevents the two shareholders (Braskem and Idesa) from directing the strategy and cash flows of Braskem Idesa and there's no expected financial support from Braskem to the JV, which is expected to operate in an independent manner. Braskem Idesa was initially structured as a project with limited recourse to Braskem. In 2021, Braskem Idesa prepaid the project finance loan with the issuance of new senior secured notes, which carry the same asset guarantees that were present in the project finance debt.

Debt maturities

Debt Maturity Profile

As of September 30, 2022



Source: Company's filings and S&P Global Ratings.

Braskem S.A.--Financial Summary

Period ending	Dec-31-2016	Dec-31-2017	Dec-31-2018	Dec-31-2019	Dec-31-2020	Dec-31-2021
Reporting period	2016a	2017a	2018a	2019a	2020a	2021a
Display currency (mil.)	R\$	R\$	R\$	R\$	R\$	R\$
Revenues	46,343	46,207	54,851	49,961	55,780	101,448
EBITDA	11,056	10,187	8,841	4,393	9,033	27,104
Funds from operations (FFO)	8,076	6,938	5,693	1,564	5,786	21,321
Interest expense	1,752	1,587	1,514	1,592	2,225	2,830
Cash interest paid	1,827	2,328	2,210	2,417	2,989	3,076
Operating cash flow (OCF)	4,074	1,181	7,157	256	7,172	12,328
Capital expenditure	1,694	1,983	2,342	2,401	2,401	3,057
Free operating cash flow (FOCF)	2,380	(803)	4,815	(2,144)	4,772	9,271
Discretionary cash flow (DCF)	382	(1,802)	3,315	(2,813)	4,769	3,278
Cash and short-term investments	7,691	5,783	6,942	7,474	15,247	9,548

Braskem S.A.--Financial Summary

Gross available cash	7,691	5,783	6,942	7,474	15,247	9,548
Debt	19,625	19,818	20,374	23,065	32,286	29,080
Common equity	2,739	6,587	6,869	4,973	(484)	9,717
Adjusted ratios						
EBITDA margin (%)	23.9	22.0	16.1	8.8	16.2	26.7
Return on capital (%)	41.4	36.3	27.9	9.4	23.6	70.5
EBITDA interest coverage (x)	6.3	6.4	5.8	2.8	4.1	9.6
FFO cash interest coverage (x)	5.4	4.0	3.6	1.6	2.9	7.9
Debt/EBITDA (x)	1.8	1.9	2.3	5.3	3.6	1.1
FFO/debt (%)	41.2	35.0	27.9	6.8	17.9	73.3
OCF/debt (%)	20.8	6.0	35.1	1.1	22.2	42.4
FOCF/debt (%)	12.1	(4.1)	23.6	(9.3)	14.8	31.9
DCF/debt (%)	1.9	(9.1)	16.3	(12.2)	14.8	11.3

Reconciliation Of Braskem S.A. Reported Amounts With S&P Global Adjusted Amounts (Mil. R\$)

Financial year	Shareholder		Revenue	EBITDA	Operating income	Interest expense	S&PGR adjusted EBITDA	Operating cash flow	Dividends	Capital expenditure
	Debt	Equity								
Dec-31-2021										
Company reported amounts	35,094	7,866	105,625	30,217	26,039	3,096	27,104	14,490	5,993	3,421
Cash taxes paid	-	-	-	-	-	-	(2,707)	-	-	-
Cash interest paid	-	-	-	-	-	-	(2,883)	-	-	-
Lease liabilities	3,156	-	-	-	-	-	-	-	-	-
Intermediate hybrids (debt)	(1,752)	1,752	-	-	-	-	-	-	-	-
Postretirement benefit obligations/deferred compensation	322	-	-	(24)	(24)	6	-	-	-	-
Accessible cash and liquid investments	(9,548)	-	-	-	-	-	-	-	-	-
Capitalized interest	-	-	-	-	-	192	(192)	(192)	-	(192)
Deconsolid./consolid.	(15,958)	1,762	(4,177)	(3,358)	(2,181)	(1,156)	-	(1,970)	-	(172)
Asset-retirement obligations	683	-	-	-	-	-	-	-	-	-

Reconciliation Of Braskem S.A. Reported Amounts With S&P Global Adjusted Amounts (Mil. R\$)

	Shareholder Debt	Equity	Revenue	EBITDA	Operating income	Interest expense	S&PGR adjusted EBITDA	Operating cash flow	Dividends	Capital expenditure
Nonoperating income (expense)	-	-	-	-	790	-	-	-	-	-
Noncontrolling/ minority interest	-	(1,662)	-	-	-	-	-	-	-	-
Debt: Litigation	1,123	-	-	-	-	-	-	-	-	-
Debt: Debt serviced by third parties	3,647	-	-	-	-	-	-	-	-	-
Debt: other	12,312	-	-	-	-	-	-	-	-	-
EBITDA - Gain/(loss) on disposals of PP&E	-	-	-	(40)	(40)	-	-	-	-	-
EBITDA: other	-	-	-	309	309	-	-	-	-	-
Interest: Amortized cost	-	-	-	-	-	691	-	-	-	-
Working capital: other	-	-	-	-	-	-	-	389	-	-
OCF: other	-	-	-	-	-	-	-	(389)	-	-
Total adjustments	(6,015)	1,851	(4,177)	(3,113)	(1,146)	(267)	(5,782)	(2,162)	-	(364)
S&P Global Ratings adjusted	Debt	Equity	Revenue	EBITDA	EBIT	Interest expense	Funds from Operations	Operating cash flow	Dividends	Capital expenditure
	29,080	9,717	101,448	27,104	24,893	2,830	21,321	12,328	5,993	3,057

Liquidity

We assess Braskem's liquidity as strong. We expect sources to exceed uses by more than 1.5x in the next 24 months even amid expected weaker operating cash flows. This is thanks to the company's robust cash position and committed credit lines, which are more than enough to cover the relatively small short-term debt, capex, and other short-term needs. Braskem has access to diversified funding sources, which supports its smooth debt maturity profile. This year, amid tighter global bond market conditions, Braskem issued local debentures in Brazil, maturing in 7-10 years, allowing the company to extend its debt maturity profile.

Principal liquidity sources

- Cash position of close to R\$12 billion as of Sept. 30, 2022;
- Stand-by credit facility of about R\$5.2 billion (\$1 billion);
- Cash FFO of about R\$6.4 billion in the 12 months after September 2022; and
- New debentures issued in December 2022, totaling R\$1.2 billion.

Principal liquidity uses

- Short-term debt maturities of R\$1.6 billion as of Sept. 30, 2022;
- Capex of about R\$4.0 billion in the 12 months after September 2022;
- Cash outflows related to Alagoas of about R\$4.9 billion in the 12 months after September 2022; and
- Dividend payments of about R\$470 million in the 12 months after September 2022.

Covenant Analysis

Requirements

The company has no financial covenants, although its bonds include some reporting requirements related to the disclosure of audited annual financial statements no later than 120 days after the closing of each fiscal year (plus 60 days cure period). Braskem’s bonds also have a payment acceleration clause in case the issue ratings are lowered as a result of a change of control at Braskem’s level. We would need to monitor acceleration risk in case a change of control prompts us or another rating agency to take a negative rating action on the company.

Environmental, Social, And Governance

ESG Credit Indicators

E-1	E-2	E-3	E-4	E-5	S-1	S-2	S-3	S-4	S-5	G-1	G-2	G-3	G-4	G-5
- Waste and pollution - Climate transition risks - Physical risks					- N/A					- Risk management, culture, oversight				

N/A—Not applicable. ESG credit indicators provide additional disclosure and transparency at the entity level and reflect S&P Global Ratings’ opinion of the influence that environmental, social, and governance factors have on our credit rating analysis. They are not a sustainability rating or an S&P Global Ratings ESG Evaluation. The extent of the influence of these factors is reflected on an alphanumeric 1-5 scale where 1 = positive, 2 = neutral, 3 = moderately negative, 4 = negative, and 5 = very negative. For more information, see our commentary “ESG Credit Indicators: Definition And Applications,” published Oct. 13, 2021.

Environmental and governance factors are a negative consideration in our credit rating analysis of Braskem. Producers of petrochemicals and thermoplastics are among the most intensive CO2 emissions producers. Brazilian authorities claimed that Braskem's rock salt extraction caused geological damage in the state of Alagoas. The company provisioned close to R\$13 billion (about 40% of its financial debt as of December 2019) to shut down the salt extraction operation, relocate the affected families, and for socio-environmental expenses. Also, the leniency agreement following a corruption investigation of the company resulted in a R\$3.1 billion fine in 2016. As part of that agreement, Braskem went through considerable internal control changes and an independent monitoring period, complying with Brazil's Federal Prosecution Office, U.S. Department of Justice, and Securities and Exchange Commission's requirements. We believe this improved the company's governance practices, with more independent members on the board, who are also part of the audit and compliance committee. On the positive side, Braskem aims to achieve carbon neutrality by 2050 and reduce GHG emissions (scopes 1 and 2) by 15% by 2030 from the 2020 level. This would be done through higher consumption of renewable energy and efficient energy projects. Also, the company will expand its production capacity of green ethylene, made from sugarcane ethanol, to produce polyethylene. It is currently investing about \$60 million to increase green ethylene production capacity from 200,000 tons per year to 260,000 tons per year. This product still represents only close to 1% of total production capacity, but Braskem has a target to increase production capacity to 1 million tons by 2030.

Rating Above The Sovereign

Braskem's sound liquidity position, cash held outside Brazil and geographic diversification would likely prevent a default of the company at the same time as the sovereign in a hypothetical sovereign stress scenario. We believe Braskem's products have high sensitivity to Brazil's country risk and economic activity, even though their commodity nature could partly offset the impact of a domestic slowdown through increased exports. We stressed the company under a Brazilian sovereign default scenario assuming:

- A GDP contraction of 10%;
- A doubling of inflation rates and interest rates, raising general expenses and floating-rate debt. We also assume that Braskem can't fully pass on cost inflation to clients.
- A currency depreciation of 50%, which doubles debt service costs for foreign currency debt (in local currency terms).
- A 70% haircut on the company's short-term investments and 10% haircut for bank deposits held in Brazil.
- A 10% decrease in volumes for domestic PE (in line with the GDP growth), and a decline of two and three times for domestic PP and PVC, respectively, given that these products are less resilient to economic downturns, linked to the automotive and infrastructure segments, respectively.
- In terms of working capital, we assume close to R\$2 billion, reflecting potentially higher delinquency rates among customers and higher inventories levels.

Even under this scenario, the company would have sufficient cash flows to cover its needs, and would maintain liquidity sources over uses of comfortably more than 1.0x for one year of simulated stress scenario. Given Braskem's high concentration of production assets in Brazil, we still limit the rating on the company up to one notch above Brazil's T&C level, currently at 'bb+'. We believe that Braskem's cash reserves abroad, committed credit lines available in hard currency, and cash flow generation from international operations and exports should allow it to sustain obligations denominated in foreign currency.

Issue Ratings--Subordination Risk Analysis

Capital structure

- We rate several senior unsecured notes, either issued or guaranteed by Braskem.
- We also rate the company's subordinated notes issued in 2020. We categorize these notes as having intermediate equity content, because they're subordinated in liquidation to Braskem's senior debt obligations, and aren't subject to features that could discourage or considerably delay deferral.

Analytical conclusions

We rate Braskem's senior unsecured international issuances at 'BBB-' and local issuances at 'brAAA', at the same level as our issuer credit ratings, because the company has limited secured debt. Even if the senior unsecured debt ranked behind the debt issued by subsidiaries in the capital structure, we believe the risk of subordination is mitigated by a priority debt ratio that's far less than 50% and the material earnings generated on the parent level. We rate the financing vehicles' unsecured debt the same as our issuer credit rating on Braskem, based on its guarantee of this debt.

We rate Braskem's subordinated notes at 'BB'. This two-notch difference between the subordinated notes rating and credit rating reflects our deduction of:

- One notch to reflect subordination to the company's senior debt obligations; and
- One notch for loss absorption or cash conservation features. Braskem's coupon deferral is discretionary and not limited in time.

Rating Component Scores

Foreign currency issuer credit rating	BBB-/Stable/--
Local currency issuer credit rating	BBB-/Stable/--
Business risk	Satisfactory
Country risk	Moderately High
Industry risk	Moderately High
Competitive position	Satisfactory
Financial risk	Significant
Cash flow/leverage	Significant
Anchor	bbb-
Diversification/portfolio effect	Neutral (no impact)
Capital structure	Neutral (no impact)
Financial policy	Neutral (no impact)
Liquidity	Strong (no impact)
Management and governance	Fair (no impact)
Comparable rating analysis	Neutral (no impact)
Stand-alone credit profile	bbb-

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- General Criteria: Hybrid Capital: Methodology And Assumptions, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Guarantee Criteria, Oct. 21, 2016
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- General Criteria: Ratings Above The Sovereign--Corporate And Government Ratings: Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012

Ratings Detail (as of December 15, 2022)*

Braskem S.A.

Issuer Credit Rating	BBB-/Stable/--
<i>Brazil National Scale</i>	brAAA/Stable/--
Senior Unsecured	
<i>Brazil National Scale</i>	brAAA

Ratings Detail (as of December 15, 2022)*

Issuer Credit Ratings History

02-Sep-2021		BBB-/Stable/--
08-Jul-2020		BB+/Stable/--
26-Nov-2019		BBB-/Negative/--
14-Mar-2018		BBB-/Stable/--
16-Aug-2017	<i>Brazil National Scale</i>	brAAA/Stable/--
23-May-2017		brAAA/Watch Neg/--
04-Dec-2015		brAAA/Negative/--

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings credit ratings on the global scale are comparable across countries. S&P Global Ratings credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

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