

CREDIT OPINION

3 May 2021

Update

✓ Rate this Research

RATINGS

Ecopetrol S.A.

Domicile	Bogota, Distrito Capital, Colombia
Long Term Rating	Baa3
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Ecopetrol S.A.

Update to credit analysis

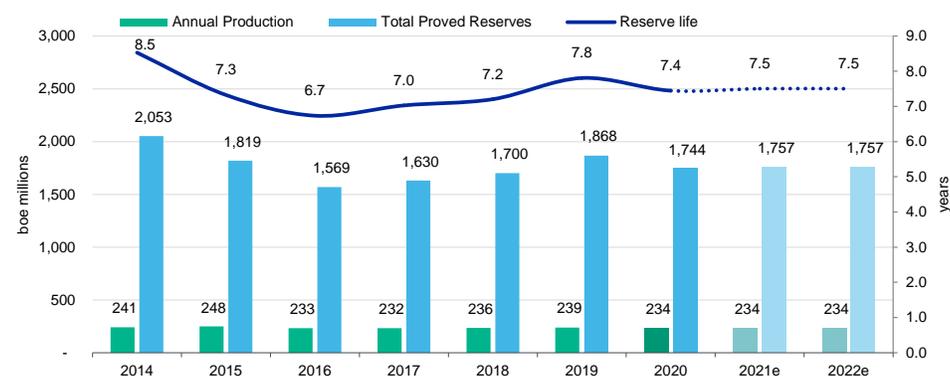
Summary

[Ecopetrol S.A.](#)'s (Baa3 stable) credit profile reflects the company's status as Colombia's leading oil and gas producer, accounting for about two-thirds of the country's production and 100% of oil product supply. The credit profile also takes into consideration Ecopetrol's sizable production scale, and the solid and relatively stable cash flow from its midstream subsidiary Cenit S.A.S., which includes [Oleoducto Central S.A.](#) (Ocesa, Baa3 stable). Furthermore, we assume a high probability of support from the [Government of Colombia](#) (Baa2 negative) for Ecopetrol and a moderate default interdependence between the two issuers. This assessment results in a one-notch uplift to Ecopetrol's senior unsecured rating to Baa3 from its ba1 BCA, which reflects the company's intrinsic credit risk without support considerations.

Exhibit 1

Ecopetrol's reserve life will remain at a comfortable level, above the average for the last seven years

Production and reserve life evolution



Conversion rate of 6,000 cubic feet = 1 barrel of oil equivalent.

Sources: Ecopetrol and Moody's Investors Service (estimates)

Credit strengths

- » Leading oil and gas producer, accounting for about two-thirds of Colombia's production, and the only provider of refined products in the country
- » Sizable production scale
- » Portfolio of valuable assets that can be relatively easily monetized, including Ocesa
- » Assumption of high support from the Government of Colombia

Credit challenges

- » High exploration and production (E&P) operating costs, although in line with regional peers
- » Execution risks arising from its reserve replacement strategy
- » Stagnant gross production, slightly above 700,000 barrels per day

Rating outlook

The stable rating outlook is based on our view that Ecopetrol will be successful maintaining its lower operating costs, largely sustaining its reserves and reserve life, and that its metrics will significantly recover in 2021 and 2022 as oil prices and refined products demand improve over the period.

Factors that could lead to an upgrade

- » Ecopetrol demonstrates the ability to grow its production and replace its reserves without hurting its credit metrics
- » Leveraged full-cycle ratio is above 1.5x, which would indicate low finding and development costs
- » Retained cash flow (RCF)/net debt above 40% on a sustained basis

Factors that could lead to a downgrade

- » Ecopetrol faces liquidity constraints
- » There is a significant downward trend in reserve life
- » RCF/net debt is below 20%, with limited prospects for a quick turnaround
- » There is a negative action on the Colombian government's rating or outlook, or a change in our assumptions of government support

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moody's.com for the most updated credit rating action information and rating history.

Key indicators

Ecopetrol S.A.

US Millions	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20	2021E	2022E
Average Daily Production (MBOE / Day)	680.4	636.6	635.6	646.6	655.7	639.8	639.8	639.8
Total Proved Reserves (MMBOE)	1,818.8	1,569.3	1,630.3	1,700.3	1,867.3	1,743.8	1,757	1,757
Crude Distillation Capacity (mbbls/day)	420.0	405.0	405.0	404.8	404.8	404.8	404.8	404.8
Downstream EBIT/Total Throughput Barrels	\$3.26	\$0.48	\$0.79	\$0.56	\$1.54	-\$3.24	\$0.4	\$1.4
EBIT / Interest Expense	4.0x	3.3x	5.6x	8.7x	10.1x	2.4x	3.1x	3.9x
RCF / Net Debt	15.8%	23.5%	41.0%	53.4%	28.4%	7.2%	35.2%	40.7%
Debt / Book Capitalization	52.4%	54.1%	47.9%	40.8%	41.1%	47.6%	46.6%	43.1%
EBIT / Avg. Book Capitalization	10.78%	10.32%	15.09%	24.18%	22.54%	6.35%	10.0%	12.7%

All figures and ratios are calculated using Moody's estimates and standard adjustments. Moody's forecasts (f) or projections (proj.) are our opinions and do not represent the views of the issuer. Periods are financial year end unless indicated.

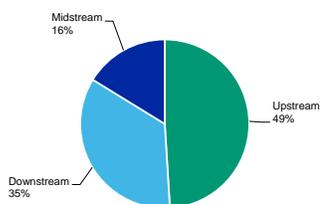
Source: Moody's Financial Metrics™

Profile

Ecopetrol S.A. (Ecopetrol) is the largest integrated oil and gas company in Colombia. The company has three business segments, namely exploration and production, refining activities and transportation and logistics. Its production averaged around 640 thousand barrels of oil equivalent per day (mboed), net of royalties, in 2020, and total assets amounted to \$40 billion in December 2020. The Colombian government owns 88.5% of the company through shares held by the Ministry of Finance, and the balance has been traded on the Colombian Securities Exchange since November 2007. Ecopetrol's ADRs are listed on the New York Stock Exchange since 2008. The company's market capitalization as of April 2021 was \$26 billion.

Exhibit 3

Revenue breakdown by business segment

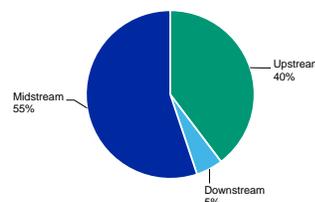


Data as of December 2020. Numbers do not include eliminations.

Source: Ecopetrol

Exhibit 4

EBITDA breakdown by business segment



Data as of December 2020.

Source: Ecopetrol

Detailed credit considerations

Leading upstream and downstream positions in Colombia

Ecopetrol is the leading oil and gas producer in Colombia, accounting for over 60% of the country's oil and gas reserves. The company's crude production accounted for around 80% of its total production in December 2020, with close to 1.7 billion boe of proven reserves in the same period, according to its 20-F published in April 2021. The company estimates average gross production of 700-710 mboed in 2021. In addition to selling its own production, Ecopetrol purchases and trades the government's royalty crude, its own natural gas royalties, and a portion of third-party production in Colombia. Ecopetrol is a medium-sized integrated oil company compared with its larger government-owned peers in Latin America.

In downstream, Ecopetrol owns all of the country's 405,000 barrels per day (bpd) of crude refining capacity through its four refineries. About 98% of the company's production comes from two refineries: the Barrancabermeja refinery, which accounts for 250,000 bpd, and Reficar at Cartagena, which has a 150,000 bpd capacity. Ecopetrol is the largest wholesale marketer in Colombia, with a virtually 100% market share, but does not engage in retail product marketing. In 2016, Ecopetrol completed the upgrade of its Reficar refinery and expanded its capacity by 65,000 bpd to a total distillation capacity of 150,000 bpd, which increased the company's total distillation capacity to 405,000 bpd. The upgrade moved Reficar's Nelson complexity index to 10.5 from 5.1, allowing for lower

feedstock cost and better product slate, which improved its overall efficiency. Ecopetrol is also Colombia's largest petrochemical producer, with 480,000 tons of annual polypropylene capacity.

Ecopetrol indirectly owns and operates directly or in joint ventures around 9,000 kilometers of crude oil and refined product pipelines, equivalent to 82% of the Colombian pipeline capacity. This includes 100% or majority stakes in four of the largest crude pipelines, which connect field production to the refineries and to wholesale product and export terminals. Ocesa is a stable source of cash flow for Ecopetrol and provides a liquidity buffer as tariffs are for the most part set in US dollars.

Relatively stable reserves amid lower crude prices in 2020

Ecopetrol's production growth rate has been relatively low and stable since 2016, and we expect this trend to continue over the next 12-18 months. During the supply and demand shock in the first half of 2020, to protect its liquidity, Ecopetrol reduced its capital spending by 45% from the figure in its original budget announced in early 2020. This strategy is in line with the measures taken in 2016 when the company cut its capital spending by 67% compared with that in 2015. The company plans to invest around \$4-5 billion per year in 2021-23. In 2020, close to 80% of its total capital spending was allocated to E&P.

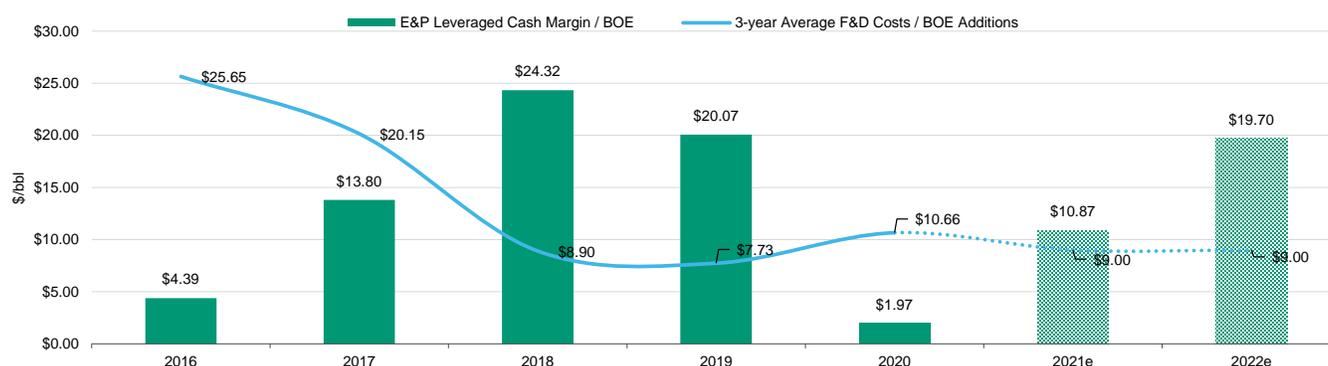
In the past, capital investment cuts have hurt Ecopetrol's production growth. Production declined by 6% in 2016 to 637 mboed (net of royalties), despite the incorporation of the Rubiales field's 50 mboe in mid-year 2016. Over 2017-18, production remained stable, averaging 641 mboed, increasing slightly to 655 mboed in December 2019 as a result of an increase in upstream investments in 2019 and select associations with international oil companies. In 2020 production declined 2% to 640 mboed, and we expect the company to at least maintain this production size in 2021-22. Ecopetrol's production is spread across various regions within Colombia, which helps protect the business against the common guerrilla attacks in the country because the company can adjust its production in its portfolio of assets in the event of disruptions.

Over 2016-19, higher oil prices, combined with better operating and capital efficiency, have helped Ecopetrol improve its credit metrics and cash flow. The company will likely be able to maintain its current reserve life at around 7.5 years through a solid reserve replacement strategy, and its credit metrics will remain strong in the foreseeable future. Ecopetrol plans to continue to enter into associations with large technically capable companies, which will help optimize its enhanced recovery processes and reduce costs; invest in small and medium-sized onshore assets that can add reserves at competitive costs; develop unconventional fields, especially in the Magdalena basin, in association with third parties; and grow inorganically outside Colombia, primarily in projects in the US, Mexico and Brazil, in joint ventures with experienced partners.

Exhibit 5

The sharp decline in oil prices in 2020 hurt Ecopetrol's metrics, but they will likely return to the 2019 levels over 2021-22

Leveraged cash margin and finding and development cost evolution



Sources: Ecopetrol and Moody's Investors Service (estimates)

Better oil prices will reduce negative free cash flow (FCF) in 2021-22

Over 2016-19, higher oil prices, combined with better operating and capital efficiency, helped Ecopetrol improve its credit metrics and cash flow from the 2015 levels. Lower capital investments in 2016 aimed at protecting liquidity resulted in positive adjusted FCF of \$1.6 billion that year, which was favorable compared with the negative \$3.9 billion in 2015. Better market fundamentals and disciplined

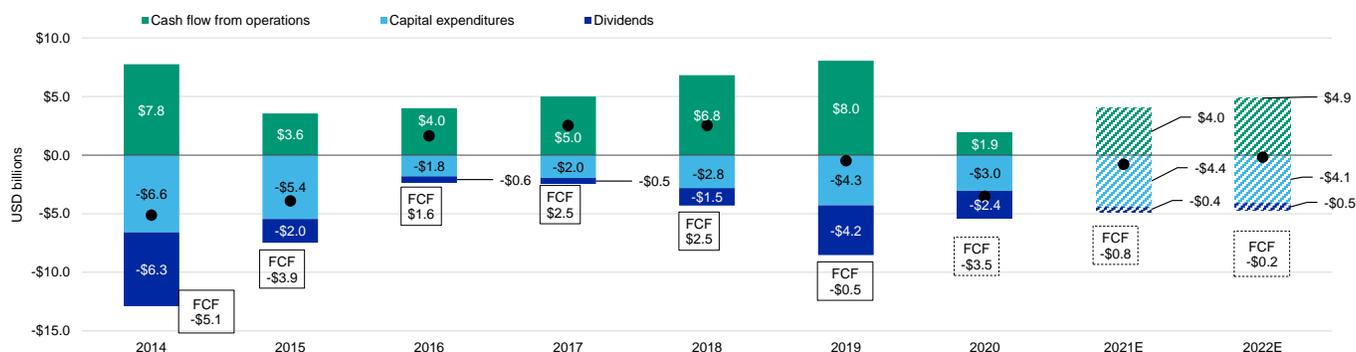
capital investment helped Ecopetrol improve its FCF further over 2017-18 to \$2.5 billion per year. In 2019, as a result of lower prices and higher capital investments, Ecopetrol generated negative \$467 million in FCF.

In 2020, Ecopetrol's FCF was negative by around \$3.5 billion as a result of lower prices and volumes, consequence of the supply shock related to geopolitical issues among global oil and gas producers as well as the demand shock caused by the coronavirus pandemic. In 2021-22 we expect Ecopetrol's FCF to be close to neutral over 2021-22 as i) prices increase, ii) production is at least stable, iii) the company maintains operating costs under control, and iv) capex increases. Favorable results from the midstream business, which benefits from high-capacity utilization and adequate tariffs, will continue to support the company's cash generation.

During the oil price plunge over 2014-16, the Government of Colombia reduced the pressure on Ecopetrol to pay dividends. As of December 2020, a recovery in demand, improved price realizations and negotiated crude differentials helped Ecopetrol to slightly reverse the downward trend seen at the beginning of the year in its three business segments but, given the pandemic, the government allowed Ecopetrol to delay its dividend payments related to 2019. During 2020 Ecopetrol paid around \$2.4 billion. The government could allow Ecopetrol to retain its cash if liquidity becomes a bigger concern. In March 2021, shareholders approved an ordinary dividend of around \$190 million, 41,4% of total net income generated in 2020.

Despite negative FCF over 2019-22, Ecopetrol is unlikely to record a significant deterioration in its credit metrics given the strength of its balance sheet.

Exhibit 6

Cash flow evolution

All figures and ratios are calculated using Moody's estimates and standard adjustments. Moody's forecasts are our opinions and do not represent the views of the issuer.

Sources: Moody's Financial Metrics™ and Moody's Investors Service (estimates)

Increase in debt in 2020 but leverage to decline over the medium term

Early in 2020 Ecopetrol strengthened its liquidity by borrowing \$1.1 billion from credit facilities, of which \$665 million were from committed revolvers, and by issuing \$2.0 billion in notes in April 2020. In July 2020, Ocesa finalized the placement of public debt securities in the international capital market for \$500 million. The resources obtained were used to repay the global bond that was due in May 2021 by the same notional amount. As a result, Ecopetrol's adjusted gross debt leverage reached 3.0x as of year-end 2020, which compares with its internal maximum limit of 2.5x-3.0x. However, we expect the company's leverage to decline again in 2021-22 because of higher prices and volumes.

Exhibit 7

Leverage evolution

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Sources: Moody's Financial Metrics™ and Moody's Investors Service (estimates)

Successful increase in operating efficiency

As a result of the pandemic, in 2020 Ecopetrol achieved some efficiencies of around COP700 billion compared with those in 2019, across all its operating operations but mostly in exploration and production.

In the upstream segment, Ecopetrol completed the drilling of 18 wells in 2020, one more than the original target of 17 wells, maintaining activities in strategic areas such as "Piedemonte" and Brazil. Ecopetrol's average gross production reached 697 mboed in the last quarter of 2020, (from 725 mboed in the same period in 2019), of which natural gas accounted for 17%. As of December 2020, natural gas reached an EBITDA above 50% and as a result of the stability in US-dollar-denominated prices and the improved dynamism over the period. Operations in the US Permian basin resumed at the end of July 2020, and five wells were drilled during Q3 2020. Production averaged 5.2 Mboed in 2020 with 22 wells in production and other 22 additional wells already drilled and expected to be completed and put to work in Q1 2021.

The downstream segment showed some recovery, increasing total throughput from 255 thousand barrels per day (mbbls/day) levels reported in June 2020 to 355 mbbls/day closing December 2020. The Cartagena Refinery reported 100% use of national crude oil in September 2020, the maximum level since the beginning of its operations.

Acquisition of Colombian power company was credit positive

In January 2021 Ecopetrol announced the acquisition of 51.4% of Interconexión Eléctrica S.A. E.S.P. (ISA, Baa2 stable)'s capital. ISA is a publicly-traded power company owned by the Government of Colombia. The transaction is credit positive for Ecopetrol because i) ISA generates a more stable EBITDA compared to that of Ecopetrol's oil and gas commodity business, which increases cash flow visibility for Ecopetrol; ii) ISA operates in Colombia, Brazil, Peru and Chile, which reduces Ecopetrol's geographic concentration risk; and iii) Ecopetrol's capital structure will not materially change after the completion of the acquisition transaction.

The acquisition of the controlling stake at ISA may cost approximately \$4 billion, based on ISA market capitalization. Because ISA is publicly-traded, the acquisition amount should be based on market prices and on standard valuation practices, despite the Colombian government currently controlling Ecopetrol's and ISA's capital.

Ecopetrol's plans to sell shares and assets as well as raise debt to fund the acquisition of ISA. The company expects that the combination of such initiatives will not deteriorate its credit metrics materially. After completion of the transaction, we expect that ISA will contribute with 15-20% of Ecopetrol's consolidated EBITDA. We assume that the companies' business strategies will not change materially and that their respective management teams, dividend policies and capital investment plans will remain mostly unchanged.

Ongoing investigations at Reficar

Certain former executives of Ecopetrol and Reficar, and other individuals are under investigations by the Colombian Office of the Comptroller General, the Attorney General's Office and the Prosecutor's Office for possible overpayments and wrongdoings regarding the upgrade and expansion of Ecopetrol's Cartagena refinery, Reficar.

In connection with the ongoing investigations, Ecopetrol has retained a US-based law firm to perform a third-party investigation into the matters set forth by the Prosecutor's Office. We will watch closely any developments arising from the investigations with regard to cost overruns in Reficar's expansion and the potential consequences for the company's liquidity and operations. However, the company's access to capital markets is unlikely to be significantly affected. Since 2014, Ecopetrol has impaired about \$1.8 billion in assets. In addition, the company has been under investigation for a number of years now, with no significant adverse findings regarding its internal controls or corporate governance practices so far.

ESG considerations

The rapid spread of the pandemic, the deteriorating global economic outlook, low oil prices and high asset price volatility have created an unprecedented credit shock across a range of sectors and regions. We regard the pandemic as a social risk under our environmental, social and governance (ESG) framework, given the substantial implications for public health and safety.

Ecopetrol aims to prevent, control, mitigate and compensate the potential environmental impacts of its operations and projects; contribute to the improvement of the environmental quality of the territories where it operates; and support sustainable development. Through environmental management, the company seeks to have the required permits and authorizations for its works, projects and activities, and follow up on their strict compliance.

The pandemic, the government measures put in place to contain it, and the weak global economic outlook continue to disrupt economies and credit markets across sectors and regions. Our analysis has taken into consideration the effect on Ecopetrol's performance from the currently weak economic activity in Colombia and a gradual recovery in the coming months. Although an economic recovery is underway, it is tenuous, and its continuation will be closely tied to the containment of the pandemic. As a result, the degree of uncertainty around our forecasts is unusually high.

Ecopetrol's management has the objective to contribute to the growth in economic value by creating sustainable development conditions, allowing the consolidation of operations and the viability of projects. Ecopetrol plans to invest close to \$500 million in environmental and social initiatives until 2024. Ecopetrol's 2021 investment plan calls for an increase in the allocation of resources to energy transition and sustainability initiatives: around 14% of investments are expected to be directed at expanding the gas chain and other energy sources, including expected investments of over \$200 million in energy efficiency projects and the incorporation of renewable energies; more than \$150 million is expected to be allocated to the decarbonization projects and over \$90 million to efficient water management in operations. In addition, nearly \$80 million is expected to be allocated to investments in technology and innovation, focusing on digital transformation, enhanced recovery, and energy transition. In 2021, the company plans to set aside approximately \$100 million for social investment allocated to the development and well-being of communities where we operate

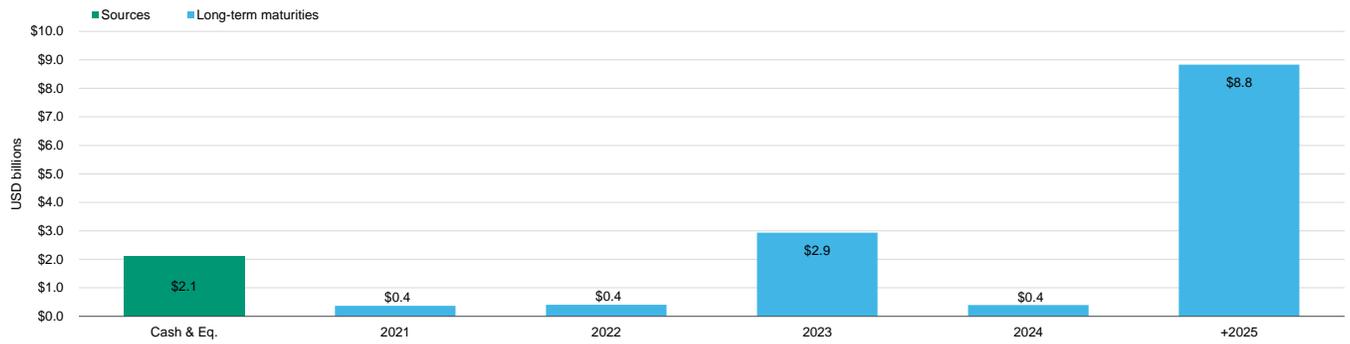
Ecopetrol's board of directors consists of nine members, of which eight are independent. Moreover, the company has several committees in place to support the board's duties. Ecopetrol is a public company, 88.49% owned by the Government of Colombia, with its shares trading on the New York Stock Exchange and the Colombian Stock Exchange. The company has to comply with local and international regulations in terms of compliance and reporting.

Liquidity analysis

Ecopetrol's liquidity is adequate. The company had cash and equivalents of \$2.1 billion as of December 2020. During 2020, the company raised around \$1.1 billion from credit facilities, of which \$665 million were from committed revolvers, and \$2 billion in bonds. We estimate cash flow from operations of close to \$4.0 billion in 2021, compared with \$0.4 billion of debt maturities and \$1.0 billion in interest expenses in the same period. We estimate that Ecopetrol will invest about \$5 billion in capital in the same period and the company expects to pay dividends within its dividend policy of 40%-60% of net profit. As of today, Ecopetrol counts with \$665 million in committed revolvers, which are fully drawn and expire in September 2023.

Exhibit 8

Debt maturity profile



Cash and equivalents as of December 2020.

Source: Ecopetrol

Methodology and scorecard

The forward-looking scorecard-indicated outcome for factors 1-5 is Baa3, compared with Ecopetrol's ba1 BCA and Baa3 global scale rating. The Government Policy Factor — which is an indicator of the financial risk associated with government taxation and financial dependence on the company — adds two notches to the scorecard-indicated rating and changes the outcome for the 12-18-month forward view to Ba2.

Rating methodology and scorecard factors

Rating factors

Ecopetrol S.A.

	Current FY 12/31/2020		Moody's 12-18 Month Forward View As of January 2021	
Integrated Oil and Gas Industry	Measure	Score	Measure	Score
Factor 1 : Scale (20%)				
a) Average Daily Production (Mboe / d)	640	A	640	A
b) Proved Reserves (MMboe)	1,744	Baa	1,757	Baa
c) Crude Distillation Capacity (Mbbbls / d)	405	Ba	405	Ba
Factor 2 : Business Profile (25%)				
a) Business Profile	Baa	Baa	Baa	Baa
Factor 3 : Profitability and Efficiency (10%)				
a) EBIT / Average Book Capitalization	6.3%	Ba	10.0%	Ba
b) Downstream EBIT / Total Throughput Barrels (\$ / bbl)	-\$3.2	Ca	\$0.4	Caa
Factor 4 : Leverage and Coverage (25%)				
a) EBIT / Interest Expense	2.4x	Ba	3.1x	Ba
b) RCF / Net Debt	7.2%	B	35.2%	A
c) Total Debt / Book Capitalization	47.6%	Baa	46.6%	Baa
Factor 5 : Financial Policy (20%)				
a) Financial Policy	Ba	Ba	Ba	Ba
Rating:				
Scorecard-Indicated Outcome from Factors 1-5		Ba1		Baa3
Notching Factor: Government Policy Framework		2		2
a) Scorecard-Indicated Outcome After Notching Factor		Ba3		Ba2
b) Actual rating assigned		Baa3		Baa3
Government-Related Issuer	Factor			
a) Baseline Credit Assessment	ba1			
b) Government Local Currency Rating	Baa2			
c) Default Dependence	Moderate			
d) Support	Moderate			
e) Actual Rating Assigned	Baa3			

All ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Moody's forward view does not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Source: Moody's Financial Metrics™

Ratings

Exhibit 10

<u>Category</u>	<u>Moody's Rating</u>
ECOPETROL S.A.	
Outlook	Stable
Issuer Rating - Dom Curr	Baa3
Senior Unsecured	Baa3
OLEODUCTO CENTRAL S.A.	
Outlook	Stable
Senior Unsecured	Baa3

Source: Moody's Investors Service

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