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8. Financial Statements

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Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Ecopetrol S.A.

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of financial position of Ecopetrol S.A. (the Company) as of December 31, 2022 and 2021, the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedules listed in exhibits 1 and 2 (collectively referred to as the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated March 29, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

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Description of the Matter

Estimation of fair value amount of long-lived assets in the Cartagena refinery

As described in notes 4.13 and 18.2 of the consolidated financial statements, management assesses, at each reporting date, whether there is an indication that long-lived assets may be impaired. If any indication exists, or when annual impairment testing for a Cash Generating Unit (CGU) is required, management estimates the CGU's recoverable amount. A CGU's recoverable amount is the higher of a CGU's fair value less costs of disposal and its value in use. When the carrying amount of a CGU exceeds its recoverable amount, the CGU is considered impaired and is written down to its recoverable amount. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the CGU's recoverable amount since the last impairment loss was recognized. In 2022, the Company recognized a reversal of impairment loss in the Cartagena refinery (the CGU) of COP \$1,107,101.

Auditing management's estimate related to the determination of the CGU's recoverable amount was complex and required the involvement of specialists due to the highly judgmental nature of the assumptions used in the model for estimating the CGU's recoverable amount. In particular, the estimation to determine the recoverable amount was sensitive to significant assumptions, such as changes in the discount rate (weighted average cost of capital) and refining margins, which are affected by expectations about future market or economic conditions such as the sales prices of refined products and crude oil purchase prices.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to determine the recoverable amount of the CGU, including controls over management's review of the methodology used to development such estimates, the projected financial information and the significant assumptions described above.

Our audit procedures included, among others, assessing the methodology used and testing the significant assumptions described above, as well as the underlying data used by the Company by comparing the significant assumptions used by management to current industry and economic trends.

Additionally, we assessed the reasonableness of the Company's projections by comparing them to actual results and comparable trends of the industry, and also tested the clerical accuracy of such projections. We also involved our specialists to assist us in the assessment of the discount rate (weighted average cost of capital), forward prices for oil and refined products, and projected financial information used in management's estimate.

Furthermore, we evaluated the related disclosures in the consolidated financial statements.

The impact of the estimation of oil and gas reserves in the determination of depreciation, depletion and amortization and impairment of long-lived assets



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Description of the Matter

As described in notes 3.1 and 3.2 to the consolidated financial statements, the oil and gas reserves estimates used in the calculation of depreciation, depletion and amortization (DD&A), and in the determination of future cash flows used in the impairment analyses of long-lived assets. The risk is the inappropriate recognition of reserves that impacts these accounting estimates.

The estimation of oil and gas reserves used to calculate the DD&A and perform the impairment analyses is a complex process and requires professional judgement. Management uses specialized firms (hereinafter “specialists”) when estimating the reserves, which are determined based on engineering assumptions and methods, contractual arrangements, and economic factors. Estimates of oil and gas reserves depend upon a number of variable factors and key assumptions, including: historical production, contractual arrangements, operating and capital costs to be incurred, oil and gas prices, among others.

Auditing these accounting estimates was complex, because of the inherent technical engineering nature of the reserves estimation process, which requires the use of specialists in the performance of the assessment, including in the determining the reasonableness of management’s key assumptions previously identified.

*How We Addressed the
Matter in Our Audit*

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company’s process to calculate the DD&A and to perform its impairment analyses, including management’s controls over the completeness and the accuracy of the financial data provided to the specialists for use in estimating oil and gas reserves used to develop such estimates.

To evaluate the estimated quantity of oil and gas reserves used in the calculation of DD&A (proved reserves) and impairment, we obtained the reports from external specialists hired by management and evaluated the competency and objectivity of the external specialists and management’s qualified persons responsible for overseeing the preparation of the reserve estimates by the specialists through the consideration of their professional qualifications, experience and their use of accepted industry practices.

In addition, we evaluated the completeness and accuracy of the financial data and inputs described above, which were used by the specialists in estimating oil and gas reserves by agreeing them to the cash flows used in impairment analyses and the final reserves balance used to the DD&A estimation. For reserves, verifying that reserve movements were in compliance with SEC regulations; evaluating management’s estimation of the point at which the operating cash flow from a project becomes negative (the economic limit); evaluating the completeness and accuracy of the inputs used by management in estimating the oil and gas reserves by agreeing the inputs to source documentation; performing back-testing of historical data to identify indications of estimation bias over time. We also tested the mathematical accuracy of the DD&A computations and reviewed the model of impairment analyses of long-lived assets by assessing the consistency between the estimation of oil and gas reserves prepared by the specialists with volumes of reserves included in the projected financial information, among other procedures.

Additionally, we evaluated the related disclosures in the consolidated financial statements.

Ernst & Young Audit S.A.S.
We have served as the Company’s auditor since 2016.
Bogotá, Colombia
March 29, 2023



Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Ecopetrol S.A.

Opinion on Internal Control over Financial Reporting

We have audited Ecopetrol S.A.'s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). In our opinion, Ecopetrol S.A. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated statements of financial position of the Company as of December 31, 2022 and 2021, the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedules listed in exhibits 1 and 2 and our report dated March 29, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Bogotá, Colombia
March 29, 2023

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Ecopetrol S.A.

Consolidated statement of financial position
(In millions of Colombian pesos)

	Note	As of December 31,	
		2022	2021
Assets			
Current assets			
Cash and cash equivalents	6	15,401,058	14,549,906
Trade and other receivables	7	39,224,999	18,448,882
Inventories	8	11,880,034	8,398,212
Other financial assets	9	1,162,127	1,627,150
Current tax assets	10	6,784,392	6,273,802
Other assets	11	2,778,480	2,333,091
		<u>77,231,090</u>	<u>51,631,043</u>
Assets held for sale		45,755	64,704
Total current assets		<u>77,276,845</u>	<u>51,695,747</u>
Non-current assets			
Trade and other receivables	7	32,155,205	24,159,716
Other financial assets	9	1,563,744	1,307,584
Investment in associates and joint ventures	13	9,496,600	8,357,186
Property, plant, and equipment	14	100,997,498	90,076,526
Natural and environmental resources	15	42,323,610	35,909,844
Right-of-use assets	16	627,813	496,678
Intangible assets	17	18,146,605	15,508,516
Non-current tax assets	10	13,401,050	9,030,132
Goodwill	19	5,350,114	4,686,324
Other assets	11	1,453,347	1,198,363
		<u>225,515,586</u>	<u>190,730,869</u>
Total non-current assets		<u>225,515,586</u>	<u>190,730,869</u>
Total assets		<u>302,792,431</u>	<u>242,426,616</u>
Liabilities			
Current liabilities			
Loans and borrowings	20	22,198,583	9,206,283
Trade and other payables	21	19,937,704	13,568,231
Provisions for employee benefits	22	2,753,697	2,296,253
Current tax liabilities	10	7,630,901	2,152,104
Accrued liabilities and provisions	23	1,533,136	1,590,118
Other liabilities		2,728,317	1,409,534
		<u>56,782,338</u>	<u>30,222,523</u>
Liabilities related to non-current assets held for sale			25,208
Total current liabilities		<u>56,782,338</u>	<u>30,247,731</u>
Non-current liabilities			
Loans and borrowings	20	92,936,256	85,854,645
Trade and other payables	21	57,056	70,607
Provisions for employee benefits	22	10,211,542	9,082,792
Non-current tax liabilities	10	15,275,644	12,124,520
Accrued liabilities and provisions	23	11,223,358	12,642,089
Other liabilities		2,403,148	1,819,460
		<u>132,107,004</u>	<u>121,594,113</u>
Total non-current liabilities		<u>132,107,004</u>	<u>121,594,113</u>
Total liabilities		<u>188,889,342</u>	<u>151,842,844</u>
Equity			
Subscribed and paid in capital	24.1	25,040,067	25,040,067
Additional paid in capital	24.2	6,607,699	6,607,699
Reserves	24.3	8,898,633	10,624,229
Other comprehensive income	24.5	15,796,719	11,357,894
Retained earnings		29,811,809	14,859,658
		<u>86,154,927</u>	<u>68,489,547</u>
Equity attributable to owners of parent		<u>86,154,927</u>	<u>68,489,547</u>
Non-controlling interest		27,748,162	22,094,225
Total equity		<u>113,903,089</u>	<u>90,583,772</u>
Total liabilities and equity		<u>302,792,431</u>	<u>242,426,616</u>

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Ecopetrol S.A.

Consolidated statement of profit or loss

(In millions of Colombian pesos, except for basic and diluted earnings per share, which are expressed in Colombian pesos)

	Note	For the years ended December 31,		
		2022	2021	2020
Sales revenue	25	159,611,078	91,881,204	50,223,393
Cost of sales	26	(89,458,148)	(55,581,776)	(37,567,472)
Gross profit		70,152,930	36,299,428	12,655,921
Administrative expenses	27	(4,335,695)	(3,342,069)	(3,373,150)
Operations and project expenses	27	(4,743,628)	(3,153,557)	(2,586,016)
Impairment of non-current assets	18	(287,999)	(33,351)	(633,156)
Other operating (expenses) income	28	(555,855)	(72,744)	1,118,166
Operating income		60,229,753	29,697,707	7,181,765
Financial results	29			
Finance income		1,317,145	403,592	1,101,430
Finance expenses		(8,027,252)	(4,431,648)	(3,929,791)
Foreign exchange (loss) gain		(124,650)	330,002	346,774
		(6,834,757)	(3,698,054)	(2,481,587)
Share of profits of associates and joint ventures	13	768,422	426,164	76,336
Profit before income tax expense		54,163,418	26,425,817	4,776,514
Income tax expense	10	(18,963,938)	(8,795,263)	(2,038,661)
Net profit for the year		35,199,480	17,630,554	2,737,853
Net profit attributable to:				
Owners of parent		31,604,781	15,649,143	1,586,677
Non-controlling interest		3,594,699	1,981,411	1,151,176
		35,199,480	17,630,554	2,737,853
Basic and diluted earnings per share	24.6	768.7	380.60	38.59

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Ecopetrol S.A.

Consolidated statement of comprehensive income

(In millions of Colombian pesos)

	Note	For the years ended December 31,		
		2022	2021	2020
Net profit for the year		35,199,480	17,630,554	2,737,853
Other comprehensive income				
Other comprehensive income that may be reclassified to profit or loss in subsequent periods -net of taxes:				
Unrealized (loss) gain on hedges:				
Cash flow hedge for future exports	30.3	(1,528,749)	(808,777)	(722)
Hedge of a net investment in a foreign operation	30.4	(4,987,735)	(2,871,410)	(364,343)
Cash flow hedge with derivative instruments		117,913	(135,666)	55,072
Financial instruments measured at fair value		829	830	406
Foreign currency translation		15,960,722	5,970,719	1,569,590
Sale of joint ventures	29	—	(361,728)	—
		9,562,980	1,793,968	1,260,003
Other comprehensive income that will not to be reclassified to profit or loss in subsequent periods -net of taxes:				
Remeasurement (loss) gain on defined benefit plans	22.1	(668,254)	1,777,157	96,221
		(668,254)	1,777,157	96,221
Other comprehensive income for the year, net of tax		8,894,726	3,571,125	1,356,224
Total comprehensive income for the year, net of tax		44,094,206	21,201,679	4,094,077
Comprehensive income attributable to:				
Owners of parent		36,043,606	19,059,975	2,887,080
Non-controlling interest		8,050,600	2,141,704	1,206,997
		44,094,206	21,201,679	4,094,077

Ecopetrol S.A.

Consolidated statement of changes in equity

(In millions of Colombian pesos)

Note	Attributable to owners of parent					Non-controlling interest	Total equity	
	Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings			
Balance as of January 1, 2022	25,040,067	6,607,699	10,624,229	11,357,894	14,859,658	68,489,547	22,094,225	90,583,772
Adoption of new standards	—	—	—	—	42,054	—	—	42,054
Balance as of January 1, 2022, after adoption	25,040,067	6,607,699	10,624,229	11,357,894	14,901,712	68,531,601	22,094,225	90,625,826
Net profit	—	—	—	—	31,604,781	31,604,781	3,594,699	35,199,480
Release of reserves	24.3	—	(5,886,441)	—	5,886,441	—	—	—
Dividends declared	24.4	—	(6,907,605)	—	(11,512,675)	(18,420,280)	(2,073,000)	(20,493,280)
Business combination	12	—	—	—	—	—	(238,839)	(238,839)
Equity restitution	—	—	—	—	—	—	(84,824)	(84,824)
<u>Appropriation of reserves, net:</u>								
Legal	24.3	—	1,669,468	—	(1,669,468)	—	—	—
Fiscal and statutory reserves	24.3	—	509,082	—	(509,082)	—	—	—
Occasional	24.3	—	8,889,900	—	(8,889,900)	—	—	—
<u>Other comprehensive income:</u>								
(Loss) gain on hedging instruments:								
Cash flow hedge for future exports	—	—	—	(1,528,749)	—	(1,528,749)	—	(1,528,749)
Hedge of a net investment in a foreign operation	—	—	—	(4,854,805)	—	(4,854,805)	(132,930)	(4,987,735)
Cash flow hedge with derivative instruments	—	—	—	62,792	—	62,792	55,121	117,913
Financial instruments measured at fair value	—	—	—	942	—	942	(113)	829
Foreign currency translation	—	—	—	11,572,728	—	11,572,728	4,387,994	15,960,720
Remeasurement loss on defined benefit plans	—	—	—	(814,083)	—	(814,083)	145,829	(668,254)
Balance as of December 31, 2022	25,040,067	6,607,699	8,898,633	15,796,719	29,811,809	86,154,927	27,748,162	113,903,089

Note	Attributable to owners of parent					Non-controlling interest	Total equity	
	Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings			
Balance as of December 31, 2020	25,040,067	6,607,699	9,635,136	7,947,062	669,900	49,899,864	3,599,499	53,499,363
Net profit	—	—	—	—	15,649,143	15,649,143	1,981,411	17,630,554
Release of reserves	24.3	—	(5,066,156)	—	5,066,156	—	—	—
Dividends declared	24.4	—	—	—	(698,984)	(698,984)	(2,008,840)	(2,707,824)
Business combination	12	—	—	—	—	—	18,973,080	18,973,080
Change in participation in subsidiaries	—	—	—	—	228,692	228,692	(596,394)	(367,702)
Equity restitution	—	—	—	—	—	—	(14,824)	(14,824)
<u>Appropriation of reserves, net:</u>								
Legal	24.3	—	168,808	—	(168,808)	—	—	—
Fiscal and statutory reserves	24.3	—	509,082	—	(509,082)	—	—	—
Occasional	24.3	—	5,377,359	—	(5,377,359)	—	—	—
<u>Other comprehensive income:</u>								
(Loss) gain on hedging instruments:								
Cash flow hedge for future exports	—	—	—	(808,777)	—	(808,777)	—	(808,777)
Hedge of a net investment in a foreign operation	—	—	—	(2,869,539)	—	(2,869,539)	(1,871)	(2,871,410)
Cash flow hedge with derivative instruments	—	—	—	(105,048)	—	(105,048)	(30,618)	(135,666)
Financial instruments measured at fair value	—	—	—	431	—	431	399	830
Foreign currency translation	—	—	—	5,811,782	—	5,811,782	158,937	5,970,719
Sale of joint ventures	29	—	—	(361,728)	—	(361,728)	—	(361,728)
Remeasurement gains on defined benefit plans	—	—	—	1,743,711	—	1,743,711	33,446	1,777,157
Balance as of December 31, 2021	25,040,067	6,607,699	10,624,229	11,357,894	14,859,658	68,489,547	22,094,225	90,583,772

Ecopetrol S.A.

Consolidated statement of changes in equity

(In millions of Colombian pesos)

Note	Attributable to owners of parent					Non-controlling interest	Total equity	
	Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings			
Balance as of December 31, 2019	25,040,067	6,607,699	3,784,658	6,646,660	12,334,706	54,413,790	3,817,838	58,231,628
Net profit	—	—	—	—	1,586,677	1,586,677	1,151,176	2,737,853
Release of reserves	—	—	(540,826)	—	540,826	—	—	—
Dividends declared	24.3	—	—	—	(7,401,005)	(7,401,005)	(1,425,586)	(8,826,591)
Change in participation in subsidiaries	—	—	—	—	—	—	249	249
<u>Appropriation of reserves, net:</u>								
Legal	—	—	1,325,148	—	(1,325,148)	—	—	—
Fiscal and statutory reserves	—	—	509,082	—	(509,082)	—	—	—
Occasional	—	—	4,557,074	—	(4,557,074)	—	—	—
<u>Other comprehensive income:</u>								
(Loss) gain on hedging instruments:								
Cash flow hedge for future exports	—	—	—	(722)	—	(722)	—	(722)
Hedge of a net investment in a foreign operation	—	—	—	(364,343)	—	(364,343)	—	(364,343)
Cash flow hedge with derivative Instruments	—	—	—	40,443	—	40,443	14,629	55,072
Financial instruments measured at fair value	—	—	—	211	—	211	195	406
Foreign currency translation	—	—	—	1,528,592	—	1,528,592	40,998	1,569,590
Remeasurement gains on defined benefit plans	—	—	—	96,221	—	96,221	—	96,221
Balance as of December 31, 2020	25,040,067	6,607,699	9,635,136	7,947,062	669,900	49,899,864	3,599,499	53,499,363

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Consolidated statement of cash flows

(In millions of Colombian pesos)

	Note	For the years ended December 31,		
		2022	2021	2020
Cash flow in operating activities:				
Net profit for the period		35,199,480	17,630,554	2,737,853
Adjustments to reconcile the net profit to net cash provided by operating activities:				
Income tax expense	10	18,963,938	8,795,263	2,038,661
Depreciation, depletion, and amortization	14,15,16,17	12,128,991	10,159,922	9,324,538
Loss (gain) foreign exchange, net	29	124,650	31,726	(346,774)
Realization of other comprehensive income from the sale of a joint venture	29	—	(361,728)	—
Finance cost of loans and borrowings	29	5,517,417	3,095,224	2,384,342
Finance cost of post-employment benefits and abandonment costs	29	2,003,687	1,043,728	872,987
Write off of exploratory assets and dry wells	15	1,032,164	486,408	448,132
Loss on disposal of non-current assets		379,985	61,846	246,317
Gain on revaluation of assets in Guajira association	28	—	—	(1,284,372)
Gain on acquisition of participations and interests	28	—	—	(86,026)
Gain on loss of control	28	—	—	(65,695)
Impairment loss of current assets	28	101,871	83,773	34,416
Impairment loss of non-current assets	18	287,999	33,351	633,156
Gain on fair value adjustment of financial assets		(77,082)	(7,431)	(43,948)
Loss on hedging transactions with derivatives		(553)	19,485	—
Share of profit of associates and joint ventures	13	(768,422)	(426,164)	(76,336)
Net gain on the sale of assets held for sale		(279,635)	(3,840)	(5,635)
Hedge ineffectiveness	30.3	6,625	24,496	9,779
Realized loss on foreign exchange cash flow hedges	25	1,143,287	249,978	193,374
Movements in provisions	23	715,831	714,839	412,609
Net change in operational assets and liabilities:				
Trade and other receivables		(28,471,881)	(9,457,451)	678,349
Inventories		(2,831,729)	(2,980,134)	716,077
Trade and other payables		3,690,068	3,117,982	(2,550,411)
Tax assets and liabilities		(3,100,744)	(2,448,882)	(1,256,889)
Provisions for employee benefits		(355,645)	(222,356)	465,062
Provisions and contingencies		(1,004,167)	(878,576)	(442,794)
Other assets and liabilities		589,729	(523,090)	(392,843)
		44,995,864	28,238,923	14,643,929
Income tax paid		(8,761,294)	(5,702,902)	(5,457,225)
Net cash provided by operating activities		36,234,570	22,536,021	9,186,704
Cash flow in investing activities:				
Investment in joint ventures	13	(329,377)	(44,735)	—
Acquisition of subsidiaries, net of acquired cash		—	(8,951,587)	—
Investment in property, plant, and equipment	14	(8,767,716)	(6,117,588)	(5,032,317)
Investment in natural and environmental resources	15	(11,962,544)	(6,733,028)	(5,994,462)
Acquisitions of intangibles	17	(1,147,510)	(444,346)	(90,082)
Proceeds from sales of other financial assets		1,301,394	1,282,903	2,107,856
Interests received	29	965,952	266,116	299,246
Dividends received	13	1,471,134	206,048	157,241
Proceeds from sales of non-current assets		373,634	17,986	23,713
Net cash used in investment activities		(18,095,033)	(20,518,231)	(8,528,805)
Cash flow in financing activities:				
Proceeds from borrowings	20.1	16,844,029	24,666,792	13,805,403
Repayment of borrowings	20.1	(16,409,494)	(11,267,540)	(5,003,885)
Interest payments		(5,492,251)	(3,333,555)	(2,345,683)
Lease payments	16	(434,555)	(336,030)	(350,539)
Payment of restitution of equity to minority shareholders		(84,824)	—	—
Dividends paid	24.4	(13,356,947)	(2,771,287)	(8,734,351)
Net cash (used) provided in financing activities		(18,934,042)	6,958,380	(2,629,055)
Exchange difference in cash and cash equivalents		1,645,657	491,428	(22,294)
Net increase (decrease) in cash and cash equivalents		851,152	9,467,598	(1,993,450)
Cash and cash equivalents at the beginning of the year		14,549,906	5,082,308	7,075,758
Cash and cash equivalent at the end of the year	6	15,401,058	14,549,906	5,082,308

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1. Reporting entity

Ecopetrol S.A. is a mixed economy company, with a commercial nature, formed in 1948 in Bogotá – Colombia, headquarters of the Ecopetrol Business Group (collectively called “Ecopetrol Business Group”); which is engaged in commercial and industrial activities related to the exploration, exploitation, refining, transportation, storage, distribution and marketing of hydrocarbons, their derivatives and products, as well as the electric power transmission services, design, development, construction, operation and maintenance of road and energy infrastructure projects and the provision of information technology and telecommunications services.

An 11.51% of Ecopetrol S.A.’s shares are publicly traded on the Stock Exchanges of Colombia and New York, USA. The remaining shares (88.49% of the total outstanding shares) are owned by the Colombian Ministry of Finance and Public Credit.

The address of the main office of Ecopetrol S.A. is Bogotá – Colombia, Carrera 13 No. 36 – 24.

2. Basis for preparation

2.1 Statement of compliance and authorization of financial statements

The consolidated financial statements of Ecopetrol and its subsidiaries as of December 31, 2022, and 2021 and for each of the three years in the period ended December 31, 2022, have been prepared in accordance with International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (IASB).

Accounting policies have been applied consistently in all years presented.

These consolidated financial statements were approved and authorized for issuance by the Board of Directors of Ecopetrol on March 29, 2023.

2.2 Reclassifications

For presentation purposes, the Ecopetrol Business Group reclassified some items in the comparative figures as of December 31, 2021 and 2020. They had no impact on the items of the statement of financial position, profits and losses, comprehensive income, changes in equity, or cash flows. The reclassifications are presented in notes 10 – Taxes and 24.5 - Other comprehensive income attributable to owners of parent.

2.3 Basis for consolidation

The consolidated financial statements were prepared by consolidating all companies set out in Exhibits 1 and 2, which are those over which Ecopetrol exercises direct or indirect control. Control is achieved when the Ecopetrol Business Group:

- has power over the investee (including rights to manage relevant activities);
- is exposed, or has the rights, to variable returns from its involvement with the investee; and
- has the ability to use its power to affect its operational returns. This instance occurs when the Ecopetrol Business Group has less than a majority of the voting rights of an investee, and it still has the power over the investee to provide it with the practical ability to direct the relevant activities of the investee unilaterally. The Ecopetrol Business Group considers all relevant facts and circumstances in assessing whether or not the Company’s voting rights in an investee are sufficient or not to give it power, including:
 - a) the percentage of the Ecopetrol Business Group’s voting rights relative to the size and apportionment of the shares of other vote holders;
 - b) potential voting rights held by the Ecopetrol Business Group, other vote holders or other parties;
 - c) rights arising from other contractual arrangements; and

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- d) any additional facts and circumstances that indicate that the Ecopetrol Business Group has, or does not have, the current ability to direct the relevant activities, at the time that decisions need to be made, including voting patterns at previous shareholders' meetings.

Subsidiaries are consolidated from the date on which control is obtained until the date that such control ceases.

All intercompany assets and liabilities, equity, income, expenses, and cash flows relating to transactions between entities of the Ecopetrol Business Group were eliminated on consolidation. Unrealized losses are also eliminated. Non-controlling interest represents the proportion of profit, other comprehensive income and net assets in subsidiaries that are not attributable to Ecopetrol shareholders.

The consolidated financial statements as of December 31, 2022, were prepared on the basis that the Ecopetrol Business Group will continue to operate as a going concern bases.

Significant changes in consolidation:

2022

Ecopetrol US Trading LLC

In November 2022, the indirect subsidiary Ecopetrol US Trading LLC was incorporated. This company is domiciled in Delaware, United States of America, its main corporate purpose is the international commercialization of refined, petrochemical, crude oil, and natural gas of Ecopetrol Business Group and third parties. Ecopetrol US Trading LLC is a direct subsidiary of Ecopetrol USA Inc.

Gasoducto de Oriente S.A.

On July 12, 2022, the liquidation of the Gasoducto de Oriente S.A. took place in the Chamber of Commerce of Bogotá. It was a subsidiary of Inversiones de Gases de Colombia S.A.

Conexión Kimal Lo Aguirre

In July 2022, ISA Inversiones Chile incorporated the Joint Venture Conexión Kimal Lo Aguirre, together with Transelec and China Southern Power Grid International (CSG) as shareholders. This company will build and operate the Kimal-Lo Aguirre project in Chile awarded in 2021.

2021

Acquisition of Interconexión Eléctrica S.A. E.S.P.

On August 20, 2021, the Ecopetrol acquired control of Interconexión Eléctrica S.A. E.S.P. (ISA), thus obtaining control of the company. See Note 12 – Business combinations.

ISA is a Multi-Latin business group with operations in the electric power transmission, toll roads concessions, and telecommunications businesses, through 50 subsidiaries, 11 joint ventures and 1 associate, in 6 countries in South and Central America. See the subsidiaries in Exhibit 1.

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New companies in Singapore

On July, 2021, the subsidiaries Ecopetrol Singapore Pte. Ltd. and Ecopetrol Trading Asia Pte Ltd. were incorporated in Singapore. Ecopetrol Singapore Pte. Ltd. owns 100% of the share capital of Ecopetrol Trading Asia Pte Ltd., whose main purpose is the international commercialization of crude and refined products of the Company to clients in Asia. Both companies are domiciled in Singapore.

2020

ECP Oil and Gas Germany GmbH

December 11, 2022, the subsidiary ECP Oil and Gas Germany GmbH completed its liquidation.

Bioenergy S.A.S and Bioenergy Zona Franca S.A.S.

On June 24, 2020, the Superintendence of Companies issued the liquidation orders decreeing on the termination of the reorganization process and the opening of the judicial liquidation process of Bioenergy S.A.S and Bioenergy Zona Franca S.A.S. The latter process will be carried out according to the law on business insolvency – Act 1116/2006, and under the direction of the aforementioned Superintendence. Consequently, as of this date Ecopetrol Business Group lost control over these companies and have not been consolidated since then. As a result, reduction of net assets was recognized due to the loss of control with a gain on the results of the Business Group for \$65,570.

2.4 Basis of measurement

The consolidated financial statements have been prepared on a historical cost basis, except for financial assets and liabilities that are measured at fair value through profit or loss and/or changes in other comprehensive income at the end of each reporting period, as explained in the accounting policies included below.

Historical cost is generally based on the fair value of the consideration given in exchange for goods and services.

The fair value is the price that would be received from selling an asset or that would be paid for transferring a liability among market participants, in an orderly transaction, on the date of measurement. When estimating the fair value, the Ecopetrol Business Group uses assumptions that market participants would use for pricing an asset or liability at current market conditions, including risk assumptions, which maximize the value (highest and best use) of the asset or liability.

2.5 Functional and presentation currency

The consolidated financial statements are presented in Colombian Pesos, which is the Ecopetrol's functional currency. For each Ecopetrol Business Group entity, its functional currency is determined based of the main economic environment where it operates.

The statements of profit or loss, and cash flows of subsidiaries with functional currencies different from Ecopetrol's functional currency are translated at the exchange rates on the dates of the transaction or based on the monthly average exchange rate. Assets and liabilities are translated at the closing exchange rate, and other equity items are translated at exchange rates at the time of the transaction. All resulting exchange differences are recognized in other comprehensive income. On disposal of all or significant part of a foreign operation, the cumulative translation adjustment related to the foreign operation is reclassified to profit or loss.

The consolidated financial statements are presented in Colombian pesos rounded up to the closest million unit (COP\$ 000,000) except when otherwise indicated.

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2.6 Foreign currency

Transactions in foreign currencies are initially recorded by the Ecopetrol Business Group's entities at their respective functional currency spot rates at the transactions date. Monetary items denominated in foreign currencies are translated at the functional currency spot rates prevailing at the reporting date. Differences arising on settlement, or translation, or monetary items are recognized in profit or loss, in financial results, net, except those resulting from the conversion of loans and borrowings designated as cash flow hedges or net investment in a foreign operation hedge, which are recognized in other comprehensive income within equity. When the hedged item affects the financial results, exchange differences accumulated in equity are reclassified to profit or loss as part of operating results.

Non-monetary items measured at fair value that are denominated in a foreign currency are translated using the exchange rates prevailing on the date when the fair value is determined. The gain or loss arising on translation of non-monetary items measured at fair value is treated in line with the recognition of the gain or loss on the change in fair value of the item.

2.7 Classification of assets and liabilities as current and non-current

The Ecopetrol Business Group presents assets and liabilities in the consolidated statement of financial position based on whether assets are classified as current or non-current.

An asset or liability is classified as current when:

- It is expected to be realized or intended to be sold or consumed (or expected to be settled, in the case of liabilities) in the ordinary course of business;
- Held mainly for the purpose of trading;
- Expected to be realized (or to be settled, in the case of liabilities) within twelve months after the reporting period; or
- In the case of the assets, it is cash or a cash equivalent, unless the exchange of such asset or liability is restricted or to be used to settle a liability at least twelve months after the reporting period; or
- In the case of a liability, there is no unconditional right to defer settlement of the liability until at least twelve months after the reporting period.

Other assets and liabilities are classified as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities.

2.8 Earnings per share

Basic earnings per share is calculated by dividing the profit for the year attributable to equity holders of Ecopetrol, the parent company, by the weighted average number of ordinary shares outstanding during the year. There is no potential dilution of shares.

2.9 Conflict between Russia and Ukraine

On February 24, 2022, Russia launched its military invasion of Ukraine, with strong ramifications for global crude and oil product supply and a surge in prices. Brent crude average prices surged from USD 70.9/Bbl in 2021 to USD 99.0/Bbl in 2022, peaking at USD 128.0/Bbl in early March 2022.

The increase in prices has had both positive and negative impacts on the Business Group. On one hand, the rise in the average price of ICE Brent has increased revenues from the sale of our crudes, and higher prices of diesel, gasoline, jet fuel, and other refined products have been favorable for the 2022 financial results of Cartagena and Barrancabermeja refineries. However, the increase in prices has also had a negative effect for the Business Group, including the weakening of the Group's crude oil differential versus Brent.

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To mitigate this, Ecopetrol Business Group has worked in improving the positioning of its crude oil and diversifying the destination markets. In addition, the high prices have affected the Business Group purchases of crude oil and products, which are used as inputs and raw materials for production processes as well as to meet the growing national demand for fuels. Lastly, higher energy costs, coupled with the international logistics crisis, have generated pressures on the operating costs and project execution timelines. Ecopetrol Business Group maintains a close and constant monitoring of various Russia-Ukraine related factors that could impact the financial performance. These factors include the ongoing conflict, interruptions in the export of Russian energy due to sanctions, disruptions in supply chain, price volatility and others. In addition, we continue monitoring the potential changes in demand, geopolitical risks, and regulatory changes that could affect the operations.

2.10 Considerations on climate change and energy transition

2.10.1 Strategic aspects of Ecopetrol Business Group

On February 8, 2022, Ecopetrol communicated to the market its 2040 long-term strategy, called “Energy that Transforms”, which comprehensively responds to current environmental, social and governance challenges, maintaining the focus on generating sustainable value for all your interest groups. Its objective is to consolidate an agile and dynamic organization that adapts in a timely manner to the changes facing the energy industry, the challenges of a world that advances in the generation and use of clean energy, traveling a path of opportunities for growth and leadership in the Americas.

“Energy that Transforms” positions Ecopetrol Business Group as an integrated energy Group, which participates in all the links of the hydrocarbon chain and in linear infrastructure, both in energy transmission and road concessions, and hopes to continue diversifying into businesses that allow it to continue to reduce its carbon footprint and advance in meeting its goal of being a company with zero net carbon emissions by 2050 (scopes 1 and 2). The strategy is supported by four strategic pillars: (i) Grow with the Energy Transition, (ii) Generate Value with Sustainability, (iii) Cutting-Edge Knowledge and (iv) Competitive Returns.

Within the first three pillars described in the strategy, the following actions associated with the energy transition and climate change were included:

1. Grow with the energy transition

On average, between USD \$5,200 and USD \$6,000 million will be invested annually by 2040. Between 2022 and 2024, organic investments will range between USD \$17,000 and USD \$20,000 million. In line with international best practices, the valuations of these investments in exploration and production projects incorporate a cost of greenhouse gas emissions under the internal CO₂ price methodology, with a price curve that starts at \$20 USD/ TonCO_{2e} today and amounts to \$40 USD/TonCO_{2e} from 2030.

Gas, as a fundamental source of energy in the energy transition, the 2022-2024 Plan includes investments in projects for more than USD \$1,800 million. In the long term, it is expected to grow in its own production, seek new marketing options and venture into regasification and storage.

Investments will be made for USD \$2,600 million (15% of the total investments of the Business Group), mainly concentrated in Brazil (42%) and Colombia (25%), in addition to Peru and Chile. In this way, the continuity of ISA's 2030 Strategic Plan is guaranteed. This is how diversification towards low-emission businesses in the long term contemplates: (i) between 2019 (base year) and 2030, investment of USD \$8.3 billion in current businesses and geographies and USD \$2.2 billion in new geographies and (ii) achieving a participation of non-conventional renewable energies between 25% and 40% in the self-generation matrix by 2040.

The foregoing will be supported by, in addition to ISA, the gradual foray into emerging businesses aligned with new global trends, such as the production of low-carbon hydrogen as an energy source, the capture, use and storage of (CCUS) and Natural Climate Solutions (NCS), to mitigate the effects of climate change. Over the next three years, more than USD \$200 million will be invested in green hydrogen projects in the Cartagena and Barrancabermeja refineries, and in CO₂ capture projects through emerging technologies such as CCUS and SNC projects.

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2. Generate value with sosTECnibilidad (sustainability + technology)

The 2022 - 2024 Plan (without ISA) includes investments of more than USD \$1,400 million in projects for circular water management, decarbonization, energy efficiency, use of energy and alternative sources, improvement in the quality of fuels, and studies and pilots of green and blue hydrogen for applications in refineries and mobility.

In this sense, the Plan has a clear focus on supporting the energy transition strategy, including the incorporation of renewable energy sources for self-consumption, taking advantage of wind, solar and geothermal energy technologies, strengthening socio-environmental investment programs, deepening digital transformation and acceleration of the development and implementation of technologies to optimize operations throughout the chain.

On the other hand, the long-term objectives include for environmental matters, achieve (i) a 25% reduction in GHG emissions by 2030 compared to 2019 (scopes 1 and 2), (ii) zero emissions CO₂ equivalent emissions by 2050 (scopes 1 and 2), (iii) zero routine flaring by 2030, (vi) water neutral by 2045 (zero discharges, 66% reduction in water collection and offsetting 34% of residual water consumption). In terms of social component, it is expected to promote the generation of about 230,000 new non-oil jobs by 2040 and contribute to the education of 2 million young colombians. As a sign of this commitment, Ecopetrol Business Group will seek to continue improving its position among public companies globally within the Dow Jones Sustainability Index.

3. Cutting edge knowledge

This pillar seeks to develop the necessary capacities for sosTECnibilidad (sustainability + technology), through a comprehensive science, technology, and innovation (CT+i) strategy to contribute to diversification, increase clean energy, decarbonize operations, and enhance human talent.

As part of the goals of the 2022-2024 Plan, more than USD \$240 million will be allocated to innovation, technology, and digital transformation projects, which include technologies for the management of produced water as a profitable and sustainable resource and a study for the capture of CO₂ in natural sinks.

2.10.2 General organic investment plan

In line with the Strategy, on December 9, 2022, Ecopetrol S.A. informed the market of the approval of the general organic investment plan for 2023, which includes the following relevant elements in terms of the energy transition and climate:

- Nearly 23% of the plan is aimed at cementing diversification into new low-emission businesses, which includes investments in hydrogen production, renewable energy, carbon capture, and electricity transmission, leveraging diversification at the Ecopetrol Business Group scale.
- The plan seeks to reduce about 400,000 tons of CO₂e emissions and incorporate about 900 MW of renewable energy and more than 50,000 tons of green hydrogen by 2025.
- The commitment to self-sufficiency in gas includes investments between COP \$3.6 billion and COP \$4.1 billion for exploration and production projects in the Piedemonte Llanero, the Continental Caribbean and Offshore. The plan aims the creation of, at least, two new regional energy communities and about 107,000 new gas-connected homes.
- Nearly COP \$5.4 trillion are allocated to the electricity transmission business with the objective of enabling more than 6,000 kilometers of new transmission lines for non-conventional renewable energies by 2025.
- In accordance with the sosTECnibilidad (sustainability + technology) objectives of the strategy, the plan includes investments close to COP \$2.3 trillion in decarbonization projects, integrated water management, and improvement of fuel quality, among others.
- Social investment resources for regional development and community well-being amount to COP \$472 billion focused on road infrastructure, education, and access to public services such as water and gas.

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- More than COP \$405 billion will be allocated to science, technology, and innovation projects, essential to leverage business development and catalyze advances in technologies for the energy transition.

3. Significant estimates and accounting judgments

The preparation of the consolidated financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of assets, liabilities, sales revenues, costs, and commitments recognized in the financial statements and the accompanying disclosures. The Ecopetrol Business Group based its assumptions and estimates on parameters available when these consolidated financial statements were prepared. Uncertainty about these assumptions and estimates could result in outcomes that required a material adjustment to the carrying amount of assets or liabilities affected in future periods. Changes in estimates are adjusted prospectively in the period in which the estimate is revised.

In the process of applying the Ecopetrol Business Group's accounting policies, management has made the following judgments and estimates which have the most significant impact on the amounts recognized in the consolidated financial statements:

3.1 Oil and gas reserves

Hydrocarbon reserves are estimates of the amounts of hydrocarbons that can be economically and legally extracted from the Ecopetrol Business Group's oil and gas properties.

The reserves estimation is performed annually as of December 31 in accordance with the United States Securities and Exchange Commission (SEC) definitions and rules set forth in Rule 4-10(a) of SEC Regulation S-X and the disclosure guidelines contained in the SEC final rule – Modernization of Oil and Gas Reporting.

As required by current regulations, the future estimated date on which a field will no longer produce for economic reasons, is based on actual costs and average of crude prices (calculated as the arithmetical average of prices on the first day of the past 12 months). The estimated date for end of production will affect the amounts of reserves, unless the prices have been defined by contractual agreements; therefore, if the prices and costs change from one year to the next, the proved reserves estimate also changes. Generally, our proved reserves decrease as prices go down and increase when prices go up.

Reserves estimation is an inherently complex process, and it involves professional judgments. Reserves estimation is prepared using geological, technical, and economic factothers, including projections of future production rates, oil prices, engineering data and duration and amounts of future investments, and they imply a certain degree of uncertainty. These estimations reflect the regulatory and market conditions existing on the date of reporting, which could significantly differ from other conditions during the year or in future periods.

Any changes in regulatory and/or market conditions and assumptions could materially affect the reserves estimation.

Impact of oil reserves and natural gas in depreciation and depletion

Changes to estimations for proven developed reserves may affect the carrying amounts of exploration and production assets, natural resources and environment, goodwill, liabilities for dismantling and depreciation, depletion, and amortization. With all other variables remaining unchanged, a decrease in estimated proven reserves would increase, prospectively, depreciation, depletion, and amortization costs, while an increase in reserves would reduce depreciation and amortization expenses, as depreciation, depletion and amortization charges are calculated using the units of production method.

Information about the carrying amounts of exploration and production assets and the amounts charged to income, including depreciation, depletion, and amortization, is presented in Notes 14 and 15.

3.2 Impairment (recovery) of non-current assets

Ecopetrol Business Group Management uses its professional judgment in assessing the existence of evidence of an impairment loss or reversal, based on internal and external factors.

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When an indicator of impairment loss or reversal of impairment of prior period impairment exists, the Ecopetrol Business Group estimates the recoverable amount of the cash generating units (CGU), which is considered the greater of fair value less costs of disposal and the value in use.

The assessments require the use of estimates and assumptions, such as, among other factors: (1) future investments, taxes, and costs; (2) useful life of assets; (3) future prices, (4) discount rate, which is reviewed annually, and is determined as the weighted average cost of capital (WACC), and (5) changes in regulation. Specifically, for crude oil and gas assets, the following are also included: (6) estimation of volumes and market value of oil and natural gas reserves and (7) production profiles of oil fields and future production of refined and chemical products. The recoverable amount is compared with the net book value of the asset, or of the cash-generating unit (CGU), thus determining whether the asset is impaired or if the impairment recognized in prior periods should be reversed.

A previously recognized impairment loss is reversed, only if there has been a change in the assumptions used to determine the assets or in the CGU's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of an asset or CGU, other than goodwill, does not exceed either its recoverable amount, or the carrying amount that would have been determined (net of amortization or depreciation) had no impairment loss been recognized for the asset or CGU in prior periods.

Future oil and refined products prices assumptions are estimated at current market conditions. For oil and gas asset, expected production volumes, which comprise proven, unproved, probable, and possible reserves are used for impairment testing because Management believes this to be the most appropriate indicator of expected future cash flows, which would also be considered by market participants. Reserves estimates are inherently imprecise and subject to uncertainty risk. Furthermore, projections about unproved volumes are based on information that is necessarily less robust than what is available for mature reservoirs.

These estimates and assumptions are subject to risk and uncertainty. Therefore, there is a possibility that changes in circumstances will impact these projections, which may also impact the recoverable amount of assets and/or CGUs, hence, may also affect the recognition of an impairment loss or the reversal of prior period impairment amounts.

3.3 Exploration and evaluation costs

The application of the Ecopetrol Business Group's accounting policy for exploration and evaluation costs requires judgment to determine whether future economic benefits are likely, either from future exploitation or sale, or whether activities have not reached a stage which permits a reasonable assessment of the existence of reserves. Certain exploration and evaluation costs are initially capitalized when it is expected that commercially viable reserves will result. The Ecopetrol Business Group uses its professional judgment of future events and circumstances and makes estimates to assess annually the generation of future economic benefits for extracting oil resources, as well as technical and commercial analyses to confirm its intention of continuing their development. Changes regarding available information, such as drilling success level or changes in the project's economics, production costs, and investment levels, as well as other factors, may result in capitalized exploration drilling costs being recognized in profit or loss for the period. The expenses for dry wells are included in operating activities in the consolidated statement of cash flows.

3.4 Determination of cash generating units (CGU)

The allocation of assets in cash generating units requires significant judgment, as well as assessments regarding integration among assets, the existence of active markets, and similar exposure to market risk, shared infrastructure, and the way in which management monitors the operations. See Note 4.13 – *Impairment of non-current assets* for more information.

3.5 Abandonment and dismantling costs of fields and other facilities

According to environmental and oil regulations, the Ecopetrol Business Group is required to bear the costs for the abandonment of oil extraction, refining plants and transportation facilities, which include the cost of plugging and abandoning wells, dismantling facilities, and environmental remediation in the affected areas.

Estimated abandonment and dismantling costs are recorded at the time of the installation of the assets and are reviewed annually.

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The calculations for these estimations are complex and involve significant judgments by Management. The ultimate decommissioning costs are uncertain and cost estimates can vary in response to many factors, including changes to relevant legal requirements, the emergence of new restoration techniques or experience at other production sites. The expected timing, extent and amount of expenditure may also change, for example, in response to changes in internal cost projections, changes in reserve estimates, future inflation rates and discount rates. Ecopetrol Business Group considers that the abandonment and dismantling costs are reasonable, based on the experience of the Ecopetrol Business Group and market conditions; nevertheless, significant variations in external factors used for the calculation of the estimation could significantly impact the amounts recorded in the financial statements. See Note 4.14 - *Provisions and contingent liabilities* (Obligation to withdraw assets).

3.6 Pension plan and other benefits

The determination of expenses, liabilities and adjustments relating to pension plans and other defined retirement benefits makes it necessary for Management to use its judgment in the application of actuarial assumptions made in the actuarial calculation. The actuarial assumptions include estimates regarding future mortality, retirement, changes in compensation, and discount rate to reflect the time value of money, in addition to the rate of return on the plan's assets. Due to the complexity in the valuation of these variables, as well as their long-term nature, the estimated amounts are quite sensitive to any change in these assumptions.

These assumptions are reviewed on an annual basis and may differ materially from actual results due to changes in economic and market conditions, regulatory changes, judicial rulings, higher or lower retirement rates, or longer or shorter life expectancies among employees.

3.7 Goodwill impairment

In December of each year, the Ecopetrol Business Group performs an annual impairment test on goodwill to assess if its carrying amount may be recoverable. Goodwill is assigned to each cash generating unit (or groups of CGU).

The determination of the recoverable amount is described in Note 4.11, and its calculation requires assumptions and estimates. Ecopetrol Business Group considers that the assumptions and estimations used are reasonable and supportable based on the current market conditions and are aligned to the risk profile of the related assets. However, if different assumptions and estimations are used, they could lead to different results. Valuation models used to determine fair value are sensitive to changes in the underlying assumptions. For example, sales volumes and prices that will be paid for the purchase of raw materials are assumptions that may vary in the future. Adverse changes in any of these assumptions could lead to the recognition of goodwill impairment.

3.8 Litigation

The Ecopetrol Business Group is subject to claims relating to regulatory and arbitration proceedings, tax assessments, and other claims arising in the normal course of business. Management evaluates these claims based on their nature, the likelihood that they materialize, and the amounts involved, to decide on the amounts recognized and/or disclosed in the financial statements.

This analysis, which may require considerable judgment, includes the assessment of current legal proceedings brought against the Ecopetrol Business Group and claims not yet initiated. A provision is recognized when the Ecopetrol Business Group has a present obligation derived from a past event, it is likely that an outflow of resources of economic benefits will be required to settle the obligation, and a reliable estimate of the amount of such obligation can be made.

3.9 Taxes

Calculation of the income tax provision requires interpretation of tax law in the jurisdictions where the Ecopetrol Business Group operates. Significant judgment is required to determine estimates for income tax on taxable profits and to evaluate the recoverability of deferred tax assets, which are based on the ability to generate sufficient taxable income during the periods in which such deferred taxes could be used or deduct.

To the extent that future cash flows and taxable income differ significantly from the estimates, the Ecopetrol Business Group's ability to realize the deferred tax assets recorded could be affected.

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Furthermore, changes in tax rules could limit the capacity of the Ecopetrol Business Group to obtain tax deductions in future years, as well as the recognition of new tax liabilities resulting from auditing conducted by the tax authorities.

Tax positions taken involve a thorough assessment by Management and are reviewed and adjusted in response to situations such as expiration in the applicability of laws, closing of tax audits, additional disclosures caused by any legal issue or a court decision relevant to a particular tax issue. The Ecopetrol Business Group records provisions based on estimated potential liabilities that could be derived from a tax audit. The amount of these provisions depends on factors such as previous experience in tax audits and different interpretations of tax legislation. The actual results may differ from the estimates recorded.

3.10 Hedge accounting

The process of identifying hedging relationships between hedged items and the underlying instruments (derivative and non-derivative, such as long-term, foreign currency-denominated debt), and their corresponding effectiveness, requires the use of judgment by Management. The Ecopetrol Business Group periodically monitors the alignment between its hedge instruments and its risk management policy.

3.11 Provision for significant maintenance and replacement

Ecopetrol Business Group has contractual obligations under its road and electric power transmission concession agreements to provide the replacement and maintenance activities. The amount of the provision is based on qualitative and quantitative analyzes made by Ecopetrol Business Group's maintenance area and an estimate of disbursements for major maintenance and replacements, which considers the current market prices of the components to be replaced at the time to recognize the provision.

3.12 Traffic projections for road concessions

The revenue for the services provided under the road concessions related to certain contracts, which are accounted under the financial asset model of IFRIC 12, is calculated through the present value of future revenue cash flow. This estimation is based on traffic studies made by an independent entity based on GDP projections among other variables according to the concession.

3.13 Electric power transmission concessions agreements

Ecopetrol Business Group operates energy transmission concessions in Colombia, Peru, Chile, Bolivia, and Brazil under public service concession agreements in which the grantor controls or regulates the services provided by the concessionaire, to whom they are provided, and at what price.

3.14 Business combination

According to IFRS 3, Business combinations, applying the acquisition method implies to identify the assets acquired and liabilities assumed and measure them at fair value on the acquisition date, subject to certain exceptions. For each kind of asset or liability, fair value methodologies are applied considering the observable inputs and elements described in IFRS 13 – Fair value measurement.

4. Accounting policies

4.1 Financial instruments

A financial instrument is any contract that creates a financial asset for an entity and a financial liability or equity instrument for another entity.

The classification of financial instruments depends on the nature and purpose for which the financial assets or liabilities were acquired and is determined at the time of initial recognition. Financial assets and financial liabilities are initially measured at their fair value.

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Transaction costs that are directly attributable to the acquisition or issuance of financial assets and liabilities, other than those measured at fair value through profit or loss, are added to or deducted from the fair value of financial assets and liabilities on initial recognition. Transaction costs directly attributable to the acquisition of financial assets and liabilities measured at fair value through profit or loss are immediately recognized in profit or loss.

Loans and trade receivables, other receivables, and financial assets held-to-maturity are measured subsequently measured at amortized cost using the effective interest method.

Additionally, equity instruments are measured at fair value.

Measurements at fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place in the principal market of the asset or liability or in the absence of a principal market in the most advantageous market.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, supposing that the market participants act in their economic best interest.

A fair value measurement of a non-financial asset considers a market participant's ability to generate economic benefits by using the asset for its most profitable use or by selling it to another market participant that would use the asset in its highest and best use.

Ecopetrol Business Group uses valuation techniques that are appropriate for the circumstances and for which the data is available and enough to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are classified within the following scale, based on the lowest level input that is significant to the fair value measurement, as follows:

- Level 1: Quoted (unadjusted) market prices in active markets for identical assets or liabilities. The fair value of the Ecopetrol Business Group's marketable securities with a quoted market price is based on Level 1 inputs.
- Level 2: Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observed. Level 2 inputs include prices of similar assets, prices obtained through quotations made by stockbrokers, and prices that can be substantially corroborated with other observable data with the same contractual terms.

For derivative contracts for which a quoted market price is not available, fair value estimates are generally determined using models and other valuation methods, the key inputs for which include future prices, volatility estimates, price correlation, counterparty credit risk, and market liquidity, as appropriate.

- Level 3: Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable. The Ecopetrol Business Group does not use Level-3 inputs for the measurement of financial assets and liabilities. The Ecopetrol Business Group may use Level-3 inputs for the calculation the recoverable amount of certain non-financial assets for the purpose of impairment testing.

Effective interest rate method

The effective interest rate method is a method of calculating the amortized cost of a financial instrument and accounting of income or financial cost over the relevant period. The effective interest rate is the discount rate that exactly discounts estimated future cash receipts or payments (including all fees, transaction costs and other premiums or discounts) through the expected life of the financial instrument (or, when appropriate, at a shorter period), to the net carrying amount on initial recognition. This methodology is also applied to the instrument's measurement related to the concession financial assets.

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Impairment

The Ecopetrol Business Group evaluates if there is objective evidence that a financial asset or group of financial assets are impaired. Financial assets are evaluated for the impairment indicators at the end of each reporting period. Financial assets are considered impaired when there is objective evidence that, because of one or more events that occurred after initial recognition, the estimated future cash flows of the asset have been affected. For financial assets measured at amortized cost, the amount of the impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

4.1.1 Cash and cash equivalents

Cash and cash equivalents include cash on hand, financial investments that are highly liquid, bank deposits, and special funds with original maturity dates of ninety days or less which are subject to an insignificant risk of changes in value.

Restricted cash is a monetary resource with the objective of allocating it to specific and previously determined purposes.

4.1.2 Financial assets

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Ecopetrol Group's business model for managing them. Except for trade receivables that do not contain a significant financing component or for which the Ecopetrol Business Group has applied the practical expedient, Ecopetrol Business Group initially measures a financial asset at its fair value plus, and, in the case of a financial asset not at fair value through profit or loss, at transaction costs. Trade receivables that do not contain a significant financing component or for which the Ecopetrol Business Group has applied the practical expedient are measured at the transaction price determined under IFRS 15.

Ecopetrol Business Group classifies its financial assets in the following categories:

- a) Financial assets measured at fair value through profit or loss

Financial assets are held for trading and financial assets designated at the time of the initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired to be sold or repurchased in the short term. They are recognized at their fair value and losses or profits arising at the time of re-measurement are recognized in the statement of profit or loss.

- b) Financial assets measured at fair value with changes in other comprehensive income

These are equity instruments of other non-controlled and non-strategic companies not allowing for any type of control or significant influence thereon and where the Ecopetrol Business Group's Management does not intend to negotiate with them in the short term. These financial instruments are recorded at their fair value, and unrealized gains or losses are recognized in other comprehensive income.

- c) Financial assets at amortized cost

This category is the most relevant to Ecopetrol Business Group. The Group's financial assets at amortized cost includes trade receivables, other receivables, loans, and borrowings.

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables, including trade and other receivables, are measured initially at fair value and then at amortized cost using the effective interest rate method, less impairment.

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Loans to employees are initially recorded using the present value of the future cash flows, discounted at the current market rate for similar loans. If the interest rate is less than the current market rate, fair value will be less than the amount of the loan. This difference is recorded as a benefit to employees.

Ecopetrol Business Group measures financial assets at amortized cost if both of the following conditions are met:

- The asset is held within a business model with the objective to hold financial assets to collect contractual cash flows.
- The contractual terms of the asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets at amortized cost are subsequently measured using the effective interest method and are subject to impairment analysis. Gains and losses are recognized in profit or loss when the asset is derecognized, modified, or impaired.

Derecognition of financial assets

The Ecopetrol Business Group derecognizes a financial asset only upon the expiration of the contractual rights to the cash flows of the asset or, when it has transferred its rights to receive such cash flows or has assumed the obligation to pay the cash flows received in full without material delay to a third party and (a) it has transferred substantially all the risks and benefits inherent in the ownership of the financial asset or (b) it has neither transferred nor retained substantially all the risks and benefits of the asset, but has transferred control of the asset.

When the Ecopetrol Business Group does neither transfer nor retain substantially all the risks and benefits of the asset or transfer control of the asset, the Ecopetrol Business Group continues to recognize the transferred asset, to the extent of its continuing participation, and it also recognizes the associated liability.

4.1.3 Financial liabilities

Financial liabilities correspond to the financing obtained by the Ecopetrol Business Group through bank credit facilities and bonds, accounts payables to suppliers, and creditors.

Bonds and bank credit facilities are initially recognized at their fair value, net of directly attributable transactions cost. After initial recognition, interest-bearing credit facilities and bonds are subsequently measured at amortized cost, using the effective interest rate method. The effective interest method amortization is included as a financial expense in the statement of profit or loss. Amortized cost is calculated by considering any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the statement of profit or loss.

Accounts payable to suppliers and creditors are short-term financial liabilities recorded at nominal value since it does not significantly differ from fair value.

Derecognition

A financial liability is derecognized when the obligation specified in the contract is discharged, cancelled, or expires. When an existing financial liability has been replaced by another from the same lender, under substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the de-recognition of the original liability and recognized as a new liability. The difference between the respective carrying amounts is recognized in the statement of profit or loss.

4.1.4 Derivative financial instruments

Financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Changes in the fair value of derivatives are recognized as gains or losses in the statement of profit or loss, except for the effective portion of cash flow hedges, which is recognized in other comprehensive income and later reclassified to profit or loss when the hedge item affects profit or loss.

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Changes in fair value of derivative contracts, which do not qualify or are not designated as hedges, including forward contracts for the purchase and sale of commodities under negotiation for physical delivery or receipt of the commodity are recorded in profit or loss.

Derivatives embedded in the host contract are accounted for as separate derivatives at fair value if their economic characteristics and risks are not closely related to those of the host contracts and the host contracts are not held for trading or designated at fair value through profit or loss. These embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss.

4.1.5 Hedging operations

For purposes of hedge accounting, hedges are classified as:

- Cash flow hedges: hedges of the exposure to variability in cash flows attributable to a particular risk associated with all, or a component of, a recognized asset or liability or a highly probable forecast transaction, and that could affect profit or loss.
- Hedges of net investments in foreign operations.
- Fair value hedges: hedges of the exposure to changes in fair value of a recognized asset or liability or an unrecognized firm commitment, or a component of any such item, that is attributable to a particular risk and that could affect profit or loss.

At the inception of a hedge relationship, Ecopetrol Business Group formally designates and documents the hedge relationship to which it wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine whether they have been highly effective throughout the financial reporting periods for which they were designated.

4.1.5.1 Cash flow hedge

The effective portion of the gain or loss on the hedging instrument is recognized in Other Comprehensive Income (OCI) in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss.

The amounts previously accumulated in OCI are recognized in profit or loss when the hedged transaction affects the statement of profit or loss. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability.

If the hedging instrument expires or is sold, terminated, or exercised without replacement or rollover, or if its designation as a hedge is revoked or when the hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss previously recognized in other comprehensive income remains separately in equity until the forecast transaction occurs is recognized in the consolidated statement of profit or loss. When it is no longer expected that the initially hedged transaction will occur.

Ecopetrol Business Group designates certain loans as a hedging instrument for its exposure to exchange rate risk in future crude oil exports. Additionally, Ecopetrol Business Group enters positions with derivative financial instruments such as commodity swaps, cross currency swaps or interest rate swaps to hedge commodity price risks, exchange rate risk and interest rate risk, respectively, which may also be designated as cash flow hedges.

4.1.5.2 Hedge of net investment in a foreign operation

Hedges of a net investment in a foreign operation, including a hedge of a monetary item that is accounted for as part of the net investment, are accounted for similarly to cash flow hedges.

Gains or losses on the hedging instrument relating to the effective portion of the hedge are recognized as OCI while any gains or losses relating to the ineffective portion are recognized in the statement of profit or loss. On the disposal of a foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to the statement of profit or loss.

Ecopetrol Business Group allocates long-term loans as hedging instruments for its exposure to foreign exchange risk on its investment in subsidiaries whose functional currency is the U.S. dollar. See Note 30.4.

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4.1.5.3 Fair value hedge

The gain or loss on the hedging instrument shall be recognized in profit or loss or other comprehensive income if the hedging instrument hedges an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income.

The hedging gain or loss on the hedged item shall adjust the carrying amount of the hedged item (if applicable) and be recognized in profit or loss. If the hedged item is a financial asset (or a component thereof) that is measured at fair value through other comprehensive income, the hedging gain or loss on the hedged item shall be recognized in profit or loss. However, if the hedged item is an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income, those amounts shall remain in other comprehensive income.

4.2 Inventories

Inventories are recorded at the lower of cost and net realizable value.

Inventories mainly comprise crude oil, fuels and petrochemicals, and consumable inventories (spares and supplies).

The cost of crude oil is the production costs, including transportation costs.

The cost of other inventories is determined based on the weighted average cost method, which includes acquisition costs (deducting commercial discounts, rebates, and other similar items), transformation, and other costs incurred to bring inventory to their current location and condition, such as transportation costs.

Consumable inventories (spares and supplies) are recognized as inventory and then charged to expense, maintenance, or project to the extent that such items are consumed.

Ecopetrol Business Group estimates the net realizable value of inventories at the end of the period. When the circumstances that previously caused inventories to be written down below cost no longer exist, or when there is clear evidence of an increase in the net realizable value because of a change in economic circumstances, the amount of the write down is reversed. The reversal cannot be greater than the amount of the original write-down, so that the new carrying amount will always be the lower of the cost and the revised net realizable value.

4.3 Investments in associates and joint ventures

4.3.1 Investments in associates

An associate is an entity over which the Ecopetrol Business Group has significant influence but not control. Significant influence is the power to participate in the financial and operational policy decisions of the investee, but it is not control or joint control over those policies. Generally, these entities are those in which the Ecopetrol Business Group holds an equity interest with voting rights of 20% to 50%. See Exhibit 1 – Consolidated subsidiaries, associates, and joint ventures.

Investments in associates are accounted for using the equity method. Under this method, the investment in an associate is initially recognized at cost. The carrying amount of the investment is adjusted to recognize changes in the Ecopetrol Business Group's share of net assets of the associate since the acquisition date. Goodwill related to the associate is included in the carrying amount of the investment and it is not tested for impairment separately.

The Ecopetrol Business Group's share of the results of operations of the associate is recognized in the consolidated statement of profit or loss. Any change is recognized in other comprehensive income of the Ecopetrol Business Group.

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After application of the equity method, the Ecopetrol Business Group determines if it is necessary to recognize an impairment on its investment in its associate. The Ecopetrol Business Group determines whether there is objective evidence that the investment is impaired. If there is such evidence, the amount of the impairment is calculated as the difference between the recoverable amount and the carrying value, and then the impairment is recognized in the consolidated profit or loss statement.

When necessary, the Ecopetrol Business Group adjusts the accounting policies of associates to ensure consistency with the policies adopted by the Ecopetrol Business Group. Additionally, the equity method of these companies is measured on their most recent financial statements.

4.3.2 Joint ventures

A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint arrangement. Joint control exists only when decisions about the relevant activities require unanimous consent of the parties sharing such control. The accounting treatment for the recognition of joint ventures is the same as investments in associates.

4.4 Joint operations

A joint operation is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets and obligations for the liabilities, relating to the arrangement.

Joint operation contracts are entered into between Ecopetrol Business Group and third parties to share risk, secure capital, maximize operating efficiency, and optimize the recovery of reserves. In these joint operations, one party is designated as the operator to execute the operations and report to partners according to their participating interests. Likewise, each party takes its share of the produced hydrocarbons (crude oil or gas), according to their share in production.

When Ecopetrol Business Group participates as a non-operator partner, it recognizes the assets, liabilities, sales revenues, cost of sales, and expenses based on the operator partner's report. When Ecopetrol Business Group is the direct operator of joint venture contract, it recognizes its percentage of assets, liabilities, sales revenues, costs, and expenses, based on the participation of each partner in the items corresponding to assets, liabilities, sales revenues, costs, and expenses.

When the Ecopetrol Business Group acquires or increases its participation in a joint operation in which the activity constitutes a business combination, such transaction is recognized applying the acquisition method in accordance with IFRS 3 – Business combination. The acquisition cost is the sum of the consideration transferred, which corresponds to the fair value, on the date of acquisition of the assets transferred and the liabilities incurred. Any transaction cost related to the acquisition or increased share in the joint operation that constitutes a business combination is recognized in the consolidated statement of profit or loss.

The excess of the sum of the consideration transferred and the amount paid in the operation is recognized as goodwill. If the result is in an excess value of the net assets acquired over the amount paid in the purchase transaction, the difference is recognized as income in the consolidated statement of profit or loss on the date of recognition of the transaction.

4.5 Non-current assets held for sale

Non-current assets are classified as held for sale if their carrying values will be recovered principally through a sale transaction rather than through continued use. Non-current assets are classified as held for sale only when the sale is highly probable within one year from the classification date and the asset (or group of assets) is available for immediate sale in its present condition. These assets are measured at the lower of their carrying amount and fair value less related costs of disposal.

4.6 Property, plant, and equipment

Recognition and measurement

Property, plant, and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Tangible components related to natural and environmental resources are part of property, plant, and equipment.

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The initial cost of an assets comprises its purchase price or construction cost, including import duties and non-refundable purchase taxes, any costs directly attributable to bringing the asset into operation, costs of employee benefits arising directly from the construction or acquisition, borrowing costs incurred that are attributable to the acquisition and construction of qualifying assets and the initial estimate of the costs of dismantling and abandonment of the item.

Spare parts and servicing equipment are recorded as inventories and recognized as an expense as they are used. Major spare parts and stand-by equipment that Ecopetrol Business Group expects to use during more than one period are recognized as property, plant, and equipment.

Any gain or loss arising from the disposal of a property, plant, and equipment is recognized in profit or loss of the period.

Subsequent disbursements

Subsequent disbursements correspond to all payments to be made on existing assets to increase or extend the initial expected useful life, increase productivity or productive efficiency, allow for significant reduction of operating costs, increase the level of reserves in exploration or production areas or replace a part or component of an asset that is considered critical for the operation.

The costs of repair, conservation and maintenance of a day-to-day nature are expensed as incurred. However, disbursements related to major maintenance are capitalized.

Depreciation

Property, plant, and equipment is depreciated using the straight-line method, except for those associated with exploration and production activities which are depreciated using the units-of-production method. Technical useful lives are updated annually considering factors such as: additions or improvements (due to parts replacement or critical components for the asset's operation), technological advances, obsolescence, and other factors; the effect of this change is recognized from the period in which it was executed. Depreciation of an asset starts when it is ready to be used.

Useful lives are determined based on the period over which an asset is expected to be available for use, physical exhaustion, technical or commercial obsolescence and legal limits or restrictions over the use of the asset.

The estimated useful life of assets fluctuates in the following ranges:

Plant and equipment	10 – 55 years
Pipelines, networks, and lines	10 – 63 years
Buildings	10 – 100 years
Other	3 – 35 years

Lands are recognized separately from buildings and facilities, have unlimited useful lives, and they are not subjected to depreciation.

Depreciation methods and useful lives are reviewed annually and adjusted if appropriate.

4.7 Natural and environmental resources

Recognition and measurement

Ecopetrol Business Group uses the successful efforts method to account for exploration and production of crude oil and gas activities, following the provisions of IFRS 6 – Exploration for the evaluation of mineral resources.

Exploration costs

Acquisition and exploration costs are recorded as exploration and evaluation assets until the determination of whether the exploration drilling is successful or not; if determined to be unsuccessful, all costs incurred are recognized as expenses in the statement of profit or loss.

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Exploration costs are those incurred with the objective of identifying areas that are considered to have prospects of containing oil and gas reserves, including geological and geophysical, seismic costs, viability, and others, which are recognized as expenses when incurred. Furthermore, disbursements associated with the drilling of exploratory wells and those related to stratigraphic wells of an exploratory nature are charged as assets until it is determined if they are commercially viable; otherwise, they are expensed in the consolidated statement of profit or loss as dry wells expense. Other expenditures are recognized as expenses when incurred.

An exploration and evaluation asset will not be classified as such when the technical feasibility and commercial viability of extracting a mineral resource are demonstrable. Exploration and evaluation assets are reclassified to the natural and environmental resources account after being assessed for impairment.

All capitalized costs are subjected to technical and commercial revisions at least once a year to confirm the evaluation and exploration efforts continue the fields; otherwise, these costs are written off through to profit or loss.

Exploration costs are net of the revenues obtained from the sale of crude oil during the extensive testing period, net of cost of sales since they are considered necessary to complete the asset.

Development costs

Development costs correspond to those costs incurred to obtain access to proved reserves and to provide facilities for extracting, treating, gathering, and storing. When a project is approved for development, the corresponding capitalized acquisition and exploration costs are classified as natural and environmental resources and costs after the exploration phase are capitalized as development costs of the properties that contain such natural resources. All development costs are capitalized, including drilling costs of unsuccessful development wells.

Production costs

Production costs are those incurred to operate and maintain productive wells and are part of the corresponding equipment and facilities. Production activity includes extraction of oil and gas to the surface, its gathering, treatment, and processing as well as storage in the field. Production costs are expenses recorded in the consolidated statement of profit or loss as incurred unless they add oil and gas reserves, in which case they are capitalized.

Production and support equipment is recognized at cost and is part of property, plant, and equipment subject to depreciation.

Capitalized costs also include decommissioning, dismantling, retiring, and restoration costs, as well as the estimated cost of future environmental obligations. The estimation includes plugging and abandonment costs, facility dismantling and environmental recovery of areas and wells. Changes arising in new abandonment liability estimations and environmental remediation are capitalized in the carrying amount of the related asset.

Depletion

Depletion of natural and environmental resources is determined using the unit-of-production method per field, using proved developed reserves as a base, except in limited exceptional cases that require greater judgment by Management to determine a better amortization factor of future economic benefits over the useful life of the asset. Depreciation/depletion rates are reviewed annually, based on reserves reports and the impact of any changes is recognized prospectively in the financial statements.

Reserves are independently estimated by internationally recognized external consultants and approved by Ecopetrol's Board of Directors. Proved reserves consist of the estimated quantities of crude oil and natural gas demonstrated with reasonable certainty by geological and engineering data to be recoverable in future years from known reserves under existing economic and operating conditions, which are at the prices and costs that apply for the date of the estimation.

Impairment

Assets associated to exploration, evaluation and production are subject to review for possible impairment in their carrying amount. See Notes 3.2 — *Impairment of non-current assets* and 4.13 — *Impairment of non-current assets*.

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4.8 Capitalization of borrowing costs

Borrowing costs related to the acquisition, construction or production of a qualifying asset that requires a substantial period to get ready for its intended use are capitalized as part of the cost of such asset when it is probable that future economic benefits associated with the item will flow to the Ecopetrol Business Group and costs can be measured reliably. Other borrowing costs are recognized as financial costs. Projects that have been suspended but that the Ecopetrol Business Group intends to continue to pursue their development in the future, are not considered qualifying assets for the purpose of capitalization of borrowing costs.

4.9 Intangible assets

Intangible assets with a defined useful life, are stated at cost less accumulated amortization and any impairment loss. Intangible assets are amortized under the straight-line method, over their estimated useful lives. The estimated useful lives and amortization method are revised at the end of each reporting period; any change in estimates is recognized on a prospective basis.

The disbursements related to research activities are recognized as expense as incurred.

Easements

Easements are rights obtained for the use part of land for the installation of a transmission line. This implies restrictions on the use of the land by the owner and authorizations to Ecopetrol Business Group to build, operate, or maintain the transmission lines. These intangible assets are permanent rights with an indefinite term of use. Although the transmission lines to which these easements are related have a finite useful life, the rights do not expire, and Ecopetrol Business Group may replace the transmission lines at the end of their useful life or make use of said rights for any other service related to transmission electricity and telecommunications. Easements have an indefinite useful life, so they are not amortized and are reviewed annually for impairment.

4.10 Concessions

Ecopetrol Business Group operates concessions under public service concession agreements, in which the grantor controls or regulates the services provided by the concessionaire, whom they are provided to, and price of the service.

IFRIC 12, Service Concession Arrangements, establishes general guidelines for the recognition and measurement of rights and obligations related to concession agreements and applies when the granting authority controls or regulates which services the concessionaire should provide with the infrastructure, to whom the services should be provided and at what price, and controls any significant residual interest in the infrastructure at the end of the concession period.

Concessions that meet the above criteria are recorded according IFRIC 12 - Concession Agreements of services.

Ecopetrol Business Group's assets that were built to operate concessions where the grantor has no residual interest in the infrastructure and the Group has no obligation to return the assets are recognized under IFRS 16 - Leases. In these cases, the construction of the infrastructure is a service provided to the grantor, different from the operation and maintenance service. Revenue from services is measured and recorded in accordance with IFRS 15 – Revenue from Contracts with Customers and IFRS 9 – Financial Instruments, depending on the asset model.

Concessions in which the Ecopetrol Business Group does not have a contractual right to receive money or another financial asset from the grantor but has the right to charge users in exchange for the services provided, are recognized under the intangible asset model.

The detail of each type of concession by country is disclosed in Note 25.

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Intangible asset model

Considering IFRIC 12, concessions in which Ecopetrol Business Group does not have a contractual right to receive cash or another financial asset from the grantor but has the right to charge users in exchange for the services provided, are recognized under the intangible asset model. The costs incurred by Ecopetrol Business Group for the construction of the concession infrastructure are on a straight-line basis over the term of the concession period. Revenue from construction or improvement services is recognized according to the level of completion of the construction, based on the costs actually incurred, including at construction margin.

The operation and maintenance costs related to the concession are recognized in the statement of profit or loss once the infrastructure of the concession is ready for its use and Ecopetrol Business Group receives from the grantor the right to receive a fee for the services. Revenues are recognized based on the services provided as established in the concession agreements.

Infrastructure expansions are recognized as intangible asset when they are expected to generate future economic benefits. The renovations costs, improvements and additions are capitalized, while routine maintenance and repairs that do not extend the useful life of the assets are recognized in the profit or loss statement.

Financial asset model

Concessions in which Ecopetrol Business Group has a contractual right to receive cash or another financial asset from the grantor for the services provided under the concession agreements and the grantor has little or no power to avoid payment are recognized under financial asset model. In this model the financial asset is classified as a financial asset concession, according to IFRS 9 – Financial Instruments, and it will be represented as current and non-current concessions in the financial position of Ecopetrol Business Group. This asset accrues interest using the effective interest rate method (see Note 4.1).

Mixed model for concessions

This model is applied when the contract simultaneously includes remuneration commitments guaranteed by the grantor and remuneration commitments that depend on the level of use of the concession infrastructure.

4.11 Goodwill

Goodwill is initially measured at cost (being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interest and any previous interest held over the net identifiable assets acquired and liabilities assumed). After initial recognition goodwill is measured at cost less any accumulated impairment loss, which cannot be reversed in subsequent periods according to IAS 36. Goodwill is not amortized but tested for impairment annually.

4.12 Leases

As of January 1, 2019, the Ecopetrol Business Group adopted IFRS 16, “Leases” applying the modified retrospective scope.

At the beginning of a contract, Ecopetrol Business Group assesses whether a contract is, or contains, a lease. This situation arises if the contract transfers the right to control the use of an identified asset for a period in exchange for a consideration. To assess whether a contract conveys the right to control an identified asset, the regulations of IFRS 16 are used.

Ecopetrol Business Group applies the guidance of IFRS 16 – Leases on concessions contracts that do not meet the criteria of the guidance of IFRIC 12.

Ecopetrol Business Group as a lessee

On the commencement date of the lease, Ecopetrol Business Group recognizes lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying asset during the lease term. The interest expense on the lease liability and the depreciation expense on the right-of-use asset are recognized separately.

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In subsequent recognition, Ecopetrol Business Group makes a remeasurement of the lease obligation upon the occurrence of events such as: a) changes in the lease term and b) changes in future lease payments resulting from variations in an index or in the rate used for determining the payments. The amount of the remeasurement of the obligation will be recognized as an adjustment to the asset for the right of use.

Ecopetrol Business Group as a lessor

Ecopetrol Business Group classifies as financial leases those contracts in which the terms of the lease substantially transfer to the lessees all the risks and inherent rewards to ownership of the asset. All other leases are classified as operational.

If the lease is classified as financial, an account receivable is recorded in the statement of financial position, for an amount equal to the net investment in the lease.

For leases classified as operating leases, income from payments is recognized on a straight-line basis in the profit and loss statement.

Right-of-use assets

The Ecopetrol Business Group recognizes right-of-use assets on the commencement date of the lease (that is, the date on which the underlying asset is available for use). The right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of the lease liabilities. Right-of-use assets are amortized in a straight-line basis during the lease term. Right-of-use assets are subject to impairment assessment. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received.

Lease liabilities

At the commencement date of the lease, the Ecopetrol Business Group recognizes lease liabilities measured at the present value of the lease payments to be made during the term of the lease. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. Variable payments that do not depend on an index or rate are recognized as expenses in the period in which an event or condition indicates that the payment will occur.

To calculate the present value of the lease payments, the Ecopetrol Business Group uses the incremental borrowing rate on the lease's commencement date. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments or a change in the assessment of an option to purchase the underlying asset.

Current leases and low-value asset leases

The Ecopetrol Business Group elected to use the recognition exemptions for lease contracts that, at the commencement date, have a lease term of 12 months or less and do not contain a purchase option (short-term leases), and lease contracts for which the underlying asset is of low value (low-value assets).

Joint Operating Agreements (JOA)

In JOA agreements, the Ecopetrol Business Group assesses whether it controls the use of the asset. If the Ecopetrol Business Group, as the operator, controls the use of the asset, it recognizes the entire right-of-use and lease liability in the financial statements. If it is the JOA who controls, it is analyzed whether the contract meets the characteristics of a sublease, and in that case each party must recognize the right of use in proportion to their participation. Ecopetrol Business Group recognizes 100% of the right-of-use in joint venture agreements in which the Groups is the operator.

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4.13 Impairment of non-current assets

In order to evaluate if any non-current assets are impaired, Ecopetrol Business Group compares its carrying amount with its recoverable amount at least annually or earlier, if there is any indicator that an asset may be impaired.

For purposes of impairment testing, assets are grouped into cash generating units (CGU), provided that those assets individually considered do not generate cash inflows that, to a greater extent, are independent from those generated by other assets or CGUs. The grouping of assets in different CGUs requires the exercise of professional judgment and the consideration, among other parameters, of the business segments. In this sense, in the Exploration and Production segment, each CGU corresponds to each one of the different contractual areas commonly called “fields”; by exception, in those cases where the cash inflows generated by several fields are interdependent from each other, those fields are grouped into a single CGU. In the case of the Refining and Petrochemicals, each CGUs corresponds to each one of the refineries, petrochemical plants, and companies in this segment of the Ecopetrol Business Group, for the Transportation segment, each pipeline system is considered an independent CGU, and for the Electric power transmission and toll roads concessions segment, which also includes telecommunication business, the CGUs correspond to three groups: energy power transmission, toll roads and telecommunications; these units are distributed in identified and independent groups of assets, agreements, subsidiaries, associates, and joint ventures defined within Interconexión Eléctrica S.A. E.S.P.

The recoverable amount of an asset is the higher amount of the fair value less costs of disposal or its value in use. If the recoverable amount of an asset (or of a CGU) is lower than its net carrying amount, such amount (or that of the CGU) is reduced to its recoverable amount, recognizing an impairment loss in profit or loss.

Fair value less costs of disposal is usually higher than the value in use for the asset in the production segment due to some significant restrictions in the estimation of future cash flows, such as: a) future capital expenses that improve the CGU performance, which could result in expected increase of net cash flows, and b) items before taxes that reflect specific business risks, resulting in a higher discount rate.

Fair value less costs of disposal is determined as the sum of the future discounted cash flows adjusted to the estimated risk. The estimations of expected future cash flows used in the assessment of impairment of the assets include estimates of futures commodity prices, supply and demand estimations, and the margins of the products.

Fair value less costs of disposal, as described above, is compared to valuation multiples and quoted prices of shares in companies comparable to Ecopetrol Business Group to determine if it is reasonable. In the case of assets or CGUs that participate in the evaluation and exploration of reserves, proven, probable, and possible reserves are considered, with a risk factor associated with them.

When an impairment loss is recorded, future amortization expenses are calculated based on the adjusted recoverable amount. Impairment losses may be recovered only if the reversal is related to a change in estimations used after impairment loss was recognized in previous periods. These recoveries do not exceed the carrying amount of the assets net of depreciation or amortization that would have been determined if such impairment had not been recognized.

The carrying amount of non-current assets reclassified as assets held-for-sale is compared to its fair value less costs of disposal. No other provision for depreciation, depletion, or amortization is recorded if the fair value less costs of sale is lower than the carrying amount.

For the case of concessions, Ecopetrol Business Group periodically performs a qualitative impairment test on the assets related to the concession to identify events or circumstances, at the CGU level, which is the concession contract with its corresponding amendments, if any, events that indicate that the carrying amount exceeds the recoverable amount. When such events are identified, the quantitative calculation is made, and any impairment is recognized in profit or loss statement.

4.14 Provisions and contingent liabilities

Provisions are recognized when the Ecopetrol Business Group has a current obligation (legal or constructive) because of a past event, it is probable that Ecopetrol will be required to settle the obligation, and a reliable estimation can be made of the amount of the obligation. Where applicable, they are recorded at present value, using a rate reflecting the risk specific to the liability.

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If the effect of the temporary value of money over time is significant, the provisions are discounted using a current market rate before taxes that reflects, when applicable, the specific risks of the liability. When the discount is recognized, the increase in the provision is recognized as a financial expense in the statement of profit and loss.

Disbursements related to environmental conservation, linked to revenue from current or future operations, are recognized as expenses or assets, as appropriate. Disbursements related to past operations, which do not contribute to obtaining current or future revenue, are recorded as expenses.

The recognition of these provisions coincides with the identification of an obligation related to environmental remediation and Ecopetrol Business Group uses all available information to determine a reasonable estimate of their respective cost.

Contingent liabilities are not recognized but are subject to disclosure in the explanatory notes when an outflow of resources is possible; including those whose amounts cannot be estimated.

In cases where the provision is expected to be reimbursed in whole or in part, for example under an insurance contract, the reimbursement is recognized as a separate asset only in cases where such reimbursement is practically certain. The amount recognized for the asset should not exceed the amount of the provision.

Asset retirement obligation

Liabilities associated with the retirement of assets are recognized when there are current obligations, either legal or constructive, related to the abandonment and dismantling of wells, facilities, pipelines, buildings, and equipment.

The obligation is usually recorded when the assets are installed or when the surface or the environment are altered at the operating sites. These liabilities are calculated using the discounted cash flow method, using a pre-tax rate reflecting current market conditions similar liabilities and considering the economic limits of the field or the useful life of the respective asset. When it is not possible to determine a reliable estimation in the period in which the obligation originates, a provision is recognized when there is enough information available to make the best estimation.

The carrying amount of the provision is reviewed and adjusted annually considering changes in the assumptions used for its estimation, using a risk-free rate adjusted by a premium that reflects the risk and the company credit rating under the current market conditions. Any change in the present value of the estimated expenditure is reflected as an adjustment to the provision and the corresponding property, plant, and equipment and natural and environmental resources. When a decrease in the asset retirement obligation related to a producing asset exceeds the carrying amount of the asset, the excess is recognized in the statement of profit or loss. The increase in the provision due to the passage of time is recognized in results for the period as a financial expense.

4.15 Income tax and other taxes

Income tax expense is comprised of income tax payable for the period and the effect of deferred taxes in each period.

Current income taxes are recognized in income except when they relate to items recognized in other comprehensive income, in which case the corresponding tax effect is also recognized in other comprehensive income. Income tax assets and liabilities are presented separately in the consolidated statement of financial position, except where there is a right of setoff within fiscal jurisdictions and an intention to settle such balances on a net basis.

4.15.1 Current income tax

The Ecopetrol Business Group determines the provision for income tax based on the highest amount between taxable income and presumptive income (the minimum estimated amount of taxable profit on which the law expects to quantify and collect income taxes). Taxable income differs from profit before tax as reported in the consolidated statement of profit or loss, because of items of income or expense that are taxable or deductible in other periods, special taxable deductions, tax losses and income and line items measured that, according to applicable tax laws in each jurisdiction, are considered nontaxable or nondeductible.

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4.15.2 Deferred income tax

Deferred tax is provided using the liability method for temporary differences between the carrying amounts of existing assets and liabilities in the consolidated financial statements and their respective tax bases. A deferred tax liability is recognized for all taxable temporary differences. A deferred tax asset is recognized for all deductible temporary differences and for all accumulated tax losses, if there is a reasonable expectation that the Ecopetrol Business Group will generate future tax profits against which they will be used.

Deferred taxes on assets and liabilities are calculated based on the tax rates that are expected to apply during the years in which temporary differences between the carrying amounts and tax bases are expected to be reversed.

The carrying amount of a deferred tax asset is subject to review at the end of each reporting period, and it is reduced to the extent it is no longer probable that the corresponding legal entity will generate enough future taxable profit to realize such deferred tax asset.

In the statement of financial position, deferred tax assets are reflected net and as an offset against deferred tax liabilities, depending on the overall tax position in a particular jurisdiction and on the same taxable entity.

Deferred taxes are not recognized when they arise in the initial recognition of an asset or liability in a transaction (except in a business combination) and at the time of the transaction, do not affect the accounting or tax profit, or in respect of the taxes on the possible future distribution of accumulated profits of subsidiaries or investments accounted for by the equity method, if at the time of the distribution it may be controlled by Ecopetrol and it is probable that the retained earnings will be reinvested by the Ecopetrol Business Group companies and, therefore, will not be distributed to the Group.

4.15.3 Other taxes

The Ecopetrol Business Group recognizes in profit or loss the costs and expenses related to other taxes than the income tax, such as the wealth tax, which is determined based on the tax equity, the industry and commerce tax on income obtained in the municipalities for performance of commercial, industrial, and service activities, and the transport tax on volumes loaded in the transport systems. Taxes are calculated in accordance with current tax regulations.

4.16 Employee benefits

Salaries and benefits for Ecopetrol Business Group's employees are governed by the Colombian Collective Labor (Agreement 01 of 1977), and, by the Colombian Substantive Labor Code. In addition to the benefits determined by labour laws, employees are entitled to fringe benefits which are subject to the place of work, type of work, length of service, and basic salary. An annual interest of 12% is recognized on accumulated severance amounts for each employee, and the payment of compensation is provided for when special circumstances arise resulting in the non-voluntary termination of the contract, without justified cause, and in periods other than the probationary period.

Ecopetrol belonged to the special pension regime under which pension liabilities are Ecopetrol's responsibility and not pension fund's responsibility. However, Law 797 of January 29, 2003, and Legislative Act 001 of 2005 determined that Ecopetrol will no longer belong to the said regime and that from that point on employees would be part of the General Pension Regime. Consequently, pension obligations related to employees pensioned until July 31, 2010, are still Ecopetrol's responsibility. Employees are entitled to such pension bonus if they worked with Ecopetrol prior to January 29, 2003, but whose labor agreement expired without renewal before that date.

All labor benefits of employees who joined Ecopetrol before 1990 are Ecopetrol's responsibility, without the involvement of any social security entity or institution. Service cost for the employee and his/her relatives registered with Ecopetrol is determined by means of a mortality table, prepared based on facts occurring during the year.

For employees who joined Ecopetrol after the Act 50 of 1990 went in effect, Ecopetrol makes periodic contributions for severance payments, pensions, and labor risks to the respective funds.

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In 2008, Ecopetrol partially settled the value corresponding to monthly pension payments from its pension liabilities, transferring such liabilities and their underlying amounts to autonomous pension funds (PAP, for its acronym in Spanish). The funds transferred, and returns on those funds, cannot be redirected, nor can they be returned to the Ecopetrol Business Group, until all of the pension obligations have been fulfilled. The settled obligation covers allowances and pension bonds payments, with health and education remaining Ecopetrol's responsibility.

Employee benefits are divided into four groups comprised as follows:

a) Short-term employee benefits and post-employment defined benefits:

Benefits to employees in the short term mainly correspond to those which payment will be made in the term of twelve months following the closing of the period in which the employees have rendered their services. These mainly include salaries, severance payments, vacation, bonuses, and other benefits.

Post-employment benefits of defined contributions plans correspond to the periodic payments for severance, pensions, and labor risk payments that the Ecopetrol Business Group makes to the respective funds that assume these obligations in their entirety.

The above benefits are recognized as an expense with an associated liability after deducting any already paid amounts.

b) Post-employment defined benefit plans:

In the defined benefits plan, the Ecopetrol Business Group provides the benefits agreed to current and former employees and assumes the actuarial and investment risks.

The following benefits are classified as long-term defined benefit plans recognized in the financial statements according to the calculations of an independent actuary:

- Pensions
- Pension bonds
- Health
- Educational plan
- Retroactive severances

Liabilities recognized in the statement of financial position with respect to these benefit plans are determined based on the present value of the defined benefit obligation at the date of the statement of financial position less the fair value of plan assets.

The defined benefit obligation is calculated annually by independent actuaries using the projected credit unit method, which considers employees' years of service and, for pensions, average or final pensionable remuneration. This obligation is discounted at its present value using interest rates of high-quality government bonds denominated in the currency in which the benefits will be paid and of a duration consistent with the plan obligations.

These actuarial calculations involve several assumptions that could differ from the events that will effectively take place in the future. Said assumptions include the determination of a discount rate, future salary increases, mortality rates and future pension increases. Because of the complexity of the calculation, the underlying assumptions and long-term nature of these plans, the obligations for defined benefits are extremely sensitive to changes in assumptions. All key assumptions are revised at the end of the reported period.

In determining the appropriate discount rate, in absence of a broad high quality bond market, Management considers interest rates corresponding to the class B TES bonds issued by the Colombian Government as its best reference, at an appropriate discount rate with maturities extrapolated in line with the term expected for each benefit plan. The mortality rate is based on the country's rate, the latest version of which is the RV08 mortality table published in resolution 1555 of October 2010. The future salary and pension increases are linked to the country's future inflation rates. Note 22 – *Provisions for employee benefits* provides further details on key assumptions used.

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The amounts recognized in the consolidated statement of profit or loss related to employees defined benefit plans are comprised mainly by service cost and the net financial expense. Service cost includes mainly the increase in present value of the benefit obligation during the period (current service cost) and the amount resulting from a new benefit plan. Plan amendments corresponds to changes in benefits and are usually recognized when all legal and regulatory approvals have been obtained and the effects have been conveyed to the employees involved. The net financial expense is calculated using the net liability for defined benefits as compared with the yield curve of the discount rate at the beginning of each year for each plan. The net defined benefit obligation or asset resulting from actuarial profits and losses, the asset ceiling effect, and the asset profitability, excluding the value of recognized in the consolidated statement of profit or loss, are recognized in other comprehensive income.

When the plan assets exceed the gross obligation, the recognized asset is limited to the lower of the surplus in the defined benefits plan and the ceiling of assets determined using a discount rate based on Colombian Government bonds.

(a) Others long-term benefits

Others long-term benefits include the five-year term bonus which also considered in the actuarial calculation. This benefit is a cash bond that accumulates annually and is paid every five years to employees. The Ecopetrol Business Group recognizes in the consolidated statement of profit or loss the service cost, the net financial cost and the adjustment to the obligation of the defined benefit plan.

(b) Termination benefits

Termination benefits are recognized only when a detailed plan exists and there is no possibility to withdraw the offer. The Ecopetrol Business Group recognizes a liability and an expense for termination benefits at the earliest date between the date when the offer of such benefits cannot be withdrawn and the date when the restructuring costs are recognized.

4.17 Revenue from contracts with customers

The Ecopetrol Business Group's business is based on four principal sources of revenue from customer contracts: 1) sales of crude oil and natural gas, 2) services associated with the transport of hydrocarbons, and 3) sales of refined and petrochemical products, and biofuels, and 4) transmission of energy power and toll roads concessions. Revenue from customer contracts is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration that the Ecopetrol Business Group expects to receive in exchange for those goods or services.

Sales of crude oil and natural gas

Revenue from sales of crude oil and natural gas is recognized upon transfer of control to the buyer. This generally occurs when the product is physically transferred into a vessel, pipe or by another delivery method, thus fulfilling the Ecopetrol Business Group's performance obligations to its customers.

For some natural gas supply contracts with a replacement period, a distinction is made between quantities of gas consumed and not consumed to recognize the respective revenue or liability relating to quantities that will be requested in the future. Once the customer claims such natural gas, the revenue is recognized.

Services associated with hydrocarbons transport

Revenue from hydrocarbons transport services is recognized when the service is provided to the customer and there are no contractual conditions that prevent recognition of the revenue. Ecopetrol Business Group companies are principal in providing these services.

Ship/ Take-or-Pay contracts for the sale of refined products, storage and transport specify minimum quantities of products or services for which a customer will pay, even if the latter does not receive them or use them ("deficient quantities"). Although the Ecopetrol Business Group expects customers to recover all deficient quantities to which they are contractually entitled, any load revenue received related to temporary shortfalls that will be offset in a future period will be deferred and that amount recognized as revenue in the event any of the following scenarios occurs:

- a) The customer exercises its right to deficient volumes or services, or

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- b) The possibility is remote that the customer will exercise its right to deficient volumes or services.

Refined and petrochemical products and biofuels

In the case of refined products and petrochemicals, such as fuel oil, asphalt, polyethylene, LPG and propane and gasoline, etc., revenue is recognized when the products are shipped and delivered by the refinery; subsequently, they are adjusted for price changes, in the case of products with regulated prices. In the case of the companies that distribute natural gas and LPG, the revenue from the services is recognized when the service is provided to the customer.

In other cases, Ecopetrol Business Group recognizes revenue when the performance obligation is satisfied, giving rise to the certain, probable, and quantifiable right to demand payment.

Under current local regulation, Ecopetrol Business Group sells regular gasoline and ACPM in Colombia at a regulated price.

In accordance with Decree 1068 of 2015, the Ministry of Mines and Energy semiannually calculates and settles Ecopetrol's net position to be stabilized for each fuel by the Fuel Price Stabilization Fund (FEPC, for its acronym in Spanish). The net position corresponds to the sum of the spreads throughout the period, the result of which is the amount in pesos owed to the Company and charged to the resources of the FEPC. The differential corresponds to the product between the volume reported by the Company at the time of sale and the difference between the parity price and the reference price, the parity price being that which corresponds to the daily prices of motor and diesel gasoline observed during the month, expressed in pesos, referenced to the Gulf of the United States market, calculated by applying Resolution 18 0522 of 2010, and the reference price is the Producer Income defined by the Ministry of Mines and Energy for these purposes. Therefore, this differential constitutes a greater or lesser value of sales revenue and a receivable or payable account for Ecopetrol.

Electric power transmission and toll roads concessions

This group refers to 1) supplying of electricity transmission services in Latin America through the operation and maintenance of high-voltage transport networks and interconnections 2) design, construction, operation, and maintenance of road infrastructures, 3) supplying of information technology, and (4) telecommunications services.

The recognition of revenue from electric power transmission services occurs according to the performance obligations based on the conditions of the contracts that include requirements established by the electricity market regulators in the countries in which Ecopetrol Business Group operates. This is generally achieved when the performance obligations agreed with the regulatory entities are executed, considering the period and the quality of the service established in the contracts. Technology and telecommunications services revenue is also recognized according to the performance obligations defined in contracts with customers.

For service concession agreements, Ecopetrol Business Group measures the revenue in accordance with IFRIC 12 at the fair value of the consideration received or receivable, considering the payment defined in the contracts.

- Recognize revenues and costs for project construction services in results for the period, according to the percentage completion method of the projects at the reporting date, which includes an estimated profit margin determined based on the macroeconomic characteristics and the conditions of the project, and the weighting of the estimated receivable cash flows related to the estimated cash flows of the construction.
- Recognize revenues and costs for operation and maintenance services of third-party facilities in the profit or loss statement for the period, as the service is provided, based on the performance obligations established in the contracts.
- Recognize the financial returns of concession agreements classified as financial assets in the statement of profit or loss for the period using the effective interest rate method.

The business model developed under electric power transmission concession agreement, associated with the obligation to build, and implement the electric power transmission infrastructure and is classified under the asset according to IFRS 15 – Revenue from contracts with customers. The asset is recognized while the obligation to build and implement the infrastructure is satisfied, and revenue is recognized over the life of the project.

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Significant financing component

Payments received from customers are generally short term (except for revenue of concessions). Using the practical expedient in IFRS 15, Ecopetrol Business Group does not adjust the promised amount of consideration for the effects of a significant financing component if it expects, at contract inception, that the period between the transfer of the promised good or service to the customer and the customer's payment for that good or service to be one year or less.

Considering that revenues related to concessions generates long term accounts receivables, a financial component is applied considering the measurement of the asset as amortized cost, defining the future cash flows, and applying and discount rate, according to IFRS 9 – Financial Instruments.

Variable considerations

Upon fulfillment of the obligations set forth in agreements with customers, via delivery of the product or provision of the service, variable components of the transaction price may exist, such as the exchange rate for crude exports or international price fluctuations. In these cases, the Ecopetrol Business Group makes its best estimate of the transaction price that reflects the goods and services transferred to customers.

Agreements signed with customers do not include material variable considerations such as rebates, refunds, or discounts.

Customer advances

They correspond to contractual obligations in which the Ecopetrol Business Group receives monetary resources from customers to subsequently transfer goods and services. These advances made by customers are part of the policies and risk assessment defined by the Ecopetrol Business Group.

4.18 Costs and expenses

Costs and expenses are presented according to their nature; they are detailed in the related disclosures in cost of sales, and administrative, operating, projects, and other associated expenses.

4.19 Finance income (expenses)

Finance income and expenses include mainly: a) borrowings costs on loans and financing, except for those that are capitalized on qualifying asset, b) gains and losses on changes in fair value of financial instruments measured at fair value through profit or loss, c) currency exchange differences of financial assets and liabilities, except for debt instruments designated as hedging instruments, d) interest expenses as a result of discounting long-term liabilities (abandonment costs and pension liabilities), e) dividends derived from equity instruments measured at fair value with changes in other comprehensive income.

4.20 Information by business segment

Ecopetrol Business Group presents the information related to its business segments in its consolidated financial statements in accordance with paragraph 4 of IFRS 8 – Operation segments.

The operations of the Ecopetrol Business Group are performed through four business segments: 1) Exploration and Production, 2) Transport and Logistics, 3) Refining, Petrochemical and Biofuels, and 4) Electric Power Transmission and Toll Roads Concessions.

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Segments are determined based on Ecopetrol Business Group Management objectives and corporate strategic plans, considering that these businesses: (a) are engaged in different commercial activities, which generate sales revenue and incur costs and expenses; (b) the operational results are revised regularly by the Ecopetrol Business Group's Governance that makes operational decisions to allocate resources to the various segments and assess their performance; and (c) there is differentiated financial information available. Internal transfers represent sales to inter-company segments and are recognized and presented at market prices.

- a) **Exploration and production:** This segment includes activities related to the exploration and production of oil and gas. Revenues are derived from sales of oil and natural gas at market prices to other segments and to third parties (domestic and foreign distributors). Costs include costs incurred in production. Expenses include all exploration costs that are not capitalized.
- b) **Transport and logistics:** This segment includes sales revenue and costs associated with the transport and distribution of hydrocarbons and derivative products in operation.
- c) **Refining, petrochemicals, and biofuels:** This segment mainly includes activities performed at the Barrancabermeja and Cartagena refineries, where crude oil from production fields is refined or processed. Additionally, this segment includes distribution of natural gas and LPG activities performed by Invercolsa Group. Revenues are derived from the sale of products to other segments and to domestic and foreign customers and include refined and petrochemical products at market prices and some fuels at regulated price. This segment also includes industrial service sales to customers.
- d) **Electric power transmission and toll roads concessions:** This segment includes activities of supplying electric power transmission services, design, development, construction, operation, and maintenance of road and energy infrastructure projects. Revenues come from the supplying of these services to domestic and foreign clients (mainly Latin America). This segment also includes the supplying of information technology and telecommunications services.

See information by segments in Note 33.

4.21 Business combinations

The Ecopetrol Business Group accounts for business combinations using the acquisition method. Identifiable assets acquired and liabilities assumed are initially measured at fair value on the acquisition date. Ecopetrol Business Group recognizes separately, at the acquisition date, the identifiable assets, and liabilities of the acquiree that meet the appropriate criteria for recognition, regardless of whether they had been previously recognized in the financial statements of the acquiree.

On the acquisition date, the acquirer will recognize separately the identifiable assets acquired, the liabilities assumed, and any non-controlling interest in the acquiree.

The company that acts as buyer will recognize the goodwill generated as an asset on the acquisition date, measured as the difference between (i) the sum of the consideration transferred, the amount of any non-controlling interest, and the fair values on the date of acquisition of the shareholding in the acquiree, and (ii) the net amount of the acquisition date of the identifiable assets acquired and the liabilities assumed.

The cost of an acquisition is measured as the aggregate of the consideration transferred, which is measured at acquisition date fair value, and the amount of any non-controlling interests in the acquiree. For each business combination, the Ecopetrol Business Group elects whether to measure the non-controlling interests in the acquiree at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition-related costs are expensed as incurred and included in administrative expenses.

The Ecopetrol Business Group determines that it has acquired a business when the acquired set of activities and assets include an input and a substantive process that together significantly contribute to the ability to create outputs. The acquired process is considered substantive if it is critical to the ability to continue producing outputs, and the inputs acquired include an organized workforce with the necessary skills, knowledge, or experience to perform that process or it significantly contributes to the ability to continue producing outputs and is considered unique or scarce or cannot be replaced without significant cost, effort, or delay in the ability to continue producing outputs.

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When Ecopetrol Business Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances and pertinent conditions as at the acquisition date.

Goodwill is initially measured at cost (being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests and any previous interest held over the net identifiable assets acquired and liabilities assumed). If the fair value of the net assets acquired is in excess of the aggregate consideration transferred, the Ecopetrol Business Group re-assesses whether it has correctly identified all of the assets acquired and all of the liabilities assumed and reviews the procedures used to measure the amounts to be recognized at the acquisition date. If the reassessment still results in an excess of the fair value of net assets acquired over the aggregate consideration transferred, then the gain is recognized in profit or loss.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of Ecopetrol Business Group's cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill has been allocated to a cash-generating unit (CGU) and part of the operation within that unit is disposed of, the goodwill associated with the disposed operation is included in the carrying amount of the operation when determining the gain or loss on disposal. Goodwill disposed in these circumstances is measured based on the relative values of the disposed operation and the portion of the cash-generating unit retained.

5. New standards and regulatory changes

5.1 New standards adopted by Ecopetrol Business Group, effective as of January 1, 2022

Ecopetrol Business Group applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2022. It has not early adopted any other standards, interpretations or amendments that have been issued and not yet effective as of the date of this report:

- IAS 16 – Property, plant, and equipment: amendment that expresses the prohibition of deducting from the cost of property, plant, and equipment the value of sales of items produced, while the company prepares the asset for its intended use. As of January 1, 2022, Ecopetrol Business Group adopted for the first time the Amendment IAS 16 “Property, Plant and Equipment - Proceeds before intended use” in a mandatory manner, the nature and effects of these changes are mentioned below:

In May 2020, the International Accounting Standards Committee - IASB issued amendments to IAS 16 - Property, Plant and Equipment referring to the part of proceeds before intended use, in terms of:

- The sales obtained from the elements produced during the installation and start-up process of the asset, that is, products obtained in the project stage or extensive tests, are recognized in the results of the period as revenue.
- The costs associated with the production of products obtained in the project stage or extensive tests sold according to IAS 2 are also recognized in the result of the period.
- The amount of revenue and costs related to the sale of products obtained in the project stage or extensive tests is disclosed in the notes to the consolidated financial statements, detailing in which items of the Financial Statement they are included.

In the oil and gas sector, this amendment has effects on the treatment of the sale to third parties of extensive oil field tests, which are sales of crude oil or gas from a well under development before entering the market in full production.

Retroactive application only affected for property, plant, and equipment, and natural and environmental resources accounts that were in the construction stage at the beginning of the earliest period presented in the consolidated financial statements in which the Ecopetrol Business Group adopted the standard, that is, on January 1, 2021. The impact of the adoption of this standard was as follows:

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- An increase of \$48,173 (See Note 15) and \$18,013 (See Note 14) in the Exploration and evaluation account within Natural and environmental resources and property, plant, and equipment balance sheet line items, respectively, with a corresponding increase in retained earnings.
- An effect of \$24,132 (See Note 10) due to the reversal of the deferred tax liability arising from the temporary difference between the tax basis and accounting basis prior to the adoption of the amendment and a corresponding effect in retained earnings.
- IAS 37 – Provisions, contingent assets, and liabilities: in which it details what costs an entity must include when determining whether a contract is onerous. The amendments apply a directly related cost approach. The costs that relate directly to a contract to provide goods or services include both incremental costs (e.g., the costs of direct labor and materials) and an allocation of costs directly related to contract activities (e.g., depreciation of equipment used to fulfil the contract as well as costs of contract management and supervision). General and administrative costs do not relate directly to a contract and are excluded unless they are explicitly chargeable to the counterparty under the contract. This amendment had no impact on the annual consolidated financial statements of Ecopetrol Business Group.
- Cycle of annual improvements 2018 – 2020 involving adjustments to IFRS 1 - subsidiary as first-time adopter, IAS 41 - taxes on fair value measurements, IFRS 16 - lease incentives and IFRS 9 - charges in the 10% test for the derecognition of financial liabilities, which clarifies the charges that an entity includes when evaluating whether the terms of a new or modified financial liability are materially different from the terms of the original financial liability. This amendment had no impact on the annual consolidated financial statements of Ecopetrol Business Group.

New standards adopted by Ecopetrol Business Group, effective as of January 1, 2021 (Reform to the benchmark interest rate) and 2020 (Amendments to IFRS 3, IFRS 7, IFRS 9, IAS 39, IAS 1, IFRS 16 Covid-19, IAS 8 and revised conceptual framework for Financial Reporting), did not have a significant impact on the financial statements as of December 31, 2021, and 2020.

5.2 New standards issued but not yet adopted

The IASB issued amendments to the following standards, with an effective date on January 1, 2023, or later periods:

- Amendment to IAS 1 - Classifications of liabilities as current or non-current, modifies the requirement to classify a liability as current, by establishing that a liability is classified as current when it does not have the right at the end of the reporting period to defer the liquidation of the liability during, at least, the twelve months following the date of the reporting period. This amendment will be effective as of January 1, 2023. On October 31, 2022, IASB published an amendment on non-current liabilities with agreed conditions and modified the effective date of January 2024.
- Amendments to IAS 1 – Presentation of financial statements. Companies must disclose material information about their accounting policies and apply the concept of materiality to accounting policy disclosures. The amendments clarify the following points:
 - The word “significant” is changed to “material or relative importance”.
 - The accounting policies that must be disclosed in the notes to the financial statements are clarified, “an entity will disclose information about its material or relative importance accounting policies.”
 - It is clarified when an accounting policy is considered material or relatively important.
 - Adds the following paragraph: “Information on accounting policies that focuses on how an entity has applied the requirements of IFRS to its own circumstances provides specific information about the entity that is more useful to users of financial statements than standardized information or information that only doubles or summarizes the requirements of IFRS standards”.
- Amendments to IAS 8 – Accounting Policies, Changes in Accounting Estimates and Errors. They clarify how companies should distinguish changes in accounting policies from changes in accounting estimates. The amendment was published by the IASB in February 2021 and clearly defines an accounting estimate to distinguish it from an accounting policy: “Accounting estimates are monetary amounts, in financial statements, that are subject to measurement uncertainty”.

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It mentions “an accounting policy could require that elements of the financial statements be measured in a way that entails measurement uncertainty—that is, the accounting policy could require that these elements be measured by monetary amounts that cannot be directly observed and they must be estimated. In this case, an entity develops an accounting estimate to achieve the objective established by the accounting policy.

- Amendments to IAS 12 Deferred taxes related to assets and liabilities that are recognized in a single transaction. The purpose of the amendments is to reduce diversity in the reporting of deferred taxes on leases and decommissioning obligations.

The amendment allows the recognition of a deferred tax liability or asset that has arisen in a transaction that is not a business combination, in the initial recognition of an asset or liability that, at the time of the transaction, does not give rise to taxable temporary differences and deductibles in the same amount.

- Modifications to IFRS 1: The amendment permits a subsidiary that elects to apply paragraph D16(a) of IFRS 1 to measure cumulative translation differences using the amounts reported in the parent’s consolidated financial statements, based on the parent’s date of transition to IFRS, if no adjustments were made for consolidation procedures and for the effects of the business combination in which the parent acquired the subsidiary. This amendment is also applied to an associate or joint venture that elects to apply paragraph D16(a) of IFRS 1.
- IFRS 3 – Business combinations: in which they update a reference from the standard to the Conceptual Framework. The amendments add an exception to the recognition principle of IFRS 3 to avoid the issue of potential ‘day 2’ gains or losses arising for liabilities and contingent liabilities that would be within the scope of IAS 37 Provisions, Contingent Liabilities and Contingent Assets or IFRIC 21 Levies, if incurred separately. The exception requires entities to apply the criteria in IAS 37 or IFRIC 21, respectively, instead of the Conceptual Framework, to determine whether a present obligation exists at the acquisition date. At the same time, the amendments add a new paragraph to IFRS 3 to clarify that contingent assets do not qualify for recognition at the acquisition date.
- Modifications to IFRS 9, IAS 39, and IFRS 7: Reform of reference interest rates. The amendments provide several exemptions that apply to all hedging relationships that are directly affected by the interest rate benchmark reform. A hedging relationship is affected if the reform gives rise to uncertainty about the timing and/or amount of the cash flows based on benchmarks of the hedged item or hedging instrument.

Although the standard has already entered into force, the companies have not made the changes in the current debt contracts and continue to apply the LIBOR rate for interest calculations since the 3 and 6-month LIBOR dollar reference rates will remain in effect until on June 30, 2023, according to the Financial Conduct Authority (FAC).

- IFRS 17 - Insurance Contracts, provides a new general model for accounting for contracts by combining a measurement of the current balance of insurance contracts with the recognition of earnings during the period in which the services are rendered. The standard’s general model requires that insurance contract liabilities be measured using current weighted probability estimates of future cash flows, a risk adjustment, and a contractual service margin that represents the expected gain from fulfilling the contracts. The effects of changes in the estimates of future cash flows and the risk adjustment related to future services are recognized during the period in which the services are rendered and not immediately in profit loss statement.

IFRS 17 replaces IFRS 4 - Insurance Contracts and will be effective for the subsidiaries Black Gold Re and Linear Systems Re Ltd for the financial reporting period beginning January 1, 2023. The standard has not yet been approved by Colombia and it is expected that in the course of 2023 it will be adopted by the country allowing Ecopetrol Business Group to adopt it in line with the international standard. The assessment of the impact of IFRS 17 is in an implementation phase and a significant effect on the Group’s consolidated financial statements is not expected given that most of the insurance contracts are short-term and would be managed by the PPA methodology - Simplified allocation of premiums.

6. Cash and cash equivalents

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	2022	2021
Banks	9,491,029	11,080,569
Short-term investments	5,907,785	3,467,859
Cash	2,244	1,478
	15,401,058	14,549,906

As of December 31, 2022, the balance of cash and cash equivalents includes 1) restricted cash flow of Interconexión Eléctrica S.A. E.S.P. for \$1,987,409 (\$1,039,024 as of December 31, 2021), based on financing contracts and maintained, mainly, to guarantee debt service and 2) restricted cash flow mainly of Oleoducto Bicentenario for \$79,870 (\$71,979 as of December 31, 2021). Both will be used in the next 12 months exclusively for the payment of principal and interest on loans.

The fair value of cash and cash equivalents approximates its book value due to its short-term nature (less than three months) and its high liquidity. Cash equivalents are convertible to a known amount of cash and are subject to a non-significant risk of changes in value. The effective rate of return on cash and cash equivalents as of December 31, 2022, was 8.5% (2021 – 2.6%).

The following table reflects the credit quality of banks in which Ecopetrol Business Group has deposits and check accounts, and issuers of investments included in cash and cash equivalents:

Rating	2022	2021
AAA	5,356,966	3,892,694
F1	1,458,524	1,177,581
A	919,903	1,224,990
A-2	749,912	—
A-1	731,424	1,294,164
AA	675,596	526,127
A3	647,316	3,049
BRC1+	606,052	2,172,603
A+	543,260	—
A-	477,059	—
F1+	466,031	2,383,713
BB	463,681	106,070
BBB	425,485	1,277,357
A2	197,917	—
A1	192,594	1,032
Baa1	93,157	—
B	16,753	14,674
Aaa	10,276	27,621
AAAmmf	5,508	—
Caa3	4,385	—
Ba1	3,083	—
BRC1	1,201	1,671
CCC	1,160	4,872
AAAf	714	19,481
P-2	—	370,582
Aa3	—	11,239
C	—	6,615
Other	1,353,101	33,771
	15,401,058	14,549,906

See credit risk policy in Note 30.7.

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7. Trade and other receivables

	<u>2022</u>	<u>2021</u>
Current		
Fuel Price stabilization fund (1)	26,296,870	7,824,788
Concessions (2)	5,194,909	3,370,644
Customers		
Domestic	3,268,944	2,917,305
Foreign	3,065,207	3,222,837
Accounts receivable from employees	115,922	106,547
Related parties (Note 31)	110,408	9,355
Industrial services	70,762	32,096
Other	1,101,977	965,310
	<u>39,224,999</u>	<u>18,448,882</u>
Non-current		
Concessions (2)	28,647,390	21,259,519
Customers		
Foreign	185,331	36,965
Domestic	72,985	178,552
Accounts receivable from employees	498,415	534,051
Related parties (Note 31)	335	335
Other (3)	2,750,749	2,150,294
	<u>32,155,205</u>	<u>24,159,716</u>

- (1) Corresponds to the application of Resolution 180522 of March 29, 2010, and other regulations that modify and add it (Decree 1880 of 2014 and Decree 1068 of 2015), which establishes the procedure to recognize the subsidy for refiners and importers of motor gasoline current and ACPM, and the methodology for calculating the net position (value generated between the parity price and the regulated price, which can be positive or negative).

For 2022, the increase in accounts receivable was mainly generated by the increase in international reference indicators. During 2022, the Ministry of Finance and Public Credit paid COP\$18,262,487 to the Ecopetrol Business Group as follows:

- Payments to Reficar for \$6,114,489 in cash and \$719,834 through Colombian sovereign bonds - TES (this operation did not generate cash flows), corresponding to the liquidation of the second half of 2021 and the first, second, and third quarter of 2022, and,
- Payments to Ecopetrol for \$4,639,779 in cash and \$6,788,385 through offsetting with dividends payable to the Ministry of Finance and Public Credit, this operation did not generate cash flows and its effect implies an increase in the variation in working capital in the cash flow statement of the Ecopetrol Business Group. The payment corresponds to the liquidation of the second half of 2021 and the first quarter of 2022.

The Ecopetrol Business Group and the National Government continue to work together and are committed to seeking alternatives to settle the balance as of December 31, 2022, during 2023.

- (2) Includes electric power transportation concessions and roads.

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- (3) Corresponds mainly to accounts receivable from the Government of Brazil for employee benefits governed by Law 4819 of 1958 to ISA CTEEP, and crude loan agreements of the Business Group for transportation systems. The balance of these accounts receivable is \$2,481,530 (2021: \$1,772,101) and the related provision for expected losses established, included in the provision line for expected credit losses, is \$475,936 (2021: \$368,299), representing a net book value of \$2,005,594 (2021: \$1,403,802). The administration monitors the progress and developments related to the legal aspect of the matter and continuously evaluates the possible impacts on its consolidated financial statements.

The book value of trade and other receivables approximates their fair value.

The changes in the allowance for doubtful accounts for the year ended December 31, 2022, 2021 and 2020 are as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Opening balance	(750,191)	(291,144)	(282,791)
Additions (reversal), net	(46,690)	2,665	(15,082)
Effect of business combination	—	(474,654)	—
Effect of change of control in subsidiaries	—	—	5,517
Currency translation	(131,270)	4,794	(1,271)
Accounts receivable write-off and uses	22,033	8,148	2,483
Closing balance	<u>(906,118)</u>	<u>(750,191)</u>	<u>(291,144)</u>

8. Inventories

The inventories balance is presented net of the allowance for inventory losses.

	<u>2022</u>	<u>2021</u>
Crude oil (1)	5,971,109	3,305,965
Fuels and petrochemicals (2)	3,241,154	2,845,486
Materials for goods production	2,667,771	2,246,761
	<u>11,880,034</u>	<u>8,398,212</u>

- (1) The variation is mainly due to a higher level of inventories in transit and connected for delivery in January 2023, and recovery of indicators (Brent reference).
(2) The variation is mainly due to the receipt of fuel imports to accomplish with the national demand for fuels.

The following are the changes of the allowances for losses for the years ended December 31, 2022, 2021 and 2020:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Opening balance	(127,662)	(109,549)	(131,526)
Additions	(18,236)	(58,437)	(9,748)
Increase due to business combination	—	(2,837)	—
Foreign currency translation	(3,591)	(1,449)	(122)
Effect of change of control in subsidiaries	—	—	20,075
Other (1)	20,692	44,610	11,772
Closing balance	<u>(128,797)</u>	<u>(127,662)</u>	<u>(109,549)</u>

- (1) It mainly includes uses.

Crude oil, fuel, and petrochemicals inventories are adjusted to the lower of cost and net realizable value, mainly due to fluctuations in international crude oil prices. The amount recorded for this in 2022 was \$133,164 (2021 - \$23,785; 2020 - \$9,017).

9. Other financial assets

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	<u>2022</u>	<u>2021</u>
Assets measured at fair value		
Investment Portfolio – Foreign currency	1,056,385	1,172,718
Investments in equity securities and trust funds (1)	875,335	606,624
Investment Portfolio – Local currency	761,687	759,892
Assets measured at fair value through other comprehensive income	3,583	2,789
Hedging instruments (2)	311	17,449
	<u>2,697,301</u>	<u>2,559,472</u>
Assets measured at amortized cost (3)	28,570	375,262
	<u>2,725,871</u>	<u>2,934,734</u>
Current	1,162,127	1,627,150
Non-current	1,563,744	1,307,584
	<u>2,725,871</u>	<u>2,934,734</u>

(1) They include deposits in trusts companies and restricted funds in Brazil, Peru, Chile, and Colombia.

(2) As of December 31, 2022, corresponds to swap contracts to hedge commodity price risk and forwards contracts to hedge exchange rate risk.

(3) Includes investments with maturities greater than 90 days, in Chile and Colombia.

The average return of the investment portfolio in Colombian pesos (local currency) and U.S. dollars (foreign currency) were 4.3% (2021 – 2.23%) and 13.11% (2021 – 0.1%), respectively.

Changes in fair value are recognized in financial results (Note 29).

9.1 Restrictions

As of December 31, 2022 and 2021, there were restricted funds for \$328,283 and \$138,688 respectively, which have specific destinations for projects in Brazil, Peru, Chile, and Colombia.

9.2 Maturity

	<u>2022</u>	<u>2021</u>
Up to 1 year	1,162,127	1,627,150
1 – 2 years	673,169	434,372
2 – 5 years	452,417	786,760
> 5 years	438,158	86,452
	<u>2,725,871</u>	<u>2,934,734</u>

9.3 Fair value

The following is the balance of other financial assets by fair value hierarchy level as of December 31, 2022, and 2021:

	<u>2022</u>	<u>2021</u>
Level 1	1,892,486	834,057
Level 2	804,815	1,725,415
	<u>2,697,301</u>	<u>2,559,472</u>

There were no transfers between hierarchy levels for the years ended December 31, 2022, and 2021.

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9.4 Credit rating

The following table reflects the credit quality of the issuers of other financial assets:

	<u>2022</u>	<u>2021</u>
BB	1,051,042	7,412
BB+	898,072	954,212
Ba1	388,743	—
AAA	40,369	1,158,794
Ba2	16,227	—
A	14,702	12,204
A3	9,918	—
F3	4,457	8,990
BBB	4,153	7,112
F1+	29	319,253
B	—	158,814
A-1	—	119,461
BRC1+	—	75,068
A+	—	42,821
AA+	—	6,075
Other	298,159	64,518
	<u>2,725,871</u>	<u>2,934,734</u>

See credit risk policy in Note 30.7.

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10. Taxes

10.1 Current and non-current tax assets and liabilities

	<u>2022</u>	<u>2021</u>
Current tax assets		
Income tax (1)	279,457	1,739,542
VAT refund (2)	4,725,281	3,108,175
Other taxes (3)	1,779,654	1,426,085
	<u>6,784,392</u>	<u>6,273,802</u>
Non-current tax assets		
Deferred tax assets (4)	13,392,480	9,024,858
Income tax credits	8,570	5,274
	<u>13,401,050</u>	<u>9,030,132</u>
Current tax liabilities		
Income tax payable (5)	6,617,468	1,298,524
Industry and commerce tax (6)	346,958	247,966
Value added tax	206,341	157,452
National tax and surcharge on gasoline	181,490	192,665
Carbon tax	77,721	66,006
Other taxes (7)	200,923	189,491
	<u>7,630,901</u>	<u>2,152,104</u>
Non-current tax liabilities		
Deferred tax liabilities (8)	13,479,336	10,850,463
Income tax payable	90,897	65,130
Income tax (9)	1,705,411	1,208,927
	<u>15,275,644</u>	<u>12,124,520</u>

- (1) The variation corresponds mainly to the use of the balance in favor of the 2021 income tax return, of Ecopetrol S.A.
- (2) It corresponds mainly to the balance in favor of the value added tax (VAT) in Ecopetrol S.A. for \$4,165,563, Esentia S.A. for \$252,977, ISA Group for \$189,538, and other companies for \$50,305, among others, and a favorable balance in the industry and commerce tax in Ecopetrol S.A. for \$57,543, and Cenit for \$8,887, and other companies for \$468.
- (3) It includes the potential tax credit of the VAT paid in the acquisition of real productive fixed assets, in accordance with the section 258-1 of the Colombia Tax Code. Additionally, it includes advances and self-withholdings of territorial taxes.
- (4) Mainly corresponds to the loans payable in dollar of Ecopetrol Business Group, that increased due to the currency devaluation in 2022 (21%), and the increase in debt levels.
- (5) The increase between the prior year mainly corresponds to the better results obtained in the year by Ecopetrol S.A., due to the growth of revenue given the increase in the average prices of the basket of crude oil, natural gas, and products, and the higher revenue obtained by the midstream segment, and the increase in the tax rate (35% in 2022 vs. 31% in 2021), among others.
- (6) The increase between the prior year mainly corresponds to the higher income obtained by Ecopetrol Business Group.
- (7) The variation mainly corresponds to the increase in royalties' payments, transport tax, among others, due to the improved results in the fiscal year 2022.

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- (8) The variation mainly corresponds to the temporary differences related to IAS 12.41 and the deferred tax of ISA, represented by the changes related to the contractual asset CPC 47 and the deferral of income in accordance with Law 12,973/2014 in Companhia de Transmissao de Energia Eletrica Paulista (CTEEP), the application of additional depreciation shifts, effect of the exchange difference of international bonds and actuarial liabilities in ISA and among others.
- (9) Mainly corresponds to the contributions payable by the ISA group of PIS, CONFIS of CTREP and subsidiaries located in Brazil.

10.2 Income tax

In accordance with Law 2010/2019 and Law 2155/2021, the tax provisions applicable in Colombia for taxable years 2021 and 2022, are the following:

- The income tax rate applicable to national companies and foreign entities will be 31% for the year 2021 and 35% for the fiscal year 2022. Law 2155 of 2021 increased the income tax rate from 31% to 35% from the year 2022.
- For the year 2021, the presumptive income rate was 0% of the taxpayer's net equity from the immediately previous year.
- The income tax for tax free trade zone users will be 20%. If the company located in the free zone has a Legal Stability Agreement (hereinafter LSA), the income tax rate will continue to be 15% during the term of said contract. This is the case of Refinería de Cartagena S.A.S. ("Reficar") until 2023 and Esentia Masterbatch Ltda. ("Esentia MB") until 2028.
- For fiscal years 2021 and 2022, Ecopetrol Business Group had subsidiaries that were subject to a 31% and 35%, respectively, income tax rate, subsidiaries located in free trade zones that were subject to a 15% income tax rate depending upon whether they complied with the Legal Stability Contract (LSA) rules and other subsidiaries in Brazil, Chile, Perú, USA, that were subject to 34%, 27%, 29.5%, 21%, respectively, and other companies that were subject to statutory income tax rates applicable in countries where they are incorporated.
- The tax depreciation percentages are adjusted based on the table established in Article 137 of the Colombian Tax Code. On the other hand, oil investments amortization will be calculated based on the technical production units as it is recorded for accounting purposes.
- Expenses for the acquisition of exploration rights, geology and geophysics, exploratory drilling, among others, are capitalizable until the technical feasibility and commercial viability of extracting the resource are determined.
- The cost of acquisition of exploration rights, geology and geophysics (G&G), exploratory drilling, among others, is capitalized for tax purposes until the technical and commercial feasibilities of extracting the resource are achieved.
- Variations in items expressed in foreign currency will only have tax effects at the time of disposal or payment in the case of assets, or liquidation or partial payment in the case of liabilities.
- Tax losses generated as of January 1, 2017, may be offset against ordinary net income obtained in the following 12 taxable years, except for companies that have signed a legal stability contract, and included within it the article that they contemplated that tax losses did not have an expiration date.

Related to income tax in other countries in which the Business Group operates, the following are the main aspects to consider:

Peru

- Current income tax rate is 29.5% on the taxable income after deducting the employees participation, which is calculated with a rate of 5% or 10% on the taxable income.
- Dividends and other forms of profit distribution are subject 5% income tax rate.

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- From 2021, the financial expenses deduction is limited to 30% of tax Ebitda.
- Intra-group services deduction is allowed for low value-added services to the extent that the deductible amount does not exceed expenses and costs plus a 5% margin.

Brazil

- Legal entities income tax and Social Contribution on Liquid Profits are federal taxes that affect the income of the legal entity in its real or presumed profit.
- Real profit: Tax is determined based on the results for each period, establishing the taxable base considering the accounting profit and performing the devaluations determined in tax legislation. All income and returns on capital are included in the calculation base. The 34% rate is applied to the taxable base of liquid profit.
- Presumed profit: it is a simplified form taxation for the calculation base. Applies to legal entities that have gross income up to BRL \$78 million in the immediately preceding year. In this system, the tax base is determined by applying the rate of 8%, 12% or 32% to gross income (the rate to be applied depends on the activity carried out by the taxpayer) and the rate of 34% is applied to the result.

Statute of limitations of tax returns

In Colombia, the income tax returns of the taxable years 2011, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021 and income tax for equality - CREE - of the taxable years 2014, 2015, and 2016 can still be reviewed by the tax authorities. The management of Ecopetrol Business Group considers that the amounts recorded as liabilities for taxes payable are sufficient and are supported by the law to meet any claim that may be established with respect to such years.

In Colombia, as of January 1, 2017, the statute of limitations for the income tax return corresponds to three-year (3) counted from the due date to file the return or the filing date, when these have been lately filed. Returns filed by taxpayers that have made transactions, subject to the transfer pricing regulations, have a five-year (5) statute of limitations, for the tax returns that are filed as of January 1, 2020. For the other countries where there are subsidiaries of the Ecopetrol Business Group, the statute of limitations time will depend on the local regulations in each country.

Income tax expense

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Current income tax (1)	16,791,619	6,975,549	2,861,606
Deferred income tax (2)	2,813,817	1,939,567	(791,824)
Deferred income tax – rate change (3)	(658,919)	(28,993)	—
Adjustments to prior years' current and deferred tax(4)	17,421	(90,860)	(31,121)
Income tax expenses	<u>18,963,938</u>	<u>8,795,263</u>	<u>2,038,661</u>

- (1) The increase between 2022 and 2021 by \$9,816,070 corresponds mainly to the better results obtained in the year in Ecopetrol S.A., generated by the growth of revenue given the increase in the average prices of the crude basket oil, natural gas, and products, and the higher revenue obtained by the midstream segment, and the increase in the tax rate (35% in 2022 vs. 31% in 2021), among others.
- (2) The variation between 2022 and 2021 by \$874,250 corresponds mainly to the effect of the exchange rate on loans denominated in foreign currencies of Ecopetrol S.A. and Refinería de Cartagena, to the adjustment of the calculation of deferred tax for capital gains, from 10% to 15%, associated with the disinvestment of the share of Ecopetrol S.A. in the opportunity called Roger project, among others.

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- (3) The variation between 2022 and 2021 by (\$656,926) corresponds mainly to the effect of the Law 2277 of 2022, that established an additional point on the income tax rate of 5%, 10%, or 15% as of the year 2023 and following years.
- (4) The variation between 2022 and 2021 by \$108,281 corresponds mainly to the difference between the provision and the income tax return for fiscal year 2021 filed in 2022.

Reconciliation of the income tax expenses

The reconciliation between the income tax expense and the current tax applicable to the Ecopetrol Business Group is as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net income before income tax	54,163,418	26,425,817	4,776,514
Statutory rate (Colombia)	35.0 %	31.0 %	32.0 %
Income tax at statutory rate	18,957,196	8,192,003	1,528,484
Effective tax rate reconciliation items:			
Adjustment - IAS 12.41	1,946,269	1,194,065	247,358
Non-deductible expenses	448,433	387,407	29,649
Reversal of deferred tax recognized in prior years	—	—	245,508
Rate differential adjustment	(670,080)	(304,176)	14,974
Non-taxable income	(739,243)	(517,483)	(35,471)
Prior years' taxes	17,421	(90,860)	(31,121)
Foreign currency translation and exchange difference	(82,028)	(149,035)	59,852
Tax discounts and tax credit	(184,054)	(173,154)	(20,572)
Others	(71,057)	285,489	—
Effect of tax reform	(658,919)	(28,993)	—
Income tax calculated	18,963,938	8,795,263	2,038,661
Effective tax rate	35.0 %	33.3 %	42.7 %
Current	16,801,363	6,940,660	2,583,832
Deferred	2,162,575	1,854,603	(545,171)
	<u>18,963,938</u>	<u>8,795,263</u>	<u>2,038,661</u>

The effective tax rate as of December 31, 2022 is 35.0% (2021 – 33.3%); The variation of 1.7% compared to the previous period is mainly due to: a) the profit increase, b) the effect of the companies of the Group with profit that have a nominal tax rate different from the parent company (Refineria de Cartagena - \$476,772, Ecopetrol Capital AG - \$71,563, Esentia MB - \$67,942, Ecopetrol USA - \$168,374, Ecopetrol Permian - \$243,809 and others - \$133,178), c) to the effect of the Law 2277 of 2022, that established an additional point on the income tax rate of 5%, 10%, or 15% as of the year 2023 and following years in Ecopetrol S.A. and Hocol, d) the greater distribution of capital pledges in Companhia de Transmissão de Energia Elétrica Paulista (CTEEP), e) the effect of the incorporating ISA in Ecopetrol Business Group and f) the update of the occasional profit tax associated with the divestment of Ecopetrol S.A. share in the opportunity called the Roger project, among others.

Deferred income tax

	<u>2022</u>	<u>2021</u>
Deferred tax assets (1)	13,392,480	9,024,858
Deferred tax liabilities (2)	(13,479,336)	(10,850,463)
Net deferred income tax	(86,856)	(1,825,605)

- (1) Mainly corresponds to the loans payable in dollar of Ecopetrol Business Group, that increased due to the currency devaluation in 2022 (21%), and the increase in debt levels of the Business Group.
- (2) The variation mainly corresponds to the deferred tax of ISA, represented by the deferral of income and the application of accelerated depreciation amounts in Companhia de Transmissao de Energia Eletrica Paulista (CTEEP).

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The detail of deferred tax assets and liabilities is as follows:

	<u>2022</u>	<u>2021</u>
Deferred tax assets (liabilities)		
Loans(1)	8,707,743	3,385,388
Loss carry forwards (2)	6,497,845	6,122,243
Provisions (3)	3,712,239	4,029,550
Employee benefits (4)	963,558	1,378,161
Accounts payable	54,611	13,774
Presumptive income tax excesses (5)	—	180,563
Goodwill (6)	(604,350)	(405,973)
Other (7)	(3,499,216)	(3,050,013)
Accounts receivable (8)	(4,558,699)	(4,029,534)
Property plant and equipment and Natural and environmental resources (9)	(11,360,587)	(9,449,764)
	<u>(86,856)</u>	<u>(1,825,605)</u>

- (1) Corresponds mainly to the effect in the foreign exchange rate (21%) in the fiscal year 2022 and the increase in debt levels of the Business Group.
- (2) In 2022, a deferred tax asset for tax losses carryforwards was recognized for \$6,497,845 (2021 - \$6,122,243) in the following companies:
- Tax losses that do not expire: Ecopetrol USA for \$339,950 (2021 - \$765,914); Refineria de Cartagena for \$1,871,732 (2021 - \$2,027,433); and ISA Group companies in Chile for \$35,806 (2021 - \$20,818).
 - Tax losses that expire in 12 years in Invercolsa for \$17,524 (2021 - \$14,626).
 - Tax losses that expire in 20 years from the date they were recognized by Ecopetrol USA Inc. for \$1,887,805 (2021 - \$1,591,781).
 - Tax losses expiring in 2025 of Ruta de la Araucania and Transamerican for \$111,273 (2021 - \$137,289); 2027, Ruta Costera for \$84,964 (2021 - \$17,953); 2030 from Internexa Chile for \$16,062 (2021 - \$12,931); 2029 of Ruta del Maipó for \$1,000,632 (2021 - \$763,272); 2040 from ISA Interchile for \$1,104,625 (2021 - \$756,410); and 2044 Ruta del Loa for \$27,472 (2021 - \$13,816).
- (3) Corresponds to non-deductible accounting provisions, mainly the asset retirement obligation (ARO) provision.
- (4) Corresponds to update of the actuarial calculations for health, pensions and bonds, education, and other long-term benefits to employee.
- (5) In 2021, Refineria de Cartagena recognized deferred tax assets by COP\$180,563
- (6) According to Colombian tax law until the fiscal year 2016, goodwill was subject to amortization for fiscal proposes, while under IFRS it is only allowed to be subject to impairment tests, a difference that results in a deferred tax liability, variances related to translation adjustment from the year.
- (7) The variation corresponds mainly to: a) the balance of regulatory security works and payment of pre-existing infrastructure of the concessionaires in Chile and in Companhia de Transmissão de Energia Elétrica Paulista (CTEEP) for the provision associated with law 4819 pension benefits, b) the total deferred tax liability of ISA's consolidated, mainly in Ruta del Maipo due to the readjustment of the financial asset and c) the effect of business combination (ISA).
- (8) The variation mainly corresponds to the deferred tax of ISA, represented by the deferral of income and the application of accelerated depreciation amounts in Companhia de Transmissao de Energia Eletrica Paulista (CTEEP).

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(9) For tax purposes, natural and environmental resources, and property, plant, and equipment have a useful life and a depreciation and amortization methodology different from those determined under international accounting standards, mainly in ISA Colombia and Transmantaro considering their accelerated depreciation in 2022.

Each legal entity of the Ecopetrol Business Group offsets tax assets and liabilities only if it has a legally enforceable right to offset current tax assets and liabilities and to the extent that they relate to income taxes required by the same tax jurisdictions and tax authorities.

The movements of deferred income tax for the years as of December 31, 2022, 2021 and 2020 are as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Opening balance	(1,825,605)	6,034,706	5,480,516
Deferred tax recognized in profit or loss	(2,162,575)	(1,854,603)	545,171
Increase due to business combination	96,767	(7,877,297)	(383,346)
Deferred tax recognized in other comprehensive income (a)	4,769,474	1,535,151	89,526
Other	(24,132)	(35,033)	—
Foreign currency translation	(940,785)	371,471	302,839
Closing balance	(86,856)	(1,825,605)	6,034,706

(a) The following is the detail of the income tax recorded in other comprehensive income:

<u>December 31, 2022</u>	<u>Pre-tax</u>	<u>Deferred tax</u>	<u>After tax</u>
Actuarial valuation gains (losses) (Note 22.1)	1,254,514	(586,260)	668,254
Cash flow hedging for future crude oil exports (Note 30.3)	3,167,351	(1,638,602)	1,528,749
Hedge of a net investment in a foreign operation (Note 30.4)	7,526,124	(2,538,389)	4,987,735
Hedge with derivative instruments	(111,690)	(6,223)	(117,913)
	11,836,299	(4,769,474)	7,066,825
<u>December 31, 2021</u>	<u>Pre-tax</u>	<u>Deferred tax</u>	<u>After tax</u>
Actuarial valuation gains (losses) (Note 22.1)	(2,456,667)	679,510	(1,777,157)
Cash flow hedging for future crude oil exports (Note 30.3)	1,259,269	(450,492)	808,777
Hedge of a net investment in a foreign operation (Note 30.4)	4,579,758	(1,708,348)	2,871,410
Hedge with derivative instruments	191,487	(55,821)	135,666
	3,573,847	(1,535,151)	2,038,696
<u>December 31, 2020</u>	<u>Pre-tax</u>	<u>Deferred tax</u>	<u>After tax</u>
Actuarial valuation gains (losses) (Note 22.1)	(137,459)	41,238	(96,221)
Cash flow hedging for future crude oil exports (Note 30.3)	(1,186)	1,908	722
Hedge of a net investment in a foreign operation (Note 30.4)	520,490	(156,147)	364,343
Hedge with derivative instruments	(78,547)	23,475	(55,072)
	303,298	(89,526)	213,772

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Deferred tax assets not recognized

Deferred tax assets related to tax loss carryforwards incurred by the subsidiaries of ISA Group: Ruta del Bosque (Chile) for \$102,864 (2021 – \$35,511), Ruta del Maule (Chile) for \$43,702 (2021 - \$27,404), ISA Inversiones Chile Ltda for \$84,816, Ruta Costera (Colombia) for \$391 (2021 - \$932), ISA Intervial Colombia for \$564 (2021 - 541), Proyecto de Infraestructura del Perú for \$1,143, ISA Capital do Brasil for \$20,216 (2021 - \$15,983), ISA Investimentos Brasil for \$883, Internexa Brasil Operadora de Telecomunicações for \$101,525 (2021 - \$69,358), Internexa Participações (Brasil) for \$2,913 (2021 – 2,121) and ISA Bolivia for \$4,142 (2021 – 1,831), are not recognized, since Management has assessed and reached the conclusion that it is not probable that the deferred tax asset related to these tax losses and presumptive excess income is recoverable in the short term.

If Ecopetrol Business Group had been able to recognize the unrecognized deferred tax asset, the profit for the year ended December 31, 2022, would have increased by \$363,158 (\$153,681).

With respect to the additional income surtax, deferred tax assets corresponding to the estimated surcharge for the years 2026 and following are not recognized because there is no certainty about the proportion of the deferred that will be recovered in each of these years.

Deferred tax liabilities not recognized

As of December 31, 2022, in connection with paragraph 39 of IAS 12 deferred tax liabilities are not recognized on the difference between the accounting and tax bases associated with investments in subsidiaries, joint ventures of Ecopetrol S.A. (Base: \$-25,966,564 Tax: \$-3,894,985) and other group companies (Base: \$-8,891,965 Tax: \$-1,333,795).

Dividends received in the year 2022 were untaxed. The Company expects this same treatment for the dividends it receives in 2023.

Uncertain tax positions - IFRIC 23

Ecopetrol Business Group's strategy is to avoid making aggressive tax decisions that may cause questioning of its tax returns, by tax authorities.

Regarding uncertain tax positions where it has been determined that there may be a possible controversy with the tax authority that could result in an income tax increase, a success threshold has been established by IFRIC 23, which has been calculated based on current regulations and tax opinion provided by our tax advisors.

In accordance with the aforementioned interpretation, the Ecopetrol Business Group considers that uncertain tax positions include in its determination of income tax will not affect the results if it is probable that the position will be accepted by the tax authorities. Notwithstanding, the Ecopetrol Business Group will continue to monitor new tax regulations and ruling issued by the tax authority and other entities.

10.3. Other taxes

Dividend taxes

Starting on the profits generated from the year 2017, the tax on dividends applies to resident natural persons, national companies, and foreign entities.

Law 1943 of 2018 established that, as of January 1, 2019, dividends and participations paid or credited to the account from profit distributions that have been considered as income that does not constitute income or occasional profit between Colombian companies, are subject to a withholding for dividend tax at a rate of 7.5% (10% as of 2023, according to Law 2277 of 2022). This withholding is transferable to the final beneficiary, foreign entity, or natural person tax resident in Colombia. On the other hand, if the profits charged to which the dividends were distributed were not subject to tax at the company level, said dividends are taxed with the income tax applicable in the period of distribution. In this case, the 7.5% withholding will apply to the value of the dividend once decreased with the income tax (35% for the year 2022).

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The non-taxed dividends that the Ecopetrol Business Group will receive will not be subject to withholding at source by express provision of the regulation, which states that dividends distributed within business groups duly registered with the Chamber of Commerce, to decentralized entities or Colombian Holding Companies, They will not be subject to withholding at source for this concept.

Transfer prices

In Colombia, income taxpayers who enter into operations with economic associates or related parties from abroad and located in free zones, or with residents located in countries considered non-cooperative jurisdictions with low or no taxation, are required to determine for income tax purposes, their ordinary and extraordinary revenue, their costs and deductions, assets and liabilities, considering for these operations the prices and profit margins that would have been used in comparable operations with or between those not economically related.

Ecopetrol Business Group submitted in 2022 the transfer pricing information for 2021 corresponding to the informative return, the supporting documentation, the country-by-country report, and the master file, in accordance with current tax regulations.

For the taxable year 2022, the transactions with economic related parties abroad, as well as the business conditions under which such operations were made and the general structure, did not vary significantly with respect to the previous year. For this reason, it is possible to infer that said transactions were recognized in accordance with the arm's length principle. It is estimated that no adjustments related to the transfer pricing analysis of the year 2021 will be required, which imply changes in the income provision of the same year.

Law 2010 of December 27, 2019 - Colombia

In October 2019 the Constitutional Court declared Law 1943 of 2018 (Tax Reform of 2018) due to procedural defects in its approval in Congress. The Court said that the effect of its pronouncement would be applicable as of January 1, 2020, therefore Law 1943 was applicable in its entirety until December 31, 2019. The Constitutional Court granted the executive the possibility of presenting a new legislative project for the 2020 period, as a result, the Government presented a bill that was sanctioned and materialized in Law 2010 of December 27, 2019. In general terms, specific modifications were presented, such as the following:

Income tax rate applicable for taxable year 2020 and following years:

<u>Year</u>	<u>General Rate*</u>
2020	32 %
2021	31 %

(*) Applicable rate for Colombian companies, permanent establishments, and foreign entities.

The undercapitalization rule contained in article 118-1 of Colombia Tax Code, had been modified by Law 1943/2018. In this sense, as of 2019, the undercapitalization rule will only be applicable with respect to interest generated in the acquisition of debts contracted, directly or indirectly, with national or foreign economic associates. Likewise, the capital-debt ratio was modified to 2:1 (previously it was 3:1) with which not only may interest generated on debts acquired with related parties be deducted when the average total amount of such debts does not exceed two (2) times the net worth of the taxpayer determined as of December 31 of the immediately preceding taxable year.

Value Added Tax

The VAT already paid by the user of the free zone are excluded from the basis to settle the VAT on imports of goods from the free zone. Article 491 of the Tax Code expressly prohibits the possibility to consider the VAT paid on the acquisition of fixed assets as deductible tax. In addition, three VAT exemption days a year are established in Colombia for certain products, with limits depending on the units purchased.

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Tax procedures

In terms of procedure, there are modifications: (i) withholding that, despite being ineffective, will be enforceable, (ii) electronic notification of administrative acts, (iii) payment of glosses in the statement of objections to avoid default interest, (iv) elimination of the extension of the finality to additional three years for compensation of tax losses, and (v) the term of the finality will be 5 years, compared to the years in which there is an obligation to comply with the transfer pricing regime.

In addition, an audit benefit was included for taxable years 2020 and 2021. By virtue of this benefit, the private settlement of income taxpayers and complementary taxpayers who increase their net income tax by at least a percentage a minimum of 30%, related to the net income tax of the immediately preceding year, will become final within six months after the date of presentation if a notification to correct or special requirement has been notified, or provisional settlement and, considering that the declaration must be presented in a timely manner and the payment must be made within the established deadlines.

If the increase in the net income tax is at least 20% over the net income tax of the immediately preceding year, shall be considered for twelve (12) months, after the date the presentation if not notified of a deadline for correction or special requirement, or a special deadline or provisional settlement, provided that the return is filed timely, and the payment is made within the established deadlines.

The above benefit does not apply to: (i) taxpayers who enjoy tax benefits due to their location in a specific geographical area; (ii) when it is shown that declared withholdings are non-existent; (iii) when the net income tax is less than 71 UVT (\$24). The term set forth in this regulation does not extend to declarations of withholding or sales tax, which will be governed by the general regulations.

Law 2155 of September 14, 2021 - Colombia

In general terms, this reform increased the general income tax rate to 35% as of January 1, 2022 and maintained the discount for the Industry and Commerce Tax at 50%. This Tax Reform introduced other changes in value added tax and tax procedure obligations. Before the passing of this Law, the rate from the year 2022 was 30% and the discount of the Industry and Commerce Tax was 100%.

Audit benefit: For the fiscal years 2022 and 2023, this Law reduce the time in which the tax authorities can audit an income tax return, from 5 years to between 6 to 12 months, depending on whether the net income tax increased to 35% or 25% with respect to that income tax return in the last fiscal year.

Works for Taxes Mechanism: The assumptions under which the “works for taxes” can be accessed are expanded, including those territories that, not being ZOMAC, are in some of these situations: (i) They have high rates of poverty, (ii) totally or partially lack infrastructure for the provision of residential public services, (iii) are in non-interconnected areas and (iv) are in Orange Development Areas (ADN acronyms in Spanish).

This mechanism will also be applicable to those projects declared of national importance that are strategic for the economic and/or social reactivation of the Nation, even if they are not located in the previous territories (subject to the approval of the Ministry of Finance and Public Credit).

Tax reform Law 2277 of December 13, 2022

The most relevant aspects of this reform in the Business Group’s taxes.

Additional rate to the income tax rate: An additional rate is established for those companies that carry out the activity 0610 – Crude oil extraction.

An additional rate will be calculated taking as a reference the average Brent price of the last 10 years, which will be updated by the inflation index of the United States of America to update them at constant values. On these, the percentiles that give rise to the surcharge rate are determined as indicated below:

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< percentile 30	0%
>= percentile 30 and < percentile 45	5%
>= percentile 45 and < percentile 60	10%
>= percentile 60	15%

Non-deductibility of royalties: The deductibility of oil royalties paid to the Colombian Government for the exploitation of non-renewable resources is restricted, regardless of the denomination of the payment.

Free zone rate: The rate of taxable income and complementary taxes applicable to offshore free zones; industrial users of special permanent free zones for port services, industrial users of special permanent free zones, whose main corporate purpose is the refining of petroleum-derived fuels or refining of industrial biofuels; industrial users of services that provide the logistics services of numeral 1 of article 3 of Law 1004 of 2005 and operator users, will be 20%.

Minimum tax rate: A minimum tax rate is established for income taxpayers, which will be calculated from the adjusted financial profit, which may not be less than 15% and will be the result of dividing the adjusted tax on the net profit.

Effective head office of management: It will be understood that the effective headquarters of management of a company or entity is the place where the commercial and management decisions necessary to carry out the activities of the company or entity are materially made on a day-to-day basis, that is, the places where the administrators of the company usually execute their responsibilities and the daily activities.

Research, technological development, or innovation investment discount: Investments in projects qualified by the National Council of Tax Benefits in Science and Technology in Innovation in Colombia will have the right to discount 30% of the value invested in said income tax projects in the taxable period in which the investment was made. It is not possible to take the cost or deduction simultaneously with the discount.

Tax benefits and incentives limits: For income taxpayers, other than natural persons and illiquid successions, the value of income that does not constitute income for tax purposes or occasional gain, special deductions, exempt income, and tax discounts may not exceed the 3% per year of ordinary liquid income before deducting the special deductions contemplated in the regulations.

Industry and commerce tax deduction: The industry and commerce tax will be 100% deductible as of taxable year 2023, it can no longer be treated as a tax discount.

Dividend tax: Dividends and shares paid to national companies will be subject to the rate of ten percent (10%) as withholding tax on income, which will be transferable and attributable to the natural person (resident or resident investor abroad).

The income tax rate applicable to dividends and shares paid to permanent establishments in Colombia of foreign companies will be 20%.

Concurrent benefits: The prohibition of taking concurrent tax benefits is extended to exempt income, revenue that does not constitute income for tax purposes or occasional gain, and the reduction of the income tax rate.

11. Other assets

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	<u>2022</u>	<u>2021</u>
Current		
Partners in joint operations	871,409	639,199
Prepaid expenses	693,341	549,456
Advanced payments to contractors and suppliers	679,829	591,990
Trust funds	507,163	527,520
Related parties (Note 31)	1,087	1,386
Other assets	25,651	23,540
	<u>2,778,480</u>	<u>2,333,091</u>
Non-current		
Abandonment and pension funds	568,066	461,729
Employee benefits	342,143	229,969
Trust funds	184,464	176,781
Advanced payments and deposits	87,684	92,815
Judicial deposits and attachments	54,776	48,845
Other assets	216,214	188,224
	<u>1,453,347</u>	<u>1,198,363</u>

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12. Business combinations

On August 20, 2021, the closing conditions of the Inter-Administrative Agreement signed on August 11 between Ecopetrol S.A. and the Ministry of Finance and Public Credit (“MHCP”) for the acquisition of 569,472,561 shares of Interconexión Eléctrica S.A. ESP (“ISA”) equivalent to 51.4% of the outstanding shares of this company and representing 100% of the ownership of the MHCP in said company were satisfactorily fulfilled.

Considering the final purchase price allocation on August 31, 2022, the fair value of the identifiable assets and liabilities of ISA as at the date of acquisition were:

	<u>Fair Value</u>
Assets	
Cash and cash equivalents	4,983,234
Accounts receivable	27,487,774
Inventories	120,300
Other financial assets	1,093,941
Current tax assets	477,504
Other assets	682,445
Investments in subsidiaries and joint ventures	5,014,749
Properties, plant, and equipment	17,486,901
Right of use assets	230,207
Intangibles	13,903,491
Deferred tax assets	2,075,849
Total assets	<u>73,556,395</u>
Liabilities	
Loans	27,203,432
Leases	255,503
Accounts payable	1,358,692
Employee Benefits	973,210
Tax liabilities	1,897,786
Provisions and contingencies	947,883
Other liabilities	1,708,349
Deferred tax liabilities	9,856,379
Total liabilities	<u>44,201,234</u>
Total identifiable net assets	<u>29,355,161</u>
Non-controlling interest	(18,734,241)
Goodwill derived from the acquisition	3,279,916
Consideration transferred	<u>13,900,836</u>

The net assets recognized in the consolidated financial statements as of December 31, 2021, were based on a provisional assessment of their fair value and could be adjusted in case of obtaining new information as referred to in paragraph 46 of IFRS 3. The valuation was not completed as of the date of approval of the 2021 financial statements by the Company’s Management.

In August 2022, the valuation was completed, considering the new information obtained to the acquisition date, and the fair value of the properties, plant, and equipment was \$17,486,901, and intangibles \$13,903,491, which presented a decrease of \$153,557, and \$422,988, respectively, over the provisional value. Those adjustments were not material thus the financial information as of December 2021 was not restated. As a result, there was a decrease in the deferred tax liability of \$96,767 and a decrease in the non-controlling interest of \$238,839. There was also a corresponding increase in goodwill of \$240,939, resulting in \$3,279,916 of total goodwill arising on the acquisition. The increased depreciation charge on the property, plant, and equipment, from the acquisition date to 31 December 2021 was also not material.

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From the date of acquisition, ISA contributed \$4,113,198 of revenue and \$1,108,202 (including non-controlling interest for \$846,454) to net profit from continuing operations of the Group. If the combination had taken place at the beginning of 2021, the Group's revenue from continuing operations would have been higher by \$7,039,487, and the profit before tax from continuing operations would have been \$2,096,511 (including non-controlling interest for \$1,501,984). The goodwill of \$3,279,916 comprises the fair value of expected synergies arising from acquisition.

13. Investments in associates and joint ventures

13.1 Composition and movements

	<u>2022</u>	<u>2021</u>
Joint ventures		
Interligação Elétrica do Madeira S.A.	1,871,142	1,374,483
Transmissora Aliança de Energia Elétrica S.A.	1,830,504	1,496,060
Equion Energía Limited	1,191,154	1,860,634
Interligação Elétrica Paraguaçu S.A.	614,112	412,526
Interligação Elétrica Garanhuns S.A.	571,328	363,498
Interligação Elétrica Ivaí S.A.	469,176	288,224
Interligação Elétrica Aimorés S.A.	411,495	278,408
Conexión Kimal Lo Aguirre S.A. (1)	169,230	—
Ecodiesel Colombia S.A.	54,614	64,019
Interconexión Eléctrica Colombia Panamá S.A.	20,516	8,737
Transnexa S.A. E.M.A.	8,545	8,545
Derivex S.A.	439	448
Parques de Rio	83	93
Interconexión Eléctrica Colombia Panamá S.A.S E.S.P.	4	4
	<u>7,212,342</u>	<u>6,155,679</u>
Less impairment:		
Equion Energía Limited	(400,196)	(398,104)
Transnexa S.A. E.M.A.	(8,545)	(8,545)
	<u>6,803,601</u>	<u>5,749,030</u>
Associates		
Gases del Caribe S.A. E.S.P.	1,495,341	1,515,838
ATP Tower Holdings	913,218	813,697
Gas Natural del Oriente S.A. E.S.P.	148,254	142,508
Gases de la Guajira S.A. E.S.P.	69,376	69,461
E2 Energía Eficiente S.A. E.S.P.	34,944	35,062
Extrucol S.A.	27,680	28,578
Serviport S.A.	9,399	9,399
Sociedad Portuaria Olefinas	4,186	3,012
	<u>2,702,398</u>	<u>2,617,555</u>
Less impairment: Serviport S.A.	(9,399)	(9,399)
	<u>2,692,999</u>	<u>2,608,156</u>
	<u>9,496,600</u>	<u>8,357,186</u>

(1) In July 2022, ISA Inversiones Chile incorporated the company Conexión Kimal Lo Aguirre S.A. together with Transelec and China Southern Power Grid International (CSG). This company will build and operate the Kimal-Lo Aguirre project in Chile awarded in 2021.

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The following is the movement of investments in associates and joint ventures:

For the year ended December 31, 2022:

	Associates	Joint ventures	Total
Opening balance	2,608,156	5,749,030	8,357,186
Capital contributions	—	329,377	329,377
Effects of equity method through:			
Profit or loss	126,329	642,093	768,422
Other comprehensive income	149,165	1,450,948	1,600,113
Dividends declared (1)	(190,651)	(1,365,755)	(1,556,406)
Impairment (Note 18)	—	(2,092)	(2,092)
Closing balance	2,692,999	6,803,601	9,496,600

(1) During 2022, Ecopetrol Business Group received dividends of \$1,471,134 from its investments Transmissora Aliança de Energia Elétrica S.A., Interligação Elétrica do Madeira S.A., Gas Natural del Oriente S.A. E.S.P, Gases del Caribe S.A. E.S.P., Extrucol S.A., Gases de la Guajira S.A. E.S.P. and E2 Energia Eficiente S.A. E.S.P.

For the year ended December 31, 2021:

	Associates	Joint ventures	Total
Opening balance	1,791,249	1,383,379	3,174,628
Capital contributions	—	44,735	44,735
Business combination (Note 12)	783,494	4,231,255	5,014,749
Effects of equity method through:			
Profit or loss	193,367	232,797	426,164
Other comprehensive income	12,142	121,856	133,998
Dividends declared (1)	(171,238)	(177,870)	(349,108)
Impairment (Note 18)	(858)	(83,644)	(84,502)
Foreign currency translation	—	(3,478)	(3,478)
Closing balance	2,608,156	5,749,030	8,357,186

(1) During 2021, the Group received dividends of \$206,048 from Ecodiesel, Transmissora Aliança de Energia Elétrica S.A., Interligação Elétrica do Madeira S.A., Gas Natural del Oriente S.A. E.S.P, Gases del Caribe S.A. E.S.P., Extrucol S.A., Gases de la Guajira S.A. E.S.P. and E2 Energia Eficiente S.A. E.S.P.

For the year ended December 31, 2020:

	Associates	Joint ventures	Total
Opening balance	1,826,757	1,418,315	3,245,072
Effects of equity method through:			
Profit or loss	114,779	(38,443)	76,336
Other comprehensive income	(2,923)	—	(2,923)
Dividends declared (1)	(148,665)	(9,017)	(157,682)
Impairment reversal (loss) (Note 18)	2,529	(69,041)	(66,512)
Foreign currency translation	(1,228)	81,565	80,337
Closing balance	1,791,249	1,383,379	3,174,628

(1) During 2020, the Group received dividends of \$157,241 from its investments.

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13.2 Additional information about associates and joint ventures

The following is the detail of assets, liabilities, and results of the main investments in associates and joint ventures, as of December 31, 2021, and 2020:

	2022			2021		
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited
Statement of financial position						
Current assets	689,613	1,967,310	1,684,029	593,389	1,233,296	3,054,020
Non-current assets	5,890,932	12,351,913	27,943	4,432,664	8,985,539	3,850
Total assets	6,580,545	14,319,223	1,711,972	5,026,053	10,218,835	3,057,870
Current liabilities	376,203	753,445	41,336	325,049	711,592	62,157
Non-current liabilities	2,765,355	7,474,497	31,372	2,196,231	4,633,422	35,316
Total liabilities	3,141,558	8,227,942	72,708	2,521,280	5,345,014	97,473
Equity	3,438,987	6,091,281	1,639,264	2,504,773	4,873,821	2,960,397
Other complementary information						
Cash and cash equivalents	200,091	700,313	52,370	207,703	128,256	106,858
	2022			2021		
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited
Statement of profit or loss						
Sales revenue	603,362	2,598,283	4,263	639,356	2,953,672	63,169
Costs	(20,098)	(410,106)	(23,726)	(18,021)	(450,666)	(45,201)
Other operating income (expenses), net	—	(198,835)	(945)	—	(117,526)	(8,553)
Financial (expenses) income	(88,991)	(606,837)	48,040	(129,094)	(562,549)	65,611
Income tax (expense)	(106,292)	(129,531)	23,151	(112,574)	(285,702)	(22,091)
Financial year results	387,981	1,252,974	50,783	379,667	1,537,229	52,935
Other comprehensive results	—	8,565	1,144,801	—	15,599	1,632,400
Other complementary information						
Depreciation and amortization	881	20,551	47	3,708	15,076	399

This is a reconciliation of equity of the significant investments and the carrying amount of investments as of December 31:

	2022			2021		
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited
Equity of the joint venture	3,438,987	6,091,281	1,639,264	2,504,773	4,873,821	2,960,397
% of Ecopetrol's ownership	51 %	14.88 %	51 %	51 %	14.88 %	51 %
Ecopetrol's ownership	1,753,883	906,382	836,025	1,277,434	725,185	1,509,802
Additional value of the investment	—	230,828	375,694	—	197,070	375,694
Impairment	—	—	(400,196)	—	—	(398,104)
Unrealized gain	—	—	(20,565)	—	—	(24,862)
Carrying amount of the investment	1,753,883	1,137,210	790,958	1,277,434	922,255	1,462,530

The information on assets, liabilities, and profit of the other associated companies and joint ventures is found in exhibits 1 and 2.

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14. Property, plant, and equipment

<u>Cost</u>	<u>Plant and equipment</u>	<u>Pipelines, networks, and lines</u>	<u>Work in progress</u>	<u>Buildings</u>	<u>Lands</u>	<u>Other</u>	<u>Total</u>
Balance as of December 31, 2021	57,452,843	55,402,633	10,566,114	9,660,227	4,800,297	3,018,660	140,900,774
Additions/capitalizations (1)	2,433,113	1,331,585	4,496,490	401,079	15,956	89,493	8,767,716
Abandonment cost update (Note 23)	(241,090)	(333,705)	—	(42,730)	—	(3,652)	(621,177)
Capitalized financial interests (2)	62,677	23,155	89,809	7,778	518	2,031	185,968
Exchange differences capitalized	366	135	524	45	3	12	1,085
Disposals	(669,531)	(471,119)	(18,057)	(41,606)	(480)	(50,169)	(1,250,962)
Decrease related to business combination (Note 12)	—	(176,451)	—	37,542	(14,648)	—	(153,557)
Effect of adopting new standards (3)	—	—	18,013	—	—	—	18,013
Foreign currency translation	7,200,073	3,665,015	336,968	635,557	393,059	228,227	12,458,899
Reclassifications/transfers (4)	(3,430,789)	846,520	(2,027,540)	4,696,173	4,364	(59,324)	29,404
Balance as of December 31, 2022	62,807,662	60,287,768	13,462,321	15,354,065	5,199,069	3,225,278	160,336,163
<u>Accumulated depreciation and impairment losses</u>							
Balance as of December 31, 2021	(24,698,837)	(19,665,052)	(1,279,600)	(4,059,253)	(67,611)	(1,053,895)	(50,824,248)
Depreciation expense	(2,807,716)	(2,319,775)	—	(423,067)	—	(159,398)	(5,709,956)
Recovery (loss) impairment (Note 18)	504,960	(70,439)	(153,449)	84,478	22,248	11,420	399,218
Disposals	637,049	448,340	755	37,953	41	44,162	1,168,300
Foreign currency translation	(2,737,467)	(1,340,435)	(2,307)	(195,728)	(8,192)	(126,507)	(4,410,636)
Reclassifications/transfers (4)	1,588,122	76,853	16,561	(1,674,537)	—	31,658	38,657
Balance as of December 31, 2022	(27,513,889)	(22,870,508)	(1,418,040)	(6,230,154)	(53,514)	(1,252,560)	(59,338,665)
Balance as of December 31, 2021	32,754,006	35,737,581	9,286,514	5,600,974	4,732,686	1,964,765	90,076,526
Balance as of December 31, 2022	35,293,773	37,417,260	12,044,281	9,123,911	5,145,555	1,972,718	100,997,498

- (1) Mainly includes: i) Ecopetrol S.A. ongoing projects associated with the Caño Sur, Castilla, Chichimene, Cusiana and Rubiales fields, ii) Interconexión Eléctrica S.A. E.S.P projects in progress: UPME 05-2014 Interconexión Costa Caribe 500kV, the UPME 06-2018 project New El Rio 220 kV Substation, and associated transmission lines and the UPME 03-2014 Interconexión Noroccidental 230/500 kV project.
- (2) Financial interest is capitalized based on the weighted average rate of borrowing costs.
- (3) Corresponds to the effect of adopting the IAS 16 amendment in Hocol S.A. (Note 5.1).
- (4) Includes the activation of the interconnection of the crude plant of the Refinería de Cartagena S.A.S. (IPCC).

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	Plant and equipment	Pipelines, networks and lines	Work in progress	Buildings	Lands	Other	Total
Cost							
Balance as of December 31, 2020	51,088,781	37,141,694	7,514,228	8,412,469	4,112,826	2,692,461	110,962,459
Additions/capitalizations	1,958,132	1,657,967	1,854,907	434,438	4,965	207,179	6,117,588
Increase by business combination (Note 12)	184,303	14,860,422	1,521,181	557,224	395,828	121,500	17,640,458
Abandonment cost update (Note 23)	(182,172)	(104,101)	(1,673)	(3,494)	—	127	(291,313)
Capitalized financial interests (1)	53,740	29,435	29,209	12,491	160	6,129	131,164
Exchange differences capitalized	1,371	751	745	319	4	156	3,346
Disposals	(312,646)	(81,967)	(9,344)	(25,530)	(4,164)	(37,560)	(471,211)
Foreign currency translation	4,946,012	1,646,079	164,778	204,496	257,988	120,110	7,339,463
Transfers/reclassifications	(284,678)	252,353	(507,917)	67,814	32,690	(91,442)	(531,180)
Balance as of December 31, 2021	57,452,843	55,402,633	10,566,114	9,660,227	4,800,297	3,018,660	140,900,774
Accumulated depreciation and impairment losses							
Balance as of December 31, 2020	(21,256,869)	(17,558,024)	(1,023,456)	(3,628,724)	(78,548)	(908,500)	(44,454,121)
Depreciation expense	(2,420,045)	(1,723,300)	-	(381,978)	-	(116,923)	(4,642,246)
Reversal (loss) of an impairment (Note 18)	24,888	(22,346)	(312,009)	12,790	16,403	(858)	(281,132)
Disposals	276,225	66,555	421	18,152	34	31,355	392,742
Foreign currency translation	(1,726,218)	(434,365)	(1,550)	(73,136)	(5,500)	(61,416)	(2,302,185)
Transfers/reclassifications	403,182	6,428	56,994	(6,357)	-	2,447	462,694
Balance as of December 31, 2021	(24,698,837)	(19,665,052)	(1,279,600)	(4,059,253)	(67,611)	(1,053,895)	(50,824,248)
Net balance as of December 31, 2020	29,831,912	19,583,670	6,490,772	4,783,745	4,034,278	1,783,961	66,508,338
Net balance as of December 31, 2021	32,754,006	35,737,581	9,286,514	5,600,974	4,732,686	1,964,765	90,076,526

(1) Financial interest is capitalized based on the weighted average rate of loan costs. See Note 20 – Loans and financing.

15. Natural and environmental resources

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	Oil investments	Asset retirement cost	Exploration and evaluation	Total
Cost				
Balance as of December 31, 2021	76,229,481	8,172,698	7,212,305	91,614,484
Additions/capitalizations (1)	8,368,195	—	3,594,349	11,962,544
Abandonment cost update (Note 23)	—	(1,130,363)	21,524	(1,108,839)
Disposals (2)	(759,178)	(114,899)	(6,084)	(880,161)
Write off exploratory assets and dry wells (3)	(223,058)	—	(809,106)	(1,032,164)
Capitalized financial interests (4)	136,696	—	60,570	197,266
Exchange differences capitalized	798	—	353	1,151
Effect of adopting new standards (5)	—	—	48,173	48,173
Foreign currency translation	4,431,851	127,871	533,347	5,093,069
Transfers/reclassifications	153,686	49,596	(175,406)	27,876
Balance as of December 31, 2022	88,338,471	7,104,903	10,480,025	105,923,399
Accumulated depletion and impairment losses				
Balance as of December 31, 2021	(51,316,344)	(4,230,674)	(157,622)	(55,704,640)
Depletion expense	(4,536,052)	(800,139)	—	(5,336,191)
(Loss) reversal of impairment (Note 18)	(632,179)	—	9,105	(623,074)
Disposals	421,036	96,489	11,793	529,318
Foreign currency translation	(2,354,611)	(82,927)	—	(2,437,538)
Transfers/reclassifications	35,677	(70,835)	7,494	(27,664)
Balance as of December 31, 2022	(58,382,473)	(5,088,086)	(129,230)	(63,599,789)
Net balance as of December 31, 2021	24,913,137	3,942,024	7,054,683	35,909,844
Net balance as of December 31, 2022	29,955,998	2,016,817	10,350,795	42,323,610

- (1) Mainly includes a) Ecopetrol Permian, for investments in drilling of wells and construction of facilities executed in Rodeo, b) Ecopetrol S.A., mainly in Caño Sur, Casabe, Castilla, Chichimene, Floreña, Rubiales fields, and Cupiagua and Uchuva exploratory wells, and c) Hocol S.A., mainly in Guarrojo, Cicuco, SSJN1, Guajira, VIM-8, SN15, YDSN-1, LLA-87 blocks.
- (2) Corresponds mainly to the withdrawal of Rygberg's association contract in Ecopetrol América.
- (3) Mainly includes a) Saturno block in Ecopetrol Brazil related to the entry bond, b) dry wells in Hocol S.A.: Bololó, Pilonera, Pollera, and Chinchorro and unsuccessfulness of the Sinuano and Yoda B wells, c) Ecopetrol S.A., Boranda Norte 1 well, and d) Ecopetrol América, Starman well.
- (4) Financial interest is capitalized based on the weighted average rate of borrowing costs.
- (5) Corresponds to the effect of adopting the IAS 16 amendment (Nota 5.1)

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	Oil investments	Asset retirement cost	Exploration and evaluation	Total
Cost				
Balance as of December 31, 2020	65,367,278	7,231,851	8,867,894	81,467,023
Additions/capitalizations (1)	4,032,780	60,618	2,639,630	6,733,028
Abandonment cost update (Note 23)	—	778,925	13,256	792,181
Disposals	(3,497)	(484)	(69,908)	(73,889)
Withdrawal of exploratory assets and dry wells (2)	—	—	(486,408)	(486,408)
Capitalized financial interests (3)	99,786	—	24,757	124,543
Exchange differences capitalized	2,546	—	632	3,178
Foreign currency translation	1,979,171	101,866	767,117	2,848,154
Transfers/reclassifications	4,751,417	(78)	(4,544,665)	206,674
Balance as of December 31, 2021	76,229,481	8,172,698	7,212,305	91,614,484
Accumulated depletion and impairment losses				
Balance as of December 31, 2020	(46,106,147)	(2,981,449)	(445,268)	(49,532,864)
Depletion expense	(3,803,027)	(1,193,454)	—	(4,996,481)
Reversal of impairment (Note 18)	305,016	—	59,111	364,127
Disposals	500	—	31,214	31,714
Foreign currency translation	(1,401,121)	(41,610)	—	(1,442,731)
Transfers/reclassifications	(311,565)	(14,161)	197,321	(128,405)
Balance as of December 31, 2021	(51,316,344)	(4,230,674)	(157,622)	(55,704,640)
Net balance as of December 31, 2020	19,261,131	4,250,402	8,422,626	31,934,159
Net balance as of December 31, 2021	24,913,137	3,942,024	7,054,683	35,909,844

- (1) Includes: a) Ecopetrol Permian for investments made in the drilling of wells and construction of facilities executed in RODEO, b) Ecopetrol for the Llanito, Purple Angel, Casabe and Offshore Tayrona fields. and c) Hocol mainly in Mamey 3, Pintado, Pozo Toldado, SN-8, Rc7 Pozo Basari, Oclote, SSJN1, VIM8 and Saman. d) Ecopetrol America for Rydber and K2 e) Ecopetrol Brazil for the Gato do Mato project.
- (2) Mainly includes the Moyote well by Ecopetrol México, Ecopetrol S.A. mainly the Aguas Blancas, Alqamari-1, Nafta-1, Lorito Este 1, Boranda Centro 1 and Chimuelo 1 wells, Hocol Chacha 2 well, Ecopetrol América the well Silverback #1 and Silverback #2 and by Ecopetrol Brasil Ceará. Additionally, Hocol includes exploration expenses.
- (3) Financial interests are capitalized based on the weighted average rate of loan costs. See Note 20 – Loans and borrowings.

Accounting for suspended exploratory wells

The following table shows the classification by age, from the completion date, of the exploratory wells that are suspended as of December 31, 2022, 2021 and 2020:

	2022	2021	2020
Between 1 and 3 years (a)	48,206	—	—
Between 3 and 5 years (b)	—	—	319,368
More than 5 years (c)	650,767	651,040	589,604
Total suspended exploratory Wells	698,973	651,040	908,972
Number of projects exceeding 1 year	8	6	16
Wells under 1 year of suspended (d)	990	20,863	—

- (a) For 2022, the balance corresponds to Hocol: Bullerengue South West-1 and Mercumbe 1, which are under evaluation.

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- (b) For 2020, the balance corresponds mainly to wells of Ecopetrol S.A.: Purple Angel and Gorgon.
- (c) For 2022 and 2021, it corresponds mainly to i) Ecopetrol S.A.: Orca 1, Purple Angel, and Gordon, which are under evaluation. For 2020, the exploratory wells correspond mainly to i) Ecopetrol S.A.: Orca 1, Luna-1, and Gala 1K.
- (d) For 2022, the balance corresponds to Ecopetrol: Magallanes. For 2021, the balance corresponds to Hocol: Merecumbe 1 -SSJN1 as of December 2021.

16. Right-of-use assets

The following is the movement of right-of-use assets for the years ended December 31, 2022 and 2021:

	Pipelines	Lands and buildings	Plant and equipment	Vehicles	Right-of-use assets	Lease liabilities
Balance as of December 31, 2021	77,019	199,070	121,384	99,205	496,678	1,165,099
Additions	40,642	100,070	71,013	142,346	354,071	354,071
Amortization of the period	(24,751)	(61,814)	(60,359)	(102,198)	(249,122)	—
Remeasurements(1)	(114)	(24,524)	7,505	16,779	(354)	18,644
Impairment loss	—	(1,244)	(4,042)	(5,499)	(10,785)	—
Disposals	(4,701)	(2,696)	(23,010)	(215)	(30,622)	(31,957)
Finance cost	—	—	—	—	—	70,250
Repayment of borrowings and interests	—	—	—	—	—	(434,555)
Transfers	(584)	(108)	595	(43)	(140)	(1,877)
Exchange difference	8,723	35,304	6,448	17,612	68,087	72,671
Balance as of December 31, 2022	96,234	244,058	119,534	167,987	627,813	1,212,346

- (1) Corresponds mainly to updating rates and conditions in lease contracts.

	Pipelines	Lands and buildings	Plant and equipment	Vehicles	Right-of-use assets	Lease liabilities
Balance as of December 31, 2020	—	93,472	133,939	150,475	377,886	1,055,198
Additions	22,871	22,190	10,037	20,319	75,417	75,417
Effect of business combinations (Note 12)	75,836	121,042	13,779	19,550	230,207	255,503
Amortization of the period	(6,897)	(39,109)	(61,186)	(86,830)	(194,022)	—
Remeasurements(1)	—	26,057	48,803	5,045	79,905	80,068
Impairment loss	—	(5,802)	(20,608)	(5,373)	(31,783)	—
Disposals	—	(14,540)	—	(98)	(14,638)	(64,726)
Finance cost	—	—	—	—	—	49,694
Repayment of borrowings and interests	—	—	—	—	—	(336,030)
Transfers	(214)	(11,676)	(363)	(1,134)	(13,387)	2,615
Exchange difference	(14,577)	7,436	(3,017)	(2,749)	(12,907)	47,360
Balance as of December 31, 2021	77,019	199,070	121,384	99,205	496,678	1,165,099

- (1) Corresponds mainly to updating rates and conditions in lease contracts.

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17. Intangible assets

The following is the movement of intangibles and their amortization and impairment for the years ended December 31, 2022, and 2021:

	Licensees and software	Other intangibles	Concessions and rights	Easements (1)	Total
Cost					
Balance as of December 31, 2021	1,118,811	940,080	13,503,441	1,733,379	17,295,711
Acquisitions	292,803	9,953	835,457	9,297	1,147,510
Effect of business combination (Note 12)	—	12,670	(117,270)	(318,388)	(422,988)
Disposals	(4,148)	—	(95,875)	(478)	(100,501)
Foreign currency translation	74,759	338,654	3,439,810	86,905	3,940,128
Transfers/reclassifications	30,389	(18,605)	2,518	126,729	141,031
Balance as of December 31, 2022	1,512,614	1,282,752	17,568,081	1,637,444	22,000,891
Accumulated amortization and impairment losses					
Balance as of December 31, 2021	(689,817)	(153,292)	(878,125)	(65,961)	(1,787,195)
Amortization of the period	(138,544)	(30,282)	(658,457)	(6,439)	(833,722)
Losses for impairment	(1,785)	(15,323)	(34,022)	(133)	(51,263)
Disposals	3,283	—	95,875	425	99,583
Foreign currency translation	(58,215)	(243,909)	(919,328)	(109)	(1,221,561)
Transfers/reclassifications	918	(3,865)	—	(57,181)	(60,128)
Balance as of December 31, 2022	(884,160)	(446,671)	(2,394,057)	(129,398)	(3,854,286)
Net balance as of December 31, 2021	428,994	786,788	12,625,316	1,667,418	15,508,516
Net balance as of December 31, 2022	628,454	836,081	15,174,024	1,508,046	18,146,605

(1) Easements are acquired rights for the passage of its operating assets, mainly electric power transmission lines. These assets are acquired in perpetuity, so they do not have a specific term or contractual limit established and the right is maintained over time.

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	<u>Licenses and software</u>	<u>Other intangibles</u>	<u>Concessions and rights</u>	<u>Easements (2)</u>	<u>Total</u>
Cost					
Balance as of December 31, 2020	835,030	201,463	351,108	79,176	1,466,777
Acquisitions	140,263	11,456	275,736	16,891	444,346
Effect of business combination (1)	130,634	666,455	11,910,589	1,618,801	14,326,479
Disposals	(21,581)	(226)	(402)	(79)	(22,288)
Foreign currency translation	82,397	83,856	893,249	18,553	1,078,055
Transfers/reclassifications	(47,932)	(22,924)	73,161	37	2,342
Balance as of December 31, 2021	1,118,811	940,080	13,503,441	1,733,379	17,295,711
Accumulated amortization and impairment losses					
Balance as of December 31, 2020	(607,871)	(67,299)	(173,799)	(62,765)	(911,734)
Amortization of the period	123,796	(19,780)	(427,989)	(3,200)	(327,173)
Losses for impairment	(57)	—	—	—	(57)
Disposals	21,313	56	—	41	21,410
Foreign currency translation	(55,695)	(66,333)	(447,697)	—	(569,725)
Transfers/reclassifications	(171,303)	64	171,360	(37)	84
Balance as of December 31, 2021	(689,817)	(153,292)	(878,125)	(65,961)	(1,787,195)
Net balance as of December 31, 2020	227,159	134,164	177,309	16,411	555,043
Net balance as of December 31, 2021	428,994	786,788	12,625,316	1,667,418	15,508,516

(1) Corresponds to the balances recognized in the business combination, which mainly includes i) service concessions classified as intangible assets, according to IFRIC 12, in Peru, Bolivia, and Colombia, ii) rights to use infrastructure and intangible assets recognized through business combinations in Brazil and Peru, and iii) intangibles associated with economic benefits from contractual income.

(2) Easements are acquired rights for the passage of its operating assets, mainly electric power transmission lines. These assets are acquired in perpetuity, so there is no set term or contractual limit, and the right is maintained over time.

18. Impairment of non-current assets

As mentioned in Note 4.13, each year the Ecopetrol Business Group assesses whether there is an indication that an asset or cash-generating unit may be impaired or if impairment losses recognized in previous periods should be reversed.

The impairment of non-current assets includes property, plant, and equipment, natural resources, investments in companies, goodwill, and other non-current assets. Ecopetrol Business Group is exposed to future risks derived mainly from variations in (a) the estimate of future oil prices, (b) the refining margins and profitability, (c) the cost profile, (d) the investments and maintenance expenses, (e) the amounts of recoverable reserves, (e) the market and country risk assessments reflected in the discount rate, and (f) changes in domestic and international regulations, among others.

Any changes in the above estimates used to calculate the recoverable amount of a non-current assets can have a material impact on the recognition impairment losses or reversals in profit or loss statement. Highly sensitive significant estimates affecting each business segments, among others include (a) in the exploration and production segment, variations of recoverable hydrocarbon estimates, changes in projected realization prices, and the discount rate, (b) in the refining segment, changes in finished products and crude oil prices, the discount rate, refining margins, changes in environmental regulations, cost structure, and the level of capital expenditures, (c) in the transport and logistics segment, changes in regulated tariffs and transported volumes, and (d) in electric power transmission and toll roads concessions, internal and external factors that affect the recoverable value of the assets versus the book value of the assets, such as currency devaluation, network capacity, moderate growth, among others.

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As described in Note 2.9, the behavior of the prices of crude oil and products during the year 2022 showed a recovery versus the price levels generated in 2021 and 2020, a situation that has an impact in the parameters established for the calculation of the impairment.

Based on the impairment tests conducted by the Ecopetrol Business Group, the following are the impairments or reversals for the years ended on December 31, 2022, 2021 and 2020:

Impairment (loss) reversal by segment	<u>2022</u>	<u>2021</u>	<u>2020</u>
Exploration and Production	(890,248)	438,020	(192,693)
Refining and Petrochemicals	1,096,021	(305,466)	(781,528)
Transport and Logistics	(406,229)	(165,901)	341,065
Electric power transmission and toll roads concessions	(87,543)	(4)	—
	<u>(287,999)</u>	<u>(33,351)</u>	<u>(633,156)</u>
 Recognized in:			
Property, plant, and equipment (Note 14)	399,218	(281,132)	(384,638)
Natural resources (Note 15)	(623,074)	364,127	(217,709)
Investment in joint ventures and associates (Note 13)	(2,092)	(84,502)	(66,512)
Right of use assets (Note 16)	(10,785)	(31,783)	35,874
Other non-current assets	(51,266)	(61)	(171)
	<u>(287,999)</u>	<u>(33,351)</u>	<u>(633,156)</u>

18.1 Exploration and production

The impairment reversal of assets of the Exploration and Production segment for the years ended December 31 of 2022, 2021 and 2020 is the following:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Oilfields	(888,156)	521,664	(123,652)
Investment in joint ventures	(2,092)	(83,644)	(69,041)
	<u>(890,248)</u>	<u>438,020</u>	<u>(192,693)</u>

18.1.1 Oilfields

In 2022, an impairment expense was recognized, mainly the Cusiana, Llanito, Sur, Cicuco-Boquete, and Upia fields (mainly associated with a decrease in reserve volumes) and a recovery in Tibú, Oripaya, and Arrayán (mainly associated with the better projection of market prices and higher volumes of reserves).

In 2021, because of the new market variables, the incorporation of new reserves, price differentials versus the reference to Brent, available technical and operational information, there was a recovery of impairment recognized in previous years of the fields that operate in Colombia: Tibú, West B, South, Dina Cretaceous, Hobo, Underriver, La Hocha and Totare; and in the field K2 abroad. There also was an expense for impairment, mainly in the Oripaya, Arrayán, and Boranda fields.

An impairment expense was recognized in the year 2020 because of the economic context of the hydrocarbons sector, the behavior of market variables, price differentials versus the reference to Brent, technical and operational information available. This impairment was mainly recognized in fields that operate in Colombia: Occidente B, Sur, Teca, Tibú, La Hocha, and Espinal, and in the field K2 abroad. In addition, a recovery was recognized in Casabe, because of a significant increase in its reserves, as well as Provincia, Lisama and Orito.

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The following is the breakdown of oilfields impairment losses or reversals for the years ended December 31, 2022, 2021 and 2020:

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	3,540,732	5,563,724	250,306
Loss	4,870,976	3,732,514	(1,138,462)
			(888,156)

2021

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	11,216,641	17,575,851	499,599
Loss	239,046	136,698	(104,041)
Fields operated abroad			
Reversal	1,142,593	1,306,219	126,106
			521,664

2020

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	24,845,238	61,224,928	1,019,395
Loss	2,439,799	1,423,561	(1,016,238)
Fields operated abroad			
Loss	1,277,609	1,150,800	(126,809)
			(123,652)

The grouping of assets to determine the CGUs is consistent as compared to the prior periods.

The assumptions used to determine the recoverable amount include the following:

- The fair value less costs of disposal of the Exploration and Production segment assets was determined based on cash flows after tax derived from the business plans approved by Ecopetrol Business Group's Management, which are developed based on long-term macroeconomic policies and fundamental assumptions of supply and demand. The fair value hierarchy is 3.
- Balance of oil and gas reserves, in addition to proven reserves; probable and possible reserves were also considered (See Note 34), adjusted by different risk factors.
- The discount rate in real terms was determined as the weighted average cost of capital (WACC) and corresponds to a differential rate depending on the projected tax surcharge for each year, as follows: 7.34 % with tax surcharge of 0%, 7.14% with a tax surcharge of 5%, 6.93% with a tax surcharge of 10% and 6.73% with a tax surcharge of 15% (2021: 4.94%).

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- Oil price – Brent: Projections include USD\$94.63/barrel for the first year, USD\$82.56/barrel average for the medium term, and USD\$79.17/barrel starting in 2034. In 2021, the assumptions made took a price of USD\$75.72/barrel for the first year, USD\$62.60/barrel average for the medium term and USD\$61.89/barrel as of 2033. The projection of international crude oil prices is carried out by an independent agency specialized in Oil & Gas, which has been considering the current scenarios of the OPEC (Organization of Petroleum Exporting Countries) oil quota agreements and the balance between supply and demand in the short and long term for the industry.

18.1.2 Investments in joint ventures

Investments in joint ventures in the Exploration and Production segment are recorded using the equity method of accounting. Ecopetrol Business group evaluates if there is any objective evidence that indicate that the fair value of such investments has impaired in the period, especially those for which goodwill has been recorded.

As a result, Ecopetrol Business Group recognized a loss or reversal of impairment on the carrying value as of December 31, as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Equion Energía Limited	(2,092)	(83,644)	7,928
Offshore International Group	—	—	(76,969)
	<u>(2,092)</u>	<u>(83,644)</u>	<u>(69,041)</u>

In 2022, an impairment expense was recognized on the investment in Equion, mainly due to the increase in the discount rate, as well as the sale of the Alto Magdalena Pipeline (OAM) at a lower value than expected.

In 2021, an impairment expense was recognized on the investment in Equion, mainly from the consideration of the fair value of the sale transaction of the El Morro Araguaney Pipeline.

There was a recovery in 2020 on the investment in Equion mainly originated by the update of the transport rates through pipelines. Additionally, an impairment loss was recognized on the investment in Offshore International Group considering the fair value of the sale transaction. The significant assumptions used to determine the recoverable amount of these investments are consistent with those described in the previous section, except for the use of a discount rate in real terms in 2020 for Offshore International Group of 5.79% (2019 – 8.50%).

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18.2 Refining and Petrochemical

Ecopetrol Business Group recognized a loss or reversal of impairment on the carrying value as of December 31, as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Refinería de Cartagena S.A.S.	1,096,024	34,650	(440,525)
Invercolsa S.A.	(3)	(97)	(3)
Refinería de Barrancabermeja (projects)	—	(340,019)	(341,000)
	<u>1,096,021</u>	<u>(305,466)</u>	<u>(781,528)</u>

The following is the Cash Generating Units impairment or reversals in the refining and petrochemical segment for the years ended December 31, 2022, 2021 and 2020:

2022

<u>Cash-generating units</u>	<u>Carrying amount</u>	<u>Recoverable amount</u>	<u>Impairment reversal (loss)</u>
Refinería de Cartagena S.A.S.	31,750,957	32,846,981	1,096,024
Invercolsa S.A.	276	273	(3)
			<u>1,096,021</u>

2021

<u>Cash-generating units</u>	<u>Carrying amount</u>	<u>Recoverable amount</u>	<u>Impairment reversal (loss)</u>
Refinería de Cartagena S.A.S.	26,808,008	26,842,658	34,650
Invercolsa S.A.	292	195	(97)
Refinería de Barrancabermeja (projects)	340,019	—	(340,019)
			<u>(305,466)</u>

2020

<u>Cash-generating units</u>	<u>Carrying amount</u>	<u>Recoverable amount</u>	<u>Impairment loss</u>
Refinería de Cartagena S.A.S.	24,041,174	23,600,649	(440,525)
Invercolsa S.A.	276	273	(3)
Refinería de Barrancabermeja (projects)	676,334	335,334	(341,000)
			<u>(781,528)</u>

The grouping of assets to determine the CGUs is consistent with prior periods.

18.2.1 Refinería de Cartagena S.A.S.

The recoverable amount of the Refinería de Cartagena was calculated based on its fair value less costs of disposal, which is higher than its value in continued use. The fair value less costs of disposal of the Refinería de Cartagena was determined based on cash flows after taxes that are derived from business plans approved by the Ecopetrol Business Group's Management, which are developed based on market prices provided by a third-party expert, which considers long-term macroeconomic variables and fundamental supply and demand assumptions for crude oil and refined products. The fair value hierarchy is 3.

Refinería de Cartagena, supported by best practices, has reviewed the current considerations in market trends and has considered the implications of climate change within the estimate of the recoverable value, for which it incorporated the following aspects:

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- SosTecnibilidad (Technology + Sustainability) Capex: Reficar's investment plan, aligned with the strategy of the Ecopetrol Business Group, includes investments focused on the implementation of new technologies that allow the current operation of the refinery to be conditioned in line with the country's fuel demands and the entry into new markets such as petrochemicals.
- Estimation horizon: Reficar has revised the estimation of the valuation horizon in the FMV exercise, going from a probable operating horizon of 94 to 70 years. Thus, considering possible impacts from decarbonization in the long term.

The significant assumptions to determine the recoverable amount included (i) a gross refining margin determined by crude oil feedstock and products price outlook provided by an independent third-party expert; (ii) a real discount rate (after tax) of 7.6% (2021-5.3% and 2020-5.1%), determined under WACC methodology. Other no significant assumptions are i) current conditions or benefits, or similar, as an industrial user of goods and services of the free trade zone and during the validity of the license; (ii) level of costs and long-term operating expenses in line with international refinery standards of similar configuration and conversion capacity; (iii) refinery throughput and production; and (iv) level of continued investment.

It is important to mention that the refining business is highly sensitive to the volatility of the margins and the macroeconomic variables implicit in the determination of the discount rate, therefore, any change in these assumptions could potentially result in significant variations in the determination of impairment losses or reversal amounts.

In 2022, there is a reversal of impairment of \$1,107,101 mainly due to i) favorable market conditions, ii) high differentials of distilled products sustained in the short term due to conjunctural impacts of the Ukraine-Russia crisis, and iii) differential in national crudes allow diet optimization. Additionally, an expense is presented for impairment in office-type containers because of the appraisals made to these and surpluses from the expansion project for \$11,077.

The impairment reversal of impairment for 2021 is mainly due to: i) favorable market conditions, ii) the recovery in product spreads, especially gasoline and middle distillates, and iii) growth in fuel demand.

The impairment expense for 2020 was mainly derived from lower refining margins associated with external factors associated with the COVID-19 pandemic. On the other hand, Management endured operational improvements that compensate to a certain extent for the effects of macroeconomic variables.

18.2.2 Refinería de Barrancabermeja

As of December 31, 2022, qualitative assessment of the assets associated with the refining segment were executed, including the Barrancabermeja Refinery Modernization Project. As a result, there are no indicator of impairment loss or recovery.

As of December 31, 2021, because an update analysis for the Barrancabermeja Refinery Modernization Project, an impairment expense of \$340,019 was recognized, produced mainly by engineering work executed according to the evaluations and the context of the industry during the year.

An impairment expense of \$341,000 was recognized as of December 31, 2020, because of the update of the analysis for the Barrancabermeja Refinery Modernization Project, in relation to engineering work based on the evaluations carried out and the current context of the industry.

18.3 Transport and Logistics

The recoverable amount of these assets was determined based on its fair value with costs of disposal, which corresponds to discounted cash flows based on the hydrocarbon production curves and refined products transport curves. The fair value hierarchy is 3.

The assumptions used in the model to determine the recoverable value included: i) the tariffs regulated by the Ministry of Mines and Energy and the Energy and Gas Regulation Commission - CREG, ii) the actual discount rate used in the valuation was 4.73% (2021 - 2.95% and 2020 - 3.17%) and iii) transport volume projections based on the financial plan and the long-term volumetric transport program.

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For 2022, the volumetric projection up to 2040 shows a decrease in crude oil exploratory prospects in the southern and northern fields of Colombia because of contractual uncertainties and socio-environmental viability, which represented an impairment loss for the CGUs by 2022 of Cenit Transporte y Logística S.A.S. in the South, North, and Yaguará-Tenay for \$405,357, and Oleoducto de Colombia S.A. for \$872.

In 2021, an impairment expense was recognized for the Southern Cash Generating Unit, the estimate of the impaired value was \$160,653, corresponding to the total value of the asset. In addition, an impairment loss of \$2,845 was established for the Yaguará-Tenay system, which corresponds to 39% of the value of the asset. Finally, the segment recognized an additional impairment loss of \$2,545 as a result of the sale of a turbo-generator during the year and a recovery in other non-current assets of \$142. The recognition of impairment is due to volumetric variation and rates.

In 2020, Cenit recognized an impairment recovery of \$341,065, related to the South CGU, which includes Tumaco Port and the TransAndino Pipeline (OTA, by its acronym in Spanish) and the North CGU, which includes the section Banadia - Ayacucho, and it is part of the Caño Limón Pipeline, due to volumetric recovery and changes in tariffs. The fair value of these CGUs is \$7,049,007 and their book value is \$2,153,631.

18.4 Energy transmission and roads

According to the impairment test, as of December 31, 2022, ISA and its companies considered that there are no operational or economic issues indicating that the net book value of its non-current non-financial assets cannot be recovered, except for the assets of Internexa Brasil and Internexa Argentina, which showed impairment indicators. Each of these operations constitute an independent Cash Generating Unit (CGU) and impairment tests were performed for each CGU.

As of December 31, 2022, an impairment loss of \$87,543 was recognized, which \$85,568 corresponds to Internexa Brasil, due to updating the business plan that reflects a decline in revenues and operating profit margins, and \$1,975 from Internexa Argentina, due to cost capital increase.

To determine the recoverable amount, the Company used the discounted free cash flow methodology, based on revenue projections, operating costs, capital investments, and operational taxes.

Internexa Brasil

- Discount rate: WACC 12.35% in local currency (BRL). The WACC is made up of a cost of equity (Ke) of 11.58%, and a cost of debt (Kd) of 12.35%. The growth rate in perpetuity was 1% of real growth (long-term inflation plus 1 percentage point), equivalent to 4.31% per year.
- Business assumptions: The estimate of the recoverable amount was based on the generation of the annual operating cash, through the projection of ordinary revenue, operating costs, capital investments and company taxes.

Internexa Argentina

- Discount rate: WACC in dollars of 19.75%. Composed of a Ke of 19.75% and Kd 0% (the company has no financial debt). A gradient of 5.27% was used for the estimation of perpetuity.
- Business assumptions: The estimate of the recoverable amount was based on the generation of the annual operating cash, through the projection of ordinary revenue, operating costs, capital investments and company taxes.

19. Goodwill

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	2022	2021
Interconexión Eléctrica S.A. E.S.P.	3,755,835	3,092,045
Oleoducto Central S.A.S.	683,496	683,496
Hocol Petroleum Ltd.	537,598	537,598
Invercolsa S.A.	434,357	434,357
Andean Chemical Ltd	127,812	127,812
Esenttia S.A.	108,137	108,137
	5,647,235	4,983,445
Less impairment Hocol Petroleum Ltd.	(297,121)	(297,121)
	5,350,114	4,686,324

Related to goodwill impairment analysis in ISA, the estimate of the recoverable amount for Energy CGU was based on the value in use, which is calculated using a discounted cash flow model projected according to the term of contracts. The principal assumptions were the generation of the annual operating cash, through the projection of ordinary revenue, operating costs, capital investments, and company taxes.

20. Loans and borrowings

20.1 Composition of loans and borrowings

	Weighted average effective interest rate as of December 31		2022	2021
	2022	2021		
Local currency				
Bonds	9.8 %	9.1 %	4,965,653	4,941,024
Syndicated loan	11.5 %	5.4 %	388,518	600,452
Lease liabilities (1)	8.0 %	6.3 %	844,734	823,922
Commercial loan	10.3 %	7.8 %	1,782,944	1,516,377
			7,981,849	7,881,775
Foreign currency				
Bonds (2)	6.0 %	5.7 %	82,432,647	66,603,695
Commercial and syndicated loans	4.6 %	3.5 %	23,537,675	18,750,580
Loans from related parties (Note 31)	5.9 %	0.3 %	815,056	1,483,701
Lease liabilities (1)	6.0 %	6.0 %	367,612	341,177
			107,152,990	87,179,153
			115,134,839	95,060,928
Current			22,198,583	9,206,283
Non-current			92,936,256	85,854,645
			115,134,839	95,060,928

(1) Corresponds to present value of the payments to be made during the term of the operative lease contracts of pipelines, tanks, property, and vehicles, recognized by the implementation of IFRS 16 – Leases (See Note 16).

(2) Corresponds to the increase in the exchange rate by \$829 per dollar and the movements in debt during the period.

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During 2022, loans and borrowings for \$16,844,029 were acquired mainly in Ecopetrol S.A. for \$11,429,785 given, i) the disbursement of a financing line for \$5,384,315 (USD\$1,200 million) for the advance payment of the credit contracted in the acquisition of ISA, ii) 1B club deal operations, acquisition of treasury credits and drafts financed in the fourth quarter of 2022 for an approximate amount of USD \$1,120 million, and iii) short-term financing with the company BNP Paribas for \$625,944 (USD \$160 million), and Interconexión Eléctrica S.A. E.S.P. for \$5,331,221, which mainly includes i) the international issuance of corporate bonds for \$2,063,735 in the subsidiary Transmantaro-CTM for the repurchase of its 2023 international bond and ii) the disbursement of credits to cover investment plans and projects in Brazil, Peru, and Chile.

As a consequence of Ecopetrol Business Group strategy related to the integral management of debt and financing of the maturities of 2023, during 2022 payments were made for \$16,409,494; mainly in Ecopetrol S.A. for \$10,071,064 and Interconexión Eléctrica S.A. E.S.P. for \$5,101,656.

20.2 Fair value of loans

The fair value of loans and borrowings is \$106,509,947 and \$99,258,034 as of December 31, 2022, and 2021, respectively.

20.3 Maturity of loans and borrowings

The following are the maturities of loans and borrowing as of December 31, 2022:

	Up to 1 year (1)	1 – 5 years	5-10 years	> 10 years	Total
Local currency					
Bonds	579,032	1,262,971	1,559,593	1,564,057	4,965,653
Syndicated loan	254,165	134,353	—	—	388,518
Lease liabilities	150,872	384,661	308,493	708	844,734
Commercial loans	311,721	689,835	631,100	150,288	1,782,944
	1,295,790	2,471,820	2,499,186	1,715,053	7,981,849
Foreign currency					
Bonds	12,235,174	25,336,179	23,223,393	21,637,901	82,432,647
Commercial and syndicated loans	7,726,416	15,054,954	547,092	209,213	23,537,675
Lease liabilities	126,147	206,474	34,991	—	367,612
Loans from related parties	815,056	—	—	—	815,056
	20,902,793	40,597,607	23,805,476	21,847,114	107,152,990
	22,198,583	43,069,427	26,304,662	23,562,167	115,134,839

(1) Includes short-term credit and the current portion of long-term debt, as applicable.

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The following are the maturities of loans and borrowing as of December 31, 2021:

	Up to 1 year (1)	1 – 5 years	5–10 years	> 10 years	Total
Local currency					
Bonds	290,858	1,152,829	1,423,909	2,073,428	4,941,024
Syndicated loan	239,597	360,855	—	—	600,452
Lease liabilities	188,477	340,283	283,070	12,092	823,922
Commercial loans	170,758	539,693	595,307	210,619	1,516,377
	889,690	2,393,660	2,302,286	2,296,139	7,881,775
Foreign currency					
Bonds	3,275,138	27,550,698	17,515,876	18,261,983	66,603,695
Commercial loans	3,457,708	14,792,560	303,012	197,300	18,750,580
Lease liabilities	100,046	205,617	35,514	—	341,177
Loans from related parties	1,483,701	—	—	—	1,483,701
	8,316,593	42,548,875	17,854,402	18,459,283	87,179,153
	9,206,283	44,942,535	20,156,688	20,755,422	95,060,928

(1) Includes short-term credit and the current portion of long-term debt, as applicable.

20.4 Breakdown by type of interest rate and currency

The following is the breakdown of loans and borrowing by type of interest rate as of December 31, 2022 and 2021:

	2022	2021
Local currency		
Fixed rate	1,844,086	1,239,723
Floating rate	6,137,763	6,642,052
	7,981,849	7,881,775
Foreign currency		
Fixed rate	82,850,932	69,427,014
Floating rate	24,302,058	17,752,139
	107,152,990	87,179,153
	115,134,839	95,060,928

The interest on the bonds in national currency is indexed to the CPI (Consumer Price Index) and bank loans and variable rate leasing in Colombian pesos are indexed to the DTF (Fixed Term Deposits) and IBR (Banking Reference Indicator), plus a differential. Interest on loans in foreign currency is calculated based on the LIBOR rate plus a spread and the interests of the other types of debt are at a fixed rate.

20.5 Loans designated as hedging instrument

As of December 31, 2022, Ecopetrol Business Group designated USD\$14,512 million (2021 - USD\$13,287 million) of foreign currency debt as a hedging instrument, of which USD\$8,940 million is used to hedge the net investment in foreign operations with the US dollar as their functional currency, and USD\$5,572 million is used to hedge the cash flows of future crude oil exports. See Notes 30.3 and 30.4.

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20.6 Guarantees and covenants

As of December 31, 2022, the estimated value of the current guarantees granted by ISA and its companies, within the framework of the definition in paragraph 14 of IFRS 7, used to support growth in its different business units and to ensure commercial, operational, and strategic viability amounts to \$23,670,968, mainly in i) Chile for \$17,676,320 in ISA Intervial, Ruta de la Araucaria, Ruta del Maipo, Ruta del Loa, and ISA Interchile, b) Brazil in ISA CTEEP for \$3,315,648, and c) Colombia on the Ruta Costera for \$2,679,000.

The syndicated loan entered by Oleoducto Bicentenario requires that this subsidiary maintain an established relationship of leverage and solvency and cash flow / service to the debt.

ISA and its companies have commitments (covenants) related to the delivery of periodic financial information and the fulfillment of the obligations originated in the credit contracts with the financial entities, the Ministry of Public Works of Chile, the bondholders, the rating agencies risks, auditors, and municipalities, among others.

21. Trade and other payables

	<u>2022</u>	<u>2021</u>
Current		
Suppliers	15,034,677	10,470,260
Withholding tax	1,896,128	717,720
Partners' advances	1,164,197	1,060,349
Dividends payable (1)	392,346	58,668
Insurance and reinsurance	330,363	294,114
Deposits received from third parties	162,338	136,310
Agreements in transport contracts	115,526	33,883
Related parties (Note 31)	67,879	66,598
Hedging operations (2)	4,311	2,032
Various creditors	769,939	728,297
	<u>19,937,704</u>	<u>13,568,231</u>
Non - current		
Suppliers	28,425	8,260
Deposits received from third parties	331	33
Various creditors	28,300	62,314
	<u>57,056</u>	<u>70,607</u>

(1) Corresponds to dividends payable from Interconexión Eléctrica S.A. for \$366,999 (2021: \$53,976), Inversiones de Gases de Colombia S.A. for \$21,680 (2021: \$978), and Ecopetrol S.A. for \$3,667 (2021: \$3,714).

(2) Corresponds to the balance payable for the liquidation of swap contracts acquired to hedge the price risk of export crude oil.

The carrying amount of trade accounts and other accounts payable approximates their fair value due to their short-term nature.

22. Provisions for employees' benefits

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	<u>2022</u>	<u>2021</u>
Post-employment benefits		
Healthcare	8,140,648	6,636,809
Pension	2,073,562	2,159,530
Education	405,769	443,761
Bonds	399,114	320,833
Other plans (1)	115,136	91,476
Termination benefits – Voluntary retirement plan	772,133	746,585
	<u>11,906,362</u>	<u>10,398,994</u>
Social benefits and salaries	970,598	856,198
Other employee benefits	88,279	123,853
	<u>12,965,239</u>	<u>11,379,045</u>
Current	2,753,697	2,296,253
Non-current	10,211,542	9,082,792
	<u>12,965,239</u>	<u>11,379,045</u>

(1) Includes benefits to employees for five years and layoffs.

22.1 Post-employment benefits liability (asset)

The following table shows the movement in liabilities and assets, net of post-employment benefits and termination benefits, as of December 31:

	<u>Pension and bonds</u>		<u>Other</u>		<u>Total</u>	
	<u>2022</u>	<u>2021</u>	<u>2022</u>	<u>2021</u>	<u>2022</u>	<u>2021</u>
<u>Liabilities for employee benefits</u>						
Opening balance	14,520,592	16,320,383	7,946,927	8,510,594	22,467,519	24,830,977
Effect of business combination	—	545,319	—	301,780	—	847,099
Current service cost	51,756	10,948	95,724	121,404	147,480	132,352
Past service cost (2)	—	3,545	114,162	125,783	114,162	129,328
Interest expense	953,146	867,644	530,482	485,494	1,483,628	1,353,138
Transferred benefits	—	—	—	(577)	—	(577)
Actuarial (gains) losses	(1,805,907)	(2,285,738)	1,361,808	(1,091,228)	(444,099)	(3,376,966)
Benefits paid	(981,486)	(931,051)	(608,184)	(506,323)	(1,589,670)	(1,437,374)
Foreign currency translation	102,047	(10,458)	24,105	—	126,152	(10,458)
Closing balance	<u>12,840,148</u>	<u>14,520,592</u>	<u>9,465,024</u>	<u>7,946,927</u>	<u>22,305,172</u>	<u>22,467,519</u>
<u>Plan assets</u>						
Opening balance	12,040,229	13,157,729	28,296	15,236	12,068,525	13,172,965
Effect of business combination	—	—	—	11,004	—	11,004
Return on assets	802,711	691,584	1,819	367	804,530	691,951
Contributions to funds	—	—	125,788	504,511	125,788	504,511
Benefits paid	(961,931)	(924,924)	(125,129)	(502,340)	(1,087,060)	(1,427,264)
Actuarial (losses) gains	(1,513,537)	(884,160)	564	(482)	(1,512,973)	(884,642)
Closing balance	<u>10,367,472</u>	<u>12,040,229</u>	<u>31,338</u>	<u>28,296</u>	<u>10,398,810</u>	<u>12,068,525</u>
Net post-employment benefits liability	<u>2,472,676</u>	<u>2,480,363</u>	<u>9,433,686</u>	<u>7,918,631</u>	<u>11,906,362</u>	<u>10,398,994</u>

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The following table shows the movement in profit and loss and in other comprehensive income as of December 31, 2022, 2021 and 2020:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Recognized in profit or loss			
Interest expense	679,098	661,187	622,163
Current service cost	147,480	132,352	118,035
Past service cost	114,162	129,328	631,761
Remeasurements	—	(211)	—
	<u>940,740</u>	<u>922,656</u>	<u>1,371,959</u>
Recognized in other comprehensive income			
Pension and pension bonds (1)	156,755	1,401,578	226,597
Healthcare (1)	(1,429,423)	991,050	(33,324)
Other	18,154	64,039	(55,814)
	<u>(1,254,514)</u>	<u>2,456,667</u>	<u>137,459</u>
Deferred tax	586,260	(679,510)	(41,238)
	<u>(668,254)</u>	<u>1,777,157</u>	<u>96,221</u>

22.2 Plan assets

Plan assets are resources held by pension trusts for payment of pension obligations. Payments for health and education post-employment benefits are Ecopetrol's responsibility. The destination of trust resources and its yields cannot be changed or returned to the Ecopetrol Business Group until all pension obligations have been fulfilled.

The following is the composition of the plan assets of pension and pension bonds by type of investment as of December 31, 2022 and 2021:

	<u>2022</u>	<u>2021</u>
Other local currency	4,810,813	5,422,709
Bonds of private entities	1,674,431	2,393,322
Bonds issued by the national government	1,552,690	2,758,728
Other foreign currency	1,762,899	113,012
Variable yield	291,847	1,026,862
Other public bonds	201,508	302,254
Bonds of foreign entities	104,622	51,638
	<u>10,398,810</u>	<u>12,068,525</u>

53.76% (2021 – 36.99%) of plan assets are classified as level 1 in the fair value hierarchy where prices for the assets are directly observable on actively traded markets, and 46.24% (2021 – 63.01%) are classified as level 2.

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The following table reflects the credit ratings of the issuers and counterparties in assets held by the autonomous pension funds:

	<u>2022</u>	<u>2021</u>
AAA	4,138,043	7,183,658
Nación	3,319,858	2,871,610
AA+	312,303	455,875
BB+	267,961	78,216
AA	161,244	74,350
F1+	87,111	112,284
F1	83,684	—
BBB-	47,919	39,865
BRC1+	43,000	37,884
BBB+	30,331	40,928
A+	23,514	—
BAA2	20,880	—
BAA1	20,814	18,855
AA-	8,714	9,558
A	2,352	5,834
Other ratings	330,997	47,348
Rating not available	1,500,085	1,092,260
	<u>10,398,810</u>	<u>12,068,525</u>

22.3 Actuarial assumptions

The following are the actuarial assumptions used in determining the present value of defined employee benefit obligations used for the actuarial calculations as of December 31, 2022, and 2021:

	<u>2022</u>	<u>Pension</u>	<u>Bonds</u>	<u>Health</u>	<u>Education</u>	<u>Others (1)</u>
Discount rate		6.2% - 14.7 %	9.00 %	8.7% - 14.7 %	6.3% - 14.8 %	7.4% - 14.5 %
Salary growth rate		4.5% - 5.5 %	N/A	4.5% - 5.5 %	N/A	4.5% - 4.7 %
Expected inflation rate		3.0% - 4.5 %	3.00 %	3.00 %	3.00 %	3.0% - 4.5 %
Pension growth rate		3.00 %	N/A	4.0% - 5.5 %	4.00 %	4.00 %
Cost trend						
Short-term rate		N/A	N/A	6.33 %	4.00 %	N/A
Long-term rate		N/A	N/A	4.00 %	4.00 %	N/A
	<u>2021</u>	<u>Pension</u>	<u>Bonds</u>	<u>Health</u>	<u>Education</u>	<u>Others (1)</u>
Discount rate		5.18% - 8.7 %	5.00% - 6.25 %	7.00% - 8.8 %	6.30% - 8.9 %	5.56% - 7.10 %
Salary growth rate		4.50 %	N/A	N/A	4.50 %	4.5% - 4.7 %
Expected inflation rate		3.0% - 4.0 %	3.00 %	3.00 %	3.00 %	3.00% - 4.00 %
Pension growth rate		3.0% - 3.5 %	N/A	N/A	N/A	3.50 %
Cost trend						
Short-term rate		N/A	N/A	6.67 %	4.00 %	N/A
Long-term rate		N/A	N/A	4.00 %	4.00 %	4.70 %

N/A: Not applicable for this benefit.

(1) Weighted average discount rate.

The cost trend is the projected increase for the initial year, which includes the expected inflation rate.

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22.4 Maturity of benefit obligation

The cash flows required for payment of post-employment obligations of Ecopetrol S.A. and Cenit are the following:

Period	Pension and bonds	Other benefits	Total
2023	1,158,416	614,528	1,772,944
2024	1,187,807	645,419	1,833,226
2025	1,212,665	684,044	1,896,709
2026	1,225,740	718,026	1,943,766
2027	1,245,109	756,240	2,001,349
2028 y ss	6,380,585	4,323,885	10,704,470

22.5 Sensitivity analysis

The following sensitivity analysis shows the effect of such possible changes on the obligation for defined benefits, while keeping the other assumptions constant, as of December 31, 2022:

	Pension	Bonds	Health	Education	Other
Discount rate					
–50 basis points	12,000,383	1,076,007	8,472,198	396,973	900,711
+50 basis points	10,969,190	1,027,361	7,538,544	372,713	872,696
Inflation rate					
–50 basis points	10,974,674	1,023,440	N/A	N/A	782,593
+50 basis points	12,057,329	1,079,923	N/A	N/A	803,403
Salary growth rate					
–50 basis points	N/A	N/A	N/A	N/A	90,552
+50 basis points	N/A	N/A	N/A	N/A	96,723
Cost trend					
–50 basis points	N/A	N/A	7,535,085	372,035	N/A
+50 basis points	N/A	N/A	8,478,117	397,599	N/A

N/A: Not applicable for this benefit.

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23. Accrued liabilities and provisions

	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2021	11,890,319	703,966	1,637,922	14,232,207
Abandonment costs update	(1,730,016)	—	—	(1,730,016)
Additions	93,704	153,786	468,341	715,831
Uses	(607,769)	(41,773)	(354,625)	(1,004,167)
Financial costs	333,688	10,293	17,322	361,303
Foreign currency translation	186,215	81,894	42,085	310,194
Reversal of provision for sale of assets (1)	(188,540)	—	—	(188,540)
Transfers	28,427	(9,915)	41,170	59,682
Balance as of December 31, 2022	10,006,028	898,251	1,852,215	12,756,494
Current	946,675	94,375	492,086	1,533,136
Non-current	9,059,353	803,876	1,360,129	11,223,358
	10,006,028	898,251	1,852,215	12,756,494

(1) Corresponding to the abandonment provision associated with the assets related to the participation of Ecopetrol S.A. in Asociación Casanare, Estero, Garcero, Orocué and Corocora (CEGOC), which were sold to Perenco Oil and Gas Colombia. This trade closed on August 26, 2022.

	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2020	11,239,325	118,139	1,070,266	12,427,730
Abandonment costs update	500,868	—	—	500,868
Effect of business combination (Note 12)	—	329,123	618,760	947,883
Additions	242,435	261,785	210,619	714,839
Uses	(548,133)	(13,453)	(334,922)	(896,508)
Financial costs	292,329	3,925	7,272	303,526
Foreign currency translation	152,212	4,466	34,774	191,452
Transfers	11,283	(19)	31,153	42,417
Balance as of December 31, 2021	11,890,319	703,966	1,637,922	14,232,207
Current	1,041,674	59,843	488,601	1,590,118
Non-current	10,848,645	644,123	1,149,321	12,642,089
	11,890,319	703,966	1,637,922	14,232,207

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	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2019	8,835,420	137,429	945,439	9,918,288
Increase in abandonment costs	2,307,453	—	—	2,307,453
Additions	143,320	32,108	237,181	412,609
Uses	(291,793)	(31,709)	(106,448)	(429,950)
Financial costs	258,464	—	—	258,464
Effect of control loss in subsidiaries (Note 28)	(23,874)	(20,117)	—	(43,991)
Adjustment on fair value for business combination	31,137	—	—	31,137
Foreign currency translation	37,239	428	5,476	43,143
Transfers	(58,041)	—	(11,382)	(69,423)
Balance as of December 31, 2020	11,239,325	118,139	1,070,266	12,427,730
Current	949,638	46,844	224,627	1,221,109
Non-current	10,289,687	71,295	845,639	11,206,621
	11,239,325	118,139	1,070,266	12,427,730

23.1 Asset retirement obligation

The estimated liability for asset retirement obligation costs corresponds to the future obligation that the Ecopetrol Business Group to restore environmental conditions to a level similar to that existing before the start of projects or activities, as described in Note 4.14. As these relate to long-term obligations, this liability is estimated by projecting the expected future payments and discounting at present value with a rate indexed to the Ecopetrol Business Group's financial obligations, considering the temporariness and risks of this obligation. The discount rates used in the estimate of the obligation as of December 31, 2022, were Exploration and Production 5.30% (2021 - 2.89%), Refining and Petrochemicals 6.36% (2021 - 4.21%), and Transportation and Logistics 5.58% (2021 - 3.14%).

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23.2 Litigations

The following table details the main litigations recognized in the statement of financial position as of December 31, whose loss expectations are probable and could imply an outflow of resources:

	<u>2022</u>	<u>2021</u>
Second instance rulings unfavorable to the interests of Ecopetrol, related to public works contributions, for which they have a unified sentence and that could be subject to collection by the tax authority	223,439	203,160
CTEEP Regulatory Contingency: Billing Eletrobras – RBNI Corresponds to the collection action filed by Eletrobras against ISA CTEEP requesting the return of the value charged in excess by the company as part of the payment of the compensation resulting from the extension of Concession Contract No. 059/2001 under Law No. 12,783/201, relating to NI facilities (new investments) that had been transferred to the company by Eletrobras.	40,692	27,993
Tax contingency: Property and Urban Land Tax (IPTU) CTEEP: corresponds to processes related to the collection of Property Tax (IPTU) in several municipalities of the State of São Paulo and recognizes a provision to cover processes.	23,691	—
Unfavorable first instance ruling for Ecopetrol in the process of direct fixing for the damages associated with the hydrocarbon spill that occurred in Guaduas, Vereda Raizal and Cajón, in the property called “La Floresta” in May 2004.	14,245	—
Administrative processes of a sanctioning type issued by PRONATEL and OSIPTEL Internexa Peru: Procedure for failure to pay contributions during the years 2010 to 2022 for the usufruct contracts with Telefónica del Perú and associated fines.	11,675	—
Damages to third parties due to hydrocarbon easement in a building near the Cartagena Refinery.	11,019	11,019
Lost profits because of an open competition for the management of a set of assets transferred to a trust company.	5,774	5,774

23.2 Environmental contingencies and others

These correspond to contingencies for environmental incidents and obligations related to environmental compensation and mandatory investment of 1% for the use of, exploitation of or effect on natural resources imposed by national, regional, and local environmental authorities. Mandatory investment of 1% is based on the use of water taken directly from natural sources in accordance with the provisions of Law 99 of 1993, Article 43, Decree 1900 of 2006, Decree 2099 of 2017 and 075 and 1120 of 2019 and article 321 of Law 1955 of 2019 in relation to the projects that Ecopetrol Business Group develops in Colombia.

The Colombian Government through the Ministry of Environment and Sustainable Development, issued in December 2016 and in January 2017 the Decrees 2099 and 075, which modify the Single Regulatory Decree of the environment and sustainable development sector, Decree 1076 of 2015, related to the mandatory investment for the use of water taken directly from natural sources. The decrees included modifications and guidelines regarding the geographical scope for the execution of the activities for the fulfillment of the obligation, investment lines and the calculation of the base of liquidation of the obligations. Likewise, June 30, 2017, was defined as the maximum date to modify the Investment Plans that are in execution.

In 2019, Law 1955/2020 was issued, which in its article 321 unifies the basis for the settlement of this obligation and requires updating the investment obligations of 1% to present value. Ecopetrol Business Group carried out the recertification of the settlement base and the acceptance of the percentage of updating of the investment values of 1% in more than 90 environmental licenses, generating a lower provision for this obligation. Currently, ANLA's pronouncements are being received in relation to article 321 of Law 1955, some through official letters and others through resolutions. Ecopetrol Business Group has filed an appeal for reconsideration with ANLA in most cases, which are under review by this authority.

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23.3 Contingencies

Refinería de Cartagena S.A.S.

Arbitration tribunal:

On March 8, 2016, Reficar filed a request for arbitration with the International Chamber of Commerce (the “ICC”) against Chicago Bridge & Iron Company NV, CB&I (UK) Limited and CBI Colombiana SA (jointly, “CB&I”), concerning a dispute related to the Engineering, Procurement, and Construction Agreements entered into by and between Reficar and CB&I for the expansion of the Cartagena Refinery in Cartagena, Colombia. Reficar is the Claimant in the ICC arbitration and seeks no less than USD\$2 billion in damages plus lost profits.

On May 25, 2016, CB&I filed its Answer to the Request for Arbitration and the preliminary version of its counterclaim against Reficar, for approximately USD \$ 213 million. On June 27, 2016, Reficar filed its reply to CB&I’s counterclaim denying and disputing the declarations and relief requested by CB&I.

On April 28, 2017, Reficar filed its non-detailed claim, and, on the same date, CB&I submitted its Statement of Counterclaim increasing its claims to approximately USD \$116 million and COP\$387,558 million, including USD \$70 million for a letter of credit compliance. On March 16, 2018, CB&I submitted its Exhaustive Statement of Counterclaim further increasing its claims to approximately USD\$129 million and COP\$432,303 million (including in each case interest), and also filed its Exhaustive Statement of Defense to Reficar’s claims. On this same date, Reficar filed its Exhaustive Statement of Claim seeking, among others, USD\$139 million for provisionally paid invoices under the Memorandum of Agreement (“MOA”) and Project Invoicing Procedure (“PIP”) Agreements and the EPC Contract.

On June 28, 2019, Chicago Bridge & Iron Company filed a response to Reficar’s non-detailed defense of the counterclaim, updating the value of its claim to approximately USD \$137 million and COP \$503,241 million, including interest. Likewise, CB&I presented its detailed defense to Reficar’s claim.

On this same date, Reficar filed its Reply to CB&I’s Non-Exhaustive Statement of Defense and its Exhaustive Statement of Defense to CB&I’s counterclaim, updating its claim for provisionally paid invoices under the MOA and PIP Agreements and the EPC Contract to approximately USD\$137 million.

In relation to this matter, as of December 31, 2020, there is a balance of approximately USD \$ 122 million, in invoices paid by Reficar to CB&I, under the PIP and MOA Agreements of the EPC contract, whose supports provided to date by CB&I do not show acceptance by AMEC Foster Wheeler - PCIB.

In January 2020, McDermott International Inc. – CB&I parent company – commenced a bankruptcy case under title 11 of the United States Code in the United States Bankruptcy Court for the Southern District of Texas. Faced with this situation, Refinería de Cartagena has taken actions to protect its interests and has a group of experts with whom it will continue to evaluate other measures it may adopt in this new circumstance.

As a consequence of the initiation of the reorganization process, the arbitration was suspended until July 1, 2020, as described below.

On January 21, 2020, Comet II BV, the successor in interest to Chicago Bridge & Iron Company NV, commenced bankruptcy case under title 11 of the United States Code in the United States Bankruptcy Court for the Southern District of Texas. Before the beginning of the insolvency process of Comet II BV, an automatic suspension of the initiation or continuation of any action, process or execution of judgment or award against Comet II BV became effective, which suspended the arbitration. On January 23, 2020, Comet II B.V. obtained an order from the Bankruptcy Court permitting it to, in its discretion, modify the automatic stay to permit it to proceed with litigation or other contested matters.

On March 14, 2020, the Bankruptcy Court entered an order confirming a plan of reorganization, and the order provides for the stay against the arbitration to end upon the earlier of the effective date of the plan or August 30, 2020.- whichever would occur first. On June 30, 2020, McDermott International Inc. notified the occurrence of the effective date of the reorganization plan, for which the suspension of arbitration was lifted on July 1, 2020.

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On May 6, 2020, the Superintendence of Companies ordered the judicial liquidation of CBI Colombiana SA, one of the defendants in the CB&I arbitration. On October 22, 2020, Reficar requested its recognition as a creditor of CBI Colombiana SA, up to the maximum amount of its claims in the arbitration. On January 15, 2021, the liquidator of CBI Colombiana SA accepted Reficar's request.

On September 22, 2020, the tribunal scheduled the start of the hearings for May 2021.

Between May 17 and June 16, 2021, the first two blocks of the hearing were held, in which the evidence in the Arbitration against CB&I was presented. On June 16, 2021, the Court ordered the submission of post-hearing briefs for October 15 and November 5, 2021. Likewise, the Court summoned the parties to a hearing on closing arguments for November 18, and 19, 2021.

On August 16, 2021, the parties requested the Court to modify the procedural calendar, consisting of slightly altering the dates of presentation of the post-hearing briefs. On August 26, 2021, the Court granted the request of the parties, so the post-hearing briefs were presented on October 22 and November 10, 2021. The closing arguments hearing was held in a single session on November 18, 2021, and the session scheduled for November 19, 2021, was dispensed with.

Subsequently, on December 20, 2021, Refinería de Cartagena presented its memorial for costs in the Arbitration against CB&I. Until the Court issues its final decision, the result of this arbitration is unknown.

Investigations of control entities – Reficar

Reficar is a wholly owned subsidiary of Ecopetrol S.A. According to Colombian regulations, Ecopetrol's and Reficar's employees are considered public servants, and as such can be held liable for negligent use or management of public resources. In this context, given that Ecopetrol S.A. is majority owned by the Colombian Government and Reficar is a wholly owned subsidiary of Ecopetrol, Ecopetrol and Reficar administer public resources.

As a result, Ecopetrol S.A. and Reficar employees are generally subject to the control and supervision of the following control entities, among others:

1. Office of the Comptroller General (Contraloría General de la República – CGR):

Financial Audit for the 2021 period

The CGR executed a financial audit of Refinería de Cartagena between January 17 and May 31, 2022.

In the Final Audit Report, two issues of an administrative nature are established, and it is indicated that (i) the budget execution is reasonable, since the budget was prepared and executed in accordance with the applicable regulations, (ii) the internal financial control was efficient, since it is adequate and effective controls according to the risks that are inherent to the different processes, procedures and activities during the 2021 period, and (iii) that the accounting opinion is negative, since the CGR considered that the financial statements "do not reasonably present all the important aspects, the financial situation as of December 31, 2021", due to the discovery of higher values in the property, plant, and equipment account, due to the alleged overestimation in 2.9 trillion pesos of this accounting account.

Considering the above, the CGR did not terminate the fiscal account for the 2021 term.

Compliance audit

The CGR executed a compliance audit of the Refinería de Cartagena between July 18 and December 6, 2022, with the following objectives: (i) Evaluate the execution and results of the Cartagena Crude Plant Interconnection Project ("IPCC Project"), and (ii) Monitor the progress of the improvement plan for the finding "greater values recognized in property, plant, and equipment".

The Final Audit Report establishes 6 administrative findings, indicating that: (i) the result of the combined risk and fraud assessment is low, (ii) the concept of compliance with the regulations applicable to the IPCC Project is unreserved, and (iii) after reviewing the activity of the improvement plan, the CGR considers that it does not "rectify the condition of the issue".

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Fiscal responsibility processes

- PRF-2018-00684-PRF-017-2018

Due to the late entry into operation that generated lost profits, the CGR is executing an independent process in which various requirements have been met.

Through Order 167 of February 3, 2022, the CGR archived the process due to the non-existence of damage, and the non-accreditation of injury to public property, mainly due to force majeure due to the labor abnormality and the winter wave that occurred.

- PRF-80011-2018-33300

Through Order No. 1328 of August 24th, 2021, the CGR closed the preliminary investigation UCC-IP-005-2019 and opened a new fiscal responsibility process. In this, eight former officials of Refinería de Cartagena (three former presidents and five former financial vice-presidents) are investigated.

According to the press release, the CGR attributes the alleged damage to unidentified expenses associated with the Project, amounting to US\$9,240,927 from the period June to December 2015 and US\$12,447,618 from the periods 2016 to 2018; and 268.71 MUSD that, being approved and entered the refinery budget, do not show what was executed within the Project.

At present, the process is pending imputation or archiving.

In this process, the Cartagena Refinery was considered an affected entity by the CGR.

- PRF-2017-01208 Contract 5210733.

On November 7, 2017, the CGR began the Fiscal Responsibility Process, related to contract 5210733, whose purpose is to provide the “Comprehensive maintenance service for tanks and vessels for Refinería de Cartagena S.A. and the Nestor Pineda Terminal of Ecopetrol S.A.”.

On March 20, 2022, the CGR confirmed that Refinería de Cartagena was considered an affected entity within this process.

On June 30, 2022, the CGR issued the filing order for this process.

It is clarified that the Refinería de Cartagena was not the subject of the proceedings, and workers of the Company were not linked to the process.

2. Prosecutor’s Office (Fiscalía General de la Nación - FGN)

Proceeding 1 – 110016000101201600023 - MOA - PIP and EPC

This process is being carried out against some ex-members of the Board of Directors and ex-employees of Refinería de Cartagena, workers of the Chicago Bridge and Iron Company (CB&I) and the Statutory Auditor of Refinería de Cartagena between 2013 and 2015, for crimes of undue interest in the execution of contracts, embezzlement by appropriation in favor of third parties, illicit enrichment of individuals in favor of third parties and ideological falsehood in a public document. In this process, Refinería de Cartagena and Ecopetrol S.A. were officially recognized as victims.

On November 25, 2019, the trial preparatory hearing was installed and is currently taking place.

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Proceeding 2 - 110016000101201800132 Business line

This process is being carried out against ex-members of the Board of Directors and an ex-president of Refinería de Cartagena, for the crimes of aggravated unfair administration, and obtaining a false public document. In this process, Refinería de Cartagena and Ecopetrol S.A. were officially recognized as victims.

On November 18, 2019, the preparatory trial hearing was installed, and it is currently being developed.

Proceeding 3 – 110016000101201800134 – Subscription of contract PMC - Foster Wheeler

This process is being carried out against two ex-employees of Refinería de Cartagena who acted as ex-president on property and ex-president in charge, for the crime of entering into a contract without legal requirements. In this process, Refinería de Cartagena and Ecopetrol S.A. were officially recognized as victims.

On August 18, 2022, a sentence was handed down imposing the minimum penalty for the crime charged, equivalent to 64 months in prison and a fine of (66.66) SMLMV. On August 25, 2022, the defenders of the defendants supported the appeal briefs, and the parties were notified to rule.

Proceeding 4 - 110016000000201702546 – Principle of opportunity

This process is being executed against an ex-employee of the Refinería de Cartagena, for charges related to crimes against the public administration, and illegal interest in the execution of contracts.

The criminal action is suspended until December 2023, due to the application of the principle of opportunity.

3. Office of the Attorney (Procuraduría General de la Nación - PCG)

There are six (6) disciplinary actions carried out by the PGN, which are in stages of a reserved nature.

The Company was aware of one (1) action associated with the Project that was archived, as follows:

- IUS 2012-332368 – IUC D-2017-981346

By Order dated October 21, 2020, the PGN issued an indictment against an ex-employee of Refinería de Cartagena for the commission of a very serious offense as a very serious fault for the preparation of the PIP. In the same decision, the investigation was closed against seven people, including former workers and former members of the Board of Directors of Refinería de Cartagena, considering that they did not commit disciplinary offenses.

On October 31, 2022, the PGN issued a filing order since the phenomenon of the prescription of disciplinary action was configured.

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23.5 Detail of contingent liabilities

The following is a summary of the main contingent liabilities that have not been recognized in the statement of financial position as, according to the evaluations made by internal and external advisors of the Ecopetrol Business Group, the expectation of loss is not probable as of December 31, 2022, and 2021:

Type of process	2022		2021	
	Number of processes	Proceedings	Number of processes	Proceedings
Constitutional	122	642,057	86	1,336,966
Ordinary administrative	147	2,590,089	146	1,867,591
Labor	625	68,194	788	87,175
Civil	59	761,090	58	13,148
Penal	—	—	1	—
	953	4,061,430	1,079	3,304,880

23.6 Details of contingent assets

The following is a breakdown of the Ecopetrol Business Group's principal contingent assets, where the associated contingent gain is likely, but not certain:

Type of process	2022		2021	
	Number of processes	Proceedings	Number of processes	Proceedings
Ordinary administrative	87	687,332	62	217,550
Arbitration	—	—	1	78,600
Civil	211	30,717	188	23,258
Penal	98	2,453	72	55,385
Labor	406	15,696	185	4,714
Constitutional	10	—	4	—
	812	736,198	512	379,507

24. Equity

24.1 Subscribed and paid-in capital

Ecopetrol's authorized capital amounts to \$36,540,000, and is comprised of 60,000,000,000 ordinary shares, of which 41,116,694,690 are outstanding, and 11.51% (4,731,906,273 shares) are held privately and 88.49% (36,384,788,417 shares) are held by the Colombian Government. The value of the reserve shares amounts to \$11,499,933 comprised of 18,883,305,310 shares. As of December 31, 2022, and 2021, subscribed and paid-in capital amounts to COP\$25,040,067. There are no potentially dilutive shares.

24.2 Additional paid-in capital

Additional paid-in capital mainly corresponds to: (i) share premium from the Ecopetrol Business Group's capitalization in 2007, for \$4,457,997, (ii) share premium from the sale of shares awarded in the second capitalization, which took place in September 2011, of \$2,118,468, (iii) a \$31,377 share premium from the placement of shares on the secondary market, arising from the calling of guarantees from debtors in arrears, according to the provisions of Article 397 of the Code of Commerce, and (iv) additional paid-in capital receivables for (\$143).

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24.3 Equity reserves

The following is the composition of the Ecopetrol Business Group's reserves as of December 31, 2022, and 2021:

	<u>2022</u>	<u>2021</u>
Legal reserve	6,407,256	4,737,788
Fiscal and statutory reserves	509,082	509,082
Occasional reserves	1,982,295	5,377,359
	<u>8,898,633</u>	<u>10,624,229</u>

The General Shareholders' Meeting of Ecopetrol S.A., held on March 30, 2022, approved the 2021 profit distribution project and the establishment of a reserve for \$8,889,900, to support the financial sustainability of the Company and flexibility in the development of your strategy. The Extraordinary General Assembly of June 17, 2022, approved the modification of the destination of a part of the occasional reserve to distribute it as an extraordinary dividend for \$6,907,605.

The movement of equity reserves is the following for the years ended December 31, 2022, and 2021:

	<u>2022</u>	<u>2021</u>
Opening balance	10,624,229	9,635,136
Release of reserves	(5,886,441)	(5,066,156)
Allocation to reserves	11,068,450	6,055,249
Dividends declared	(6,907,605)	—
Closing balance	<u>8,898,633</u>	<u>10,624,229</u>

24.4 Retained earnings and dividends

Ecopetrol Business Group distributes dividends based on its financial statements prepared under International Financial Reporting Standards accepted in Colombia (NCIF, as its acronym in Spanish).

The Ordinary General Assembly of Shareholders of Ecopetrol S.A., held on March 30, 2022, approved the profit distribution project for fiscal year 2021 and defined the distribution of dividends in the amount of \$11,512,675 (distribution during 2021: \$698,984). The due date for the payments of the ordinary and extraordinary dividends to the minority shareholders was April 21, 2022, and, throughout 2022, in the case of the majority shareholder.

Additionally, the Extraordinary General Assembly of Ecopetrol S.A. of June 17, 2022, approved the modification of the destination of a part of the occasional reserve to distribute it as an extraordinary dividend for \$6,907,605. The payment was made in June 2022, for minority shareholders in a single payment, and for the majority shareholder, the entirety of this dividend was offset with the receivable account related to the Fuel Price Stabilization Fund, therefore, did not imply a cash outflow.

Dividends were paid as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Ecopetrol S.A.	11,622,778	696,387	7,369,498
Oleoducto Central S.A. - Ocesa	752,530	682,615	959,949
Interconexión Eléctrica S.A. ESP	572,260	790,532	—
Invercolsa S.A.	179,202	150,333	148,941
Oleoducto de los Llanos Orientales S.A. - ODL	138,939	147,056	166,589
Oleoducto de Colombia S.A. - ODC	91,238	86,594	89,374
Oleoducto Bicentenario de Colombia S.A.S. - OBC	—	217,770	—
Total	<u>13,356,947</u>	<u>2,771,287</u>	<u>8,734,351</u>

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24.5 Other comprehensive income attributable to owners of parent

The following is the composition of the other comprehensive income attributable to the shareholders of the parent, Ecopetrol, net of tax:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Foreign currency translation	28,816,983	17,244,255	11,794,201
Hedge of a net investment in a foreign operation	(9,219,271)	(4,364,466)	(1,494,927)
Actuarial gain on defined benefit plans	(1,331,361)	(517,278)	(2,260,989)
Cash flow hedges for future exports	(2,473,999)	(945,250)	(136,473)
Cash flow hedge with derivative instruments	1,290	(61,502)	43,546
Others	3,077	2,135	1,704
	<u>15,796,719</u>	<u>11,357,894</u>	<u>7,947,062</u>

24.6 Earnings per share

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Profit attributable to Ecopetrol's shareholders	31,604,781	15,649,143	1,586,677
Weighted average number of outstanding shares	41,116,694,690	41,116,694,690	41,116,694,690
Net basic earnings per share (Colombian pesos)	<u>COPS 768.7</u>	<u>COPS 380.60</u>	<u>COPS 38.59</u>

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25. Revenue from contracts with customers

	<u>2022</u>	<u>2021</u>	<u>2020</u>
National sales			
Mid-distillates (1)	39,182,510	17,140,327	8,860,588
Gasoline and turbo fuels (1)	27,620,199	15,475,370	6,768,046
Natural gas (2)	4,162,876	3,200,069	2,845,155
Services	3,601,681	3,065,988	2,859,559
Electric power transmission services (3)	2,595,505	728,467	—
Plastic and rubber	1,568,816	1,642,035	865,204
LPG and propane	1,094,332	926,231	375,775
Asphalts	897,200	611,051	526,100
Fuel gas service	860,102	734,666	671,570
Crude oil	375,790	193,476	230,520
Roads and Construction Services (3)	355,737	107,179	—
Aromatics	343,792	247,387	155,740
Polyethylene	302,630	320,466	138,035
Fuel oil	9,213	23,799	37,001
Other income gas contracts	1,940	2,879	32,190
Other products	679,183	402,828	322,232
Cash flow hedges (4)	—	(8)	—
	<u>83,651,506</u>	<u>44,822,210</u>	<u>24,687,715</u>
Foreign sales			
Crude oil (2)	56,651,753	34,868,421	20,086,173
Electric power transmission services (3)	5,114,783	1,827,622	—
Roads and Construction Services (3)	4,676,822	1,241,144	—
Fuel oil	4,348,312	2,288,977	1,044,811
Diesel	2,324,861	3,867,937	3,164,068
Plastic and rubber	2,036,201	2,092,379	1,302,131
LPG and propane	339,837	116,960	18,943
Natural gas	254,054	71,529	17,231
Gasoline and turbo fuels	157,685	—	179,257
Cash flow hedges (4)	(1,578,246)	(349,884)	(857,347)
Other products (5)	1,633,510	1,033,909	580,411
	<u>75,959,572</u>	<u>47,058,994</u>	<u>25,535,678</u>
	<u>159,611,078</u>	<u>91,881,204</u>	<u>50,223,393</u>

- (1) Corresponds to the application of Decree 180522 of March 29, 2010, and other standards that modify and add (Decree 1880 of 2014 and Decree 1068 of 2015), which establishes the procedure to recognize the subsidy for refiners and importers of ordinary motor gasoline and ACPM, and the methodology for calculating the net position (value generated between the parity price and the regulated price, which can be positive or negative). As of December 31, 2022, the value recognized by price differential corresponds to \$36,532,743 (2021 \$11,335,453; 2020 (\$142,723)).
- (2) With the implementation of the IAS 16 Amendment on the management of the sale of products obtained in the project stage or extensive tests mandatory as of January 1, 2022, Ecopetrol Business Group recognizes as of that date, the income received from the product of the sale of hydrocarbons in the stage prior to their declaration of commerciality of the oil fields. The cost related to these revenues is disclosed in Note 26 – Cost of sales. As of December 2022, the value recognized for extensive tests is as follows: natural gas for national sales \$44,962 and crude oil for foreign sales \$141,242.
- (3) Corresponds to the revenue related to the electric power transmission contracts and toll roads concessions of Interconexión Eléctrica S.A. E.S.P. See Note 4.17 – Revenue from contracts with customers.

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- (4) Includes accumulated as of December 31 the result of i) hedges for future exports (Note 30.3) for (\$1,143,287) (2021: (\$249,978); 2020: (\$193,374)) and ii) operations with derivative financial instruments for (\$434,959) (2021: (\$99,914); 2020: (\$663,973)).
- (5) Includes revenue from telecommunications services provided by Interconexión Eléctrica S.A. E.S.P. and the sale of diesel, asphalt, and other products.

Sales by geographic areas

	<u>2022</u>	<u>%</u>	<u>2021</u>	<u>%</u>	<u>2020</u>	<u>%</u>
Colombia	83,651,506	52.4 %	44,822,210	48.8 %	24,687,715	49.2 %
Asia	22,547,997	14.1 %	20,355,063	22.2 %	9,497,498	18.9 %
United States	27,120,783	17.0 %	16,025,083	17.4 %	11,365,218	22.6 %
South America and others	13,609,587	8.5 %	5,727,355	6.2 %	1,296,370	2.6 %
Central America and the Caribbean	9,841,202	6.2 %	3,503,618	3.8 %	2,581,644	5.1 %
Europe	2,840,003	1.8 %	1,447,875	1.6 %	794,948	1.6 %
	<u>159,611,078</u>	<u>100 %</u>	<u>91,881,204</u>	<u>100 %</u>	<u>50,223,393</u>	<u>100 %</u>

Concentration of customers

During 2022, Organización Terpel S.A. represented 9% of sales revenue for the period (2021 – 11% and 2020 – 15%); no other customer represented more than 10% of total sales. There is no risk of the Ecopetrol Business Group's financial situation being affected by a potential loss of the client. The commercial relationship with this customer is for the sale of refined products and transportation services.

Revenues from concession contracts

ISA, through its companies, promotes development in several countries through concessions acquired for the supplying of public energy transport services, services associated with the Management of Real Time Systems in Colombia and public road transport, through concessionaires in Chile and Colombia.

The main concessions are the following:

Concessions in Colombia

Intelligent Network Systems, through a business collaboration agreement entered into with UNE EPM Telecomunicaciones S.A. and Consorcio ITS, executes the addendum number 5 of the Inter-administrative Agreement 5400000003 of 2006 with the Municipality of Medellín to “provide under the concession modality, the necessary technological infrastructure, the services for its modernization and optimization of the management of the administrative services of the Secretaría de Transporte y Tránsito de Medellín, through a complete solution of technology, information, communications and operation of the information and communications technology (ICT's)”, in which the payment consists in the right to participate in the resources received from the penalty fees collected through the photodetection system within the municipality.

This contract is within the scope of IFRIC 12 under the intangible model, because the Municipality of Medellín, as the grantor, controls what services the operator must provide with the infrastructure, who must be charged, and at what price. In addition, the Municipality of Medellín controls, through ownership of the right of use, any significant residual interest in the infrastructure at the end of its useful life.

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Ruta Costera

Under the public-private partnership scheme, considering the terms of Law 1508 of 2012, and from the act of awarding the Public Tender VJ-VE-IP-LP-0011-2013, issued by the National Infrastructure Agency (ANI), through Resolution No. 862 of July 2, 2014, on September 10, 2014, the ANI and the concessionaire signed the Concession Contract No. 004 of 204. The purpose is to “execute the final studies and designs, environmental management, property, social management, construction, rehabilitation, improvement, operation, and maintenance of the corridor Cartagena-Barranquilla Project and Circunvalar de la Prosperidad”.

This contract is within the scope of IFRIC 12 under the financial asset model for investment in construction (construction services). The concession receives income from the following sources of compensation: ANI contributions, tolls collections and revenues from commercial exploitation. If the concessionaire does not achieve the expected revenue from toll collection, the grantor (ANI) will recognize and pay the concessionaire the collection differential in years 8, 13 and 18, contractually denominated as present value of the reference month of toll collection. The revenue guarantees represent an unconditional contractual right to receive cash or other financial assets for construction services provided. The contractually guaranteed payment is a specific and determinable amount.

As of December 31, 2021, a progress of 97.24% was obtained for Functional Unit 3 and 99.94% for Functional Unit 6, achieving a consolidated progress of the project of 99.91% and commissioning of the entire road corridor.

Concessions in Brazil

For concession contracts in Brazil to supply public electric power transmission services, the operator has the right in the contractual asset while the concessionaire complies with the obligation to build and implement the transmission infrastructure, recognizing revenues throughout the time of the project. At the end of the concession, the assets linked to it will be reverted, determining and calculating the compensation to be recognized by the operator.

The concession contracts of ISA CTEEP and TAESA were analyzed and classified in accordance with IFRS 15 - Revenue from contracts with customers within the contractual asset model as of the 1st of January 2018.

The value of the contractual asset of the electric power transmission concessionaires is formed by the present value of their future cash flows, which are determined at the beginning of the concession or in its extension and is revalued in the Periodic Tariff Review.

The cash flows are defined based on the remuneration that the concessionaires receive for supplying the public transmission service to the users, Receita Anual Permitida (RAP). These resources amortize the investments made in the transmission infrastructure. Any investments that are not amortized (reversed assets) generate the right to compensation from the grantor, equivalent to the additional remuneration of the entire transmission infrastructure at the end of the concession contract. This flow of future collections is updated for inflation (IPCA/IGPM) and remunerated by a discount rate that represents the financial component of the business defined at the beginning of each project.

During the stage of the execution of the construction of the work, the concessionaire has the right to the consideration in accordance with the fulfillment of the completion of the work and the performance obligations, and not only with the time used for the construction. The revenue is recognized for the value of the expenses incurred in the formation of the asset plus a construction margin.

Construction and remuneration revenues from concession assets are subject to deferral of the cumulative Social Integration Program and the Contribution for the Financing of Social Security (Cofins), recognized as deferred taxes (non-current liabilities).

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Concessions in Chile

Road concession contracts for the supplying the public service of road infrastructure in Chile, may consider traffic risk or guaranteed total income according to a revenue distribution mechanism or a present value of revenue, which in the latter cases, allow the total revenue of the concession to be collected in a guaranteed way in present value. Additionally, in some concession contracts other concepts are included, such as the minimum guaranteed revenue and subsidies (both in construction and in operation stages); both correspond to payments from the State, subject to specific compliance of conditions by the concessionaire.

The model applied to concessions in Chile will depend on whether there is a traffic risk, that is, whether its revenue is guaranteed or not and whether it is enough to pay for the investment. If the concession contract considers traffic risk, it is recognized according to IFRIC 12 as an intangible asset. This asset is amortized over the life of the concession operation. In the other hand, if the contract establishes income and compensation guarantee mechanisms, it is recognized as a financial asset. This asset is extinguished through payments received from road users, through the collection of tolls, or directly through payments from the Ministry of Public Works. Currently, ISA has road concessions in Chile applying the financial asset model.

Concessions in Peru

Due to the terms and conditions contained in the concession contracts in Peru to provide public electricity transmission services, similar in their legal terms and in the rights and obligations with the Government, the model that applies to the concession contracts for the public energy transmission service in ISA REP, ISA Perú, and Consocio Transmantaro is the intangible asset model. It applies when the services provided by the operator are paid by the users or when the grantor does not unconditionally guarantee the collection of accounts receivable, and represents the right granted by the Peruvian State to charge users of the energy transmission service. This right is not an unconditional right to receive cash.

Concessions in Bolivia

Like the type of contracts in Peru, in those of concession to provide public energy services in Bolivia, the unconditional receipt of cash by the operator is not guaranteed, assuming the credit risk associated with the collection of amounts invoiced, which would mean that the company cannot recover the entire investment made. Additionally, the Bolivian State is not obliged to guarantee shortages, either due to the non-existence of demand or due to non-payment by any of the market agents; therefore, the assignor has no obligation to pay for the construction services received and, in this sense, the model that adjusts to the contractual conditions and framed by IFRIC 12 is the intangible asset model.

Committed investments

ISA and its companies have committed investments of \$22.4 billion pending execution in the 2023-2030 period. These investments correspond to the balance pending execution of contracts already awarded, and to estimated needs for reinforcements and expansions of existing infrastructure and replacement of assets. These investments include 100% of the projects of the controlled companies and the capital contributions in the companies with shared control, which are estimated to be necessary to fund the portion corresponding to capital of the committed investments.

The 60% of the investment will be executed in the 2023-2025 period and 40% between 2026 and 2030. Ninety percent of the investment will be concentrated in the energy transmission business, 5% in roads and the remaining 5% in telecommunications. 55% of the committed investment will be executed in Brazil, where ISA CTEEP and subsidiaries will continue to work on the projects awarded in past tenders, and on the plan to reinforce and improve the transmission network.

In Colombia, 25% of the investment will be executed, mainly associated with energy transmission projects from UPME calls, connections, and asset replacement.

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The 14% of the committed investment will be developed in Chile, of which one third corresponds to the road business, and the remaining capex, to energy transmission. Six percent of the committed investment will be made in Peru, Argentina, and Bolivia.

The value of committed investments pending execution may vary, among other things, due to adjustments in the scope of the projects, equipment and material prices, and variations in macroeconomic estimates, such as exchange rates and price indexes.

26. Cost of sales

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Variable costs			
Imported products (1)	31,230,405	16,944,375	7,592,489
Purchases of crude in association and concession	16,223,628	10,015,898	4,281,661
Purchases of hydrocarbons – ANH (2)	9,219,215	5,611,153	2,798,432
Depreciation amortization and depletion	6,774,770	6,328,144	6,069,903
Electric energy	1,540,452	1,087,269	1,098,621
Taxes and economic rights	1,510,265	1,125,761	841,443
Process materials	1,260,608	906,500	827,464
Purchases of other products and gas	1,244,765	811,024	598,015
Hydrocarbon transport services	1,219,818	917,552	874,632
Services contracted in associations	311,107	267,934	269,637
Extensive tests (3)	71,304	—	—
Others (4)	(2,426,118)	(3,009,700)	657,634
	<u>68,180,219</u>	<u>41,005,910</u>	<u>25,909,931</u>
Fixed costs			
Depreciation and amortization	4,635,601	3,270,735	2,930,120
Maintenance	3,771,137	2,637,857	2,257,370
Labor costs	3,436,167	2,596,947	2,299,761
Construction services	2,802,486	732,723	—
Services contracted	2,870,890	2,023,277	1,623,375
Services contracted in associations	1,566,562	1,286,291	1,121,010
Taxes and contributions	914,455	1,060,123	593,041
Materials and operating supplies	684,679	561,182	508,037
Hydrocarbon transport services	179,082	57,855	253,752
General costs	416,870	348,876	71,075
	<u>21,277,929</u>	<u>14,575,866</u>	<u>11,657,541</u>
	<u>89,458,148</u>	<u>55,581,776</u>	<u>37,567,472</u>

- (1) Imported products correspond mainly to mid-distillates and gasolines. The variation corresponds to the higher national demand of these products, considering the maintenance programmed for the refineries for 2022, and diluent to facilitate the transport of heavy crude oil.
- (2) Corresponds to purchases of crude oil by Ecopetrol Business Group from the National Hydrocarbons Agency (ANH, by its acronym in Spanish) derived from national production.
- (3) Corresponds to the cost related to revenue from the sale of hydrocarbons (Note 25 - Revenue from contracts with customers), obtained in exploration stage or extensive tests prior to the declaration of commerciality of the oil fields. This recognition is the result of the application of the IAS 16 Amendment, mandatory as of January 1, 2022.
- (4) Corresponds to i) result of the process of use and valuation of core inventories, ii) measurement at net realizable value, and iii) other capitalizable charges to projects.

27. Administrative, operative, and project expenses

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	<u>2022</u>	<u>2021</u>	<u>2020</u>
Administrative expenses			
General expenses	(2,040,773)	(1,638,129)	(1,424,348)
Labor expenses (1)	(1,663,464)	(1,264,319)	(1,658,613)
Taxes	(57,944)	(52,889)	(60,397)
Depreciation and amortization	(573,514)	(386,732)	(229,792)
	<u>(4,335,695)</u>	<u>(3,342,069)</u>	<u>(3,373,150)</u>
Operations and project expenses			
Exploration costs	(1,512,268)	(959,562)	(689,087)
Commissions fees freights and services	(1,326,184)	(686,156)	(656,432)
Taxes	(781,181)	(515,848)	(428,608)
Labor expenses	(363,838)	(312,791)	(309,972)
Fee for regulatory entities	(192,094)	(139,158)	(142,695)
Maintenance	(162,383)	(156,412)	(78,181)
Depreciation and amortization (2)	(145,106)	(174,311)	(94,723)
Others	(260,574)	(209,319)	(186,318)
	<u>(4,743,628)</u>	<u>(3,153,557)</u>	<u>(2,586,016)</u>

28. Other operating (expenses) income

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Expense for legal provisions	(516,288)	(650,926)	(139,978)
Loss on sale of assets (1)	(86,954)	(123,342)	(263,647)
Impairment loss of current assets	(101,871)	(83,773)	(34,416)
Gain on revaluation of assets in Guajira association (2)	—	—	1,284,372
Gain on acquisition of participations and interests (2)	—	—	86,026
Gain on loss of control in subsidiaries (3)	—	—	65,695
Other income (4)	149,258	785,297	120,114
	<u>(555,855)</u>	<u>(72,744)</u>	<u>1,118,166</u>

- (1) It mainly corresponds to the end of Rygberg's association contract in Ecopetrol America, and the profit on the sale of the total participation of Ecopetrol S.A. in the Casanare, Estero, Garcero, Orocué and Corocora Association (CEGOC). This sale of fields was made to its partner Perenco Oil and Gas Colombia.
- (2) Results in the acquisition of Guajira in 2020: Ecopetrol S.A. \$1,284,372 and Hocol \$86,026. For Ecopetrol S.A. it corresponds to the revaluation of the assets that it already had in the Guajira association and for Hocol it corresponds to the Bargain obtained from the acquisition of the 43% stake.
- (3) Recognition in 2020 of the disposal of net assets due to the loss of control due to the opening of the judicial liquidation process of Bioenergy S.A.S. and Bioenergy Zona Franca S.A.S. \$65,570 and liquidation process of ECP Oil and Gas Germany GmbH COPS125.
- (4) For 2021, it mainly corresponds to the compensation received by Cenit Transporte y Logística de Hidrocarburos and Oleoducto Bicentenario de Colombia, because of the approval of the conciliation agreement with the Frontera Group.

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29. Financial result

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Finance income			
Yields and interests	965,952	266,116	299,246
Results from financial assets	178,212	108,640	665,310
Gain (loss) on derivatives valuation	18,099	(406)	—
Dividends	70	27	44
Gain on derivatives liquidation	—	10,695	108,838
Other financial income	154,812	18,520	27,992
	<u>1,317,145</u>	<u>403,592</u>	<u>1,101,430</u>
Finance expenses			
Interest	(5,517,417)	(3,095,224)	(2,384,342)
Financial cost of other liabilities (1)	(2,003,687)	(1,043,728)	(872,987)
Results from financial assets	(152,355)	(101,973)	(473,598)
Other financial expenses	(353,793)	(190,723)	(198,864)
	<u>(8,027,252)</u>	<u>(4,431,648)</u>	<u>(3,929,791)</u>
Foreign exchange gain			
(Loss) gain from exchange difference	(124,650)	(31,726)	346,774
Gain from realization of other comprehensive income on sale of joint ventures (2)	—	361,728	—
	<u>(124,650)</u>	<u>330,002</u>	<u>346,774</u>
Financial result	<u>(6,834,757)</u>	<u>(3,698,054)</u>	<u>(2,481,587)</u>

(1) Includes the financial expense of the asset retirement obligations and the liabilities for post-employment benefits.

(2) On January 19, 2021, through the signing of the share purchase agreement (Share Purchase Agreement) with one of the subsidiaries of De Jong Capital LLC., in its capacity as buyer, Ecopetrol S.A. formalized the sale of all the shares in the company Offshore International Group (OIG), in which it had a participation equivalent to 50%. This operation generated the following impacts on the results of the period: profit from the sale of assets for \$4,923 and the realization of other comprehensive income for \$361,728.

30. Risk management

30.1 Exchange rate risk

The Ecopetrol Business Group operates mainly in Colombia and makes sales in the local and international markets, for that reason, it is exposed to exchange rate risk.

As of December 31, 2022, the Colombian peso depreciated 20.82%, going from a closing rate as of December 31, 2021, of COP\$3,981.16 to COP\$4,810.20 pesos per dollar.

When the Colombian peso depreciates, export earnings, when converted to pesos, increase, and imports and external debt service become more expensive.

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The balance of financial assets and liabilities denominated in foreign currency for the years ended December 31, is presented in the following table:

<u>(in US\$Million)</u>	<u>2022</u>	<u>2021</u>
Cash and cash equivalents	615	388
Other financial assets	955	408
Trade receivables and payables, net	(392)	423
Loans and borrowings	(16,113)	(15,514)
Other assets and liabilities, net	202	702
Net liability position	<u>(14,733)</u>	<u>(13,593)</u>

Of the total net position, USD\$(14,566) million correspond to net liabilities of companies with Colombian peso functional currency, of which USD\$(14,512) correspond to loans used as hedging instruments whose valuation is recognized in other comprehensive income, the exchange difference valuation of the remaining net liabilities for USD\$54 million affects the statement of profit and loss. Likewise, USD\$(167) million of the net position correspond to monetary assets and liabilities of Business Group companies with a functional currency other than the Colombian peso, whose valuation is recognized in the profit or loss statement.

30.2 Sensitivity analysis for exchange rate risk

The following is the effect of a change of 1% and 5% in the exchange rate of the Colombian peso as compared with the U.S. dollar, on the balance of financial assets and liabilities denominated in foreign currency as of December 31, 2022:

<u>Scenario / Variation in the exchange rates</u>	<u>Effect on income before taxes +/-</u>	<u>Effect in other comprehensive income +/-</u>
1%	10,618	698,068
5%	53,092	3,490,342

30.3 Cash flow hedge for future exports

To express in the consolidated financial statements, the effect of the existing natural hedge between exports and indebtedness, understanding that the exchange rate risk materializes when exports are made, on September 30, 2015, the Board of Directors designated the sum of USD\$5,440 million of Ecopetrol's debt as a hedging instrument for its future revenues from crude oil exports, for the period 2015 – 2023. As of December 31, 2022, the current balance of this hedging corresponds to USD\$1,300 million.

During the years 2022 and 2021, USD\$4,272 million were designated as a hedging instrument for future income from the export of crude oil, for the period 2022-2030; in accordance with IFRS 9 – Financial instruments.

The following is the movement of this non-derivative hedging instrument:

<u>(US\$Million)</u>	<u>2022</u>	<u>2021</u>
Hedging instrument at the beginning of the period	4,972	1,300
Reassignment of hedging instruments	1,879	675
Realization of exports	(1,879)	(675)
Designation of new coverage	600	3,672
Hedging instrument at the end of the period	<u>5,572</u>	<u>4,972</u>

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The following is the movement in other comprehensive income for the years ended December 31, 2022, 2021 and 2020:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Opening balance	(945,250)	(136,473)	(135,751)
Exchange difference	(4,317,263)	(1,533,743)	(201,967)
Reclassification to profit or loss	1,143,287	249,978	193,374
Ineffectiveness	6,625	24,496	9,779
Deferred income tax	1,638,602	450,492	(1,908)
Closing balance	<u>(2,473,999)</u>	<u>(945,250)</u>	<u>(136,473)</u>

The expected reclassification of the cumulative exchange difference from other comprehensive income to the profit or loss is as follows:

Year	<u>Before taxes</u>	<u>Taxes</u>	<u>After taxes</u>
2023	1,910,677	(887,863)	1,022,814
2024	884,199	(410,875)	473,324
2025	878,587	(408,267)	470,320
2026	864,459	(401,702)	462,757
2027	26,104	(12,130)	13,974
2028	25,561	(11,878)	13,683
2029	24,526	(11,397)	13,129
2030	7,468	(3,470)	3,998
	<u>4,621,581</u>	<u>(2,147,582)</u>	<u>2,473,999</u>

30.4 Hedge of a net investment in a foreign operation

The Board of Directors approved the application of net investment hedge accounting from June 8, 2016. The measure is intended to reduce the volatility of non-operating income due to exchange rate variations. The net investment hedge will be applied on a portion of the Ecopetrol Business Group's investments in foreign operations, in this case on investments in subsidiaries which have the U.S. dollar as their functional currency, using a portion of the Ecopetrol Business Group's U.S. dollar denominated debt as the hedging instrument.

Ecopetrol Business Group designated as the hedged item the net investments in Oleoducto Central S.A. (Ocensa), Ecopetrol América LLC., Hocol Petroleum Ltd, (HPL) and Refinería de Cartagena S.A.S. (Reficar) and as a hedging instrument a portion of its debt denominated in US dollars, in a total amount equivalent to USD\$5,200 million.

During 2019 and 2020 Ecopetrol S.A. expanded this hedge to include investments in Ecopetrol Permian LLC and Ecopetrol Brazil in the designation. At the close of December 31, 2020, the amount of the hedge amounted to USD\$7,249 million.

During 2021 Ecopetrol Business Group expanded this hedge for USD\$1,229 million to add a greater amount of designation for Refinería de Cartagena. In 2021, also capital payments of USD\$270 million were made (June USD\$163 and December USD\$107 million). The total hedged balance as of December 31, 2021, is USD\$8,208 million.

During 2022, an expansion for USD\$750 million was carried out to add a greater amount in Permian and principal payments of the debt for USD\$325 million were made. The total balance covered as of December 31, 2022, is USD\$8,633 million.

Additionally, ISA Colombia made a net investment hedge on the investments in the companies REP, ISA Perú, CTM and PDI for a value of USD\$307 million. The hedging instrument corresponds to a green international bond issued on November 26, 2021.

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The following is the movement in other comprehensive income attributable to owners of parent for the years ended December 31:

	2022	2021	2020
Opening balance	4,366,336	1,494,926	1,130,583
Exchange difference	7,526,124	4,579,758	520,490
Deferred income tax	(2,538,389)	(1,708,348)	(156,147)
Closing balance	9,354,071	4,366,336	1,494,926

30.5 Hedging with financial derivatives

The ISA Group has hedges with derivative financial instruments – CCS (Cross Currency Swaps) and IRS (Interest Rate Swap) to hedge exchange rates. These hedges are recognized as cash flow hedges.

Company	Derivative instrument	2022	2021
Red de Energía del Perú (1)	Cross currency swap	48,195	106,333
Intervial Chile (2)	Cross currency swap	77,229	30,769
Ruta del Maipo (3)	Cross currency swap	—	11,042
		125,424	148,144

- (1) The company designated these derivative instruments as cash flow hedges, to mitigate exposure to exchange rate volatility of interest payments in Peruvian sol of the First Issue Series A and First Issue Series B of the Third Corporate Bond Program, considering that its functional currency is the US dollar.
- (2) In 2021, a UF currency hedging operation was subscribed as a debt strategy in Chilean pesos.
- (3) The subsidiary has a cross currency swap as a hedging instrument, the purpose of which is to reduce exposure to changes in future cash flows due to changes in the exchange rate that affect the bond held by the entity in US dollars and the UF variation due to future flows from toll collections.

30.6 Commodity price risk

The price risk of raw materials is associated with Ecopetrol Business Group's operations, both exports and imports of crude oil, natural gas, and refined products. To mitigate this risk, the Group has implemented hedges to partially protect the results from price fluctuations, considering that part of the financial exposure under contracts for the purchase of crude oil and refined products depends on the international oil prices.

The risk of such exposure is partially hedged in a natural way, as an integrated Business Group (with operations in the exploration and production, transportation and logistics and refining segments) and carries out both crude exports at international market prices and sales of refined products at prices correlated with international prices.

Ecopetrol Business Group has a policy for the execution of (strategic and tactical) hedges and implemented processes, procedures, and controls for their management:

- The main purpose of the strategic hedging program is to protect the separate and consolidated financial statements against the volatility of market variables in each period, protect income and thus cash flow. During 2022, a hedging plan was executed to protect the box against low price scenarios below the budget base price, in this sense, put options were purchased. As of December 31, 2022, there was no balance of these financial instruments on the balance sheet.

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- On the other hand, tactical hedges allow capturing value in trading operations and Asset Backed Trading (ABT), mitigating the market risk of specific operations. In the trading activity, the commitments in spot and forward physical contracts imply an exposure to commodity price risk, particularly the risk associated with the volatility of the price of crude oil and refined products. Although said exposure is part of the natural risk of the production, refining and marketing activity carried out by the Business group, sometimes marketing, to maximize value capture, can concentrate risk exposure in terms of term and/or or indicator that differs from the Company's natural price risk profile. As of the date of this report, Ecopetrol S.A. recognizes a total net liability position in Swaps for \$28,519 (2021: liability \$34,395) and Ecopetrol Trading Asia PTE. LTD a total active net position in Swaps for \$6,544. The constitution of these operations with derivatives is recognized under cash flow hedge accounting.

30.7 Credit risk

Credit risk is the risk that the Ecopetrol Business Group may suffer financial losses because of default of: (a) payments by its clients for the sale of crude oil, gas, products, or services; (b) financial institutions in which it keeps investments, or (c) by counterparties with which it has contracted financial instruments.

Credit risk related to customers

In the selling process of crude oil, gas, refined products and petrochemicals, transport services, energy transmission, roads and telecommunications, the Ecopetrol Business Group may be exposed to credit risk if customers fail to fulfill their payment obligations. The Ecopetrol Business Group's risk management strategy has designed mechanisms and procedures that aim to minimize such events, thus safeguarding the Ecopetrol Business Group's cash flow.

The Ecopetrol Business Group performs a continuous analysis of the financial strength of its counterparties, by classifying them according to their risk level and financial guarantees in the event of a default of payments. Similarly, the Ecopetrol Business Group continuously monitors national and international market conditions for early alerts of major changes that may have an impact on the timely payment of obligations from customers.

For the receivables that are considered exposed to credit risk, Ecopetrol Business Group make individual analysis of each customer's situation to determine the value of impairment to recognize in financial statements. The Ecopetrol Business Group performs administrative and legal actions required to recover amounts past due and charges interest from customers that fail to comply with payment policies.

An aging analysis of the accounts receivable portfolio in arrears, but not impaired, as of December 31, 2022, and 2021 is as follows:

	<u>2022</u>	<u>2021</u>
Less than 3 months overdue	171,896	332,249
Between 3 and 6 months overdue	67,985	7,103
More than 6 months overdue	456,046	4,418
	<u>695,927</u>	<u>343,770</u>

Credit risk in financial assets

Following the promulgation of Decree 1525 of 2008, which provides general rules on investments for public entities, Ecopetrol's management established guidelines for its investment portfolios. These guidelines determine that investments in Ecopetrol's U.S. dollar portfolios are generally limited to investments of cash excess in fixed-income securities issued by entities rated A or higher in the long term and A1/P1/F1 or higher in the short term (international scale) by Standard & Poor's Ratings Services, Moody's Investors Service or Fitch Ratings.

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In addition, Ecopetrol Business Group may also invest in securities issued or guaranteed by the United States of America or Colombia governments, without regard to the ratings assigned to such securities. In Ecopetrol's Colombian Peso portfolio, it must invest the cash excess in fixed-income securities of issuers rated AAA in the long term, and F1+/BRC1+ in the short term (local scale) by Fitch Ratings Colombia or BRC Standard & Poor's. Likewise, the Company may also invest in securities issued or guaranteed by the National Government of Colombia without qualification restrictions.

To diversify the risk in the Colombian Peso portfolio, Ecopetrol Business Group does not invest more than 10% of the cash excess in one specific issuer. In the case of the U.S. dollar portfolio, Ecopetrol Business Group does not invest more than 5% of the cash excess in one specific issuer in the short term (up to one year), or 1% in the long term.

The credit rating of issuers and counterparties in transactions involving financial instruments is disclosed in Note 6 – Cash and cash equivalents, Note 9 – Other financial assets and Note 22.2 – Plan assets.

30.8 Interest rate risk

Interest rate risk arises from Ecopetrol's exposure to changes in interest rates because the Ecopetrol Business Group has investments in fixed and floating-rate instruments and has issued floating rate debt linked to LIBOR, DTF, and CPI interest rates. Thus, interest rate volatility may affect the fair value and cash flows of the Ecopetrol Business Group's investments and the financial expense of floating rate loans and financing.

As of December 31, 2022, 26.4% (2021, 25.7% and 2020, 16%) of the Ecopetrol Business Group's indebtedness is linked to floating interest rates. As a result, if market interest rates rise, financing expenses will increase, which could have an adverse effect on the results of operations.

Ecopetrol Business Group controls the exposure to interest rate risk by establishing limits to the portfolio duration, Value at Risk – VAR and tracking error.

Autonomous equities linked to Ecopetrol Business Group's pension obligations are also exposed to changes in interest rate, as they include fixed and floating rate instruments that are recognized according to the mark to market. Colombian regulation for pension funds, as stipulated in the Decree 941 of 2002 and Decree 1861 of 2012, indicates that they must follow the same regime as the regular obligatory pension funds in their moderate portfolio.

The following table provides information about the sensitivity of the Ecopetrol Business Group's results and other comprehensive income for the next 12 months to variations in interest rate of 100 basis points:

	<u>Effect on profit or loss (+/-)</u>		<u>Effect on Other</u>
	<u>Financial</u>	<u>Financial</u>	<u>Comprehensive Income (+/-)</u>
	<u>Assets *</u>	<u>Liabilities</u>	<u>Plan Assets</u>
+100 basis points	(57,833)	842,534	(346,784)
-100 basis points	57,833	(887,053)	352,209

(*) This sensitivity was executed for portfolios of Ecopetrol S.A. and Black Gold Re. These are the most relevant of the Ecopetrol Business Group.

A sensitivity analysis of discount rates on pension plan assets and liabilities is disclosed in Note 22 – Provisions for employees' benefits.

30.9 Liquidity risk

The ability to access credit and capital markets to obtain resources for the investment plan execution for Ecopetrol Business Group may be limited due to adverse changes in market conditions. A global financial crisis could worsen risk perception in emerging markets.

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Events that could affect the political and regional environment of Colombia may make it difficult for our subsidiaries to access the capital markets. These conditions, together with potential significant losses in the financial services sector and changes in credit risk assessments, may make it difficult to obtain resources on favorable terms. As a result, the Ecopetrol Business Group may be forced to review the conditions of the investment plan, or access financial markets under unfavorable terms, thereby negatively affecting the Ecopetrol Business Group's results of operations and financial results.

Liquidity risk is managed in accordance with the Ecopetrol Business Group's policies aimed at ensuring that enough cash flows to comply with the Ecopetrol Business Group's financial commitments within the established dates and with no additional costs. The main method for the measurement and monitoring of liquidity is cash flow forecasting.

The following is a summary of the maturity of financial liabilities as of December 31, 2022. The amounts disclosed in the table are the contractual undiscounted cash flows. The payments in foreign currency were restated taking a constant exchange rate of COP\$4,810.20 per U.S. dollar:

	<u>Up to 1 year</u>	<u>1-5 years</u>	<u>5-10 years</u>	<u>> 10 years</u>	<u>Total</u>
Loans (payment of principal and interest)	22,915,877	58,620,843	39,406,585	49,615,059	170,558,364
Trade and other payables	19,937,704	62,647	—	—	20,000,351
	<u>42,853,581</u>	<u>58,683,490</u>	<u>39,406,585</u>	<u>49,615,059</u>	<u>190,558,715</u>

30.10 Risk and opportunities related to climate

Ecopetrol Business Group made progress in the process of identifying and assessing physical and transition climate risks, considering short, medium, and long-term climate scenarios. Physical and transition risks are often seen as opposites. The greatest transition risks are associated with more aggressive reduction policies, while physical risks increase due to extreme weather events in lax policy scenarios that deviate from the objectives of the Paris Agreement. The IEA (International Energy Agency), the IPCC (Intergovernmental Panel on Climate Change) and the SSP (Shared Socio-economic Pathway) have developed multiple future climate scenarios that capture a series of policy decisions and climate outcomes.

- **Physical risks:** related to the Business Group's exposure and vulnerability to the impacts of climate change and climate variability, which could affect the availability of water and increase the exposure of assets to possible damages and operational disruptions.
 - For the case of Ecopetrol S.A., the Company executed the analysis and the identification of seven (7) physical risks related to chronic threats (drought and thermal stress) and acute threats (precipitation, coastal flooding, fluvial flooding, fires, and winds) at 95 points associated with the company's main assets. The modeling was carried out through Cervest's EarthScan platform, using the following IPCC scenarios: (i) scenario aligned with the objective of the Paris Agreement (SSP1-RCP2.6), (ii) scenario peak emissions in 2040 (SSP2-RCP4.5), and (iii) business as usual scenario (SSP5- RCP8.5). EarthScan uses regional climate models with diverse data sets to analyze the physical vulnerability of assets, relative to the potential impact of climate hazards. The probability and severity of climatic events are estimated up to 2100.
 - Ecopetrol S.A. also has an analysis of vulnerability for climate variability scenarios associated with the "El Niño" phenomena and its opposite phase "La Niña". The frequency and intensity of these phenomena have been increasing in Colombia.
- **Transition risk:** related to the challenges that the company has identified to move towards a low-carbon, sustainable and competitive operation. The following are the identified risks:
 - Regulatory risk, associated with regulatory changes that may directly affect the Business Group in the short and medium term. Among the regulatory changes, the following can be highlighted: (i) new information requirements for the application or modification of current and future licenses (GHG emissions, vulnerability and climate risks analysis, adaptation measures, among others), of which Ecopetrol Business Group could not have the information available, (ii) new regulations for the detection and repair of leaks, flaring, and venting of gas, (iii) disclosure requirements on

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environmental and social matters by the Financial Superintendence of Colombia, (iv) greater limitations on the use of offsetting to meet decarbonization goals, among others.

- Legal risk, associated with the negative reactions and lawsuits against the climate action of the company.
- Risk of assets trapped in the traditional business of hydrocarbon production, transportation, and refining, considering factors such as fuel demand prospects and asset profit horizons.
- Market risk, related to the change in preferences in the use of low-carbon products in the long term, which implies a risk for Ecopetrol Business Group of not being able to meet market demand and of not advancing effectively in the development of these products and the impact in the costs due to the change in carbon prices.
- Reputational risk, associated with the impossibility of responding in a timely way to the expectations and demand of investors and other interest groups to establish ambitious objectives regarding climate change, which would affect the image of Ecopetrol Business Group.
- Technological risk, associated with the negative effects on the profitability of the business if there is no preparation and capacity to adapt to new technologies because of the transition process.

Ecopetrol S.A. defined a modeling exercise that prioritized market and regulatory risk, for the upstream segment, using the following analysis routes: (i) quantification of the impact on revenues derived from a changing demand for hydrocarbons, (ii) quantification of the impact in costs due to changes in carbon prices, and (iii) quantification of the financial repercussions derived from higher abatement costs associated with limitations on the use of offsets. The model used the International Energy Agency WEO 2022 scenarios: (i) Net Zero Emissions (NZE), (ii) Announced Pledges Scenario (APS), and (iii) Stated Policies Scenario (STEPS). The portfolio's resilience was evaluated by comparing the net present value of future cash flows from the IEA scenarios with the net present value of Ecopetrol's base case. In both cases, the hypotheses associated with the analysis routes were applied. The foregoing will be subject to review and assessment to establish the potential impact on the financial and strategic planning of the company.

The opportunities derive from the analysis of risks associated with the climate, the review of the energy transition scenarios, the implementation of the decarbonization plan and the alignment with the 2040 strategy. Opportunities have been identified related to the diversification of the traditional business, the incorporation into the portfolio of sustainable and low-emission businesses, the diversification in energy power and infrastructure markets, and the strengthening of energy efficiency and renewable energies.

30.11 Capital management

The main objective of the capital management of the Ecopetrol Business Group is to ensure a financial structure that optimizes the cost of capital, maximizes the rate of return to its shareholders and allows access to financial markets at a competitive cost to cover financial needs.

The following is the leverage ratio as of December 31:

	<u>2022</u>	<u>2021</u>
Loans and borrowings (Note 20)	115,134,839	95,060,928
Cash and cash equivalents (Note 6)	(15,401,058)	(14,549,906)
Other financial assets (Note 9)	(2,725,871)	(2,934,734)
Net financial debt	<u>97,007,910</u>	<u>77,576,288</u>
Equity (Note 24)	<u>113,903,089</u>	<u>90,583,772</u>
Leverage (1)	<u>45.99 %</u>	<u>46.13 %</u>

(1) Net financial debt / (Net financial debt + Equity)

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31. Related parties

Balances with associates and joint ventures as of December 31, 2022, and 2021 are as follows:

	Accounts receivable	Accounts receivable – Loans	Other assets	Accounts payable	Loans	Other liabilities
Joint Ventures						
Equion Energy Limited (1)	127	—	1,087	2,004	815,056	2,698
Ecodiesel Colombia S.A.	13,155	—	—	53,821	—	3
Interligação Elétrica do Madeira S.A.	89,505	—	—	—	—	—
Interligação Elétrica Garanhuns S.A.	—	40	—	—	—	—
Interligação Elétrica Ivaí S.A.	—	182	—	—	—	—
Derivex S.A.	—	335	—	—	—	—
Associates						
Gas Natural del Oriente S.A. E.S.P.	—	—	—	7,048	—	—
Extrucol S.A.	2	—	—	854	—	—
E2 Energía Eficiente S.A. E.S.P.	7,397	—	—	4,152	—	—
Balance as of December 31, 2022	110,186	557	1,087	67,879	815,056	2,701
Current	110,186	222	1,087	67,879	815,056	2,701
Non-current	—	335	—	—	—	—
	110,186	557	1,087	67,879	815,056	2,701
	(Note 7)	(Note 7)	(Note 11)	(Note 21)	(Note 20)	
Joint Ventures						
Equion Energy Limited (1)	925	—	1,386	12,997	1,483,701	233
Ecodiesel Colombia S.A.	1,521	—	—	46,452	—	—
Interligação Elétrica Garanhuns S.A.	—	28	—	—	—	—
Interligação Elétrica Paraguaçu S.A.	—	28	—	—	—	—
Interligação Elétrica Aimorés S.A.	—	28	—	—	—	—
Interligação Elétrica Ivaí S.A.	—	28	—	—	—	—
Derivex S.A.	—	335	—	—	—	—
Associates						
Gas Natural del Oriente S.A. E.S.P.	—	—	—	5,211	—	—
Extrucol S.A.	—	—	—	283	—	—
E2 Energía Eficiente S.A. E.S.P.	6,797	—	—	1,655	—	—
Balance as of December 31, 2021	9,243	447	1,386	66,598	1,483,701	233
Current	9,243	112	1,386	66,598	1,483,701	233
Non-current	—	335	—	—	—	—
	9,243	447	1,386	66,598	1,483,701	233
	(Note 7)	(Note 7)	(Note 11)	(Note 21)	(Note 20)	

Loans:

(1) Resources deposited by Equion in Ecopetrol Capital AG.

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The main transactions with related parties as of December 31 are detailed as follows:

	2022		2021		2020	
	Sales and services	Purchases and others	Sales and services	Purchases and others	Sales and services	Purchases and others
Joint Ventures						
Equion Energy Limited	33	23,845	13,996	149,046	27,595	356,872
Ecodiesel Colombia S.A.	21,234	619,286	35,825	442,373	8,268	346,201
Offshore International Group	—	—	—	—	4,461	—
	<u>21,267</u>	<u>643,131</u>	<u>49,821</u>	<u>591,419</u>	<u>40,324</u>	<u>703,073</u>
Associates						
Gas Natural del Oriente S.A. E.S.P.	—	53,994	—	27,175	—	26,141
Extracol S.A.	20	3,411	—	2,354	—	1,162
E2 Energía Eficiente S.A. E.S.P.	90,117	7,908	60,159	6,976	49,860	2,849
	<u>90,137</u>	<u>65,313</u>	<u>60,159</u>	<u>36,505</u>	<u>49,860</u>	<u>30,152</u>
	<u>111,404</u>	<u>708,444</u>	<u>109,980</u>	<u>627,924</u>	<u>90,184</u>	<u>733,225</u>

31.1 Directors and key management personnel

In accordance with the approval given by the shareholders' meeting in 2012, which was recorded in Minute No. 026, the directors' fees for attending the meetings of the Board of Directors and / or the committees increase from four to six legal monthly minimum legal monthly salaries in force.

On the other hand, in the General Shareholders' Meeting of 2018, the amendment of the Corporate Bylaws that appears in Minute No. 036 was approved, by virtue of which, the fourth paragraph of article 23 was eliminated that made the differentiation between the fees for face-to-face and non-face-to-face meetings. The members of the Board of Directors do not have any kind of variable remuneration. The amount paid in 2022 for fees to members of the Board of Directors amounted to \$3,582 (2021 - \$3,757).

The total compensation paid to Executive Officers and Senior Managers as of December 31, 2022, amounted to \$27,359 (2021 - \$27,735). Executive Officers and Senior Managers are not eligible to receive pension and retirement benefits.

As of December 31, 2022, key management officers owned less than 1% of the outstanding shares of Ecopetrol S.A. as follows:

Key management personnel	% Shares
Felipe Bayón	<1% outstanding shares
Jaime Caballero	<1% outstanding shares

31.2 Post-employment benefit plans

The administration and management of resources for payment of Ecopetrol's pension obligations are managed by autonomous pension funds (PAPs, by its acronym in Spanish) which serve as guarantee and payment sources. In 2008, Ecopetrol S.A. received the authorization to partially commute the value corresponding to monthly payments, bonds, and quotas, transferring said obligations and the money that support them to autonomous patrimonies of a pension nature, in accordance with the requirements of Decree 1833 of 2016.

Since November 2016, the entities that manage the resources are: Fiduciaria Bancolombia, Fiduciaria de Occidente, and Consorcio Ecopetrol PACC (formed by Fiduciaria La Previsora, Fiduciaria Bancoldex, Fiduagraria, and Fiduciaria Central).

As of 2022, and after a rigorous selection and asset allocation process, the new trust companies that manage the funds related to the pension obligations are Fiduciaria BBVA, Fiduciaria Bogotá, and the Ecopetrol PACC 2021 Consortium, defined by Fiduprevisora, Fiducoldex, FiduAgraria, and Fiducentral.

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31.3 Government related parties

The Colombian Government controls Ecopetrol S.A. with a stock ownership of 88.49%. The most significant transactions with governmental entities are comprised as follows:

(a) Purchase of oil from the National Hydrocarbons Agency – ANH

The ANH, an entity which operates under the rules of the Ministry of Mines and Energy, has as objective to manage the oil and gas reserves and resources owned by the Colombian Nation.

By nature of the business, the Business Group purchases the crude oil that the ANH receives from producers in Colombia at the prices set in accordance with an established formula, which reflects the sale prices (crude oils and products), adjusted for API gravity quality, sulfur content, transportation rates to the export ports, refining process cost and a commercialization rate (when apply). The contract between Ecopetrol S.A. and the ANH ended on October 30, 2020, and a new one began with effect from November 1, 2020, to October 31, 2022.

The purchase value of oil and gas from ANH is detailed in Note 26 - Cost of sales.

(b) Refined Price Stabilization Fund

The sale prices of regular gasoline and diesel are regulated by the National Government. In that way, there are differentials between the volume reported by the companies at the time of sale and the difference between the parity price and the reference price, the parity price being the one that corresponds to the daily prices of motor gasoline and diesel observed during the month. This differential can be for or against the producers. The value of this differential is detailed in Note 25 - Revenue from contracts with customers and in Note 7 - Trade and other receivables.

(c) National Tax and Customs Direction

Ecopetrol Business Group, just like any other company in Colombia, has tax obligations that it must comply with and does not have any other kind of association or commercial relationship with the National Tax and Customs Direction of Colombia.

(d) Comptroller General of the Republic

Ecopetrol Business Group, just like any other state entity in Colombia, is obliged to comply with the requirements set out by the Comptroller General of the Republic and make an annual payment to this entity on account of a maintenance fee. Ecopetrol Business Group does not have any other kind of association or commercial relationship with this entity.

32. Joint operations

The Ecopetrol Business Group carries out exploration and production operations through Exploration and Production (E&P) Contracts, Technical Evaluation (TEA) Contracts and Agreements signed with the National Hydrocarbons Agency or ANH, as well as through Partnership Contracts and other types of contracts.

The main joint operations in 2022 are as follows:

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32.1 Contracts in which Ecopetrol Business Group is not the operator

Partners	Contract	Type	% Participation	Geographic area of operations
SierraCol Energy Arauca, LLC	Chipirón	Production	30-41%	Colombia
	Cosecha		30%	
	Cravo Norte		55%	
	Rondón		50%	
Frontera Energy Colombia Corp	Quifa	Production	40%	Colombia
	Union Temporal Ismocol Joshi Parko	Production	Variable Between 70% and 80% According amendment	Colombia
Parex Resources Colombia LTD	Capachos	Production	50%	Colombia
	LLA-122	Exploration		
Anadarko Colombia Company (OXY)	E&P COL 1	Exploration	40%	Offshore North Caribe
	E&P COL 2		40%	
	E&P COL 6		40%	
	E&P COL 7		40%	
Petrobras	Tayrona	Exploration	55.60%	Offshore North Caribe
	Fuerte Sur	Exploration	50%	Offshore North Caribe
Purple Angel	50%			
Col-5	50%			
Interoil Colombia	Mana	Production	30%	Colombia
	Rio Opia		30%	
	Ambrosia		30%	
Geopark Colombia SAS	Llanos 86	Exploration	50%	Colombia
	Llanos 87		50%	
	Llanos 104		50%	
	Llanos 123		50%	
	Llanos 124		50%	
Lewis Energy Colombia	SSJN1	Production	50%	Colombia
	Perdices	Exploration	50%	
	VIM-42		50%	
	SSJN3-1		50%	
Maurel & Prom Colombia B.V.	Clarinero		Exploration	50%
	SSJN9	50%		
Quarter North Energy	Gunflint	Production	32%	Gulf of Mexico
	Murphy Exploration and Production Company – USA	Dalmatian	Production	30%
OXY (Anadarko) - K2	K2	Production	21%	Gulf of Mexico
	HESS	Production	21%	Gulf of Mexico
Shell	ESOX	Exploration	30%	Brazil
	S-M-1709		30%	
	S-M-1908		30%	
	S-M-1601		30%	
	S-M-1713		30%	
	S-M-1817		30%	
	S-M-1599		30%	
	S-M-1910		30%	
	Saturno		10%	
	Sul de Gato do Mato		30%	
BP Energy	BM-S-54	Exploration	20%	Brazil
	Pau Brasil	Exploration	50%	Brazil
Chevron	CE-M-715	Exploration	30%	Brazil
	PAMA-M-187		30%	
Petrobras	PAMA-M-188	Exploration	30%	Brazil
	PAMA-M-222		30%	
	PAMA-M-223		30%	
	BM-C-44		38%	
Anadarko	BM-S-74	Exploration	13%	Brazil
	BM-C-29		50%	
Repsol	BM-ES-29	Exploration	30%	Brazil
ONGC	BM-S-73	Exploration	13%	Brazil
	BM-S-63		30%	
Vanco	BM-S-71	Exploration	30%	Brazil
	BM-S-72		30%	
Occidental Midland Basin, LLC (Oxy)	Rodeo Midland Basin	Production	49%	Midland, Texas, USA
Pemex Exploration y Production	Bloque 8	Exploration	50%	Gulf of Mexico
PC Carigali Mexico Operation SA	Bloque 6	Exploration	50%	Gulf of Mexico

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32.2 Contracts in which Ecopetrol Business Group is the operator

Partners	Contract	Type	% Participation	Geographic area of operations
	VMM29	Exploration	50%	Colombia
	CR2		50%	
ExxonMobil Exploration Colombia	C62		50%	
	KALE		100%	
Repsol Colombia SA	CPO9	Exploration	55%	Colombia
ONGC Videsh Limited Sucursal Colombia	RC9	Exploration	50%	Colombia
CPVEN E&P Corp Sucursal Colombia	VMM32	Exploration	51%	Colombia
SK Innovation Co Ltd.	San Jacinto	Exploration	70%	Colombia
Repsol Exploration Colombia S.A.	Catleya	Exploration	50%	Colombia
Emerald Energy PLC Suc. Colombia	Cardon	Exploration	50%	Colombia
Parex Resources Colombia Ltd.	ORC401 CRC-2004-01	Exploration	50%	Colombia
Repsol Colombia Oil & Gas Limited	CPO9 – Akacias	Production	55%	Colombia
SierraCol Energy Arauca, LLC	La Cira Infantas	Production	52%+PAP	Colombia
	Teca		100% Basic	
	Niscota**	Exploration	60% incremental 20%	Colombia
Total Colombie				
Talisman Oil & Gas	Oleoducto Alto Magdalena	Production	45%	Colombia
Emerald Energy				
Frontera Energy				
Perenco Oil And Gas	San Jacinto Rio Paez	Production	68%	Colombia
Cepsa Colombia				
	SSJN1	Production	50%	Colombia
	Perdices		50%	Colombia
Lewis Energy Colombia	VIM-42	Exploration	50%	Colombia
	SSJN3-1		50%	Colombia
	Clarinero		50%	Colombia
Maurel & Prom Colombia B.V.	CPO17	Exploration	50%	Colombia

** Fields in abandonment process.

The Company acquires investment commitments at the moment of receiving the exploration and/or exploitation rights of a determined area by the competent authority. As of December 31, 2022, investment commitments with the ANH reach USD \$805.6 million (2021 - USD \$739.9 million).

Ecopetrol Permian LLC has commitments related to the five-year business plan in the Permian Basin under the Rodeo Midland Basin LLC formation agreement, which may be modified annually by contract members, and Ecopetrol América LLC commitments derived from the joint operations in the Gulf of Mexico through authorizations for expenditures (AFEs) for projects of both a capital nature and operating expenses.

33. Information by segments

A description of the Ecopetrol Business Group's business segments is in Note 4.20 - Information by business segment.

The following segment information is reported based on the information used by the Board of Directors as the top body to make strategic and operational decisions of these business segments. The performance of the segments is based primarily on an analysis of income, costs, expenses, and results for the period generated by each segment which are regularly monitored.

The information disclosed in each segment is presented net of transactions between the Ecopetrol Business Group companies.

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33.1 Statement of profit or loss

Below are the consolidated statements of profit or loss by segment for the years ended December 31, 2022, 2021 and 2020:

	For the year ended on December 31, 2022					
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Eliminations	Total
Third-party sales	60,719,903	82,728,875	2,807,031	13,355,269	—	159,611,078
Inter-segment sales	30,300,562	6,450,072	11,148,961	2,237	(47,901,832)	—
Revenue from contracts with customers	91,020,465	89,178,947	13,955,992	13,357,506	(47,901,832)	159,611,078
Variable cost	(34,649,988)	(76,341,169)	(720,247)	—	43,531,185	(68,180,219)
Fixed cost	(12,099,432)	(3,990,829)	(3,172,963)	(5,854,832)	3,840,127	(21,277,929)
Cost of sales	(46,749,420)	(80,331,998)	(3,893,210)	(5,854,832)	47,371,312	(89,458,148)
Gross profit	44,271,045	8,846,949	10,062,782	7,502,674	(530,520)	70,152,930
Administrative expenses	(2,489,557)	(823,349)	(499,801)	(965,314)	442,326	(4,335,695)
Operation and project expenses	(3,221,678)	(1,387,064)	(327,952)	—	193,066	(4,743,628)
Impairment of non-current assets	(890,248)	1,096,021	(406,229)	(87,543)	—	(287,999)
Other operating income and expenses net	(310,628)	(37,959)	(96,239)	(104,664)	(6,365)	(555,855)
Operating income	37,358,934	7,694,598	8,732,561	6,345,153	98,507	60,229,753
Financial result net						
Financial income	1,011,182	89,173	157,264	577,743	(518,217)	1,317,145
Financial expenses	(2,894,636)	(1,381,682)	(287,889)	(3,883,596)	420,551	(8,027,252)
Foreign exchange gain (loss) net	(44,302)	(289,105)	10,080	198,677	—	(124,650)
	(1,927,756)	(1,581,614)	(120,545)	(3,107,176)	(97,666)	(6,834,757)
Share of profits of associates and joint ventures	30,197	222,460	—	515,746	19	768,422
Income before tax	35,461,375	6,335,444	8,612,016	3,753,723	860	54,163,418
Income tax	(13,829,885)	(1,464,380)	(2,962,021)	(707,652)	—	(18,963,938)
Net profit (loss) for the period	21,631,490	4,871,064	5,649,995	3,046,071	860	35,199,480
Profit (loss) attributable to:						
Group owners of parent	21,761,164	4,686,009	4,483,060	673,688	860	31,604,781
Non-controlling interest	(129,674)	185,055	1,166,935	2,372,383	—	3,594,699
	21,631,490	4,871,064	5,649,995	3,046,071	860	35,199,480
Supplementary information						
Depreciation depletion and amortization	7,304,525	1,960,399	1,448,626	1,415,441	—	12,128,991

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	For the year ended on December 31, 2021					
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Eliminations	Total
Third-party sales	38,552,572	46,658,196	2,557,238	4,113,198	—	91,881,204
Inter-segment sales	24,696,380	4,318,189	9,601,228	—	(38,615,797)	—
Revenue from contracts with customers	63,248,952	50,976,385	12,158,466	4,113,198	(38,615,797)	91,881,204
Variable cost	(30,473,145)	(44,860,928)	(531,361)	—	34,859,524	(41,005,910)
Fixed cost	(9,861,987)	(3,674,460)	(2,728,948)	(1,817,491)	3,507,020	(14,575,866)
Cost of sales	(40,335,132)	(48,535,388)	(3,260,309)	(1,817,491)	38,366,544	(55,581,776)
Gross profit	22,913,820	2,440,997	8,898,157	2,295,707	(249,253)	36,299,428
Administrative expenses	(1,987,817)	(784,214)	(457,217)	(322,939)	210,118	(3,342,069)
Operation and project expenses	(1,882,686)	(944,616)	(404,264)	(460)	78,469	(3,153,557)
Impairment of non-current assets	438,020	(305,466)	(165,901)	(4)	—	(33,351)
Other operating income and expenses net	(617,893)	10,749	591,829	(51,267)	(6,162)	(72,744)
Operating income (expenses)	18,863,444	417,450	8,462,604	1,921,037	33,172	29,697,707
Financial result net						
Financial income	517,629	24,313	76,453	89,267	(304,070)	403,592
Financial expenses	(2,410,906)	(1,151,255)	(250,816)	(886,420)	267,749	(4,431,648)
Foreign exchange gain (loss) net	(219,747)	(132,734)	381,964	300,519	—	330,002
	(2,113,024)	(1,259,676)	207,601	(496,634)	(36,321)	(3,698,054)
Share of profits of associates and joint ventures	9,610	200,998	858	214,698	—	426,164
Income before tax	16,760,030	(641,228)	8,671,063	1,639,101	(3,149)	26,425,817
Income tax	(5,019,540)	(383,562)	(2,925,390)	(466,771)	—	(8,795,263)
Net profit (loss) for the period	11,740,490	(1,024,790)	5,745,673	1,172,330	(3,149)	17,630,554
Profit (loss) attributable to:						
Group owners of parent	11,829,119	(1,198,619)	4,635,354	386,438	(3,149)	15,649,143
Non-controlling interest	(88,629)	173,829	1,110,319	785,892	—	1,981,411
	11,740,490	(1,024,790)	5,745,673	1,172,330	(3,149)	17,630,554
Supplementary information						
Depreciation depletion and amortization	6,844,910	1,640,940	1,211,642	462,430	—	10,159,922

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	For the year ended on December 31, 2020				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Third-party sales	22,854,925	24,804,887	2,563,581	—	50,223,393
Inter-segment sales	13,985,072	1,299,464	9,630,859	(24,915,395)	—
Revenue from contracts with customers	36,839,997	26,104,351	12,194,440	(24,915,395)	50,223,393
Fixed costs	(9,479,317)	(3,427,211)	(2,813,856)	4,062,843	(11,657,541)
Variable costs	(23,429,102)	(22,398,344)	(567,501)	20,485,016	(25,909,931)
Cost of sales	(32,908,419)	(25,825,555)	(3,381,357)	24,547,859	(37,567,472)
Gross profit	3,931,578	278,796	8,813,083	(367,536)	12,655,921
Administrative expenses	(2,163,198)	(936,175)	(533,594)	259,817	(3,373,150)
Operation and project expenses	(1,511,510)	(781,309)	(403,657)	110,460	(2,586,016)
Impairment of non-current assets	(192,693)	(781,528)	341,065	—	(633,156)
Other operating income and expenses net	1,085,114	34,705	1,827	(3,480)	1,118,166
Operating income (expenses)	1,149,291	(2,185,511)	8,218,724	(739)	7,181,765
Financial result net					
Financial income	1,177,712	67,832	125,677	(269,791)	1,101,430
Financial expenses	(2,896,060)	(914,534)	(389,394)	270,197	(3,929,791)
Foreign exchange gain (loss) net	360,409	(447,880)	434,245	—	346,774
	(1,357,939)	(1,294,582)	170,528	406	(2,481,587)
Share of profits of associates and joint ventures	(53,037)	131,462	(2,089)	—	76,336
Income before tax	(261,685)	(3,348,631)	8,387,163	(333)	4,776,514
Income tax	43,569	614,269	(2,696,499)	—	(2,038,661)
Net profit (loss) for the period	(218,116)	(2,734,362)	5,690,664	(333)	2,737,853
Profit (loss) attributable to:					
Group owners of parent	(139,279)	(2,848,511)	4,574,800	(333)	1,586,677
Non-controlling interest	(78,837)	114,149	1,115,864	—	1,151,176
	(218,116)	(2,734,362)	5,690,664	(333)	2,737,853
Supplementary information					
Depreciation depletion and amortization	6,445,812	1,599,780	1,278,946	—	9,324,538

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33.2 Sales by product

The sales by product for each segment are detailed below for the years ended December 31, 2022, 2021 and 2020:

	For the year ended on December 31, 2022					
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Eliminations	Total
Local sales						
Mid-distillates	—	39,217,618	—	—	(35,108)	39,182,510
Gasoline and turbo fuels	—	32,022,556	—	—	(4,402,357)	27,620,199
Natural gas	5,250,577	—	—	—	(1,087,701)	4,162,876
Services	450,322	746,500	13,955,992	296,216	(11,847,349)	3,601,681
Electric power transmission services	—	—	—	2,595,505	—	2,595,505
Plastic and rubber	—	1,568,816	—	—	—	1,568,816
LPG and propane	739,323	385,178	—	—	(30,169)	1,094,332
Asphalts	47,224	849,976	—	—	—	897,200
Fuel gas service	—	869,101	—	—	(8,999)	860,102
Crude oil	28,725,485	491,440	—	—	(28,841,135)	375,790
Roads and Construction services	—	—	—	355,737	—	355,737
Aromatics	—	343,792	—	—	—	343,792
Polyethylene	—	302,630	—	—	—	302,630
Fuel oil	2,663	6,550	—	—	—	9,213
Other income gas contracts	1,940	—	—	—	—	1,940
Other products	20,204	2,164,882	—	—	(1,505,903)	679,183
	35,237,738	78,969,039	13,955,992	3,247,458	(47,758,721)	83,651,506
Foreign sales						
Crude oil	56,701,497	92,147	—	—	(141,891)	56,651,753
Electric power transmission services	—	—	—	5,114,783	—	5,114,783
Roads and Construction Services	—	—	—	4,676,822	—	4,676,822
Fuel oil	—	4,348,312	—	—	—	4,348,312
Diesel	—	2,324,861	—	—	—	2,324,861
Plastic and rubber	—	2,036,201	—	—	—	2,036,201
LPG and propane	339,837	—	—	—	—	339,837
Natural gas	254,054	—	—	—	—	254,054
Gasoline and turbo fuels	—	157,685	—	—	—	157,685
Other products	35,113	1,281,174	—	318,443	(1,220)	1,633,510
Cash flow hedging	(1,547,774)	(30,472)	—	—	—	(1,578,246)
	55,782,727	10,209,908	—	10,110,048	(143,111)	75,959,572
	91,020,465	89,178,947	13,955,992	13,357,506	(47,901,832)	159,611,078

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	For the year ended on December 31, 2021					
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Eliminations	Total
Local sales						
Mid-distillates	—	17,166,812	—	—	(26,485)	17,140,327
Gasoline and turbo fuels	—	17,931,469	—	—	(2,456,099)	15,475,370
Natural gas	4,077,691	—	—	—	(877,622)	3,200,069
Services	132,060	659,088	12,158,466	120,795	(10,004,421)	3,065,988
Plastic and rubber	—	1,642,035	—	—	—	1,642,035
LPG and propane	618,218	332,542	—	—	(24,529)	926,231
Fuel gas service	—	742,212	—	—	(7,546)	734,666
Electric power transmission services	—	—	—	728,467	—	728,467
Asphalts	25,178	585,873	—	—	—	611,051
Polyethylene	—	320,466	—	—	—	320,466
Aromatics	—	247,387	—	—	—	247,387
Crude oil	23,619,491	—	—	—	(23,426,015)	193,476
Roads and Construction Services	—	—	—	107,179	—	107,179
Fuel oil	10,838	12,961	—	—	—	23,799
Other income gas contracts	2,879	—	—	—	—	2,879
Other products	35,213	2,160,653	—	—	(1,793,038)	402,828
Cash flow hedges	—	(8)	—	—	—	(8)
	28,521,568	41,801,490	12,158,466	956,441	(38,615,755)	44,822,210
Foreign sales						
Crude oil	34,868,421	—	—	—	—	34,868,421
Diesel	—	3,867,937	—	—	—	3,867,937
Fuel oil	—	2,288,977	—	—	—	2,288,977
Plastic and rubber	—	2,092,379	—	—	—	2,092,379
Electric power transmission services	—	—	—	1,827,622	—	1,827,622
Roads and Construction Services	—	—	—	1,241,144	—	1,241,144
LPG and propane	116,960	—	—	—	—	116,960
Natural gas	71,529	—	—	—	—	71,529
Other products	20,365	925,595	—	87,991	(42)	1,033,909
Cash flow hedges	(349,891)	7	—	—	—	(349,884)
	34,727,384	9,174,895	—	3,156,757	(42)	47,058,994
	63,248,952	50,976,385	12,158,466	4,113,198	(38,615,797)	91,881,204

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	For the year ended on December 31, 2020				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Local sales					
Mid-distillates	—	8,871,938	—	(11,350)	8,860,588
Gasoline and turbo fuels	6,739	7,880,124	—	(1,118,817)	6,768,046
Services	116,485	268,081	12,194,384	(9,719,391)	2,859,559
Natural gas	3,683,018	—	—	(837,863)	2,845,155
Plastic and rubber	—	865,204	—	—	865,204
Fuel gas service	—	678,396	—	(6,826)	671,570
Asphalts	27,043	499,057	—	—	526,100
LPG and propane	249,533	133,525	—	(7,283)	375,775
Crude oil	13,250,275	—	—	(13,019,755)	230,520
Aromatics	—	155,740	—	—	155,740
Polyethylene	—	138,035	—	—	138,035
Fuel oil	7,758	29,243	—	—	37,001
Other income gas contracts	32,190	—	—	—	32,190
Other products	19,556	417,889	—	(115,213)	322,232
	17,392,597	19,937,232	12,194,384	(24,836,498)	24,687,715
Foreign sales					
Crude oil	20,165,489	29	—	(79,345)	20,086,173
Diesel	—	3,164,068	—	—	3,164,068
Fuel oil	—	1,044,811	—	—	1,044,811
Plastic and rubber	—	1,302,131	—	—	1,302,131
LPG and propane	18,943	—	—	—	18,943
Natural gas	17,231	—	—	—	17,231
Gasolines and turbo fuels	—	179,257	—	—	179,257
Other products	26,702	553,206	56	447	580,411
Cash flow hedges	(780,965)	(76,382)	—	—	(857,347)
	19,447,400	6,167,120	56	(78,898)	25,535,678
	36,839,997	26,104,352	12,194,440	(24,915,396)	50,223,393

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33.3 Capital expenditures by segments

The following are the investments amounts made by each segment for the years ended December 31, 2022, 2021 and 2020:

	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Total
2022					
Property, plant, and equipment (Note 14)	4,461,244	928,843	2,424,428	953,201	8,767,716
Natural and environmental resources (Note 15)	11,962,544	—	—	—	11,962,544
Intangibles (Note 17)	145,532	32,832	89,463	879,683	1,147,510
	16,569,320	961,675	2,513,891	1,832,884	21,877,770
2021					
Property, plant, and equipment (Note 14)	2,633,119	1,845,618	1,344,654	294,197	6,117,588
Natural and environmental resources (Note 15)	6,733,028	—	—	—	6,733,028
Intangibles (Note 17)	106,490	22,685	47,236	267,935	444,346
	9,472,637	1,868,303	1,391,890	562,132	13,294,962
2020					
Property, plant, and equipment (Note 14)	2,866,600	1,329,181	—	836,536	5,032,317
Natural and environmental resources (Note 15)	5,994,462	—	—	—	5,994,462
Intangibles (Note 17)	41,002	8,771	40,309	—	90,082
	8,902,064	1,337,952	876,845	—	11,116,861

34. Supplemental information on oil and gas producing activities (unaudited)

The information in this note is referred to as “unaudited” as a means of clarifying that it is not covered by the audit opinion of the independent registered public accounting firm that has audited and reported on the “Consolidated Financial Statements.”

In accordance with the requirements of the United States Securities and Exchange Commission (SEC), Rule 4–10(a) of Regulation S–X, Release 33–8879, Accounting Standards Codification 932 and the ASU– 2010–03 “Oil and Gas reserve Estimation and Disclosures” rule, this section provides supplemental information on oil and gas exploration and producing activities of the Ecopetrol Business Group. The information included in sections (1) to (3) provides historical cost information pertaining to costs incurred in exploration, property acquisitions and development, capitalized costs, and results of operations. The information included in sections (4) and (5) presents information on Ecopetrol’s estimated net proved reserve quantities, standardized measure of estimated discounted future net cash flows related to proved reserves and changes in estimated discounted future net cash flows.

The following information corresponds to Ecopetrol’s oil and gas producing activities as of December 31, 2022, 2021 and 2020, and includes information related to the Ecopetrol Business Group’s consolidated subsidiaries.

Under the SEC final rule optional disclosure of possible and probable reserves is allowed but, the Ecopetrol Business Group opted not to do so. Ecopetrol estimated its reserves without considering non–traditional resources.

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34.1 Capitalized costs relating to oil and gas exploration and production activities

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Natural and environmental properties	90,284,366	79,385,151	67,767,005
Wells, equipment, and facilities – property, plant, and equipment	33,568,835	31,730,001	31,166,804
Exploration and production projects	16,451,284	11,474,682	12,494,665
Accumulated depreciation, depletion, and amortization	<u>(79,744,788)</u>	<u>(70,739,885)</u>	<u>(64,233,572)</u>
Net capitalized cost	<u>60,559,697</u>	<u>51,849,949</u>	<u>47,194,902</u>

It includes information of the Exploration and Production segment subsidiaries and joint ventures.

In accordance with IAS 37, costs capitalized to natural and environmental properties include provisions for asset retirement obligations of \$1,979,749, \$3,930,370, and \$3,936,494 during 2022, 2021 and 2020, respectively.

34.2 Costs incurred in oil and gas exploration and developed activities

Costs incurred are summarized below and include both amounts expensed and capitalized in the corresponding period.

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Acquisition of proved properties (1)	141,928	—	507,907
Acquisition of unproved properties (2)	339,394	—	1,274,660
Exploration costs	3,322,055	1,793,549	1,340,898
Development costs	<u>16,266,222</u>	<u>11,264,075</u>	<u>7,367,020</u>
	<u>20,069,599</u>	<u>13,057,624</u>	<u>10,490,485</u>

(1) For 2022, it corresponds to 49% of participation contract in Barnett, acquired by Ecopetrol Permian.

For 2020, it corresponds mainly to the acquisition of the entire participation in the Guajira Association (43% of the association contract) by Hocol and its position as operator.

(2) During 2022, Ecopetrol Óleo e Gás do Brasil Ltda have acquired and capitalized seven offshore blocks in the Santos Basin. The blocks are operated by Shell, which holds a 70% of participation in the assets, with a 30% of participation held by Ecopetrol Brasil.

During 2020, Ecopetrol Business Group through its subsidiary Ecopetrol Óleo e Gás do Brasil Ltda acquired 30% of the interests, rights and obligations in two areas that correspond to the BM-S-54 Concession Agreement and the Sul de Gato do Mato Shared Production Contract, located offshore in Santos basin of Brazil, in the discovery of hydrocarbons called “Gato do Mato”. Additionally, Ecopetrol Óleo e Gás do Brasil Ltda has recognized the billing related to activities of drilling during the year. On July 17, 2020, the Ministry of Mines and Energy of Brazil authorized the transfer of 10% of the Saturn block for USD\$85 million, located in the Santos basin, to Ecopetrol Óleo e Gás do Brasil, this percentage of which Shell Brasil Petróleo Ltda and Chevron Brasil Óleo e Gas Ltda. were equal holders. In the new shareholding structure, Ecopetrol Óleo e Gás do Brasil retains 10% of the interests of the block, while Shell (operator) and Chevron each retain 45% of the total.

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34.3 Results of operations for oil and gas exploration and production activities

The Ecopetrol Business Group's results of operations from oil and gas exploration and production activities for the years ended December 31, 2022, 2021 and 2020 are as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net revenues			
Sales	71,223,307	50,631,272	30,141,662
Transfers	19,797,158	12,617,680	7,025,839
	<u>91,020,465</u>	<u>63,248,952</u>	<u>37,167,501</u>
Production costs(1)	22,152,495	12,554,338	12,753,880
Depreciation, depletion, and amortization(2)	7,138,902	6,623,891	6,393,506
Other production costs(3)	20,741,550	21,156,904	14,005,669
Exploration expenses(4)	1,512,385	960,247	689,204
Other expenses(5)	5,399,726	3,090,128	2,227,481
	<u>56,945,058</u>	<u>44,385,508</u>	<u>36,069,740</u>
Income before income tax expense	34,075,407	18,863,444	1,097,761
Income tax expense	(13,026,271)	(5,652,743)	(233,255)
Results of operations for exploration and production activities	<u>21,049,136</u>	<u>13,210,701</u>	<u>864,506</u>

- (1) Production costs are lifting costs incurred to operate and maintain productive wells and related equipment and facilities including costs such as operating labor, materials, supplies, and fuel consumed in operations and the costs of operating natural gas liquids plants. In addition, they include expenses related to the asset retirement obligations that were recognized during 2022, 2021 and 2020 of \$333,683, \$292,329, and \$213,925, respectively.
- (2) In accordance with IAS 37, the expense related to asset retirement obligations that were recognized during 2022, 2021 and 2020 in depreciation, depletion, and amortization, were \$768,466, \$887,725, and \$639,123, respectively.
- (3) Includes transportation costs and naphtha that are not part of the Ecopetrol Business Group's lifting cost.
- (4) Exploration expenses include the costs of geological and geophysical activities, as well as the non-productive exploratory wells.
- (5) Corresponds to administration, marketing expenses, and impairment.

During 2022, 2021, and 2020, the Ecopetrol Business Group transferred approximately 21.8%, 19.9%, and 18.9%, respectively, of its crude oil and gas production; (percentages based on the value sales in Colombian pesos) to intercompany business units. Those transfers were 50.4%, 52.1% and 45.9%, respectively, of crude oil and gas production volume (including Refinería de Cartagena).

The intercompany transfers were realized at market prices.

34.4 Reserve information

The Ecopetrol Business Group follows international standards for estimating, classifying, and reporting reserves framed under SEC definitions. Corporate Reserve Management of Ecopetrol Business Group, Upstream Management and the Vice-Presidency of Development and Production, present the reserves balance to the Board of Directors, which approved it in February 2023.

The reserves were estimated at a level of 99.8% by specialized firms: DeGolyer and MacNaughton, Ryder Scott Company, Gaffney Cline, and Sproule International Limited. According to these certifications the reserves report complies with the content and guidelines set forth in Rule 4-10 of Regulation S-X issued by the United States SEC.

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The following information relates to the net proven reserves owned by the Ecopetrol Business Group in 2022, 2021 and 2020, and corresponds to the official reserves statements prepared by the Ecopetrol Business Group:

	2022			2021			2020		
	Oil (Mbls)	Gas (Gpc)	Total (Mbe)	Oil (Mbls)	Gas (Gpc)	Total (Mbe)	Oil (Mbls)	Gas (Gpc)	Total (Mbe)
Proved reserves:									
Opening balance	1,449	3,151	2,002	1,257	2,921	1,770	1,384	2,906	1,894
Revisions of previous estimates (1)	81	(104)	63	240	431	315	(81)	51	(72)
Improved recovery	77	21	81	120	107	139	100	74	113
Purchases	39	50	48	—	—	—	—	171	30
Extensions and discoveries	52	33	57	12	—	12	41	8	42
Sales	—	—	—	(3)	(4)	(3)	(1)	—	(1)
Production	(183)	(323)	(240)	(177)	(304)	(231)	(186)	(289)	(236)
Closing balance	1,515	2,828	2,011	1,449	3,151	2,002	1,257	2,921	1,770
<i>Proved developed reserves:</i>									
Opening balance	921	2,561	1,370	834	2,636	1,297	898	2,662	1,365
Closing balance	995	2,174	1,376	921	2,561	1,370	834	2,636	1,297
<i>Proved undeveloped reserves:</i>									
Opening balance	528	590	632	423	285	473	486	244	529
Closing balance	520	654	635	528	590	632	423	285	473

Some values were rounded for presentation purposes.

Mbls = Million barrels

Gpc: Giga cubic feet

Mbe = Million barrels of oil equivalent

- (1) Represents changes in previous proved reserves, upward or downward, resulting from new information (except for an increase in a proved area), usually obtained from development drilling and production history or result from changes in economic factors.

For additional information about the changes in Proved Reserves and the process for estimating reserves, see section 3.1 – Oil and Gas Reserves.

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34.5 Standardized measure of discounted future net cash flows relating to proved oil and gas quantities and changes therein

The standardized measure of discounted future net cash flows related to the above proved crude oil and natural gas reserves is calculated in accordance with the requirements of ASU 2010-03. Estimated future cash inflows from production under SEC requirements are computed by applying unweighted arithmetic average of the first day-of-the-month for oil and gas price to year-end quantities of estimated net proved reserves, with cost factors based on those at the end of each year, currently enacted tax rates and a 10% annual discount factor. In our view, the information so calculated does not provide a reliable measure of future cash flows from proved reserves, nor does it permit a realistic comparison to be made of one entity with another because the assumptions used cannot reflect the varying circumstances within each entity. In addition, a substantial but unknown proportion of future real cash flows from oil and gas production activities is expected to derive from reserves which have already been discovered, but which cannot yet be regarded as proved.

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Future cash inflows	685,716,359	401,980,640	187,210,379
Future costs			
Production (1)	(182,522,131)	(129,109,036)	(85,989,384)
Development	(58,332,264)	(38,451,863)	(28,752,131)
Income taxes	(201,912,509)	(69,053,224)	(13,470,352)
Future net cash flow	<u>242,949,455</u>	<u>165,366,517</u>	<u>58,998,512</u>
10% discount factor	<u>(86,340,334)</u>	<u>(57,009,654)</u>	<u>(18,568,308)</u>
Standardized measure of discounted net cash flows	<u>156,609,121</u>	<u>108,356,863</u>	<u>40,430,204</u>

(1) Production future costs include the estimated costs related to assets retirement obligations in the amount of \$23,234,408; \$17,364,520, and \$12,545,574 as of December 31, 2022, 2021, and 2020, respectively.

The following are the principal sources of change in the standardized measure of discounted net cash flows in 2022, 2021 and 2020:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net change in sales and transfer prices and in production cost (lifting) related to future production	158,798,134	110,224,660	(44,482,725)
Changes in estimated future development costs	(52,166,780)	(22,011,659)	(5,401,560)
Sales and transfer of oil and gas produced net of production costs	(68,867,970)	(50,694,613)	(24,413,621)
Net change due to extensions, discoveries, and improved recovery	9,993,781	6,741,068	3,134,469
Net change due to purchase and sales of minerals in place	1,767,856	(13,419)	570,460
Net change due to revisions in quantity estimates	10,807,453	32,923,680	(3,414,649)
Previously estimated development costs incurred during the period	69,458,458	32,941,335	7,943,239
Accretion of discount	15,360,418	10,468,951	10,468,951
Timing and other	(11,990,359)	(16,636,925)	567,027
Net change in income taxes	<u>(84,908,732)</u>	<u>(36,016,420)</u>	<u>16,073,288</u>
Aggregate change in the standardized measure of discounted future net cash flows for the year	<u>48,252,259</u>	<u>67,926,658</u>	<u>(38,955,121)</u>

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35. Subsequent and relevant events

- **Issuance of bonds in the international market**

Ecopetrol S.A. reported on January 10, 2023, that as part of its refinancing and financing strategy for the 2023 investment plan, it successfully placed External Public Debt Bonds in the international capital market, based on the authorization issued by the Ministry of the Treasury and Public Credit through Resolution 0054 of January 10, 2023, for USD2,000 million under the following conditions:

Term	10 years
Transaction date	January 10, 2023
Compliance date	January 13, 2023
Maturity	January 13, 2033
Face amount	US\$2,000 million
Price	99.187
Yield	9.000%
Coupon rate	8.875%
Periodicity	Semiannual
Rating (Moody's/S&P/Fitch)	Baa3 / BB+ / BB+

The allocation of the resources of the issuance is to make the prepayment of the balance of the credit authorized by resolution 1928 of August 13, 2021, obtained to finance the acquisition of 51.4% of Interconexión Eléctrica S.A. (ISA), and finance Ecopetrol's 2023 organic investment plan and other non-investment expenses, including the refinancing of liabilities that mature in 2023.

- **International bonds repurchase offer**

On January 17, 2023, Ecopetrol S.A. reported that as part of its comprehensive debt management strategy and to mitigate refinancing risk, it launched a repurchase offer (tender offer) of its international bond maturing in September 2023. (issued in 2013), up to a principal amount of USD 1,000 million. The nominal amount outstanding of the mentioned bond is USD 1,800 million and it has a coupon rate of 5.875%.

On February 14, Ecopetrol S.A. reported the final results of the operation. According to the depository and information agent of the offer, on February 13, 2023, the total repurchased through the offer amounts to USD \$978.5 million of the aggregate amount of the bonds. After the closing of the repurchase offer, a total of USD \$821.4 million of the bond balance will remain outstanding.

- **Felipe Bayón, President of Ecopetrol S.A., will lead the Company until March 31, 2023**

On January 26, it was reported that Felipe Bayón Pardo will lead Ecopetrol S.A. until March 31, 2023. The selection and appointment process of the new president of Ecopetrol S.A. by the Board of Directors will be given based on a rigorous selection process, in accordance with the Succession Policy of the President of Ecopetrol S.A.

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Exhibit 1 – Consolidated subsidiaries, associates, and joint ventures

Company Subsidiaries	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Refinería de Cartagena S.A.S.	US Dollar	100 %	Refining of hydrocarbons, commercialization and distribution of products	Colombia	Colombia	27,050,693	2,871,807	43,624,345	16,573,652
Cenit transporte y logística de hidrocarburos S.A.S.	Colombian Peso	100 %	Storage and transport by pipelines of hydrocarbons	Colombia	Colombia	17,213,132	4,584,958	19,560,744	2,347,612
Ecopetrol Global Energy S.L.U.	US Dollar	100 %	Investment Vehicle	Spain	Spain	16,066,888	751,378	16,067,277	389
Oleoducto Central S.A.S - Ocensa	US Dollar	72.65 %	Transportation by crude oil pipelines	Colombia	Colombia	4,878,286	2,838,743	8,706,108	3,827,822
Hocol Petroleum Limited.	US Dollar	100 %	Investment Vehicle	Bermuda	Bermuda	5,215,029	605,044	5,215,238	209
Ecopetrol América LLC.	US Dollar	100 %	Exploration and exploitation of hydrocarbons	United States	United States	2,547,392	(154,690)	3,298,838	751,446
Hocol S.A.	US Dollar	100 %	Exploration and exploitation of hydrocarbons	Cayman Islands	Colombia	4,615,488	608,858	6,772,497	2,157,009
Esentia S.A.	US Dollar	100 %	Production and commercialization of polypropylene resin	Colombia	Colombia	3,047,356	188,561	3,678,832	631,476
Ecopetrol Capital AG	US Dollar	100 %	Collection of surpluses from, and providing funds to, companies of Ecopetrol Business Group	Switzerland	Switzerland	3,196,506	255,926	11,473,594	8,277,088
Oleoducto Bicentenario de Colombia S.A.S.	Colombian Peso	100 %	Transportation by crude oil pipelines	Colombia	Colombia	1,349,368	218,102	2,249,766	900,398
Oleoducto de Colombia S. A. – ODC	Colombian Peso	73 %	Transportation by crude oil pipelines	Colombia	Colombia	486,729	426,614	787,802	301,073
Black Gold Re Ltd.	US Dollar	100 %	Reinsurer for companies of Ecopetrol Business Group	Bermuda	Bermuda	1,243,639	46,795	1,548,991	305,352
Andean Chemicals Ltd.	US Dollar	100 %	Investment Vehicle	Bermuda	Bermuda	2,162,912	119,383	2,163,316	404
Oleoducto de los Llanos Orientales S. A. - ODL	Colombian Peso	65 %	Transportation by crude oil pipelines	Panama	Colombia	824,251	515,817	1,414,330	590,079
Interconexión Eléctrica S.A. E.S.P	Colombian Peso	51.41 %	Public transmission service of electric power, the development of infrastructure projects and their commercial exploitation and the development of information technology systems, activities and services and telecommunications.	Colombia	Latin-America	29,550,372	2,202,581	78,733,852	49,183,480

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Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Inversiones de Gases de Colombia S.A. Invercolsa S.A.	Colombian Peso		Holding with investments in natural gas and LPG transportation and distribution companies in						
		51.88 %	Colombia	Colombia	Colombia	616,330	283,885	663,786	47,456
Alcanos de Colombia S.A. E.S.P. (1)	Colombian Peso		Residential public fuel gas service, construction and operation of gas pipelines, distribution networks, regulation, measurement, and compression stations.						
		29.61 %	Colombia	Colombia	Colombia	393,197	131,102	814,660	421,463
Metrogas de Colombia S.A. E.S.P. (1)	Colombian Peso		Public service of commercialization and distribution of fuel gas; the exploration, exploitation, storage, use, transportation, refining, purchase, sale and distribution of hydrocarbons and their derivatives.						
		33.49 %	Colombia	Colombia	Colombia	67,772	17,047	136,167	68,395
Gases del Oriente S.A. E.S.P. (1)	Colombian Peso		Home public service of distribution of fuel gas and the development of all complementary activities to the supplying of said service.						
		48.50 %	Colombia	Colombia	Colombia	123,247	44,925	216,319	93,072
Promotora de Gases del Sur S.A. E.S.P. (1)	Colombian Peso		Promote the linking of national or foreign capital, public or private, to achieve the gas massification project.						
		31.44 %	Colombia	Colombia	Colombia	64,031	28,470	91,463	27,432
Combustibles Líquidos de Colombia S.A. E.S.P. (1)	Colombian Peso		Wholesale marketing of fuel gas, the supplying of the residential public service of LPG distribution and the development of complementary activities to supply the service.						
		41.61 %	Colombia	Colombia	Colombia	60,408	1,444	84,213	23,805

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Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Ecopetrol USA Inc.	US Dollar		Exploration and exploitation of hydrocarbons	United States	United States	13,849,664	1,235,087	13,872,872	23,208
Ecopetrol Permian LLC.	US Dollar	100%	Exploration and exploitation of hydrocarbons	United States	United States	8,999,442	1,357,066	9,875,481	876,039
Ecopetrol Oleo é Gas do Brazil Ltda.	Real	100%	Exploration and exploitation of hydrocarbons	Brazil	Brazil	2,093,147	(462,646)	2,313,440	220,293
Esentia Masterbatch Ltda.	Colombian Peso	100%	Manufacture of polypropylene compounds and masterbatches	Colombia	Colombia	445,118	290,672	584,869	139,751
Ecopetrol del Perú S. A.	US Dollar	100%	Exploration and exploitation of hydrocarbons	Peru	Peru	71,668	(2,129)	75,229	3,561
ECP Hidrocarburos de México S.A. de C.V.	US Dollar	100%	Offshore exploration	Mexico	Mexico	52,677	(17,473)	59,826	7,149
Ecopetrol Costa Afuera S.A.S.	Colombian Peso	100%	Offshore exploration	Colombia	Colombia	12,964	(483)	13,130	166
Esentia Resinas del Peru SAC	US Dollar	100%	Commercialization of polypropylene resins and masterbatches	Peru	Peru	17,486	2,232	40,417	22,931
Topili Servicios Administrativos S de RL De CV.	Mexican Peso	100%	Specialized management services	Mexico	Mexico	5	(48)	25	20
Kalixpan Servicios Técnicos S de RL De CV.	Mexican Peso	100%	Specialized services related to oil and gas industry	Mexico	Mexico	53	(46)	58	5
Ecopetrol US Trading LLC	US Dollar	100%	International trading of crude oil and refined products	United States	United States	—	—	—	—
Ecopetrol Singapore PTE. LTD	Singapore dollar	100%	Holding company with investment in an international trading company for crude oil and refined products	Singapore	Asia	240,841	222,548	241,043	202
Ecopetrol Trading Asia PTE. LTD	Singapore dollar	100%	International trading of crude oil and refined products	Singapore	Asia	241,032	222,727	2,862,371	2,621,339

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<u>Company</u> <u>Associates</u>	<u>Functional</u> <u>currency</u>	<u>Ownership</u> <u>interest</u> <u>Ecopetrol</u>	<u>Activity</u>	<u>Country/</u> <u>Domicile</u>	<u>Geographic</u> <u>area of</u> <u>operations</u>	<u>Equity</u>	<u>Profit (loss) of</u> <u>the year</u>	<u>Total assets</u>	<u>Total</u> <u>liabilities</u>
Serviport S.A. (2)	Colombian Peso		Services for the support of loading and unloading of oil ships, supply of equipment, technical inspections, and load measurements	Colombia	Colombia	16,589	(653)	38,776	22,187
Sociedad Portuaria Olefinas y Derivados S.A. (3)	Colombian Peso	49 %	Construction, use, maintenance and administration of port facilities, ports, private docks.	Colombia	Colombia	5,362	1,323	8,940	3,578
Joint Ventures									
Equion Energia Limited	US Dollar		Exploration and exploitation of hydrocarbons	United Kingdom	Colombia	1,639,264	50,783	1,711,972	72,708
Ecodiesel Colombia S.A. (3)	Colombian Peso	51 %	Production, trading, and distribution of biofuels and oleochemicals	Colombia	Colombia	109,229	77,729	248,791	139,562
		50 %							

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Company	Functional currency	Ownership interest ISA	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Assets	Liabiliti
Subsidiaries Interconexión Eléctrica S.A. ESP									
Consorcio Transmantaro	US Dollar	60.00 %	Electric power	Peru	Peru	2,272,947	307,699	9,085,357	6,812,41
Interligação Elétrica Evrecy	Brazilian real	35.82 %	Electric power	Brazil	Brazil	243,025	(48,856)	267,247	24,22
Fundo de Investimento Assis	Brazilian real	35.81 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	37,107	7,562	37,107	–
Fundo de Investimento Barra Bonita Renda Fixa Referenciado	Brazilian real	35.73 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	13,197	3,651	13,197	–
Fundo de Investimento Referenciado di Bandeirantes	Brazilian real	27.68 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	250,436	29,441	250,436	–
Fundo de Investimento Xavantes Referenciado di	Brazilian real	17.54 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	538,537	55,264	538,537	–
Interconexiones Viales	Chilean peso	65.00 %	Roads concessions	Chile	Chile	3,380	(2,935)	3,901	52
Interligação Elétrica Aguapeí	Brazilian real	35.82 %	Electric power	Brazil	Brazil	582,138	88,602	654,581	72,44
Interligação Elétrica Biguaçu	Brazilian real	35.82 %	Electric power	Brazil	Brazil	399,587	35,053	476,172	76,58
Interligação Elétrica De Minas Gerais	Brazilian real	35.82 %	Electric power	Brazil	Brazil	372,475	(27,636)	410,106	37,63
Interligação Elétrica Itapura	Brazilian real	35.82 %	Electric power	Brazil	Brazil	163,809	25,988	176,625	12,81
Interligação Elétrica Itaquerê	Brazilian real	35.82 %	Electric power	Brazil	Brazil	510,426	59,930	592,065	81,63
Interligação Elétrica Itaúnes	Brazilian real	35.82 %	Electric power	Brazil	Brazil	462,427	23,425	499,955	37,52
Interligação Elétrica Norte E Nordeste	Brazilian real	35.82 %	Electric power	Brazil	Brazil	338,101	38,685	485,124	147,02
Interligação Elétrica Pinheiros	Brazilian real	35.82 %	Electric power	Brazil	Brazil	56,620	62,687	69,231	12,61
Interligação Elétrica Riacho Grande	Brazilian real	35.82 %	Electric power	Brazil	Brazil	87,708	(721)	98,771	11,06
Interligação Elétrica Serra Do Japi	Brazilian real	35.82 %	Electric power	Brazil	Brazil	384,866	62,833	432,753	47,88
Interligação Elétrica Sul	Brazilian real	35.82 %	Electric power	Brazil	Brazil	204,438	12,193	232,392	27,95
Interligação Elétrica Tibagi	Brazilian real	35.82 %	Electric power	Brazil	Brazil	222,671	19,465	257,165	34,49
Internexa	Colombian peso	99.42 %	Telecommunications and ICT	Colombia	Colombia	125,935	(92,594)	607,744	481,80
Transamerican Telecommunication S.A.	US Dollar	99.42 %	Telecommunications and ICT	Argentina	Argentina	21,152	(3,278)	45,400	24,24
Internexa Brasil Operadora de Telecomunicações	Brazilian real	99.42 %	Telecommunications and ICT	Brazil	Brazil	28,195	(114,568)	253,014	224,81
Internexa Chile	Chilean peso	98.43 %	Telecommunications and ICT	Chile	Chile	34,332	7,098	100,853	66,52

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Company	Functional currency	Ownership interest ISA	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Assets	Liabilities
Subsidiaries Interconexión Eléctrica S.A. ESP									
Interligação Elétrica JAGUAR 6 S.A.	Brazilian real	35.82 %	Electric power	Brazil	Brazil	224,245	1,775	237,516	13,271
Interligação Elétrica JAGUAR 8 S.A.	Brazilian real	35.82 %	Electric power	Brazil	Brazil	97,020	1,833	103,999	6,979
Interligação Elétrica JAGUAR 9 S.A.	Brazilian real	35.82 %	Electric power	Brazil	Brazil	388,824	7,930	432,420	43,596
Intermexa Participações	Brazilian real	99.42 %	Investment Vehicle	Brazil	Brazil	23,221	(99,644)	24,430	1,209
Intermexa Peru	US Dollar	99.42 %	Telecommunications and ICT	Peru	Peru	52,265	(4,307)	376,626	324,361
ISA Bolívia	US Dollar	100.00 %	Electric power	Bolivia	Bolivia	140,414	10,976	155,384	14,970
ISA Capital Do Brazil	Brazilian real	100.00 %	Investment Vehicle	Brazil	Brazil	5,379,693	650,721	5,606,854	233,161
ISA CTEEP	Brazilian real	35.82 %	Electric power	Brazil	Brazil	14,914,001	1,861,300	28,831,572	13,917,571
ISA Interchile	US Dollar	100.00 %	Electric power	Chile	Chile	1,493,203	(19,966)	7,374,469	5,881,266
ISA Intercolombia	Colombian peso	100.00 %	Electric power	Colombia	Colombia	130,626	47,481	357,192	226,566
ISA Intervial Chile	Chilean peso	100.00 %	Roads concessions	Chile	Chile	4,024,265	438,479	4,985,244	960,979
ISA Intervial Colombia	Colombian peso	100.00 %	Roads concessions	Colombia	Colombia	587	20	587	—
ISA Inversiones Chile	Chilean peso	100.00 %	Investment Vehicle	Chile	Chile	1,949,226	(9,385)	1,954,212	4,986
ISA Inversiones Chile Vías Spa	Chilean peso	100.00 %	Investment Vehicle	Chile	Chile	4,025,954	438,012	4,025,954	—
ISA Inversiones Costera Chile	Chilean peso	100.00 %	Investment Vehicle	Chile	Chile	(211,407)	(76,363)	612,824	824,231
ISA Inversiones Tolten	Chilean peso	100.00 %	Investment Vehicle	Chile	Chile	39	(9)	39	—
ISA Investimentos E Participações	Brazilian real	100.00 %	Investment Vehicle	Brazil	Brazil	1,152,834	163,525	1,152,949	115
ISA Peru	US Dollar	99.98 %	Electric power	Peru	Peru	240,254	34,518	1,159,668	919,414
ISA REIP	US Dollar	60.00 %	Electric power	Peru	Peru	672,302	273,783	2,311,363	1,639,061
ISA Transelca	Colombian peso	100.00 %	Electric power	Colombia	Colombia	1,002,878	222,945	1,788,873	785,995
Linear Systems RE	US dollar	100.00 %	Other business	Bermudas	Bermudas	36,506	4,802	141,027	104,521
Proyectos de Infraestructura del Perú	US Dollar	100.00 %	Electric power	Peru	Peru	15,289	2,254	114,879	99,590
Ruta Costera	Colombian peso	100.00 %	Roads concessions	Colombia	Colombia	177,882	(11,404)	2,859,724	2,681,842
Ruta de La Araucanía	Chilean peso	100.00 %	Roads concessions	Chile	Chile	432,393	76,332	903,688	473,295
Ruta de Los Ríos	Chilean peso	75.00 %	Roads concessions	Chile	Chile	122,428	49,926	339,054	216,626
Ruta del Bosque	Chilean peso	100.00 %	Roads concessions	Chile	Chile	106,522	(23,361)	150,803	44,281
Ruta del Loa	Chilean peso	100.00 %	Roads concessions	Chile	Chile	324,504	50,506	1,121,725	797,221
Ruta del Maipo	Chilean peso	100.00 %	Roads concessions	Chile	Chile	2,831,192	355,286	8,869,327	6,038,135
Ruta del Maule	Chilean peso	100.00 %	Roads concessions	Chile	Chile	6,048	(4,561)	9,693	3,645
Sistemas Inteligentes en Red	Colombia peso	99.77 %	Other business	Colombia	Colombia	10,472	2,868	19,885	9,413
XM	Colombian peso	99.73 %	Electric power	Colombia	Colombia	45,336	10,873	306,304	260,968
Joint ventures Interconexión Eléctrica S.A. ESP									
Interligação Elétrica do Madeira	Brazilian real	51.00 %	Electric power	Brazil	Brazil	3,438,987	387,981	6,580,545	3,141,558
Interligação Elétrica Garanhuns	Brazilian real	51.00 %	Electric power	Brazil	Brazil	985,789	161,864	1,369,603	383,814
Interligação Elétrica Paraguaçu	Brazilian real	50.00 %	Electric power	Brazil	Brazil	1,016,496	135,684	1,530,815	514,319
Interligação Elétrica Aimorés	Brazilian real	50.00 %	Electric power	Brazil	Brazil	671,186	110,769	1,014,426	343,240
Interligação Elétrica Ivaí	Brazilian real	50.00 %	Electric power	Brazil	Brazil	795,707	33,388	3,706,984	2,911,277
Transmissora Aliança de Energia Elétrica	Brazilian real	14.88 %	Electric power	Brazil	Brazil	6,091,281	1,252,974	14,319,223	8,227,942
Interconexión Eléctrica Colombia Panamá-Panamá	US Dollar	50.00 %	Electric power	Panama	Panama	38,132	(31,996)	40,480	2,348
Interconexión Eléctrica Colombia Panamá	Colombia peso	1.17 %	Electric power	Colombia	Colombia	267	(2)	268	1
Transnexas (4)	US Dollar	50.00 %	Transport and telecommunications	Ecuador	Ecuador	—	—	—	—
Derivex	Colombia peso	40.46 %	Manage the trading system for financial instruments derived from electricity	Colombia	Colombia	850	(873)	850	—
Parques del Río	Colombia peso	33.00 %	Roads	Colombia	Colombia	102	(30)	102	—
Conexión Kimal Lo Aguirre S.A.	Chilena peso	33.33 %	Electric power	Chile	Chile	507,690	776	631,392	123,702
Associates Interconexión Eléctrica S.A. ESP									
ATP Tower Holdings	US Dollar	24.7 %	Transport and telecommunications	United States	United States	1,850,384	(219,990)	4,551,118	2,700,734

(1) Indirect participation through Inversiones de Gases de Colombia S.A. Invercolsa S.A.

(2) Information available as of September 30, 2022, the investment of is fully impaired.

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- (3) Information available as of November 30, 2022.
(4) Transnexa is in the liquidation process and its investment has been impaired in its entirety.

Exhibit 2 – Conditions of the most significant debt

Type of debt	Company	Issue date	Maturity date	Currency	Disbursement	Outstanding	Outstanding	Interest rate	Amortization plan	Payment of interest	
						balance Dec 31, 2022	balance Dec 31, 2021				
Bonds, domestic currency	Ecopetrol S.A.	Dec-10	Dec-40		284,300	284,300	284,300				
		Aug-13	Aug-23		168,600	168,600	168,600				
		Aug-13	Aug-28	COP	347,500	347,500	347,500	Floating	Bullet	Half-yearly	
		Aug-13	Aug-43		262,950	262,950	262,950				
			Dec-11	Dec-23	COP	180,000	180,000	180,000	Floating	Bullet	Half-yearly
			Dec-11	Dec-41	COP	120,000	120,000	120,000	Floating	Bullet	Half-yearly
			May-13	May-22	COP	120,000	—	120,000	Floating	Bullet	Quarterly
			May-13	May-28	COP	100,000	100,000	100,000	Floating	Bullet	Quarterly
			May-15	May-25	COP	100,000	100,000	100,000	Floating	Bullet	Quarterly
			May-15	May-30	COP	120,000	120,000	120,000	Floating	Bullet	Quarterly
			May-15	May-35	COP	280,000	280,000	280,000	Floating	Bullet	Quarterly
			Feb-16	Feb-24	COP	115,000	115,000	115,000	Floating	Bullet	Quarterly
			Feb-16	Feb-28	COP	152,000	152,000	152,000	Floating	Bullet	Quarterly
		Interconexión Eléctrica S.A. E.S.P and subsidiaries	Feb-16	Feb-41	COP	133,000	133,000	133,000	Floating	Bullet	Quarterly
			Apr-17	Apr-24	COP	260,780	260,780	260,780	Fixed	Bullet	Quarterly
			Apr-17	Apr-32	COP	196,300	196,300	196,300	Floating	Bullet	Quarterly
			Apr-17	Apr-42	COP	242,920	242,920	242,920	Floating	Bullet	Quarterly
			Nov-17	Nov-25	COP	150,080	150,080	150,080	Fixed	Bullet	Quarterly
			Nov-17	Nov-31	COP	120,100	120,100	120,100	Floating	Bullet	Quarterly
			Nov-17	Nov-47	COP	229,820	229,820	229,820	Floating	Bullet	Quarterly
			Jul-18	Jul-27	COP	156,500	156,500	156,500	Floating	Bullet	Quarterly
			Jul-18	Jul-33	COP	142,063	142,063	142,063	Floating	Bullet	Quarterly
			Jul-18	Jul-43	COP	201,437	201,437	201,437	Floating	Bullet	Quarterly
		Aug-20	Aug-29	COP	160,000	160,000	160,000	Fixed	Bullet	Quarterly	
		Aug-20	Aug-40	UVR (1)	152,311	165,369	147,132	Fixed	Bullet	Annual	
		Jul-16	Jan-34	UVR (1)	353,434	440,777	341,416	Fixed	Half-yearly	Half-yearly	
		Oct-11	Oct-26	COP	100,000	100,000	100,000	Floating	Bullet	Quarterly	

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Type of debt	Company	Issue date	Maturity date	Currency	Disbursement	Outstanding balance	Outstanding balance	Interest rate	Amortization plan	Payment of interest
						Dec 31, 2022	Dec 31, 2021			
Bonds, foreign currency	Ecopetrol S.A.	Sep-13	Sep-23	USD	1,300	1,300	1,300	Fixed	Bullet	Half-yearly
		Sep-13	Sep-43		850	850	850			
		May-14	May-45		2,000	2,000	2,000			
		Sep-14	Jan-25		1,200	1,200	1,200			
		Jun-15	Jun-26		1,500	1,500	1,500			
		Nov-21	Nov-31		1,250	1,250	1,250			
		Nov-21	Nov-51		750	750	750			
		Jun-16	Sep-23		500	500	500			
		Apr-20	Apr-30		2,000	2,000	2,000			
		Oleoducto Central S.A.S.	Jul-20		Jul-27	USD	500			
		Nov-21	Nov-33		330	330	330	Fixed	Half-yearly	Half-yearly
		Jul-16	Jan-34		151	143	151	Fixed	Half-yearly	Half-yearly
		Jan-11	Jan-26		38	38	38	Fixed	Bullet	Quarterly
		Oct-12	Apr-31		40	40	40	Fixed	Bullet	Half-yearly
		Feb-13	Feb-23		21	20	19	Fixed	Bullet	Half-yearly
		May-13	May-23		450	600	450	Fixed	Bullet	Half-yearly
		Apr-19	Apr-34		600	500	600	Fixed	Half-yearly	Half-yearly
		Mar-17	Feb-24		63	77	54	Floating	Bullet	Annual
		May-18	Apr-25		131	154	111	Floating	Bullet	Half-yearly
		Dec-19	Dec-29		86	96	73	Floating	Half-yearly	Half-yearly
		Dec-20	Nov-28	USD	169	153	143	Floating	Half-yearly	Half-yearly
		Dec-20	May-44		169	168	143	Floating	Half-yearly	Half-yearly
		Feb-21	Jul-44		142	153	121	Floating	Half-yearly	Half-yearly
		May-21	May-24		253	230	215	Floating	Bullet	Bullet
		Oct-21	Oct-31		141	138	120	Floating	Bullet	Half-yearly
		Oct-21	Oct-39		59	58	50	Floating	Half-yearly	Half-yearly
		Apr-22	Apr-29		134	134	—	Fixed	Half-yearly	Half-yearly
		Aug-18	Jun-25		234	238	213	Fixed	Half-yearly	Half-yearly
		Aug-18	Dec-30		242	407	220	Fixed	Half-yearly	Half-yearly
		Aug-18	Dec-24		40	23	37	Fixed	Half-yearly	Half-yearly
		Jun-19	Dec-30		201	207	183	Fixed	Half-yearly	Half-yearly
		Nov-22	Jun-50		36	36	55	Fixed	Half-yearly	Half-yearly
	Feb-21	Jun-50		79	79	—	Fixed	Half-yearly	Half-yearly	
	Jul-21	Jun-56		1,200	1,200	1,200	Fixed	Bullet	Half-yearly	

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Type of debt	Company	Issue	Maturity	Currency	Disbursement	Outstanding balance	Outstanding balance	Interest rate	Amortization plan	Payment of interest
		date	date			Dec 31, 2022	Dec 31, 2021			
International commercial loans	Interconexión Eléctrica S.A. E.S.P and subsidiaries	Sep-19	Sep-25	USD	70	70	70	Fixed	Half-yearly	Half-yearly
		Jun-21	Jun-23		40	10	40	Fixed	Bullet	Bullet
		Feb-16	Jul-24		5	2	3	Floating	Quarterly	Quarterly
		Jan-14	Mar-29		60	23	25	Floating	Monthly	Monthly
		Jan-14	Jan-24		22	2	4	Fixed	Monthly	Monthly
		Aug-17	Mar-32		57	35	36	Floating	Monthly	Monthly
		Jan-11	May-26		10	—	3	Floating	Monthly	Monthly
		Nov-11	May-26		11	—	3	Floating	Monthly	Monthly
		Nov-11	May-26		9	—	3	Floating	Monthly	Monthly
		May-10	May-30		46	23	24	Fixed	Monthly	Monthly
		Mar-20	Aug-24		7	6	6	Floating	Quarterly	Quarterly
		Sep-12	Sep-23		63	—	9	Fixed	Half-yearly	Half-yearly
		Oct-18	Mar-25		9	—	8	Floating	Monthly	Monthly
		Sep-12	Sep-23		35	—	4	Fixed	Half-yearly	Half-yearly
		Sep-12	Sep-23		25	—	5	Fixed	Half-yearly	Half-yearly
		May-21	Mar-24		11	6	11	Fixed	Half-yearly	Half-yearly
		May-21	Mar-24		6	—	6	Fixed	Half-yearly	Half-yearly
		Sep-18	Jun-50		13	—	16	Fixed	Monthly	Monthly
		May-21	May-25		112	83	105	Fixed	Half-yearly	Half-yearly
		May-21	May-26		75	69	70	Fixed	Half-yearly	Half-yearly
		Jun-22	Jun-23		10	30	—	Fixed	Bullet	Bullet
		Dec-22	Nov-30		40	40	—	Floating	Half-yearly	Half-yearly
		Apr-22	Nov-26		67	65	—	Fixed	Bullet	Bullet
		Sep-22	Sep-32		76	76	—	Fixed	Half-yearly	Half-yearly
		Mar-22	Dec-41		48	45	—	Floating	Monthly	Monthly
		Dec-22	Dec-23		10	10	—	Floating	Quarterly	Quarterly
		Sep-22	Mar-25		18	28	—	Floating	Half-yearly	Half-yearly
		Sep-22	Mar-25		10	15	—	Floating	Half-yearly	Half-yearly

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<u>Type of debt</u>	<u>Company</u>	<u>Issue date</u>	<u>Maturity date</u>	<u>Currency</u>	<u>Disbursement</u>	<u>Outstanding balance Dec 31, 2022</u>	<u>Outstanding balance Dec 31, 2021</u>	<u>Interest rate</u>	<u>Amortization plan</u>	<u>Payment of interest</u>
International commercial loans - Refinería de Cartagena	Ecopetrol S.A.	Dec-17	Dec-27		2,001	855	1,100	Fixed		
		Dec-17	Dec-27		75	32	42	Floating		
		Dec-17	Dec-27	USD	73	31	40	Fixed	Half-yearly	Half-yearly
		Dec-17	Dec-27		158	68	87	Floating		
		Dec-17	Dec-25		359	182	224	Floating		
International commercial loan –ISA acquisition	Ecopetrol S.A.	Aug-21	Aug-23							
				USD	3,672	472	1,672	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-28	COP	250,000	242,125	250,000	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	COP	150,000	147,000	150,000	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	COP	150,000	147,000	150,000	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	UVR (1)	405,972	181,972	161,904	Fixed	Half-yearly	Half-yearly
Domestic commercial loans	Interconexión Eléctrica S.A.	Jul-18	Jul-35	COP	217,500	4,353	4,651	Floating	Half-yearly	Half-yearly
	E.S.P and subsidiaries	Oct-21	Oct-31	COP	158,050	158,050	158,050	Floating	Quarterly	Quarterly
		Oct-21	Oct-28	COP	70,500	70,500	70,500	Floating	Quarterly	Quarterly
		Jun-17	Jun-24	COP	28,000	—	8,717	Floating	Quarterly	Quarterly
		Aug-17	Aug-24	COP	32,000	—	23,863	Floating	Quarterly	Quarterly
		Dec-17	Dec-24	COP	10,000	—	7,472	Floating	Quarterly	Quarterly
		May-18	Nov-28	COP	59,467	50,971	59,467	Floating	Half-yearly	Half-yearly
		Nov-18	Nov-28	COP	23,000	19,714	23,000	Floating	Half-yearly	Half-yearly
		May-22	May-23	COP	14,422	14,422	—	Floating	Quarterly	Quarterly
		Jun-22	Jun-27	COP	12,900	12,900	—	Floating	Quarterly	Quarterly
		Ago-22	Ago-27	COP	51,085	51,085	—	Floating	Half-yearly	Half-yearly
Committed credit line	Ecopetrol S.A.	Apr-20	Sep-23							
Domestic syndicated commercial loan	Oleoducto Bicentenario	Jul-12	Jul-24							
				USD	665	—	665	Floating	Bullet	Half-yearly
				COP	2,100,000	375,725	600,450	Floating	Quarterly	Quarterly

(1) UVR is “Unidad de Valor Real”, a national currency which reflects the inflation adjusted Colombian peso.