

2022

REPSOL Group

Information
on oil and gas
exploration
and production
activities

*Translation of a report
originally issued in Spanish.
In the event of a discrepancy,
the Spanish language
version prevails*



The Repsol Commitment
Net Zero Emissions
by 2050



REPSOL

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(1) About this report

This document contains information on the Repsol Group's oil and gas exploration and production activities. This unaudited information is published on an annual basis and is prepared in accordance with the criteria contained in Topic 932 of the "Financial Accounting Standards Boards" (FASB), that are generally applied in the oil and gas industry.

This information includes, in relation to the Repsol Group's oil and gas exploration and production activities:

- **Information on acreage.**
- **Exploration and development activities.**
- **Production of oil and gas.**
- **Net proved reserves**, which represent the estimate volume of proved developed and undeveloped reserves of oil and gas.
- **Future net cash flows**, which represents an estimate of standardized measure of discounted future net cash flows relating to proved oil and gas reserves, as well as the changes with respect to those presented for the previous year
- **Results of oil and gas exploration and production activities**, including revenue and expenses directly associated to the oil and gas exploration and production activities.
- **Investments** in oil and gas exploration and production activities, both accumulated, which shows capitalized historical costs (capitalized cost), and for the period, which represent the amounts capitalized during the year, including the dismantling obligations (cost incurred).

The financial information included in this document is consistent with that stated in the Group financial statements and management report (accessible at www.repsol.com), but there might be some differences due to the fact that the information included in the current document is presented in accordance with US GAAP (Topic 932 FASB) and the Group's official financial information is presented accordingly to International Financial Reporting Standards endorsed by the European Union (IFRS-UE).

Repsol Group estimates its proved reserves according to the standards established by the "SPE/WPC/AAPG/SPEE/SEG/SPWLA/EAGE Petroleum Resources Management System", generally referred to by its acronym "SPE-PRMS (SPE-Society of Petroleum Engineers)". The information here contained refers to the last three years (2022, 2021 and 2020).

In the Exploration and Production segment, an agreement was signed in September with EIG (through its subsidiary Breakwater Energy Holdings, S.Å R.L.) for the sale of a 25% stake in Repsol's hydrocarbon Exploration and Production business for a share price of \$3.35 billion (subject to customary closing adjustments in this type of transaction). This deal values the E&P business at \$19 billion. The transaction is expected to be close in the first quarter of the year, as the regulatory approvals and corporate reorganization of the business have been completed. Additionally, divestments in Malaysia, Ecuador, Russia and Greece and the sale of part of Canada's assets have been completed in 2022.

(2) Information on acreage

The following tables disclose details of Repsol's acreage and exploration and development activities by geographical region:

- **Developed and undeveloped acreage:** developed acreage consists of surface area that contains productive wells, while undeveloped acreage encompasses surface area that does not contain productive wells or in which these are not capable of producing hydrocarbons.

(km ²)	Developed & undeveloped acreage											
	2022				2021				2020			
	Developed		Undeveloped		Developed ⁽³⁾		Undeveloped ⁽⁴⁾		Developed		Undeveloped	
	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾
Europe	1,573	489	2,867	1,440	1,588	499	9,535	4,773	1,924	594	27,495	11,922
Norway	469	73	1,594	521	478	80	1,594	521	741	177	3,294	1,200
United Kingdom	1,082	399	428	138	1,087	402	425	136	1,161	400	424	135
Rest of Europe	22	17	844	780	22	17	7,515	4,116	22	17	23,778	10,587
Latin America	2,915	688	60,064	28,088	2,960	704	62,434	28,500	2,962	704	67,556	30,805
Brazil	838	80	6,790	3,796	838	80	7,163	3,492	838	80	7,861	3,575
Colombia	268	77	39,470	19,429	268	77	39,470	19,429	268	77	43,430	21,426
Peru	238	48	1,456	245	238	48	1,456	245	238	48	1,456	245
Trinidad & Tobago	152	45	2,794	838	152	45	2,794	838	153	45	2,793	838
Venezuela	806	192	2,185	661	806	192	2,185	661	806	192	2,185	661
Rest of Latin America	615	247	7,370	3,119	660	263	9,367	3,835	661	263	9,831	4,059
North America	3,180	2,219	18,415	7,912	3,420	2,414	19,756	8,815	3,433	2,444	19,843	9,033
Canada	2,070	1,331	4,735	762	2,422	1,604	5,937	2,446	1,621	1,621	6,222	1,930
United States	1,109	888	4,560	2,628	998	810	4,166	2,322	987	823	3,968	2,261
Rest of North America	-	-	9,120	4,522	-	-	9,653	4,842	-	-	9,653	4,842
Africa	2,777	816	17,065	4,642	2,777	763	17,065	4,696	4,246	1,095	26,965	8,355
Asia & Oceania	2,562	970	10,531	6,598	3,937	1,553	65,346	52,160	4,342	1,738	119,591	87,116
Indonesia	2,555	968	10,078	6,278	2,555	968	10,614	6,707	2,594	979	15,878	10,021
Malaysia	-	-	-	-	1,293	526	1,004	351	1,293	526	1,004	351
Russia	-	-	-	-	-	-	3,519	1,760	47	23	5,020	3,046
Rest of Asia and Oceania	7	2	453	320	89	59	50,208	43,341	408	211	97,689	73,698
Total	13,006	5,183	108,942	48,680	14,682	5,933	174,135	98,944	16,908	6,576	261,450	147,230

- (1) Gross acreage is the area in which Repsol owns an interest.
- (2) Net acreage is the total of the fractional interest in the gross acreage position.
- (3) Includes 599 km² net from blocks in Ecuador, Malaysia and Vietnam sold in January 2022.
- (4) Includes 5,916 km² net from blocks in Ecuador, Greece, Russia, Malaysia and Vietnam sold in January 2022.

- **Acreage under development/production and exploration:** acreage under development consist of surface area occupied by blocks under development and/or production, while acreage under exploration is surface area occupied by assets in the exploration phase.

(km ²)	Acreage in development or Exploration											
	2022				2021				2020			
	Development		Exploration		Development ⁽³⁾		Exploration ⁽⁴⁾		Development		Exploration	
	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾
Europe	2,729	1,087	1,711	842	2,729	1,092	8,393	4,180	4,687	1,841	24,733	10,675
Norway	838	227	1,225	368	847	233	1,225	368	2,810	1,009	1,225	368
United Kingdom	1,491	529	20	9	1,482	528	31	10	1,477	501	108	34
Rest of Europe	400	331	466	466	400	331	7,137	3,802	400	331	23,400	10,273
Latin America	14,062	4,046	48,917	24,731	15,450	4,531	49,944	24,673	15,411	4,528	55,107	26,981
Brazil	1,691	250	5,937	3,625	1,691	250	6,310	3,321	1,691	250	7,008	3,405
Colombia	1,432	211	38,305	19,295	1,432	211	38,305	19,295	1,393	208	42,305	21,295
Peru	1,693	292	-	-	1,693	292	-	-	1,693	292	-	-
Trinidad & Tobago	2,945	884	-	-	2,945	884	-	-	2,945	884	-	-
Venezuela	2,990	853	-	-	2,990	853	-	-	2,990	853	-	-
Rest of Latin America	3,310	1,555	4,675	1,810	4,698	2,041	5,329	2,056	4,698	2,041	5,794	2,281
North America	5,435	3,749	16,160	6,382	6,471	4,550	16,705	6,679	6,738	4,835	16,538	6,643
Canada	2,901	1,887	3,904	206	4,439	3,039	3,920	217	4,704	3,296	3,964	255
United States	2,534	1,862	3,136	1,654	2,032	1,511	3,131	1,621	2,034	1,539	2,921	1,545
Rest of North America	-	-	9,120	4,522	-	-	9,653	4,842	-	-	9,653	4,842
Africa	11,153	2,326	8,689	3,132	11,153	2,326	8,689	3,132	12,622	2,605	18,589	6,845
Asia & Oceania	2,478	1,048	10,614	6,520	4,857	1,983	64,425	51,730	5,739	2,362	118,194	86,492
Indonesia	2,018	727	10,614	6,520	2,018	727	11,151	6,949	2,018	727	16,454	10,273
Malaysia	-	-	-	-	2,297	877	-	-	2,297	877	-	-
Russia	-	-	-	-	-	-	3,519	1,760	357	174	4,711	2,895
Rest of Asia and Oceania	460	322	-	-	542	379	49,756	43,021	1,067	584	97,029	73,325
Total	35,856	12,256	86,092	41,607	40,660	14,483	148,157	90,393	45,196	16,171	233,161	137,635

- (1) Gross acreage surface area is the area in which Repsol owns an interest.
- (2) Net acreage is the total of the fractional interest in the gross acreage position.
- (3) Includes 1,420 km² net from blocks in Ecuador, Malaysia and Vietnam sold in January 2022.
- (4) Includes 5,095 km² net from blocks in Russia and Greece sold in January 2022.

(3) Production

The next table shows the productions in volume and the number of Repsol's productive wells by geographic area:

	Net Production of liquids and natural gas by area									Productive wells by area					
	Liquids (Mbbbl)			Natural gas (bcf)			Total (Mboe)			Oil			Gas		
	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020
Europe	11	10	14	30	30	29	16	16	19	184	187	230	13	15	11
Norway	4	4	5	25	26	24	9	9	9	33	27	66	11	13	8
United Kingdom	7	6	9	5	4	5	7	7	10	151	160	157	2	2	2
Rest of Europe	-	0	0	-	0	0	-	0	0	-	-	7	-	-	1
Latin America	27	29	30	381	382	440	95	97	108	711	717	741	224	207	207
Brazil	14	14	14	9	9	8	15	16	16	30	29	29	-	-	-
Colombia	4	3	3	-	-	1	4	3	3	484	458	446	-	-	-
Peru	4	4	5	70	56	68	17	14	17	-	-	-	28	28	28
Trinidad & Tobago	0	1	1	142	140	189	26	26	34	3	1	1	55	45	45
Venezuela	3	2	2	104	103	93	21	21	18	117	135	81	30	31	31
Rest of Latin America	2	4	5	57	74	80	12	17	19	77	94	184	111	103	103
North America	17	16	20	250	224	294	62	56	72	974	1,852	1,943	1,877	1,975	2,228
Canada	4	5	6	43	51	59	11	14	16	57	986	1,083	1,182	1,289	1,549
United States	13	11	14	207	174	234	50	42	56	917	866	860	695	686	679
Rest of North America	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Africa	12	15	7	16	26	34	15	20	13	383	377	387	25	22	93
Asia & Oceania	1	5	9	71	87	90	13	20	25	2	84	669	33	62	61
Indonesia	0	0	0	70	73	71	13	13	13	2	2	4	33	30	28
Malaysia	0	2	4	1	14	18	0	5	7	-	79	81	-	31	32
Russia	-	1	3	-	-	-	-	1	3	-	-	542	-	-	-
Rest of Asia and Oceania	0	1	1	-	1	2	0	1	2	-	3	42	-	1	1
Total	67	75	79	748	750	887	201	209	237	2,254	3,217	3,970	2,172	2,281	2,600

(4) Exploration and development activities

The following tables show Repsol's completed exploratory and developed wells by geographical region:

	Exploration wells completed and in progress ⁽¹⁾														
	Positive			Negative			Under evaluation			Total completed			In progress		
	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020
Europe	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-
Norway	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Europe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latin America	2	1	1	4	-	-	-	-	-	6	1	1	1	1	1
Brazil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colombia	2	-	1	2	-	-	-	-	-	4	-	1	1	-	-
Peru	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Latin America	-	1	-	2	-	-	-	-	-	2	1	-	-	1	1
North America	-	1	5	1	1	1	-	-	-	1	2	6	-	-	-
Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United States	-	1	3	1	-	-	-	-	-	1	1	3	-	-	-
Rest of North America	-	-	2	-	1	1	-	-	-	-	1	3	-	-	-
Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asia & Oceania	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-
Indonesia	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Russia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Asia and Oceania	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2	2	6	6	2	1	-	-	-	8	4	7	1	1	1

(1) Excluding appraisal wells (3 completed in 2022, 2 completed positive and 1 completed negative; 2 completed in 2021, 2 completed positives and 1 in progress; and 2 completed in 2020, 1 completed positive and 1 completed in evaluation, and 1 in progress).

	Completed development wells ⁽¹⁾											
	Positive			Negative			In evaluation			Total		
	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020
Europe	11	8	4	1	-	-	2	1	-	14	9	4
Norway	7	6	4	-	-	-	2	1	-	9	7	4
United Kingdom	4	2	-	1	-	-	-	-	-	5	2	-
Rest of Europe	-	-	-	-	-	-	-	-	-	-	-	-
Latin America	24	12	15	4	-	1	1	3	1	29	15	17
Brazil	-	-	3	-	-	-	-	1	1	-	1	4
Colombia	18	9	9	4	-	-	-	1	-	22	10	9
Peru	-	-	-	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	3	-	-	-	-	-	-	-	-	3	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Latin America	6	-	3	-	-	1	1	1	-	7	1	4
North America	78	19	18	1	-	-	1	-	-	80	19	18
Canada	-	-	1	-	-	-	1	-	-	1	-	1
United States	78	19	17	1	-	-	-	-	-	79	19	17
Africa	14	-	6	-	-	-	-	-	-	14	-	6
Asia & Oceania	1	3	12	-	-	1	-	1	-	1	4	13
Indonesia	1	3	-	-	-	-	-	1	-	1	4	-
Malaysia	-	-	5	-	-	-	-	-	-	-	-	5
Russia	-	-	5	-	-	1	-	-	-	-	-	6
Rest of Asia and Oceania	-	-	2	-	-	-	-	-	-	-	-	2
Total	128	42	55	6	-	2	4	5	1	138	47	58

(1) Excluding pilot wells for development concept (1 in 2021, positive).

(5) Net proved oil and gas reserves

The tables below reflect the net developed and undeveloped proved reserves of crude oil, condensates, natural gas liquids and natural gas, including the volume of reserves equivalent to the financial income obtained under certain production-sharing contracts and service contracts in force as of December 31, 2022, 2021 and 2020, and the variations therein.

Repsol applies the criteria established by the Society of Petroleum Engineers' Petroleum Resource Management System (SPE/WPC/AAPG/SPEE/SEG/SPWLA/EAGE) to estimate its proved and unproved reserves of oil and gas. See Note 3.5.1 "Calculating the recoverable amount of the assets" of the 2022 Consolidated Financial Statements.

In accordance with these rules, proved oil and gas reserves are those quantities of crude oil, condensates, natural gas liquids and natural gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable – from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations – prior to the time at which contracts providing the right to operate expire, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonable certain that it will commence the project within a reasonable time.

In determining net reserves, we exclude from our reported reserves royalties due to others, whether payable in cash or in kind, where the royalty owner has a direct interest in the underlying production and is able to make lifting and sales arrangements independently. By contrast, to the extent that royalty payments required to be made to a third party, whether payable in cash or in kind, are a financial obligation, or are substantially equivalent to a production or severance tax, the related reserves are not excluded from our reported reserves despite the fact that such payments are referred to as "royalties" under local rules. Repsol follows the same methodology in reporting our production amounts.

All of Repsol's oil and gas reserves have been estimated by the company's petroleum engineers.

To control the quality of reserves booked, Repsol has established a process that is integrated into Repsol's internal control system. The process to manage reserves booking is centrally controlled by the Reserve Control Direction which is independent from the upstream activities and it is overseen by the Audit and Control Committee of the Repsol's Board. Furthermore, the volumes booked are submitted to third party engineers for a reserves audit on a periodic basis (at least 95% of the reserves are externally audited on a three years cycle).

For those areas submitted to third party audit, Repsol's proved reserves figures have to be within 7% of the third party reserves audit figures for Repsol to declare that the reserves information meets the third party reserves audit standards. In the event that the difference is greater than 7% tolerance, Repsol reestimates its proved reserves to achieve this tolerance level or discloses the third party reserves audit figures. In 2022, Repsol commissioned an external audit for various areas of South America and North America.

Estimates of developed and undeveloped proved reserves of crude oil, condensate and natural gas liquids:

Millions of barrels

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Reserves at December 31st, 2019 ⁽¹⁾	415	35	-	84	114	74	90	17
Revisions of previous estimates	15	(1)	-	(3)	-	(9)	23	4
Improved recovery	4	-	-	-	2	2	-	-
Extensions and discoveries	(6)	-	-	-	(6)	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(47)	(5)	-	(5)	(14)	(11)	(7)	(6)
Reserves at December 31st, 2020 ⁽¹⁾	381	30	-	77	96	57	107	15
Revisions of previous estimates	36	2	-	-	16	1	17	1
Improved recovery	1	-	-	-	-	1	-	-
Extensions and discoveries	51	-	-	-	50	1	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(6)	-	-	-	-	-	(4)	(2)
Production ⁽¹⁾	(48)	(4)	-	(4)	(11)	(10)	(15)	(3)
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	414	27	-	72	151	49	105	10
Revisions of previous estimates	19	(3)	-	(4)	9	11	6	-
Improved recovery	10	-	-	-	-	10	-	-
Extensions and discoveries	122	-	-	-	122	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(27)	-	-	-	-	(18)	-	(9)
Production ⁽¹⁾	(42)	(4)	-	(4)	(13)	(7)	(12)	(1)
Reserves at December 31st, 2022 ⁽¹⁾	496	19	-	63	269	45	99	1

Millions of barrels

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Equity-accounted investees								
Reserves at December 31st, 2019 ⁽¹⁾	205	35	37	-	-	107	-	26
Revisions of previous estimates	23	11	(8)	-	-	23	-	(3)
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	1	-	-	-	-	-	-	1
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(32)	(9)	(2)	-	-	(18)	-	(3)
Reserves at December 31st, 2020 ⁽¹⁾	196	37	28	-	-	112	-	20
Revisions of previous estimates	4	(1)	-	-	-	6	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	-	-	-	-	-	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(19)	-	-	-	-	-	-	(19)
Production ⁽¹⁾	(27)	(6)	(2)	-	-	(17)	-	(1)
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	155	30	25	-	-	101	-	-
Revisions of previous estimates	8	(1)	2	-	-	7	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	-	-	-	-	-	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(25)	(7)	(3)	-	-	(16)	-	-
Reserves at December 31st, 2022 ⁽¹⁾	138	22	24	-	-	92	-	-
Total fully-consolidated and equity-accounted entities	635	41	24	63	269	137	99	1

Estimates of developed proved reserves of crude oil, condensate and natural gas liquids:

Millions of barrels

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
At December 31st, 2019	436	42	30	56	60	151	66	31
Fully-consolidated entities	264	10	-	56	60	59	66	13
Equity-accounted investees	171	32	30	-	-	92	-	18
At December 31st, 2020	392	39	27	50	30	141	77	27
Fully-consolidated entities	217	6	-	50	30	41	77	12
Equity-accounted investees	175	33	27	-	-	100	-	15
At December 31st, 2021	353	24	24	52	47	131	67	8
Fully-consolidated entities	212	4	-	52	47	34	67	8
Equity-accounted investees	141	20	24	-	-	97	-	-
At December 31st, 2022	322	32	23	46	53	104	62	1
Fully-consolidated entities	191	12	-	46	53	16	62	1
Equity-accounted investees	131	20	23	-	-	88	-	-

Note: The aggregated changes in reserves and total reserves at December 31 may differ from the individual values shown because the calculations use more precise figures than those shown in the table.

- (1) Total net proved developed and undeveloped reserves at December 31, 2022, 2021, 2020 and 2019 include an estimated volume of approximately 27, 29, 46 and 47 million barrels of oil equivalent, respectively, corresponding to royalty payments which, as described above, constitute a financial obligation or are substantially equivalent to a production or equivalent tax. Net production 2022, 2021, 2020 and 2019 includes an estimated volume of 3, 3, 4 and 5 million barrels of oil equivalent, respectively, in connection with such payments.
- (2) Total net proved reserves at December 31, 2021 include a volume of 10 million barrels of oil equivalent corresponding to assets classified as held for sale under IFRS-UE.

Estimates of developed and undeveloped proved reserves of natural Gas:

Thousand Millions of Standard Cubic Feet

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Reserves at December 31st, 2019 ⁽¹⁾	5,248	90	20	1,609	2,251	701	206	371
Revisions of previous estimates	(175)	5	3	(74)	67	(183)	21	(13)
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	(115)	-	-	-	(115)	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(556)	(25)	(3)	(68)	(234)	(102)	(34)	(90)
Reserves at December 31st, 2020 ⁽¹⁾	4,403	71	21	1,467	1,969	415	193	267
Revisions of previous estimates	104	13	1	-	(74)	29	(6)	140
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	1,221	-	-	-	1,217	4	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(57)	-	-	-	-	-	(55)	(2)
Production ⁽¹⁾	(465)	(26)	(4)	(56)	(174)	(92)	(26)	(87)
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	5,206	58	18	1,411	2,938	356	106	318
Revisions of previous estimates	8	25	1	(104)	67	31	(1)	(10)
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	(5)	-	-	-	(5)	-	-	-
Purchases of minerals in place	378	-	-	-	378	-	-	-
Sales of minerals in place	(66)	-	-	-	-	(23)	-	(43)
Production ⁽¹⁾	(468)	(25)	(3)	(70)	(207)	(75)	(16)	(71)
Reserves at December 31st, 2022 ⁽¹⁾	5,053	58	16	1,237	3,170	289	89	194
<i>Thousand Millions of Standard Cubic Feet</i>								
	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Equity-accounted investees								
Reserves at December 31st, 2019 ⁽¹⁾	3,282	11	1,843	-	-	1,428	-	-
Revisions of previous estimates	(192)	5	(198)	-	-	1	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	-	-	-	-	-	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(331)	(5)	(91)	-	-	(236)	-	-
Reserves at December 31st, 2020 ⁽¹⁾	2,759	12	1,554	-	-	1,194	-	-
Revisions of previous estimates	(133)	5	34	-	-	(173)	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	10	-	-	-	-	10	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(285)	(4)	(99)	-	-	(182)	-	-
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	2,351	13	1,489	-	-	849	-	-
Revisions of previous estimates	30	5	65	-	-	(40)	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	-	-	-	-	-	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(280)	(5)	(100)	-	-	(175)	-	-
Reserves at December 31st, 2022 ⁽¹⁾	2,102	14	1,454	-	-	634	-	-
Total fully-consolidated and equity-accounted entities	7,155	72	1,469	1,237	3,170	923	89	194

Estimates of developed proved reserves of natural gas:

Thousand Millions of Standard Cubic Feet

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
At December 31st, 2019	6,054	92	1,617	1,012	1,411	1,456	152	315
Fully-consolidated entities	3,615	80	20	1,012	1,411	625	152	315
Equity-accounted investees	2,439	11	1,597	-	-	831	-	-
At December 31st, 2020	5,112	75	1,415	914	1,226	1,081	143	257
Fully-consolidated entities	3,022	64	21	914	1,226	397	143	257
Equity-accounted investees	2,090	11	1,394	-	-	684	-	-
At December 31st, 2021	4,684	67	1,348	1,000	1,082	844	60	282
Fully-consolidated entities	2,837	54	18	1,000	1,082	340	60	282
Equity-accounted investees	1,847	13	1,330	-	-	504	-	-
At December 31st, 2022	4,402	65	1,377	884	1,249	604	51	172
Fully-consolidated entities	2,708	52	16	884	1,249	284	51	172
Equity-accounted investees	1,694	13	1,361	-	-	320	-	-

Notes: The aggregated changes in reserves and total reserves at December 31 may differ from the individual values shown because the calculations use more precise figures than those shown in the table.

- (1) Total net proved developed and undeveloped reserves at December 31, 2022, 2021, 2020 and 2019 include an estimated volume of approximately 657, 717, 781 and 907 billion cubic feet of gas, respectively, corresponding to royalty payments which, as described above, constitute a financial obligation or are substantially equivalent to a production or equivalent tax. Net production in 2022, 2021, 2020 and 2019 includes an estimated volume of 56, 53, 64 and 70 billion cubic feet of gas, respectively, in connection with such payments.
- (2) Total net proved reserves at December 31, 2021 include a volume of 44 billion cubic feet of gas corresponding to assets classified as held for sale under IFRS-UE.

Estimates of developed and undeveloped proved reserves of crude oil, condensate, natural gas liquids and natural gas:

Millions of Barrels of Oil Equivalent

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Reserves at December 31st, 2019 ⁽¹⁾	1,350	51	4	371	515	199	127	83
Revisions of previous estimates	(16)	-	1	(16)	12	(42)	27	2
Improved recovery	4	-	-	-	2	2	-	-
Extensions and discoveries	(27)	-	-	-	(27)	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(146)	(9)	-	(17)	(56)	(29)	(13)	(22)
Reserves at December 31st, 2020 ⁽¹⁾	1,165	42	4	338	447	131	141	62
Revisions of previous estimates	55	4	-	-	3	6	16	26
Improved recovery	1	-	-	-	-	1	-	-
Extensions and discoveries	268	-	-	-	267	1	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(16)	-	-	-	-	-	(14)	(2)
Production ⁽¹⁾	(131)	(9)	(1)	(14)	(42)	(27)	(20)	(19)
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	1,341	37	3	324	674	112	124	67
Revisions of previous estimates	20	1	-	(23)	20	17	6	(2)
Improved recovery	10	-	-	-	-	10	-	-
Extensions and discoveries	121	-	-	-	121	-	-	-
Purchases of minerals in place	67	-	-	-	67	-	-	-
Sales of minerals in place	(39)	-	-	-	-	(22)	-	(17)
Production ⁽¹⁾	(125)	(9)	(1)	(17)	(50)	(21)	(15)	(13)
Reserves at December 31st, 2022 ⁽¹⁾	1,396	29	3	284	833	97	115	36

Millions of Barrels of Oil Equivalent

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Equity-accounted investees								
Reserves at December 31st, 2019 ⁽¹⁾	789	37	366	-	-	361	-	26
Revisions of previous estimates	(12)	12	(43)	-	-	23	-	(3)
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	1	-	-	-	-	-	-	1
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(91)	(10)	(18)	-	-	(60)	-	(3)
Reserves at December 31st, 2020 ⁽¹⁾	687	39	304	-	-	324	-	20
Revisions of previous estimates	(19)	-	6	-	-	(25)	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	2	-	-	-	-	2	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	(19)	-	-	-	-	-	-	(19)
Production ⁽¹⁾	(78)	(7)	(20)	-	-	(50)	-	(1)
Reserves at December 31st, 2021 ⁽¹⁾⁽²⁾	574	32	290	-	-	252	-	-
Revisions of previous estimates	14	-	13	-	-	-	-	-
Improved recovery	-	-	-	-	-	-	-	-
Extensions and discoveries	-	-	-	-	-	-	-	-
Purchases of minerals in place	-	-	-	-	-	-	-	-
Sales of minerals in place	-	-	-	-	-	-	-	-
Production ⁽¹⁾	(75)	(7)	(20)	-	-	(47)	-	-
Reserves at December 31st, 2022 ⁽¹⁾	513	25	283	-	-	205	-	-
Total fully-consolidated and equity-accounted entities	1,909	54	286	284	833	302	115	36

Estimates of developed proved reserves of crude oil, condensate, natural gas liquids and natural gas:

Millions of Barrels of Oil Equivalent

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
At December 31st, 2019	1,514	58	318	236	312	410	93	87
Fully-consolidated entities	908	24	4	236	312	170	93	69
Equity-accounted investees	606	34	315	-	-	240	-	18
At December 31st, 2020	1,303	52	279	213	249	334	103	73
Fully-consolidated entities	756	17	4	213	249	112	103	58
Equity-accounted investees	547	35	275	-	-	222	-	15
At December 31st, 2021	1,188	37	264	231	240	281	78	58
Fully-consolidated entities	717	14	3	231	240	94	78	58
Equity-accounted investees	471	23	261	-	-	187	-	-
At December 31st, 2022	1,107	44	268	204	276	212	71	32
Fully-consolidated entities	673	21	3	204	276	67	71	32
Equity-accounted investees	434	23	265	-	-	145	-	-

Notes: The aggregated changes in reserves and total reserves at December 31 may differ from the individual values shown because the calculations use more precise figures than those shown in the table.

- (1) Total net proved developed and undeveloped reserves at December 31, 2022, 2021, 2020 and 2019 include an estimated volume of approximately 144, 157, 186 and 208 million barrels of oil equivalent, respectively, corresponding to royalty payments which, as described above, constitute a financial obligation or are substantially equivalent to a production or equivalent tax. Net production in 2022, 2021, 2020 and 2019 includes an estimated volume of 13, 13, 15 and 17 million barrels of oil equivalent, respectively, in connection with such payments.
- (2) Total net proved reserves at December 31, 2021 include a volume of 18 million barrels of oil equivalent corresponding to assets classified as held for sale under IFRS-UE.

(6) Standardized future cash flows

Standardized measure of discounted future net cash flows and changes therein relating to proved oil and gas reserves

Projected net cash flows were estimated in accordance with the criteria established by the “SPE/WPC/AAPG/SPEE/SEG/SPWLA/EAGE Petroleum Resources Management System, commonly referred to by its acronym, SPE-PRMS (SPE standing for the Society of Petroleum Engineers)”. Oil and gas prices and other financial assumptions regarding the outlook for costs reflect the Company's best estimates for the purposes of valuing its assets (See Note 3.5.1 of the 2022 Consolidated Financial Statements). These assumptions are applied to estimated future production in respect of its proved oil and gas reserves as of the most recent reporting date, less estimated future development and production costs (based on current costs) in respect of these same proved reserves, all of which assuming that prevailing economic conditions are sustained.

Future production costs were estimated on based on the cost structure at the end of the year and are projected on the basis of the above-mentioned assumptions. Future development costs were calculated on the basis of technical studies conducted by Repsol and by the operators holding joint title with Repsol. The taxes projected for each of the future years were determined under the contractual and tax regime prevailing at the end of the year. The rate used to discount the future net revenues was 10%.

The present value of the future net cash flows estimated on the basis of the aforementioned assumptions is not intended to be interpreted, and should not be interpreted, as the fair value of the Group’s oil and gas reserves. An estimation of the fair value of these reserves should also include the future exploitation of reserves not yet classified as proved reserves and costs and a discount rate which represents the time value of money at the calculation date and the uncertainties inherent to estimating the reserves.

The following table shows the present value of the future net revenues relating to proved oil and gas reserves, calculated on the basis of the aforementioned assumptions.

Millions of euros
At December 31st 2020

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Future cash inflows	28,124	1,828	52	5,867	8,997	2,752	6,593	2,035
Future production costs	(11,988)	(1,121)	(30)	(2,787)	(4,999)	(1,397)	(994)	(660)
Future development and abandonment costs	(5,370)	(1,128)	(1)	(549)	(1,800)	(981)	(623)	(288)
Future income tax expenses	(3,857)	491	(8)	(748)	(6)	(110)	(3,083)	(393)
Future net cash flows after taxes	6,909	70	13	1,783	2,192	264	1,893	694
10% annual discount for estimated timing of cash flows	(2,339)	(55)	(5)	(1,075)	(775)	348	(679)	(98)
Discounted future net cash flows	4,570	15	8	708	1,417	612	1,214	596
Equity-accounted investees								
Future cash inflows	18,796	2,007	7,440	-	-	8,345	-	1,004
Future production costs	(8,120)	(1,474)	(2,284)	-	-	(3,507)	-	(855)
Future development and abandonment costs	(3,807)	(2,225)	(204)	-	-	(1,303)	-	(75)
Future income tax expenses	(1,792)	751	(1,844)	-	-	(682)	-	(17)
Future net cash flows after taxes	5,077	(941)	3,108	-	-	2,853	-	57
10% annual discount for estimated timing of cash flows	(1,887)	659	(1,634)	-	-	(895)	-	(17)
Discounted future net cash flows	3,190	(282)	1,474	-	-	1,958	-	40
Total discounted future net cash flows	7,760	(267)	1,482	708	1,417	2,570	1,214	636

Translation of a report originally issued in Spanish.
In the event of a discrepancy, the Spanish language version prevails.

Millions of euros
At December 31st 2021

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Future cash inflows	39,106	2,251	28	7,454	16,590	2,992	7,495	2,296
Future production costs	(14,714)	(1,074)	(26)	(3,062)	(7,086)	(1,792)	(932)	(742)
Future development and abandonment costs	(6,986)	(921)	(2)	(675)	(3,479)	(1,130)	(562)	(217)
Future income tax expenses	(5,629)	(35)	(3)	(1,175)	(114)	(147)	(3,732)	(423)
Future net cash flows after taxes	11,777	221	(3)	2,542	5,911	(77)	2,269	914
10% annual discount for estimated timing of cash flows	(4,314)	(66)	-	(1,264)	(2,649)	603	(769)	(169)
Discounted future net cash flows	7,463	155	(3)	1,278	3,262	526	1,500	745
Equity-accounted investees								
Future cash inflows	19,147	2,027	7,722	-	-	9,398	-	-
Future production costs	(8,574)	(1,629)	(2,319)	-	-	(4,626)	-	-
Future development and abandonment costs	(4,192)	(2,478)	(223)	-	-	(1,491)	-	-
Future income tax expenses	(1,975)	854	(1,919)	-	-	(910)	-	-
Future net cash flows after taxes	4,406	(1,226)	3,261	-	-	2,371	-	-
10% annual discount for estimated timing of cash flows	(1,474)	808	(1,608)	-	-	(674)	-	-
Discounted future net cash flows	2,932	(418)	1,653	-	-	1,697	-	-
Total discounted future net cash flows	10,395	(263)	1,650	1,278	3,262	2,223	1,500	745

Millions of euros
At December 31st 2022

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Future cash inflows	54,118	2,630	26	9,772	29,012	3,353	7,993	1,332
Future production costs	(19,633)	(679)	(23)	(3,627)	(12,310)	(1,620)	(1,004)	(370)
Future development and abandonment costs	(10,139)	(882)	(1)	(826)	(6,868)	(974)	(508)	(80)
Future income tax expenses	(8,207)	(848)	(3)	(1,743)	(745)	(494)	(4,055)	(319)
Future net cash flows after taxes	16,139	221	(1)	3,576	9,089	265	2,426	563
10% annual discount for estimated timing of cash flows	(6,285)	31	-	(1,409)	(4,277)	244	(762)	(112)
Discounted future net cash flows	9,854	252	(1)	2,167	4,812	509	1,664	451
Equity-accounted investees								
Future cash inflows	16,985	1,923	5,813	-	-	9,249	-	-
Future production costs	(7,266)	(1,301)	(1,910)	-	-	(4,055)	-	-
Future development and abandonment costs	(4,422)	(2,595)	(266)	-	-	(1,561)	-	-
Future income tax expenses	(1,703)	764	(1,410)	-	-	(1,057)	-	-
Future net cash flows after taxes	3,594	(1,209)	2,227	-	-	2,576	-	-
10% annual discount for estimated timing of cash flows	(649)	729	(932)	-	-	(446)	-	-
Discounted future net cash flows	2,945	(480)	1,295	-	-	2,130	-	-
Total discounted future net cash flows	12,799	(228)	1,294	2,167	4,812	2,639	1,664	451

Changes in Standardized measure of discounted future net cash flows relating to proved oil and gas reserves

The detail of the changes in the standardized measure of discounted future net cash flows for 2020, 2021 and 2022 as follows:

Changes in the standardized measure of discounted future net cash flows

Millions of euros

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Balance at December 31st, 2019	6,540	246	9	827	2,305	690	1,328	1,135
Changes due to sale or transfer prices of future production costs	(2,603)	(162)	(4)	(61)	(861)	(770)	(513)	(232)
Changes in future development costs	129	(128)	4	1	221	2	101	(72)
Oil and gas sales and transfers in the period	(2,801)	(369)	(6)	(107)	(666)	(216)	(812)	(625)
Net changes due to extensions, discoveries and improvements in the recovery of reserves	378	-	-	-	355	23	-	-
Net changes due to purchases/sales of assets	-	-	-	-	-	-	-	-
Net changes due to revisions in quantity estimates	1,300	5	2	(64)	(350)	733	974	-
Previously estimated development costs incurred in the year	693	150	1	37	211	117	77	100
Effect of discounting to a different date and exchange rate effect	61	3	-	11	41	1	(10)	15
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	873	270	2	64	161	32	69	275
Net change	(1,970)	(231)	(1)	(119)	(888)	(78)	(114)	(539)
Balance at December 31st, 2020	4,570	15	8	708	1,417	612	1,214	596
Changes due to sale or transfer prices of future production costs	2,214	346	(13)	694	1,024	(76)	225	14
Changes in future development costs	(284)	135	(1)	(33)	(334)	(118)	3	64
Oil and gas sales and transfers in the period	(1,532)	(33)	(3)	(92)	(292)	(151)	(555)	(406)
Net changes due to extensions, discoveries and improvements in the recovery of reserves	1,181	-	-	-	1,164	17	-	-
Net changes due to purchases/sales of assets	64	(4)	-	-	-	-	58	10
Net changes due to revisions in quantity estimates	945	70	-	64	(149)	105	554	301
Previously estimated development costs incurred in the year	455	192	-	23	105	55	32	48
Effect of discounting to a different date and exchange rate effect	892	15	1	149	318	99	216	94
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	(1,042)	(581)	5	(235)	9	(17)	(247)	24
Net change	2,893	140	(11)	570	1,845	(86)	286	149
Balance at December 31st, 2021	7,463	155	(3)	1,278	3,262	526	1,500	745
Changes due to sale or transfer prices of future production costs	3,686	900	(2)	1,565	605	203	365	50
Changes in future development costs	(843)	6	-	(117)	(625)	(96)	19	(30)
Oil and gas sales and transfers in the period	(3,334)	(675)	1	(385)	(835)	(219)	(849)	(372)
Net changes due to extensions, discoveries and improvements in the recovery of reserves	1,126	-	-	-	913	213	-	-
Net changes due to purchases/sales of assets	154	-	-	-	333	13	-	(192)
Net changes due to revisions in quantity estimates	534	200	2	(24)	122	(82)	268	48
Previously estimated development costs incurred in the year	1,171	199	1	36	753	94	79	9
Effect of discounting to a different date and exchange rate effect	1,085	(4)	-	180	521	78	221	89
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	(1,188)	(529)	-	(366)	(237)	(221)	61	104
Net change	2,391	97	2	889	1,550	(17)	164	(294)
Balance at December 31st, 2022	9,854	252	(1)	2,167	4,812	509	1,664	451

Millions of euros

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Equity-accounted investees								
Balance at December 31st, 2019	4,599	100	2,002	-	-	2,309	-	188
Changes due to sale or transfer prices of future production costs	(943)	(151)	(274)	-	-	(310)	-	(208)
Changes in future development costs	(66)	(33)	74	-	-	(100)	-	(7)
Oil and gas sales and transfers in the period	(1,317)	(271)	(211)	-	-	(785)	-	(50)
Net changes due to extensions, discoveries and improvements in the recovery of reserves	5	-	-	-	-	-	-	5
Net changes due to purchases/sales of assets	-	-	-	-	-	-	-	-
Net changes due to revisions in quantity estimates	(278)	(277)	(565)	-	-	516	-	48
Previously estimated development costs incurred in the year	385	96	2	-	-	272	-	15
Effect of discounting to a different date and exchange rate effect	64	10	41	-	-	4	-	9
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	741	244	405	-	-	52	-	40
Net change	(1,409)	(382)	(528)	-	-	(351)	-	(148)
Balance at December 31st, 2020	3,190	(282)	1,474	-	-	1,958	-	40
Changes due to sale or transfer prices of future production costs	(76)	26	(10)	-	-	(92)	-	-
Changes in future development costs	(399)	(99)	(7)	-	-	(293)	-	-
Oil and gas sales and transfers in the period	(839)	(111)	(166)	-	-	(540)	-	(22)
Net changes due to extensions, discoveries and improvements in the recovery of reserves	(2)	-	-	-	-	(2)	-	-
Net changes due to purchases/sales of assets	(33)	(13)	-	-	-	-	-	(20)
Net changes due to revisions in quantity estimates	296	(5)	31	-	-	270	-	-
Previously estimated development costs incurred in the year	342	124	5	-	-	213	-	-
Effect of discounting to a different date and exchange rate effect	522	(66)	268	-	-	318	-	2
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	(69)	8	58	-	-	(135)	-	-
Net change	(258)	(136)	179	-	-	(261)	-	(40)
Balance at December 31st, 2021	2,932	(418)	1,653	-	-	1,697	-	-
Changes due to sale or transfer prices of future production costs	(324)	163	(922)	-	-	435	-	-
Changes in future development costs	(83)	(97)	(34)	-	-	48	-	-
Oil and gas sales and transfers in the period	(1,279)	(212)	(276)	-	-	(791)	-	-
Net changes due to extensions, discoveries and improvements in the recovery of reserves	-	-	-	-	-	-	-	-
Net changes due to purchases/sales of assets	-	-	-	-	-	-	-	-
Net changes due to revisions in quantity estimates	908	220	279	-	-	409	-	-
Previously estimated development costs incurred in the year	421	200	7	-	-	214	-	-
Effect of discounting to a different date and exchange rate effect	425	(83)	270	-	-	238	-	-
Other non-specific changes	-	-	-	-	-	-	-	-
Changes in income tax	(55)	(253)	318	-	-	(120)	-	-
Net change	13	(62)	(358)	-	-	433	-	-
Balance at December 31st, 2022	2,945	(480)	1,295	-	-	2,130	-	-
Total fully-consolidated and equity-accounted entities	12,799	(228)	1,294	2,167	4,812	2,639	1,664	451

(7) Results of oil and gas exploration and production activities

The following table shows the revenues and expenses associated directly with the Group's oil and gas exploration and production activities. It does not include any allocation of the finance costs or general expenses, except for the accretion expense, and, therefore, is not necessarily indicative of the contribution to consolidated net profit of the oil and gas activities.

Millions of euros

At December 31st 2020	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Income								
Sales to non-Group companies	409	6	-	6	198	55	144	-
Sales between business segments and to Group Companies	2,174	221	7	223	545	323	205	650
Total income	2,583	227	7	229	743	378	349	650
Production costs	(876)	(109)	(3)	(62)	(278)	(226)	(72)	(126)
Production taxes	(73)	-	(1)	(41)	(4)	-	(22)	(5)
Exploration expenses ⁽¹⁾	(253)	(105)	-	(1)	(9)	(50)	(24)	(64)
Other operating expenses	(468)	(108)	-	(31)	(203)	-	(40)	(86)
Depreciation and amortisation charge ⁽²⁾	(3,017)	(796)	3	(47)	(553)	(735)	(213)	(676)
Profit (Loss) before taxes and charges	(2,104)	(891)	6	47	(304)	(633)	(22)	(307)
Taxes and charges ⁽³⁾	226	53	3	(15)	60	77	(47)	95
Results of oil and gas production activities	(1,878)	(838)	9	32	(244)	(556)	(69)	(212)
Equity-accounted investees								
Income								
Sales to non-Group companies	359	28	-	-	-	331	-	-
Sales between business segments and to Group Companies	1,249	302	324	-	-	527	-	96
Total income	1,608	330	324	-	-	858	-	96
Production costs	(453)	(201)	(21)	-	-	(217)	-	(14)
Production taxes	(223)	-	(53)	-	-	(131)	-	(39)
Exploration expenses ⁽¹⁾	(110)	-	-	-	-	(46)	-	(64)
Other operating expenses	(61)	(14)	(77)	-	-	35	-	(5)
Depreciation and amortisation charge ⁽²⁾	(1,634)	(494)	(128)	-	-	(932)	-	(80)
Profit (Loss) before taxes and charges	(873)	(379)	45	-	-	(433)	-	(106)
Taxes and charges ⁽³⁾	149	125	3	-	-	14	-	7
Results of oil and gas production activities	(724)	(254)	48	-	-	(419)	-	(99)
Total results of oil and gas activities ⁽⁴⁾	(2,602)	(1,092)	57	32	(244)	(975)	(69)	(311)

Millions of euros

At December 31st
2021

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Income								
Sales to non-Group companies	770	6	-	5	364	42	353	-
Sales between business segments and to Group Companies	3,679	593	2	548	695	528	601	712
Total income	4,449	599	2	553	1,059	570	954	712
Production costs	(811)	(139)	(1)	(60)	(225)	(200)	(61)	(125)
Production taxes	(181)	-	-	(107)	(7)	-	(51)	(16)
Exploration expenses ⁽¹⁾	(367)	(59)	-	(1)	(248)	(54)	(1)	(4)
Other operating expenses	(677)	(320)	(19)	(73)	(165)	(42)	6	(64)
Depreciation and amortisation charge ⁽²⁾	(896)	(176)	-	(37)	(150)	(253)	(71)	(209)
Profit (Loss) before taxes and charges	1,517	(95)	(18)	275	264	21	776	294
Taxes and charges ⁽⁵⁾	(941)	(199)	(3)	(90)	(66)	(103)	(336)	(144)
Results of oil and gas production activities	576	(294)	(21)	185	198	(82)	440	150
Equity-accounted investees								
Income								
Sales to non-Group companies	553	101	-	-	-	452	-	-
Sales between business segments and to Group Companies	1,798	352	411	-	-	983	-	52
Total income	2,351	453	411	-	-	1,435	-	52
Production costs	(487)	(253)	(32)	-	-	(198)	-	(4)
Production taxes	(361)	-	(64)	-	-	(266)	-	(31)
Exploration expenses ⁽¹⁾	12	-	-	-	-	(15)	-	27
Other operating expenses	(232)	(28)	(143)	-	-	(60)	-	(1)
Depreciation and amortisation charge ⁽²⁾	(856)	(281)	(42)	-	-	(532)	-	(1)
Profit (Loss) before taxes and charges	427	(109)	130	-	-	364	-	42
Taxes and charges ⁽³⁾	(98)	54	22	-	-	(155)	-	(19)
Results of oil and gas production activities	329	(55)	152	-	-	209	-	23
Total results of oil and gas activities ⁽⁴⁾	905	(349)	131	185	198	127	440	173

Millions of euros

At December 31st
2022

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Income								
Sales to non-Group companies	4,665	1,121	2	999	433	675	845	590
Sales between business segments and to Group Companies	2,283	82	-	8	1,717	-	476	-
Total income	6,948	1,203	2	1,007	2,150	675	1,321	590
Production costs	(936)	(173)	(18)	(83)	(332)	(209)	(72)	(49)
Production taxes	(263)	-	-	(182)	(25)	-	(56)	-
Exploration expenses ⁽¹⁾	(452)	(34)	-	(1)	(79)	(147)	-	(191)
Other operating expenses	(773)	(69)	(152)	(120)	(383)	(2)	(8)	(39)
Depreciation and amortisation charge ⁽²⁾	(1,124)	(269)	(1)	(55)	(199)	(217)	(120)	(263)
Profit (Loss) before taxes and charges	3,400	658	(169)	566	1,132	100	1,065	48
Taxes and charges ⁽⁵⁾	(2,158)	(642)	6	(195)	(317)	(117)	(814)	(79)
Results of oil and gas production activities	1,242	16	(163)	371	815	(17)	251	(31)
Equity-accounted investees								
Income								
Sales to non-Group companies	2,820	472	580	-	-	1,768	-	-
Sales between business segments and to Group Companies	943	188	-	-	-	755	-	-
Total income	3,763	660	580	-	-	2,523	-	-
Production costs	(532)	(281)	(24)	-	-	(227)	-	-
Production taxes	(534)	-	(81)	-	-	(453)	-	-
Exploration expenses ⁽¹⁾	(23)	(3)	-	-	-	(16)	-	(4)
Other operating expenses	(343)	(24)	(203)	-	-	(116)	-	-
Depreciation and amortisation charge ⁽²⁾	(607)	21	24	-	-	(652)	-	-
Profit (Loss) before taxes and charges	1,724	373	296	-	-	1,059	-	(4)
Taxes and charges ⁽³⁾	(617)	(90)	(115)	-	-	(412)	-	-
Results of oil and gas production activities	1,107	283	181	-	-	647	-	(4)
Total results of oil and gas activities ⁽⁴⁾	2,349	299	18	371	815	630	251	(35)

(1) Exploration expenses include charges for the impairment of exploration assets of €138, €188 and €192 million in 2022, 2021 and 2020, respectively (see Note 20 to the 2022 and 2020 Financial Statements and Note 21 to the 2021 Financial Statements).

(2) Depreciation and amortization charge and provisions⁷ includes the net impairment of production assets and development and provisions for onerous charges, as well as impairment of goodwill amounting to €229, €337 and €2,919 million in 2022, 2021 and 2020, respectively (see Note 20 to the 2022 and 2020 Financial Statements and Note 21 to the 2021 Financial Statements).

(3) The income tax expense includes the impairment of tax assets recognized in 2022 and 2020 amounting to €286 and €75 million (see Note 20 to the 2022 and 2020 Financial Statements).

(4) Results generated for divestments are not included. In addition, it does not include the results recorded because of the procedure initiated by Addax Petroleum UK Limited y Sinopec International Petroleum Exploration and Production Corporation (see Note 15 to the Financial Statements).

(8) Investments

Investments of the year (cost incurred)

The costs incurred represent amounts capitalised during the year relating to acquisitions of properties and for exploration and development activities, including dismantling costs.

Millions of euros
At December 31st 2020

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Acquisition of proved properties	193	-	-	-	193	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	261	27	-	-	105	94	3	32
Development costs	482	221	(4)	40	128	21	8	68
Costs incurred	936	248	(4)	40	426	115	11	100
Equity-accounted investees								
Acquisition of proved properties	-	-	-	-	-	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	35	-	-	-	-	23	-	12
Development costs	397	67	2	-	-	324	-	4
Costs incurred	432	67	2	-	-	347	-	16
Total costs incurred	1,368	315	(2)	40	426	462	11	116

Millions of euros
At December 31st 2021

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Acquisition of proved properties	-	-	-	-	-	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	222	24	-	-	112	59	1	26
Development costs	844	323	(1)	67	314	75	38	28
Costs incurred	1,066	347	(1)	67	426	134	39	54
Equity-accounted investees								
Acquisition of proved properties	3	3	-	-	-	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	26	-	-	-	-	23	-	3
Development costs	316	116	(31)	-	-	230	-	1
Costs incurred	345	119	(31)	-	-	253	-	4
Total costs incurred	1,411	466	(32)	67	426	387	39	58

Millions of euros
At December 31st 2022

	<u>Total</u>	<u>Europe</u>	<u>Venezuela</u>	<u>Peru</u>	<u>United States</u>	<u>Rest of America</u>	<u>Africa</u>	<u>Asia and Oceania</u>
Fully-consolidated entities								
Acquisition of proved properties	213	-	-	-	213	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	214	(4)	-	-	124	53	1	40
Development costs	1,460	126	-	52	1,183	56	43	-
Costs incurred	1,887	122	-	52	1,520	109	44	40
Equity-accounted investees								
Acquisition of proved properties	-	-	-	-	-	-	-	-
Acquisition of unproved properties	-	-	-	-	-	-	-	-
Exploration costs	18	-	-	-	-	18	-	-
Development costs	82	(74)	-	-	34	122	-	-
Costs incurred	100	(74)	-	-	34	140	-	-
Total costs incurred	1,987	48	-	52	1,554	249	44	40

Accumulated investments (capitalised costs)

Capitalised costs represent the historical costs capitalised related to oil and gas exploration and production activities, including auxiliary equipment and facilities, and the related accumulated depreciation and accumulated impairment losses.

Millions of euros
At December 31st 2020

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Capitalised costs of proved oil and gas properties	19,142	1,008	66	460	7,924	4,991	1,628	3,065
Capitalised costs of unproved oil and gas properties	1,734	32	-	0	1,195	377	1	129
Total capitalised costs	20,876	1,040	66	460	9,119	5,368	1,629	3,194
Auxiliary equipment and facilities	5,174	863	26	702	1,246	856	1,074	407
Total capitalised costs	26,050	1,903	92	1,162	10,365	6,224	2,703	3,601
Accumulated depreciation and impairment losses	(15,951)	(1,213)	(90)	(380)	(5,448)	(4,480)	(1,972)	(2,368)
Net amount	10,099	690	2	782	4,917	1,744	731	1,233
Equity-accounted investees								
Capitalised costs of proved oil and gas properties	9,938	1,963	1,454	-	-	6,346	-	175
Capitalised costs of unproved oil and gas properties	582	-	-	-	-	586	-	(4)
Total capitalised costs	10,520	1,963	1,454	-	-	6,932	-	171
Auxiliary equipment and facilities	3,980	456	790	-	-	2,732	-	2
Total capitalised costs	14,500	2,419	2,244	-	-	9,664	-	173
Accumulated depreciation and impairment losses	(9,703)	(1,514)	(1,846)	-	-	(6,207)	-	(136)
Net amount	4,797	905	398	-	-	3,457	-	37
Total Net amounts	14,896	1,595	400	782	4,917	5,201	731	1,270

Millions of euros
At December 31st 2021

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Capitalised costs of proved oil and gas properties	20,694	920	71	559	8,836	5,492	1,702	3,114
Capitalised costs of unproved oil and gas properties	1,744	20	-	(1)	1,166	397	(1)	163
Total capitalised costs	22,438	940	71	558	10,002	5,889	1,701	3,277
Auxiliary equipment and facilities	5,951	1,190	28	768	1,467	899	1,183	416
Total capitalised costs	28,389	2,130	99	1,326	11,469	6,788	2,884	3,693
Accumulated depreciation and impairment losses	(17,587)	(1,209)	(97)	(446)	(6,043)	(5,044)	(2,178)	(2,570)
Net amount	10,802	921	2	880	5,426	1,744	706	1,123
Equity-accounted investees								
Capitalised costs of proved oil and gas properties	10,890	2,189	1,508	-	-	7,193	-	-
Capitalised costs of unproved oil and gas properties	685	-	-	-	-	661	-	24
Total capitalised costs	11,575	2,189	1,508	-	-	7,854	-	24
Auxiliary equipment and facilities	4,193	541	840	-	-	2,810	-	2
Total capitalised costs	15,768	2,730	2,348	-	-	10,664	-	26
Accumulated depreciation and impairment losses	(11,117)	(1,889)	(2,030)	-	-	(7,198)	-	-
Net amount	4,651	841	318	-	-	3,466	-	26
Total Net amounts ⁽¹⁾	15,453	1,762	320	880	5,426	5,210	706	1,149

Millions of euros
At December 31st 2022

	Total	Europe	Venezuela	Peru	United States	Rest of America	Africa	Asia and Oceania
Fully-consolidated entities								
Capitalised costs of proved oil and gas properties	21,293	1,007	76	625	11,811	3,377	1,835	2,562
Capitalised costs of unproved oil and gas properties	606	4	-	0	188	381	(1)	34
	21,899	1,011	76	625	11,999	3,758	1,834	2,596
Auxiliary equipment and facilities	5,828	1,191	29	828	1,798	514	1,270	198
Total capitalised costs	27,727	2,202	105	1,453	13,797	4,272	3,104	2,794
Accumulated depreciation and impairment losses	(16,143)	(1,422)	(102)	(521)	(6,560)	(2,906)	(2,419)	(2,213)
Net amount	11,584	780	3	932	7,237	1,366	685	581
Equity-accounted investees								
Capitalised costs of proved oil and gas properties	11,263	2,133	1,600	-	-	7,530	-	-
Capitalised costs of unproved oil and gas properties	687	-	-	-	-	687	-	-
	11,950	2,133	1,600	-	-	8,217	-	-
Auxiliary equipment and facilities	4,628	689	880	-	34	3,025	-	-
Total capitalised costs	16,578	2,822	2,480	-	34	11,242	-	-
Accumulated depreciation and impairment losses	(12,028)	(2,072)	(1,971)	-	-	(7,985)	-	-
Net amount	4,550	750	509	-	34	3,257	-	-
Total Net amounts	16,134	1,530	512	932	7,271	4,623	685	581

(1) In 2021, includes assets classified as held for sale amounting €257 million.

The information in this document is published pursuant to the provision of article 226 of the Spanish Securities Market Law.