

W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Ecopetrol S.A. is a public limited company. The Republic of Colombia is the majority shareholder, with an 88.49% interest in the company. It is one of the largest companies in Colombia, also with operations in Brazil, Mexico, and the United States (the Gulf of Mexico and the Permian Basin in Texas). Besides being an integrated oil and gas company with operations in the upstream, midstream, and downstream segments, it also has operations in gas distribution. In 2021 Ecopetrol acquired Interconexión Eléctrica S.A. ESP, the leading energy transition group in the Western Hemisphere, effectively diversifying its EBITDA from the hydrocarbon sector. Ecopetrol's Colombian operation includes two refineries, one in Barrancabermeja and one in Cartagena (the latter one through its subsidiary REFICAR). Along with its subsidiary company CENIT (specialized in oil transport and logistics), Ecopetrol owns four ports for the export and import of fuels and crude oil in Coveñas, Santa Marta and Cartagena on the Caribbean Sea, and in Tumaco on the Pacific Ocean. CENIT also owns most of the country's pipelines and polyducts that connect production systems with large consumption centers and maritime terminals. Through ISA Ecopetrol also has operations in the electricity transmission, road concessions and information communications technology business in Colombia, Brazil, Peru, Chile, Bolivia, Argentina, and Central America.

One of the eight pillars of Ecopetrol's Environmental Strategy is Water Neutrality which has been defined as the balance between the water required to operate and all the actions to reduce the direct water footprint and offset 100% of the remaining water used through conservation actions within the basins. In this way water-associated conflicts are prevented, assuring water security in the environment.

Ecopetrol's 2040 Corporate Strategy defined four pillars:

1. Growing with the energy transition
2. Generating value through TESG (technology, environment, social, and governance)
3. Competitive returns
4. Cutting-edge knowledge

The second pillar, "generating value through TESG", includes the water neutrality target to be reached by 2045. This means replacing 100% of the water consumed by the operations, thereby generating a positive impact in the basins within the area of influence. To achieve this goal, Ecopetrol focuses on:

- By leveraging the implementation of technology and cutting-edge knowledge, Ecopetrol is improving operational efficiency in water management, by maximizing internal reutilization and the use of alternative water sources (e.g., municipal wastewater, seawater, brackish water from deep aquifers, etc.), and the reutilization of produced water in other sectors (e.g., agriculture).
- Reducing freshwater discharges and improving the quality of the discharges.
- Protection of water basins by implementing own and collective actions to offset the remaining volume of water consumed by the operations and activities.

Note: The scope of this report includes all facilities operated by Ecopetrol S.A (E&P assets in Colombia and the Cartagena and Barrancabermeja Refineries), as well as administrative areas and the Colombian Petroleum Institute (ICP).

W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

- Upstream
- Midstream/Downstream
- Other, please specify (Corporate areas)

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1 2021	December 31 2021

W0.3

(W0.3) Select the countries/areas in which you operate.

Colombia

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

COP

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which operational control is exercised

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W0.7

(W0.7) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, an ISIN code	Ticker at NYSE is EC
Yes, an ISIN code	Ticker at BVC is ECOPETROL

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Vital	<p>Freshwater is vital for Ecopetrol's direct operations as 40.1 Mm3* (i.e. 26% of total required water) came from freshwater sources in 2021. Ecopetrol uses freshwater mainly in the Downstream segment (71% of total freshwater withdrawals), which requires good quality water for cooling and steam generation. In the Upstream segment (28.8% of total freshwater withdrawals) freshwater is used especially for secondary hydrocarbon recovery processes; the remaining 0.2% corresponds to corporate areas where freshwater is used mainly for domestic uses. Furthermore, in 2021 Ecopetrol established the "Water Neutrality Strategy: towards water positive by 2045", which seeks to reduce the direct water footprint, as technically and economically feasible, and to replenish at least 100% of the remaining freshwater consumed through offsetting actions, generating a positive impact in each basin where its operations are carried out. The water neutrality roadmap includes a 66% reduction** in freshwater withdrawals by 2045, which will decrease the company's dependence on freshwater resources in the future. Still, freshwater will continue to be vital as there will be a 34%** of freshwater that the company will need to withdraw to ensure the implementation of its development plan in the short, medium and long-term.</p> <p>*Mm3 Millions of cubic meters **With regards to the baseline year: 2019</p> <p>Freshwater is also vital for Ecopetrol's indirect use. According to our water footprint calculation, between 80-90% of Ecopetrol's indirect water consumption is related to electricity use, which is provided by the national energy supply system. Energy supply in Colombia originally comes from hydroelectric (68%) and thermoelectric (31%), which uses freshwater for generation. It is expected that freshwater will continue to be vital for electricity generation in Colombia, since the electricity sector will use about 2x more freshwater by 2030 in comparison to 2016 (ENA 2018, IDEAM)</p>
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Not very important	<p>Water reuse continues to be the primary source of water supply for Ecopetrol, as 111.3 Mm3 (i.e. 74% of total required water) came from this source in 2021. The Upstream segment reused 94.4 Mm3 of produced water, especially to maintain reservoir pressures or increase oil recovery and other activities such as drilling fluids preparation, wells maintenance, firefighting systems and equipment cooling. The Downstream segment reused 16.9 Mm3 in activities such as condensate recovery for steam generation and firefighting systems. In a lower proportion, the company also reused wastewater in drilling activities, where reverse osmosis and demineralization processes have been implemented for wastewater treatment, allowing the reuse of at least 90% of the treated water. Reuse will also be vital to achieve the water neutrality ambition, as it allows to reduce freshwater withdrawals and discharges. It is expected that by 2045, about 90% of total required water will come from the reuse of produced and industrial waters. In addition, Ecopetrol is also seeking to use alternative water sources as an option to reduce its freshwater consumption and to achieve water neutrality; some alternative sources include industrial and domestic wastewater from external parties, brackish water aquifers and seawater.</p> <p>Regarding the indirect use, as mentioned above, the majority of Ecopetrol's indirect water consumption corresponds to the external electricity supply generated mainly from freshwater. In addition, according to the National Department for Planning (DNP), Colombia has low levels of reuse of treated wastewater and rainwater, especially in the greater water user. Therefore recycled, brackish and/or produced water availability for indirect use is currently rated as "not very important". However, this rate could change in the future, as the National Government has established the goal of reusing 40% of total wastewaters generated in the country by 2030 (Conpes 3934-2018).</p>

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	Since 2015 Ecopetrol has a corporate water information system named "SIGAR-Aguas" implemented over the SAP Environmental Compliance (SAP EC) software, where water management information of all its operating assets is registered. Specifically, information on freshwater withdrawal volumes is gathered monthly on SIGAR, based on daily records directly obtained from flow measurement devices located at each withdrawal point in the field.
Water withdrawals – volumes by source	100%	In the configuration of the SIGAR-Aguas information system, each freshwater withdrawal point is assigned with an attribute associated with the corresponding source type (surface, groundwater, aqueducts, external suppliers, rainwater and sea). This configuration allows Ecopetrol to monitor the volumes of water withdrawn by source for the entire company. As explained before, monthly volumes of each of the withdrawal points are registered on SIGAR, from daily records obtained on field from flowmeters.
Entrained water associated with your metals & mining sector activities - total volumes [only metals and mining sector]	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	100%	Total volumes of produced water are also included in the SIGAR information system based on the daily records reported on the company's official tool for volumetric management of oil, gas, and water production (AVM-AVOCET). Produced water is estimated from the daily oil production measurement and the average BSW (Basic Sediment and Water) measured by a laboratory.
Water withdrawals quality	100%	Ecopetrol measures and monitors freshwater withdrawals' quality at the facility level to respond to operational and regulatory requirements based on the frequency defined and required by the environmental authority on each of the environmental licenses and permits. Some parameters, such as pH, TDS, turbidity, and others, are usually measured in real-time to control operational variables associated with raw water treatment. In addition, freshwater used for oil recovery (EOR) is periodically monitored in terms of dissolved CO ₂ , H ₂ S, oil and greases, and TSS to verify water compatibility with the reservoir and control and avoid damage in the injection wells.. Quality measurements are carried out using the company's own measurement devices and equipment and / or by external accredited laboratories.
Water discharges – total volumes	100%	SIGAR-Aguas information system also includes monthly volumes of domestic, industrial, and stormwater discharges from 100% of the operated assets. In most cases, records are taken daily from flow meters located at each discharge point (especially for industrial and domestic discharges that discharge to surface freshwater and sprinkler fields to the ground). For domestic discharges that are discharged in the soil through infiltration fields (e.g., septic tanks) or storm water discharges, volumes are usually estimated monthly using methodologies accepted by national authorities.
Water discharges – volumes by destination	100%	Ecopetrol's corporate water information system (SIGAR-Aguas) collects data at the discharge point level assigned with an attribute associated with the corresponding receiving source category (surface, soil, sea, public sewer, and external manager). This configuration allows to break down total discharges by destination with a monthly frequency. As mentioned before, records are taken daily from flow meters located at each discharge point (especially for industrial and domestic discharges that discharge to surface water bodies and sprinkler fields to the ground); for domestic wastewater which is discharged to the soil through infiltration fields (e.g., septic tanks) or storm water discharges, volumes are usually estimated monthly using methodologies accepted by national authorities
Water discharges – volumes by treatment method	100%	In the configuration of SIGAR-Aguas, each discharge point is assigned with an attribute associated with the treatment category (pre-treatment, primary, secondary, tertiary, and others) to ensure compliance with national and local quality standards. As mentioned before, records are taken daily from flow meters located at each discharge point (especially for industrial and domestic discharges that discharge to surface water bodies and sprinkler fields to the ground); for domestic discharges that go to the soil through infiltration fields (e.g. septic tanks) or storm water discharges, volumes are usually estimated monthly using methodologies accepted by national authorities.
Water discharge quality – by standard effluent parameters	100%	Water quality is measured and monitored for 100% of the Company's discharge points, with the frequency established by environmental authorities (monthly, quarterly, semi-annually, or annually) in every discharge permit. Measurements are carried out by external laboratories accredited by IDEAM (Colombia's Institute of Hydrology, Meteorology and Environmental Studies) and include more than 40 water quality parameters for industrial wastewaters. This information is also entered into the information system SIGAR, where each discharge point's quality is monitored. It is also verified that the maximum values allowed by national and local discharge regulations are not exceeded. This information also enables Ecopetrol to respond to environmental authorities and stakeholders reporting requirements , and for internal management and decision making.
Water discharge quality – temperature	100%	Wastewater discharge temperature is one of the quality parameters requested by national and regional environmental authorities. It is monitored for 100% of the Company's discharge points with the frequency requested in each discharge permit. Beyond this, Ecopetrol continuously monitors discharge temperature to assure compliance with the maximum limit (40 °C) allowed and that temperature change in the water receiving body does not exceed 5°C in the mixing zone.
Water consumption – total volume	100%	Water consumption is estimated monthly on the SIGAR information system, calculating the difference between water inflows (freshwater withdrawals, produced water, internal transfers) and outflows (discharges, injection/reinjection, reuse, etc.) at the facility level. Measurement methods were described above.
Water recycled/reused	100%	This variable is also collected monthly in the SIGAR information system. In the case of produced water reused for oil recovery, data is recorded daily in the field using flow measurement devices at the injection plants, and is subsequently registered on the company's official information systems for oil, gas, and water volumetric management (AVOCET), which is integrated with SIGAR-Aguas. Reuse data from drilling activities is measured using flow meters located at every drilling site. In refineries, water recirculated / reused is measured using flow meters placed on water pipelines or estimated using water balances.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Ecopetrol provides drinking water and sanitation services to all workers in 100% of its facilities.

W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	428479	About the same	<p>In 2021, total water withdrawn was 428.48 Mm3 (millions of cubic meters), which is about the same compared to 2020 (-3.8%). This figure includes both freshwater withdrawn and produced water as requested in CDP's technical guidelines for the oil & gas sector; however, Ecopetrol does not consider produced water as a water withdrawal but as a natural by-product of the oil and gas extraction.</p> <p>Regarding freshwater, Ecopetrol withdrew 40.1 Mm3 (millions of cubic meters), which represents a decrease of 3.9% compared to 2020, mainly due to lower freshwater requirement for oil recovery in the La Cira Infantas, Yarigui-Cantagallo and Tibú oil fields. As part of the Water Neutrality roadmap 2045 goal, Ecopetrol expects to reduce 66% of its freshwater withdrawals by 2045, compared to the 2019 baseline year.</p> <p>Regarding produced water, Ecopetrol generated 388.4 Mm3 which represents a 3.8% decrease compared to 2020, mainly associated to the suspension of the Castilla surface discharge permit during the first half of 2021. Considering the nature of the company's reservoirs, the produced water levels to be managed by Ecopetrol may increase in the future as a result of the aging of oil fields, water injection projects expansion for oil recovery, and implementation of the production development plans.</p> <p>Note: When filling out the column "comparison with previous reporting year", the following thresholds were defined for the whole questionnaire: Increase greater than 20%: "Much higher"; Increase between 5 and 20%: "Higher"; Increase and reductions between 0 and 5%: "About the same"; Reductions between 5 and 20%: "Lower"; Reductions greater than 20%: "Much lower"</p>
Total discharges	413218	About the same	<p>According to the definition of total discharges as "all water leaving the company boundary" mentioned in the CPD's technical note, in 2021, Ecopetrol recorded discharges for 413.2 Mm3 (million cubic meters) which represents a decrease of 4.1% compared to 2020. This volume includes the following water effluents (percentages represents variation against 2020): 1.15 Mm3 of domestic wastewater discharges (-12%), 60.5 Mm3 of industrial wastewater discharges* to surface water, soil, and external managers (-31%), 8.1 Mm3 of freshwater injected for oil recovery (-21%), 94.3 Mm3 of produced water reinjected for oil recovery (+11%), 246.9 Mm3 of produced water reinjected for disposal (+0.6%), 2.3 Mm3 of produced water reused in agricultural irrigation (-26.5%). The reduction in total discharges was caused mainly to the suspension of the Castilla surface discharge permit during the first half of 2021.</p> <p>*Note: this volume includes produced water and rainwater susceptible to contamination, a type of wastewater that is part of Barrancabermeja's refinery discharges permit.</p> <p>As part of the water neutrality roadmap, a decrease in total discharges is expected in the future for the Downstream segment due to the implementation of additional reuse initiatives. For the Upstream segment, discharges may increase as the produced water levels may increase in the near future as a result of ageing of oil fields, water injection projects expansion for oil recovery, and implementation of the production development plans. However, based on the water naturality roadmap, discharges to fresh surface water are expected to reach a peak between 2025-2026 and gradually decrease until reaching zero by 2045.</p>
Total consumption	15261	Higher	<p>Following the CDP's methodology, water consumption was estimated as the difference between total withdrawals and total discharges, which resulted in a consumption of 15.26 Mm3 in 2021, about 4% of total withdrawals. This figure represents an increase of 6.5% in total consumption compared to 2020, caused by larger volumes of water reused in the Downstream segment (16.9 Mm3 in 2021 and 11.2 Mm3 in 2020).</p> <p>For the Upstream segment, no relevant changes are expected in the future since increases in produced water are also reflected in total discharges. However, as internal reuse of water is vital to achieve the water neutrality ambition, it may increase the freshwater consumption (understood as the difference between discharges and withdrawals) in the next years since internal reuse is not considered as an effluent that leaves the boundaries of the organization.</p>

W-OG1.2c

(W-OG1.2c) In your oil & gas sector operations, what are the total volumes of water withdrawn, discharged, and consumed – by business division – and what are the trends compared to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year %	Please explain
Total withdrawals - upstream	399931	About the same	In 2021, total withdrawals in the Upstream segment (exploration, drilling, and production) were 399.3 Mm3 (million cubic meters), about 4.2% lower than 2020. Regarding freshwater, 11.6 Mm3 were withdrawn from surface and groundwater sources, representing a decrease of 18% compared to the previous year, due to a reduction of freshwater requirements for oil recovery injection in La Cira Infantas, Yarigui-Cantagallo and Tibú oil fields. In 2021, four (4) Clean Technology Reconversion Plans for Wastewater Management (PRTLGV for its Spanish acronym), finalized execution (Casabe, Llanito, Tibú and Provincia oil fields). This will allow Ecopetrol to continue decreasing the amount of freshwater injected for oil recovery since 2022, especially in the Casabe field (about 5 Mm3 per year). Moreover, as part of the water neutrality roadmap, Ecopetrol expects an estimated 40% decrease in freshwater withdrawals in the Upstream by 2045. Regarding produced water, Ecopetrol generated 388.4 Mm3 which represents a 3.8% decrease compared to 2020, mainly associated to the suspension of the Castilla surface discharge permit during the first half of 2021. Considering the nature of the reservoirs, the produced water levels to be managed by the company may increase in the future as a result of ageing of oil fields, water injection projects expansion for oil recovery, and implementation of production development plans.
Total discharges – upstream	398847	About the same	According to the definition of total discharges as "all water leaving the company boundary" mentioned in the CDP's technical note, in 2021, the Upstream segment recorded discharges for 398.8 Mm3 which represents a decrease of 4.4% compared to 2020. This volume includes the following water effluents (percentages represents variation against 2020): 1.0 Mm3 of domestic wastewater discharges (-4%), 46.2 Mm3 of industrial wastewater discharges to surface water, soil, and external managers (-36%), 8.1 Mm3 of freshwater injected for oil recovery (-21%), 94.3 Mm3 of produced water reinjected for oil recovery (+11%), 246.9 M m3 of produced water reinjected for disposal (+0.6%), 2.3 Mm3 of produced water reused in agricultural irrigation (-26.5%). The reduction in total discharges was caused mainly to the suspension of the Castilla surface discharge permit during the first half of 2021. Considering the nature of Ecopetrol's reservoirs, the produced water levels to be managed by the company may increase in the future as a result of ageing fields, water injection projects expansion for oil recovery, and implementation of the production development plans. This condition will also be reflected in total discharges.
Total consumption – upstream	1084	About the same	Total consumption for the upstream segment is lower than 1% of its total withdrawals. No relevant changes are expected in the following years as increases in produced water are also reflected in total discharges.
Total withdrawals - midstream/downstream	28486	About the same	In 2021 the Downstream segment withdrew 28.48 Mm3 of freshwater, representing an increase of 4% compared to 2020, due to higher volumes of oil refined. In the Midstream segment (represented by the Nestor Pineda Terminal in Cartagena), 0.01 Mm3 of seawater were used for fire – fighting drills. As part of the water neutrality roadmap, Ecopetrol expects to reduce the freshwater withdrawal in both refineries through the implementation of additional reuse initiatives of its effluents, as well as the use of seawater in the Cartagena Refinery.
Total discharges – midstream/downstream	14334	About the same	Total effluents in the Midstream and Downstream segments were 14.3 Mm3, which represents an increase of 3.2% compared to 2020, due to higher water withdrawals caused by higher volumes of refined oil. As part of the water neutrality roadmap, the company expects a decrease in total discharges in the future for the Downstream segment after the implementation of additional reuse initiatives
Total consumption – midstream/downstream	14152	About the same	Total consumption for the midstream and downstream segments is about 50% of their total withdrawals, caused mainly by evaporation losses in the cooling towers. Total consumption in 2021 was about the same, compared to 2020 (+3.2%). Internal reuse of water is vital to achieve the water neutrality ambition, since it allows to reduce both freshwater withdrawals and discharges; However, it may increase the freshwater consumption (understood as the difference between discharges and withdrawals) in the next years, since internal reuse is not considered as an effluent that leaves the boundaries of the organization.
Total withdrawals – chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total discharges – chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total consumption – chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total withdrawals – other business division	62	Lower	Freshwater withdrawals in administrative buildings and the Colombian Petroleum Institute (ICP for its acronym in Spanish), reached 62 thousand cubic meters, representing a decrease of 6% compared to the previous year. This figure is low compared to Ecopetrol's total withdrawals. No relevant changes are expected in the coming years.
Total discharges – other business division	37	Lower	Total discharges from administrative buildings and the ICP were 37 thousand cubic meters, representing a decrease of 12% compared to the previous year. This figure is low compared to Ecopetrol's total discharges. No relevant changes are expected in the following years.
Total consumption – other business division	25	About the same	Total consumption is about 40% of total withdrawals, +4.2% higher than 2020. This figure is low compared to Ecopetrol's total withdrawals. No relevant changes are expected in the coming years.

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Identification tool	Please explain
Row 1	Yes	1-10	About the same	WRI Aqueduct	Ecopetrol uses the World Resources Institute (WRI-Aqueduct) methodology and identifies its facilities located in areas with potential water stress, when the baseline water stress index (ratio between water demand and available surface supply of the sub-basin) is greater than 40%, using official information published in the 2018 National Water Study by IDEAM (Colombia's Institute of Hydrology, Meteorology and Environmental Studies). Ecopetrol uses IDEAM's information for tracking and monitoring basin's water supply conditions instead of other global datasets, given that it provides a higher level of detail for the 316 subbasins in Colombia. So, in 2021 Ecopetrol withdrew 11.1 million cubic meters of freshwater and generated 13.6 million m3 of produced water in basins under the mentioned water stress condition, which represents 6% of the sum of total freshwater withdrawn and the total produced water. Ecopetrol continues to develop initiatives to reduce its dependence on freshwater availability at these facilities. In 2021, no freshwater was withdrawn for oil recovery in areas with water stress.

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	24333	About the same	Fresh surface water is relevant since this source represents 61% of Ecopetrol's total freshwater withdrawals. In comparison to 2020, there was a 3% reduction due to lower water requirements for oil recovery in La Cira Infantas (-1.2 Mm ³ -million cubic meters-) due to an increase in the field's BSW, and consequently, higher availability of produced water for injection. And lower requirements in the Yaguará field (-31 thousand m ³) due to optimizations in the recovery process.
Brackish surface water/Seawater	Relevant	10	Much higher	0.01 Mm ³ of seawater were extracted in 2021 for firefighting in the Nestor Pineda Terminal. There was no use from this source in 2020.
Groundwater – renewable	Relevant	8773	Lower	Groundwater withdrawal is relevant to the company, as it corresponds to 22% of total freshwater withdrawals. Compared to the previous year, groundwater withdrawals were lower (-6%) due to a decrease in water requirements for oil recovery in the Tibú oil field (-0.94 Mm ³) due to temporary closures for public order conditions; and Yarigui-Cantagallo (-0.33 Mm ³) due to optimizations in the oil recovery injection.
Groundwater – non-renewable	Relevant	0	About the same	Currently, Ecopetrol does not extract non-renewable groundwater. However, in the coming years, this source may be of interest when developing unconventional reservoirs, which have not yet started their pilot phase in Colombia
Produced/Entrained water	Relevant	388370	About the same	Produced water is a natural element during the extraction of hydrocarbons, since oil, gas and water are mixed in reservoirs. This mixture is brought to the surface, where the products (oil and gas) are separated from the water. Produced water is Relevant, as in 2021 Ecopetrol generated 388.4 Mm ³ of produced water (on average, for each barrel of oil equivalent, 12 barrels of produced water are generated), which represents a 3.8% decrease compared to 2020, mainly associated to the suspension of the Castilla surface discharge permit during the first half of 2021.
Third party sources	Relevant	6993	About the same	Freshwater from third-party sources is equivalent to 17% of the total freshwater withdrawn and it corresponds mainly to raw water supplied by the Cartagena public aqueduct (ACUACAR) to the Cartagena Refinery. Compared to 2020, there was a reduction of 4% in freshwater withdrawals from these sources due to higher water reuse in the Cartagena Refinery (4.8 Mm ³ in 2021 vs 4.1 Mm ³ in 2020).

W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	58245	Much lower	Total wastewater discharges destined to surface water were 58.2 Mm ³ , which is 31% lower than the previous year, mainly associated to the suspension of the Castilla surface discharge permit during the first half of 2021. This destination is relevant to Ecopetrol water management given that through it, Ecopetrol disposed 14% of its effluents in 2021. However, as part of the water neutrality roadmap, the company expects to decrease discharges to fresh surface water and to reach zero discharges by 2045 in both Downstream and Upstream segment.
Brackish surface water/seawater	Relevant	2508	Higher	Total discharges to seawater were 2.5 Mm ³ , which represents an increase of 6% compared to the previous year, due to higher discharges of domestic and industrial wastewater from the Cartagena refinery in 2021. Seawater discharges are relevant to Ecopetrol, as it is the primary discharge source for the Cartagena refinery.
Groundwater	Relevant	352358	About the same	According to the definition in the CDP's technical note, total discharges to groundwater sources were 352.4 Mm ³ , a slight 2% increase compared to 2020. This figure consists of the following streams and variations against 2020: 8.1 Mm ³ of freshwater injected for oil recovery (-21%), 94.3 Mm ³ of produced water reinjected for oil recovery (+11%), 246.9 Mm ³ of produced water reinjected for disposal (+0.6%), 2.3 Mm ³ of produced water reused in agricultural irrigation (-26.5%), and 0.8 Mm ³ of domestic and industrial wastewater discharged to soil (-7%). Groundwater discharges are relevant to Ecopetrol, given that 88% of total produced water is reinjected back to the reservoir for disposal or oil recovery purposes.
Third-party destinations	Relevant	106	Lower	In 2021, total discharges to sewers and authorized external wastewater managers were 0.1 Mm ³ (-17% compared to 2020). Although third-party destinations' volume is much lower than other destination sources, it remains relevant to Ecopetrol because they are the principal discharge alternative for administrative buildings and some exploration and drilling projects.

W1.2j

(W1.2) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Relevant	0	About the same	Less than 1%	Tertiary treatment is relevant for drilling activities, where wastewaters are treated by reverse osmosis and/or demineralization allowing the reuse of at least 90% of the treated water. However, it is not counted as a discharge since treated water is reused at the sites, and only the rejected water (brine) is disposed through authorized external managers. Thus, there was no change between 2021 and 2020.
Secondary treatment	Relevant	59587	Much lower	11-20	Secondary treatment is relevant for discharges to natural receivers (fresh surface water, seawater and soil) as it allows to remove substances of environmental interest and to assure the compliance of the maximum allowed limits established in environmental regulations. It corresponds to wastewater treatment systems that remove pollutants by both physical (i.e. skimming tanks, API and CPI separators, floating cells, flocculation/coagulation, filters, decanters, etc.) and biological processes (oxidation and stabilization ponds, activated sludges, etc.). In comparison with the previous year, there was a 31% reduction in this treatment caused mainly to the suspension of the Castilla surface discharge permit during the first half of 2021 (-23 Mm3).
Primary treatment only	Relevant	353566	About the same	81-90	Primary treatment is relevant for the Upstream segment, since it allows to reduce pollutants to the standards required for injection (i.e. NACE standards). In the Downstream segment, stormwater and effluents from raw water treatment systems are also treated by primary treatments. In comparison with the previous year, there was a slight increase in this type of treatment (+3%) due to higher water injection volumes for both oil recovery and disposal.
Discharge to the natural environment without treatment	Relevant	0	About the same	Less than 1%	Ecopetrol does not discharge wastewater to the natural environment without prior treatment. All discharges to surface water, sea, or soils, are treated to remove harmful substances in order to comply with the Colombian regulation.
Discharge to a third party without treatment	Relevant	65	Much lower	Less than 1%	It relates to domestic and industrial wastewater discharged to public sewer and other third-party discharges. In comparison with the previous year, there was a 44% reduction in this treatment alternative caused mainly to the exclusion of transportation plants in the inventory, as Ecopetrol is not operating them since 2020.
Other	Relevant	0	About the same	Less than 1%	It is worth mentioning that the domestic water in some assets is treated using a Phyto evaporator system which consists of an inlet of domestic wastewater through an up-flow anaerobic filter (UAFP) and the outlet release in a Phyto evaporator system with vetiver grass. Part of the water is consumed by the vetiver grass, and part is lost through evapotranspiration. For the system to function correctly, maintenance is carried out to avoid the accumulation of fats and oils to guarantee its normal operation. Maintenance is carried out by a third party that holds an environmental permit for this activity.

W1.3

(W1.3) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1	4196700000000	428479	97944123.282588	Considering the nature of Ecopetrol's reservoirs, the produced water levels may increase in the future as a result of ageing fields, water injection projects expansion for oil recovery, and the implementation of development plans. So, the total water withdrawal efficiency indicator may be lesser in the future. However, in terms of freshwater withdrawal efficiency, the company expects a higher withdrawal efficiency figure because of the water neutrality roadmap implementation.

W-OG1.3

(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?

Yes

W-OG1.3a

(W-OG1.3a) Provide water intensity information associated with your activities in the oil & gas sector.

Business division

Upstream

Water intensity value (m3)

0.06

Numerator: water aspect

Freshwater withdrawals

Denominator

Barrel of oil equivalent

Comparison with previous reporting year

Lower

Please explain

Freshwater intensity for the upstream segment was estimated at 0.058 m3/BOE, representing a 15% decrease compared to 2020, due to reduction of freshwater requirements for oil recovery injection (e.g., waterflooding and EOR) in La Cira Infantas, Yariguí-Cantagallo and Tibú

Business division

Midstream/Downstream

Water intensity value (m3)

0.22

Numerator: water aspect

Freshwater withdrawals

Denominator

Barrel of crude oil throughput

Comparison with previous reporting year

Lower

Please explain

Downstream freshwater intensity was estimated at 0.22 m3 per barrel of oil throughput. This figure shows a variation of -6.5% in comparison to 2020, due to higher water reuse in both refineries.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?

Yes, our suppliers

Yes, our customers or other value chain partners

W1.4a

(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?

Row 1

% of suppliers by number

Less than 1%

% of total procurement spend

Less than 1%

Rationale for this coverage

In 2021, Ecopetrol defined 8 green clauses related to water management (in terms of water footprint): Maintenance, chemicals and catalyst (purchase, use, and services), construction for artificial lift systems, highway maintenance, tanks and septic tanks maintenance, as well as treatment of sludge and oily waste. Contracts that include green clauses with water management information requirements were selected considering the termination of current contracts and their relevance in terms of water footprint.

Impact of the engagement and measures of success

The green clauses related to water started their implementation in December 2021. Currently three contracts include these clauses, representing 0.04% of total procurement spend.

The green clauses require suppliers to report on:

- Source of water supply for non-domestic use
- Activity that generates non-domestic wastewater
- Volume of water for non-domestic use
- Water consumption
- Responsible for the treatment and final disposal of non-domestic wastewater
- Type of non-domestic wastewater treatment
- Final disposal of treated non-domestic wastewater

Comment

W1.4b

(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement

Onboarding & compliance

Details of engagement

Inclusion of water stewardship and risk management in supplier selection mechanism

% of suppliers by number

Less than 1%

% of total procurement spend

Less than 1%

Rationale for the coverage of your engagement

The lubricants procurement strategy, prioritized considering water footprint, included water criteria for selecting new suppliers. Based on these criteria, 4 suppliers were selected.

This procurement strategy were prioritized to include water criteria for the supplier selection considering the termination of the current strategy and its relevance in terms of water footprint.

Impact of the engagement and measures of success

The procurement strategy mentioned represented 0.04% of total procurement spend. This coverage will increase during the future years

Comment

W1.4c

(W1.4c) What is your organization's rationale and strategy for prioritizing engagements with customers or other partners in its value chain?

Regarding customers: Ecopetrol's general terms and conditions incorporate clauses in which the customers agree to comply with the applicable HSE laws, in order to guarantee a healthy, safe and an environmentally sound execution of the obligations established in the crude oil and products sales contracts.

Regarding partners: Ecopetrol seeks to ensure high standards in relation to water management in non-operating assets in the planning and operation stages of the projects agreed to be developed by partners. In the planning phase, Ecopetrol participates in the water management strategy through technical recommendations; during execution, Ecopetrol verifies the performance of the strategy, applying the agreed contract provisions and participating in the different committees during the decision-making process (technical, financial, and operational). Ecopetrol's corporate strategy with partners aims to map and implement initiatives to increase the reuse of produced water and to strengthen the databases that include relevant variables such as withdrawals, discharge of non-domestic wastewater, reuse, produced water and injection water, which allow to adequately quantify the reductions and benefits obtained after the implementation of joint projects. Additionally, spaces have been developed with partners to share good practices and find synergies and articulations, such as individual sessions in order to present the strategies and lessons learned from Ecopetrol's direct operation and workshops on water footprint. To address future challenges, focus groups have been formed to promote appropriate development in water management and ensure the implementation of new initiatives and projects articulated with partners. Likewise, Ecopetrol, within its Collaboration Contracts, has incorporated clauses in which the operator agrees to comply with the regulations associated with HSE, guaranteeing safe operations and without affecting lives and the environment.

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

Yes

W2.1a

(W2.1a) Describe the water-related detrimental impacts experienced by your organization, your response, and the total financial impact.

Country/Area & River basin

Colombia	Orinoco
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Type of impact driver & Primary impact driver

Regulatory	Regulatory uncertainty
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Primary impact

Reduction or disruption in production capacity

Description of impact

On December 17th, 2020, the regional environmental authority (CORMACARENA) suspended the surface waters permit for discharging produced water from the Castilla field, due to an alleged non-compliance of the Guayuriba's river quality parameters, downstream of Castilla's discharge. CORMACARENA required Ecopetrol to comply with water quality objectives for the Guayuriba river, right from the discharge point, disregarding not only the original requirements issued in the discharge permit (Resolution PSGJ. 1.2.6.16.1012-2016), but also the national regulation that states water quality objectives must be fulfilled after the mixing zone (Decree 1076 of 2015). This situation resulted in a deferred production of 2.284.220 bbls in 2021. Deferred production for 2021 was valued at 563,252 million COP, considering the deferred production (2,284,220 bbls), an average "Exportation Castilla blend" oil price of USD65.88 per barrel and an exchange rate of 3,743 COP/USD. Although according to the categories established in the corporative risk assessment matrix (RAM), this event could be considered as "Major"

Primary response

Comply with local regulatory requirements

Total financial impact

563252000000

Description of response

Since being notified on December 14th 2020, Ecopetrol started legal actions to enquire the entity authorizing the discharge indicating a violation of due process and an excessive autonomous regulatory power against the conditions in which the discharge permit was issued. Likewise, Ecopetrol proceeded to comply with all requirements required by the regional authority and suspended the produced water discharge to surface waters on December 17th, as legal and technical actions continued. This discharge remained suspended until June 2021, when CORMACARENA considered all technical actions were executed by Ecopetrol, authorizing again the produced water discharge.

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

No

W3. Procedures

W-OG3.1

(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?

For Ecopetrol, pollutants are all substances, elements or physical conditions present in wastewaters that can affect the receiving body quality, adversely affecting the hydrobiological populations and downstream users. To identify potential pollutants, Ecopetrol periodically monitors more than 40 water quality parameters for all its wastewater discharges and receiving bodies to verify the efficiency of the treatment and compliance with maximum limits allowed by environmental regulations. Ecopetrol measures water quality and carries out toxicity studies of samples taken downstream from discharge sites to verify the absence of adverse effects on receiving water bodies.

The presence of pollutants in wastewater discharges varies depending on the process that generates them and the oil reservoir characteristics (for the Upstream segment). Ecopetrol's produced waters can generally contain dissolved salts (e.g., chlorides and sulphates), aromatic organic compounds (such as phenols, BTEX, PAHs), some heavy metals and high temperatures. For example, high levels of chlorides are presented especially in produced water from Magdalena Medio fields (Llanito, Casabe, La Cira Infantas), where concentrations could range between 5,000 to 30,000 ppm, while in Castilla and Rubiales it does not exceed 200 ppm. In the downstream segment, wastewater could have high levels of aromatic organic compounds (such as phenols, BTEX), organic matter (COD, BOD), total nitrogen, and dissolved salts. However, Ecopetrol measures all the wastewater pollutants required for the hydrocarbon sector within the 631 Resolution of 2015 which establishes the maximum allowable discharge limits to continental surface water and the 0883 Resolution of 2018 which establishes maximum dischargeable limits to seawater. Both Resolutions include all relevant pollutants and set limitations for the oil and gas sector; aromatic compounds are of special attention due to their level of hazardousness to people and ecosystems, especially BTEX compounds (benzene, toluene, ethylbenzene, and xylene), phenols, PAHs, and heavy metals. Monitoring and measurements are carried out by laboratories accredited by the IDEAM (Colombia's Institute of Hydrology, Meteorology and Environmental Studies) that have implemented measurement methods based on the Standard Methods for the Examination of Water and Wastewater (SM), EPA procedures, and other technical standards.

Ecopetrol also performs acute toxicity analysis on wastewater and water bodies (when is required by the environmental authority), measured as CL50 / CE50 and has not observed any effect concentration (NOEC). Acute toxicity is defined as a fast and severe physical response of organisms to certain stimuli. This stimulus is generally manifested in an interval of 0 to 96 hours, and it is measured as the mean lethal concentration (LC50) or the mean effective concentration (EC50). The mean lethal concentration measures the amount of compound required for 50% of organisms to die after a short exposure (maximum 96 hours). Results have shown no evidence of acute toxicity on Ecopetrol's wastewaters and receiving water bodies.

In addition, Ecopetrol is using the results of the produced water footprint assessment for its products, based on the ISO 14046 standard, which includes the following water degradation impact indicators:

1. Human toxicity: based on the USEtox model, it evaluates wastewater discharges dangerousness in terms of carcinogenic human toxicity and non-carcinogenic human toxicity in CTUh (Comparative Toxic Unit for human).
2. Freshwater ecotoxicity: based on the USEtox model, it evaluates various toxicological mechanisms caused by the release of substances with a direct effect on the ecosystem's health in CTUe (Comparative Toxic Unit ecotoxicity).
3. Seawater ecotoxicity: based on the Recipe model
4. Freshwater acidification: based on the Accumulated Exceedance AE model, it evaluates freshwater affectation by releasing NOx, SOx, and NH3 into the atmosphere that could cause acid rainwater.

W-OG3.1a

(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.

Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
Hydrocarbons	Upstream Midstream/Downstream	The most relevant pollutants due to their hazardousness level are aromatic organic compounds such as BTEX (Benzene, Toluene, ethylbenzene, and xylene), Phenols (such as phenol, chlorophenols, nitrophenols), PAH (such as naphthalene, anthracene, benzo (a) pyrene, etc.), and metals. These are compounds found in produced waters and are brought to the surface in the crude oil extraction processes. These pollutants have the potential to affect hydrobiological communities and restrict water use downstream. Some substances such as benzene, benzo (a) pyrene and pentachlorophenol have been classified by the WHO as carcinogenic to humans. It is important to mention that the presence of these substances has not been found in Ecopetrol's wastewater discharges to surface water.	Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement Emergency preparedness Other, please specify (Information systems)	Compliance with effluent quality standards: Prior treatment is undertaken to remove pollutants in wastewater to assure compliance with quality standards required by environmental laws and regulations, and to avoid the mentioned potential impacts downstream. Wastewater discharges quality is periodically measured (according to the frequency required by the environmental authority). These results are periodically reported to environmental authorities through the environmental compliance reports for monitoring and control. Internally, Ecopetrol continuously checks water quality using the SIGAR information system, where compliance is verified automatically. In addition, the company has set "Clean Technology Reconversion Plans for Wastewater Management" to ensure compliance with maximum levels established in the 631 Resolution of 2015 aiming to improve water efficiency in the upstream and downstream operations, in terms of reduction of pollutant loads discharged to surface water bodies. These plans include improvement of current wastewater treatment, or the abolishment of the surface discharge, and increase of reused or recycled water. Moreover, as part of the water neutrality roadmap, Ecopetrol expects to gradually decrease discharges to fresh surface water aiming to reach zero discharges in 2045 in both Downstream and Upstream segment. Measures to prevent spillage, leaching, and leakage: Ecopetrol has maintenance and operation areas that implement integrity programs for wells, lines, tanks, and any facilities that may contain any product. Community/stakeholder engagement: communities located downstream are active actors constantly demanding information on environmental compliance and performance. Thus, all enquiries are managed through the Complaints Management System. Emergency preparedness: Ecopetrol has Emergency Preparedness and Response Plans for every wastewater discharge site which incorporate actions and procedures to prevent, avoid, reduce, or correct failures that may occur in the wastewater treatment system limiting its treatment and compliance with the applicable mandatory criteria. They also establish the prevention and mitigation measures of possible adverse impacts, the emergency and contingency protocols in the system, and the rehabilitation and recovery program of the receiving body.

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Value chain stage

Direct operations
Supply chain

Coverage

Full

Risk assessment procedure

Water risks are assessed as part of an established enterprise risk management framework

Frequency of assessment

Annually

How far into the future are risks considered?

More than 6 years

Type of tools and methods used

Tools on the market
Enterprise risk management
International methodologies and standards
Databases

Tools and methods used

WRI Aqueduct
ISO 31000 Risk Management Standard
Environmental Impact Assessment
IPCC Climate Change Projections
Regional government databases

Contextual issues considered

Water availability at a basin/catchment level
Water quality at a basin/catchment level
Stakeholder conflicts concerning water resources at a basin/catchment level
Water regulatory frameworks
Status of ecosystems and habitats
Access to fully-functioning, safely managed WASH services for all employees

Stakeholders considered

Customers
Employees
Investors
Local communities
NGOs
Regulators
Suppliers
Water utilities at a local level
Other water users at the basin/catchment level

Comment

W3.3b

(W3.3b) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

Ecopetrol's methodology for identifying water-related risks is based on the WRI Aqueduct tool, which identifies physical (quantity and quality), regulatory and reputational potential risks, considering a set of numerical indicators that capture a wide range of variables for describing territories' external conditions. However, data used in the WRI Aqueduct tool has a global scale, which leads to the loss of the detail level required to carry out risk analysis at the local level. To overcome that limitation, Ecopetrol uses more detailed hydrological information for Colombia, published in the National Water Studies (ENA), developed by the IDEAM (Institute of Hydrology, Meteorology and Environmental Studies), for 316 water sub-basins, as well as data from regional authorities and environmental impact assessments from its operations. In addition, some supplementary indicators are proposed or modified to the standard methodology as they are considered to be of key importance, e.g. reputational risk management includes analyzing requests, complaints, and claims related to water resources. We are also conducting a research related to surface water availability changes in the short, medium and long term (2025-2050) within the area of influence, considering different climate change scenarios (e.g. GISS-E2-R, MPI-ESM-MR, MRI-CGCM3, and the 3rd national communication on climate change), (ii) changes in land use (iii) , hydro energy expansion, and (iv) population growth. Outcomes of the risk assessment (with other variables) were used to classify water as an "Exceptional" element within the TESG strategy due to its importance to the company to generate value in the short, medium, and long term, as well as to its significant relevance for stakeholders. Water-related risks were also included in the company's Business Risk Map, considering their potential affectionation on the goals and targets of the 2040 Corporate Strategy "Energy that Transforms" (the company's business risk management is based on the ISO 31000 standard, which is used to identify, assess, and manage its corporate business risks). Potential financial impacts derived from water-related risks are updated every year after carrying out a sensitivity analysis on how changes in water availability could result in financial impacts to the company.

Ecopetrol's methodology for identifying water-related risks includes all contextual issues selected in W3.3a. Regarding water availability and quality, indicators such as water use (e.g., baseline water stress), regulation index (an indicator of seasonal variability), water quality index, and pollutant discharges are included; regarding potential stakeholders conflicts, we monitor population without access to drinking water in areas nearby to our operations, and the Water-related Petitions, Complaints and Claims (PQRs for its Spanish acronym) reported by any of our interest groups; regarding water-related regulatory frameworks, we maintain a continuous relationship with national and regional environmental authorities to identify potential or ongoing regulatory changes and provide constructive feedback; regarding the status of ecosystems and habitats, as part of the environmental licensing, Ecopetrol characterizes the ecosystems within its influence areas, considering status, functionality, composition and structure of the biotic environment. For obtaining the biotic baseline it is normally required to carry out inventories and characterizations of biodiversity, which generally include activities to collect specimens of biological diversity. The characterization of the biotic environment refers to the following components: terrestrial ecosystems (fauna and flora), continental and marinecoastal aquatic ecosystems and the identification of Areas of Special Environmental Interest (e.g. Protected Areas, Ramsar Sites, Biosphere Reserves, World Heritage Sites, among others); regarding WASH services for employees, all of Ecopetrol's facilities provide to all workers access to drinking water and sanitation.

All stakeholders are considered in Ecopetrol's water-related risk assessment, since they all have access to the Complaints Management System, which can be used to report all kinds of water-related events, requests for information, special requirements, among other enquiries. Besides the social responsibility of addressing and responding to each inquiry, tracking inquiries helps to identify potential risks of increased water-related conflicts. In addition, we conduct a Stakeholder Perception and Expectation Survey on an annual basis which seeks to evaluate the perceptions and expectations of the stakeholders regarding the Company's management of water and other material elements and as well as other corporate responsibility matters.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, only within our direct operations

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Risks are evaluated in terms of their occurrence probability and their impact dimensions, in accordance with the procedure established in the company's risk assessment matrix (RAM). Impact dimensions are measured in terms of the consequence level based on the following components: health, the environment, economic resources, reputation and customers. Impact assessment levels are: Insignificant (1), Minor (2), Moderate (3), Major (4) and Catastrophic (5), which are determined through specific conditions of impact on each component that may be impacted. Probability is measured in terms of historical materialization within Ecopetrol or other company in the oil and gas sector; and/or the level of occurrence possibility in the next year. These scenarios evaluation provide five (5) levels of probability: rare (1), improbable (2), possible (3), probable (4) and with certainty (5). A combination between occurrence probability and its impact dimensions leads to a final risk evaluation. In this sense, risks are valued as VH (Very High), H (High), M (Medium), L (Low) or N (Null). Particularly, a substantive financial impact on business is considered in the economic resources dimension established in the Risk Assessment Matrix explained before, within three (3) levels: Catastrophic (> USD \$150 M), Major (USD \$50M - USD \$150M) and Moderate (USD \$10M - USD \$50 M).

W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	3	1-25	<p>According to the water-related risk assessment, Ecopetrol has identified that production fields with surface water discharges located in the Orinoco's basin (Castilla, Apiay and Suria) could be exposed to possible water risks due to seasonal variability, with the potential to have a substantive financial impact on operations. Details of risks are provided below (see W4.2).</p> <p>Note: Rubiales is not considered as a facility exposed to water risks that could have a substantive financial impact as the reduction in production associated to seasonal variability is already included in the production forecast (P50), so it is not considered as a deferred production</p>

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

Colombia	Orinoco
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Number of facilities exposed to water risk

3

% company-wide facilities this represents

1-25

Production value for the metals & mining activities associated with these facilities

<Not Applicable>

% company's annual electricity generation that could be affected by these facilities

<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities

1-25

% company's total global revenue that could be affected

1-10

Comment

According to the water-related risk assessment, Ecopetrol has identified that production fields with surface water discharges located on Orinoco's basin (Castilla, Apiay and Suria) could be exposed to possible water risks due to seasonal variability, with the potential to have substantive financial impacts. Risk details are provided below. (see W4.2).

Note: Rubiales is not considered as a facility exposed to water risks that could have a substantive financial impact as the reduction in production associated to seasonal variability is already included in the production forecast (P50), so it is not considered as a deferred production

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Colombia	Orinoco
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Type of risk & Primary risk driver

Chronic physical	Seasonal supply variability/inter annual variability
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Primary potential impact

Reduction or disruption in production capacity

Company-specific description

According to the water risk assessment, the Department of Meta (where Ecopetrol’s produced water discharges to surface water are concentrated) experiences an extreme runoff reduction annually that could last from December to March, which significantly decreases available water supply in the region. There is an approximate decrease of 70%* in the runoff in this period in comparison to the annual average value. This scenario could also be intensified by climate variability events (e.g., El Niño Southern Oscillation) and climate change. A decrease in the runoff may lead to a flow reduction in wastewater-receiving water bodies to levels below their environmental flow. If this happens, Ecopetrol must suspend surface discharges and shutdown some oil wells. This situation could represent a temporary decrease in oil production in Castilla, Apiay and Suria fields**.

* Internal calculation using data from the National Water Study 2018 published by IDEAM (Institute of Hydrology, Meteorology and Environmental Studies)

** Rubiales is not considered in this sensitivity analysis as the reduction in production associated to this scenario is already included in the production forecast (P50), so it is not considered as a deferred production.

Timeframe

Current up to one year

Magnitude of potential impact

Medium

Likelihood

Very likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

215400000000

Potential financial impact figure - minimum (currency)

<Not Applicable>

Potential financial impact figure - maximum (currency)

<Not Applicable>

Explanation of financial impact

The inherent financial impact was estimated considering the potential revenue loss in one year due to the deferred production described above. The analyzed scenario considered a reduction in oil production of 27,000 barrels of oil equivalent per day-BOEPD (Castilla -17,000, Apiay and Suria -10,000) for 30 days due to the potential restrictions to perform surface discharges during the dry season as explained above. The financial impact figure was estimated considering an oil price of 66.8 USD/Bbl (Castilla exportation blend price) and an exchange rate of 3,981 COP/USD (20F exchange rate). According to Ecopetrol’s Risk Assessment Matrix (RAM Matrix), the magnitude of the potential impact for this risk is medium, given that the potential economic impact is between 50 and 150 million USD.

Primary response to risk

Adopt water efficiency, water reuse, recycling and conservation practices

Description of response

For these facilities, specific water management programs have been established to identify and implement efficient solution alternatives for their produced water management, from a value perspective. These programs are based on the following action lines (where it applies): (1) Water reinjection for oil recovery (when possible) or disposal; (2) Water reuse and quality enrichment, which seeks to identify alternatives and potential customers (receivers) close to the existing water discharge infrastructure, for agricultural and forestry irrigation systems. (3) Technology, which seeks to identify alternatives to minimize produced water brought to the surface. (4) Water treatment, which seeks to identify technologies to improve produced water quality (even below 1 ppm of oil and greases), to reduce pollutant loads discharged to receiving water bodies; and (5) basin protection and restoration. Further details will be presented in the section of water related opportunities, since these strategies seek both to reduce the risk associated with the potential impact on current production, and to enable production of contingent resources (increase production).

Cost of response

13774260000

Explanation of cost of response

The Colombian Petroleum Institute (ICP for its Spanish acronym) is Ecopetrol’s innovation and technology center where research on water-related issues is conducted. ICP’s efforts include a technology-enabled water management program that encompasses the conservation, recycling, reuse and valorization of produced water streams, as a measure to face rising water-related risk. In 2021, Ecopetrol invested USD 3.46 million (13.77 million of COP) in water-related topics in the ICP, which represents a 134% increase compared to 2020, reflecting the lead role of the technology and innovation in the achievement of Ecopetrol’s water neutrality strategy. Moreover, between 2022-2024, ICP’s budget for research on water issues is USD 12.5 million (49.76 million of COP). Further details will be presented in the section of water related opportunities.

W4.2c

(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	As previously mentioned, contracts with major water use are related to activities of well drilling, workover, general oil services, and operation and maintenance of production facilities. Water required for these activities is provided by Ecopetrol, so that their water-related risks are included in Ecopetrol's direct operation analysis. Also, it is important to mention that risk related to freshwater availability for drilling operation (in terms of both water use and discharges) has been decreased by the implementation of reverse osmosis and demineralization treatments for domestic and industrial wastewater, allowing the reuse of at least 90% of the treated water in activities such as drilling fluid preparation, equipment washing, pumps cooling and other industrial uses (see more details on W4.3). As mentioned before, about 80-90% of Ecopetrol's indirect consumption water footprint is related to the electrical energy supply. Although, it has been found that seasonal variability and climate phenomenon like "El Niño Southern Oscillation" could potentially impact energy supply due to the low level of the rivers that feed the hydroelectric generation system. Nevertheless, it is not expected that this situation may affect Ecopetrol's operation in the coming years.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity

Efficiency

Primary water-related opportunity

Improved field recovery factor

Company-specific description & strategy to realize opportunity

Ecopetrol, in its search for alternative options to achieve a balance between the oil production and the conservation and protection of the environment, in alliance with Agrosavia* (formerly named Corpoica) developed a research to evaluate the impact of the use of treated produced water from the Apiay and Castilla fields, in the irrigation of agricultural crops and pastures in the Sustainability Area in Agroenergy – ASA, located on the vicinity of the Castilla field, in the Municipality of Acacias, Meta. After 15 years of research, it was shown that there are no adverse effects from the use of treated produced water from Castilla in agricultural and forestry systems irrigation; on the contrary, crops have increased biomass growth index when compared to reference data. Based on these results, Ecopetrol scaled this alternative since 2019 as an additional destination for Castilla's produced water management field, averaging 40 thousand barrels per day in 2021.

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

71385000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact

In 2021, total reused water in the ASA enabled an estimated production of 735 barrels per day. Taking an average "Castilla exportation blend" price of oil (66.8 USD/Bbl) and an average exchange rate (3,981 COP/USD), the potential financial impact (in terms of revenues) is estimated at about 71 thousand million COP (USD \$17.9 million) in 2021.

Type of opportunity

Efficiency

Primary water-related opportunity

Improved water efficiency in operations

Company-specific description & strategy to realize opportunity

Advanced separation of fluids – SOWS Injection (Surface oil water separation): This technology seeks to enhance water quality for in-situ injection at the well clusters, using compact units and non-chemicals, allowing to increase the oil production that cannot be brought to surface due to lack of treatment capacity on existing facilities.

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

226518900000

Potential financial impact figure – maximum (currency)

738077400000

Explanation of financial impact

Financial impact was estimated considering probabilistic runs from the P10 (minimum), P50 (probable) and P90 (maximum) scenarios for the Castilla fields. The business case considers equipment purchase (CAPEX) and it does not consider fluid treatment tariffs. Estimated benefit was estimated between USD59.6 million and USD185.4 million (average exchange rate 3,981 COP/USD)

Type of opportunity

Resilience

Primary water-related opportunity

Increased resilience to impacts of climate change

Company-specific description & strategy to realize opportunity

Advanced separation of fluids – SOWS ultra-treatment: This technology seeks to cost-effectively treat produced water to agro-industrial reuse quality with the aim of protecting oil reserves and current production associated to surface discharges, especially in fields with high-water cut, like Rubiales, Castilla, Apiay and Suria. It also seeks to convert water into a circular economy resource for the agro-industrial sector in the Orinoquía region.

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

720561000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact

Financial impact was estimated for Castilla considering a 9 year scenario (2023-2031), in which 27.8 million of oil barrels could be enabled by the application of this technology. Financial benefit was estimated in US\$181 million after deducting CAPEX related to ultra-treatment facilities and transfer lines to irrigation zones (average exchange rate 3,981 COP/USD).

Type of opportunity

Resilience

Primary water-related opportunity

Increased resilience to impacts of climate change

Company-specific description & strategy to realize opportunity

Enrichment of treated wastewaters: This technology is based on adding nanofertilizers and microorganisms to the treated wastewater that could be reused in the irrigation of agro-industrial and wood-fuel plantations, generating a circular economy between oil and gas operations and the Orinoquía region, as well as decreasing impacts from in-situ fertilization activities.

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

19610000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact

Financial impact was preliminary estimated based on an agroindustry business case for the Rubiales field, where produced water is delivered to a thirty party for the irrigation of a wood-fuel plantation, which subsequently is used for electrical energy generation. This results in OPEX savings in water treatment and energy tariffs. It was assumed that water is treated by a third party, and Rubiales purchases the electrical energy generated.

Type of opportunity

Efficiency

Primary water-related opportunity

Improved water efficiency in operations

Company-specific description & strategy to realize opportunity

NanoRPM and ECRPM and NanoWW technologies are innovative developments for controlling water production at the source due to the modification of oil and water mobility and the aqueous-phase catchment on near wellbore in conditions of high water cuts (70% to 95%) and high fluids flows (higher than 3,000 barrels of fluids per day).

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Low-medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

184630000000

Potential financial impact figure – maximum (currency)

197580000000

Explanation of financial impact

The NPV estimates are based on a business case where this technology is implemented in 50 production wells where benefits are expected due to savings in water treatment, oil production increments, energy savings, lower atmospheric emissions, and increased surface facilities capacity for enabling more production.

Type of opportunity

Efficiency

Primary water-related opportunity

Improved water efficiency in operations

Company-specific description & strategy to realize opportunity

In drilling activities, reverse osmosis has been implemented for domestic and industrial wastewater treatment. This technology allowed Ecopetrol to reduce 40-50% of withdrawn volume from hydric resources, which resulted in transportation and disposal costs reduction. As an additional benefit, the transportation reduction has decreased the CO2 emissions.

Estimated timeframe for realization

1 to 3 years

Magnitude of potential financial impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

5000000000

Potential financial impact figure – maximum (currency)

7000000000

Explanation of financial impact

The financial impact comes from transportation savings from re utilized water, transportation and avoided disposal costs.

W5. Facility-level water accounting**W5.1**

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number

Facility 1

Facility name (optional)

Castilla

Country/Area & River basin

Colombia	Orinoco
----------	---------

Latitude

3.87

Longitude

-73.65

Located in area with water stress

No

Primary power generation source for your electricity generation at this facility

<Not Applicable>

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

77926

Comparison of total withdrawals with previous reporting year

Much lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

11

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

81

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

77834

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

77399

Comparison of total discharges with previous reporting year

Much lower

Discharges to fresh surface water

19056

Discharges to brackish surface water/seawater

0

Discharges to groundwater

58341

Discharges to third party destinations

2

Total water consumption at this facility (megaliters/year)

526

Comparison of total consumption with previous reporting year

About the same

Please explain

Total withdrawals and total discharges were 22% lower than the previous year, associated to the suspension of the Castilla surface discharge permit during the first half of 2021.

Facility reference number

Facility 2

Facility name (optional)

Suria

Country/Area & River basin

Colombia	Orinoco
----------	---------

Latitude

4.0432

Longitude

-73.4551

Located in area with water stress

No

Primary power generation source for your electricity generation at this facility

<Not Applicable>

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

4981

Comparison of total withdrawals with previous reporting year

About the same

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

4

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

236

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

4741

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

5008

Comparison of total discharges with previous reporting year

Please select

Discharges to fresh surface water

4259

Discharges to brackish surface water/seawater

0

Discharges to groundwater

748

Discharges to third party destinations

1

Total water consumption at this facility (megaliters/year)

-27

Comparison of total consumption with previous reporting year

Much lower

Please explain

Negative consumption due to the storm water that reaches produced water treatment pools, and which is not accounted as a withdrawal.

Facility reference number

Facility 3

Facility name (optional)

Apiay

Country/Area & River basin

Colombia	Orinoco
----------	---------

Latitude

4.0886

Longitude

-73.3826

Located in area with water stress

No

Primary power generation source for your electricity generation at this facility

<Not Applicable>

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

3600

Comparison of total withdrawals with previous reporting year

Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

149

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

3451

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

3465

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

3243

Discharges to brackish surface water/seawater

0

Discharges to groundwater

220

Discharges to third party destinations

2

Total water consumption at this facility (megaliters/year)

135

Comparison of total consumption with previous reporting year

Lower

Please explain

Lower total withdrawals and discharges due to a decrease in water production.

W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been third party verified?

Water withdrawals – total volumes

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water withdrawals – volume by source

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water withdrawals – quality by standard water quality parameters

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water discharges – total volumes

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water discharges – volume by destination

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water discharges – volume by final treatment level

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water discharges – quality by standard water quality parameters

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

Water consumption – total volume

% verified

76-100

Verification standard used

All the water figures reported in W5.1 are included in the Integrated Sustainable Management Report 2021, which was verified by the independent consultant "EY".

Please explain

<Not Applicable>

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?

Yes, we have a documented water policy that is publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

Row	Scope	Content	Please explain
1	Company-wide	<p>Description of business dependency on water</p> <p>Description of business impact on water</p> <p>Description of water-related performance standards for direct operations</p> <p>Reference to international standards and widely-recognized water initiatives</p> <p>Company water targets and goals</p> <p>Commitment to align with public policy initiatives, such as the SDGs</p> <p>Commitments beyond regulatory compliance</p> <p>Commitment to water-related innovation</p> <p>Commitment to water stewardship and/or collective action</p> <p>Commitment to safely managed Water, Sanitation and Hygiene (WASH) in local communities</p> <p>Acknowledgement of the human right to water and sanitation</p> <p>Recognition of environmental linkages, for example, due to climate change</p>	<p>Ecopetrol's Environmental Strategy which was published in 2021 includes a Water Neutrality strategic pillar, which aims to improve water efficiency to reduce water-related impacts and potential associated conflicts, promote water security, and ensure business sustainability due to the operation's dependence and potential impacts on water sources. The company has defined water neutrality as the balance between water required to operate and the actions to reduce the direct water footprint by promoting efficiency, reducing freshwater discharges and offsetting 100% of the freshwater withdrawn through conservation actions within basins. To achieve this, three (3) strategic lines were defined: 1) Operational efficiency in water management, which includes actions for reducing water required to operate, maximizing reuse, reducing pollutants loads discharged to surface water, and using alternative water sources such as municipal wastewaters, deep aquifers, and seawater; 2) Knowledge and technology integration, which focuses on the development of water technologies with the support of the Technology and Innovation Center-ICP (see further details in W4.3a); and 3) Sustainability and water security in the environment, which focuses on natural capital management for water regulation, fairness in the access to drinking water and sanitation for communities present in operational areas, Nature-based solutions/Natural climate solutions (e.g. Ecoreserveas), and water planning and governance (e.g. collective action for the management of water security and participation in water-related policy-making). In addition, the ongoing Comprehensive Water Management Strategy (published on 2018) complements the Water Neutrality strategic pillar. This strategy is articulated with the National Water Resources Policy of the Ministry of Environment and Sustainable Development, to the OECD recommendations on water management and the 6th Sustainable Development Goal 6 on Clean Water and Sanitation, which is one of the prioritized SDGs in the company's Corporate Responsibility Strategy.</p> <p>Estrategia_Ambiental.pdf</p> <p>GDE-N-002 Estrategia de Gestión del Agua Ecopetrol - Version P8.pdf</p>

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Board-level committee	The Board is comprised of six (6) Board Committees that support the Board’s review of the company’s strategy and its decision-making process. Board Committees work together as a system that oversees issues related to water matters from their specific perspective. The main objective of these Board Committees is to review the issues that the Board of Directors should be aware of in advance and issue recommendations. The Risk and Audit Committee oversees the risks related to the company and entails matters related to water, in the Business Risk “Inadequate management of climate change and water risk” and the “Operational disruption incidents risk due to environmental causes”. The Corporate Governance and Sustainability Committee supports the Board in the analysis and decision making related to the adoption of best practices in corporate governance and sustainability matters, which includes the company’s Technology, Environmental, Social and Governance (TESG) strategy, the sustainability and corporate responsibility agenda. Moreover, the HSE Committee is responsible for guiding the environmental strategy which includes the Water Neutrality pillar. Finally, the Technology & Innovation Committee has enabled, and reviewed TESG-related matters given the role of technology components to contribute to the generation of long-term value, promoting responsible, safe, and efficient operations, and harmonizing the relationship with the environment and with stakeholders.
Other, please specify (All nine (9) members of Ecopetrol’s Board of Directors)	All nine (9) members of Ecopetrol’s Board of Directors review and provide recommendations on water management.

W6.2b

(W6.2b) Provide further details on the board’s oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	Monitoring implementation and performance Overseeing major capital expenditures Providing employee incentives Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Reviewing and guiding corporate responsibility strategy Reviewing innovation/R&D priorities Setting performance objectives	<p>Ecopetrol’s BoD is responsible for monitoring and approving Ecopetrol Group’s Strategy. On June 2021, the Board reviewed Ecopetrol’s TESG (Technology, Environmental, Social and Governance) Strategy, which covered TESG topics related to, among others, energy transition, water management, hydrogen, climate change, air quality, decarbonization, circular economy, fugitive emissions. In August 2021, the Upper Management updated the Board with the new needs for Ecopetrol’s Group Strategy considering the different factors affecting the Oil & Gas industry, which would lead to the update of the Strategy 2020+. As a result, during 2021 the Board’s efforts were also aimed at updating Ecopetrol Group’s Strategy, by establishing, for the first time, a corporate strategy spanning longer than 10 years.</p> <p>On December 2021, the Board approved the 2040 Strategy which included TESG issues. This Strategy incorporates four strategic pillars: (i) Grow with the Energy Transition; (ii) Generate Value through TESG (Technology, Environmental, Social and Governance), (iii) Cutting-edge Knowledge, and (iv) Competitive Returns. The Board analyzed the Strategy and its pillars. The pillar “Generating value with TESG” includes two strategic purposes, one of which is harmonizing TESG under a transparent and ethic governance frame. One of the objectives of the mentioned purpose is to reach Water Neutrality by 2045 which includes a 66% reduction of freshwater withdrawals and zero water discharges.</p> <p>The Board of Directors also approved on December 2021 the results of materiality assessment of the TESG elements, which classified water as an exceptional material element. This means that Ecopetrol is or aspires to be a leader in water management practices and to contribute to the advancement thereof at a global level. The Board of Directors (through the Audit and Risk Committee) also verifies the establishment of the Corporate Risk Management System, and analyzes and recommends Business Risks for the approval of the Board, and follows-up on risk management. It is worth to mention that since 2020, water management is part of the Ecopetrol’s Business Risk Map.</p> <p>Furthermore, a water reuse indicator was incorporated into the Ecopetrol Group’s 2021 Balanced Scorecard* (TBG by its initial in Spanish), consisting in two sub-indicators: reuse of 22.4% of total produced water, and reuse of 34.2% of the freshwater withdrawn. The results of this indicator were presented in the scheduled ordinary meetings to the ExCo and to the Board of Directors as part of the monitoring of the company’s TBG results. *Note: The Balanced Scorecard -TBG- is used to monitor performance in terms of the Company’s objectives, indicators, targets, and milestones, ultimately affecting the Upper Management and employee’s variable compensation (further details are provided in W6.4).</p>

W6.2d

(W6.2d) Does your organization have at least one board member with competence on water-related issues?

	Board member(s) have competence on water-related issues	Criteria used to assess competence of board member(s) on water-related issues	Primary reason for no board-level competence on water-related issues	Explain why your organization does not have at least one board member with competence on water-related issues and any plans to address board-level competence in the future
Row 1	Yes	Competence of board members was evaluated considering their professional background and experience in water management related topics, registered in their resumes. As a result, one of the Ecopetrol's Board of Directors has expertise in energy transition, climate change and water and wastewater management. He has published the following: La economía del cambio climático y la opción Amazónica ["The economics of climate change and the Amazon option"], La economía del cambio climático ["The economics of climate change"] and Economía y Agua ["Economy and water"]. This information is publicly available at Ecopetrol's website.	<Not Applicable>	<Not Applicable>

W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)

Chief Executive Officer (CEO)

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

More frequently than quarterly

Please explain

Since water management is part of the Ecopetrol's Business Risk Map, the CEO holds the highest-ranking position with water-related risk management and audit responsibilities at an operational level; in this position, the CEO reports directly to the Audit and Risk Committee of the Board of Directors. Furthermore, the CEO is the main responsible for the achievement of company's TBG goals (Balanced Scorecard, by its acronym in Spanish) and on communicating progress to the Board; as mentioned before, in 2021 Ecopetrol included a water management goal in its TBG, which were presented in the scheduled monthly ordinary meetings to the ExCo and to the Board of Directors. The TBG is used to monitor performance of the company's objectives, indicators and milestones, ultimately affecting Senior Management and employee's variable compensation.

Name of the position(s) and/or committee(s)

Chief Operating Officer (COO)

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

More frequently than quarterly

Please explain

Ecopetrol's Chief Operating Officer (COO) implements the Group's strategy while making sure challenges arising from climate change and water are considered. As outlined within their specific roles and responsibilities, the COO establishes assurance and risk mitigation actions within the Company's operations and ensures the accomplishment of objectives and goals of Occupational Health, Industrial Safety and Processes; Corporate Responsibility; and Social and Environmental Management of the operations, included within the scope of their management, seeking an operation that is free of occupational incidents, with secure processes and a safe environment.

Name of the position(s) and/or committee(s)

Other, please specify (Vice Presidency of HSE (Health, Safety and Environmental))

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

Annually

Please explain

Ecopetrol's organizational structure establishes the Vice Presidency of HSE (Health, Safety and Environmental) which is responsible for assessing and managing water risks and opportunities. He is the main responsible of environmental obligations through use and exploitation of natural resources and the collection of water from watersheds is established in control and monitoring instruments (environmental licenses, environmental management plans, and environmental permits). Compensation for the use of natural resources and compulsory investment of not less than 1% in the water basins subject to water withdrawals.

Name of the position(s) and/or committee(s)

Other, please specify (Vice Presidency of Corporate Strategy and New Businesses)

Responsibility

Other, please specify (Designs and implements the energy transition roadmap, provides analysis and defines the energy transition scenarios)

Frequency of reporting to the board on water-related issues

As important matters arise

Please explain

Designs and implements the energy transition roadmap, provides analysis and defines the energy transition scenarios.

Name of the position(s) and/or committee(s)

Other C-Suite Officer, please specify (Vice Presidency of Sustainable development)

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

As important matters arise

Please explain

The responsible in drinking water and basic sanitation in the communities, allocated to wastewater treatment projects, construction and implementation works for drinking water supply, and the management and disposal of solid and hazardous waste

Name of the position(s) and/or committee(s)

Other C-Suite Officer, please specify (Upstream Vice Presidency)

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

As important matters arise

Please explain

Improving operational efficiency in water management (leveraging on the implementation of technology and the generation of knowledge), reducing freshwater catchments and discharges by maximizing internal reutilization and the use of alternative water sources (e.g., municipal wastewater, seawater, brackish water from deep aquifers, etc.), and the reutilization of produced water in other sectors (e.g., agriculture).
Reduction of the volume of fresh water withdrawn for industrial use. Completion of the Plans for Reconversion to Clean Technologies in the Management of Discharges which imply eliminating the discharge of treated produced water, previously discharged into surface bodies

Name of the position(s) and/or committee(s)

Other C-Suite Officer, please specify (Refining and Industrial Processes Vice Presidency)

Responsibility

Assessing water-related risks and opportunities
Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

As important matters arise

Please explain

Improving operational efficiency in water management (leveraging on the implementation of technology and the generation of knowledge), reducing freshwater catchments and discharges by maximizing internal reutilization and the use of alternative water sources (e.g., municipal wastewater, seawater, brackish water from deep aquifers, etc.).
Suspension of sensitive water sources for the two (2) refineries.

Name of the position(s) and/or committee(s)

Other C-Suite Officer, please specify (The Executive Committee (ExCo))

Responsibility

Other, please specify (Approve the environmental, health and safety strategy for the Ecopetrol Group, which is contained in the Corporate Strategy approved by the Board of Directors)

Frequency of reporting to the board on water-related issues

Annually

Please explain

The ExCo is a Senior Management Committee that is a part of Ecopetrol' s collegiate bodies and is a management tool that supports Ecopetrol' s Chief Executive Officer in his activities. This Committee monitors and approves strategic issues of the corporate areas as well as the goals, objectives and business initiatives that are transversal to more than one of the Ecopetrol Group' s segments (Upstream, Midstream, Downstream, and Commercial). This Committee meets at least eight times in a year and occasionally invites other high-level employees to discuss more technical matters related to the water strategy.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	Yes, the company has a short-term incentive "Performance-Based Variable Compensation" (CVR for its acronym in Spanish) linked to the annual achievement of business objectives and goals established in the Balanced Scorecard (TBGs); this incentive applies to all employees of the company, and for 2021 the balanced scorecard included a water reuse goal, consisting in two indicators: reuse of 22.4% of total produced water, and reuse of 34.2% of the freshwater withdrawn. Both targets were achieved in 2021, with a compliance of 106% and 133%, respectively.

W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Chief Executive Officer (CEO) Chief Financial Officer (CFO) Chief Operating Officer (COO) Chief Purchasing Officer (CPO) Chief Risk Officer (CRO) Chief Sustainability Officer (CSO) Other C-suite Officer (The Short-Term Incentive (STI) applies to all employees)	Reduction of water withdrawals Improvements in efficiency - direct operations Improvements in waste water quality - direct operations	To align the interests of management and our overall strategy, climate change and water related metrics are now included in the variable compensation program of senior management. The Short-Term Incentive (STI) applies to all employees and is recognized based on the results of the strategic objectives and the goals of the Balanced Scorecard (TBGs). It also considers other factors such as HSE, ethical and disciplinary events, internal control failures and the individual performance of each employee. In 2021, 55% of the variable compensation program of senior management was tied to TSEG targets, which include metrics related to climate, water management, renewable energies, and gas strategy. In 2021 Ecopetrol's Group Balanced Scorecard included a water reuse goal, consisting in two indicators: reuse of 22.4% of total produced water, and reuse of 34.2% of the freshwater withdrawn. This goal aimed to minimize Ecopetrol's freshwater withdrawals and discharges, thus reducing the pressure that the company puts on natural resources, especially in areas with high rates of water use.
Non-monetary reward	Chief Executive Officer (CEO) Chief Financial Officer (CFO) Chief Operating Officer (COO) Chief Purchasing Officer (CPO) Chief Risk Officer (CRO) Chief Sustainability Officer (CSO) Other, please specify (All employees)	Reduction of water withdrawals Improvements in efficiency - direct operations Improvements in waste water quality - direct operations Implementation of employee awareness campaign or training program	Ecopetrol has an internal acknowledgment system where any employee can recognize actions, behaviors or results of their co-workers. As water is an exceptional element of the TSEG pillar, it is becoming more frequent the conceptualization and implementation of new initiatives proposed by employees, seeking to improve water efficiency in both operational and administrative areas, that end up being recognized in our acknowledgment system. This type of acknowledgment promotes the improvement of the workers' organizational behaviors and competencies, and can be considered by the employees's leader when making the individual evaluation. The company also develops specific training programs on environmental issues (including water topics) to its employees, which promotes the improvements in water-related competences. In 2021 more than 500 workers were trained in water-related issues.

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?

Yes, direct engagement with policy makers

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

The Water Management Strategy establishes these action lines: Establish alliances for knowledge acquisition to strengthen decision-making processes affecting the territories where we operate; Identify and participate in processes of concertation, formulation, consultation, implementation, and monitoring of water regulations; Analyze technical, economic and environmental impacts of regulatory changes and suggest modification; Determine adjustments of projects/operations due to new water related requirements. Also, Ecopetrol has a corporative business risk related to changes in the regulatory framework, which covers water-related issues, and includes the following actions: framework and procedure for regulatory strategy; regulatory strategy follow-up; collaborative work with operative areas; systematic review of bills and regulations related to HSE; review and update of internal procedures; review of best practices in government relations; internal communications protocol. In 2021 Ecopetrol participated in the processes of modification and updating of water-related regulations such as Res. 1256-2021, which regulates the use of wastewater and allow us to maximize the internal water reuse as well as to continue with the reuse of produced water for agroforestry crop irrigation. Also, the Res. 699-2021 which establishes quality limits for domestic wastewater discharges to soil, where the company provided numerous quality reports from its assets and made comments on draft standards

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)
 22-10205-1_D15.6_ECOPEPETROL+S.A._20-F.pdf

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	21-30	Ecopetrol has recently announced its 2040 strategy which includes water as part of its long-term business objectives. During 2020, Ecopetrol reviewed the structure to manage ESG issues, considering emerging international trends. As a result, the company developed a TESG (Technology, Environmental, Social and Governance) Strategy which has been currently integrated into the 2040 business strategy. The strategy's starting point was a comprehensive materiality analysis which resulted on the identification of water as an "exceptional" element, due to its significant impact (positive or negative) on Ecopetrol's ability to generate value and/or a significant relevance to stakeholders. "Exceptional" elements are those through which Ecopetrol seeks to stand out and be recognized worldwide for best practices implementation and cutting-edge technological advances Water issues considered in the TESG materiality assessment were: 1) effluents: temporary restrictions for discharging treated wastewaters to surface waterbodies (caused by a decrease in rainfall that drives to a reduction in waterbodies flows and thus its assimilation capacity) and as a long-term objective, zero discharges by 2045; and 2) required water to operate: freshwater unavailability for both industrial uses and enhanced oil recovery, especially in water-stressed areas and as a long-term objective an estimated 66% reduction in freshwater withdrawals by 2045.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	21-30	To achieve the long-term objectives stated above, Ecopetrol has established the Water Neutrality roadmap, which aims to improve water efficiency to reduce water-related impacts and potential associated conflicts; promote water security; and ensure business sustainability due to the operation's dependence and potential impacts on water sources. Ecopetrol has defined water neutrality as the balance between water required to operate and the actions to reduce the direct water footprint by promoting efficiency, reducing freshwater discharges and offsetting 100% of the freshwater withdrawn through conservation actions within basins. For achieving it, 3 strategic lines were defined: 1) Operational efficiency in water management, which includes actions for reducing water required to operate, maximizing reuse, reducing pollutants loads discharged to surface water, and using alternative water sources such as municipal wastewaters, deep aquifers, and seawater; 2) Knowledge and technology integration, which focuses on the development of water technologies with the support of the Technology and Innovation Center-ICP (see further details in W4.3a); and 3) Sustainability and water security in the environment, which focuses on natural capital management for water regulation, fairness in the access to drinking water and sanitation for communities present in operational areas, Nature-based solutions/Natural climate solutions (e.g. Ecoreservas), and water planning and governance.
Financial planning	Yes, water-related issues are integrated	21-30	Ecopetrol's 2040 Strategy plans to allocate around USD200 million annually to achieve the long-term water objectives set. This number is a high-level estimate of investments needed for water treatment initiatives. During 2022, Ecopetrol's financial team will work on maturing these initiatives and identifying additional initiatives aligned with water issues considered in the TESG materiality assessment. This identification and maturity might cause changes on the current estimate of capital allocation.

W7.2

(W7.2) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Row 1

Water-related CAPEX (+/- % change)
 -22.78

Anticipated forward trend for CAPEX (+/- % change)
 166.33

Water-related OPEX (+/- % change)
 4.49

Anticipated forward trend for OPEX (+/- % change)
 8.77

Please explain

OPEX: Expense increase mainly due to cost increase in upstream activities.

CAPEX: Information based on projects of the investment plan approved by the Board of Directors. Capex expense decreased in 2021 vs. 2020 due to two (2) projects whose greatest execution was presented in 2020, related to the construction of two (2) water treatment plants, one in the Barrancabermeja Refinery and another in the Casabe Field for compliance with the industrial water treatment regulations. An increase is expected in 2022 due to new projects in the investment plan, such as the water injection in Castilla, the Yariguí improved water injection expansion and production water management of the Piedemonte oil fields, mainly.

W7.3

(W7.3) Does your organization use scenario analysis to inform its business strategy?

	Use of scenario analysis	Comment
Row 1	Yes	Ecopetrol considers two (2) scenarios and two (2) sensitivities for Energy Transition. i) Reference scenario ii) Accelerated transition scenario; and i) Decelerated sensitivity ii) 2°C sensitivity. Between 2022-2023 Ecopetrol will conduct additional analysis to understand the implications of climate change in its strategy and will construct climate changes scenarios aligned with the RCP of AR6 (IPCC Assessment Report).

W7.3a

(W7.3a) Provide details of the scenario analysis, what water-related outcomes were identified, and how they have influenced your organization’s business strategy.

	Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy
Row 1	Water-related Climate-related Socioeconomic	Ecopetrol considers two (2) scenarios and two (2) sensitivities for Energy Transition. For each of these scenarios the most relevant parameters considered were GDP and population growth. The assumptions used where: i) Reference scenario: Includes technological expectations (proved and the ones with the highest development investment), demand (observable and foreseeable trends) and regulatory patterns (existent and those necessary to stimulate technological adoption) ii) Accelerated transition scenario: highest energy efficiency and penetration of renewable energy due to tighter regulation in terms of emissions and cost reduction in parallel with greener consumption patterns and new technological developments. iii) Decelerated sensitivity: considers a slower transition due to economic issues which translates in a reprioritization of policies and regulations towards more economy-driven measures vs. emissions. iv) 2°C sensitivity: considers radical changes in consumption, regulation, and technology to achieve decarbonization and global warming goal of 2°C.	Ecopetrol monitors the occurrence probability of extreme weather events based on monthly alerts, which are issued by the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM). Those alerts are related to the possible occurrence of El Niño and La Niña phenomena, which triggers an action plan when an occurrence probability exceeds 80%. In the case of other risks that can potentially generate losses and damage affecting the company's financials, such as water shortages, floods, forest fires, storms and hurricanes, the rising sea levels, Ecopetrol has implemented an adaptation plan to variability and climate change in six regions of Colombia.	Due to the importance of water as a strategic enabler, water is included as an exceptional element within TESG which is one of the 4 drivers of Ecopetrol’s 2040 strategy. In the 2040 strategy., Ecopetrol has included three (3) main aims of strategic actions in the Water Neutrality Roadmap. These include: 1) operational efficiency in water management, which includes initiatives of alternative sources and water reuse to achieve results such as an estimated 66% reduction of water freshwater intake for industrial purposes in Ecopetrol’s Upstream and Downstream and zero discharges to freshwater by 2045. 2) Integration of knowledge and technology, which focuses on the development of water technologies with the support of the Technology and Innovation Center-ICP (see further details in W4.3a). 3) Watershed protection with initiatives to offset the 34% remaining freshwater withdrawal.

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

No, but we are currently exploring water valuation practices

Please explain

The analysis carried out in Ecopetrol on the Water Income Statement has made it possible to monitor the cost included in water related investments and to focus on the characterization of the specific oil fields with specific problems in terms of water demand (collection) or supply (shedding).

W7.5

(W7.5) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Definition used to classify low water impact	Primary reason for not classifying any of your current products and/or services as low water impact	Please explain
Row 1	Yes	Definition provided by the GRI standard, disclosure 303-2 (2016): Water sources significantly affected by water withdrawal: withdrawals that account for an average of five (5) percent or more of the annual average volume of the water body.	<Not Applicable>	During 2021, no surface bodies of water were affected by withdrawals, given that the ratio of 5% between the volume collected and the available surface supply of a given hydrographic subzone was not exceeded.

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Company-wide targets and goals Business level Goals are monitored at the corporate level Site/facility specific targets and/or goals Country level targets and/or goals	Targets are monitored at the corporate level	In 2021, targets were updated for the 2022-2024 period as a result of collaborative work between operative areas and the Vice Presidency of HSE and considering Ecopetrol's TESG Strategy, development plans for the upstream and downstream segments and sector's benchmark. Targets are built and agreed with each operating asset, and then aggregated to obtain the business level and company-wide targets. The following goals and targets were defined, and will allow the company to achieve the goal of water neutrality (measured against the base year 2019): Freshwater withdrawals reduction: -14% by 2022, aiming towards -66% by 2045; Reuse of produced water: 28.8% by 2022; Reuse of industrial water: 41.2% by 2022; Discharges to surface freshwater bodies: aiming to -100% by 2045; Offsetting the remaining freshwater withdrawal to achieve the water neutrality goal by 2045. Targets are monitored monthly by the corporative Vice Presidency of HSE, and some could be part of the Group's Balanced Scorecard (TBG GE for its acronym in Spanish). Ecopetrol sets water-related targets and goals to reduce its water footprint and its dependence to freshwater availability, which allows to manage physical, regulatory and reputation risks at every basin where each operation or project is developed, and to increase the resilience of operations in territories that progressively are increasing social expectations and policies for the generation of value in the environment and society.

W8.1a

(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.

Target reference number

Target 1

Category of target

Water withdrawals

Level

Company-wide

Primary motivation

Risk mitigation

Description of target

In 2021 Ecopetrol established a Water Neutrality Roadmap, which seeks to reduce the direct water footprint as technically and economically feasible (water withdrawal and freshwater discharges) and to replenish at least 100% of the remaining freshwater consumed through offsetting actions, generating a positive impact in each basin where its operations are carried out. The water neutrality roadmap includes reductions in freshwater withdrawals aiming for a 66%* reduction by 2045, gradually decreasing Ecopetrol's dependence on freshwater resources.

*Compared to a 2019 baseline

Quantitative metric

% reduction in total water withdrawals

Baseline year

2019

Start year

2021

Target year

2030

% of target achieved

13

Please explain

In 2021, 40.1 Mm3 (million of cubic meters) of freshwater were withdrawn from surface sources, groundwater, aqueducts and external suppliers. This figure corresponds to a 13% reduction compared to 2019, which means that the company achieved 20% of its reduction target by 2045 .

Target reference number

Target 2

Category of target

Water recycling/reuse

Level

Company-wide

Primary motivation

Risk mitigation

Description of target

Percentage of produced water reuse: this indicator is calculated as the ratio between reused produced water and total produced water. Results show a proportion of produced water that currently has an additional use beyond water disposal. Maximizing the reuse of produced water is one of Ecopetrol's main strategies to minimize both freshwater withdrawals and surface water discharges, and consequently reduce water-related risks and impacts generated especially in basins with high water uses and high vulnerability to shortages.

Quantitative metric

Other, please specify (% of freshwater water reused)

Baseline year

2020

Start year

2021

Target year

2021

% of target achieved

100

Please explain

In 2021, 94.4 Mm3 (million of cubic meters) of produced water were reused, which represents an increase of 18% compared to 2020, mainly caused by an increased performance in the reinjection for oil recovery in the Castilla, Apiay, Suria and Chichimene oil fields. The percentage of produced water reused, calculated as the ratio between the volume of reused produced water and the total produced water generated was 24%, achieving 106% compliance to the 2021 target (22.4%)

Target reference number

Target 3

Category of target

Water recycling/reuse

Level

Company-wide

Primary motivation

Risk mitigation

Description of target

Percentage of freshwater reuse: this indicator is calculated as the ratio between freshwater water reused/recycled and total freshwater withdrawals. This is an indicator of water efficiency and demonstrates Ecopetrol's efforts in reducing total freshwater withdrawals and discharges especially in the downstream segment.

Quantitative metric

Other, please specify (% of freshwater reused)

Baseline year

2020

Start year

2021

Target year

2021

% of target achieved

100

Please explain

In 2021, Ecopetrol reused and recirculated 16.9 million m3 of effluents resulting from the use of withdrawn water. The percentage of reuse, calculated as the relationship between the volume of reused-recirculated water and the total volume withdrawn was 42%, (+15 percentual points compared to 2020), achieving 133% compliance to the 2021 target (34.2%).

W8.1b

(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.

Goal

Providing access to safely managed Water, Sanitation and Hygiene (WASH) in local communities

Level

Company-wide

Motivation

Commitment to the UN Sustainable Development Goals

Description of goal

Ecopetrol's goal is to increase the access to drinking water and sanitation of approximately 900 thousand people by the end of 2022. This initiative is part of Ecopetrol's shared prosperity strategy, which contributes to the fulfilment of the United Nations Sustainable Development Goals (SDG) in the components of (3) Good Health and Well-Being, (6) Clean Water and Sanitation and (11) Sustainable Cities and Communities, as well as the reduction of potential water-related conflicts (reputational risks). This indicator is part of strategic line of Sustainability and water security in the environment.

Baseline year

2019

Start year

2020

End year

2022

Progress

During 2021, Ecopetrol supported the execution of two projects associated with drinking water solutions; one on the municipality of Riohacha (La Guajira) through the expansion of distribution networks, improving the pressure and coverage of the service to more than 13,710 people; and the other, through the construction of infrastructure to protect, stabilize and improve access ways to the collection system of the urban aqueduct of Puerto Gaitán, benefiting 8,200 inhabitants. In addition, to contribute to the proper management and treatment of wastewater, Ecopetrol supported the execution of a basic sanitation project in Cantagallo, Bolívar, which includes the construction of nearly 150 Sanitary Units, benefiting 675 inhabitants. Similarly, four projects are being carried out that will benefit more than 900,000 people by 2022; where the metropolitan aqueduct of the municipalities of Cúcuta, Villa del Rosario and Los Patios stands out; the construction of the San Silvestre Wastewater Treatment Plant in Barrancabermeja; and the implementation of four individual water purification solutions in educational institutions in the municipality of Puerto Wilches. In the same way, in a stewardship work with national and municipal authorities, three agreements were signed to provide drinking water to more than 18,700 people, in the municipality of Tibú (5,792 beneficiaries), Alto de Pompeya (district in the municipality of Villavicencio with 1,762 beneficiaries) and Guamal (11,217 people)

Goal

Engagement with public policy makers to advance sustainable water management and policies

Level

Company-wide

Motivation

Risk mitigation

Description of goal

Ecopetrol seeks to contribute to policy, standards and guidelines development as well as other instruments related to integrated water and natural capital management. In this sense, Ecopetrol participates in the early stages in the preparation and discussion of regional management plans (POT for its acronym in Spanish) and basin management plans (POMCAS for its acronym in Spanish).

Baseline year

2019

Start year

2021

End year

2021

Progress

Ecopetrol actively participates in providing feedback to regional and local authorities on water planning and management regulations in sub-basins within the area of influence. During 2021, Ecopetrol participated in the working groups organized by the Ministry of Environment and Sustainable Development - MADS in conjunction with ANDI (Industries' National Association) and ACP (Colombian Petroleum association), to update the POMCAS (basin management plans) guidelines. Ecopetrol is also part of seven (7) river basin councils: Sogamoso, Opón, Cocorná, Lebrija Medio, Guavio, Cusiana and Negro. On 2021 a study carried out by Ecopetrol and the Ministry of Environment and Sustainable Development to establish a methodology to define wetland areas at a 1:25,000 scale concluded. In addition, a cartographic window for its implementation was developed for the municipalities of Barrancabermeja and Puerto Wilches. With this new tool, Ecopetrol expects to formulate a Main Ecological Structure Proposal for the Municipality of Puerto Wilches. During 2021 an Environmental Management Plan for the San Silvestre Wetland, was developed within the framework of an Agreement between the Regional Environmental Authority (Corporación Autónoma de Santander –CAS) and Ecopetrol.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?

Yes

W9.1a

(W9.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W1 Current state	Water withdrawals, Water discharges, and Water Consumption	ASAE3000	In 2021, the independent consultant "EY" verified the information contained in the Integrated Sustainable Management Report (ISMR) of Ecopetrol S.A. for the period between January 1 to December 31, 2021 (see Page 378 of the ISMR). All the water figures reported in this questionnaire are consistent with the Integrated Sustainable Management Report 2021.

W10. Sign off

W-FI

(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

W10.1

(W10.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	Vicepresident of Corporate Affairs and Secretary General	Other C-Suite Officer

W10.2

(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].

Yes

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms