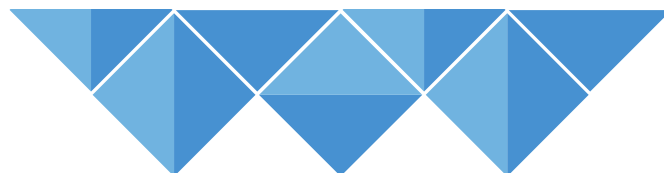




WATER DYNAMICS IN VENEZUELA

Mapping of surface water between 2000 and 2024
Collection 3



MAPBIOMAS
[AGUA]



MAPBIOMAS
VENEZUELA

To learn more:
venezuela.mapbiomas.org

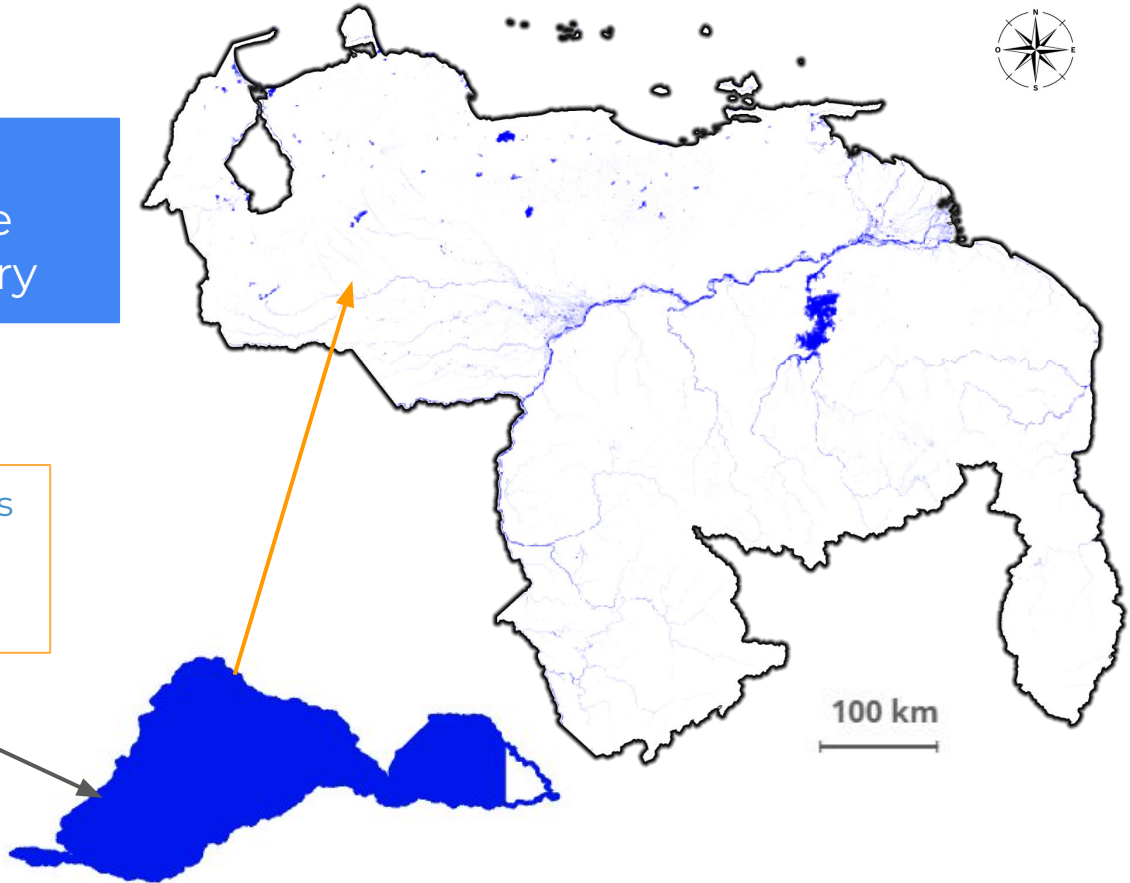


EXTENSION OF SURFACE WATER IN VENEZUELA BY 2024

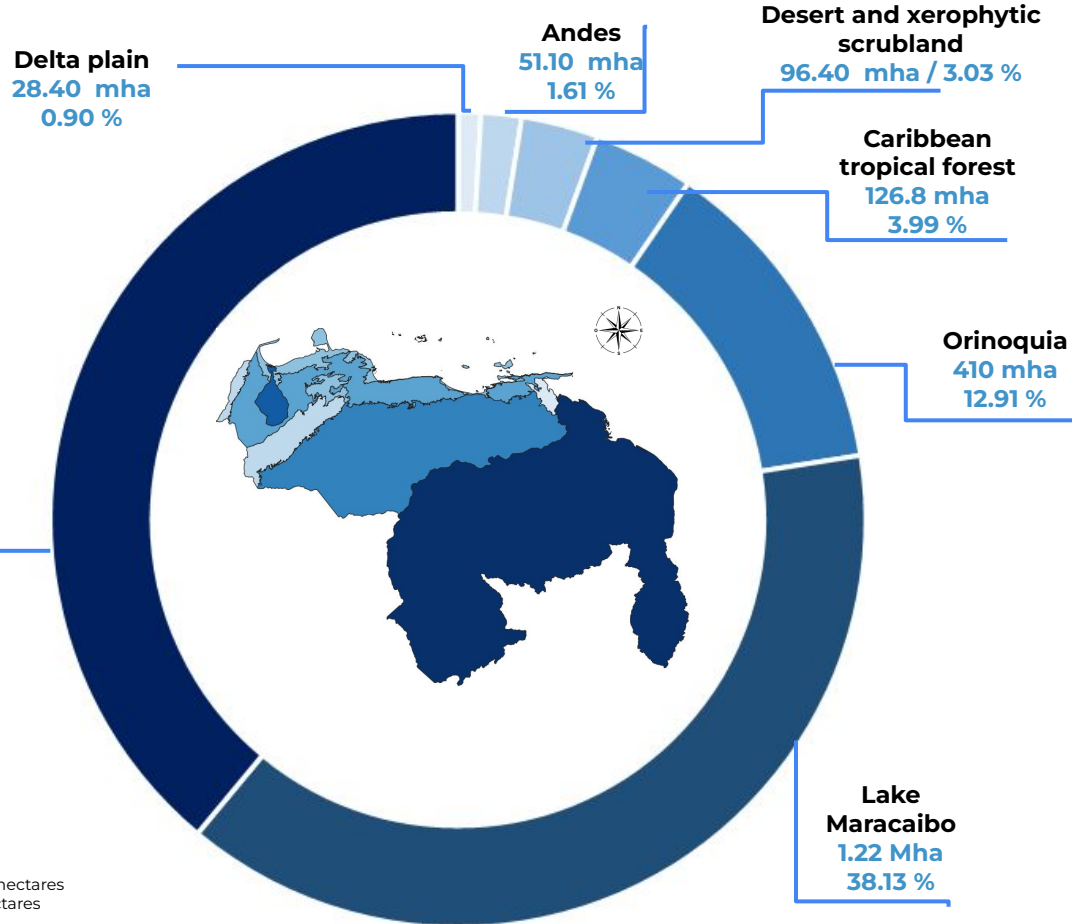
In 2024, Venezuela has a water surface area of 3.17 million hectares (Mha).

3 %
of the
territory

Approximately 0.87 times
the territory of Barinas
state (3.52 Mha)



EXTENSION OF SURFACE WATER BY BIOMES - 2024

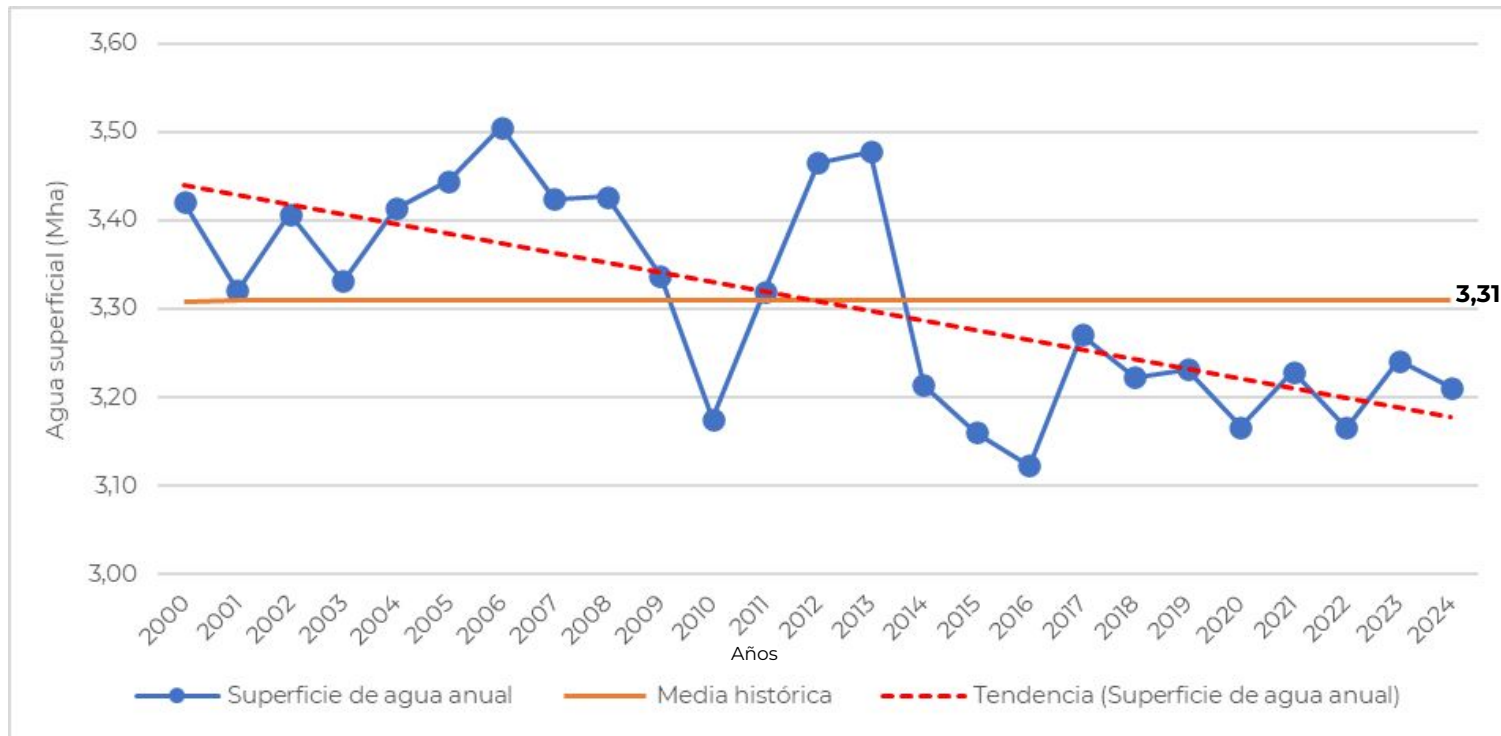


The largest proportion of water surface is found among biomes:
Amazon y Lake Maracaibo with 2.46 Mha / 76.88 %

The Amazon biome is home to the **Orinoco River**, the country's main waterway, and the delta that flows from it.

mha = thousands of hectares
Mha = millions of hectares

SURFACE WATER TREND IN VENEZUELA 2000 - 2024

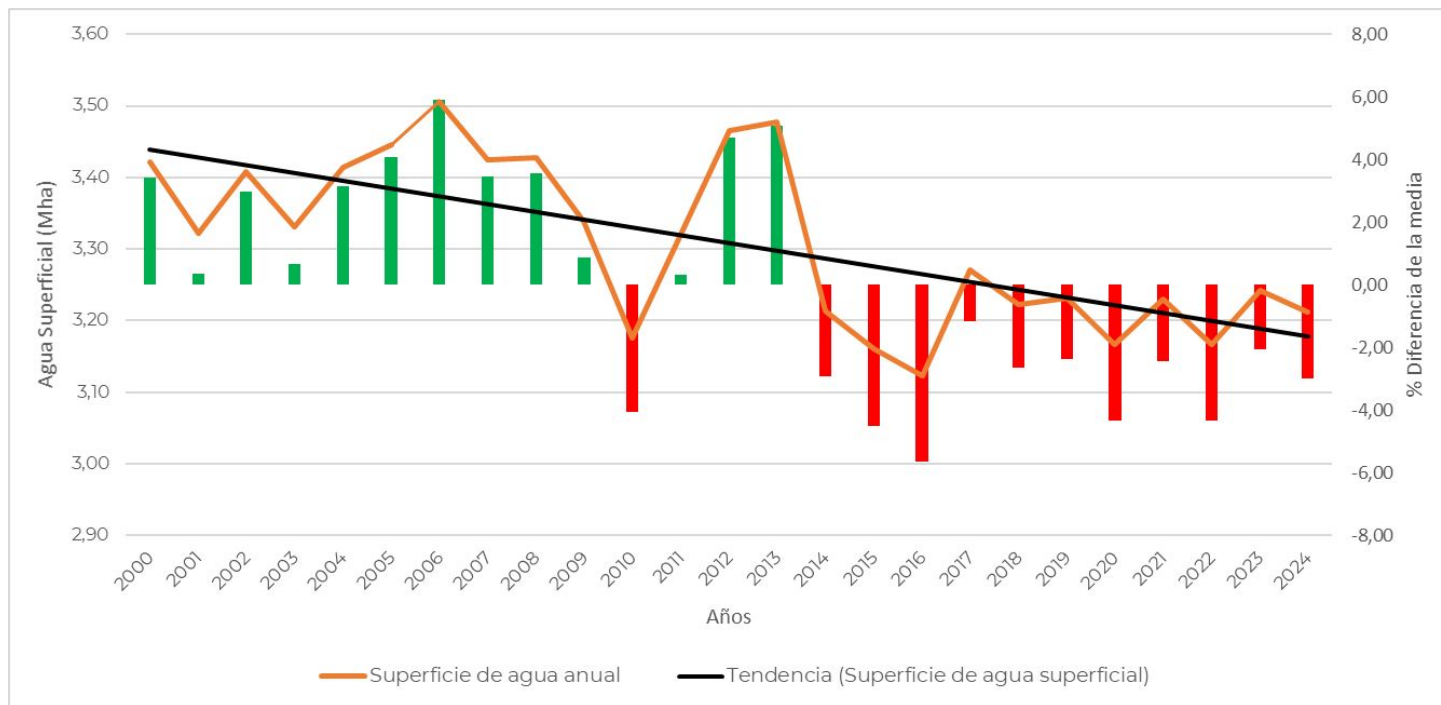


By **2024** the detected water surface area was un **0.94 % less** than in **2023** and was **3 % below the historical average**.

During the period **2000 - 2024** there was a trend toward **surface water loss** at the national level, with an average rate of **- 8.56 ha/year**.

SURFACE WATER TRENDS IN VENEZUELA

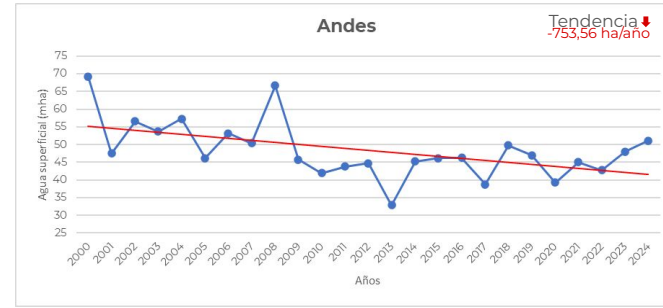
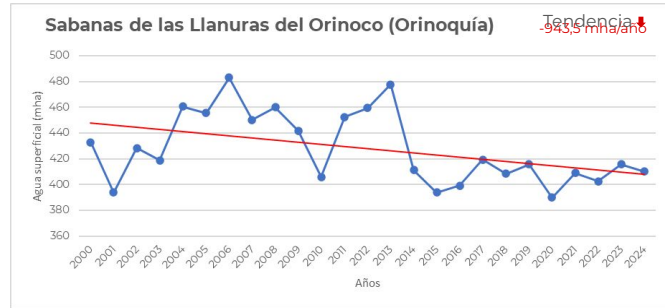
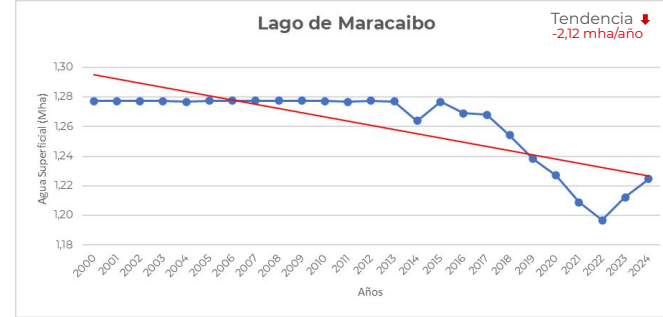
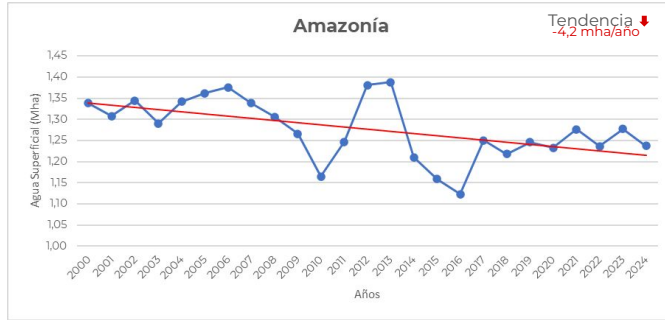
Gains and losses between 2000 y 2024



Over the last 10 years, the water surface area remained **below** the historical average.

The **largest** difference from the average **gain** was **in 2006** with **3.5 Mha**, and the **largest loss** was **in 2016** with **3.12 Mha**

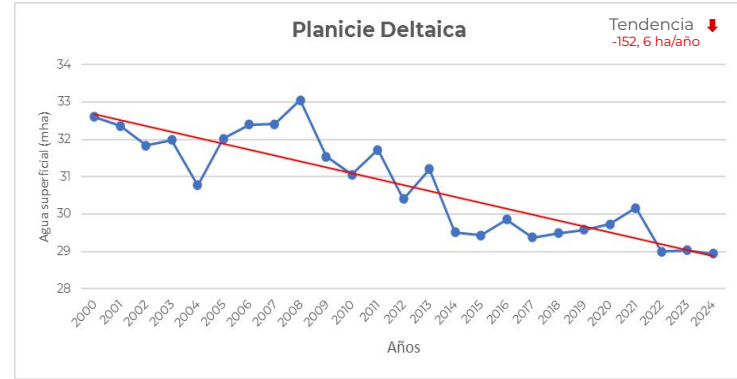
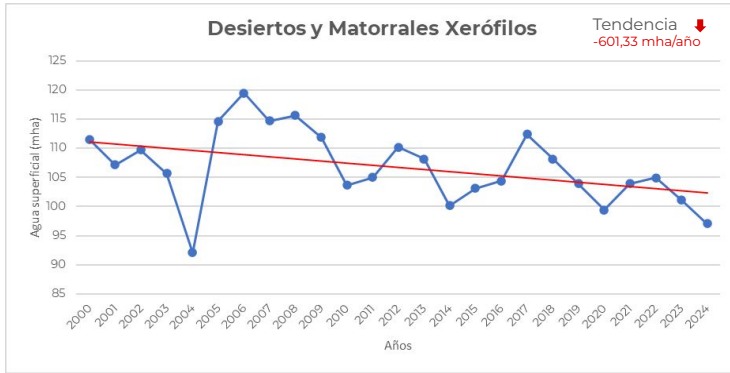
SURFACE WATER TREND BY BIOME 2000 - 2024



The biomes with the **greatest loss** of surface water are the **Amazon** and **Lake Maracaibo**, known for having the largest water reserves in Venezuela.

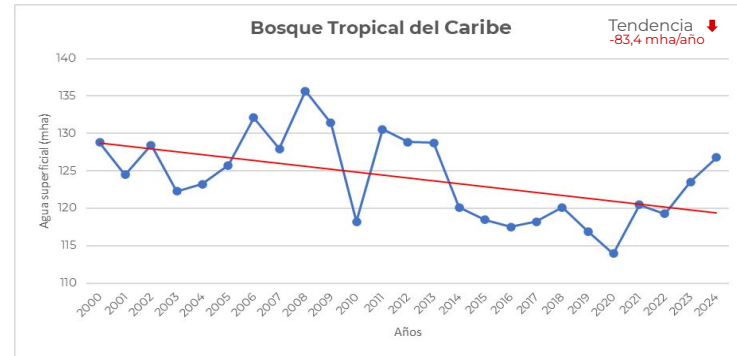
The **Lake Maracaibo**, **Orinoquía**, and **Andes** biomes are expected to **gain water starting in 2022**.

SURFACE WATER TRENDS BY BIOME (2000 - 2024)



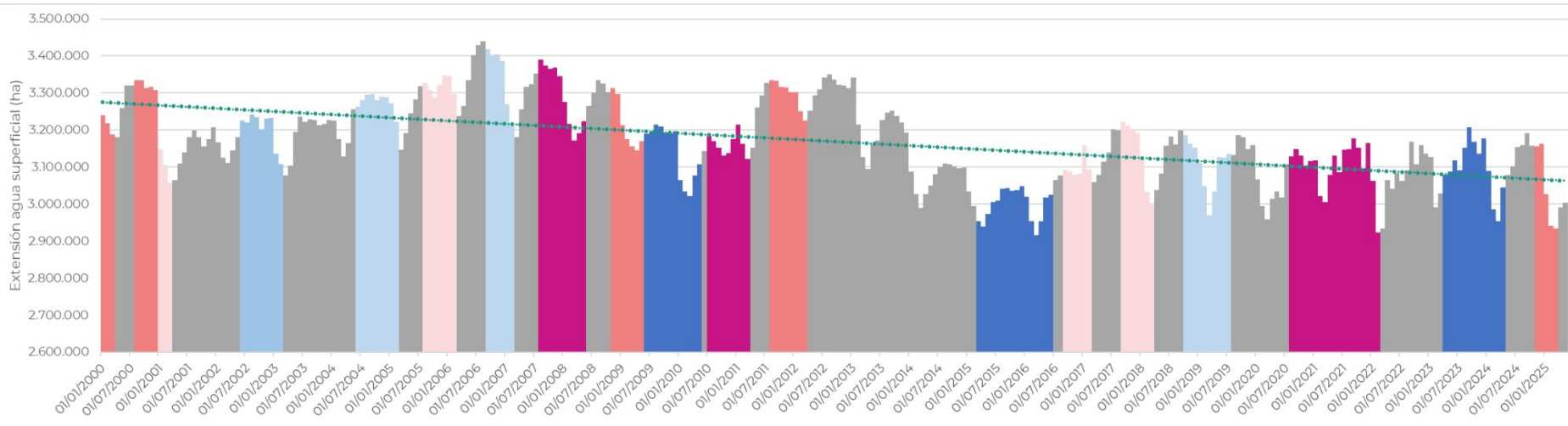
All biomes in Venezuela tend to **lose** surface water.

The **Caribbean Tropical Forest** biome, **has gained 7.5 mha** since 2022.



SURFACE WATER TRENDS IN VENEZUELA

Extent of surface water and relationship with phenomena El Niño and La Niña

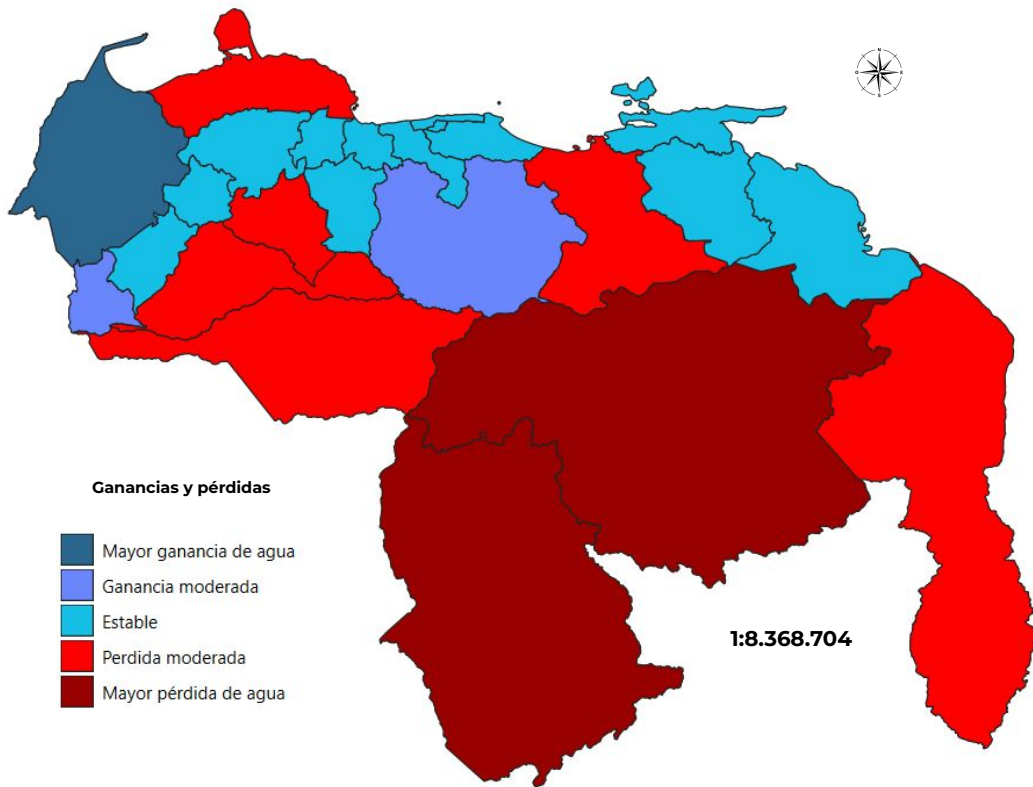


- Niña Débil
- Niña Moderada
- Niña Fuerte
- Niño Débil
- Niño Moderado
- Niño Fuerte

March 2016 was the month with the **lowest** surface water extent in the entire period (**-12% compared to the average**) a year with a strong El Niño event.

SURFACE WATER TREND IN VENEZUELA

Gains and losses of Venezuelan states between 2023 and 2024

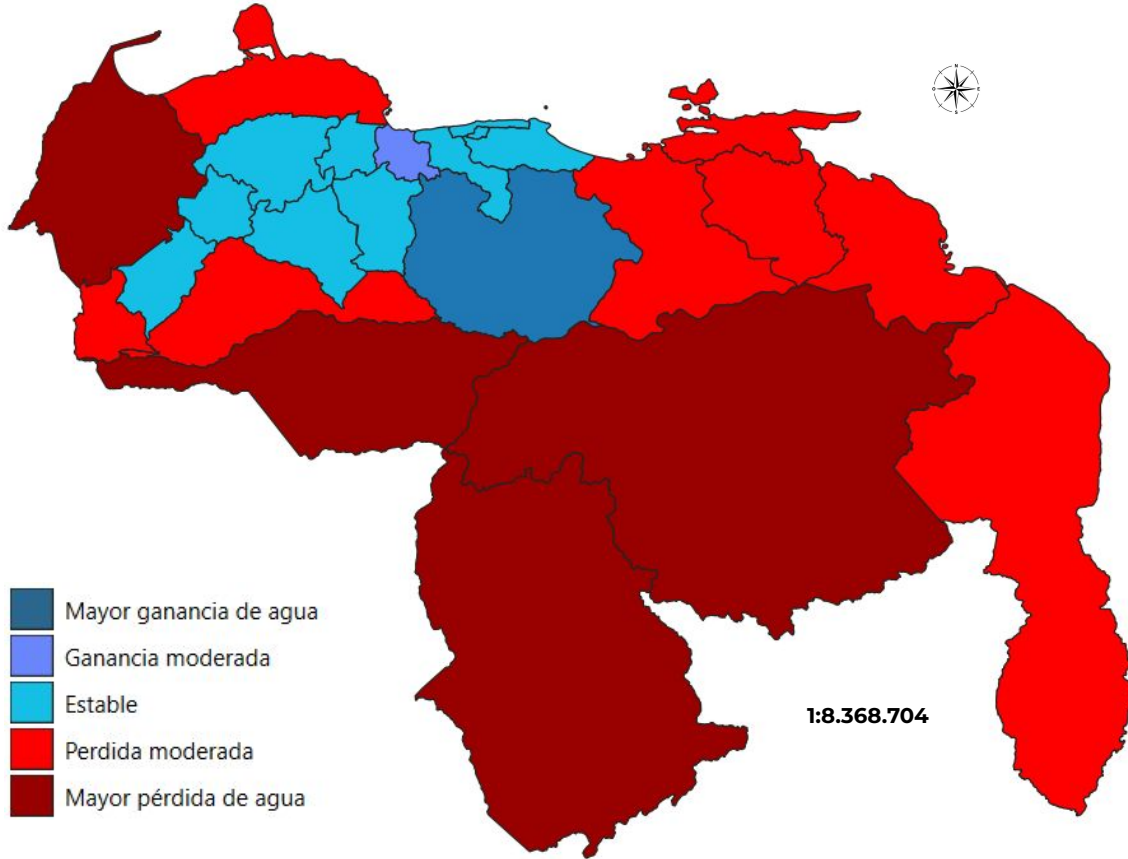


The states with the **greatest loss** of surface water between **2023 and 2024** were **Bolívar** with **18.7 mha**, followed by **Amazonas** with a **loss** of **12.3 mha**.

The **highest** surface water **gains** are observed in **Zulia** state with **11.7 mha**, followed by **Táchira** and **Guárico** with **4.9** and **2.1 mha**, respectively.

SURFACE WATER TRENDS IN VENEZUELA

States with the greatest tendency toward gain or loss of the water surface between 2000 - 2024

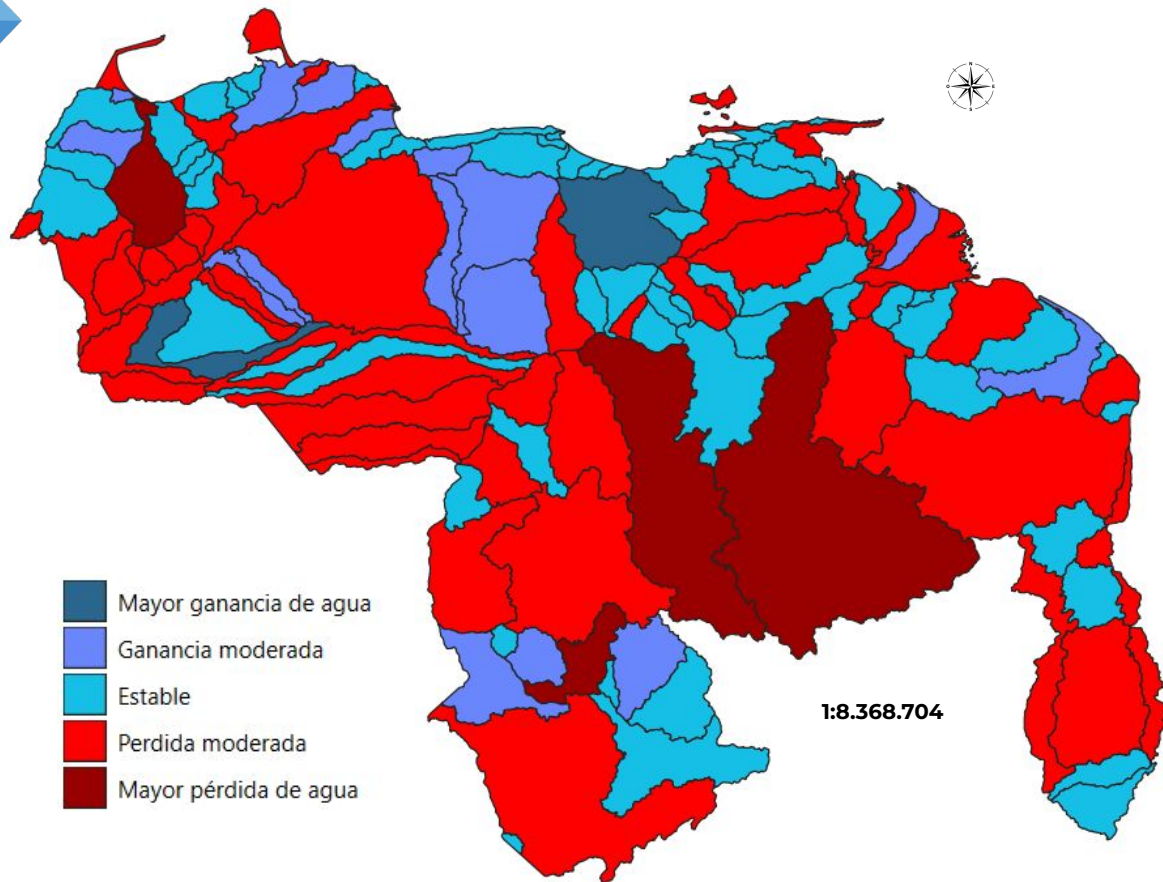


14 states in the country show a trend toward **surface water loss**.

Los estados con mayor **ganancia** de agua superficial fueron **Guárico y Carabobo** con **6,0 mha y 2,0 mha** aproximadamente.

SURFACE WATER TRENDS BY BASIN

Gains and losses between 2000 and 2024



The **Lake Maracaibo** basin has the **highest net loss** of surface water (**-52.7 mha**), followed by the **Caroní (33.9 mha)** and **Caura (10.7 mha)** basins.

The **largest gains** in surface water occurred in the **Unare** basin (**8.0 mha**) and **Alto Apure** basin (**3.7 mha**).

NEWS ABOUT THE CLASSIFICATION OF WATER BODIES

Expansion of the legend

Collection 2

- Natural
- Anthropogenic Uses
- Hydroelectric
- Mining
- Aquaculture

Collection 3

1. Water bodies, according to their origin	
1.1 Natural	#0000FF
1.2 Anthropic	#00D7EE



Collection 3

2. Water bodies, according to their use	
Natural	
Rivers, lakes, or oceans	#0000ff
Glacial lakes	#0cb7f2
Anthropic	
Mining	#AC0024
Aquaculture	#091077
Water supply	#009b94
Irrigation	#e8c39e
Mixed	#97f425
Hydroelectric	#E65277
Other Uses	#fed353
Gas extraction	#009d71
Oil	#704214

*In collection 3, the categories of water bodies were **expanded** according to **their use**, including: water supply, irrigation, mixed, gas extraction, oil extraction, and other uses.*

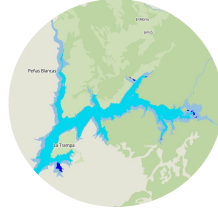
TYPES OF BODIES OF WATER BY ORIGIN, YEAR 2024

Natural

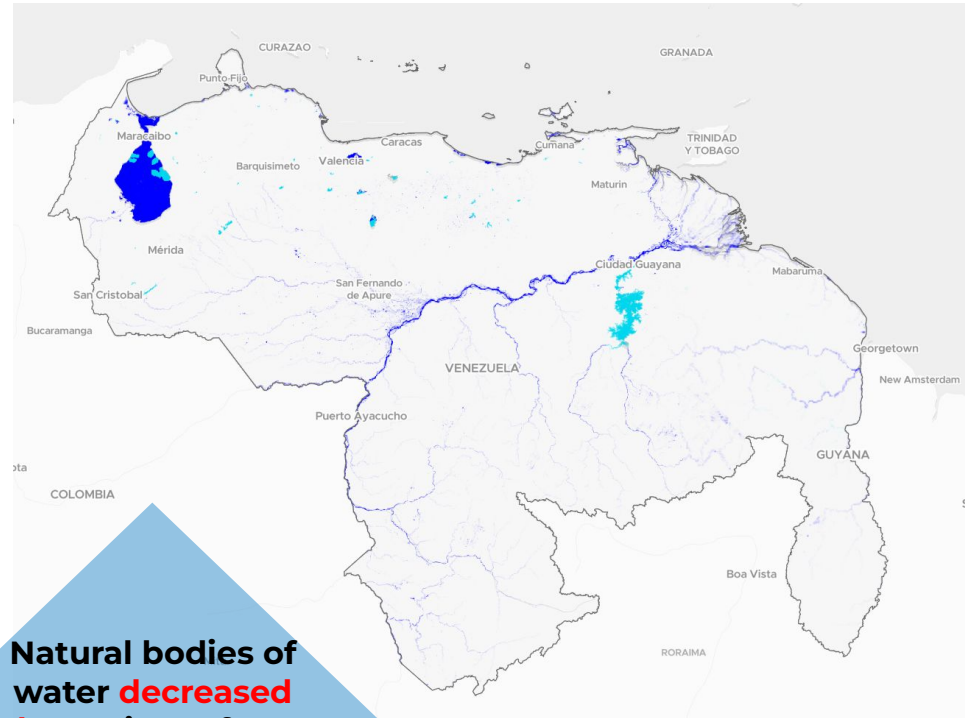


Orinoco River

Anthropic

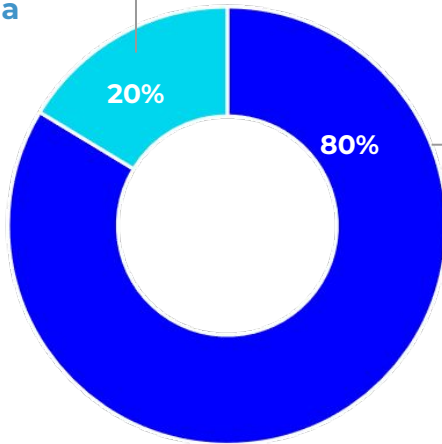


Uribante Caparo Complex



Natural bodies of water **decreased** by 7% in surface area by 2024, compared to 2000.

Anthropic
586.19 mha

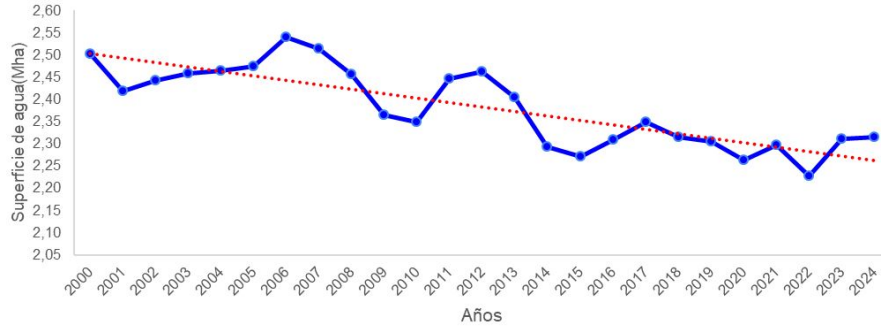


Natural
2.3 Mha

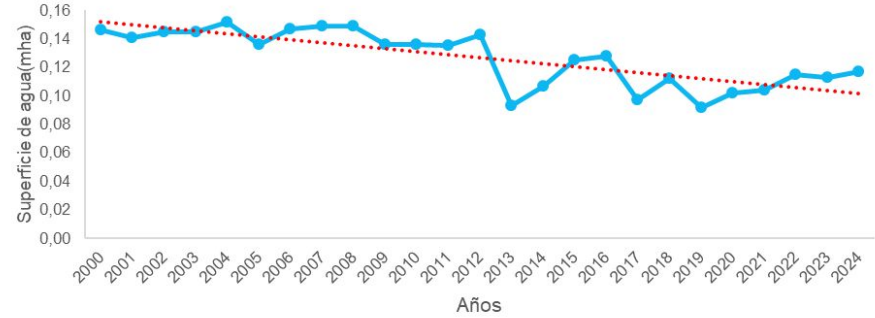
mha = thousands of hectares
Mha = millions of hectares

TENDENCY OF WATER BODY TYPES 2000 - 2024

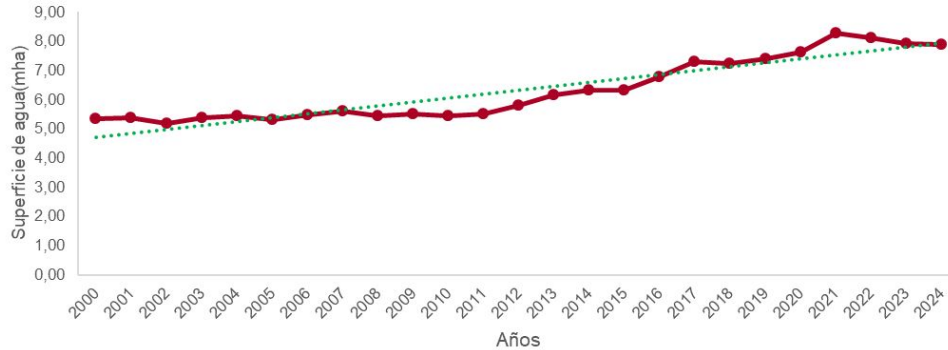
Río, lago y océano



Lagunas Glaciares



Minería

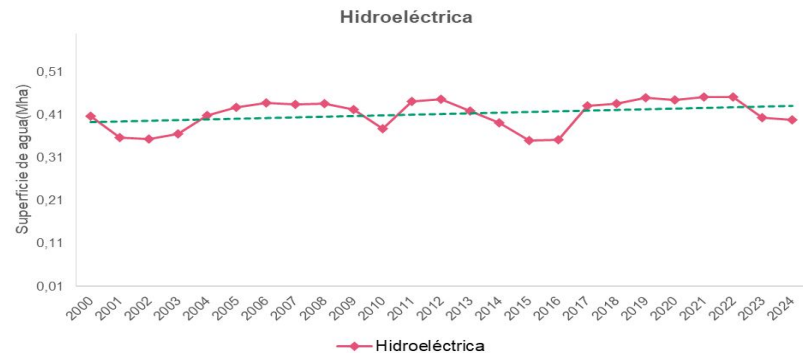
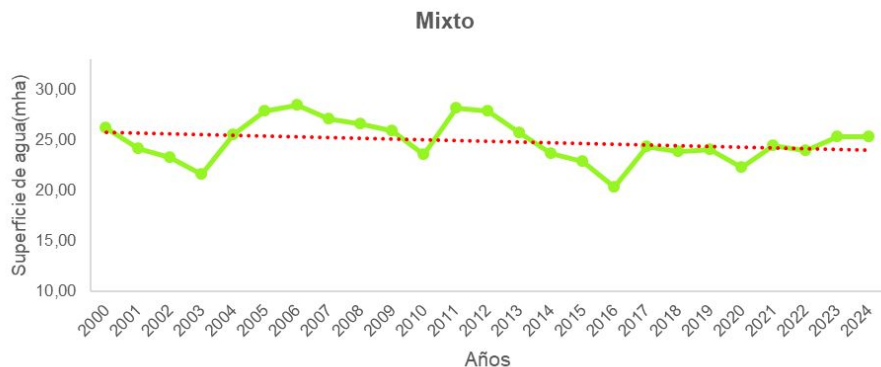
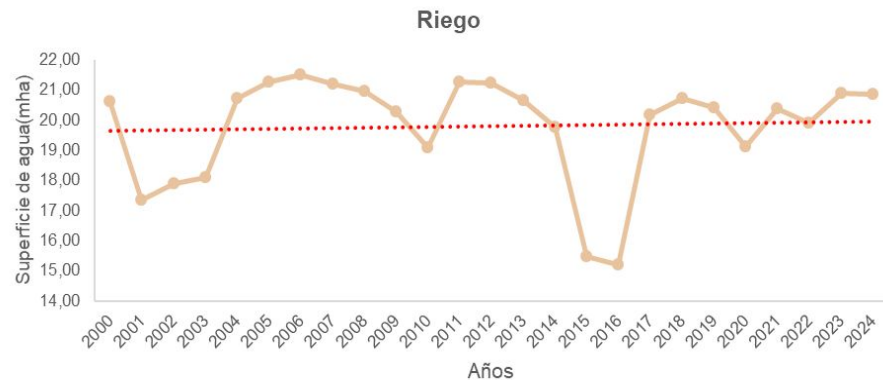
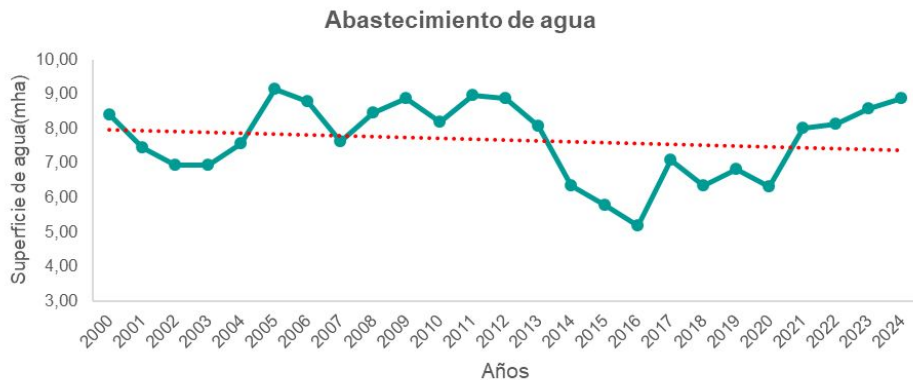


**Type of mining use:
+ 50%**

The type of mining use shows a positive trend and is concentrated in the Amazon biome.

Trend line

TENDENCY OF WATER BODY TYPES 2000 - 2024



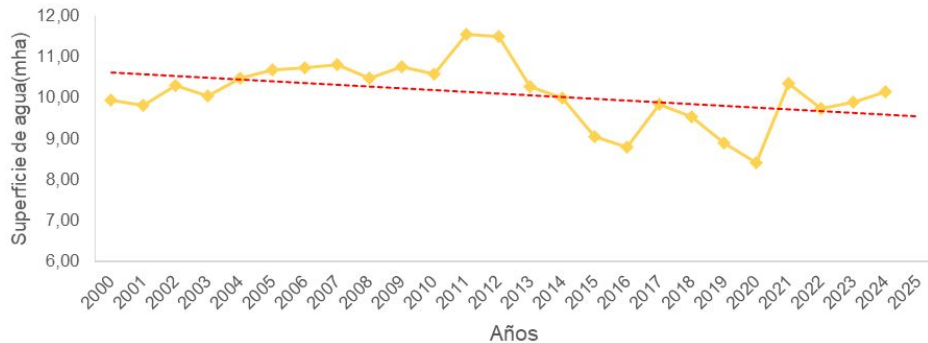
Tendencia



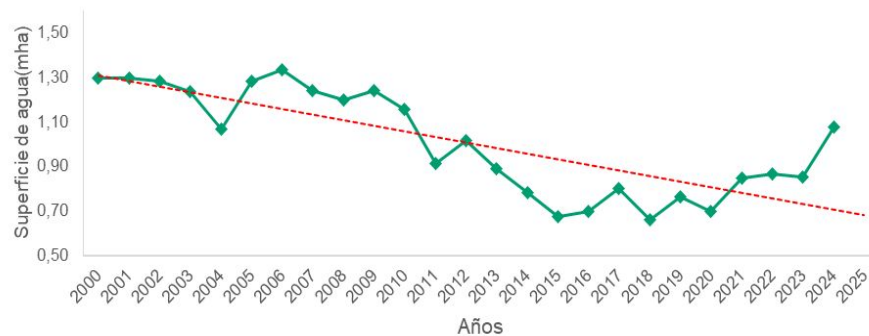
Reservoirs used for water supply, irrigation, and mixed use are expected to **increase** in surface area starting in 2020.

TENDENCY OF WATER BODY TYPES 2000 - 2024

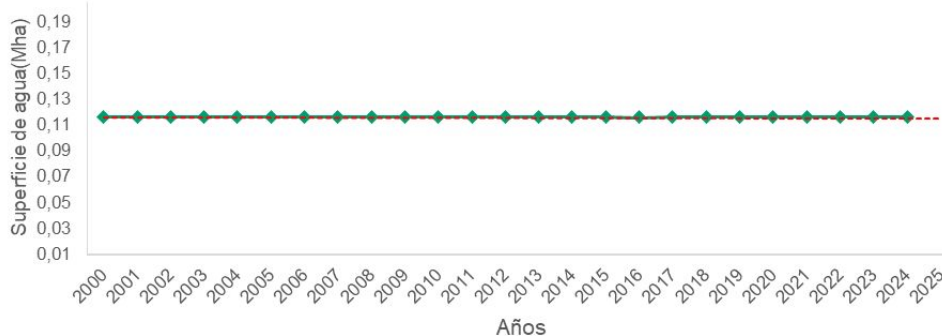
Otros Usos



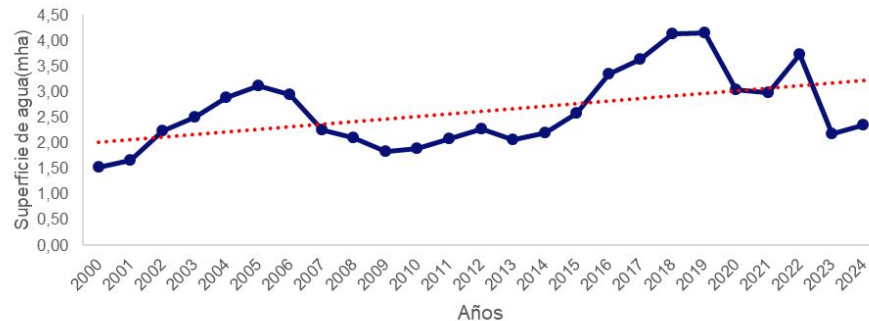
Extracción de gas



Extracción de petróleo



Acuicultura

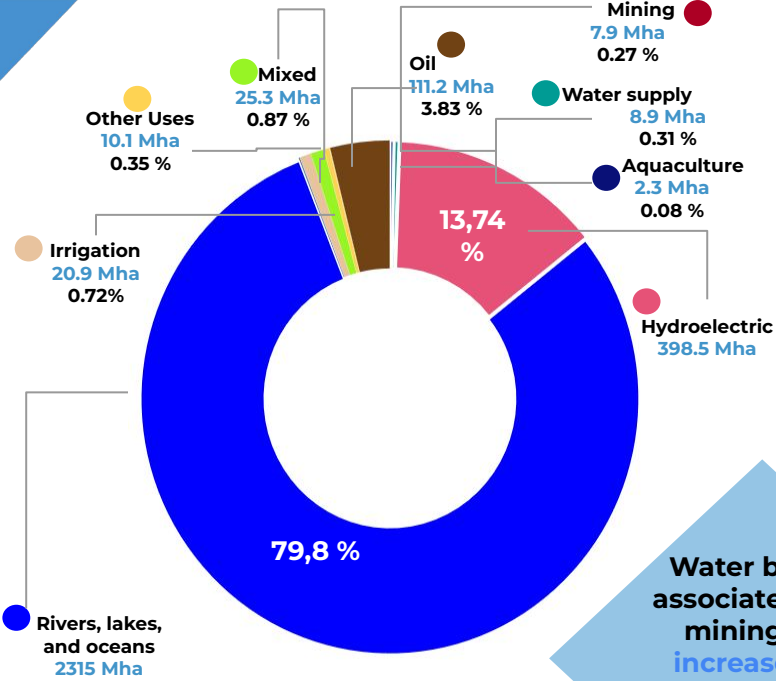


Tendency

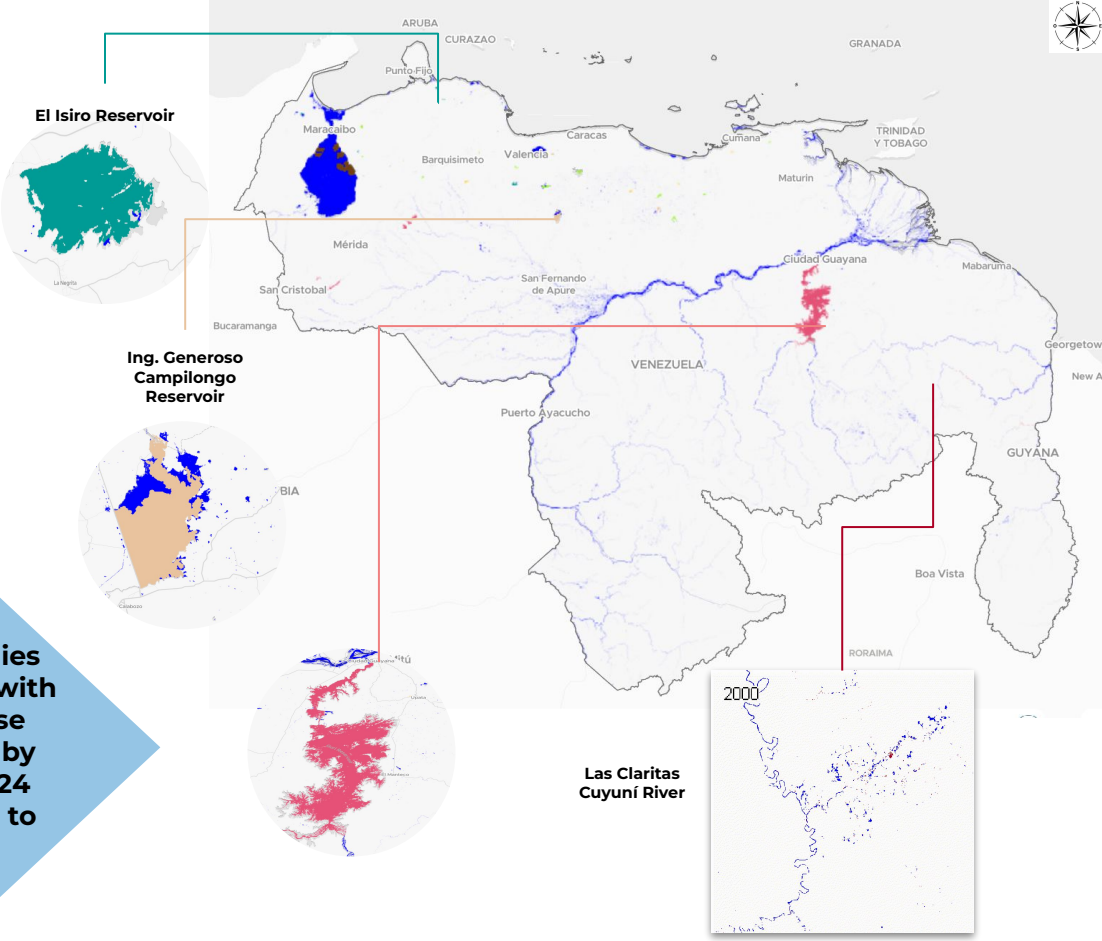


The types of use with the **highest surface water dynamics** are: aquaculture, gas extraction, and others, while those associated with oil extraction have remained stable throughout the series.

TYPES OF BODIES OF WATER ACCORDING TO THEIR USE, YEAR 2024

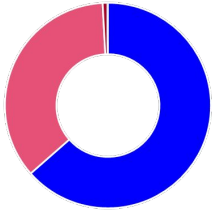


Water bodies associated with mining use increased by 47% in 2024 compared to 2000.

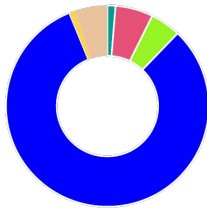


TYPES OF WATER BODIES BY BIOMES YEAR 2024

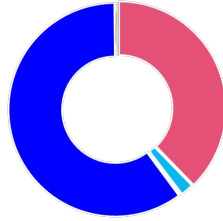
1 Amazon



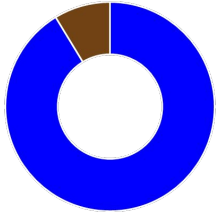
2 Sheets from the Orinoco Plains



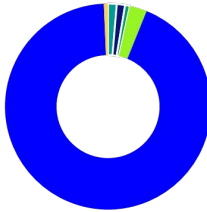
3 Andes



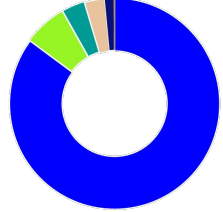
4 Lake Maracaibo



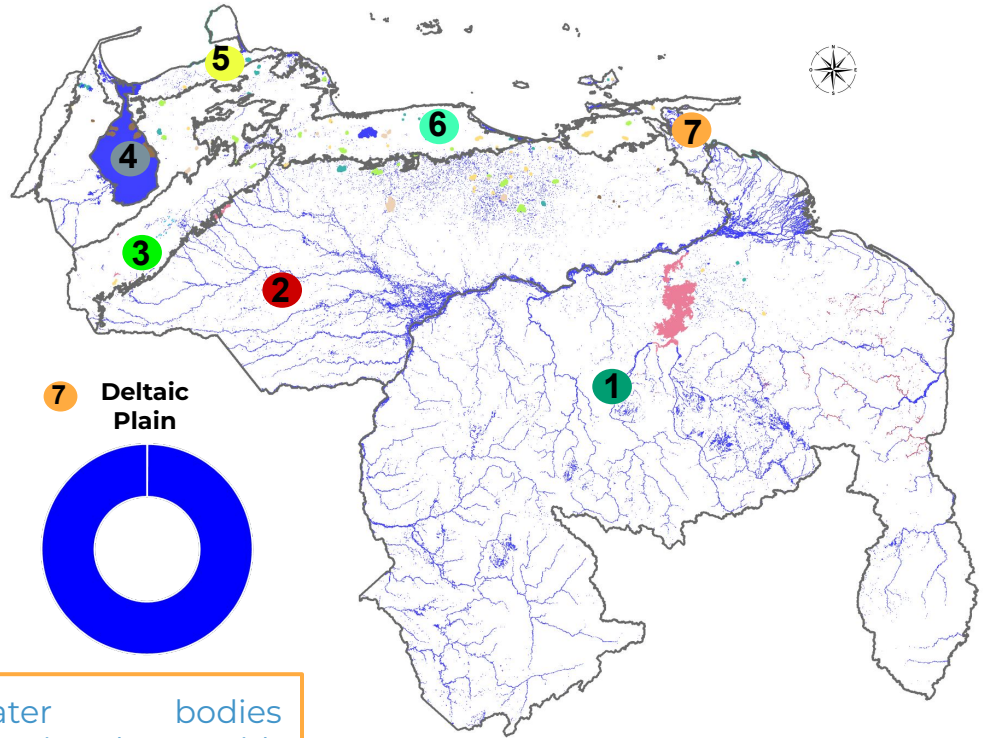
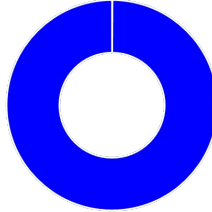
5 Deserts and xerophytic scrublands



6 Caribbean tropical forest



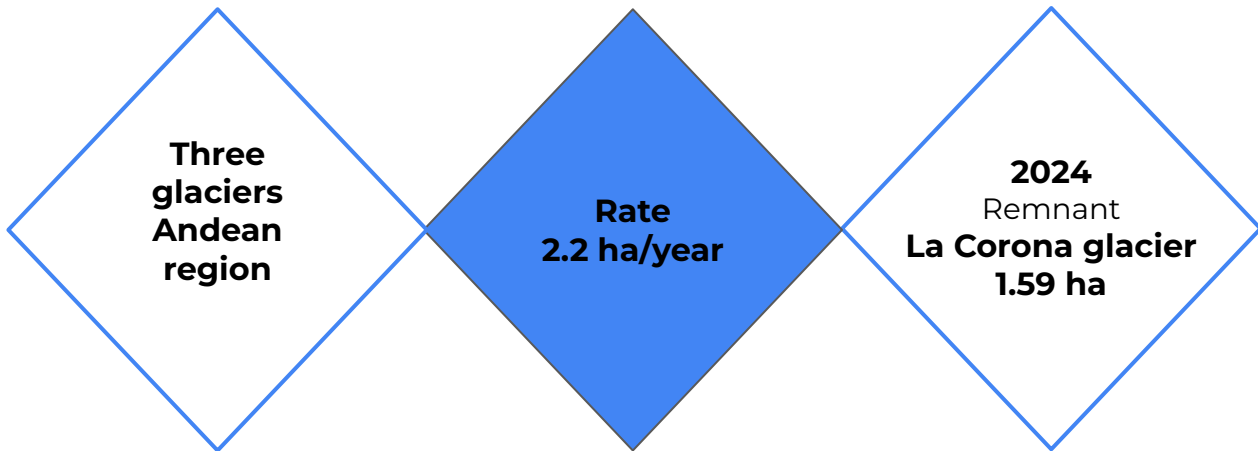
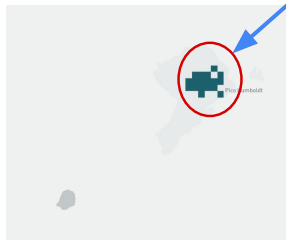
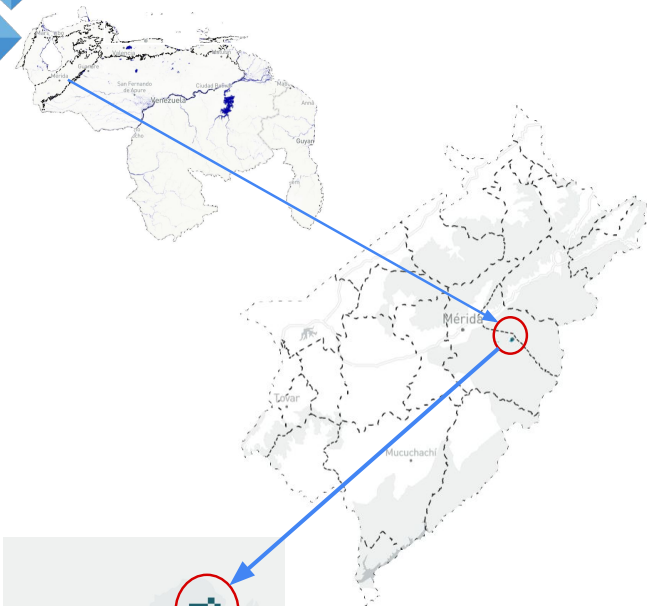
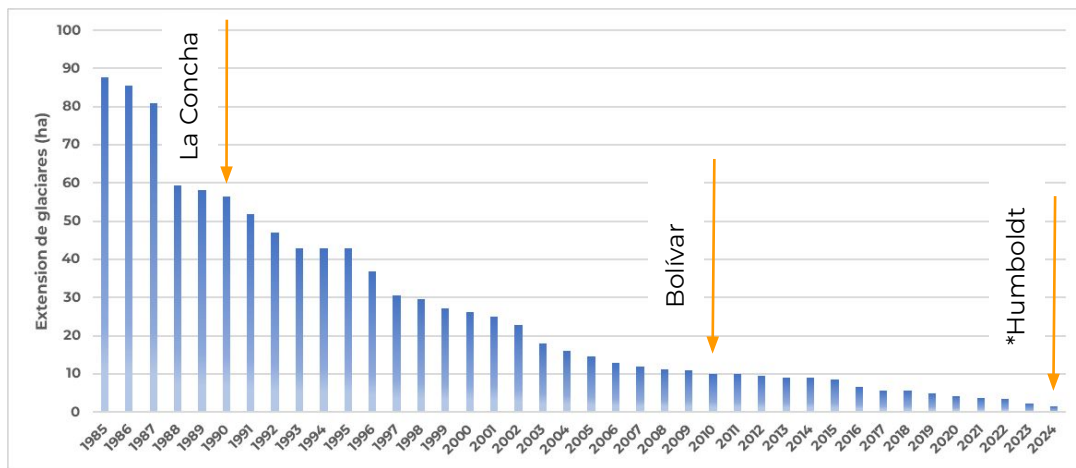
7 Deltaic Plain



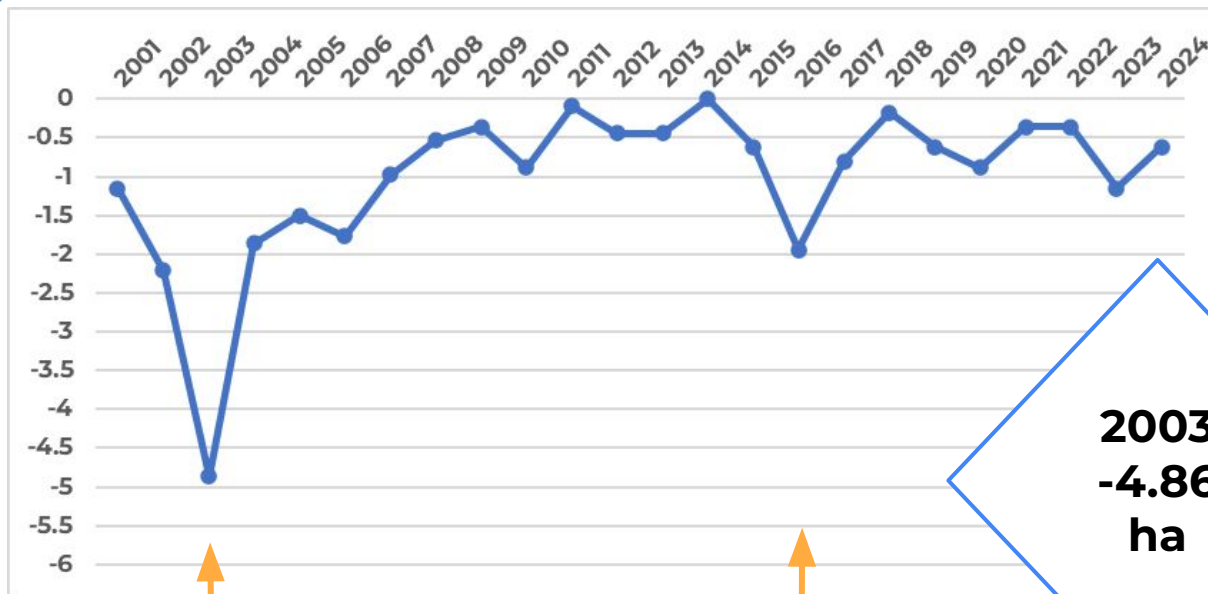
The Lake Maracaibo Biome accounts for **40 % of all natural water bodies**, followed by the Amazon with 23 %, but in the terms of hydroelectric use, the latter accounts for 13%, the highest in the country.

Water bodies associated with **Aquaculture**, **increased** by 54% in 2024 compared to 2000.

GLACIERS (SOLID WATER): 1985-2024



GLACIERS (SOLID WATER): 2000-2024

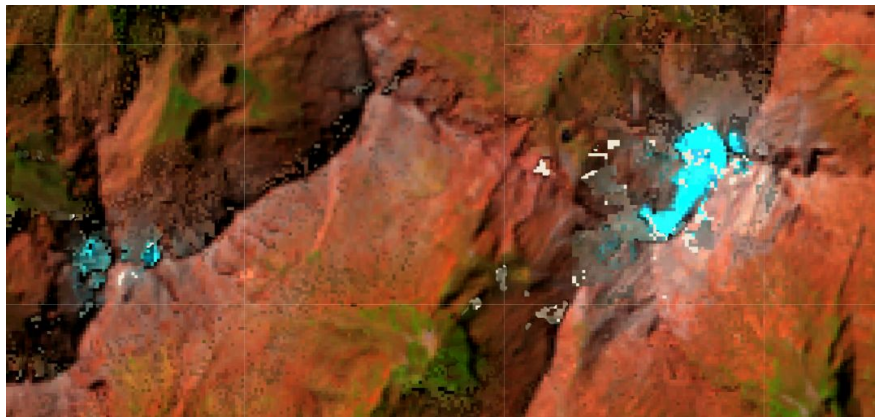


2003
-4.86
ha

2016
-1.94
ha

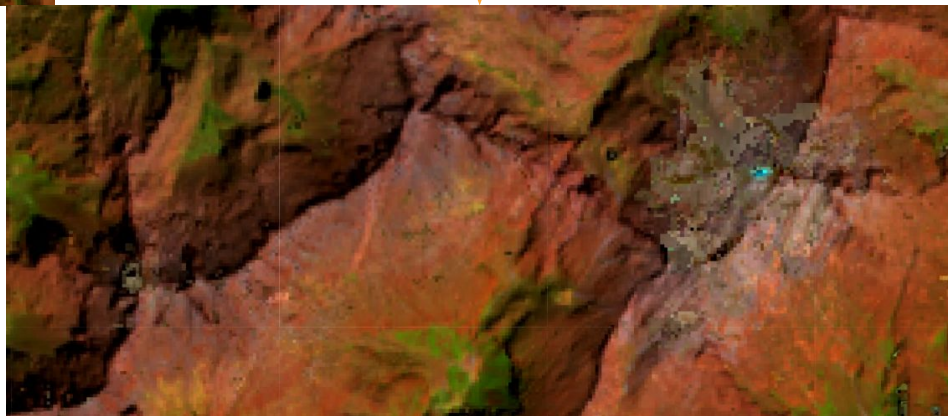
2024
-0,62
ha

GLACIERS (SOLID WATER): 1985-2024



2000

2024



About MapBiomias Water

Images from Landsat satellites 5, 7, 8, and 9

25 years of satellite data are used to map the water surface in Venezuela

Landsat scenes are processed to estimate the presence of water per pixel.

The annual data is the result of an analysis of the monthly frequency of water occurrence.

The data allows for the analysis of surface water bodies, their transitions, and trends.

All information can be analyzed in different territorial areas.

Detection is based on spectral mixture analysis and fuzzy logic.

Water bodies are identified by their spectral signature and temporal analysis.

Learn more at: venezuela.mapbiomas.org



MapBiomias data is public, open, and free under a Creative Commons [CC-BY](https://creativecommons.org/licenses/by/4.0/) license and with reference to the source, observing the following format:

"MapBiomias – Collection 3 of the Mapping of Surface Water in Venezuela, accessed on 28/11/2025 via the link: [\[plataforma.mapbiomas.org\]](http://plataforma.mapbiomas.org)"



MAPBIOMAS
[AGUA]



MAPBIOMAS
VENEZUELA

liderado por



RAISG
RED AMAZÓNICA DE INFORMACIÓN
SOCIOAMBIENTAL GEORREFERENCIADA