

STEM 4 WATER

INSTITUT ERMESSEDA DE GIRONA



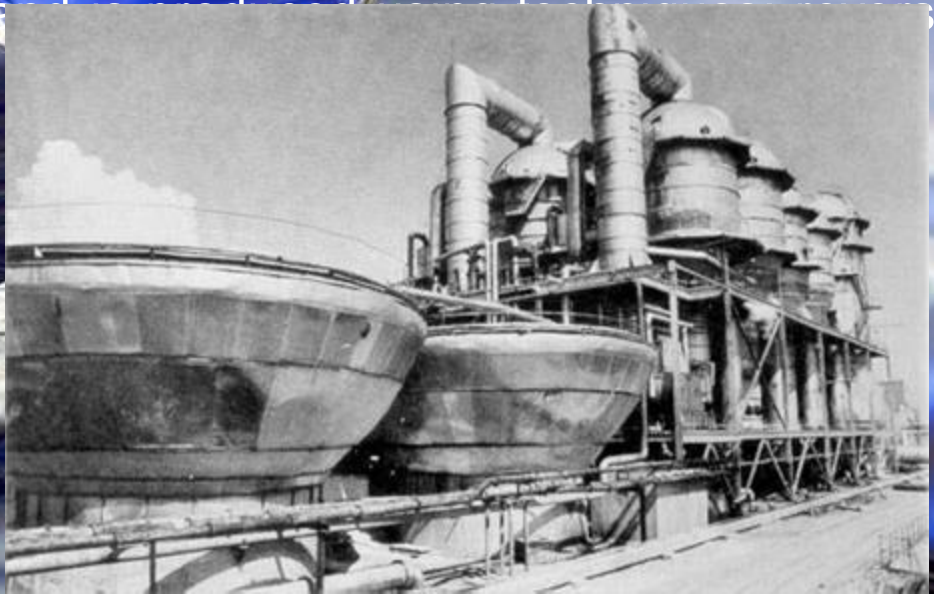
Students

Ricard Artigas
Ona Orcau
Aleix Puig
Jofre Balliu
Abril Fàbregas
Ivet Fernández
Alexandra González
Rebecca Mihai
Cesc Molina
Berta Monjé
Narcís Perpinyà
Marc Solé



WHAT IS A DESALINATION PLANT?

A desalination plant is a facility that serves to remove salt from seawater and convert it into fresh water suitable for human consumption. This process is called desalination and is achieved by using two processes: reverse osmosis and distillation.



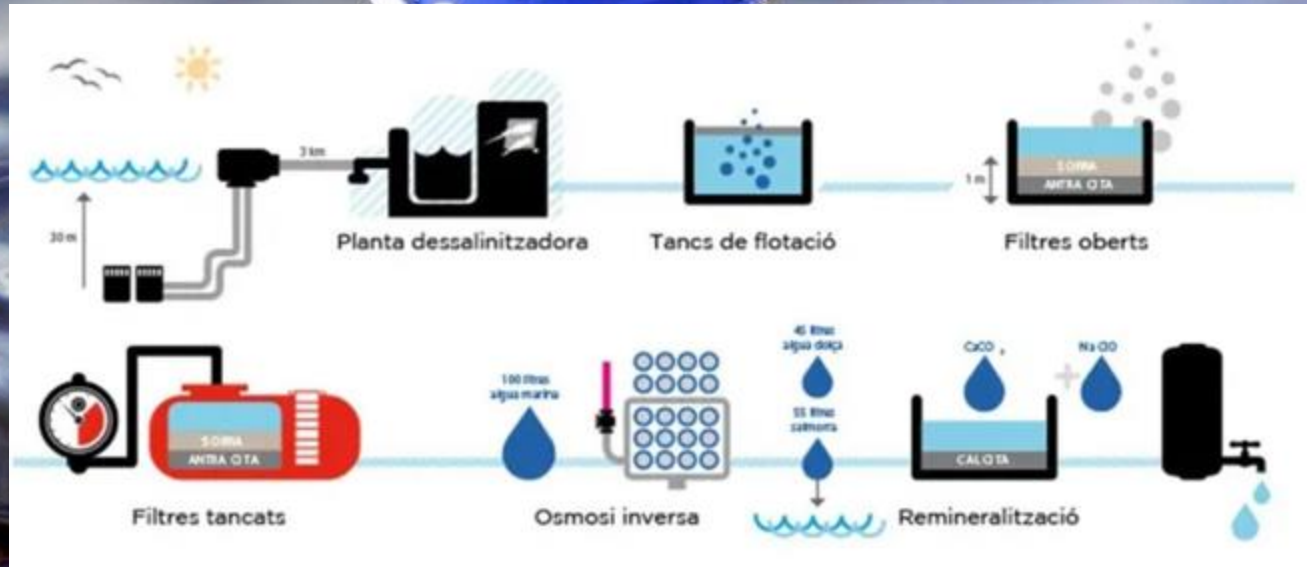
WHERE DO WE FIND THEM?

Now a days, Catalonia has two desalination plants: the one in Llobregat (municipality of Prat de Llobregat), with a production capacity of 60 hm³/year, and the one in Tordera (in the municipality of Blanes), with a production capacity of 20 hm³.



HOW DOES THE DESALINATOR WORK?

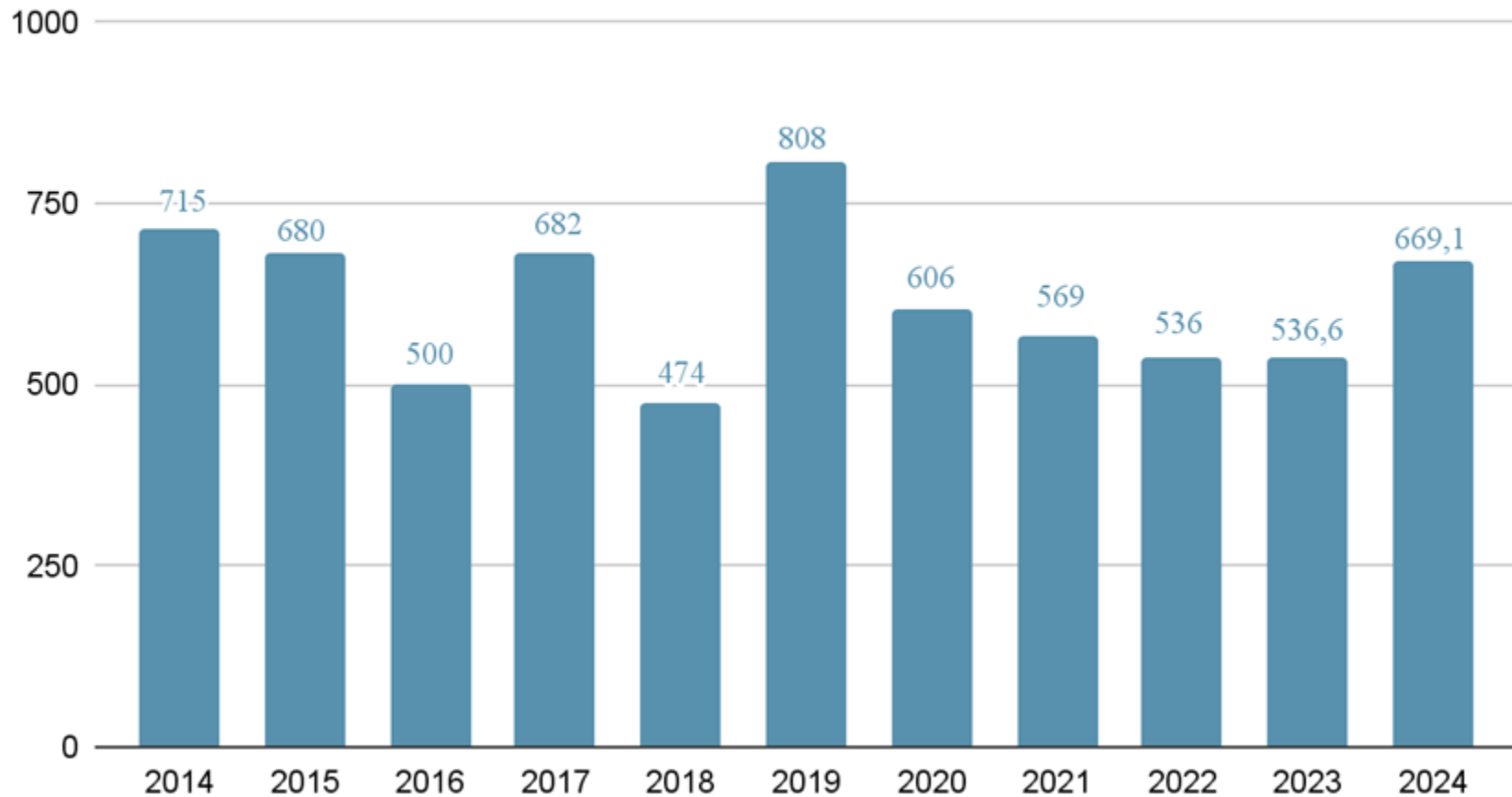
Using a hydraulic pump system, it draws seawater, which undergoes a filtration process to remove hydrocarbons or algae. It then undergoes a reverse osmosis process to remove all possible solutes and obtain potable water.



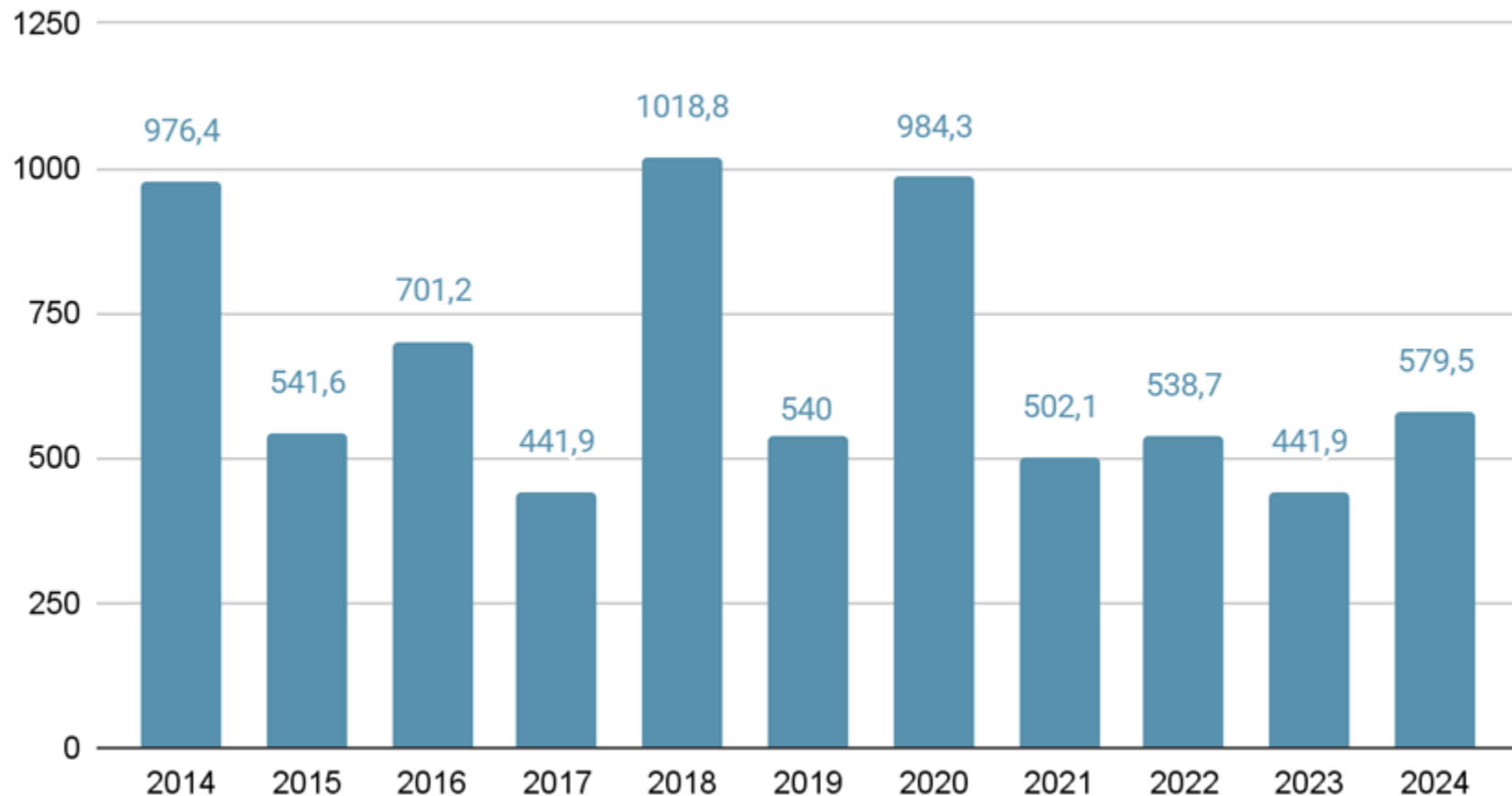
ELS TEMPORALS

From 2020 to 2024, there was a severe drought, which caused the reservoirs to reach very low levels. Because of this, measures had to be taken, such as reducing the water that we use in hotels and homes, among others. Luckily, the situation has improved, and now it rains more or less normally again.

Rainfall in Spain in the last ten years



Rainfall in Girona in the last 10 years



TEMPORAL GLÒRIA (storm)

Between the 20th and the 23rd of January, 2020.

Huge storm with extensive rainfall.

People were confined at home, schools were shut down.

Reservoirs were forced to open, due to the danger of bursting dams.



RESERVOIRS IN CATALUNYA:

1. **What are reservoirs and what are they used for?**
 - The reservoirs of Catalunya store water to ensure the supply to the population, agriculture and industry.
 - They are essential to deal with drought and regulate the water cycle.
 - They also allow for tourism or sports activities and energy generation.



2. Which are the reservoirs in Catalonia?

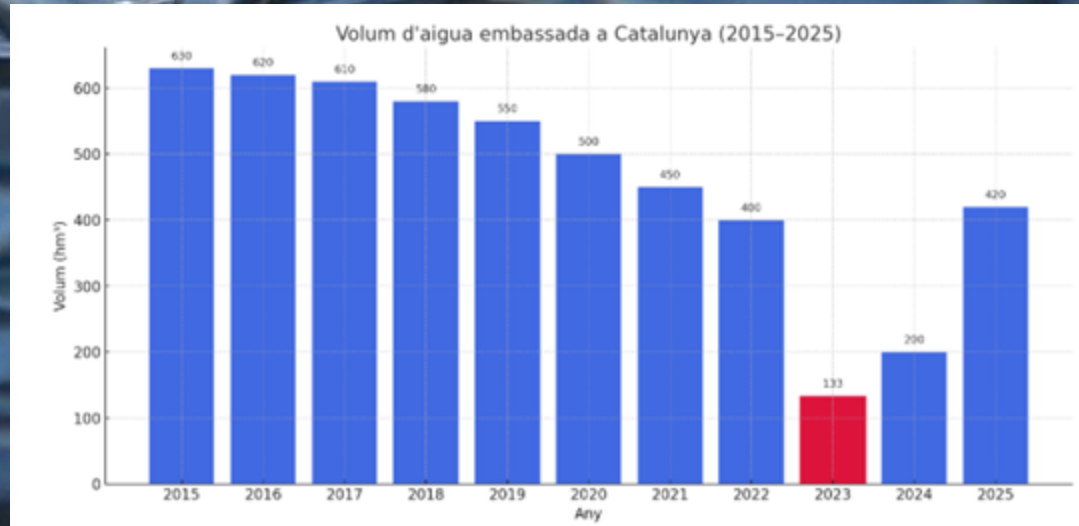
Catalonia has 19 main reservoirs: 9 in “conques internes” and 10 in “conca de l'Ebre”.

The reservoirs of the province of Girona are:
Sau, Susqueda, Pasteral and Darnius-Boadella.



3. Water level in the last 10 years

In the past decade, water levels have varied because of different weather patterns, droughts, and increased water usage. In 2023, there was a significant drop, worrying both scientists and local communities. Now, levels remain lower than average, highlighting the need for sustainable water management and conservation efforts to ensure future availability.



THE USE OF WATER IN CATALUNYA

According to the Catalan Water Agency (ACA), the total water use in the internal basins of Catalonia is about 1,043 cubic hectometres per year. From this total, the tourism sector uses about 2%, which means around 22 hm³ per year.

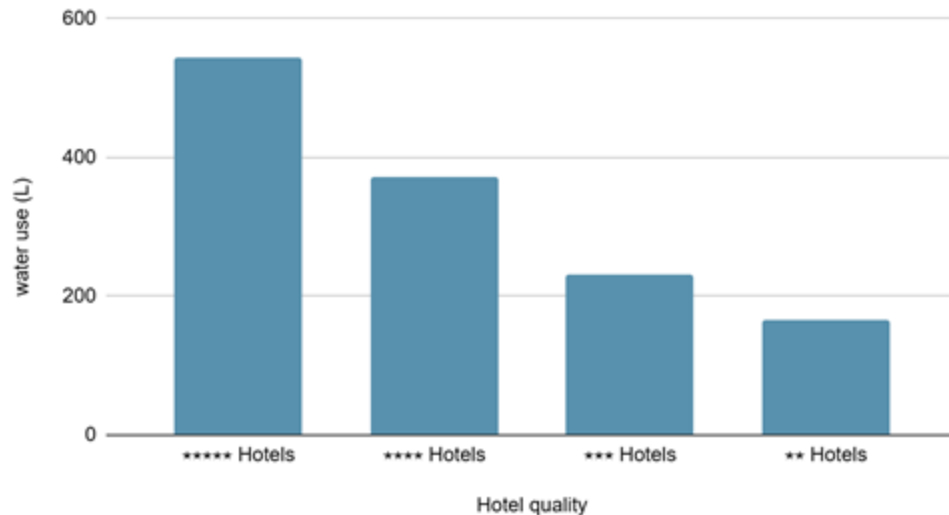
This number includes the direct use by tourists and the use from economic activities related to tourism. Water use in Catalonia varies significantly throughout the year, especially in tourist areas such as Barcelona, the Costa Brava, the Costa Daurada and PortAventura. This variability is closely linked to the seasonality of tourism and climatic conditions, such as recurrent droughts.

THE USE OF WATER IN CATALUNYA: TOURISM

Water use in hotels and tourist accommodations changes depending on the category of the place and its facilities:

- ★★★★★ Hotels: up to 545 litres per tourist per day.
- ★★★★ Hotels: around 373 litres per tourist per day.
- ★★★ Hotels: about 232 litres per tourist per day.
- ★★ Hotels: around 165 litres per tourist per day.

water use (L) i Hotel quality



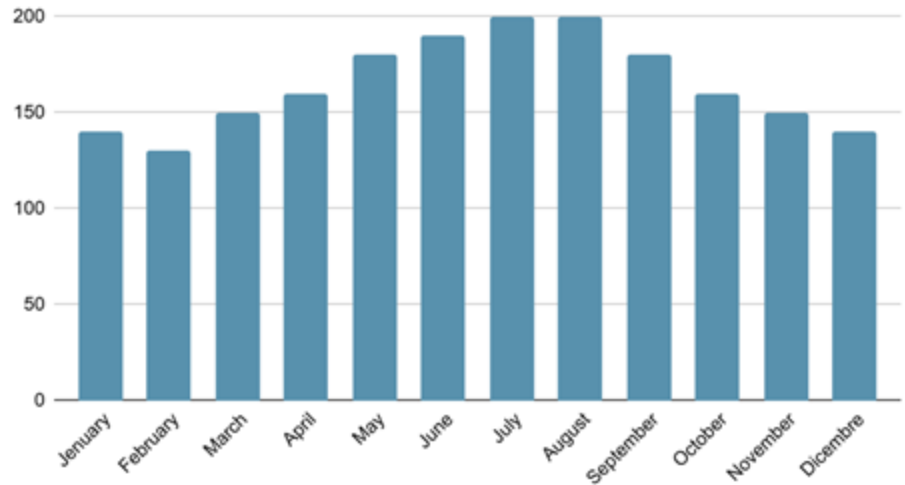
THE USE OF WATER IN CATALUNYA: TOURISM

Water consumption in the tourist areas of Catalonia shows a marked seasonal pattern:

Spring and summer (April to September): significant increase in water consumption due to the rise in tourist influx.

Autumn and winter (October to March): reduction in water consumption corresponding to the decrease in tourism.

Total consumption in billions (L)



Restriction and Sustainability Measures

In response to recurring droughts, the Government of Catalonia has implemented measures to limit water consumption in the tourism sector:

- **Consumption limit:** 100 litres per person per day in tourist establishments during drought emergency phases.
- **Water reuse:** Promotion of the use of reclaimed water and the installation of private desalination systems to reduce dependence on freshwater reserves.

Conclusions

- Water consumption in Catalonia is influenced by the seasonal nature of tourism, with peaks during the summer months.
- Tourist establishments, especially those of higher category, have a higher per capita water consumption than the resident population.
- Authorities have implemented measures to control and reduce water usage in the tourism sector, promoting more sustainable practices.
- For efficient water resource management, it is essential to continue monitoring water consumption and to adapt policies according to climate conditions and the needs of the tourism sector.

Thank you for listening!



[Esta foto](#) de Autor desconocido está bajo licencia [CC BY](#)



Co-funded by the
Erasmus+ Programme
of the European Union



Erasmus+