



**EUROPEAN
RIVERS
SUMMIT**



No one will hold the Tagus river!

Paulo Constantino



proTEJO's Mission

Raise awareness and mobilize citizens and their organizations in defense of the Tagus River and its tributaries in an ecological and cultural perspective.





PILLARS FOR A LIVING TAGUS

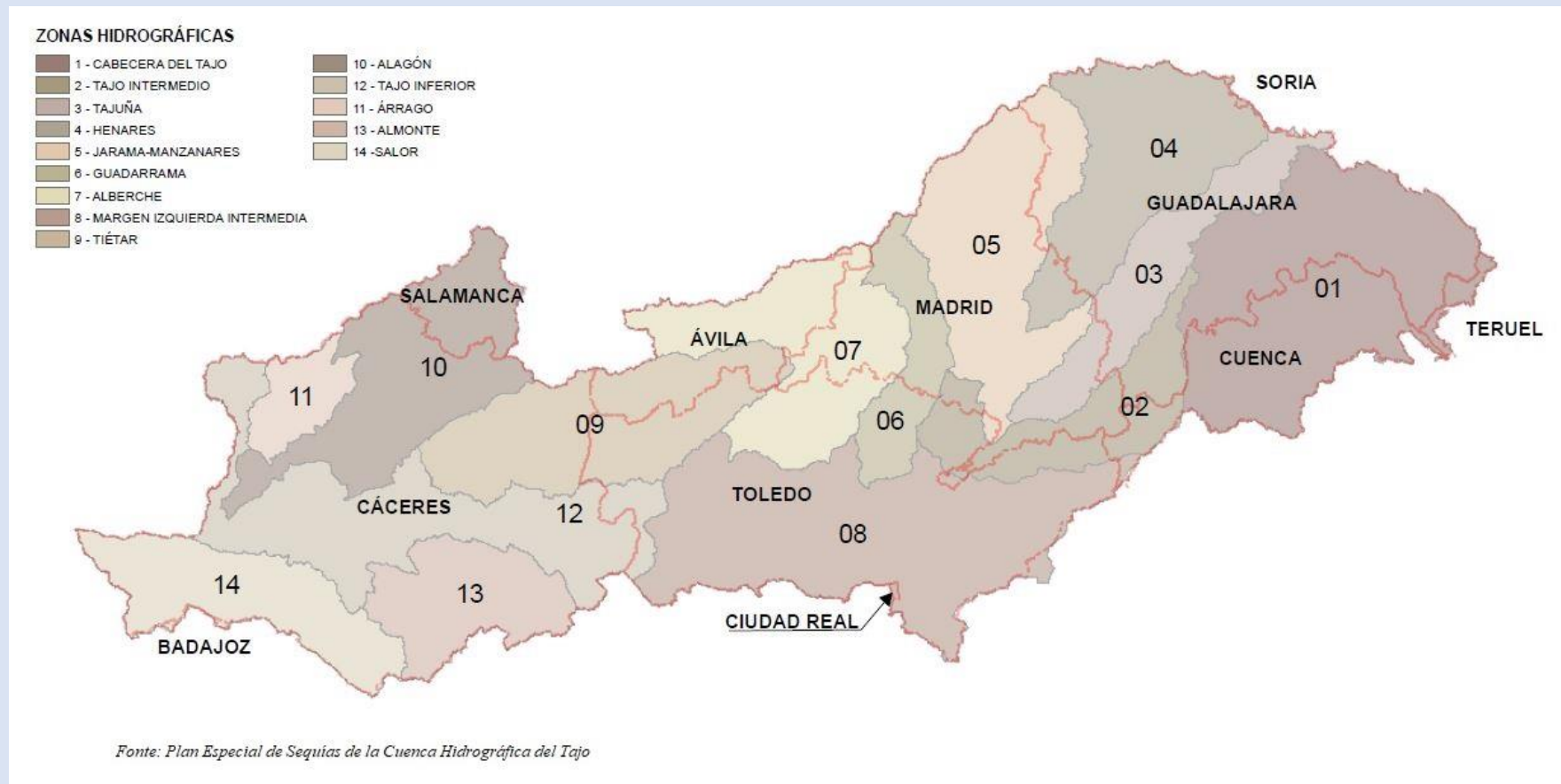
- 1. Water Quantity**
- 2. Water Quality**
- 3. River connectivity (without barriers)**
- 4. Biodiversity and Life Sustainability**

Action Required and Big Question



1. Water Quantity

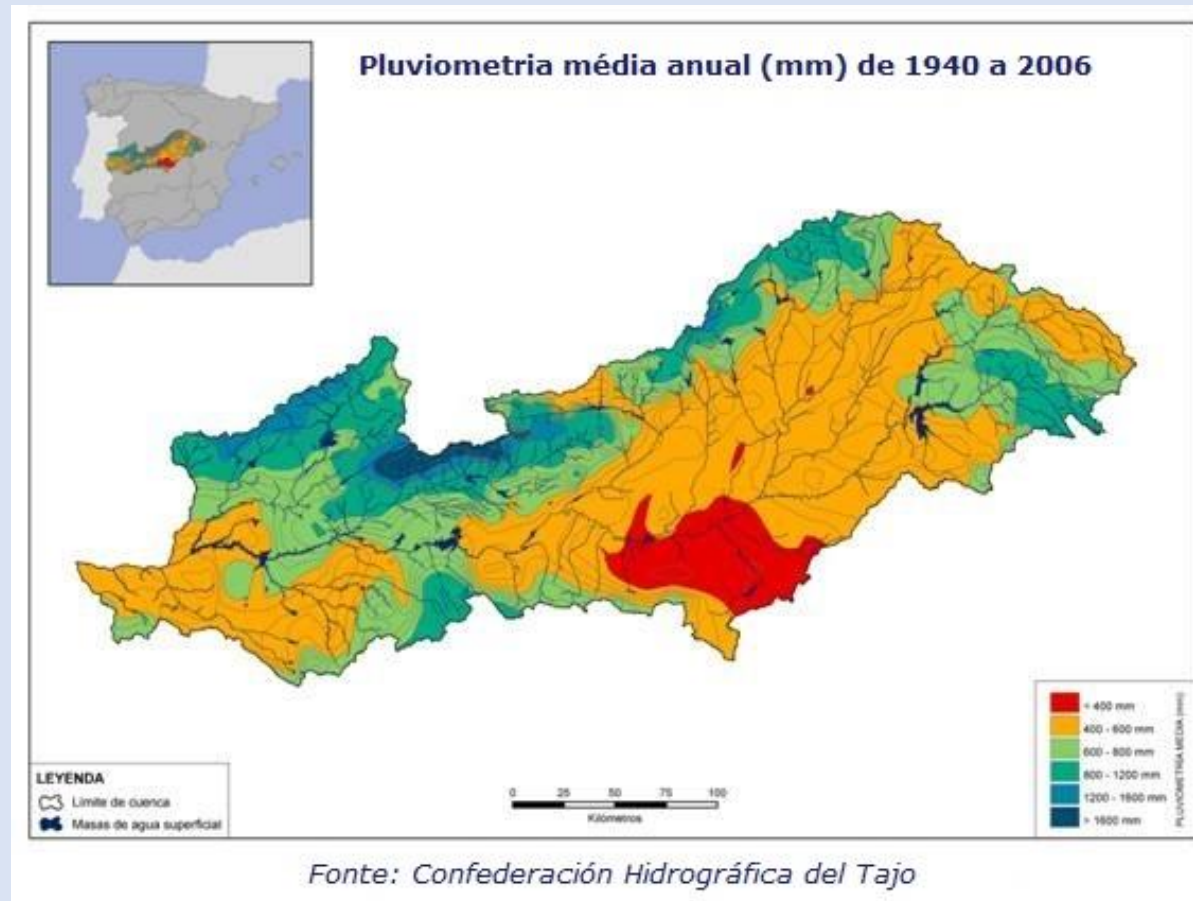
Water retention in Spanish dams





1. Water Quantity

Average Annual Precipitation (mm) from 1940 to 2006

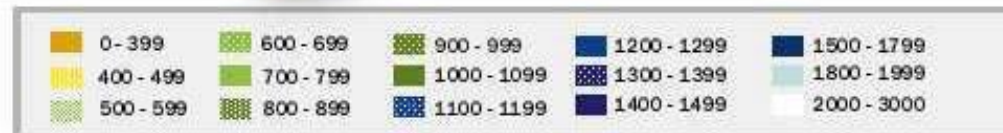




1. Water Quantity

Distribution of precipitation (mm) in the Tagus basin

Distribuição da precipitação média anual (mm) na bacia do Tejo (Espanha)



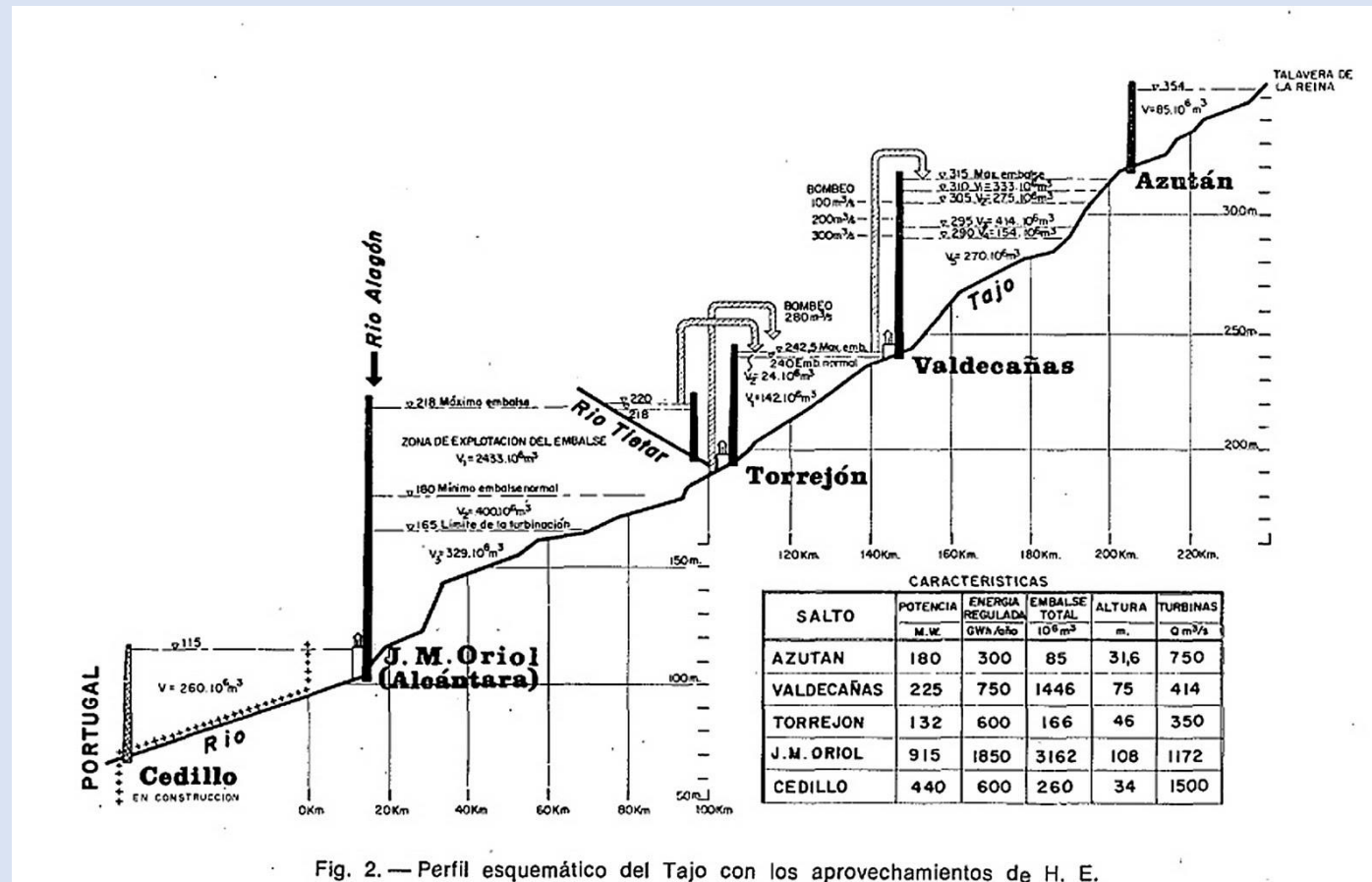
Fonte: Plan Especial de Sequias de la Cuenca Hidrográfica del Tago



1. Water Quantity

Water retention in Spanish dams

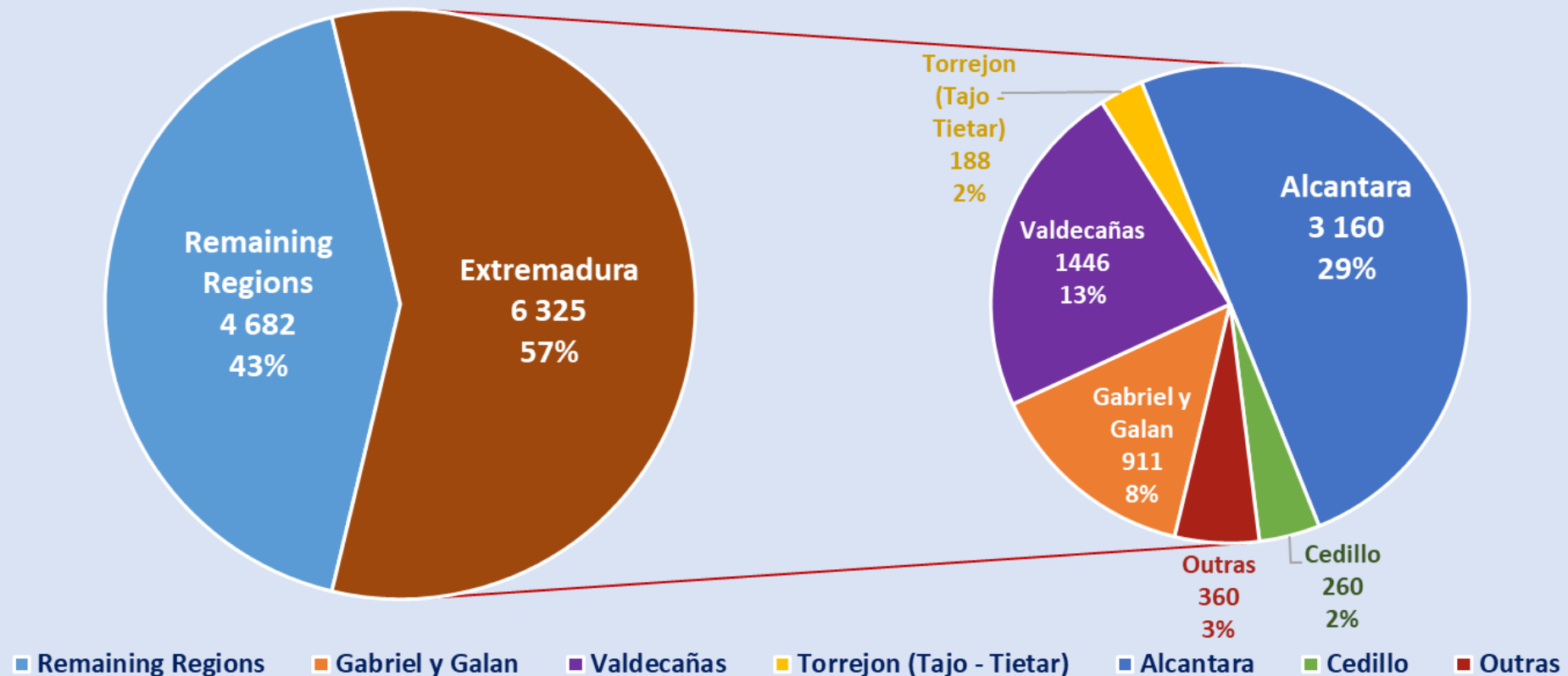
Cascade of Dams in Spanish Extremadura





1. Water Quantity

CAPACITY OF DAMS IN THE TAGUS BASIN (hm³)





1. Water Quantity

Uses of the Main Dams in Spanish Extremadura

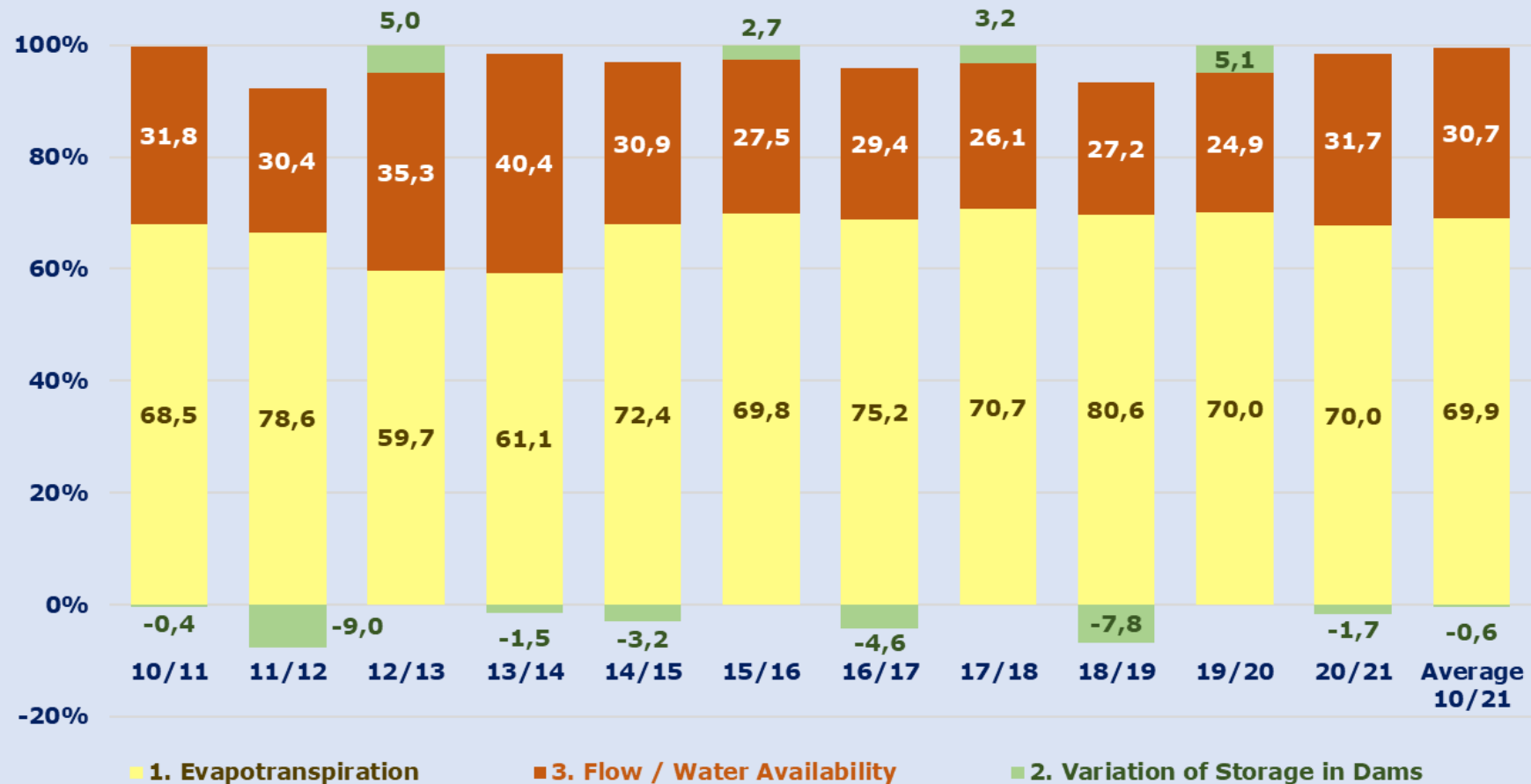
Dam	Human Supply	Irrigation	Hydro electric	Industry	Fishing	Navigation	Bath	Pic-nic	Restaurants
<u>GABRIEL Y GALAN</u>		X	X		X	X	X	X	X
<u>VALDECAÑAS</u>	X	X	X					X	
<u>TORREJON (TAJO - TIETAR)</u>	X	X	X						
<u>ALCANTARA</u>			X			X		X	X
<u>CEDILLO</u>			X		X	X			

Source: www.embalses.net; Ministerio de Medio Ambiente.



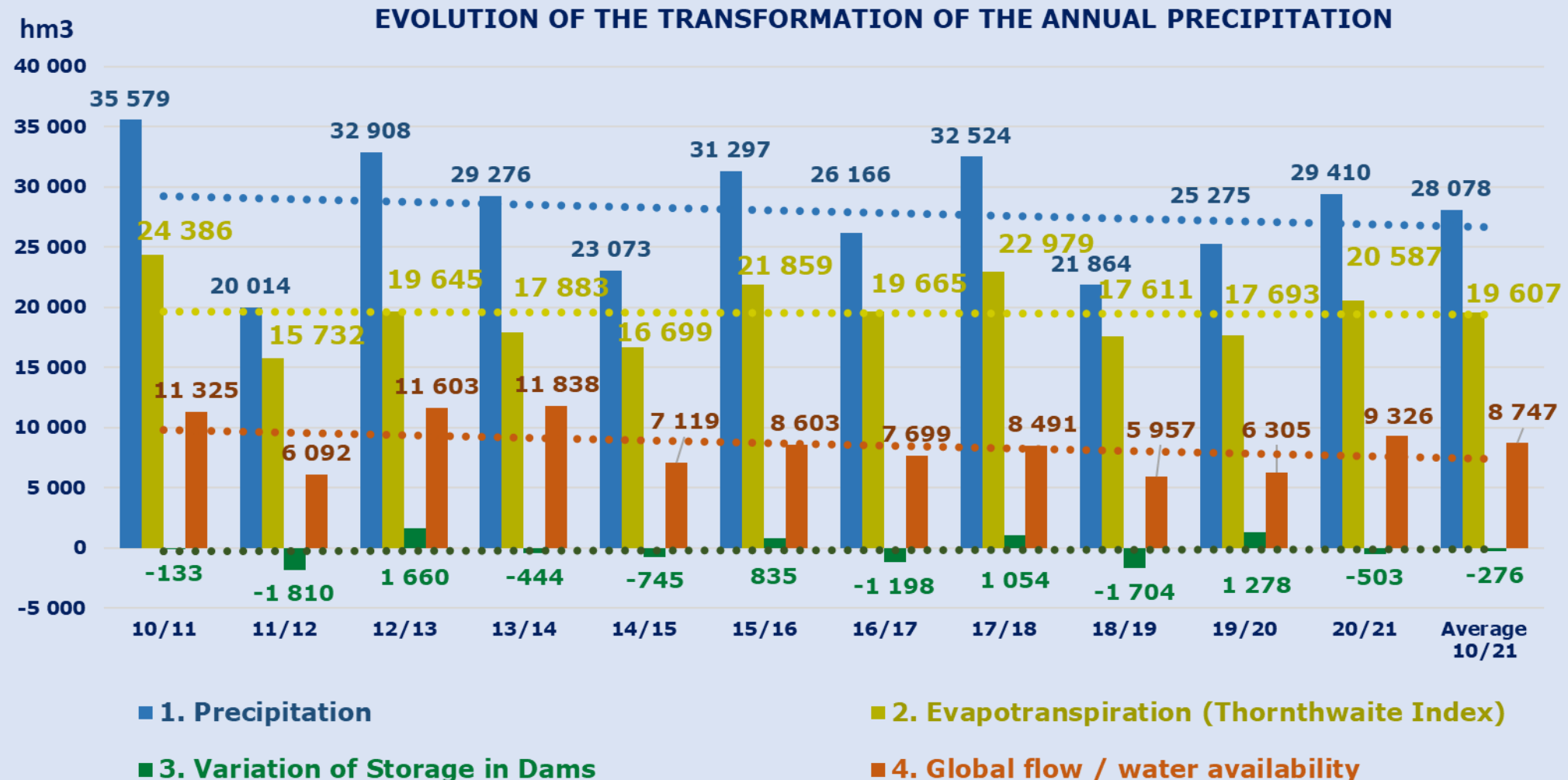
1. Water Quantity

TRANSFORMATION OF ANNUAL PRECIPITATION





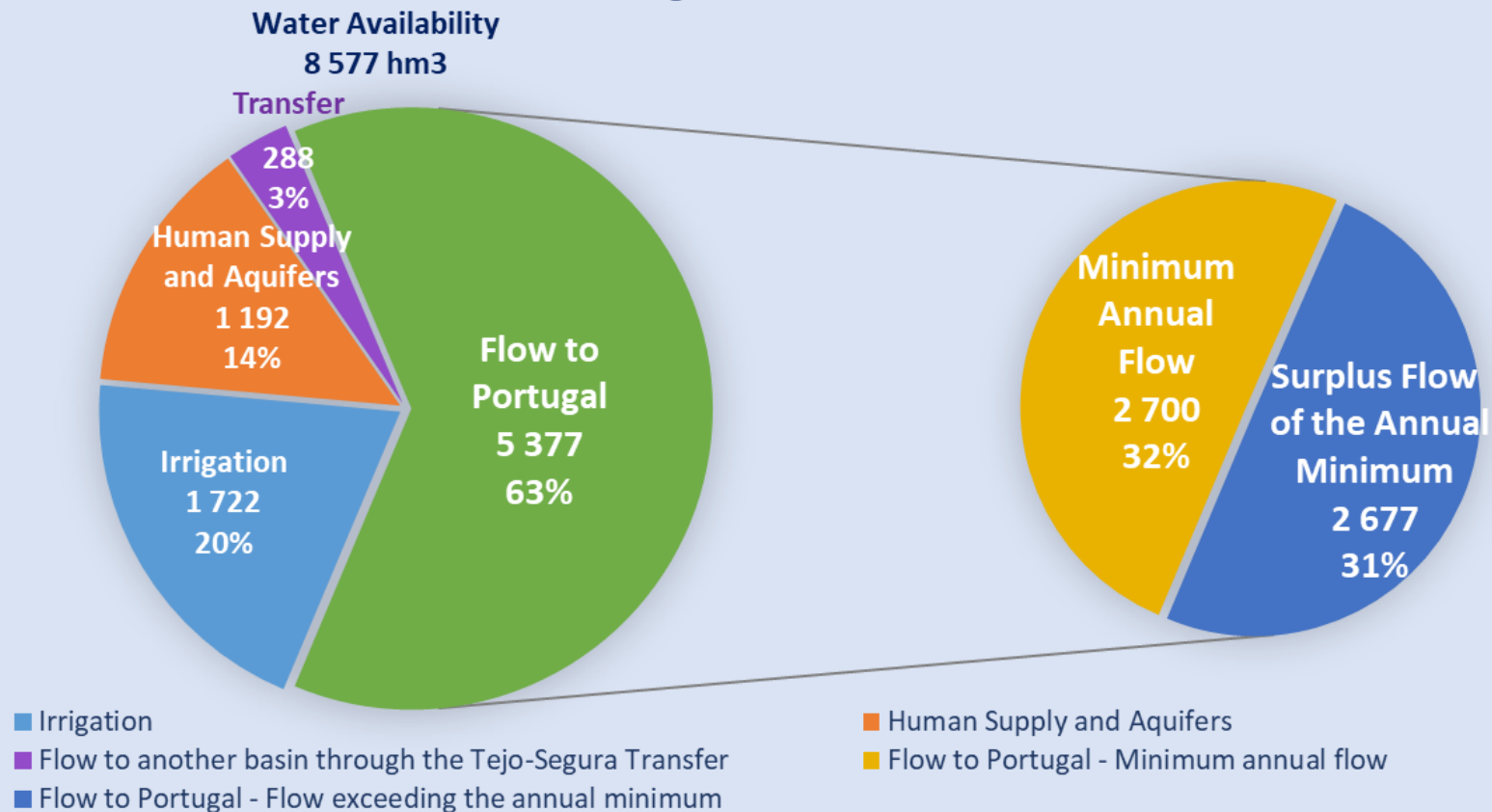
1. Water Quantity





1. Water Quantity

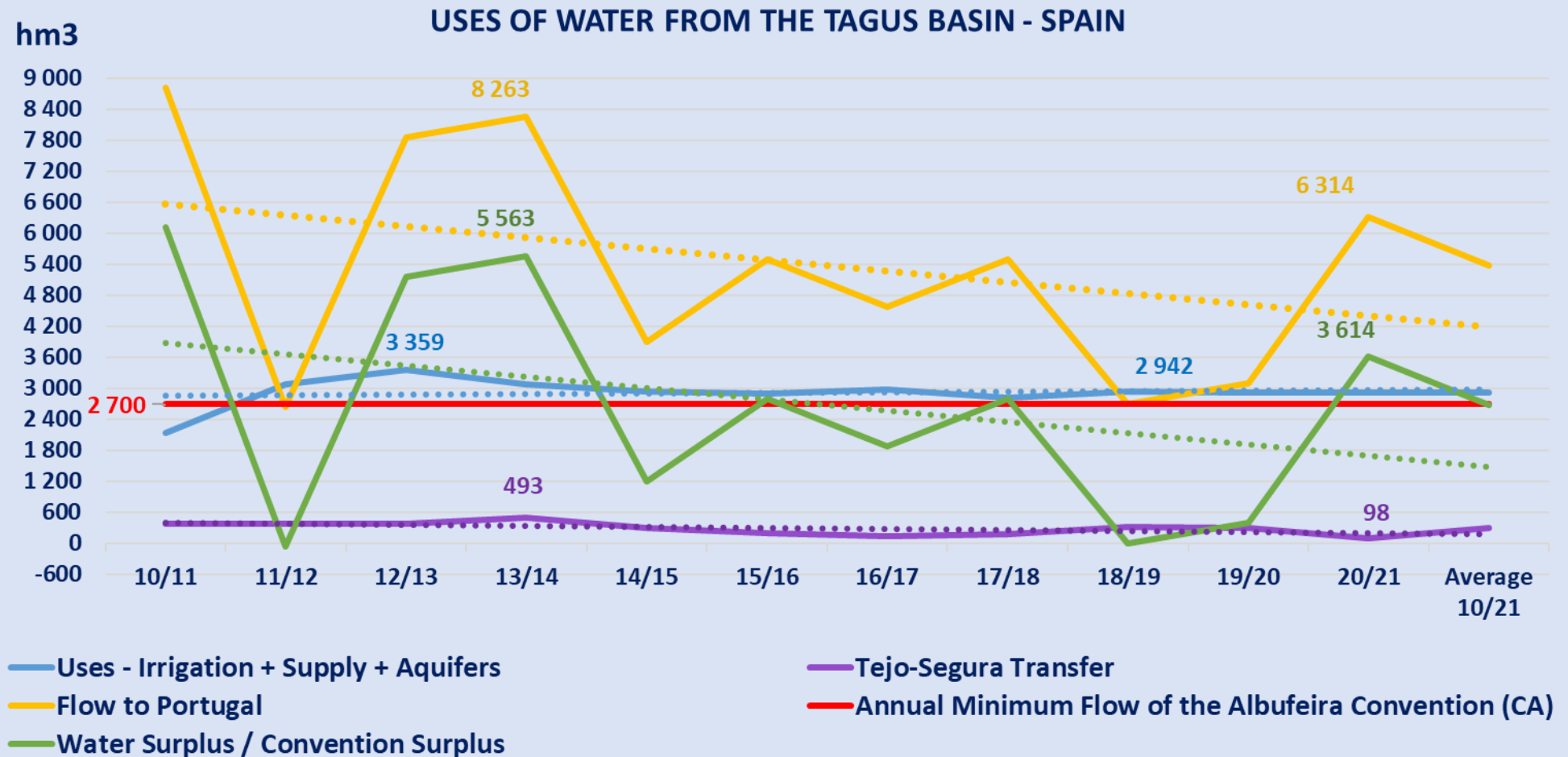
USES OF THE ANNUAL WATER AVAILABILITY OF THE TAGUS BASIN IN SPAIN
Average of 2010/2021



Source: Confederación Hidrográfica del Tajo/ Memoria 2010 a 2019.



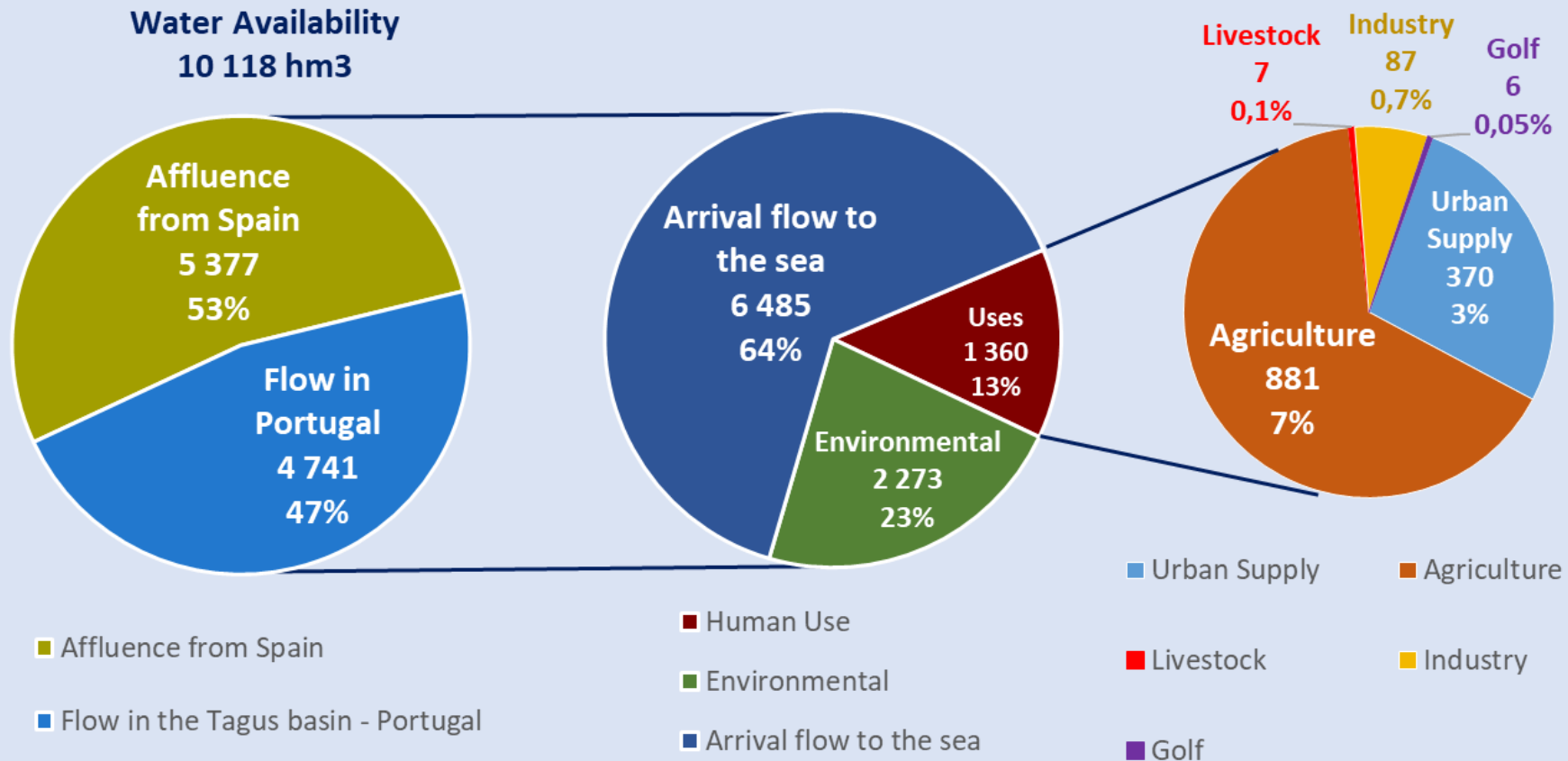
1. Water Quantity





1. Water Quantity

USES OF ANNUAL WATER AVAILABILITY IN THE TAGUS BASIN IN PORTUGAL

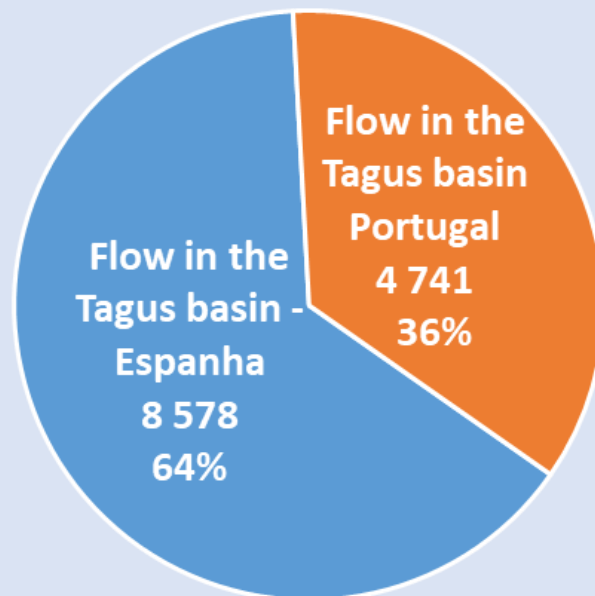




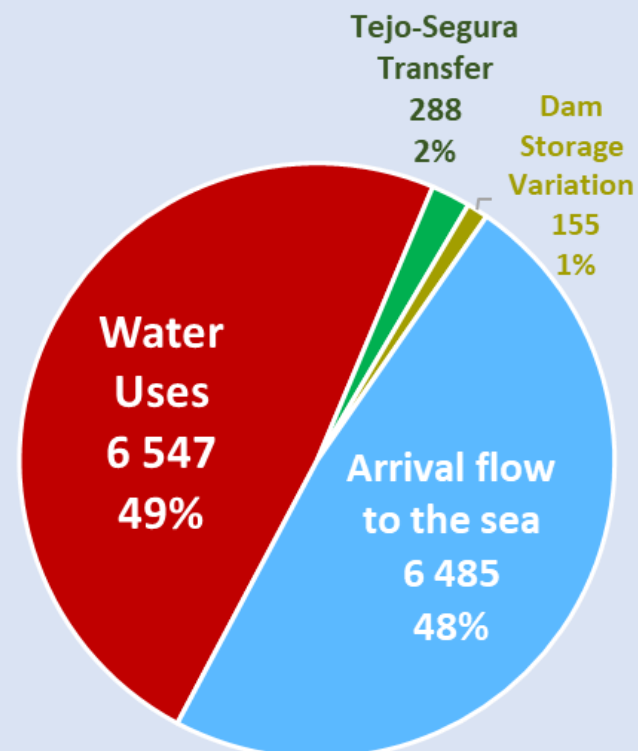
1. Water Quantity

USES OF WATER AVAILABILITY IN THE IBERIAN TAGUS BASIN

Water Availability
13 319 hm³



■ Flow in the Tagus basin
■ Flow in the Tagus basin



■ Water Uses
■ Tejo-Segura Transfer
■ Dam Storage Variation
■ Arrival flow to the sea



1. Water Quantity

MINIMUM FLOWS AT THE ALBUFEIRA CONVENTION

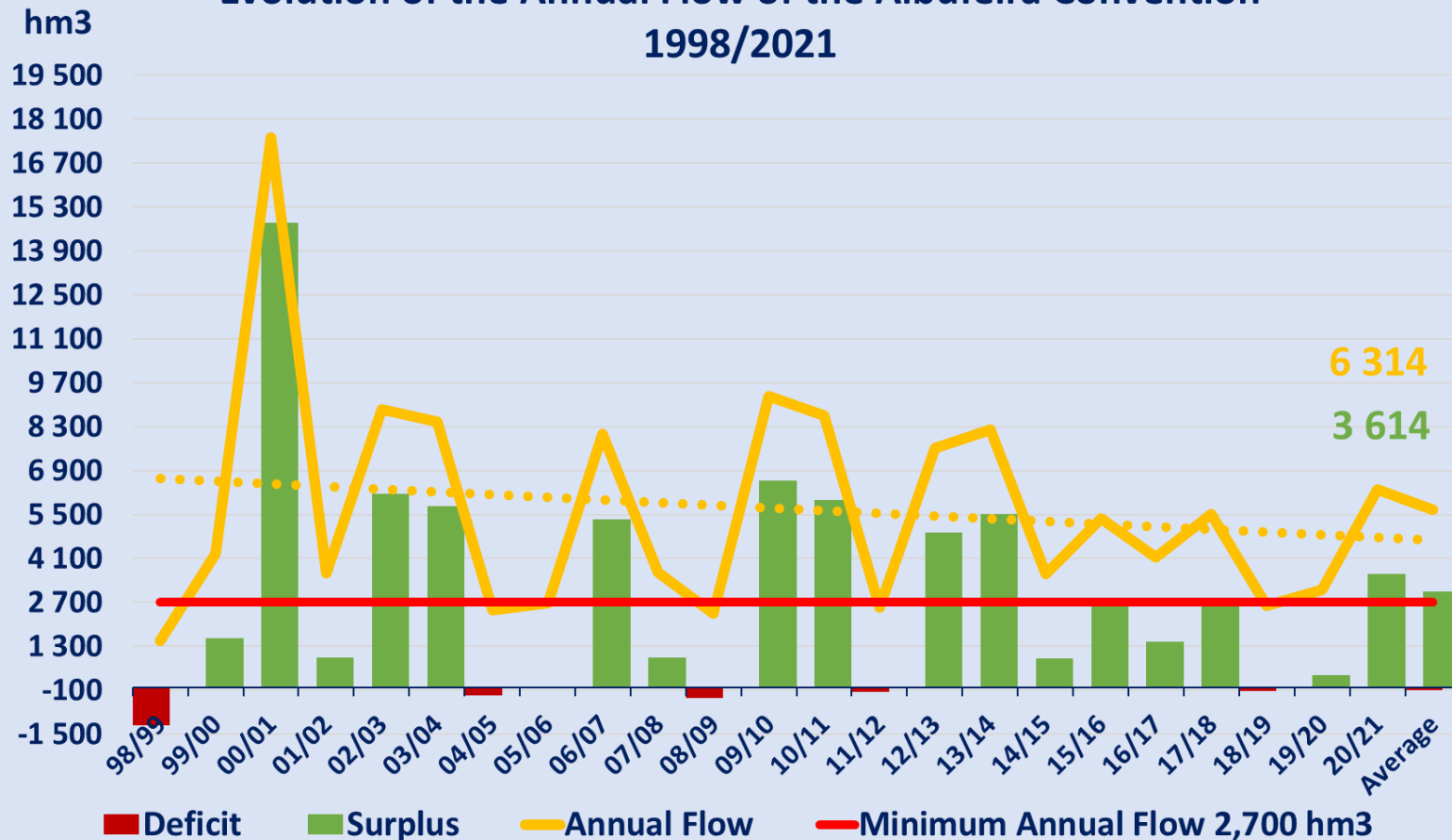
Minimum Flows	Guadiana			Tejo			Minho			Douro			4 Bacias		
	hm3	m3/s	% (hm3)	hm3	m3/s	% (hm3)	hm3	m3/s	% (hm3)	hm3	m3/s	% (hm3)	hm3	m3/s	% (hm3)
i) Full annual flow	400	13		2 700	86		3700	117		3 500	111		10 300	327	
ii) Quarterly full flow	140	4	35	995	32	37	1 480	47	40	1 890	60	54	4 505	143	44
Autumn - From 1st October to 31st December	42	5	11	295	37	11	440	56	12	510	65	15	1 287	163	12
Winter - From 1st January to 31st March	49	6	12	350	44	13	530	67	14	630	80	18	1 559	198	15
Spring - From April 1st to June 30th	28	4	7	220	28	8	330	42	9	480	61	14	1 058	134	10
Summer - From the 1st of July to the 30th of September	21	3	5	130	17	5	180	23	5	270	34	8	601	76	6
ii) Full weekly flow (x 52 weeks)	1,2	2	16	7	12	13				10	16	15	18,2	3	9
Water Availability in Spain (a)				9 096			12 120			9 013					
% Full Annual Flow / Water Availability in Spain				30			31			39					
% Full Quarterly Flow / Water Availability in Spain				11			12			21					

Note: (a) Minho and Douro - Management Plans for the Hydrographic Region 2016-2021 - Average annual flow in natural regime - 50% (average year); Tejo - Hydrological Balance Sheet of the Tejo Hydrographic Confederation - Spain - Average for the last 10 years.



1. Water Quantity

Evolution of the Annual Flow of the Albufeira Convention
1998/2021

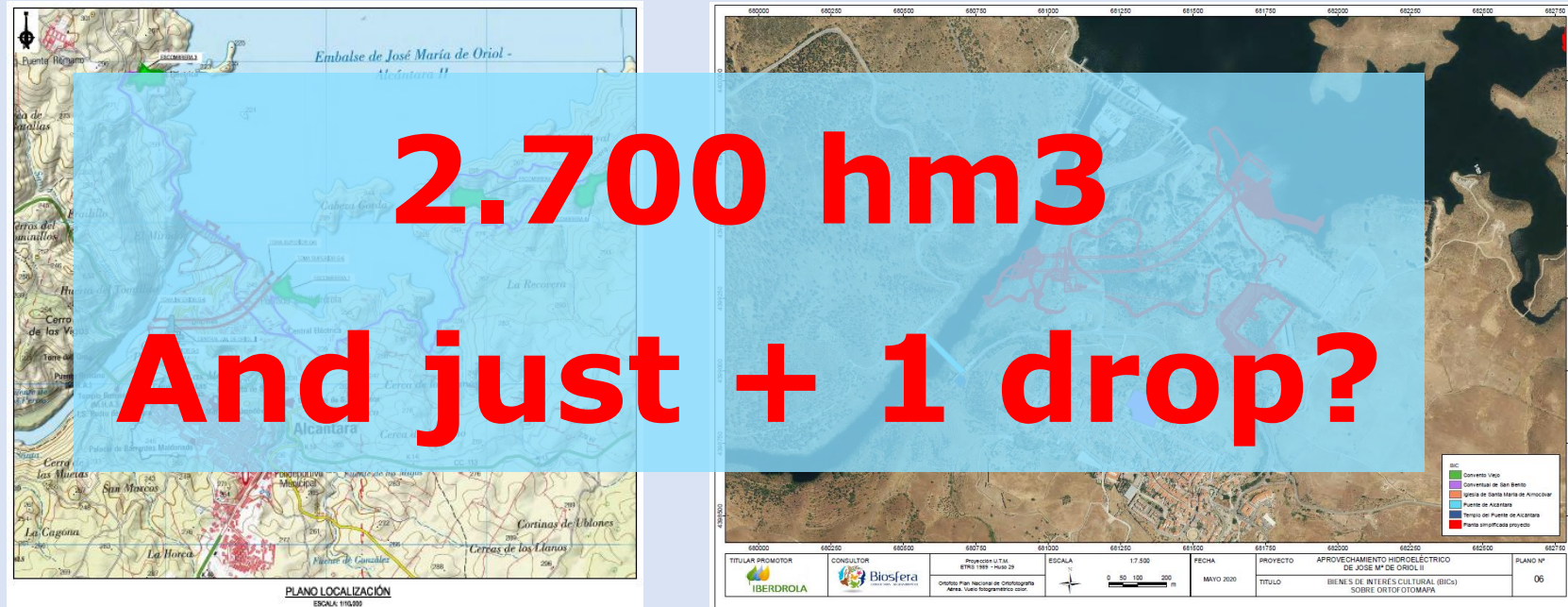




1. Water Quantity

Project for the installation of a reversible hydroelectric plant
(upstream water pumping) in the Alcântara dam owned by Iberdrola

Public
consultation
until June 19,
2020 in Spain



[Iberdrola proyecta una hidroeléctrica reversible en el embalse de Alcántara - Hoy Extremadura - 21 junio 2020](#)



1. Water Quantity

The **minimum weekly and quarterly flows established** in the Additional Protocol to the Albufeira Convention, which flow from Spain, **are insignificant as they represent**, if complied with, respectively, **only 13% and 37% of the annual flow of 2,700 hm³**, thus allowing a **wide variation in flows during days, weeks and quarters**.

MINIMUM FLOWS AT THE ALBUFEIRA CONVENTION

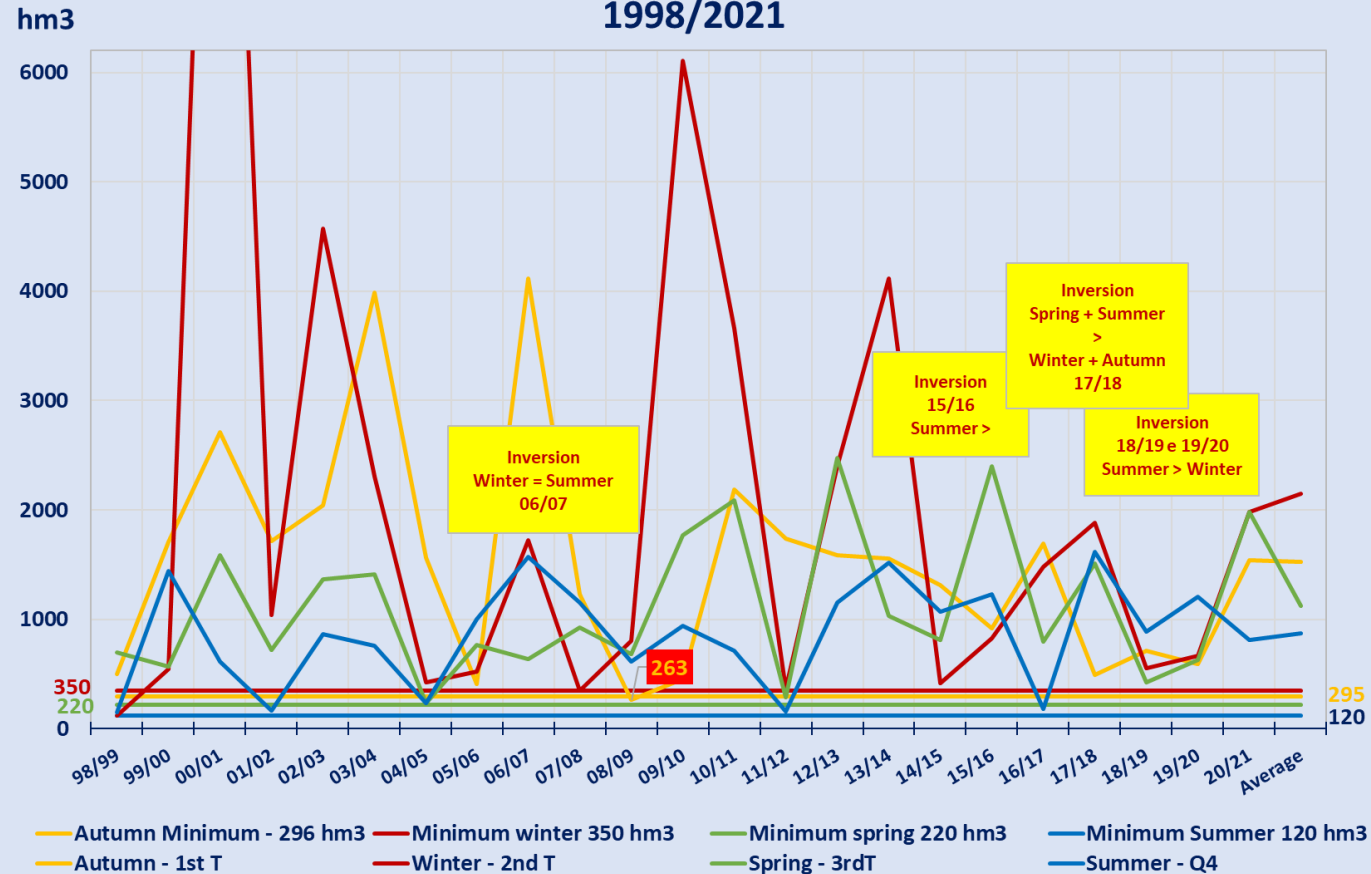
Minimum Flows	Downstream of the Cedillo dam (Borderline)						Downstream of the Ponte de Muge (Portugal)					
	Minimum Flow at the Albufeira Convention		Quarterly or Weekly Minimum Flow = Annual Flow		Quarterly or Weekly Flow / Annual Flow	Multiplier for Annual Flow Equivalence	Minimum Flow at the Albufeira Convention		Quarterly or Weekly Minimum Flow = Annual Flow		Quarterly or Weekly Flow / Annual Flow	Multiplier for Annual Flow Equivalence
	hm ³	m ³ /s	hm ³	m ³ /s	%	Qt	hm ³	m ³ /s	hm ³	m ³ /s	%	Qt
i) Full annual flow	2 700	86	2 700	86	100		1 300	41	1 300	41	100	
ii) Quarterly full flow	995		2 700				500		1 300			
From October 1st to December 31st	295	38	801	102	37	3	150	19	390	50	38	3
From January 1st to March 31st	350	45	950	121	37	3	180	23	468	60	38	3
From April 1st to June 30th	220	28	597	76	37	3	110	14	286	36	38	3
From the 1st of July to the 30th of September	130	17	353	45	37	3	60	8	156	20	38	3
ii) Full weekly flow	7	12	52	86	13	7	3	5	25	41	12	8



1. Water Quantity

**Affluent Quarterly Flow of Spain by Quarter Hydrological Years
1998/2021**

**Inversion of
the water
cycle**

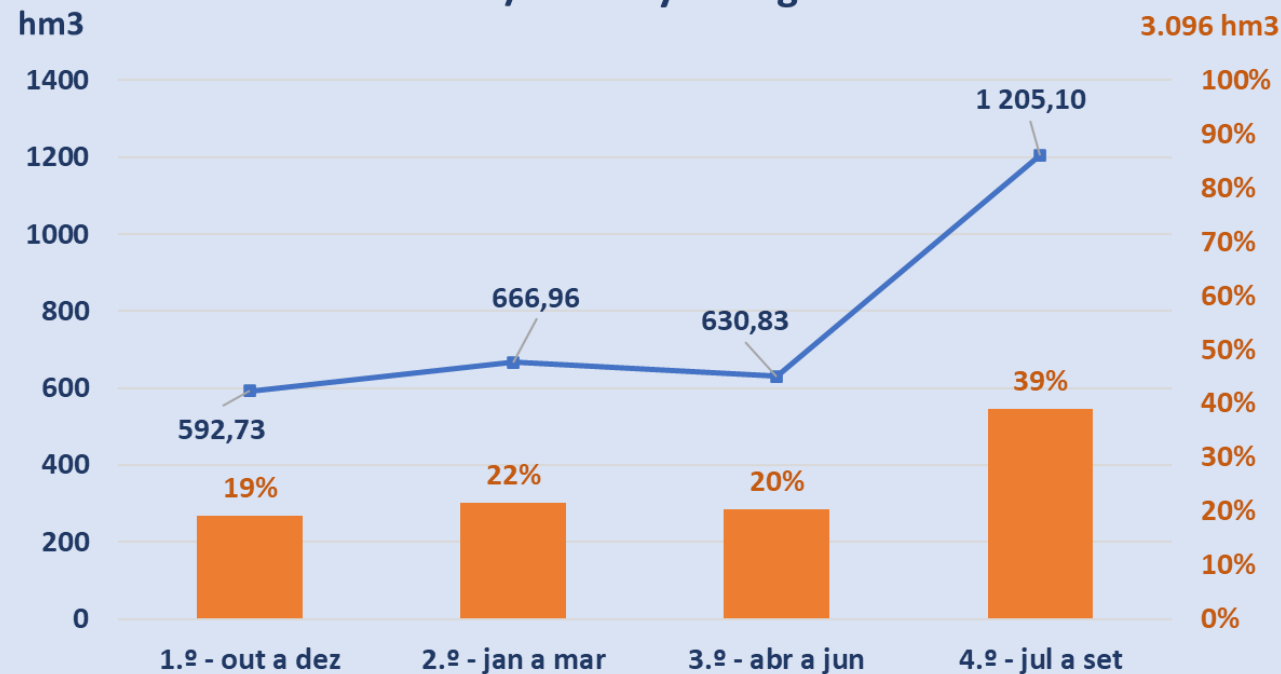


Source: Portuguese Environment Agency's Water Resources Information System



1. Water Quantity

Evolution of Spain's affluent flow
in the 2019/2020 Hydrological Year



Note: Calculation of 24 hours x 60 minutes x 60 seconds x affluent average daily flow in m3 / second.

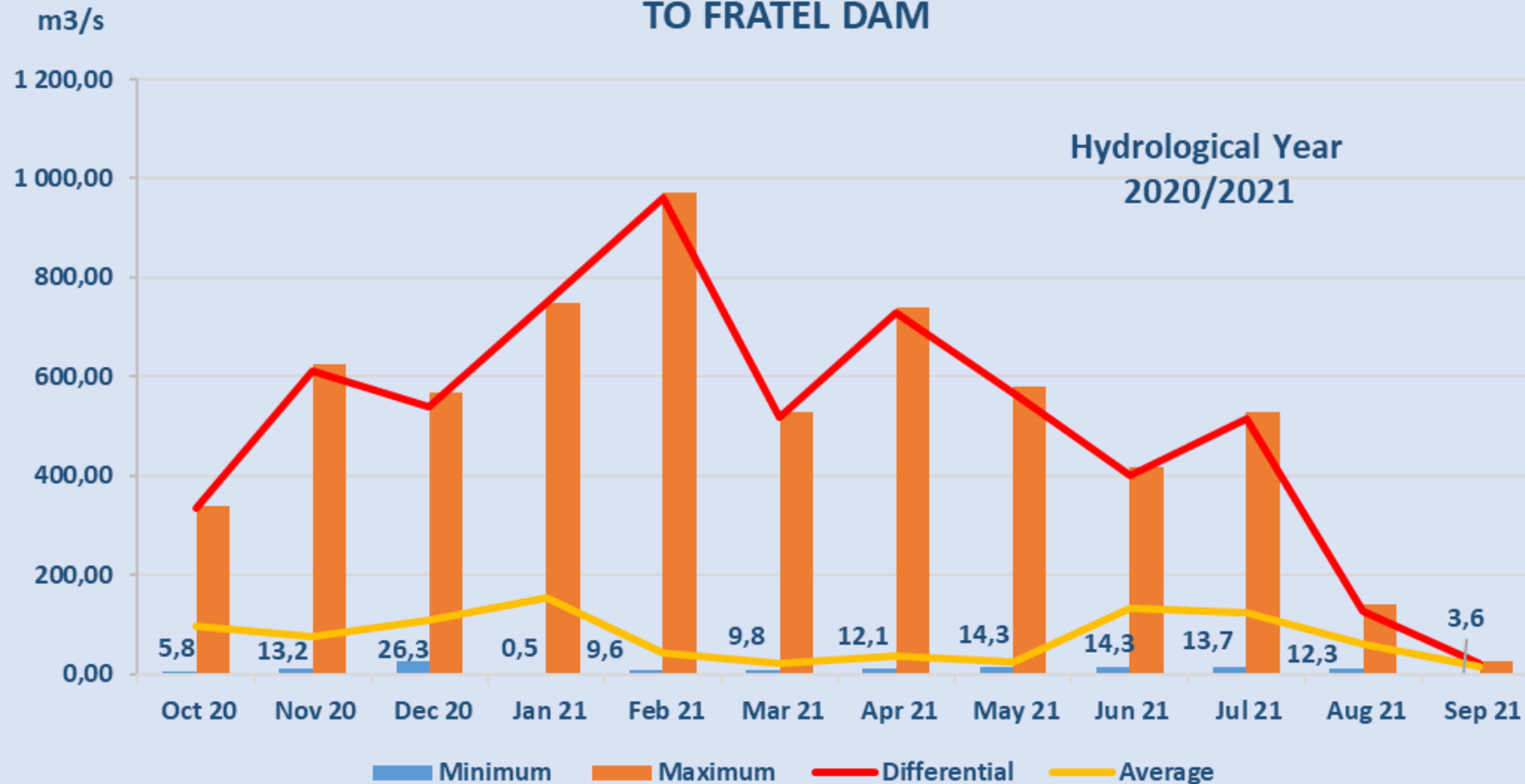
Source: Average daily flows (m3 / s) affluent to the Fratel dam of the National Water Resources Information System of the Portuguese Environment Agency.

**Inversion of
the water
cycle**



1. Water Quantity

DAILY AVERAGE FLUENT FLOW VALUES TO FRATEL DAM



Source: Portuguese Environment Agency's Water Resources Information System



1. Water Quantity

Fratel

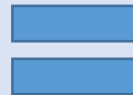


Belver



Average daily
flow at Belver
of 10 m³/s

2017



4 hours X 30 m³/s

+

4 hours X 30 m³/s

+

16 hours = 0 or >0



Negative impacts on:

economic activities

enjoyment of populations

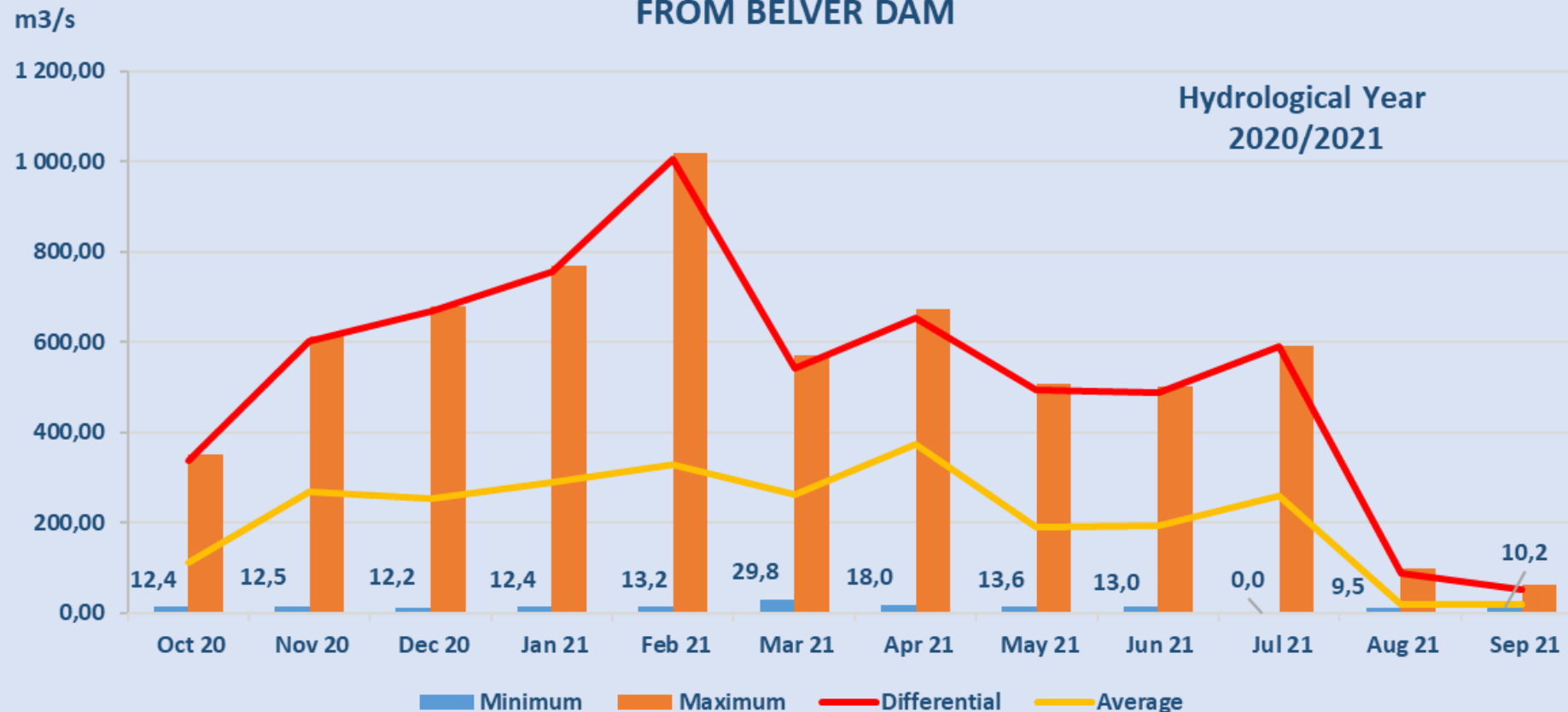
biodiversity and ecosystems

Sustainability of Life



1. Water Quantity

DAILY AVERAGE EFFLUENT FLOW VALUES
FROM BELVER DAM



Source: Portuguese Environment Agency's Water Resources Information System



1. Water Quantity

Transfer between different basins





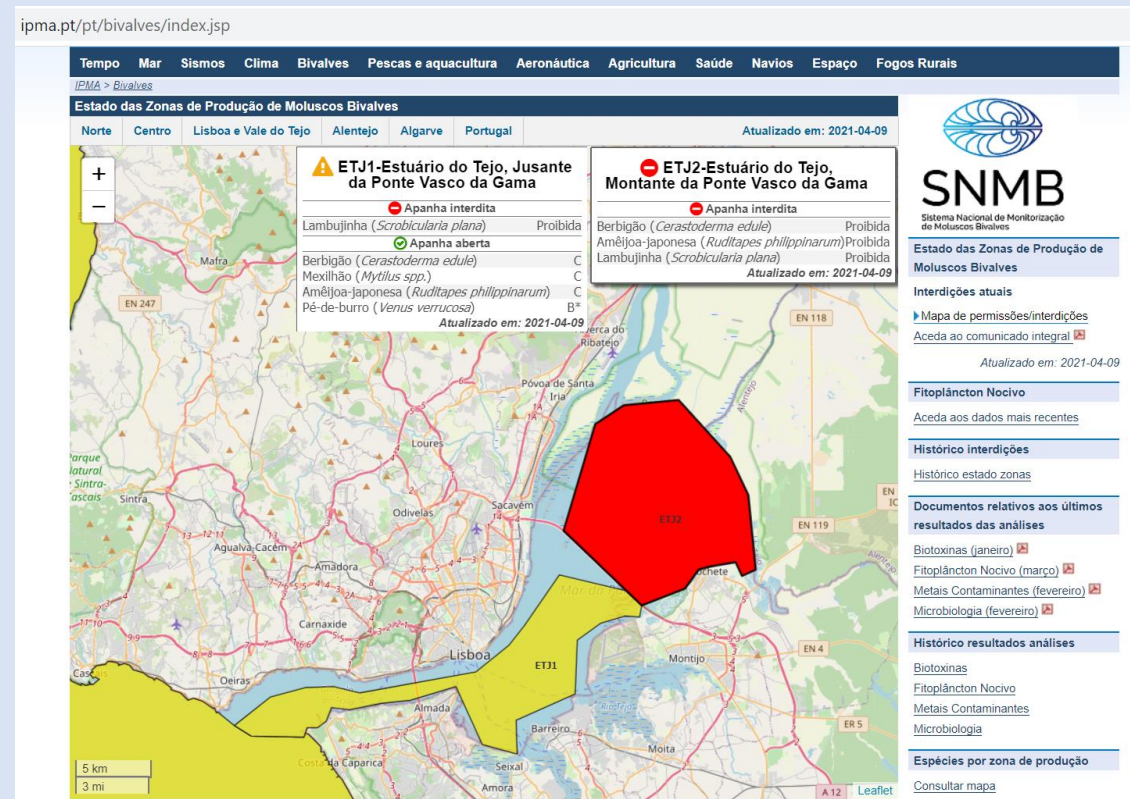
2. Water Quality

a. Water Framework Directive

b. Pollution – from Spain, in Tagus river, affluents and estuary

i. Estuary
pollution since
March 9,
2021.....

**Bivalve fishing ban
in the Tagus Estuary
Natural Reserve**





2. Water Quality

ii. Affluents of Tagus River pollution during 2021...

Nabão River



**Boa Água
stream**



**Alviela
River**



Nisa stream





2. Water Quality

iii. Main stretch of the Tagus river pollution during 2021...

Valada, Tagus River



Chamusca, Tagus River





2. Water Quality

iv. Pollution from Spain - eutrophication, algae bloom and cyanobacteria since 2009...

**Cedillo Dam,
Borderline with Spain
April 2021,
Tagus River**





2. Water Quality

iv. Pollution from Spain - eutrophication, algae bloom and cyanobacteria since 2009...

Alcântara Dam

September 14th, 2021, Tagus River



[“La Guardia Civil investiga el mal estado del río Tajo tras los desembalses” El Periódico Extremadura - 14 septiembre 2021](#)

[“El Gobierno investiga a Iberdrola por desembalse en Ricobayo y Valdecañas y ve "escandaloso" que la compañía diga que cumple los requisitos” El Mundo - 13 agosto 2021](#)



2. Water Quality

iv. Pollution from Spain - eutrophication, algae bloom and cyanobacteria since 2009...

**Belver Dam
September 24th, 2021,
Tagus River**



**RIO TEJO
24/SET/21
18:00 HORAS**



2. Water Quality

iv. Pollution from Spain - eutrophication, algae bloom and cyanobacteria since 2009...

Fratel Dam

October 14th, 2021, Tagus River

October 7th, 2021

Portuguese Environmental Agency

[Note to the Media No. 73/2021](#)

**[Appearance of algal bloom
\(cyanobacteria\) in Cedillo dam](#)**





3. River connectivity without barriers

A. New Tagus Project - Hydraulic Harnessing for Multiple Purposes of the Tagus and West

- i. Fragmentation of habitats and ecosystems
- ii. Worse water quality and quantity

Last 120 km of free Tagus River

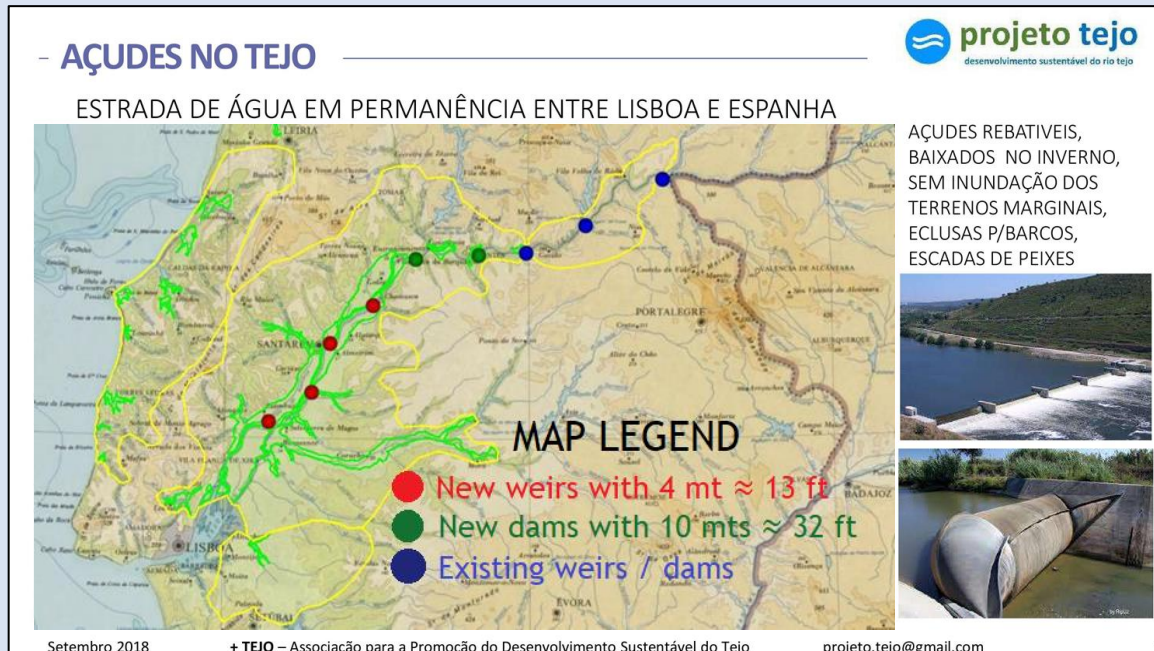
**2 New Dams and 4 New Weirs
(Green + Red)**

=

**1.007 km from source
til the sea**

Less (-)

880 km of dams and weirs





3. River connectivity without barriers

B. 1 Big Dam Ocreza

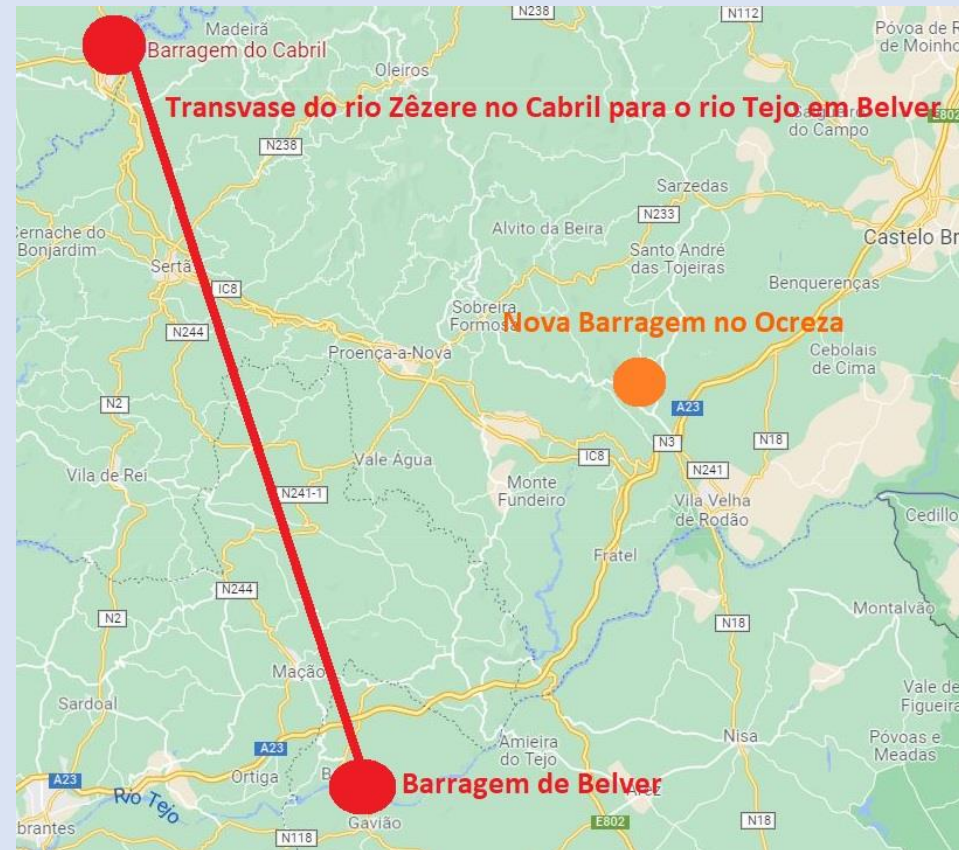
+

**C. 1 Transfer from Zêzere River
to Tagus River**

iii. Loss of Biodiversity

iv. Worst state of Tagus estuary

v. Against the European Strategy
for Biodiversity 2030



Huge cost - 5k M€ = 1/3 of european funds



3. River connectivity without barriers

Alternative - Water abstraction directly from the Tagus river

EPAL's Water Catchment Station in Valada captures 240,000 m³/day of water by gravity at high tide without energy costs and at low tide using suction equipment.



© 2011 - R. Piquero / Foto Engeström

Créditos: EPAL

[EPAL - Environmental Education: guided visit to the Valada Water Catchment Station.](#)

Lower Cost – 10 M€ - and scale economies allow to **reduce** energy costs of water catchment for agriculture.



Need for water capture to Projeto Tejo = 2 x atual use (150 mil ha)

= 2 x 1.163 hm³ = 2.326 hm³ ≈ Minimum Annual Flow in CA

All the water from Spain for Agriculture use?

And the ecological flow to the estuary and sea?



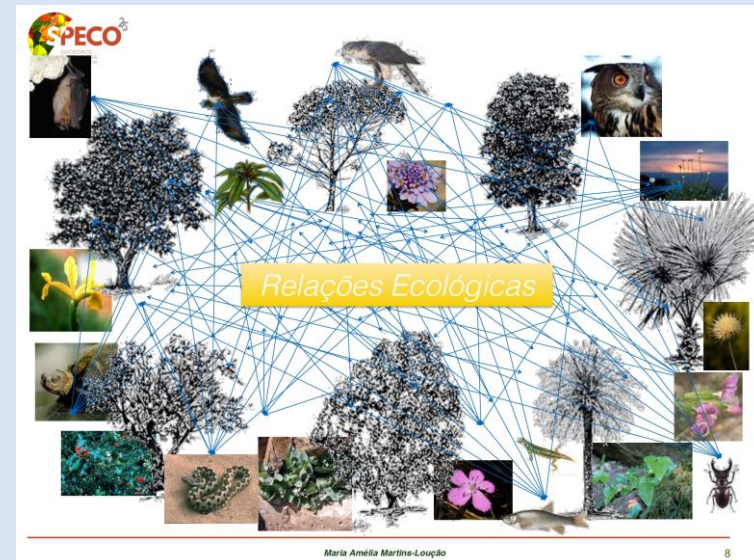
4. Biodiversity and Life Sustainability

Biodiversity as the basis of ecosystems provides services of greater importance to society, namely,

- ❑ *the **provision, regulation and purification of water**, which must be integrated and valued in environmental assessment and social well-being.*

"We must preserve every bit of biodiversity as invaluable as we learn to use it and understand what it means to humanity."

Edward O. Wilson





4. Biodiversity and Life Sustainability

The role of free rivers

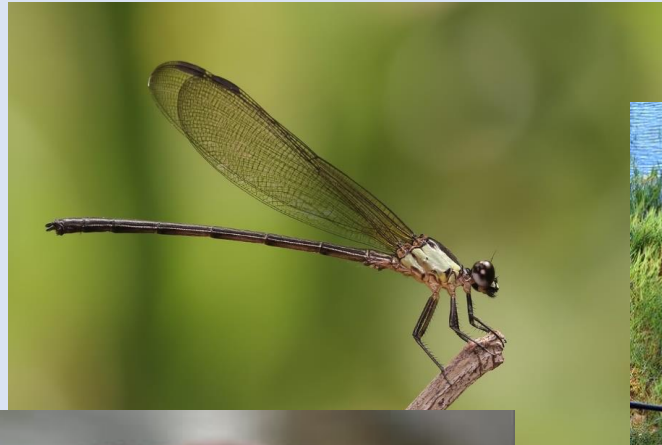
- a. Contribute to safeguarding and restoring biodiversity;
- b. Maintenance of ecological cycles and the sustainability of life through the services that ecosystems provide to society.

Dams and weirs add negative pressures on biodiversity, which requires:

- a. Ecological vision*** capable of identifying ***alternatives for action on the supply and demand of water;***
- b. Achieve a balance between satisfying human needs and conserving biodiversity*** to ensure continuity of the proper functioning of the ***vital cycles that sustain Life.***



4. Biodiversity and Life Sustainability





ACTION REQUIRED

Complaint to the European Commission against Portugal and Spain:

1º Non-compliance with the Water Framework Directive (WFD)

The management of hydroelectric production dams with purely economic criteria of profit maximization:

- ❑ *is causing a **further deterioration of the ecological status of the water bodies** of the Tagus river and for that reason,*
 - ***prevents the environmental objectives of Article 4(1) of the WFD from being achieved;***
- ❑ *it does **not ensure a "hydrological regime consistent with the achievement of the WFD environmental objectives in natural surface water bodies"** - [guidance document nº 31 – Ecological flows in the implementation of the Water Framework Directive](#).*



ACTION REQUIRED

Complaint to the European Commission against Portugal and Spain:

2º Non-compliance with European Biodiversity Strategy 2030

The European Biodiversity Strategy 2030 **presents ecological restoration targets for ecosystems, namely rivers, in order to increase their connectivity.**

The European Commission has established:

- ❑ the restoration of at least 25 000 km of rivers by removing obsolete barriers and restoring riparian ecosystems as a goal to be achieved under the European Biodiversity Strategy 2030.**



ACTION REQUIRED

Complaint to the European Commission against Portugal and Spain:

2º Non-compliance with European Biodiversity Strategy 2030

**New hydraulic works for the construction
of dams and transfers increasing barriers
to the connectivity of the Tagus River**

=

**Contradiction and perversion of the objectives
defined by the European Union,
subscribed by Portugal**



**EUROPEAN
RIVERS
SUMMIT**



ONLINE SUMMIT

Nov. 18-20

2021 

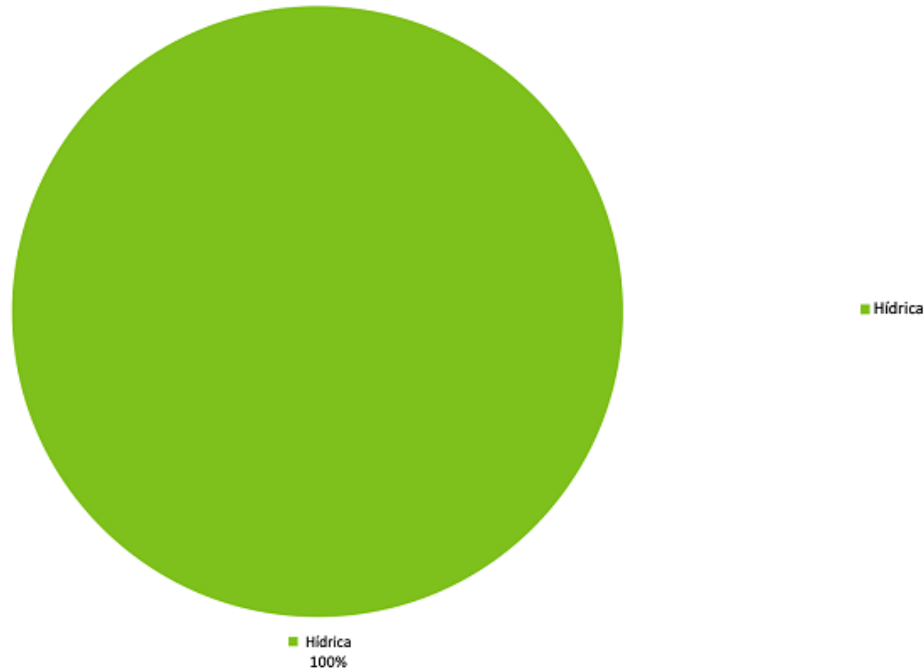
**AND CAN YOU GUESS THE
BIG QUESTION NOW?**



Still believe in hydric “Green Product” of dams?

iberdrola.pt/sobre-nos/mercado-eletrico/rotulagem-energia/iberdrola-portugal

Produto Verde



A Iberdrola oferece planos aos seus clientes cuja energia pode ter origem em fontes renováveis e não renováveis, que denomina como produto genérico. Este gráfico reflete o mix de produção do produto genérico.



Let's Dive into a Living Tagus?





**EUROPEAN
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ONLINE SUMMIT

Nov. 18-20

2021 

Let's join the President?





EUROPEAN
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ONLINE SUMMIT

Nov. 18-20

2021 



But Before...





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Adhere to the proTEJO Cause in Facebook: <http://www.causes.com/proTEJO>



EUROPEAN RIVERS SUMMIT



THANK YOU

AND HAVE A NICE SUMMIT!

