SPANISH-PORTUGUESE TRANSBOUNDARY RIVERS

Spain and Portugal share five main river basins. Three of these (Duero/Douro, Tajo/Tejo, and Guadiana) are also some of the largest basins in the Iberian Peninsula.

In general, Spanish territory is upstream and around 70% of the annual water resources of these rivers is generated in Spain.

Extreme variations in rainfall – from season to season and year to year - exacerbate scarcity in water flows, particularly in the drier south. Irrigation, a highly consumptive use, is the main source of demand in both States.

ALBUFEIRA CONVENTION

In 1998 the Spanish Government and the Portuguese Government reacted and negotiations followed that led to the signature of a new water treaty in 1998, the so-called Albufeira Convention.

ALBUFEIRA PRINCIPLES

Legal framework for cooperation and coordination

- Environmental global protection of surface water and groundwater bodies and related ecosystems
- To guarantee sustainable water use and mitigate effects
  - floods,
  - droughts
  - water scarcity.

- **Cooperation** based on three principal elements:
  - Active, regular and systematic exchange of information and consultation
  - Harmonise technical, administrative and legal measures
  - Define a flow regime in international rivers
- **Coordination of water management plans and programme of measures (WFD)**
  - ✓ Common environmental objectives
  - ✓ Coordination of works & Programme of measures

This convention is inspired by the traditional spirit of friendship and co-operation between both Nations and seeks to balance environmental protection with sustainable use of the water resources within the framework of International and EU Law, whilst at the same time respects the provisions of previous water treaties.

FLOW AGREEMENT IN GUADIANA RIVER AT BADAJOZ

Annual

Total volume in reference dams 1th March (hm^3)	Cumulated precipitation from 1th Octuber to 1th March	
	Precipitation higher than 65%	Precipitation lower than 65%
> 4000	600	400
3150-4000	500	300
2650-3150	400	Exeption (*)
<2650	Exeption (*)	Exeption (*)

Minimum flow

Qmin	2 m^3/sg
Annual mínimum volume	63,1 hm^3/año

FROM ANNUAL VALUES TO TRIMESTER VALUES

1 Trimester

Storage volume in selected dams [hm³]	Pp higher than 65%	Pp lower than 65%
> 3700	63	42
2850-3700	53	32
2350-2850	42	Exeption (*)
< 2350	Exeption (*)	Exeption (*)

2 Trimester

Storage volume in selected dams [hm³]	Pp higher than 65%	Pp lower than 65%
> 4000	74	49
3150-4000	61	37
2650-3150	49	Exeption (*)
< 2650	Exeption (*)	Exeption (*)

3 Trimester

Storage volume in selected dams [hm³]	Pp higher than 65%	Pp lower than 65%
> 3700	42	28
2850-3700	35	21
2350-2850	28	Exeption (*)
< 2350	Exeption (*)	Exeption (*)

4 Trimester

Storage volume in selected dams [hm³]	Pp higher than 65%	Pp lower than 65%
> 3400	32	21
2550-3400	26	16
2050-2550	21	Exeption (*)
< 2050	Exeption (*)	Exeption (*)

(*) Exeptions witn mínimum flows:

MINIMUM FLOWS:

Qmin	2 m³/s
Min Annual Volume	63,1 hm³/year
Minimum trimester volume	15,8 hm³/trim

THE SENEGAL RIVER

With a length of 1,800 km, the Senegal River crosses Guinea, Mali, Mauritania and Senegal.

The river basin extends over 337, 500 km² and has a population of around 3,500,000 inhabitants (16% of the total populations of these states).

A milestone in this history was the creation in 1972 of the Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVS) when the basin countries were experiencing the worst drought in decades.

The document signed by the 4 countries gives the Commission the possibility of managing water.

DELTA DETERIORATION AFFECTING LOCAL COMMUNITIES

The delta and the Senegal valley were affected with the impoundment of the Manantali and Diama dams.

These changes had negative impacts on the functioning of the delta ecosystems and local communities

THE WATER NEEDS OF ECOSYSTEMS

Table 1. Optimal growth conditions for some of the characteristic lower delta vegetation, as derived from the comparison of flood maps and vegetation maps.

Group	*Species*	*Optimal water height during flood peak*	*Optimal flood duration*	*Typical growth station*	*Use*
Chenopodiacea	*Arthrocnemum macrostachyum*	< 0.05 m	< 1 week	Nebkas (wind blown deposits)	Marginal grazing for camels
Poacea (grasses)	*Echinochloa colona*	0.05 to 0.4 m			High quality grazing (bovines)
	Sporobolus robustus	< 0.8 m	2 to 4 weeks	Levees and edges of flooded depressions	Artisanal weaving and bulk grazing
	Sporobolus helvolus				Bulk grazing
Cyperacea (sedges)	*Bolboschoenus maritimus*				None
	Scirpus maritimus	0.8 to 1m	Several months	Flooded depressions	None
	Cyperus rotundus				None
	Cyperus esculentus				None
Typhacea (reedmace)	*Typha domingensis*	0.8 to 1m	Year round	Channels	None

ARTIFICIAL FLOODS: IMPROVING THE DELTA CONDITION OF PEOPLE AND ECOSYSTEMS

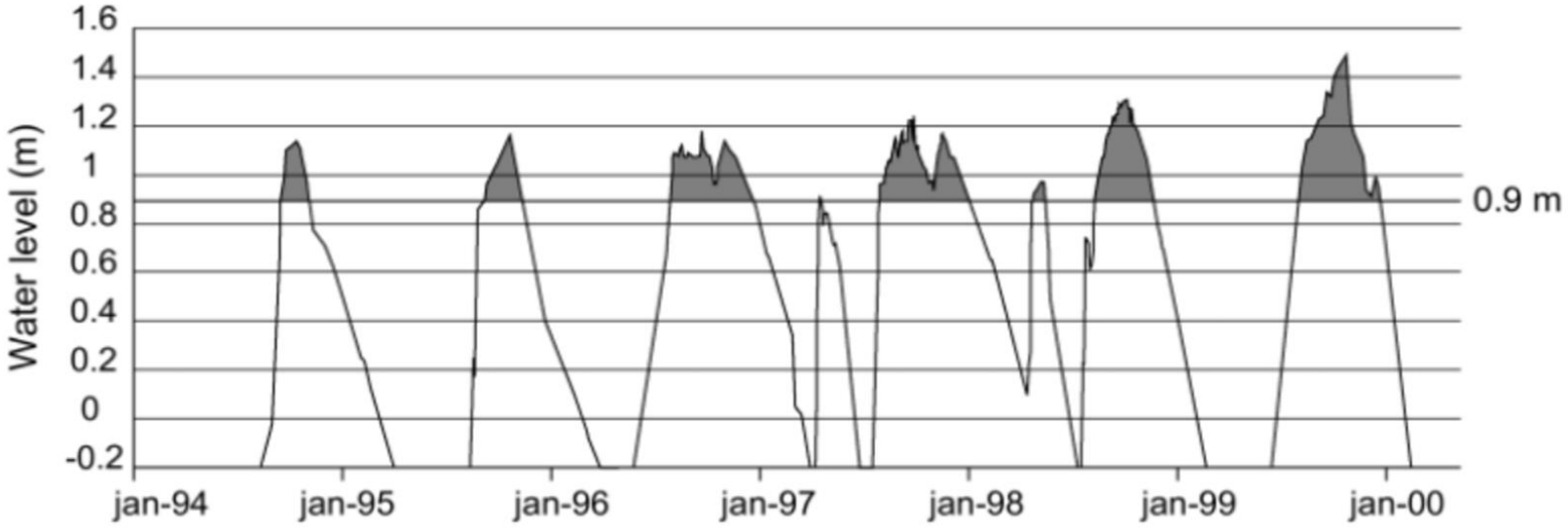

Fig. 4. *Water levels in the Bell basin between 1994 and 1999. When the water level exceeds 0.90m IGN the floodplain starts to be covered by water (grey shading).*

OMVS initiated the implementation of the Environmental Impact Mitigation and Monitoring Program (PASIE). This program aims to define and implement a series of actions that are part of a global strategy for the protection and preservation of the environment.

Managed flood releases from Manantali allowed traditional recession agriculture in the floodplains to continue, especially in the years of important natural floods. This compensatory measure attenuated the negative impacts of the dams on the quality of life of the traditional floodplain users.

With increased understanding - within the donor community and OMVS - of the economic, social and environmental benefits of the artificial floods, it is envisaged to the perpetuate the managed flood releases.