Water allocation in transboundary basins

Status and good practices

Integrating flexibility and hydrological changing conditions into an agreement: The case of Albufeira Convention (Spain-Portugal)

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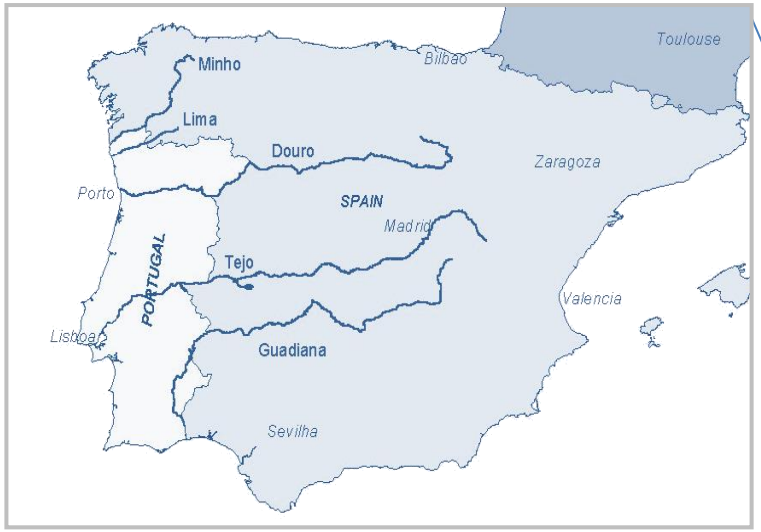
Geneva, October, 16th-17th 2017

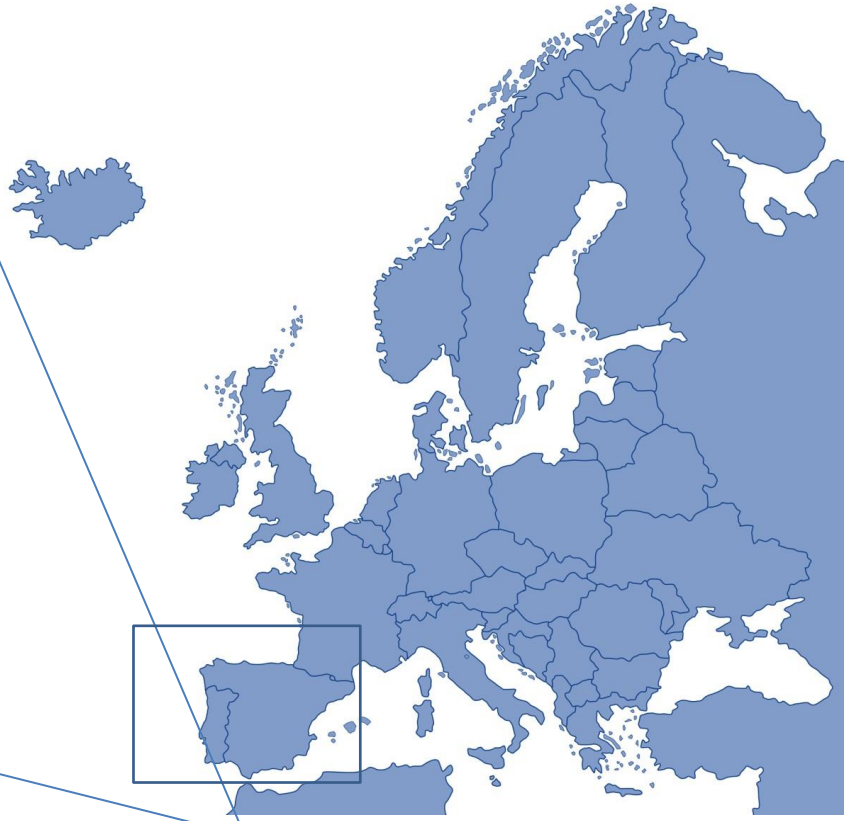
PLANEGE CENOR

Introduction

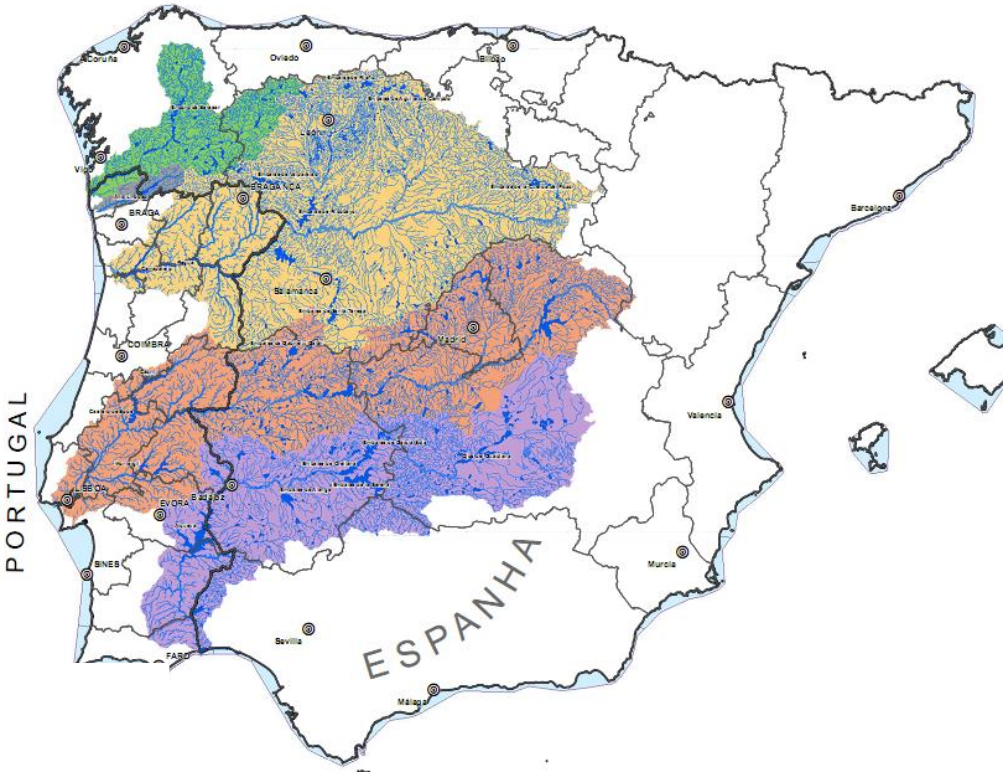
Portugal is an independent Nation since 1147, at a time when in the Iberian Peninsula coexisted many kingdoms that afterwards would give place to the Kingdom of Spain.

The borders between the two countries were defined in 1298 and they are the oldest in Europe, eventually in the whole World.



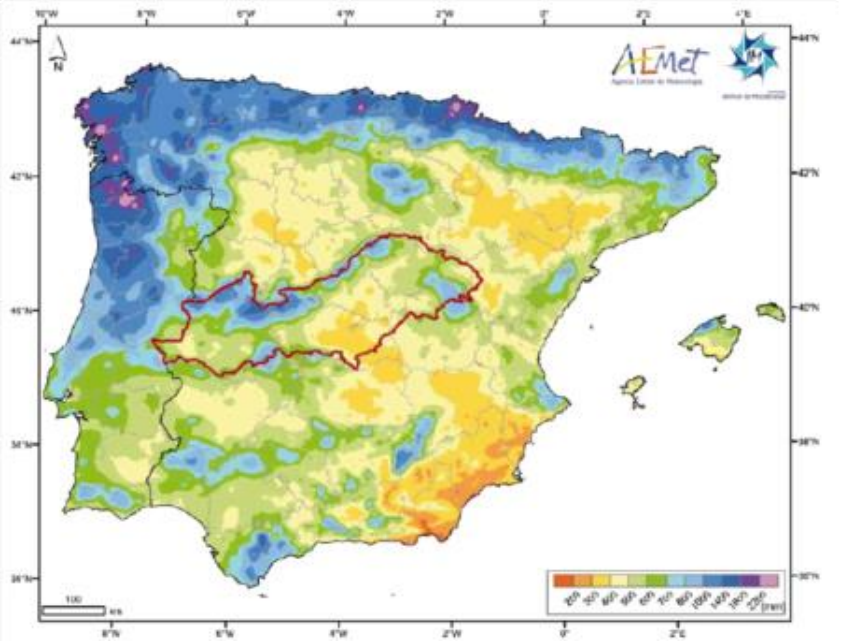


Introduction



Pluviometria and geography are advantageous to Portugal.

The Northern part of the Peninsula is humid, whilst the Southern part is dry, specially in Spain.



Tajo's river basin makes the transition from the humid Iberia to the dry one, in Spain as well as in Portugal.

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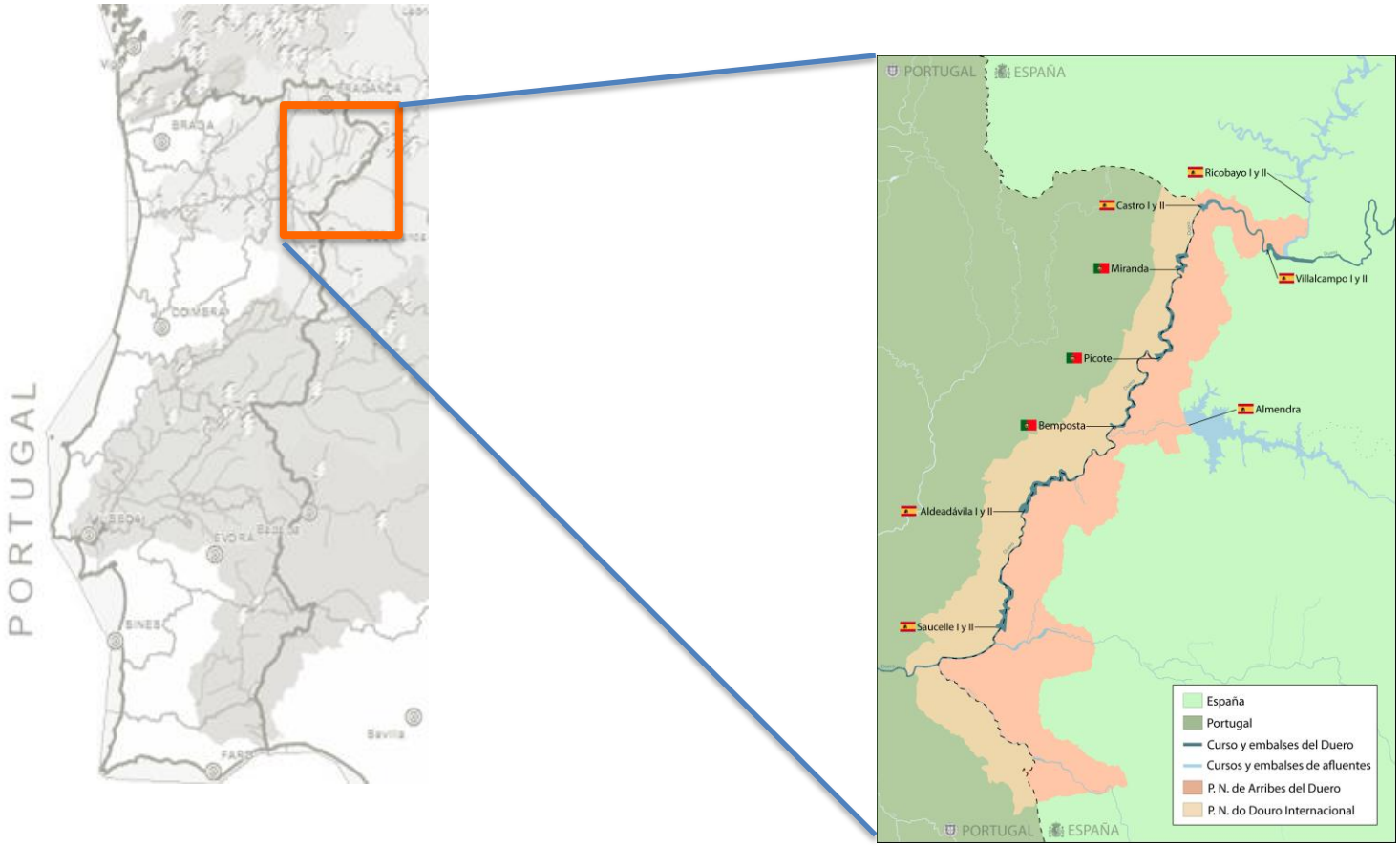
The 1927 Convention on the Douro

Transboundary cooperation really started in 1927, when a Convention on the sharing of the hydropower potential of the border stretch of this river was signed and a Portuguese-Spanish Commission in charge of management was set up.

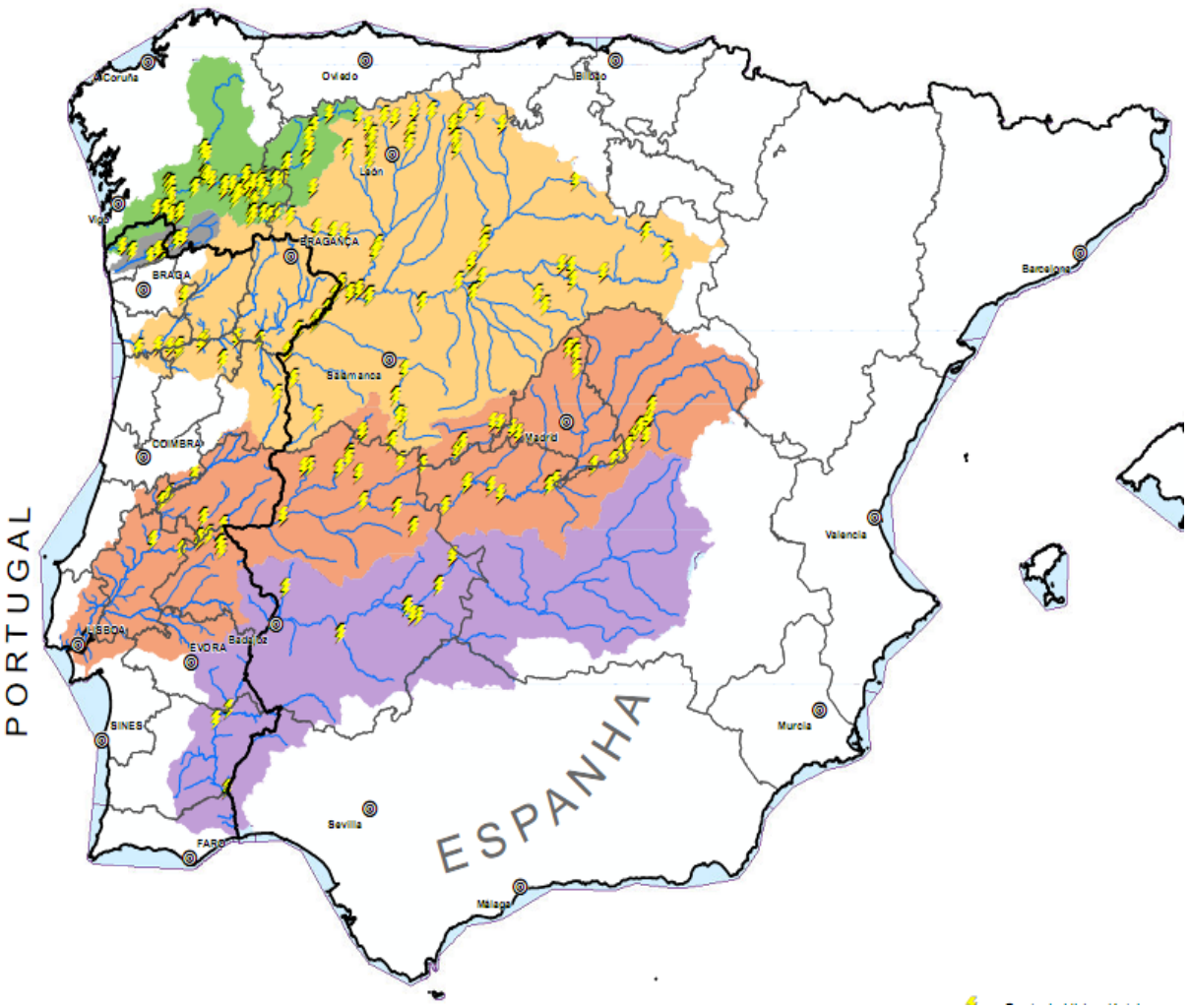
This convention was updated in 1964.



The 1968 Convention on the Minho, Lima, Tajo and Guadiana rivers

Another Convention was signed in 1968 with the scope of sharing the hydraulic potential, and no longer the hydropower potential, of the border stretches of the other transboundary rivers.

Spain wanted to build the Tajo-Segura Aqueduct, to bring water to the Southern part of the territory, and **Portugal wanted to build the Alqueva Dam, for irrigation purposes in the Alentejo**.



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The 1968 Convention on the Minho, Lima, Tajo and Guadiana rivers

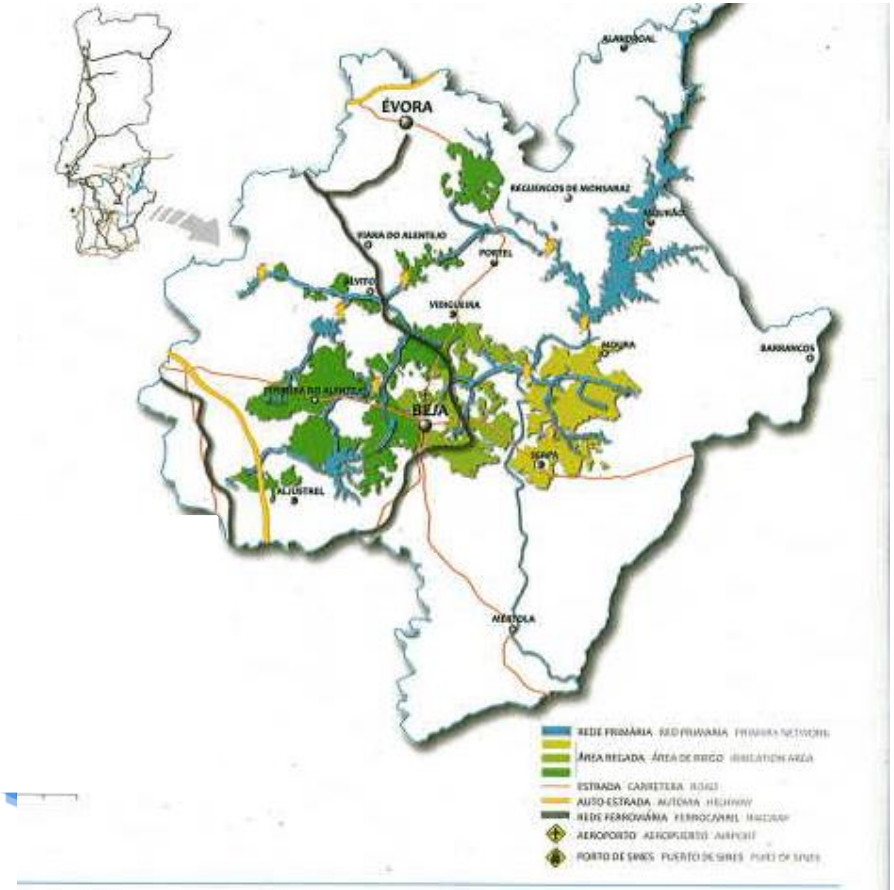
Aqueduct Tajo-Segura

Up to 1000 million m^3 may be transfered each year (30 m^3/sec) to be used in the Segura river basin.

The 1968 Convention on the Minho, Lima, Tajo and Guadiana rivers

Alentejo's Irrigation Plan

In Portugal the irrigation of 200.000 ha in Alentejo, in the Tajo, Guadiana and Sado river basins, was foreseen.

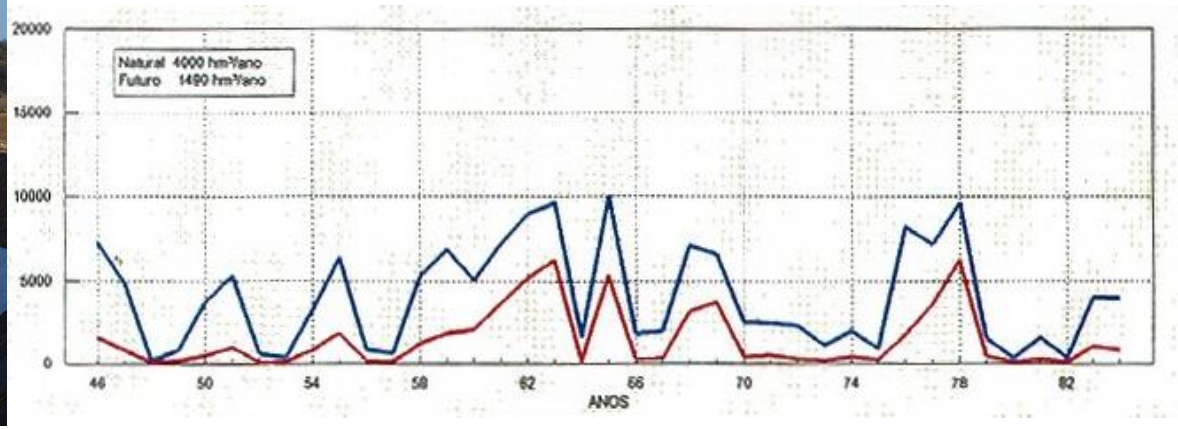


Dam builders

By the end of the 1980ies the situation in the main transboundary rivers presented itself as follows:

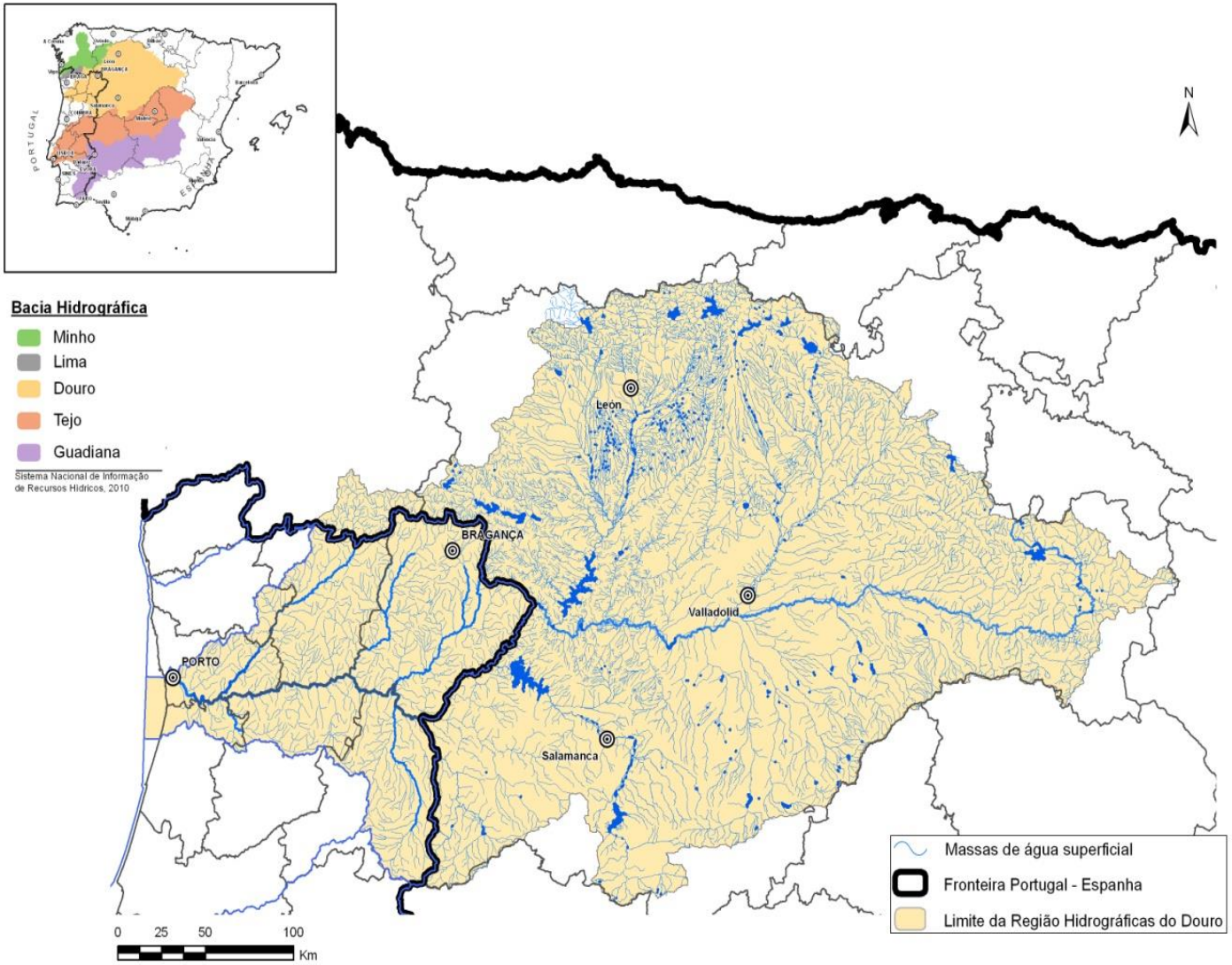
- Dozens of dams had been built, both in Spain and Portugal;
- Because of agricultural and industrial development, waters were highly polluted almost everywhere;
- Water abstraction for irrigation severely reduced the flows arriving to the border and flow regime was highly irregular.

Hydrogramme at the border of the Guadiana river obtained by simulation for pristine conditions (blue) and with the uses as set up in 1990 (red).

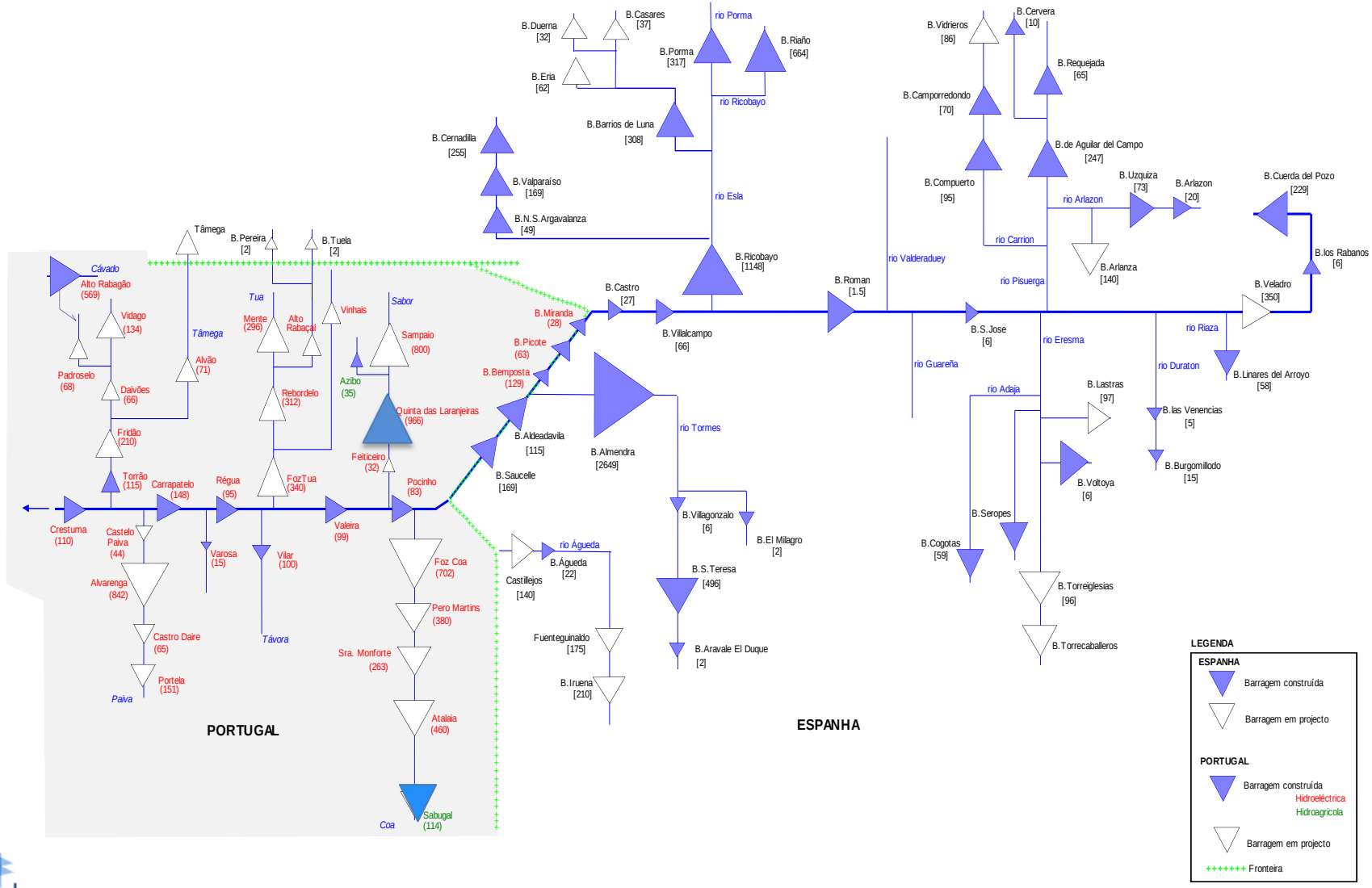


PLANEGE CENOR

Dam builders – Douro river basin



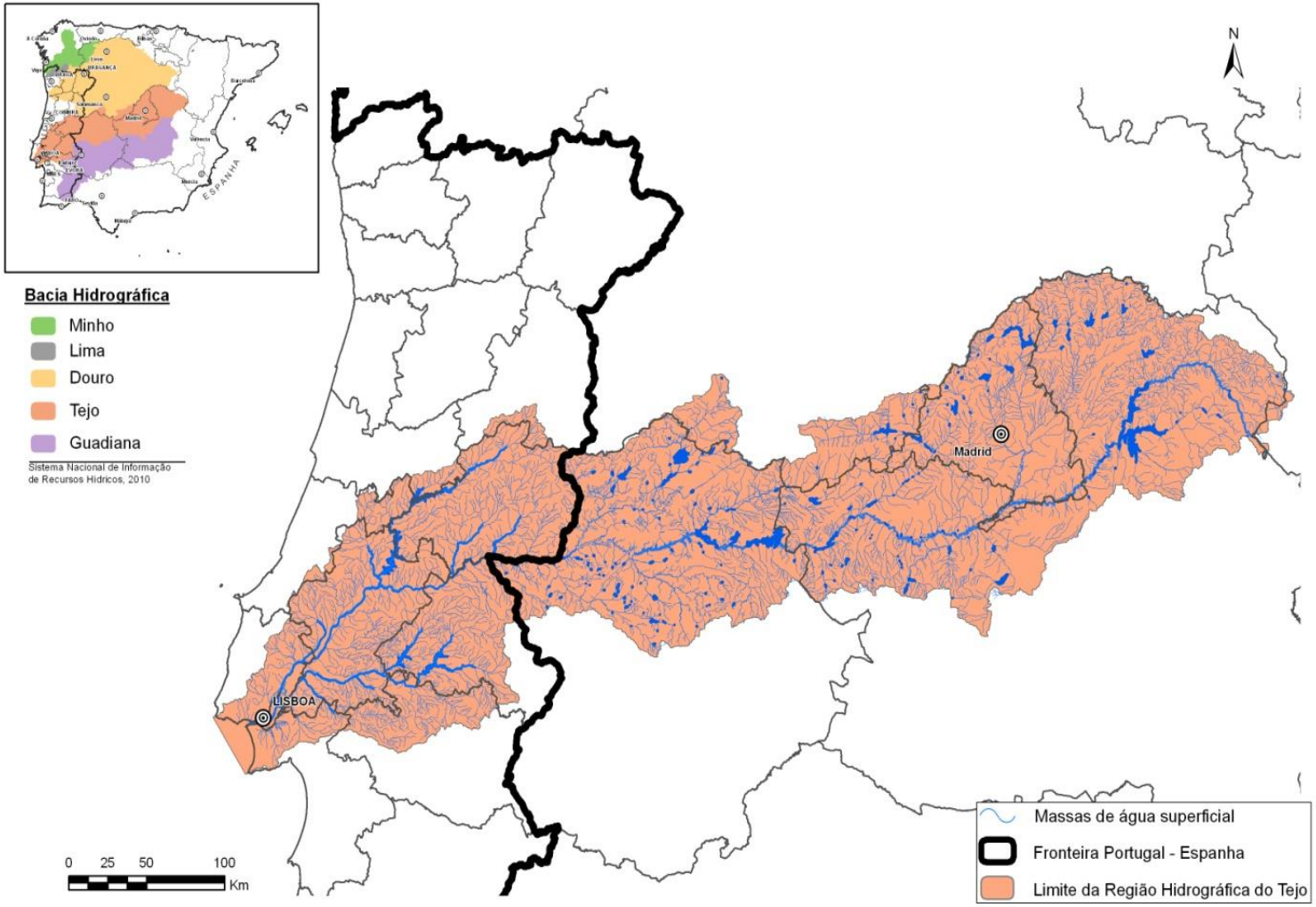
Dam builders – Douro river basin



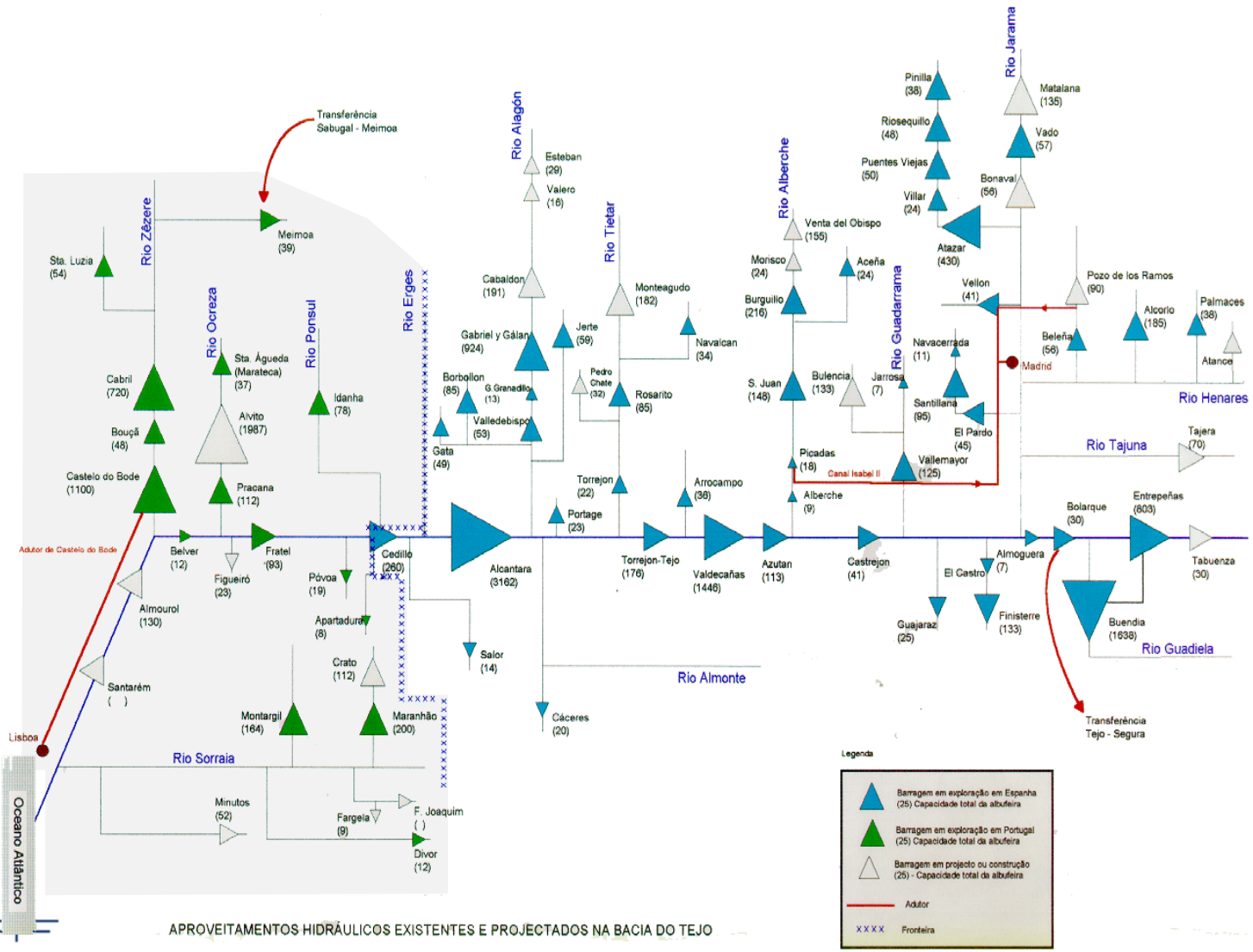
PLANEGE CENOR

APROVEITAMENTOS HIDRÁULICOS EXISTENTES E EM PROJECTO NA BACIA DO DOURO

Dam builders – Tajo river basin



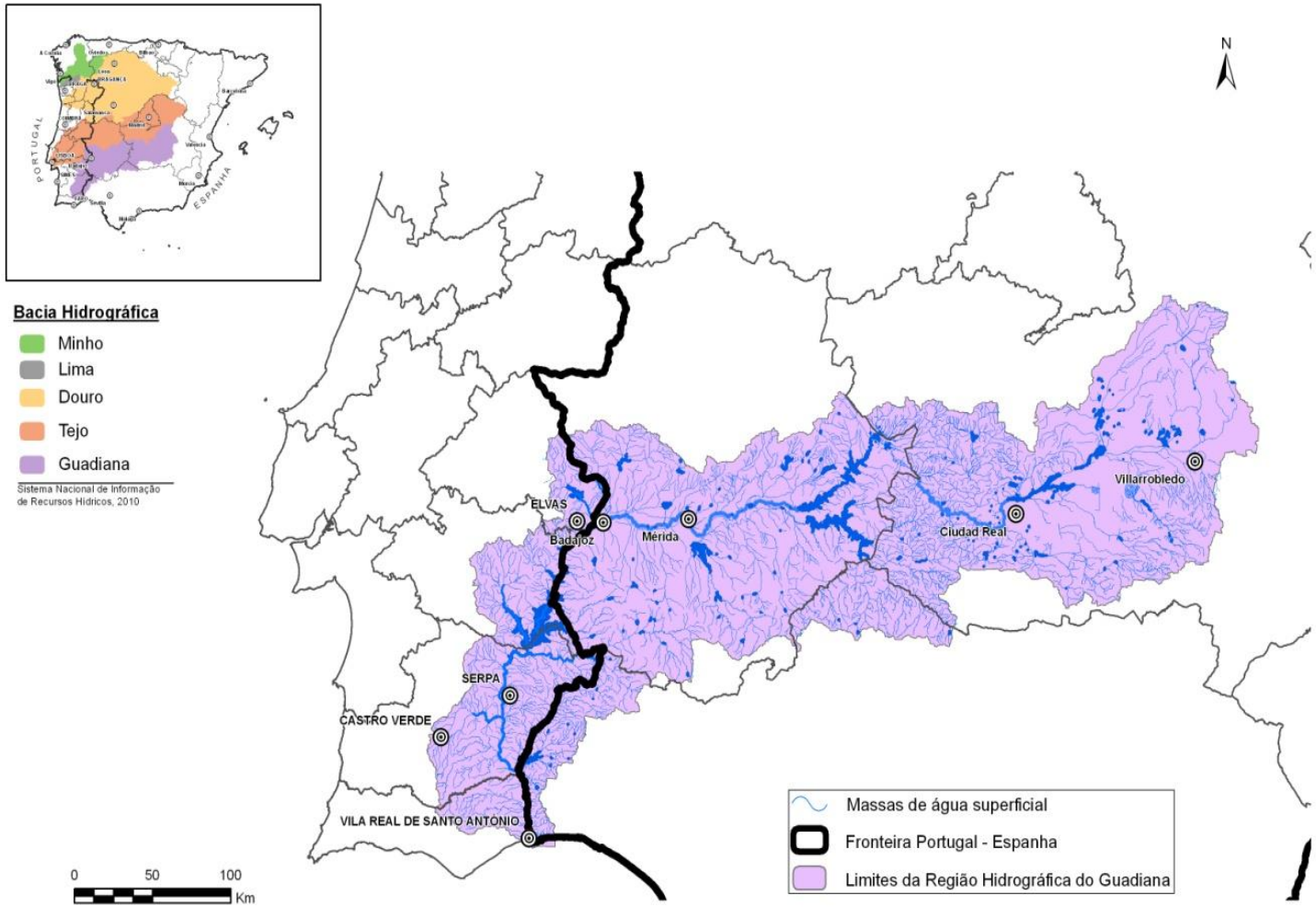
Dam builders – Tajo river basin



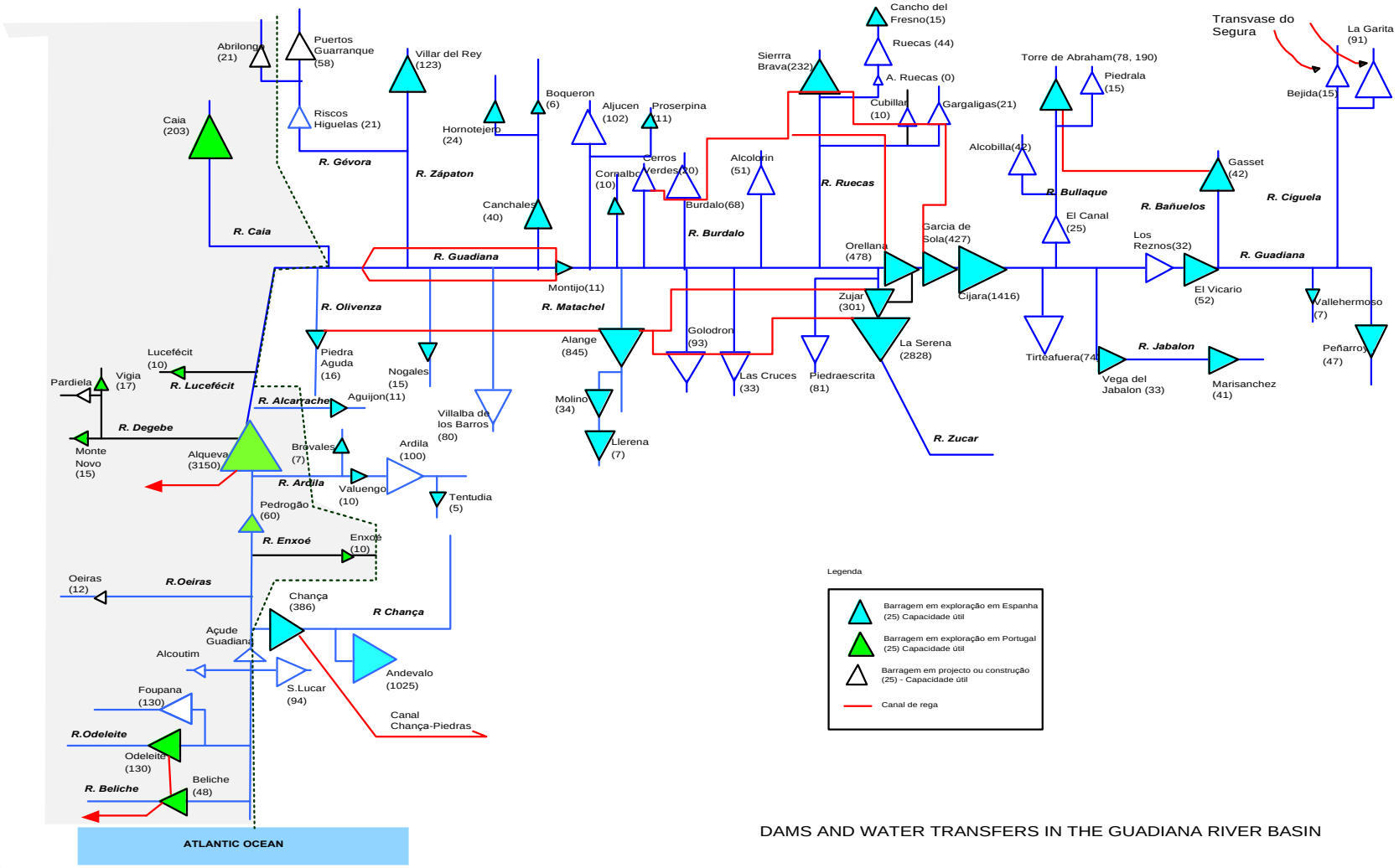
APROVEITAMENTOS HIDRÁULICOS EXISTENTES E PROJECTADOS NA BACIA DO TEJO

PLANEGE CENOR

Dam builders – Guadiana river basin



Dam builders – Guadiana river basin



DAMS AND WATER TRANSFERS IN THE GUADIANA RIVER BASIN

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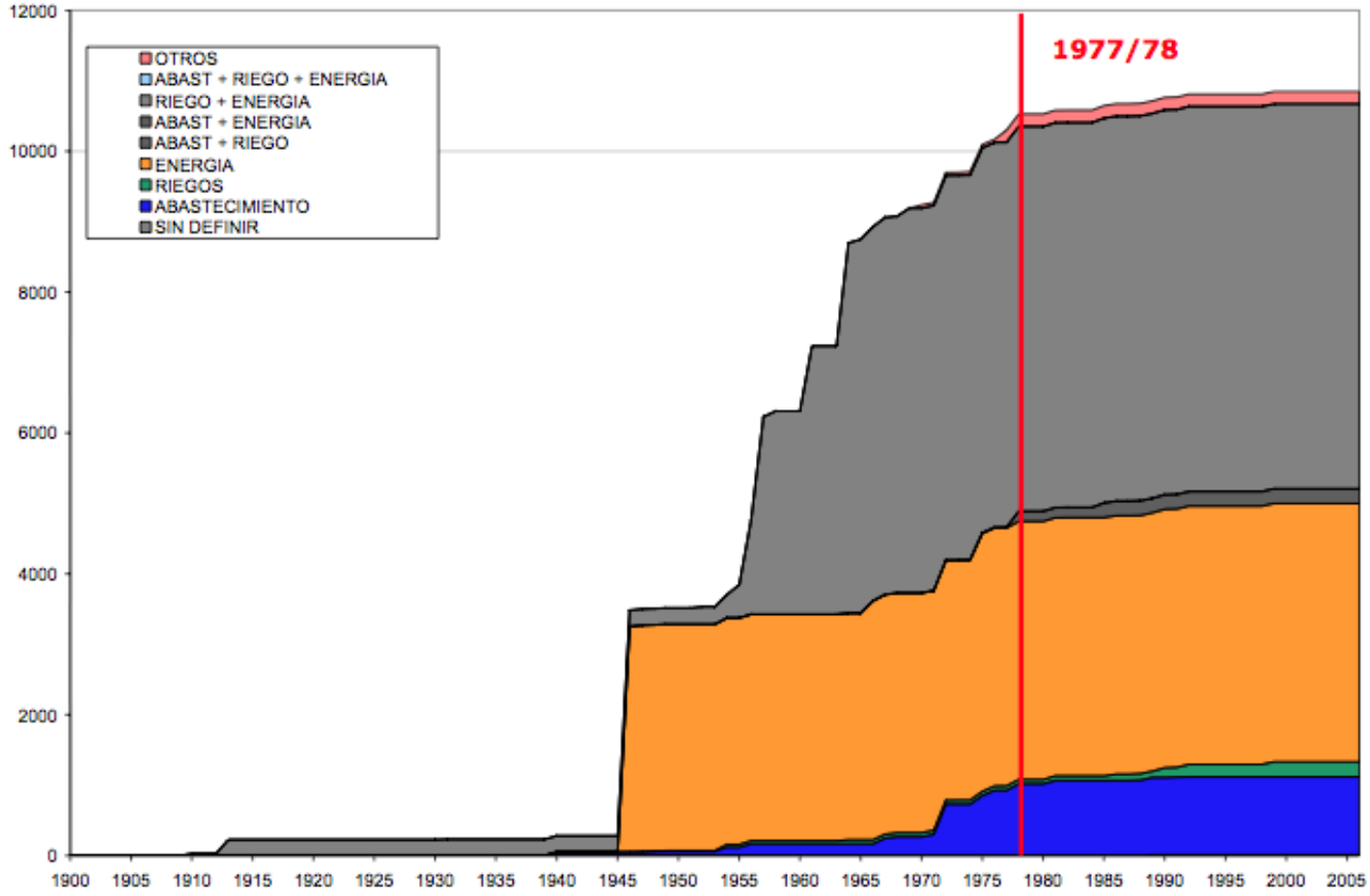
Tajo river basin – Installed flow regulation capacity



PLANEGE CENOR

The 1993 crisis

A crisis in the relations between the two States arose in 1993

In 1993 a draft **National Water Plan** was submitted to public consultation in Spain that was **badly received by the Portuguese public**.

A second water transfer in direction of the Southern river basins, again in the order of 1.000 hm^3, was considered, now having as origin the Douro basin.

The two governments decided to start negotiating a new water Convention.

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The negotiations of the new Convention

The negotiations for the new Convention started in 1994 and by the end of that year the Ministers of the Environment met in order to **establish the working programme and agreed on the principles that should be considered** (the so called Oporto Declaration). The number of delegates in each side was limited and consisted of:

- The **Water Directors**;
- **Diplomats**;
- **Jurists**;
- Experts on hydrology and hydraulics;
- On the Spanish side, representatives of the hydraulic administration of the regions concerned;

The Working Group met al least every 6 months alternatively in Spain and Portugal.

Besides that the Ministers and the Water Directors met regularly in Brussels at the Environment Councils and also at the **Spanish-Portuguese yearly Summits chaired by the Heads of Government of both States**. The progresses registered were then evaluated and **disputes settled by political arbitration.**

DECLARAÇÃO COMUM

A Ministra do Ambiente e Recursos Naturais de Portugal e o Ministro de Obras Públicas, Transportes e Meio Ambiente de Espanha, no quadro das excelentes relações políticas entre Portugal e Espanha:

Constatam com satisfação os progressos no desenrolar dos trabalhos preparatórios de um futuro convénio Luso-Espanhol sobre Recursos Hídricos, decorrente da Cimeira de Palma de Maiorca, assentes num grande empenhamento, técnico e político;

Desejam criar condições propícias à utilização óptima dos recursos hídricos das bacias partilhadas numa perspectiva de protecção do ambiente e qualidade das suas águas;

Consideram necessária a cooperação entre os dois países para a salvaguarda dos respectivos interesses através da troca sistemática de informação;

Reconhecem que é fundamental avaliar previamente os efeitos em Espanha e Portugal das realizações significativas em cada um dos países;

Concordam em coordenar o planeamento e a gestão dos recursos hídricos das bacias partilhadas, na perspectiva da sua utilização sustentável por ambos os Estados.

Acordam em concluir no mais curto prazo de tempo possível o Convénio Luso-Espanhol sobre Recursos Hídricos que acolherá designadamente:

1. Os Princípios de Direito Comunitário e Internacional aplicáveis;
2. O reconhecimento do direito equitativo e razoável de ambos os países em recursos hídricos das bacias partilhadas;
3. Um mecanismo de cooperação que assegure uma troca de informação regular e sistemática;
4. Um modelo institucional que permita uma avaliação e concertação permanentes das situações hidrológicas de interesse comum.

Porto, 18 de Novembro de 1994

A MINISTRA DO AMBIENTE E RECURSOS NATURAIS

O MINISTRO DE OBRAS PÚBLICAS, TRANSPORTES E MEIO AMBIENTE

PLANEGE CENOR

The negotiations of the new Convention

Negotiations took advantage from the fact that:

- Relations between the two Governments were very good and a **Treaty on Friendship and Cooperation had just been signed**;
- The two States were by that **time members of the EU and had both to abide to very stringent water directives**, namely in what concerns the prevention of water pollution and the protection of the environment;
- **The two States had already subscribed the UNECE conventions (Helsinki, Aarhus, Espoo)**;
- There was a **long-lasting and solid tradition of fruitful cooperation between the authorities of the two States on transboundary water issues**; the Commission that had been created for the management of the Conventions in place was meeting from time to time and people knew each other. Confidence had been created.

For Portugal, it was very important to arrive to a satisfactory result as for the flows issue, for Spain it was more the definition of a framework for further water uses that was at stake. It was Portugal's responsibility to take the lead and present proposals (the petitioner).

Kew words of the new Convention

- Cooperation
- Coordination
- Environment protection
- Sustainable development
- Exchange of information
- Consultation
- Impacts mitigation– **no harm principle**
- **Flows Guaranties – Principle of equitable and reasonable use**
- Development of the Law

The negotiations of the new Convention

For all issues, with the exception of the flows regime issue, there were already formulae that had been accepted by the two Parties (in the EU water directives, the UNECE conventions, the 1966 Helsinki rules, the New York Convention). But these formulae had to be adapted:

- To the specificities of the shared rivers;
- To the **previous water agreements** (the 1964 and 1968 Water Conventions, which stayed in place);
- To the ***de facto* situations** (the already built dams, the water transfers, the irrigation perimeters);
- To the **specificities of the State organisation and administration of the two States**.

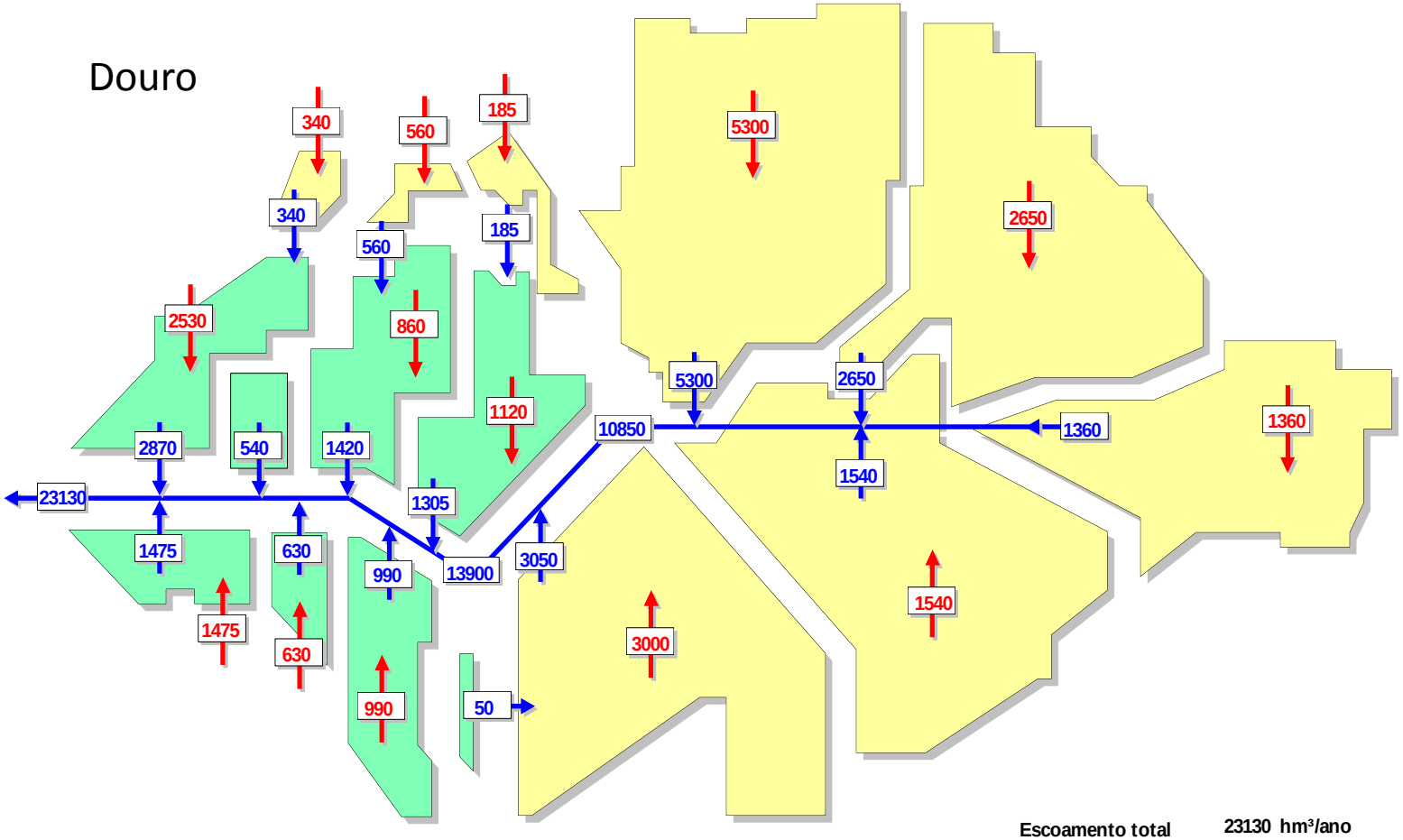
All this had to be studied and considered by the two Parties and very **thorough and extensive exchange of information followed**.

But in what concerns the flows regime, even if some precedents existed, it was clear from the first minute that we had to innovate.

PLANEGE CENOR

Studies made by the Portuguese Party and presented to the Spanish Party

Study of the flows regime in pristine conditions

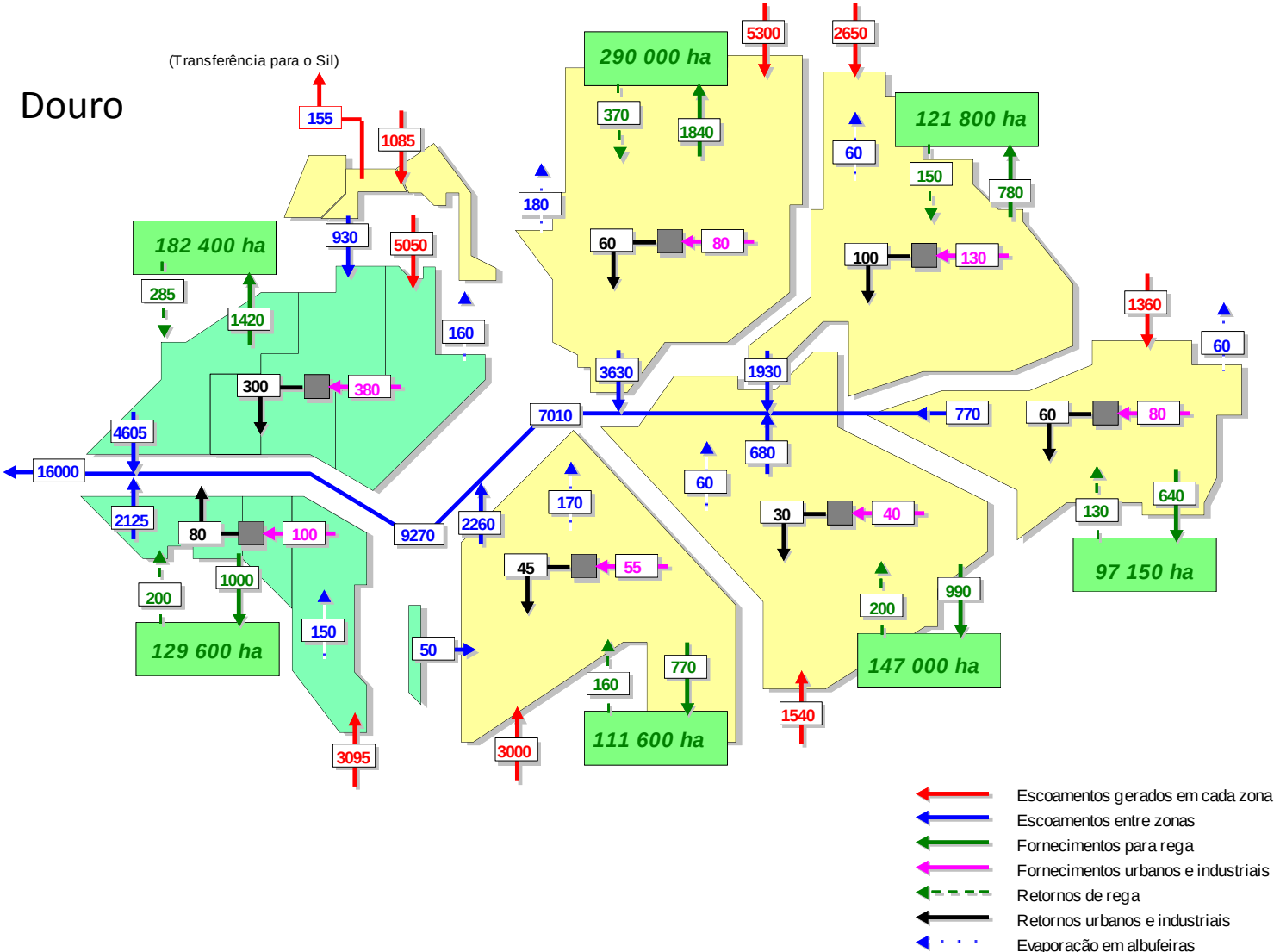


Escoamento total	23130	hm³/ano
Gerado em Espanha	14980	65 %
Gerado em Portugal	8150	35 %

PLANEGE CENOR

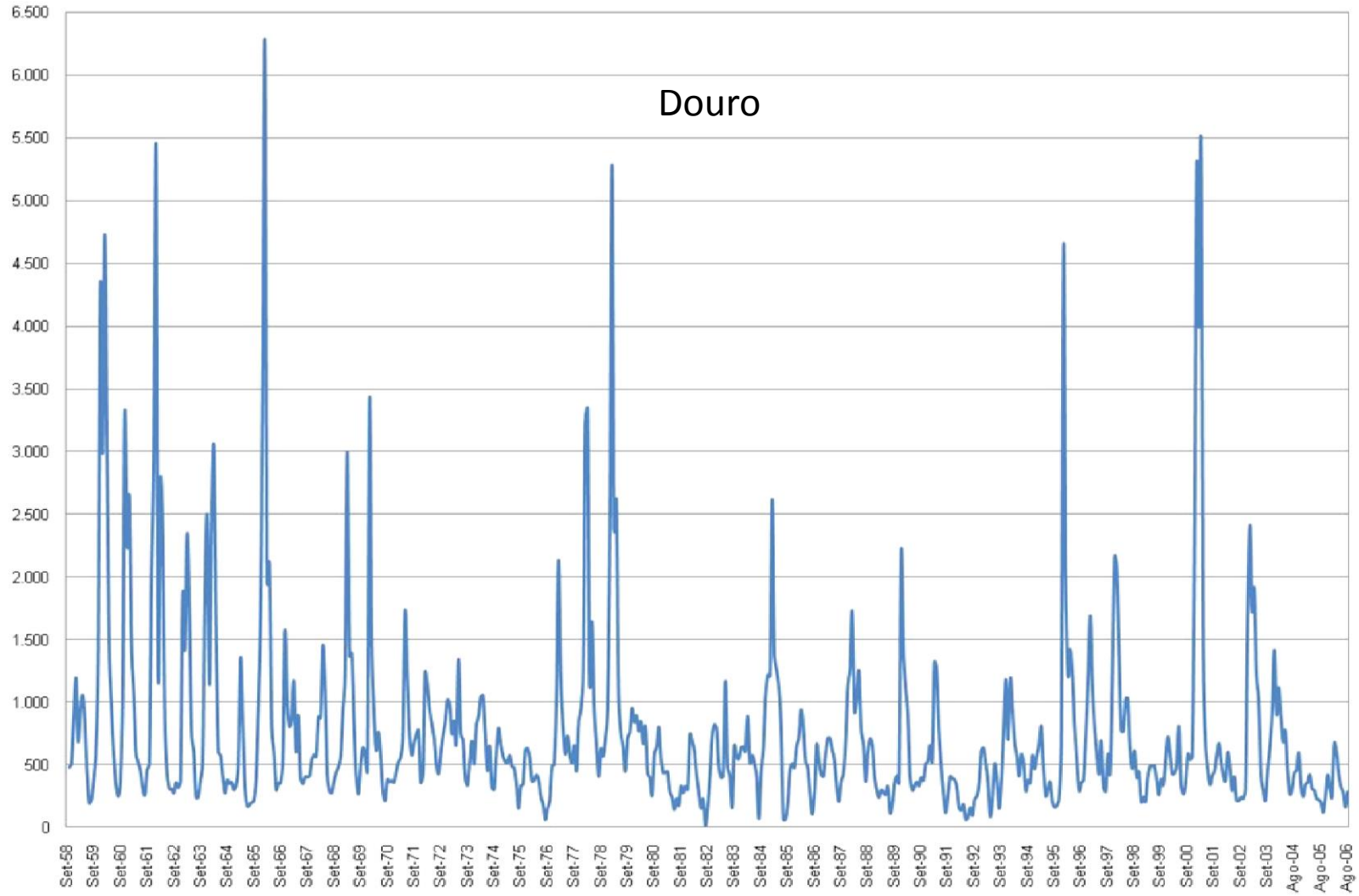
Studies made by the Portuguese Party and presented to the Spanish Party

Study of water uses and flows regime in modified conditions



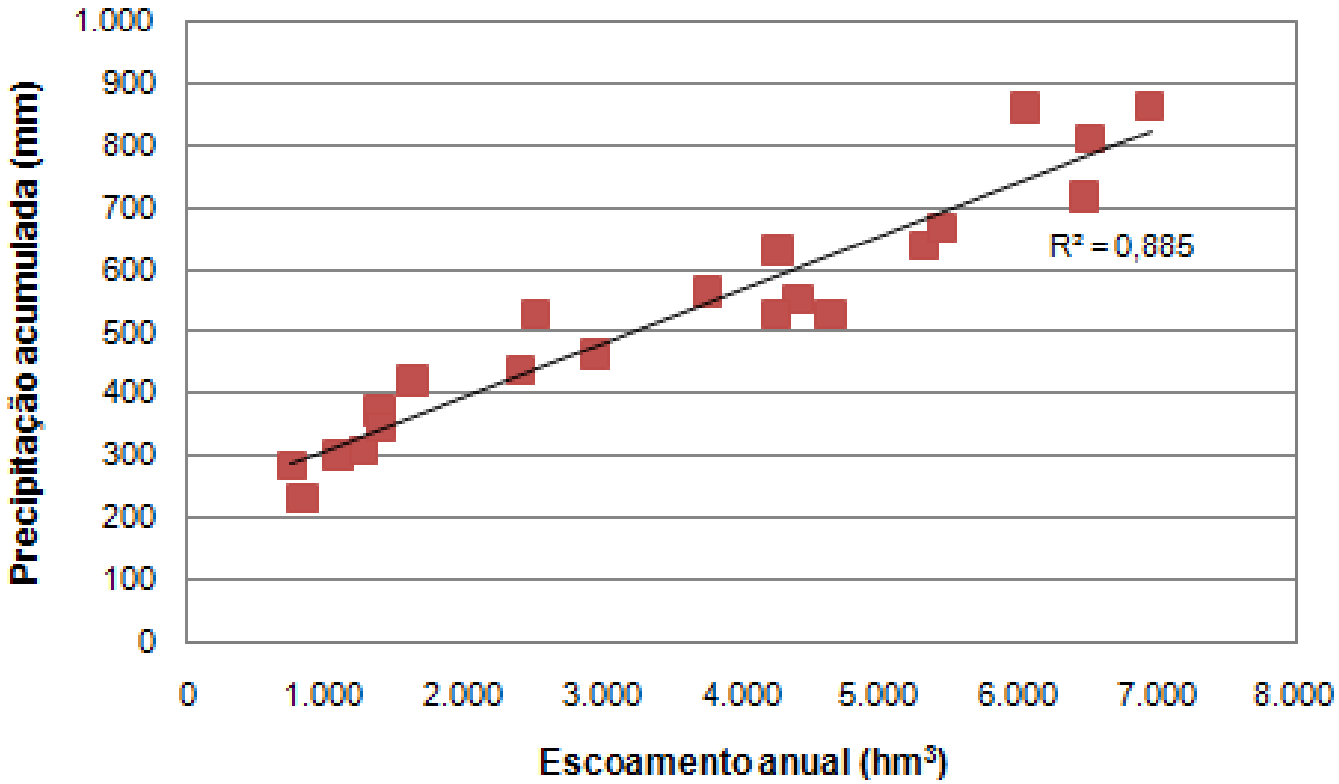
Studies made by the Portuguese Party and presented to the Spanish Party

Study of hydrologic series at the entrance of Portugal and other relevant sections



Studies made by the Portuguese Party and presented to the Spanish Party

Studies on the correlation between rainfall and runoff



PLANEGE CENOR

Studies made by the Portuguese Party and presented to the Spanish Party

The Portuguese Party presented proposals for minimum annual flows at the relevant sections:

- At the **entrance sections of the border stretches of the rivers** and the sections where the rivers enter into Portugal, **thus creating an obligation to the Spanish Party**.
- At the **entrance of the estuaries**, **thus creating an obligation to the Portuguese Party**;

For the Minho, Douro and Tajo rivers, exceptions were considered whenever the pluviometria is below some reference values (by the end of the rainy season) as measured in pluviometric posts that have been agreed as representative.

For the Guadiana river, where the installed regulating capacity in Spain doubles the mean annual flow at the entrance into Portugal, **minimum flows that depend not only on rainfall but also on the volumes of water stored in Spain were agreed**.

That is to say that **Spain agreed to allocate some of its regulation capacity installed upstream of the border for the service of Portuguese needs**.

The negotiations of the new Convention

The **specific elements that were decisive for reaching the agreement** were:

- Only **sound proposals were presented by any of the parties at the table of negotiations,** not abstractions with no justification;
- All proposals had to be **balanced and achievable without imposing unbearable burden upon the other party**;
- Portugal being the downstream country and therefore the main beneficiary of the agreed flow regime, **it was to him to prove that in each and every case there was a benefit for Spain on what was being proposed**;
- The views of the two parties were reconciled **by including in the agreement flow obligation at the entrance of the estuaries**, to be guaranteed by Portugal;
- It was also important to accept that in case of droughts, as defined in the convention, the parties are exempted from compliance of the agreed flow regime

PLANEGE CENOR

The negotiations of the new Convention

The **benefits for the two Parties are the following**:

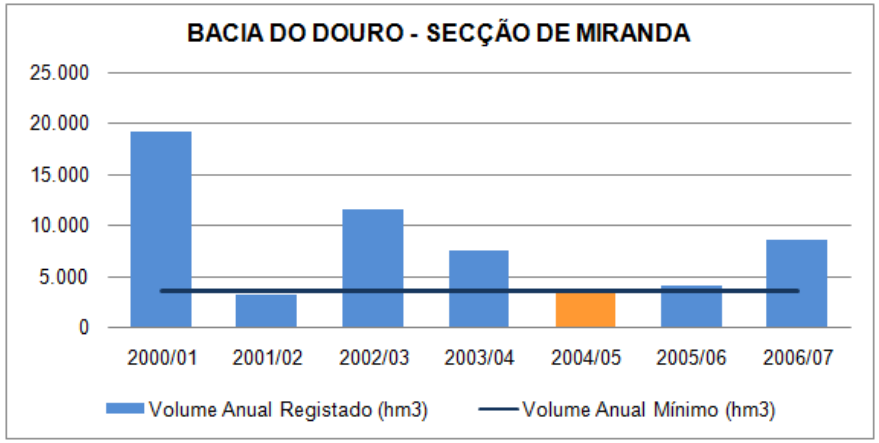
- In defining and regulating the flows that Spain has to guarantee at the entrance of the Portuguese territory **the convention offers guarantees of water resources to Portugal that allow the development of hydraulic projects on a more solid basis**;
- In defining and regulating flows at the entrance of the Portuguese territory **the convention defines limits to the use of the water resources by Spain in its territory in a double way**:
  - ✓ **Limits the expansion of consumptive uses** (irrigation, water transfers);
  - ✓ **At the same time, allows for the expansion of consumptive uses up to this top, which Portugal will not contest**;
- In defining and regulating flows at the entrance of the estuaries the convention **defines limits to the use of the water resources by Portugal in its territory;**

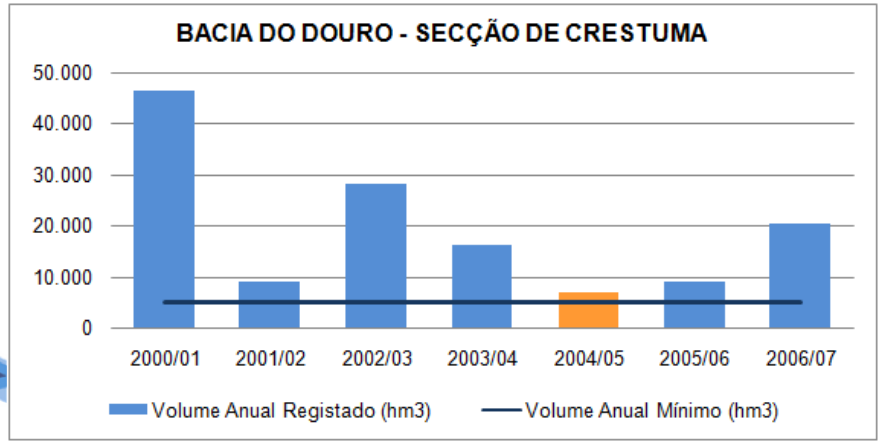
PLANEGE CENOR

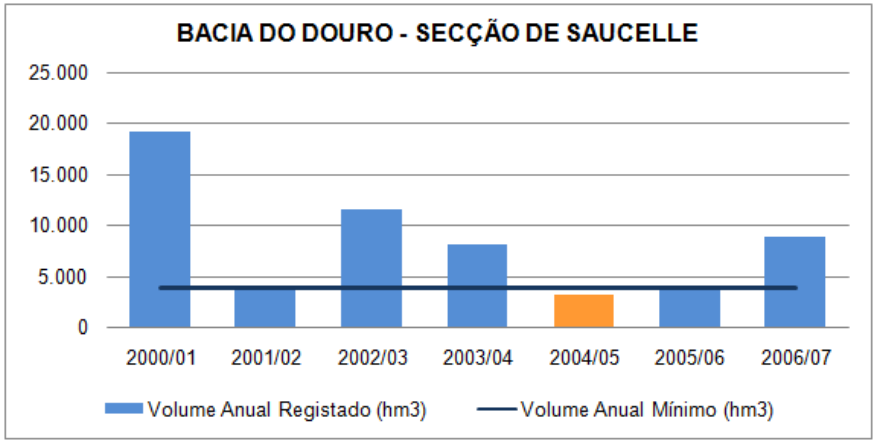
Studies made by the Portuguese Party and presented to the Spanish Party

Proof that the proposed regime would not constitute any severe harm to Spanish interests had to be presented.

DOURO



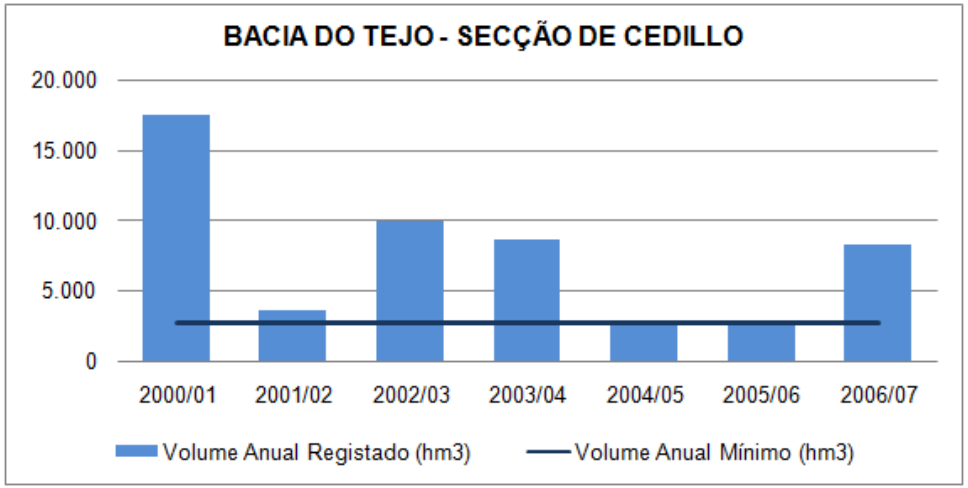


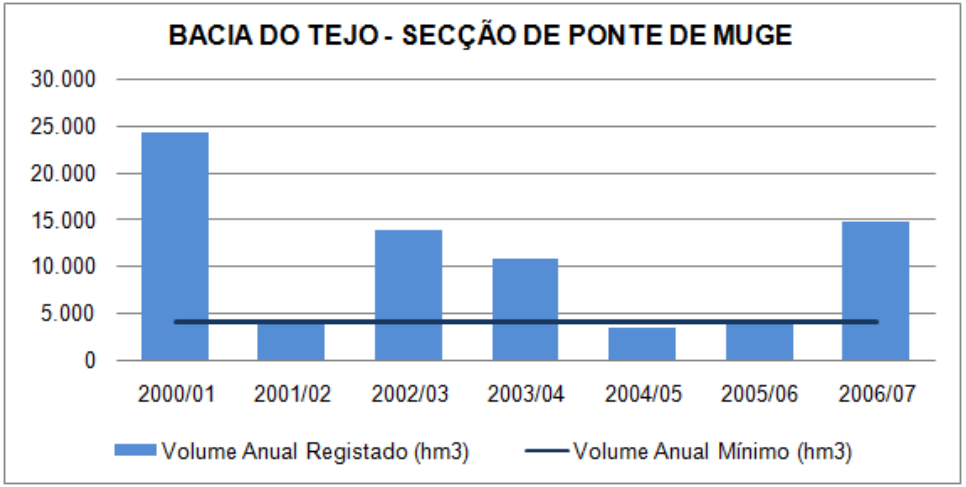


Studies made by the Portuguese Party and presented to the Spanish Party

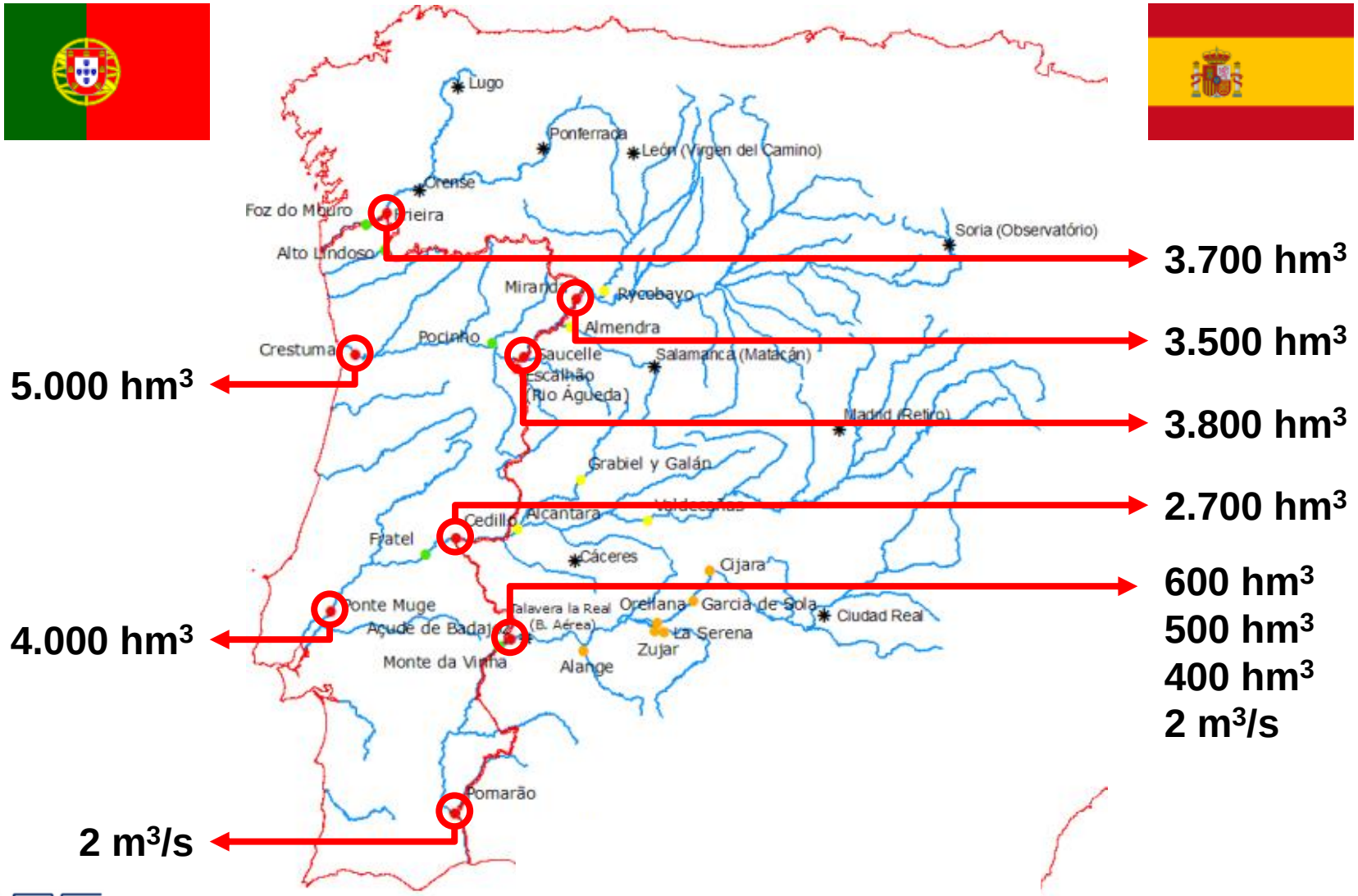
The same with Portuguese interests.

TAJO





Flow regime of the Albufeira Convention, 1998



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Flow regime of the Albufeira Convention for the Guadiana

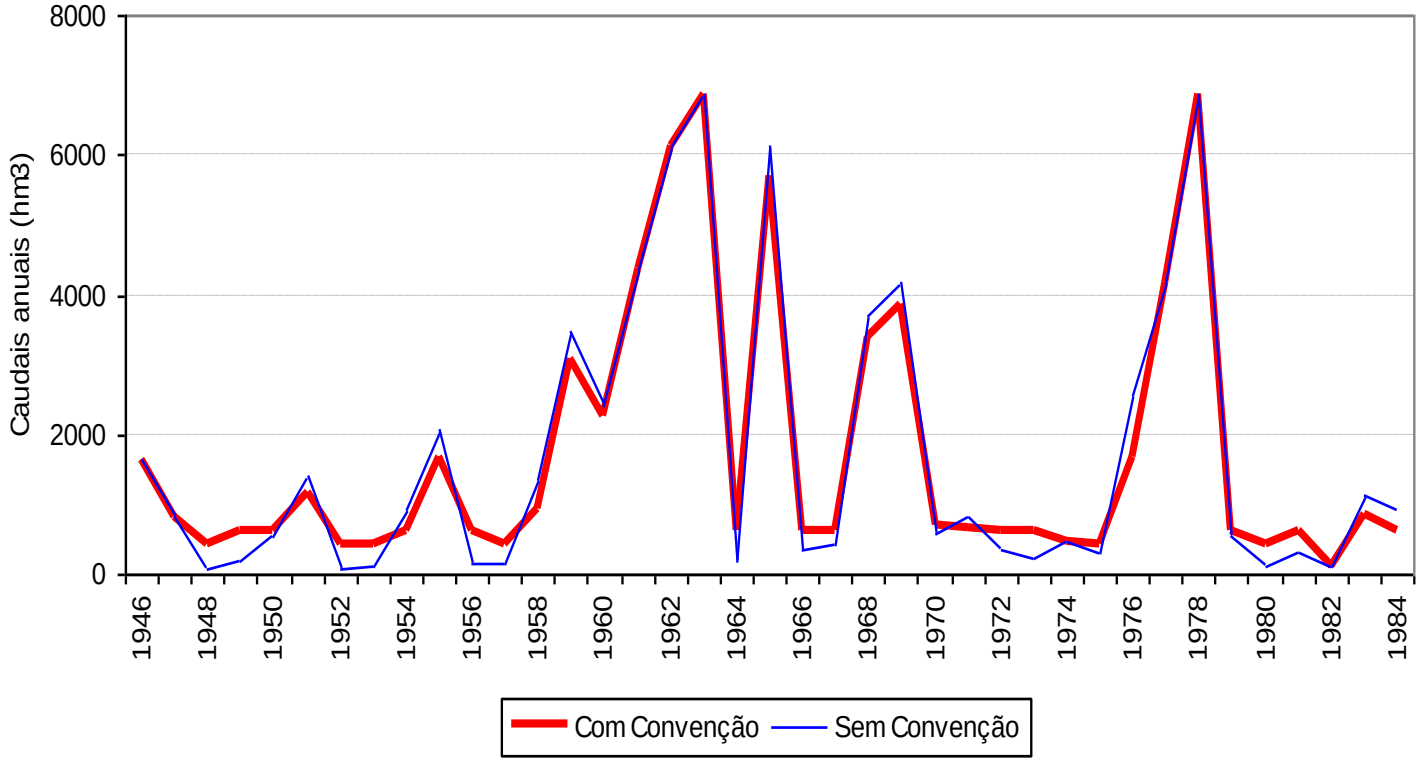
For the Guadiana river the flow regime is more complex, but the principle is the same: **there is exception whenever the rainfall accumulated since the beginning of the hydrologic year and the volumes of water stored in the reference reservoirs are bellow certain levels**. The installed regulation capacity in Spain upstream the border is in the order of 8.000 hm^3.

Total volume stored in the reservoirs (hm^3)	Reference cumulative precipitation from the beginning of the hydrologic year (1st October) until 1st March	
	More than 65% of the mean cumulative reference precipitation	Less than the 65% of the mean cumulative reference precipitation
> 4 000	600 hm^3	400 hm^3
3 150-4 000	500 hm^3	300 hm^3
2 650 -3 150	400 hm^3	Exception
< 2 650	Exception	Exception

PLANEGE CENOR

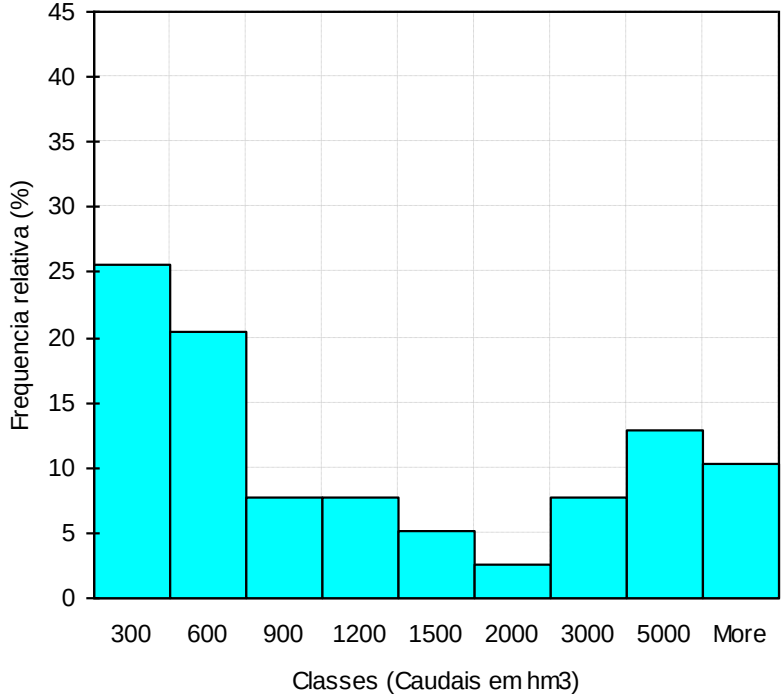
Flow regime of the Albufeira Convention for the Guadiana

Hydrogramme of river flows at the border, with the Convention and without the Convention, obtained by simulation

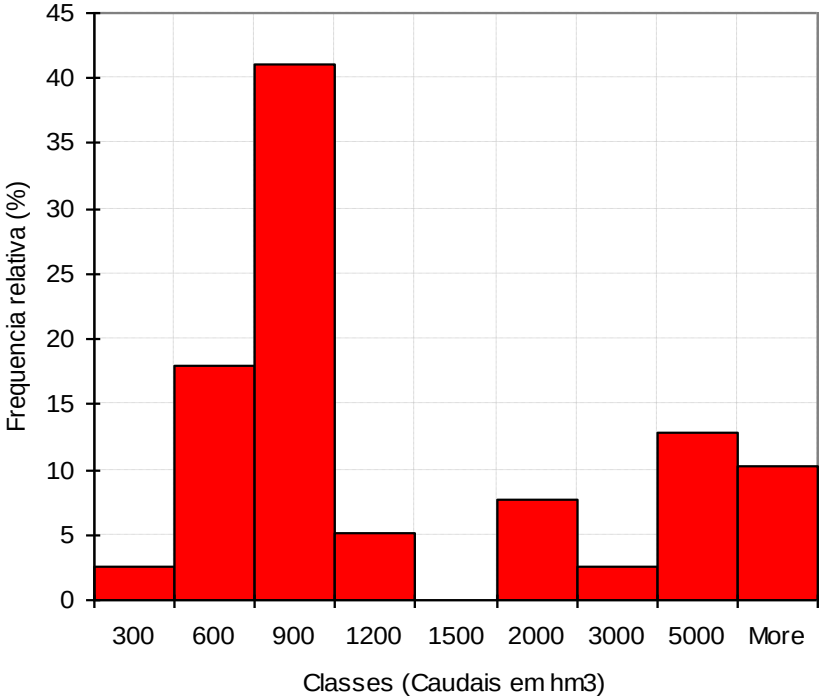


Flow regime of the Albufeira Convention for the Guadiana

Histogram of annual flows at the border **without the Convention**



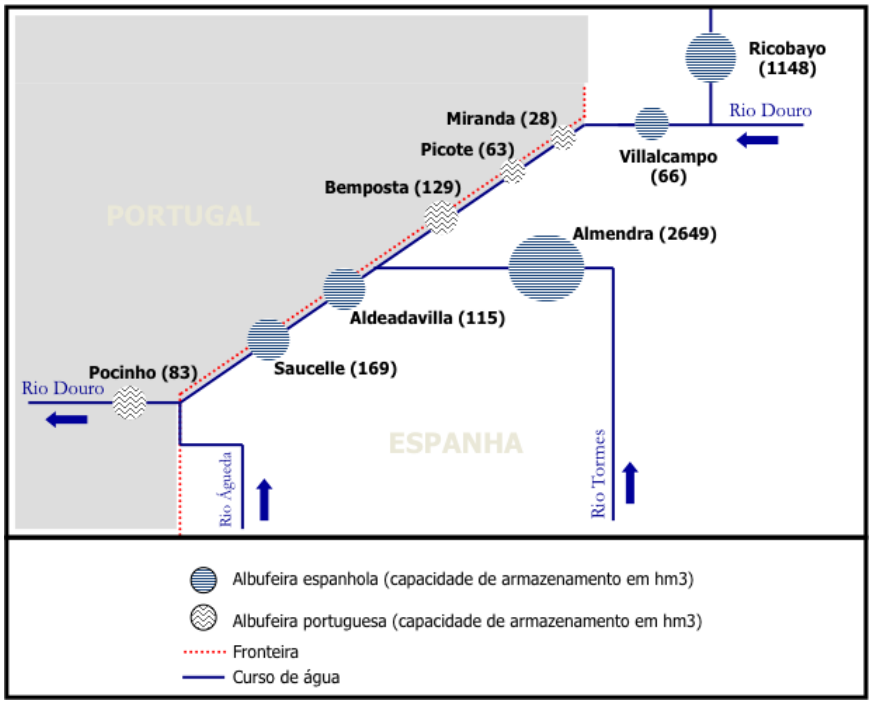
Histogram of annual flows at the border **with the Convention**



Flow regime of the 2008 Protocol to the Albufeira Convention

In 2008 the flow regime was detailed by means of

- The definition of **minimum quarterly flows;**
- The definition of **minimum weekly flows**;



Caudal Integral (hm^3)		Miranda	Saucelle	Crestuma
Annual		3 500	3 800	5 000
Quarter	1.º	510	580	770
	2.º	630	720	950
	3.º	480	520	690
	4.º	270	300	400
Weekly		10	15	20

Douro river at the border

Lessons learned

The success of the Albufeira Convention is the result of a stubborn and very serious work that went on for 5 years.

The fact that the Parties had a **common legal framework, the EU water and environment directives and the UNECE conventions**, was very important for the successful conclusion of the Convention.

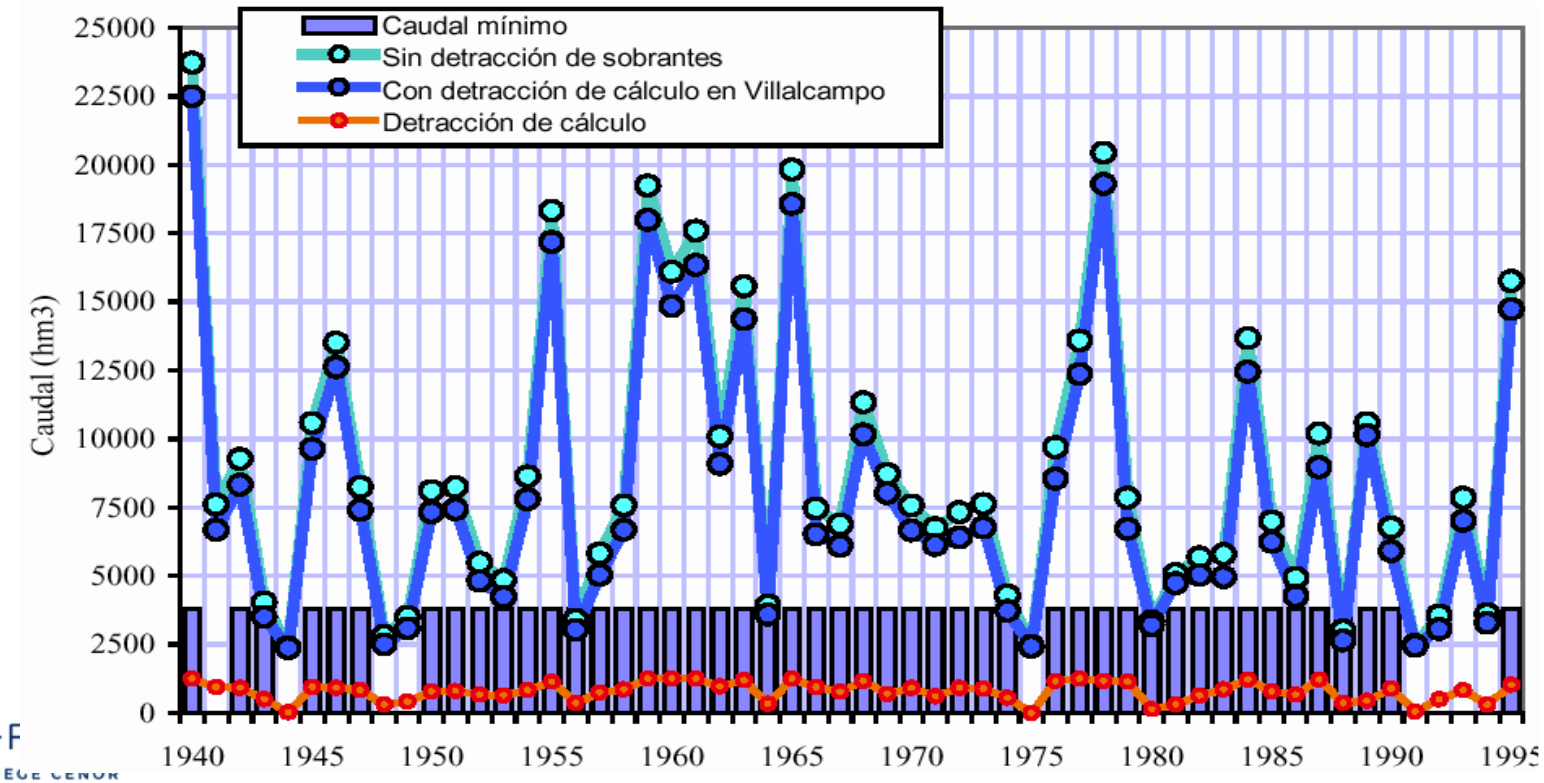
The technical study of the solutions took some time but proved to be crucial for the success of the negotiations. The Portuguese Party, as the downstream country, had the initiative most of the time.

The seriousness of the negotiations consisted in **not presenting biased proposals, proposals that could not be complied with by the other Party without severely affecting its sovereignty in what concerns water resources management**. We both tried to systematically understand **the other Party's positions and its reasons and point of view.**

The **presence of Diplomats at the negotiating table was very important**.

Afterword

In the year 2000 a new National Hydrologic Plan was developed in Spain that again considered the transfer of water from the Douro river to the South (1.000 hm^3). Having simulated the transfer **the Spanish authorities arrived to the conclusion that it was not feasible if the agreed flow regime was to be respected and the project was abandoned**.



Many thanks for your attention

pedro.serra@tpf.pt