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The experience of Spain in the application of the WFD

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Ministry of Agriculture and Fisheries, Food and Environment

SWIM – H2020 SM – DECENTRALIZED WATER MANAGEMENT

Brussels 24th July 2017

Spain: some figures

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Population	46,5 million
Area	505.000 km^2
Density	90 inhab/km^2
GDP	1.400 billion US$
GDP per capita	30.000 US$

Natural runoff: 109 km3/yr
Reservoir capacity: 55 km3

Total water use	30,1 km^3/yr
Urban water supply	5,5 km3/yr
Agricultural use	23 km^3/yr
Industrial use	1 km^3/yr
Surface water use	23 km^3/yr
Groundwater use	7 km^3/yr

Climate of Spain

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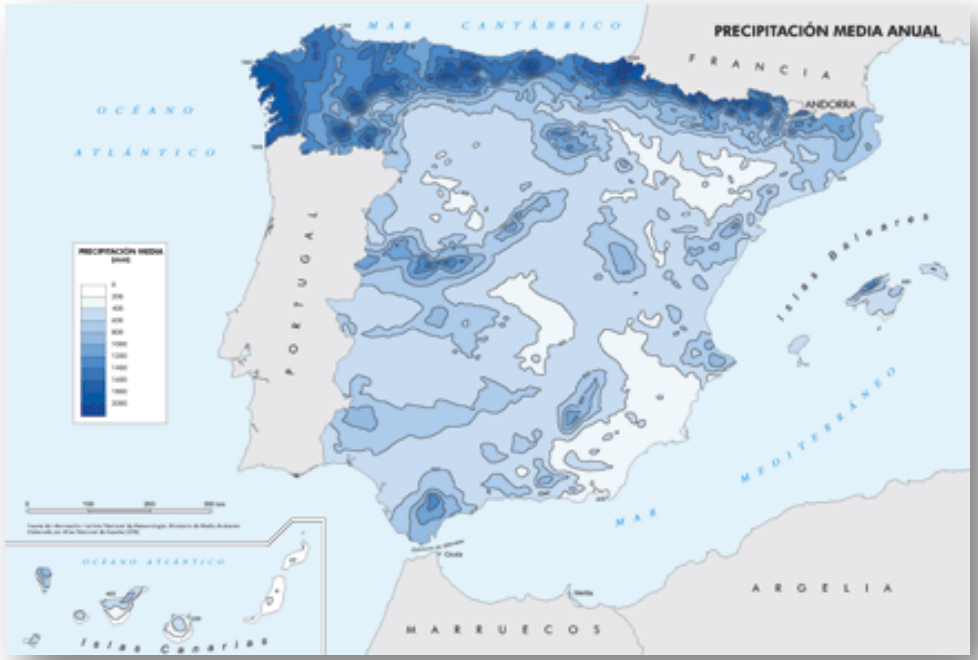
Rainfall is unevenly distributed - Geographically and seasonally



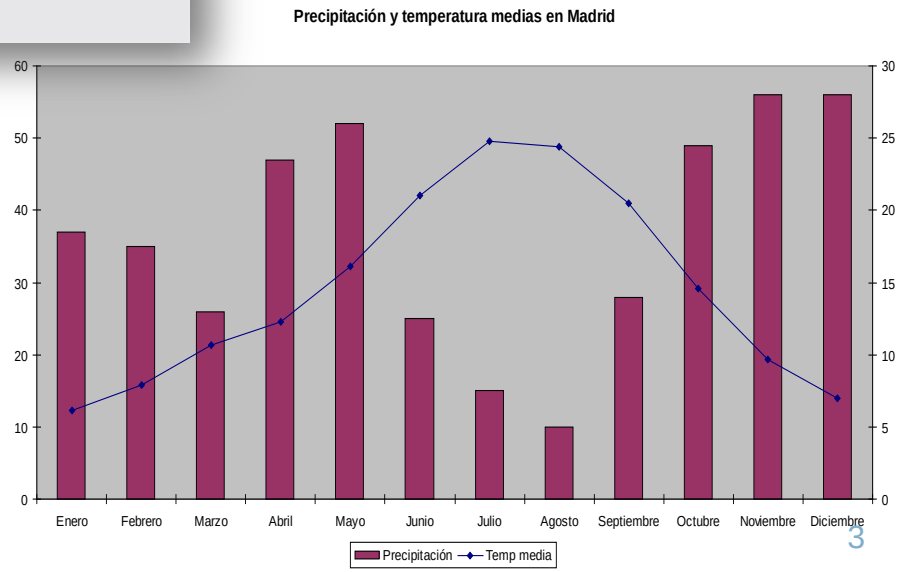
Spain (average): 650 mm/year

Santiago: 2.000 mm/year

Madrid: 435 mm/year

Almería: 195 mm/year

Precipitation and temperature in Madrid



Climate of Spain

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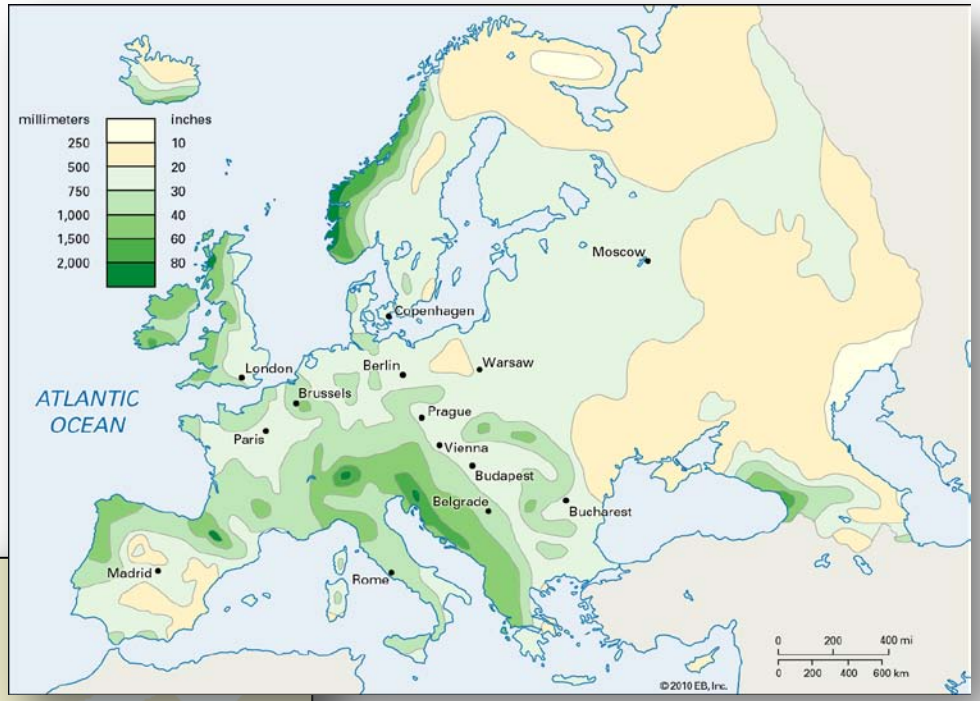
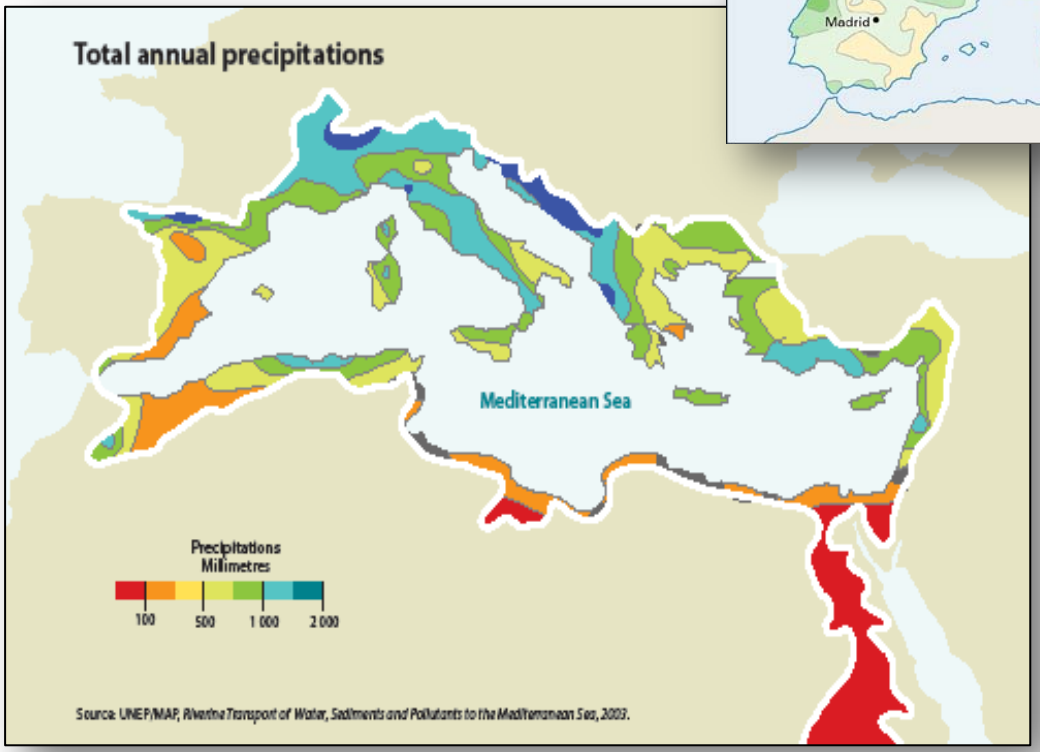
Climate of:

Mediterranean basins





The Southeast of Spain looks like North Africa

Spain as pioneer of water management

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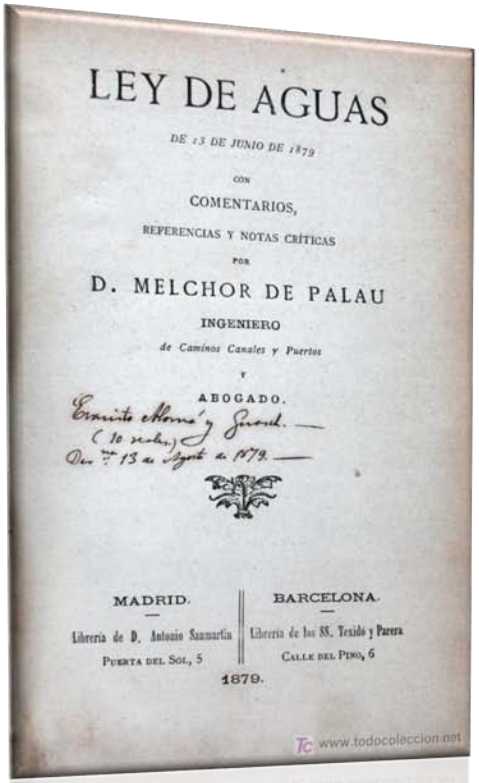
- A long tradition
- Water Act (1985)
- Modified by RDL 1/2001 and last review on June 2017

Focused on development



LEY DE AGUAS

DE 13 DE JUNIO DE 1879

CON

COMENTARIOS,

REFERENCIAS Y NOTAS CRÍTICAS

POR

D. MELCHOR DE PALAU

INGENIERO

de Caminos Canales y Puertos

Y

ABOGADO.

MADRID. Librería de D. Antonio Suamartín, Puerta del Sol, 5

BARCELONA. Librería de los SS. Texidó y Parera, Calle del Pino, 6

1879.

www.todocoleccion.net

Focused on environmental objectives

- Directive 2000/60/UE (aka. WFD)
- RDL 1/2001 and RD 907/2007 on Water Planning at river basin scale

Focused on Water Quantity (exploitation system level) + Environmental Objectives (water body level)

Spain as pioneer of water management

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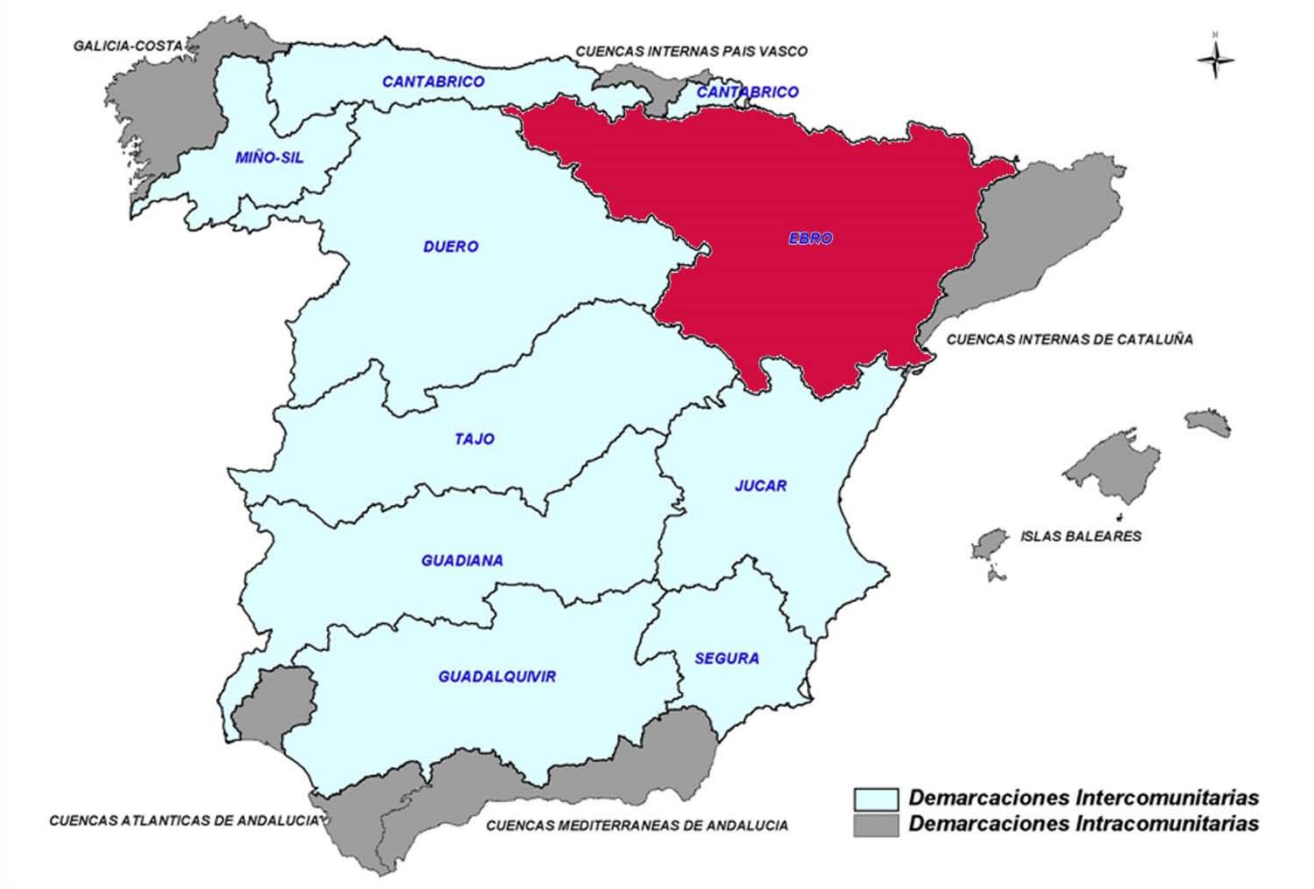
Water management using **river basin districts** as the reference unit



The Ebro Hydrographic Confederation was the first entity of this type created in Spain (1926)

Spain as pioneer of water management

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At the beginning of the 20th Century Spain introduced a **pioneering system of water management** by river basins publishing the Water Act

Main principles:

- Water-resource planning as the most effective tool for the efficient and fair distribution of the available water resources**.**
- Identification of measures to make possible to carry out a sustainably distribution, from the economic, social, and environmental point of view.

This water-resource planning incorporates the **participation of users** and the administrations involved as one of the guiding principles of governance

Spain as pioneer of water management

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All waters are public, so their allocation and use requires administrative concession

Individuals only acquire the right of use, not the ownership of water

Water Law includes an Economic-financial regime:

Principle of recovery of the costs of water-related services, including costs associated with damage or adverse effects on the aquatic environment

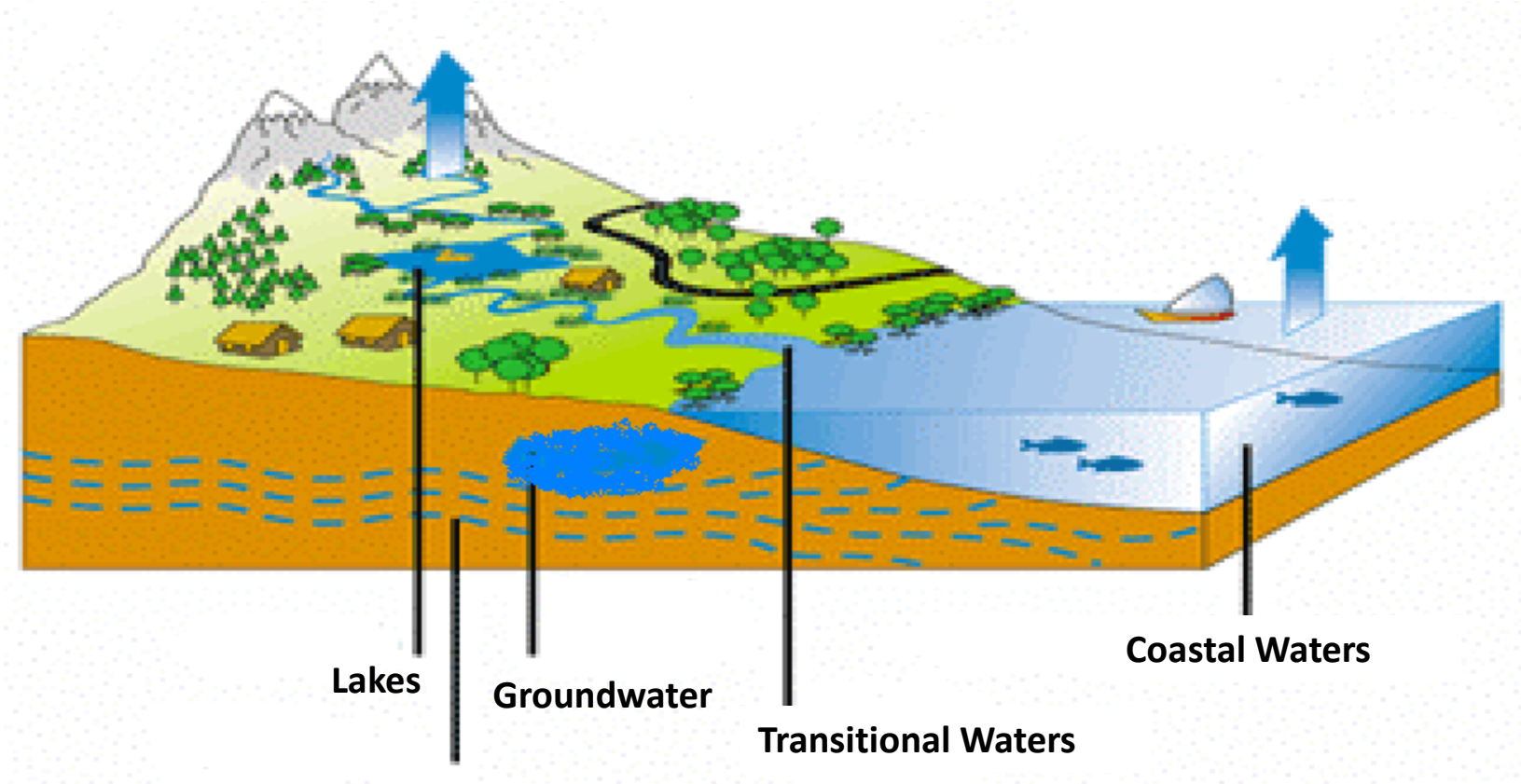
Regulation and use tariffs and abstraction and discharge taxes

Service management	Users	Cost- recovery mechanisms
Extraction, reservoir and transport of high main networks (surface water)	Domestic Industrial Agricultural	Canon regulation Water use rate
Urban supply Collection of urban wastewater Urban wastewater treatment	Domestic Industrial	Supply rate Sewer rate Canon of sanitation Service Rates
Distribution of irrigation water	Agricultural	Rates of irrigation groups (including the amount of the payment of canon and rate to the Basin Organizations)
Control of Pollution	Domestic Industrial	Discharge control canon

As a consideration of water services, there are a number of figures whose objective is to **recover the costs of services** and **promotes financial balance** in the provision of these services

* Management of water services and cost recovery mechanisms according to Spanish laws. Current data.

River Basin vs RB District



Traditional Spanish management level → **River Basin** — *Concept of Allocation and Quality of SW and GWB*

New management level due to the WFD → **River Basin District** — *Concept of Status of Water Bodies*

Who are responsible for the RBMPs?

Central Administration - MAPAMA:

- River basin as water management unit – 9 River Water Basin Authorities which depend on the Water General Directorate
- Responsible for the Planning Process at RBD level → Committee of Competent Authorities on all water issues as a coordinating body and the Water Council as the main governing institution in water planning. First step in the RBMPs approval (voting)
- Water General Directorate → legal mandate of coordinating role between RBAs, and legal mandate of solving at national level all those issues that the RBMPs cannot solve themselves, through the National Hydrological Plan (i.e. shared aquifers, water transfers and coordinating measures)

Regional Administrations – CC.AA:

- Responsible for the Planning Process in RBs which are completely circumscribed to their lands

National Water Council

- Next major step in the RBMPs approval (voting)

Council of Ministries - Approval of the RBMPs by Royal Decree (exc. Canary Islands)

RBMP2: RD 701/2015; RD 1/2016; RD 11/2016; RD 415/2017

Water Administration in Spain

Water Administration in Spain

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Water Administration in Spain

Example: Segura River Basin

River basin authorities

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Governance and Management Bodies

- **GOVERNING BODIES**
  - President
  - Governing Board
- **MANAGEMENT BODIES**
  - User Assembly
  - Operating Board
  - Reservoir Use Commission
  - Infrastructures & Works Board
- **PLANNING BODIES**
  - River Basin Water Council
- **COOPERATION BODIES**
  - Competent Authority Committee

RBMPs - Drivers and Pressures

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Main drivers:

Agriculture and Seasonality:

75 million tourists /year

3,7 million irrigated hectares (18% of total agricultural area)

Main pressures:

- ✓ Water abstraction
- ✓ Point and Diffuse pollution
- ✓ Hydromorfological alterations

RBMPS – Reliability for Allocation

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Allocations and Reserves for uses through balances at *exploitation system* scale

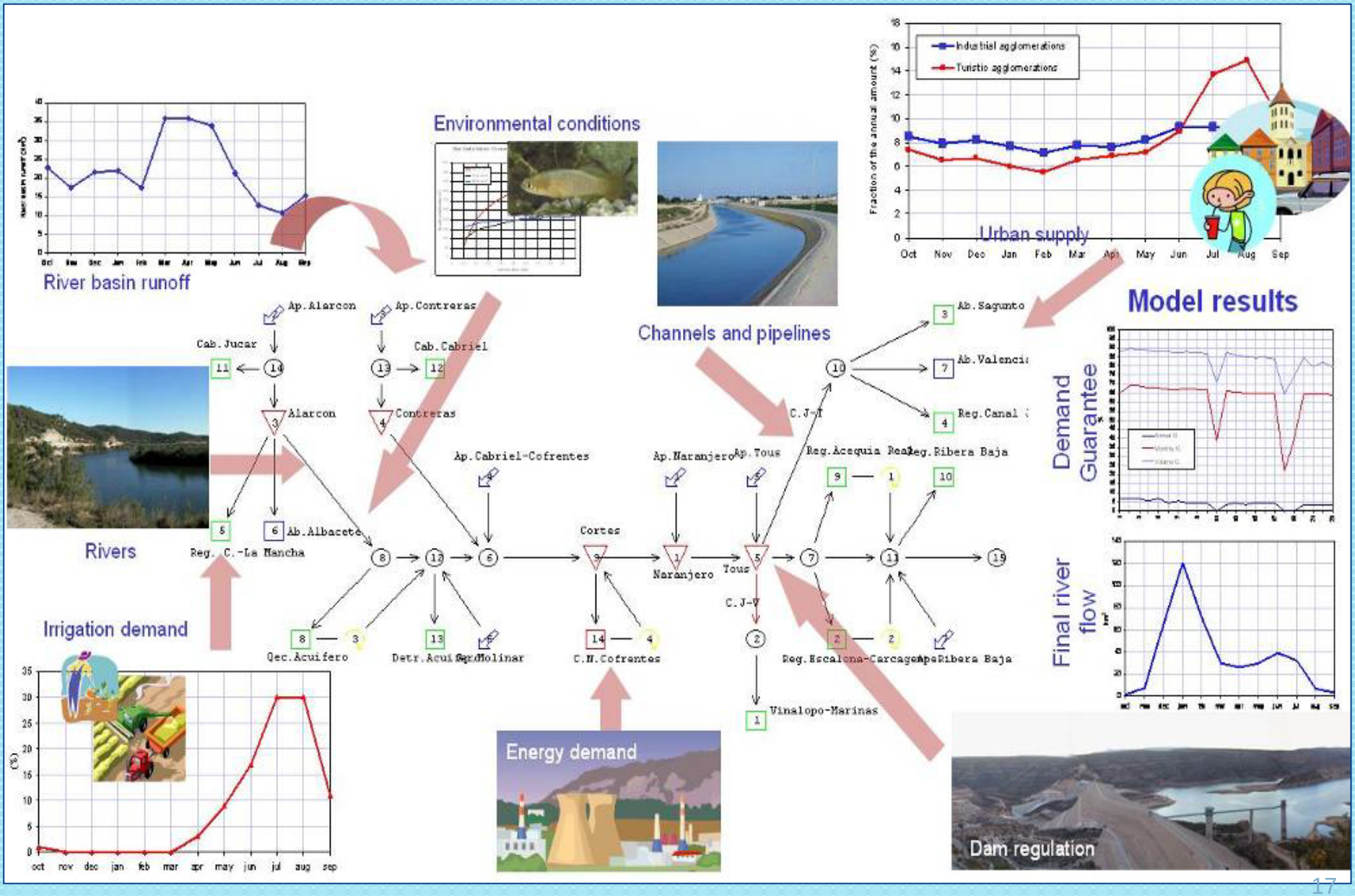
According to a hierarchy: Urban is always first!

Demarcación Hidrográfica	Asignaciones de recursos recogidas en los planes hidrológicos (hm³/año)			
	Uso urbano	Uso agrario	Uso industrial	TOTAL
COR	226,92	2,33	36,12	265,37
COC	246,54	64,36	173,28	484,18
GAL	222,30	30,59	84,91	337,81
MIÑ	97,96	195,66	11,47	305,09
DUE	405,53	3.422,98	152,74	3.981,25
TAJ	994,03	1.911,53	96,26	3.001,82
GDN	254,21	2.022,20	82,15	2.358,56
TOP	55,99	359,17	52,69	467,85
GDQ	398,65	3.126,61	66,55	3.591,81
GYB	117,33	287,85	8,58	413,76
CMA	278,74	770,49	50,79	1.100,02
SEG	288,20	1.231,20	0,00	1.519,40
JUC	319,10	1.928,70	43,20	2.291,00
EBR	614,05	7.678,54	85,40	8.377,99
CAT	530,50	377,30	100,00	1.007,80
BAL	106,20	45,46	51,12	202,77
MEL	4,74	0,00	0,00	4,74
CEU	2,95	0,00	0,00	2,95
CAN (*)	214,20	210,73	30,27	455,20
SUMA:	**5.378,15**	**23.665,70**	**1.125,53**	**30.169,38**

Balance == Natural runoff / Demands and Returns / Non-conventional resources / Environmental Objectives / Ecological flows are considered a previous restriction

AQUATOOL System
(Simulation mode)

Simulation models for allocation



RBMPs – Impacts and Status

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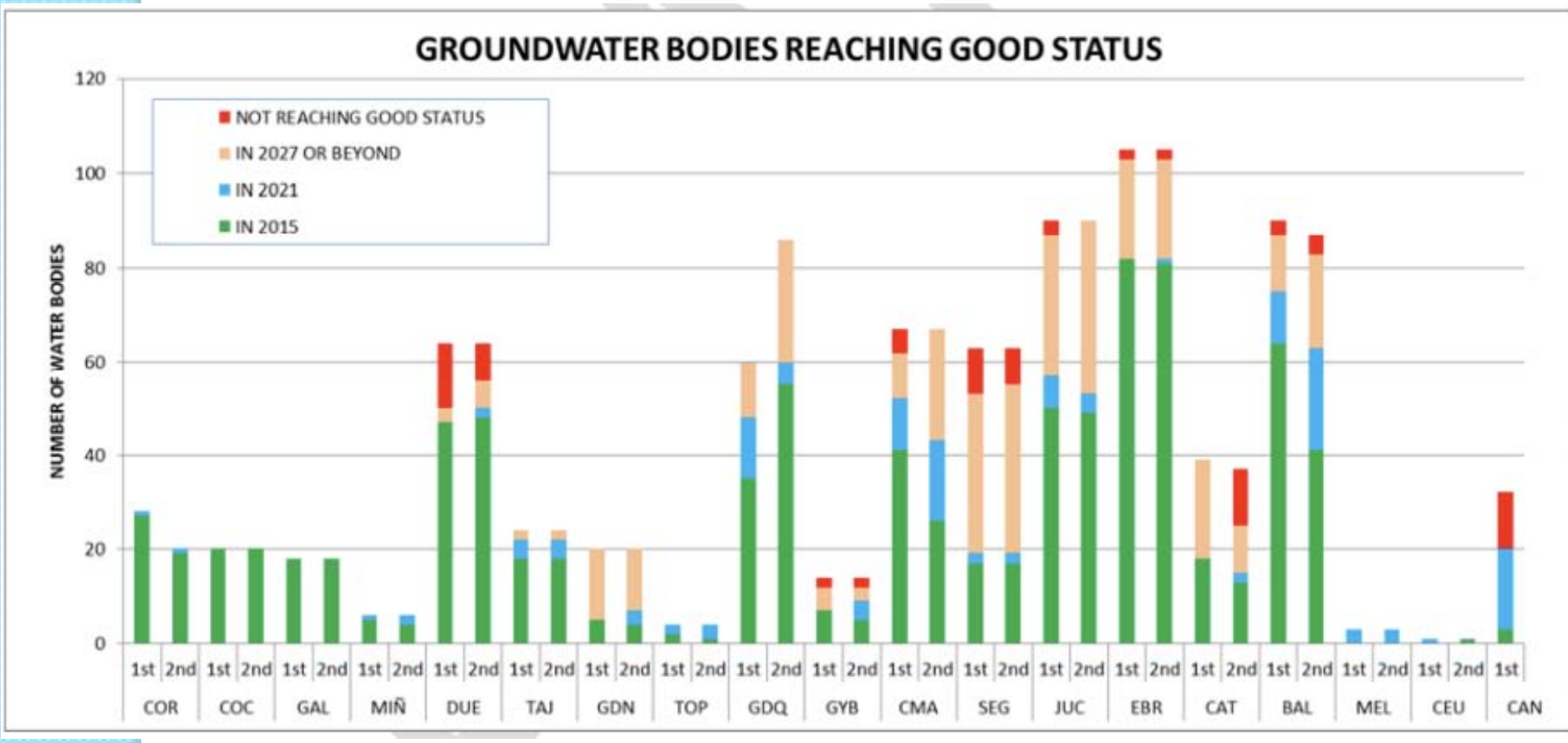
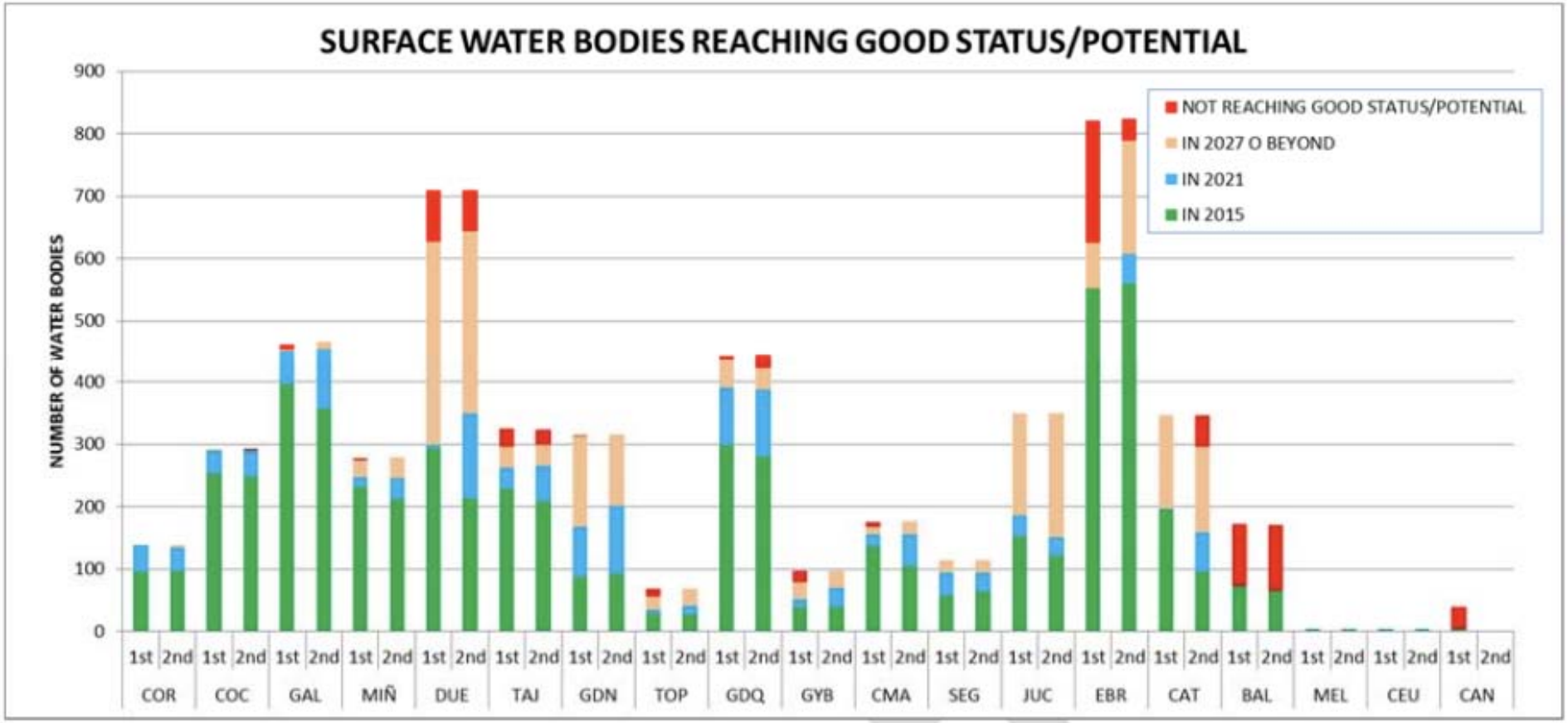
Some figures - Total 761 Groundwater bodies



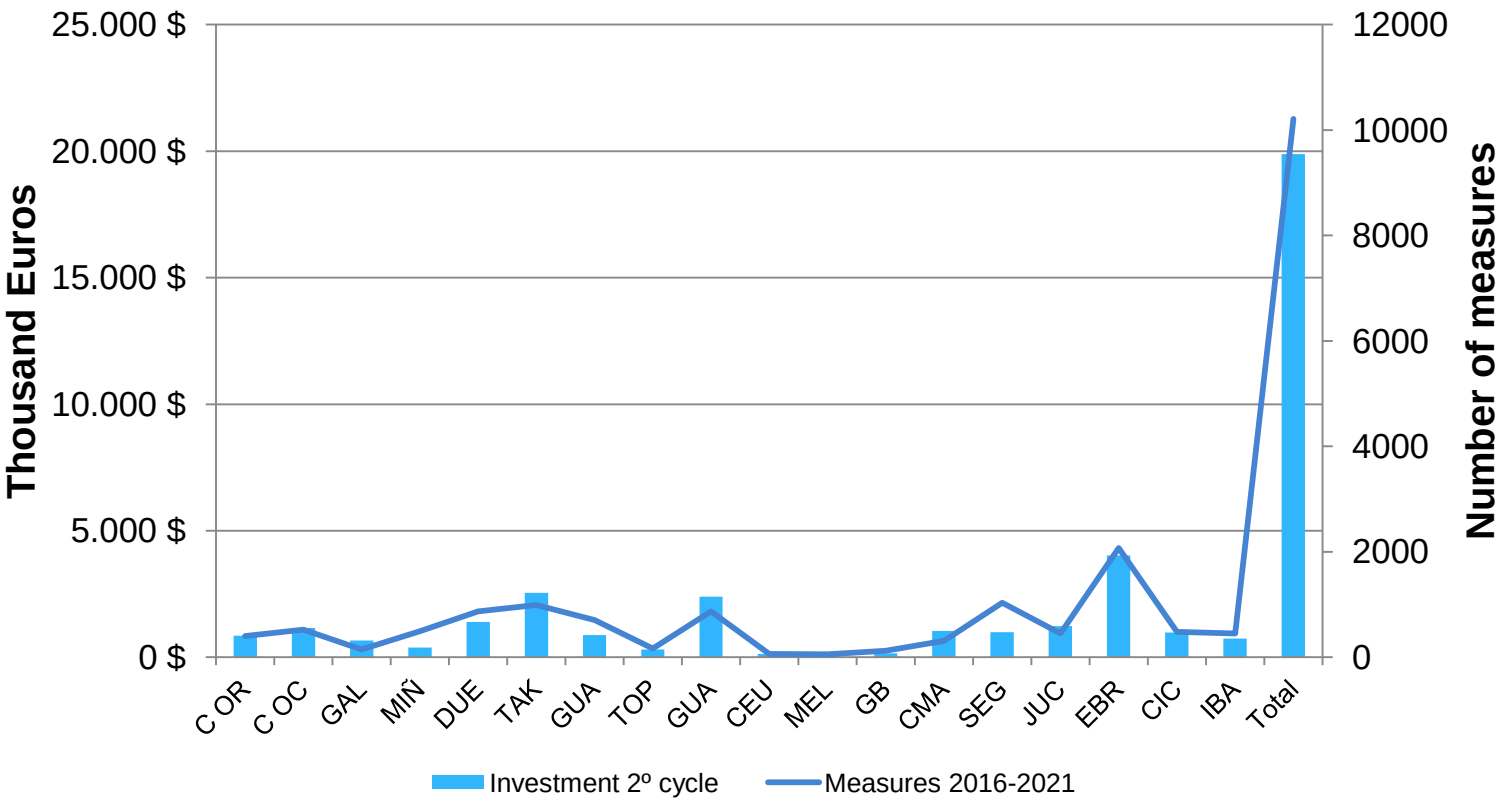
RBMPs – Impacts and Status

Some figures - Total 761 Surface water bodies



Ecological flows established for 73% of surface water bodies

RBMPs – PoMs



RBMPs – Information

WEB: *http://www.mapama.gob.es/es/agua/temas/planificacion-hidrologica/*

SUMMARY REPORT:

http://www.mapama.gob.es/es/agua/temas/planificacion-hidrologica/summaryrbmp2ndcycledraft_tcm7-448674.pdf

Special Plans for Situations of Alert and Temporary Droughts

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New **approach**

FROM a crisis management system, focused on immediate reaction to the problems posed by drought

TO a well-planned system for preventing water scarcity and drought

Tackling the hydrological droughts not the meteorological

Definition

Management Plan that allows to detect hydrological drought and adopts mitigation measures in advance that minimize the effects on water demand and on the environment

It is NOT an Infrastructure Plan, although it can include measures related to infrastructures

Drought Management Plans were approved by Ministerial Order (MAM/698/2007) in 2007

They are currently under review according to RD 1/2016 - Public information 21st Dec 2017

Special Plans for Situations of Alert and Temporary Drought

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Specific objectives :

- Guarantee water availability to sustain population life and health.
- Avoid or minimize negative drought effects on the ecological status of water bodies.
- Minimize negative effects on public water supply.
- Minimize negative effects on economic activities, according to the prioritization of uses established by the River Basin Management Plans.

Special Plans for Situations of Alert and Temporary Drought

Tools:

- **Indicator system** → which allows the early detection of droughts by establishing progressive thresholds on drought gravity.
- **Programme of measures** → which defines the measures to put in place in function of the phase
- **Management system** → which allows to adopt the measures.
- **Follow-up system** → thanks to specific indicators allows to determinate the correctly function of these plans.

Special Plans for Situations of Alert and Temporary Drought

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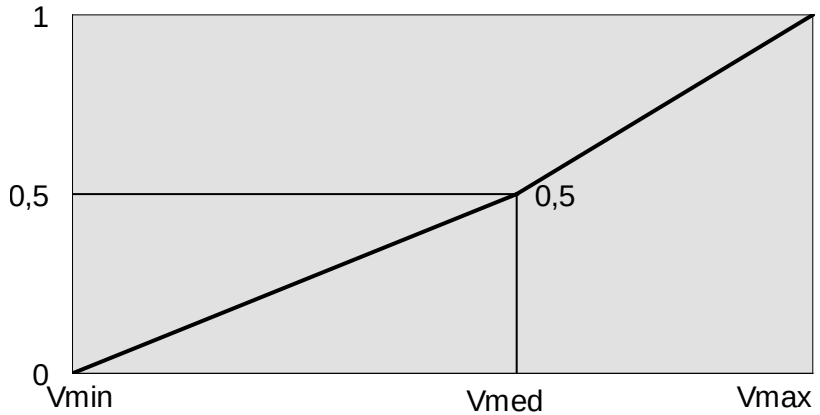
Indicator system

- Each river basin develops its own set of indicators adapted to its specific characteristics.
- All the indicators are normalised to values from 0 to 1, which allows the combination of different indicators by weighted additions.



$$- Si \;\; V_i \geq V_{med} \Rightarrow I_e = \frac{1}{2}\left[1 + \frac{V_i - V_{med}}{V_{\max} - V_{med}}\right]$$

$$- Si \;\; V_i < V_{med} \Rightarrow I_e = \frac{V_i - V_{\min}}{2\left(V_{med} - V_{\min}\right)}$$

Special Plans for Situations of Alert and Temporary Drought

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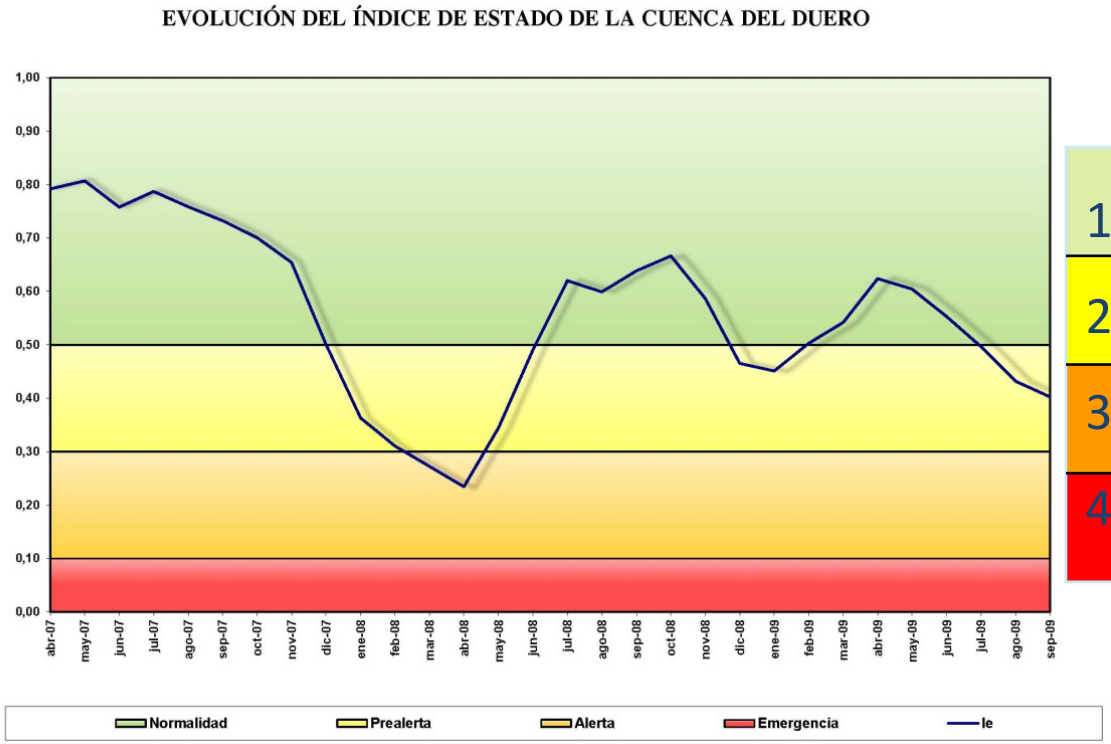
By using **hydrological simulations**, 4 drought phases had been established



1. Normal situation
2. Pre-alert situation
3. Alert situation
4. Emergency situation

Since the Drought Management Plans were launched, the indicators have been recorded at least monthly, increasing in many cases to a weekly collection

Cooperation in the WM field

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Important instrument in order to promote RBMPs for a sustainable WM according to regional needs and peculiarities.

WFD CIS – At EU level: Technical WGs – Guidance documents – Water Directors Meetings for WFD implementation (since 2001)

CODIA – Conference of Iberoamerican Water Directors – LA + ES+ PT – Technical Dialogues and products – Water Capacity Building Programme – WDs Agreements in the fields of Water Security, Water Planning, Supply and Treatment (since 2004)

Water Strategy in the Western Mediterrnaean – 5+5 countries: Action Plan in 10 priority areas (since 2015)

Thank you!

شكرا

Merci!

¡Gracias!

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