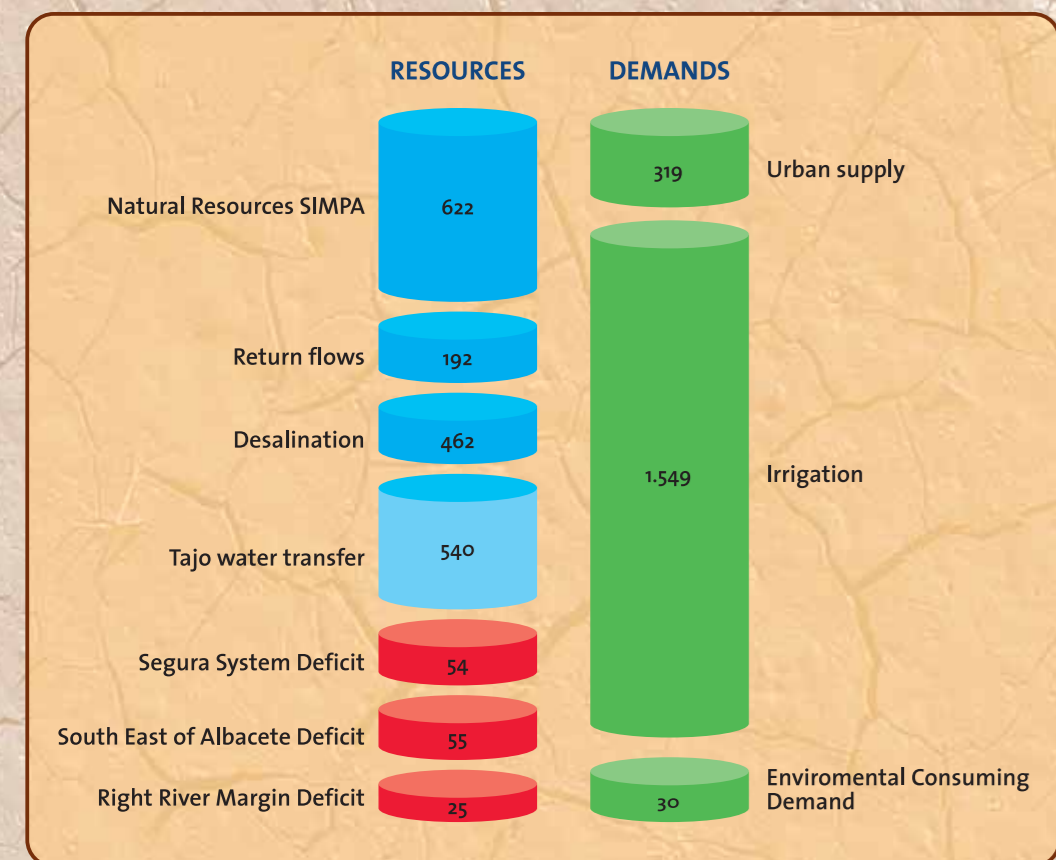


# Overall Balance

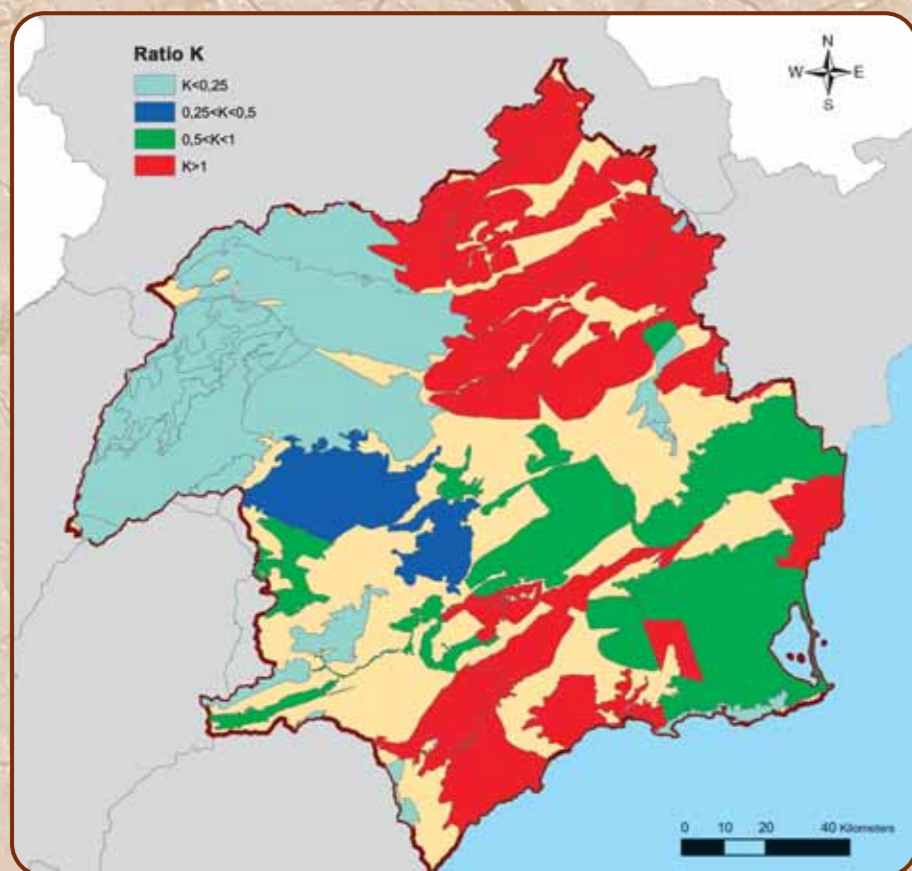
Despite all the measures that have been carried out, the demand-resource balance in the Segura river basin is expected to still have an estimated deficit of 134 hm<sup>3</sup> per year in 2015.



Overall balance

Expected balance in 2015

One of the deficit consequences in the Segura river basin district is the increase of pressure on groundwater bodies.



Ratio k= abstraction/recharge  
Source: Art. 5,6 & 7 WFD Report

# Urgent and Emergency Works Investment

The investment effort undertaken during the last drought period has provided additional water resources in a critical water scarcity moment.

TYPE OF WORKS/HIDROLOGIC YEAR	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Total (M€)
Desalination Plants (M€)	243,50	6,04	0,00	0,00	1,25	250,79
BES (M€)	0,00	16,00	8,00	8,95	6,10	39,05
Urban supply (M€)	26,50	6,50	2,39	0,00	8,98	44,37
Water Transfer Infrastructures maintenance (M€)	0,00	5,70	3,90	4,00	3,73	17,33
Irrigation infrastructures (M€)	21,00	0,00	7,59	1,32	5,81	35,72
Others (M€)	6,80	7,80	0,00	0,00	4,59	19,19
<b>Total (M€)</b>	<b>297,80</b>	<b>42,04</b>	<b>21,88</b>	<b>14,27</b>	<b>30,46</b>	<b>406,46</b>

Investment

# Impacts suffered by irrigation during the two former drought periods

Integrated water resource management measures that have been carried out, together with the undertaken investment efforts, have managed to significantly reduce drought impacts. However, drought effects are still considerable, and that's why it's essential to keep on working to tackle water scarcity and droughts.

IRRIGATION	NORMAL PERIOD AVERAGE (1990-92)	DROUGHT PERIOD AVERAGE (1990-92)	Δ (%)	NORMAL PERIOD AVERAGE (2002-2004)	DROUGHT PERIOD AVERAGE (2005-2006)	Δ (%)
Surface (ha)	156.383	141.664	-9,4%	156.494	152.821	-2,3%
Productive performance (t/ha) (*)	15,97	14,84	-7,1%	17,27	16,91	-2,1%
Production (t)	2.497.608	2.102.322	-15,8%	2.703.028	2.583.525	-4,4%
Economic performance (€/ha)	5.701	5.476	-3,9%	6.959	6.154	-11,6%
Production Value (M€ 2002)	891,614	775,803	-13,0%	1.089	940	-13,6%

Impacts suffered



Desalination Plant in Valedelentisco (Mazarrón, Murcia), for urban supply and irrigation.



Modernized agriculture exploitation (Campo de Cartagena, Murcia)



# Segura river basin Water Scarcity and Drought PILOT RIVER BASIN



Hydroponic crops (Pilar de la Horadada, Alicante)



Los Alcázares sewage treatment plant (Los Alcázares, Murcia)



Desalination Plant Alicante (Alicante), for urban supply



Cenajo Dam (Hellín, Albacete)

# Hydrologic and meteorological characterization of the Segura river basin

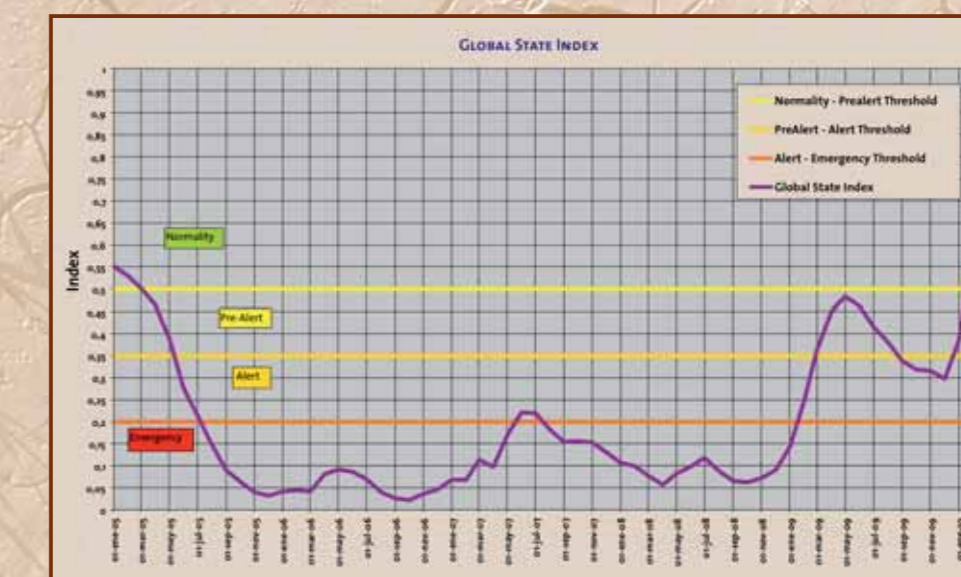
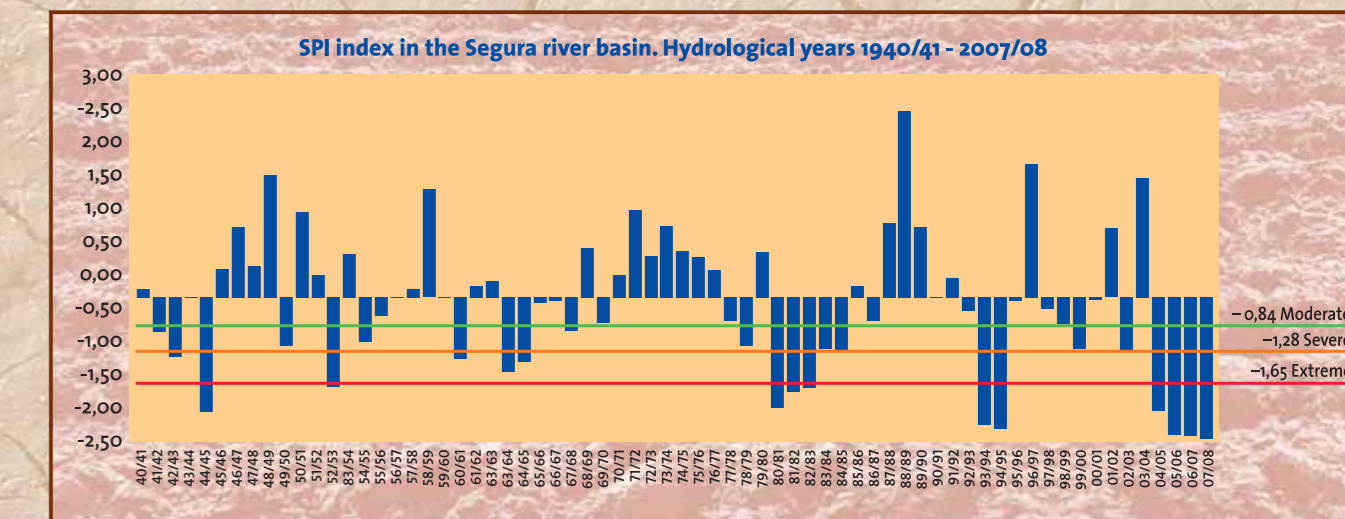
Water resource available per person in the Segura River Basin is one of the slowest of Spain, and it's below thresholds which are considered as acceptable.

	GENERAL DATA				RATIO (m <sup>3</sup> /Person/Year)
	SURFACE (km <sup>2</sup> )	AVERAGE PRECIPITATION (mm)	ETP (mm)	RN INFLOWS (hm <sup>3</sup> /year)	
S.R.B.	18.815	383	969	803	442
Spain	506.474	684	862	111.186	2.460
Water scarcity threshold according to international organizations (as WHO, UN), in m <sup>3</sup> per person per year					1.000

Source: Libro Digital del Agua / CHS Annual report 2008.

# Drought indicators in the Segura river basin

SPI Drought Characterization



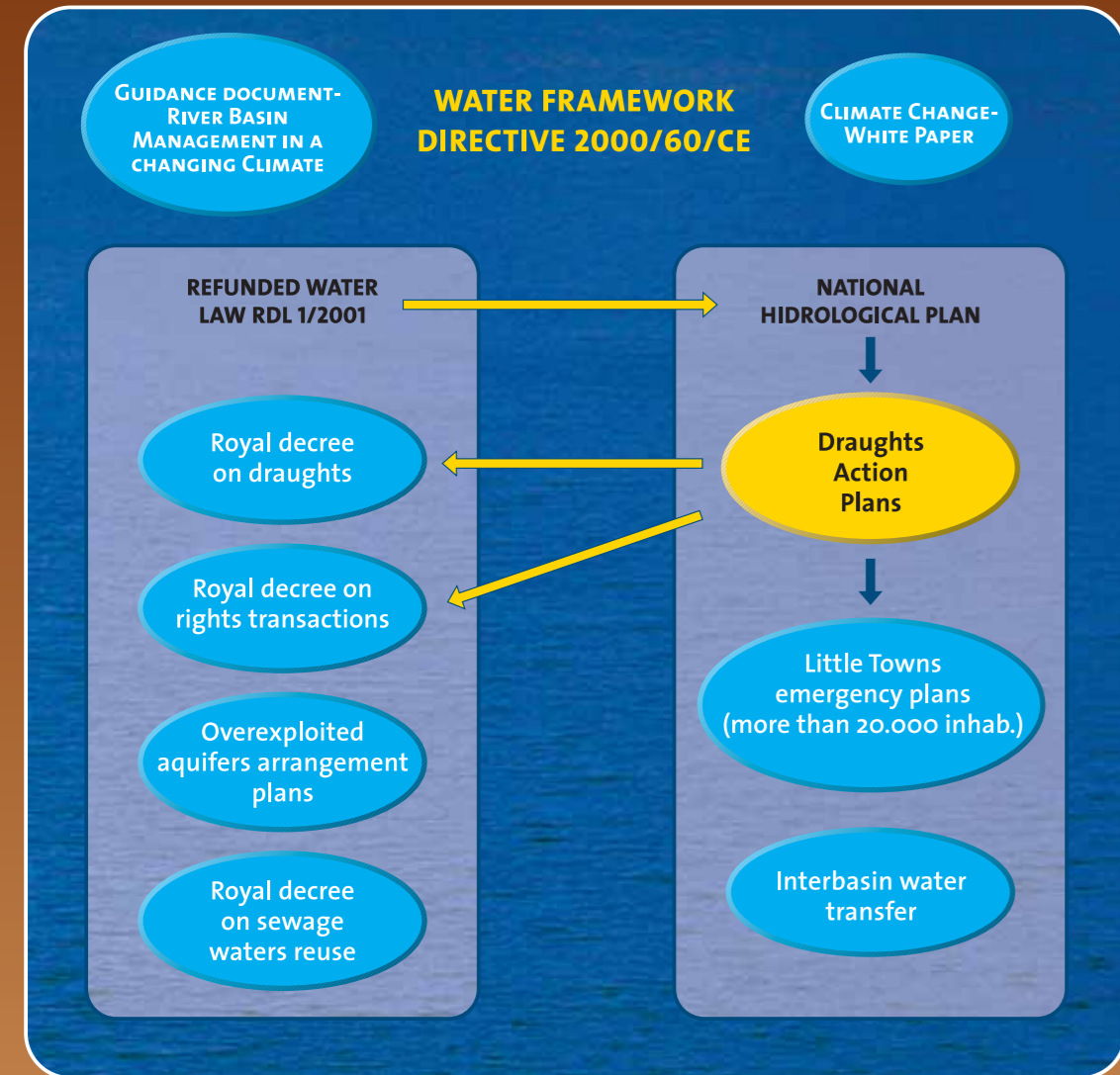
Drought Indicator assessed according to the Drought action plan of the Segura river basin.

Indicators



# Integrated water resource management legal framework

Legal framework



# Measure towards an integrated water resource management

To achieve an adequate resource and demands management in a basin characterized by recurrent drought periods, competent administrations and users have been provided with a legal framework, and several specific measures have been adopted:

- Water transfers from other basins.
- Transference of irrigating rights between users.
- Construction of desalination plants to increase water resources.
- Reuse of treated waters for agriculture.
- Water volumes provided by the drought well strategic network.
- Modernization of irrigation systems to improve its efficiency and to reduce its water consumption.
- Restrictions in irrigation water supply, which can be up to 50% depending on the drought severity.
- Specific drought regulations development, like the Royal decree on droughts.

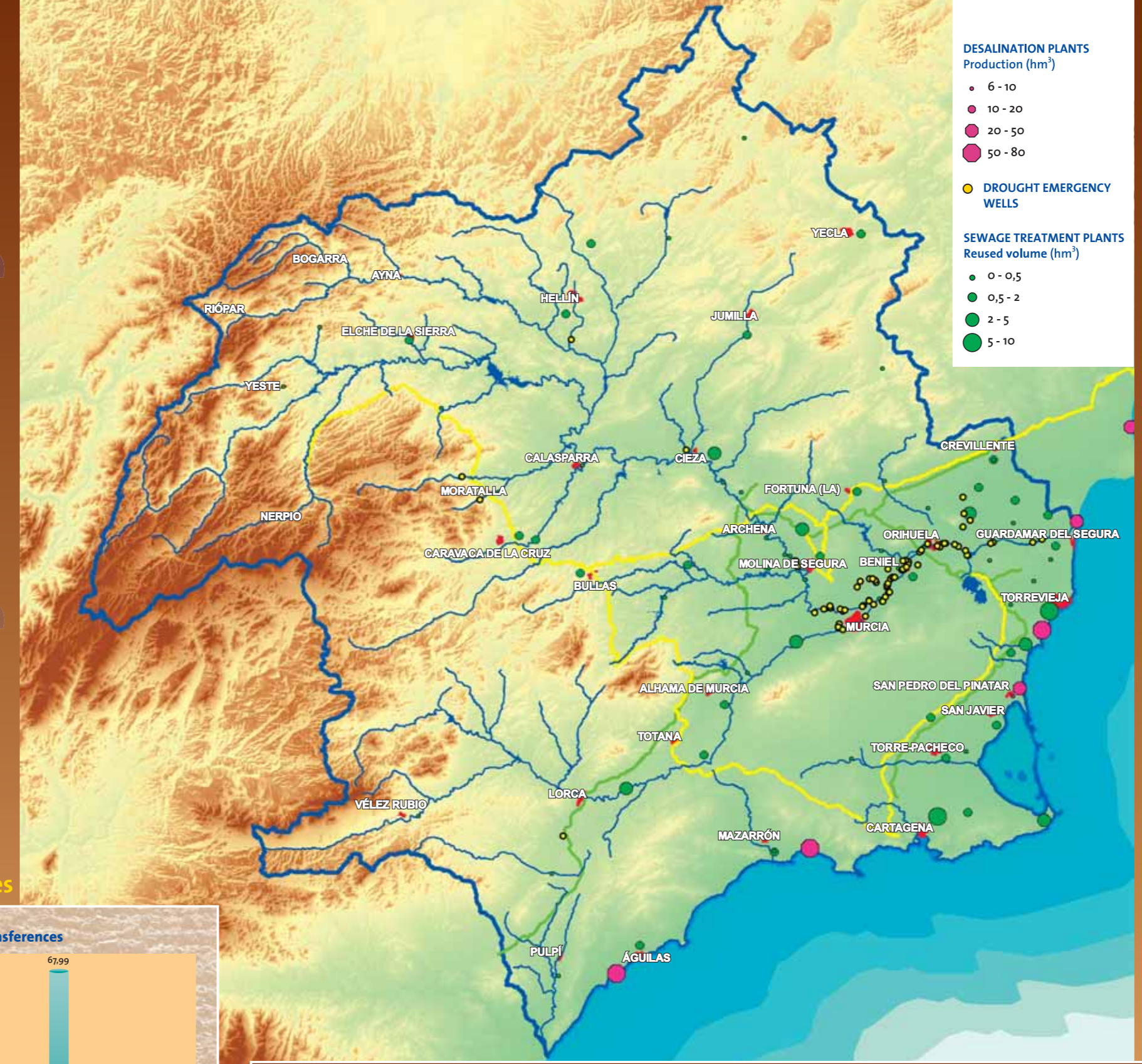
All this measures are included in the Drought Action Plan (PES) of the Segura river basin, and are designed to minimize environmental impacts.

## Drought Action Plan (PES) in the Segura river basin:

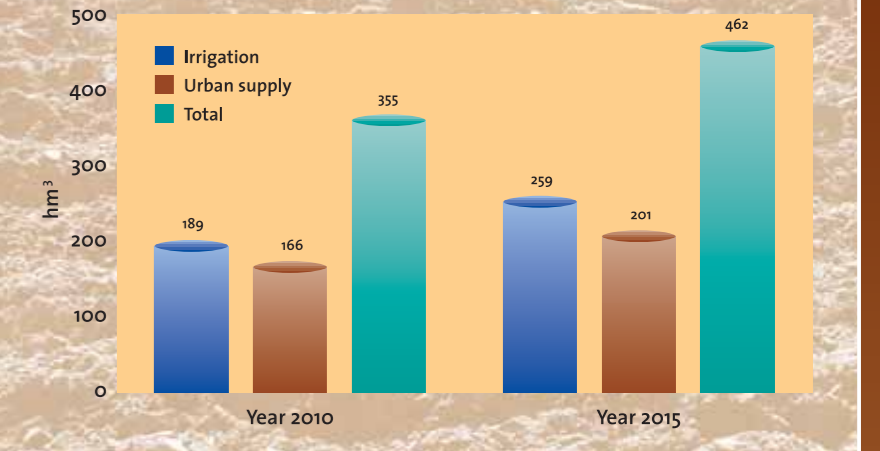
It is the principal document in drought management, since it determines the appearance of a drought objectively by means of a group of drought indicators. Later, a group of legal measures, and also demand and resource management rules, will be applied.



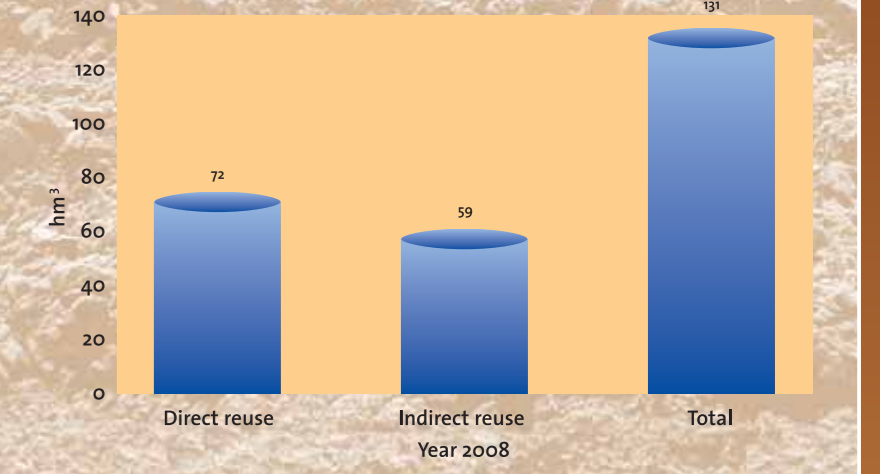
Integrated management



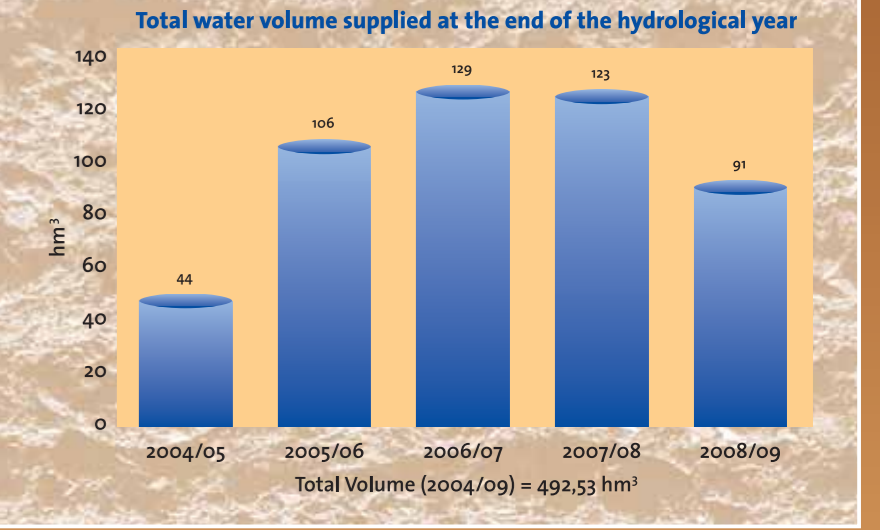
## Desalination



## Reuse of treated water



## Drought wells

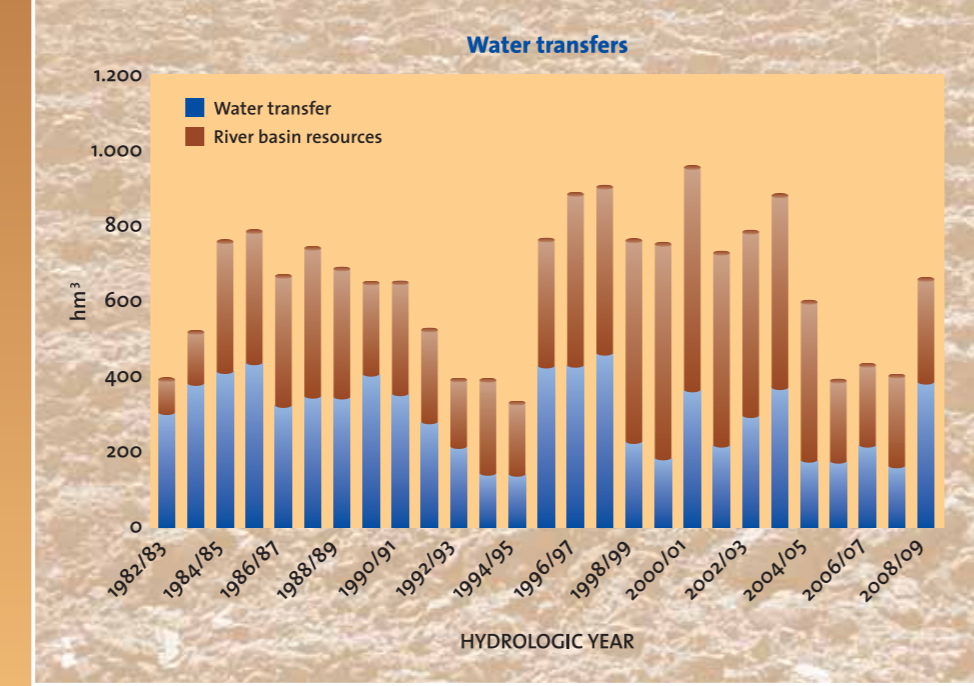


Supplied volumes by the drought well strategic network (BES) based on the management rules established by the Droughts action plan (PES) of the Segura river basin.

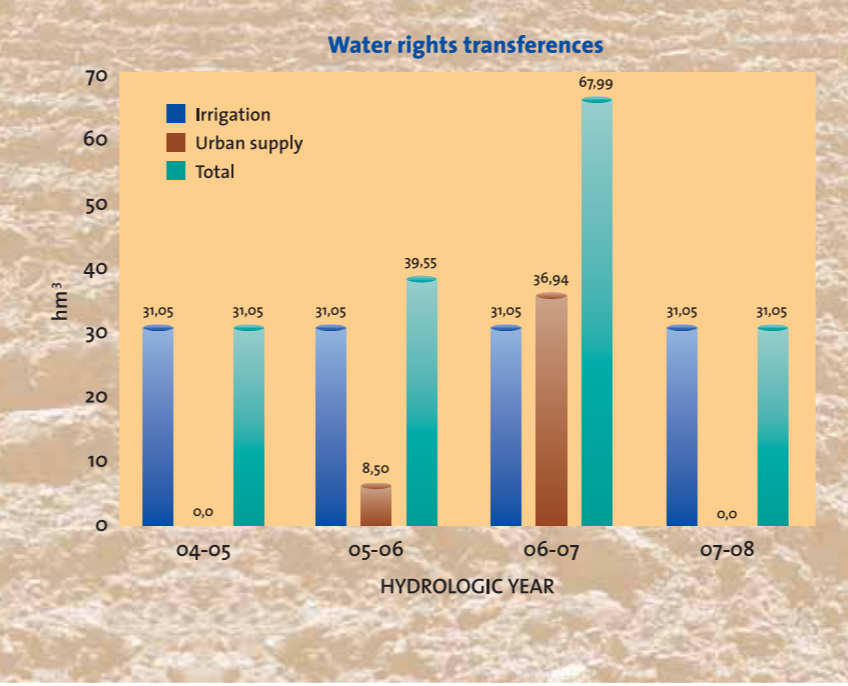


Segura river downstream Talave reservoir (Lietor. Albacete)

## Transfer from other basins



## Water rights transferences



## Irrigation Modernization

IRRIGATION MODERNIZATION INVESTMENT			IRRIGATION MODERNIZATION INVESTMENT (EXPECTED)		
ORGANIZATION	INVESTMENT	PERIOD	INVESTMENT	PERIOD	WATER SAVING
SEIASA	112.924.118 €	2001-2005	AGUA Program	362.000.000 € until 2015	114 hm³/year
Ministry of the Environment and Rural and Marine affairs	126.318.717 €	1997-2005	GRAVITY	SPRINKLER	DRIP
			PHC'g8**	41,33%	5,11%
Autonomous communities	171.038.810 €	1986-2003	2009*	7,13%	56,05%
			2015*	32,30%	11,73%

\* Estimated values \*\* Segura river basin Management Plan 1998



Well in Ascoy-Sopalmo aquifer