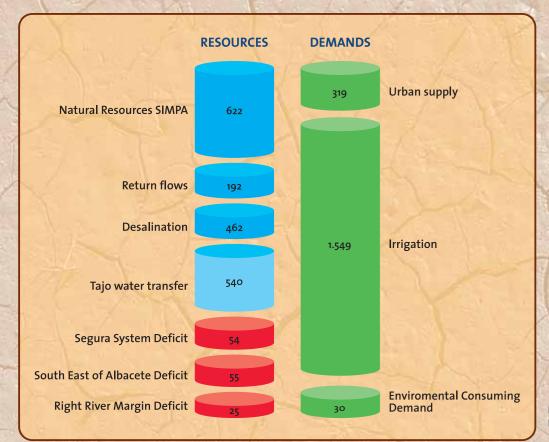
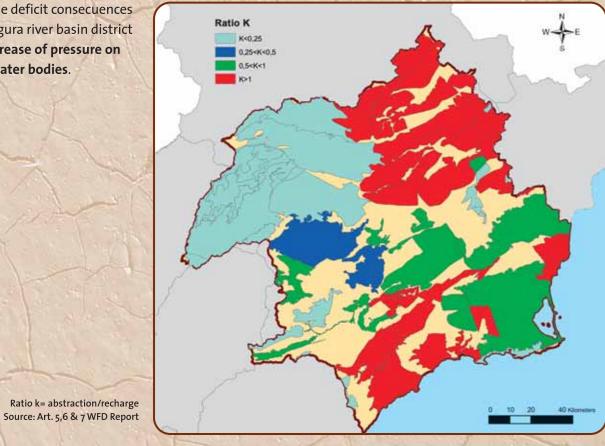
#### **Overall Balance**

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 hm³ per year in 2015.



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



# **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
Total (M€)	297,80	42,04	21,88	14,27	30,46	406,46
		A 1/4 TO		100000	OF RESIDENCE	

# 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%

for urban supply and irrigation.



Modernized agriculture exploitation (Campo de Cartagena. Murcia)





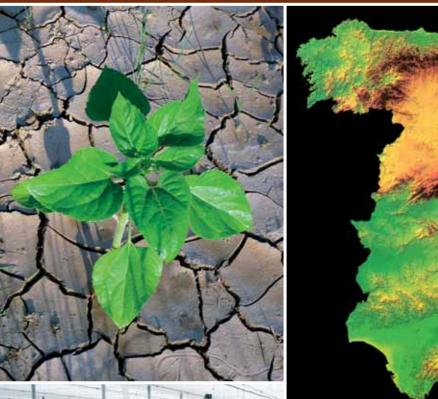






# Segura river basin

Water Scarcity and Drought PILOT RIVER BASIN













### 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.

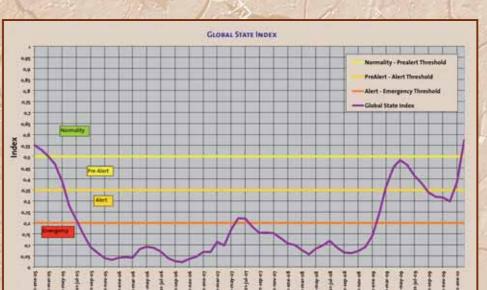
	GENERAL DATA							
	SURFACE (km²)	AVERAGE PRECIPITATION (mm)	ETP (mm)	RN INFLOWS (hm³/year)	RATIO (m³/Person/Year)			
S.R.B.	18.815	383	969	803	442			
Spain	506.474	684	862	111.186	2.460			
	Water scarcity threshold according to international organizations (as WHO, UN),  in m³ per person per year  1.000							

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

# Drought indicators in the Segura river basin

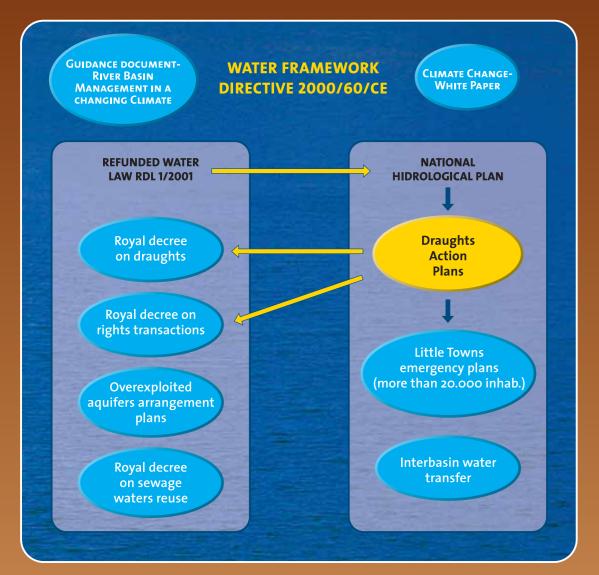
SPI Drought Characterization

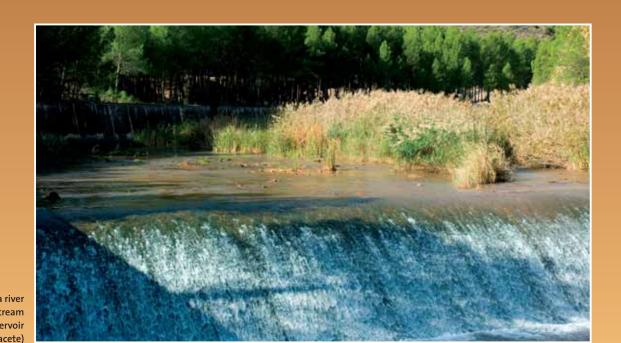




Drought Indicator assessed according to the Drought action plan of the Segura river

#### Integrated water resource management 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:

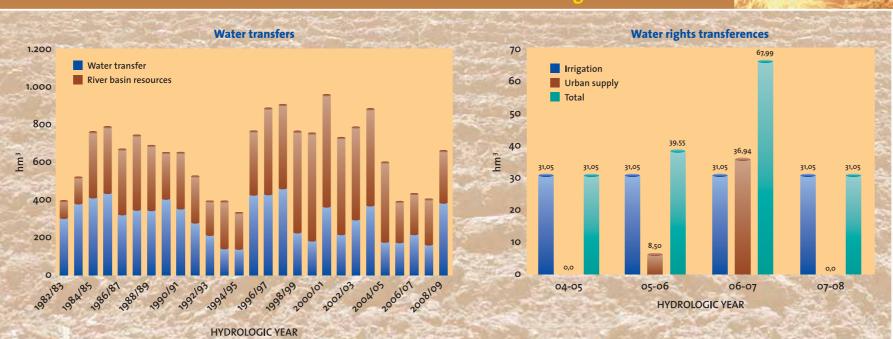
- Water transfers from other basins.
- Transference of irrigation rights between users.
- Construction of desalination plants to increase water resources.
- Reuse of treated waters for agriculture.
- Water volumes provided by the drought well strategic network.
- Modernization of irrigation systems to 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.





Production (hm³) Desalinatio

**Irrigation Modernization** 

AGUA Program

PERIOD

2001-2005

1997-2005

1986-2003

IRRIGATION MODERNIZATION INVESTMENT

INVESTMENT

112.924.118 € 2005

126.318.717 € 2005

171.038.810 € 2005

RGANIZATION

Ministry of the

ind Marine affairs

vironment and Rural

Autonomous communities

DROUGHT EMERGENCY

DESALINATION PLANTS

SEWAGE TREATMENT PLANTS Reused volume (hm³)

**IRRIGATION MODERNIZATION INVESTMENT (EXPECTED)** 

362.000.000€

GRAVITY

41,33%

32,30%

until 2015 114 hm³/year

\*\* Segura river basin Management Plan 1998

SPRINKLER

5,11%

7,13%

11,73%

DRIP

53,25%

56,05%

60,19%

Reuse treated wat

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.

Total Volume (2004/09) = 492,53 hm<sup>3</sup>

Total water volume supplied at the end of the hydrological year

