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WATER PRICING IN SPAIN: FOLLOWING THE FOOTSTEPS OF SOMBER CLIMATE CHANGE PROJECTIONS

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Outline

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- Past experiences with water pricing
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- Present experiences with water pricing
  - Irrigation
  - Urban users
- Current debates and future directions
- Conclusions

Introduction

- Overview of water prices in Spain → improving water allocation has become a significant aim in the last decades

- Dealing with a complex institutional scenario….

  - Spanish water pricing regulation: based on 1985 Water Law (partial amendments were implemented, basically in 2001)

  - In the 80s and 90s, water projects were heavily subsidized. Structural funds decrease with the economic crisis → difficulties to get alternative funds (debt issuance strongly constrained)

  - WFD in 2000. Collecting information. Delays in the submission of basin water plans to the EC

  - Decentralization in Spain

Introduction

...and a complex environmental scenario:

- Significant population growth in the present century and possibly in the future
- Climate change in Spain (CEDEX, 2011) → by 2040,
  - Mean annual temperature could increase between +1.4 and +1.9
  - Annual precipitation could decrease between 5 and 6%
  - More arid areas would experience large changes in rainfall patterns
- Great impacts of water availability and water quality
  - Southern basins could suffer reductions up to 13-15%
  - Mediterranean basins would experience reductions of less than 10%
  - 50% of surface water bodies are in a poor ecological status

Past experiences with water pricing

The general model of water pricing in Spain (Garrido and Calatrava, 2009): 1985 Spanish Water Act
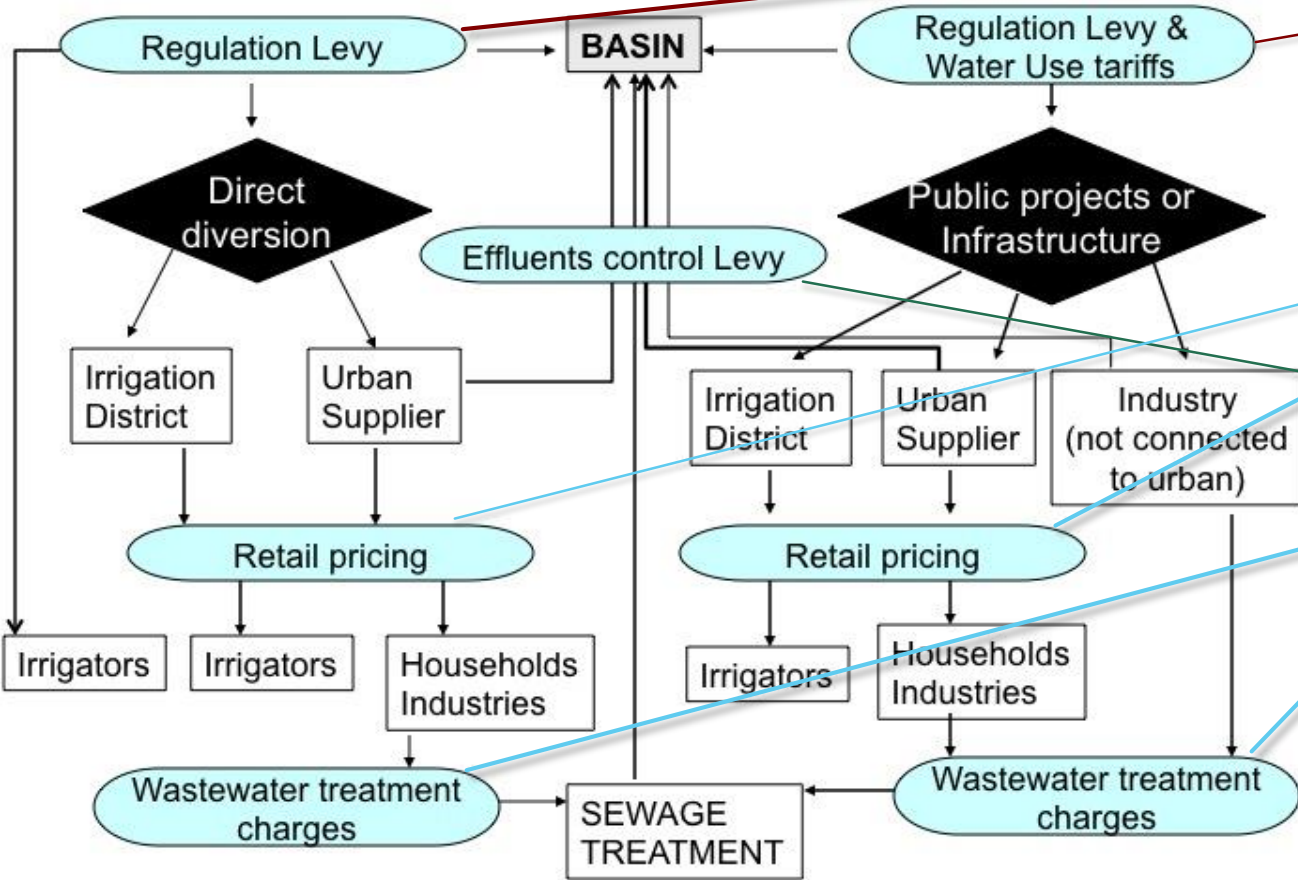
Charges paid by the users of surface resources to the river basin authorities. Those charges try to cover

Strong regional/local heterogenity in *retail pricing* and *wastewater treatment charges*

Past experiences with water pricing

- Additionally, users of the public hydraulic domain are charged to protect the domain's conditions. This levy is based on the occupation or use of land belonging to the public hydraulic domain, riverbeds and river flows, but not on water use.

- Groundwater users are not usually obliged to pay any levy or tariff, as they do not use public infrastructures to divert water resources. There are concession rights for groundwater resources.

- Regulation Levy and Water Use Tariff:

  - Usually, cost-recovery rates below 100%

  - They are different depending on the kind of user: equivalence coefficients → The coefficients are different between and within basins.

- The general model is applied in basins responsibility of central government. In intraregional basins managed by regional governments, additional fees / conditions could emerge.

Past experiences with water pricing

▶ Irrigation

Most frequent pricing structures (2001): Fixed per hectare (82%); volumetric (13%) and binomial (5%). → quotas, rather than prices, remain the main allocation system.

Farmers' payments for irrigation water services in interregional Spanish basins (2001–2002)

Basin	Surface water resources			Groundwater		Surface and Groundwater	
	Per ha						
	Distribution (paid to WUA)	WUA and basin tariff	WUA and basin tariff per m^3	Cost per ha	Cost per m^3	per ha	per m^3
Duero	20	46	0.012	500	0.095	231	0.044
Ebro	49	12	0.011	829	0.15	113	0.02
Tajo	36	67	0.02	541	0.10	199.3	0.038
Júcar	81	16	0.02	383	0.074	283	0.055
Guadiana	19	102	0.025	232	0.048	188	0.039
Guadalquivir	101	70	0.035	744	0.15	400	0.081
Segura	34	151	0.038	789	0.163	463.8	0.096
Total	**50**	**56**	**0.021**	**500**	**0.09**	**263.5**	**0.051**

Source: Adapted from MMA (2007); All figures expressed in current euros.

Past experiences with water pricing

- Urban users

  - Prices are among the lowest in the EU (OECD, 2010, 2013)

  - Most frequent pricing structures (2002) → binomial (fixed charge +increasing blocks). Social discounts are applied at the household level.

Urban water tariffs structure by users, 2002 (% population)

	Residential			Industrial		
	Supply	**Sewerage**	**Sanitation**	**Supply**	**Sewerage**	**Sanitation**
Fixed charge + increasing blocks	92%	71%	63%	67%	67%	3%
Fixed charge + constant price	3%	18%	27%	24%	23%	90%
Free allowance	5%	4%	2%	9%	3%	0%
Constant price	0%	7%	3%	0%	7%	2%
Flat fee	0%	0%	4%	0%	0%	6%

Source: AEAS (2003)

Past experiences with water pricing

▶ Urban users

Average revenue from urban water services in Spain by regions: 1996-2004 (in current €/m³)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
NATIONAL AVERAGE	0.63	0.65	0.67	0.69	0.73	0.76	0.81	0.86	0.95
Andalusia	0.53	0.55	0.57	0.58	0.59	0.64	0.69	0.79	0.94
Aragon	0.44	0.46	0.51	0.55	0.59	0.59	0.62	0.66	0.82
Asturias	0.36	0.41	0.42	0.45	0.51	0.55	0.59	0.65	0.65
Balearic Islands	1.12	1.16	1.16	1.24	1.32	1.45	1.48	1.42	1.31
Canary Islands	1.51	1.52	1.52	1.55	1.58	1.66	1.67	1.68	1.64
Cantabria	0.41	0.41	0.44	0.46	0.53	0.52	0.55	0.60	0.69
Castilla & Leon	0.41	0.41	0.44	0.42	0.42	0.45	0.49	0.53	0.61
Castilla - La Mancha	0.35	0.38	0.39	0.35	0.44	0.48	0.52	0.57	0.63
Catalonia	0.76	0.80	0.86	0.9	0.94	0.91	0.98	1.04	0.92
Valencia	0.62	0.60	0.62	0.62	0.66	0.72	0.78	0.83	1.07
Extremadura	0.44	0.49	0.49	0.60	0.72	0.74	0.76	0.73	0.72
Galicia	0.41	0.41	0.48	0.50	0.54	0.60	0.61	0.62	0.78
Madrid	0.64	0.65	0.66	0.68	0.69	0.76	0.81	0.86	1.00
Murcia	0.94	0.95	0.99	0.99	1.12	1.02	1.08	1.08	1.41
Navarra	---	---	---	0.45	0.60	0.59	0.63	0.73	1.11
Bask Country	0.98	1.02	1.04	1.06	1.12	1.09	1.14	1.15	0.83
La Rioja	---	---	---	0.30	0.41	0.42	0.44	0.54	0.96

Source: own elaboration from www.ine.es

Present experiences with water pricing

- Irrigation
  - Per hectare pricing as preferred option→ most tariff structures remain untouched
  - Volumetric or binomial tariff structures are found in districts where groundwater is a relevant source of supply
  - In the most water-scarce basins (Segura, Almanzora), volumetric retail pricing is set. Additionally, tariffs and levies are also paid volumetrically to the basin's authorities.
  - Increased availability of desalinized resources, specially in the Mediterranean Coast basins

Present experiences with water pricing

► Irrigation

Area/Region	Source of water	Price
RBAs Regulation Levies and Water Use Tariffs		
Tajo basin	Surface	Regulation Levy: 5,22–130,36 €/ha; Water Use Tariff: 33,17-300,11 €/ha;
Guadalete-Barbate basin (Andalusia)	Surface	Regulation Levy: 21,69-136,49 €/ha; Water Use Tariff: 19,47-369,7 €/ha;
Duero basin	Surface	Regulation Levy: 15,99 – 73,06 €/ha; Water Use Tariff: 14,9-245,97 €/ha;
Guadiana basin	Surface	Western basin: Regulation Levy: 10,82 – 48,39 €/ha; Water Use Tariff: 0 - 295,14 €/ha. Eastern basin: Regulation Levy: 8,98 – 31,59 €/ha; Water Use Tariff: 0 - 295,14 €/ha.
Mediterranean Andalusian basins (Almería province)	Surface	Regulation Levy: 0,0262 – 0,0547 €/m^3; Water Use Tariff: 0,0136 – 0,1523 €/m^3;
Mediterranean Andalusian basins (rest)	Surface / Groundwater	Regulation Levy: 33,78 – 270,24 €/ha; Water Use Tariff: 29,99 - 147,55 €/ha.
Final (volumetric) prices paid by farmers		
Segura basin	Various sources	0.03 €/m^3 (surface); 0.09-0.12 €/m^3 (Tajo-Segura inter-basin Transfer); 0.03 €/m^3 (treated sewage water); 0.38-0.45 €/m^3 (desalinization, incl. transport.); 0.10-0.33 €/m^3 (groundwater)
Mazarrón (Segura basin)	Desalinized groundwater	0.6 € /m^3
Castilla La Mancha Region (Júcar basin)	Groundwater	0.15 € m^3
Riegos del Alto Aragón (Ebro basin)	Surface	Average districts' charges: 0.013 €/m^3 + 62.50 €/ha (sprinkler irrigated districts); 0.005€/m^3 + 46.50 €/ha (surface irrigated districts)
Western and Eastern La Mancha aquifers (Guadiana basin)	Groundwater	0.08-0.11 €/m3 (Western La Mancha Aquifer); 0.06-0.11 €/m3 (Eastern La Mancha Aquifer);

Source: own elaboration

Present experiences with water pricing

- Urban users
  - Despite price increases, cost-recovery aims have not been fully achieved (EEA, 2013)
  - There were no significant changes of tariff structures in the last years. Some trends:
    - Binomial structure: Fixed charge + increasing blocks as a preferred option
    - Slight trend to simplify water tariff structures
    - Free allowances have been reduced (not totally eliminated)
  - Discounts have been strongly generalized (specially in medium-big cities)

Present experiences with water pricing

▶ Urban users

Residential water supply tariffs: Family size adjustments

Barcelona	
Block	Euros/m^3
0 – 6 m^3	0.6188
7 – 9 m^3	1.2376
10 – 15 m^3	1.8564
16 – 18 m^3	2.4752
> 18 m^3	3.0940

Eligible households: families with 4 or more members
Discount → Blocks will be extended as follows:
  - First block: 2 m^3/month per additional person.
  - Second block: 3 m^3/month per additional person
  - Third block: 5 m^3/month per additional person.
  - Forth block: 6 m^3/month per additional person

Granada	
Block	Euros/m^3
0 – 2 m^3	0.4053
3 – 10 m^3	0.6763
11 – 18 m^3	1.3996
> 18 m^3	1.9171

Eligible households: families with 3 or more children.
Discount: 50% in the variable charge corresponding to 10 m^3/month (two first blocks)

Source: Authors own elaboration

Present experiences with water pricing

► Urban users

Industrial water supply tariffs in Madrid: Industry size adjustments

Block size (m^3/bimonth)

Block	Meter size (mm.)									
	≤15	20	25	30	40	50	65	80	100	>100
1	<90	<150	<200	<350	<400	<550	<800	<800	<900	<900
2	90-180	150-300	200-400	350-700	400-800	550-1,100	800-1,600	800-1,600	900-1,800	900-1,800
3	>180	>300	>400	>700	>800	>1,100	>1,600	>1,600	>1,800	>1,800

Prices (Euros/m^3)

Block	Price	
	Summer	Rest of the year
1	0.407	0.407
2	0.687	0.550
3	1.460	0.973

Source: Author own elaboration

Current debates and future directions

- Markets are limited, and water law reform is improbable → irrigation water pricing structures and levels would not change in the short run

- Increasing choice of water tariffs: "menu" of structures

- Combining pricing instruments with other kind of non-pricing instruments:

  - Information as a key issue

  - Spreading the use of efficient technologies (avoiding the rebound effect)

- Environmental issues need to be improved →

  - Only regional governments charge environmental levies, in addition to the (central) *effluent control levy*

  - Non-point pollution is not addressed using charges or levies

Conclusions

▶ Water pricing → A matter of principles (Marxism philosophy, Groucho Marx)

▶ **S**ufficiency

▶ **E**fficiency

▶ **A**ffordability

▶ **T**ransparency

THANK YOU FOR YOUR ATTENTION!