

Water Management in Spain: An example of changing paradigms

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Extended Abstract

Both in principles and practical terms, Spain's water policy has changed dramatically in the last years. This rapid evolution has been accompanied by growing water problems, of which the Spanish society is becoming increasingly concern. This paper reviews the recent history of Spanish water policy, examines its weaknesses and strengths and draws policy relevant conclusions for other arid and semiarid countries. Key drivers of change, including serious environmental degradation, growing water demand, climatic change, agricultural policy and economic growth provide the context for recent water policy landmarks. Among these the reform of the water law in 1999, enabling water market transactions, the EU Water Framework Directive, the 2001 national hydrological plan and its subsequent reform in 2004 mark a decade of radical policy initiatives. Underlying them, water users, managers and society in general also show signs of new attitudes, thinking and awareness. In the paper, we review a few innovative programmes that tackle problems whose solution is long overdue, but shows signs of success. We look at the economics of water resources, including flexible allocation instruments, voluntary arrangements, and water prices. We also review how the most pressing problems associated with intensive use of groundwater resources are being addressed, after decades of unsuccessful attempts. Finally, we look at the irrigation sector, by far the largest water consumer in Spain and the one in which policies can accomplish the largest impacts. Furthermore, we elaborate on the impact that virtual water trade can have on water supply for the production of food and fibers.

The paper concludes summarising the most outstanding lessons that the Spanish case can provide to water policy discussions at a global scale. These are (a) large water projects are not the solution to unsustainable water uses or enhance water supply reliability; (b) flexible and adaptable solutions, that rely on technologies, infrastructure and demand management instruments are more complex and require multiple standpoints and longer maturation periods; (c) the actual costs of supplying water at subsidized prices multiply spilling over other users, the taxpayer and the environment, especially when scarcity becomes acute; (d) rigid, hierarchical and top-down planning models fails when water hegemonic thinking and political coalitions break down; (e) accesible information, science-based decision making and public participation are key elements to breakthrough entrenched and adversarial positions; (f) innovative water policies require strong budgets, sound finance and equitable burden distribution.

1. Major water policy landmarks

This section briefly reviews:

- The 1999 Water Law reform: the role of water markets, promotion of desalination and privately financed water projects.
- The WFD DMA. Changing paradigms, reshaping priorities, and the appearance of economic evaluation.
- The NHP 2001. The big water project.
- The NHP 2004. Stopping the Ebro transfer, focusing on water quality and putting hope on desalination.
- Miscellaneous initiatives: The Guadiana program, water banks, new planning criteria and the programmes of measures.

2. Drivers of change

- The widespread recognition that many water bodies are severely deteriorated. Restoring water quality is a formidable task that requires large investments, a better administration and a great deal of education.
- Water demand still grows insatiably, especially where resources are scarce. Economic development and growth, the construction boom, the tourist sector and a competitive export-oriented agricultural sector jointly contribute to a stressful environment, which so far has been addressed adding further supplies.
- Climate change poses serious challenges for the Iberian peninsula. Most models predict larger evapotranspiration, lower and more unstable precipitation regimes, and lower rivers runoff. Agricultural demand will likely to grow, adding further pressure to the catchments and supply systems.
- Agricultural policies have moved the support measures from production incentives and specific sectorial programmes to completely decoupled support. Farmers are now completely free to grow the crops they want. Furthermore, many policies are being based on the separation of land and water use rights. This opens numerous opportunities to farmers to adapt to market forces and internalise water value in decision making.

3. Increasing awareness of water problems

This section shows that water problems cut across many social and economic issues, demanding the attention of educators, city councils and entrepreneurs. This widespread awareness is reinforced by steady media attention, and

4. Case studies

4.1. ***Changes in the economics of water resources, including flexible allocation instruments, voluntary arrangements, and water prices***

We review how pricing, markets and voluntary agreements are gaining approval, and becoming commoner than ever. We review water pricing against measures of water productivity and value for the main economic sectors.

4.2. ***Tackling most pressing problems with intensive use of groundwater resources***

The P del Guadiana.
The Jucar plan.

4.3. ***The irrigation sector as the cornerstone of water resources in Spain***

Narrowing the technology gap.
Access to water in mainland Spain
New cropping patterns
The National irrigation plans: the thrust of irrigation modernisation

5. Drawing useful lessons from the Spanish example

a) large water projects are not the solution to unsustainable water uses or enhance water supply reliability; (b) flexible and adaptable solutions, that rely on technologies, infrastructure and demand management instruments are more complex and require multiple standpoints and longer maturation periods; (c) the actual costs of supplying water at subsidized prices multiply spilling over other users, the taxpayer and the environment, especially when scarcity becomes acute; (d) rigid, hierarchical and top-down planning models fails when water hegemonic thinking and political coalitions break down; (e) accesible information, science-based decision making and public participation are key elements to breakthrough entrenched and adversarial positions; (f) innovative water policies require strong budgets, sound finance and equitable burden distribution

Literature

Garrido, A, y M.R. Llamas (Eds.) *Water policy in Spain*. Resources for the Future, Washington, D.C. 2007, in press.

Llamas, R. y E. Custodio (Eds.). *Intensive use of groundwater: challenges and opportunities*. Balkema Publishing Company, Amsterdam, 207-221 2002.

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Summary

**Water Management in
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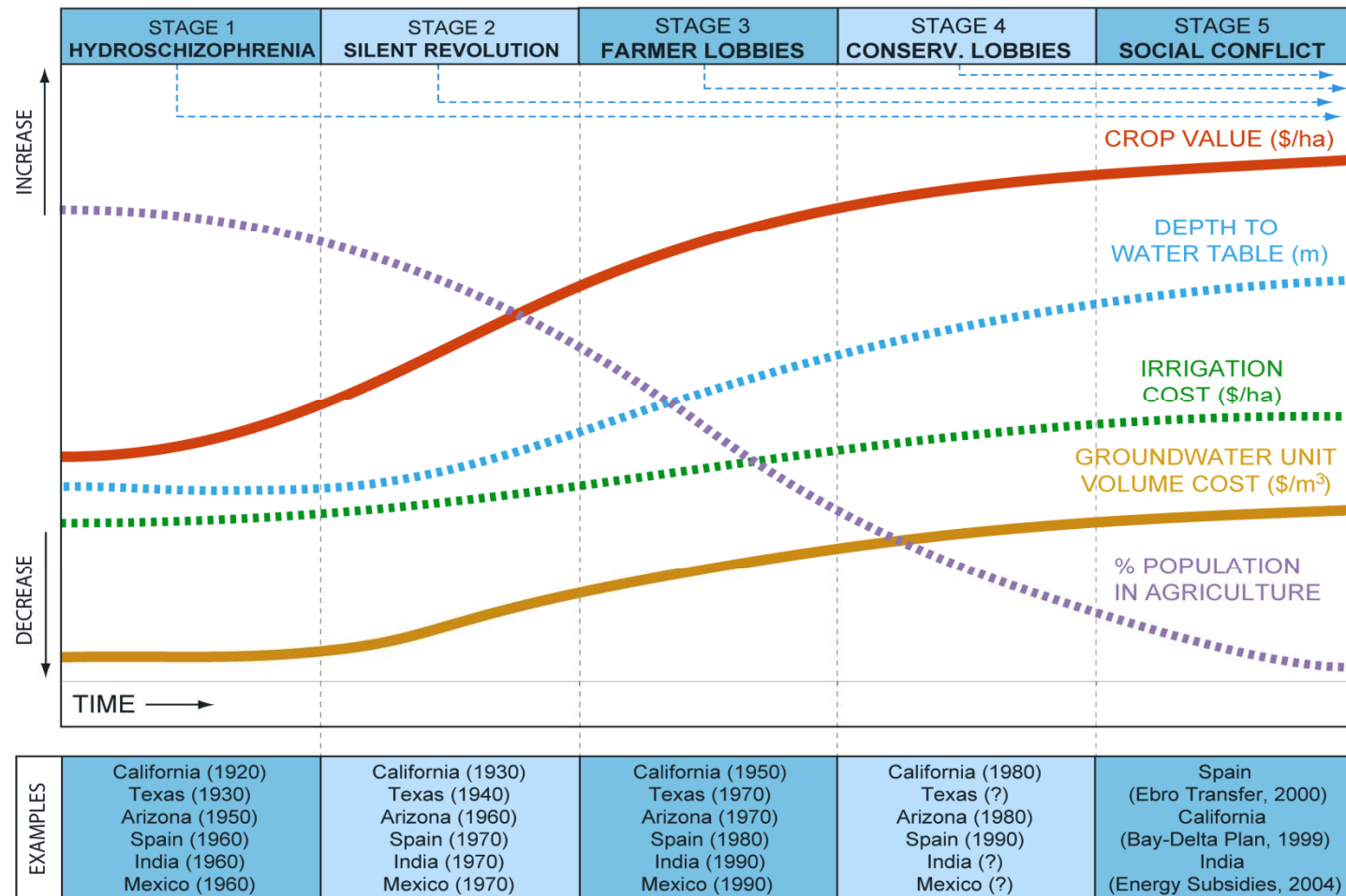
1. A history briefing
2. Drivers of change
3. Increasing awareness of water problems
4. Three illustrative problems and solutions
5. Concluding remarks

1. A History briefing

- Growth period 1879-1985
- Maturity 1985-2000
- 2000- the breakdown of consensus:
 - The demise of big projects
 - Regional issues
 - Sectorial competition

1. A History briefing

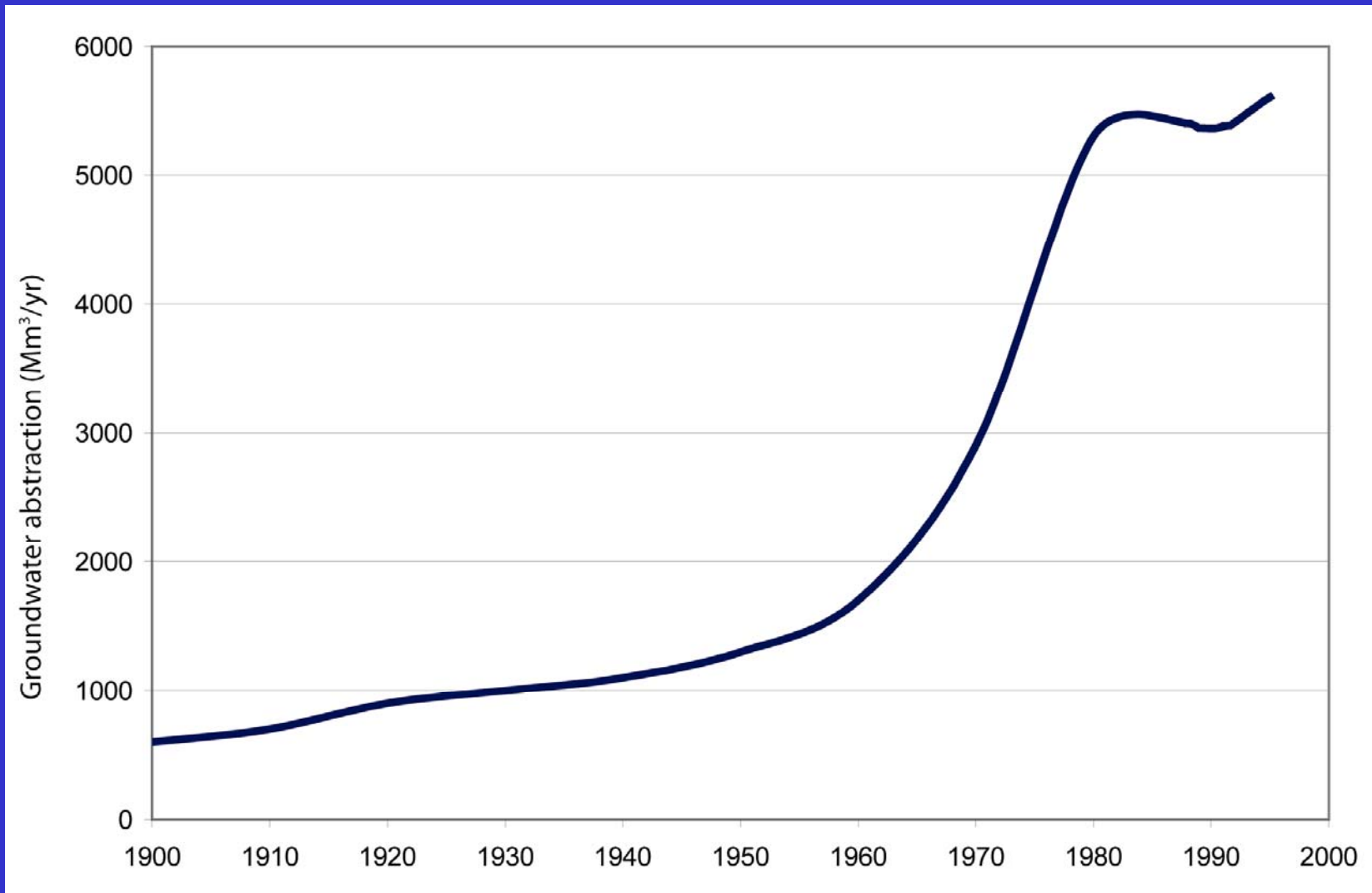
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Source: Llamas and Martinez-Santos (2005b).

1. A History briefing

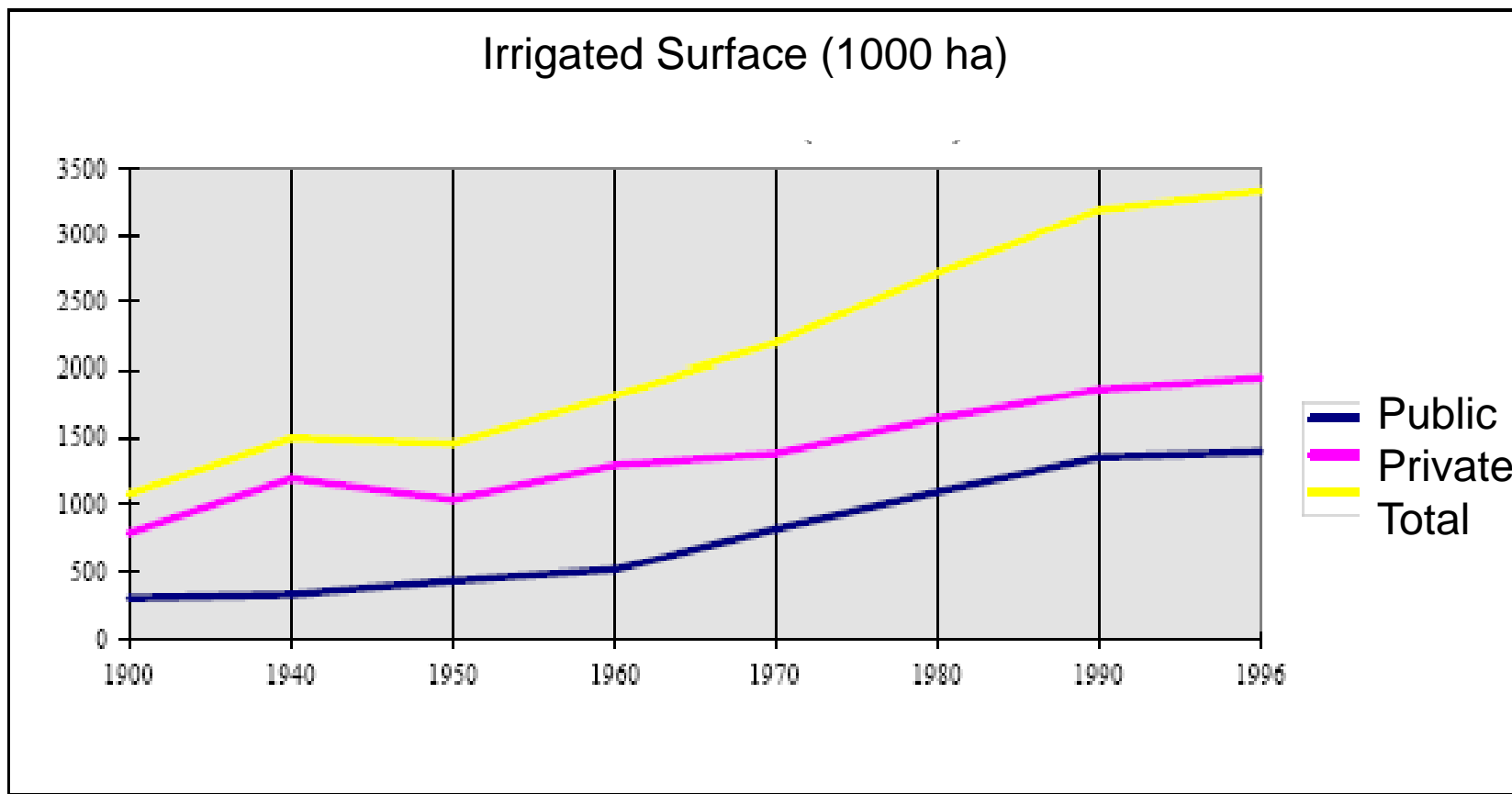
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Source: Llamas and Martinez-Santos (2005b).

1. A History briefing

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Source: MAPYA, 2002

1. A History briefing

- 2000- the breakdown of consensus:
 - The demise of big projects
 - Regional issues
 - Sectorial competition

1. A History briefing

- The 1999 Law reform (water markets, sounder finance, desalination,...)
- EU Water Framework Directive (2000)
 - Good water quality status
 - Economics (pricing/CBA/Cost-effectiveness A)
 - Programmes of measures
 - Public participation
- The New PHN-2004

2. Drivers of change

- Intense Urbanisation (culture, economy...)
- Enlargement of the scientific community
- The 1993-95 Drought
- Economics and finance
- Revamping the EU Common Agricultural Policy
- Growing conflicts about groundwater

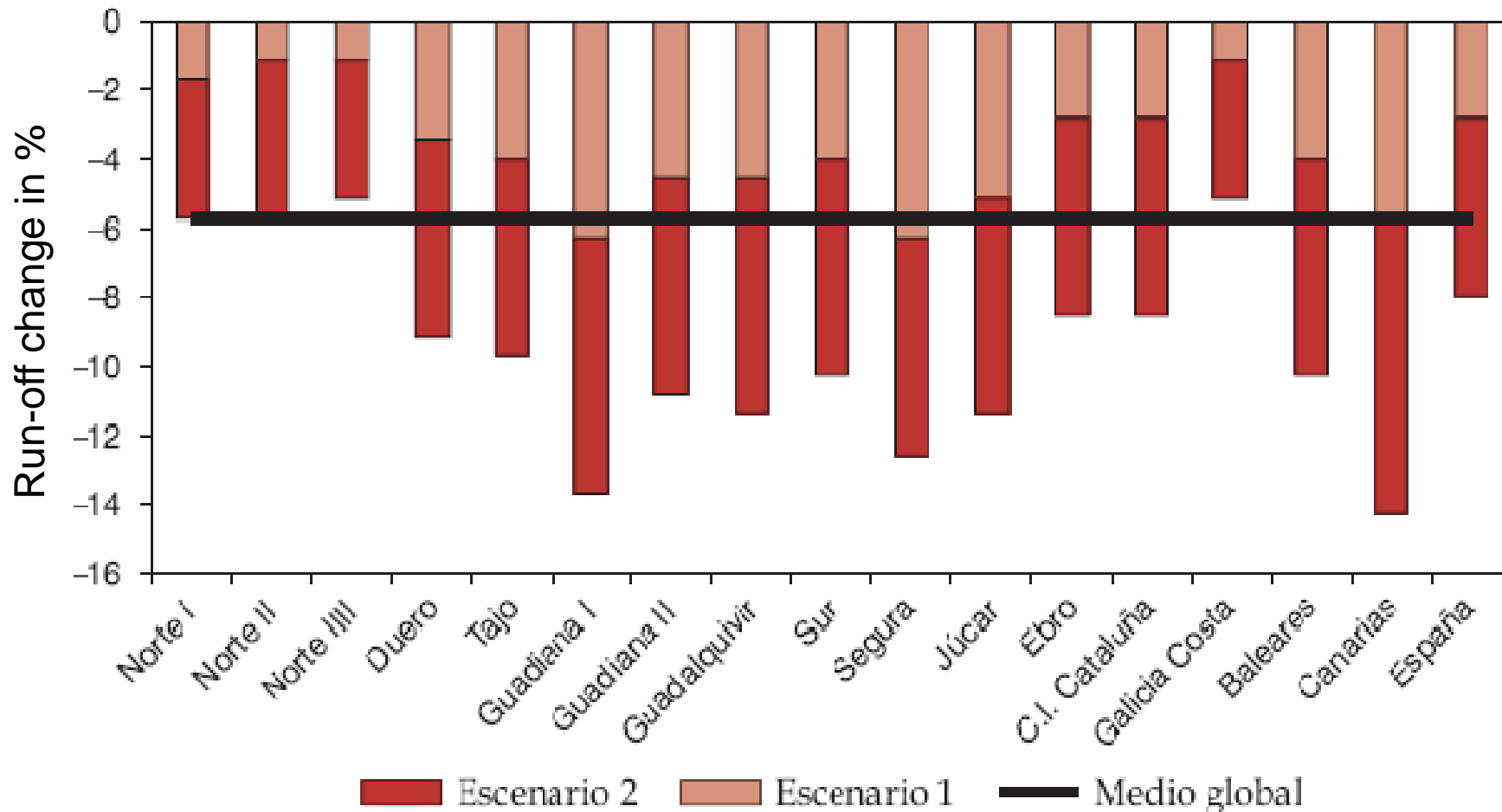
3. Increasing awareness

- Water conflicts land in the streets (of Barcelona, Madrid, Valencia and Brussels)
- Media coverage
- The scientific community multiplies efforts
- Climate change seriously affecting WR in Spain
- ...
- An undisputable conclusion “Water resources are used unsustainably”

3. Increasing awareness

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Reduction of Run-off of the principal river Basins (Horizon 2030)



4. Three illustrative problems and solutions

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1. The role of economic instruments
2. Tackling the most pressing problems of intensive groundwater use.
3. The revolution in the irrigation sector

4.1. Economic instruments

Water Tariffs & Markets

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- Full cost and block-rate tariffication for all urban users.

	Household's consumers (in % of served population)	Industrial and Commercial consumers (% of served population)
Fixed rate	Yes (91%)	Yes (90.5%)
Minimum consumption	No (86.5%)	No (88%)
Block-rate structures	Yes (91.5%) of which – 2 blocks: 12.3% – 3 blocks: 55% – 4 blocks: 18% – 5 or more blocks: 15%	Yes (79%) of which – 2 blocks: 53.8% – 3 blocks: 21% – 4 blocks: 15% – 5 or more blocks: 9%
Increasing Block Rates	Yes 96(%)	Yes (84%)
With incentives for reduced consumption	72%	32%

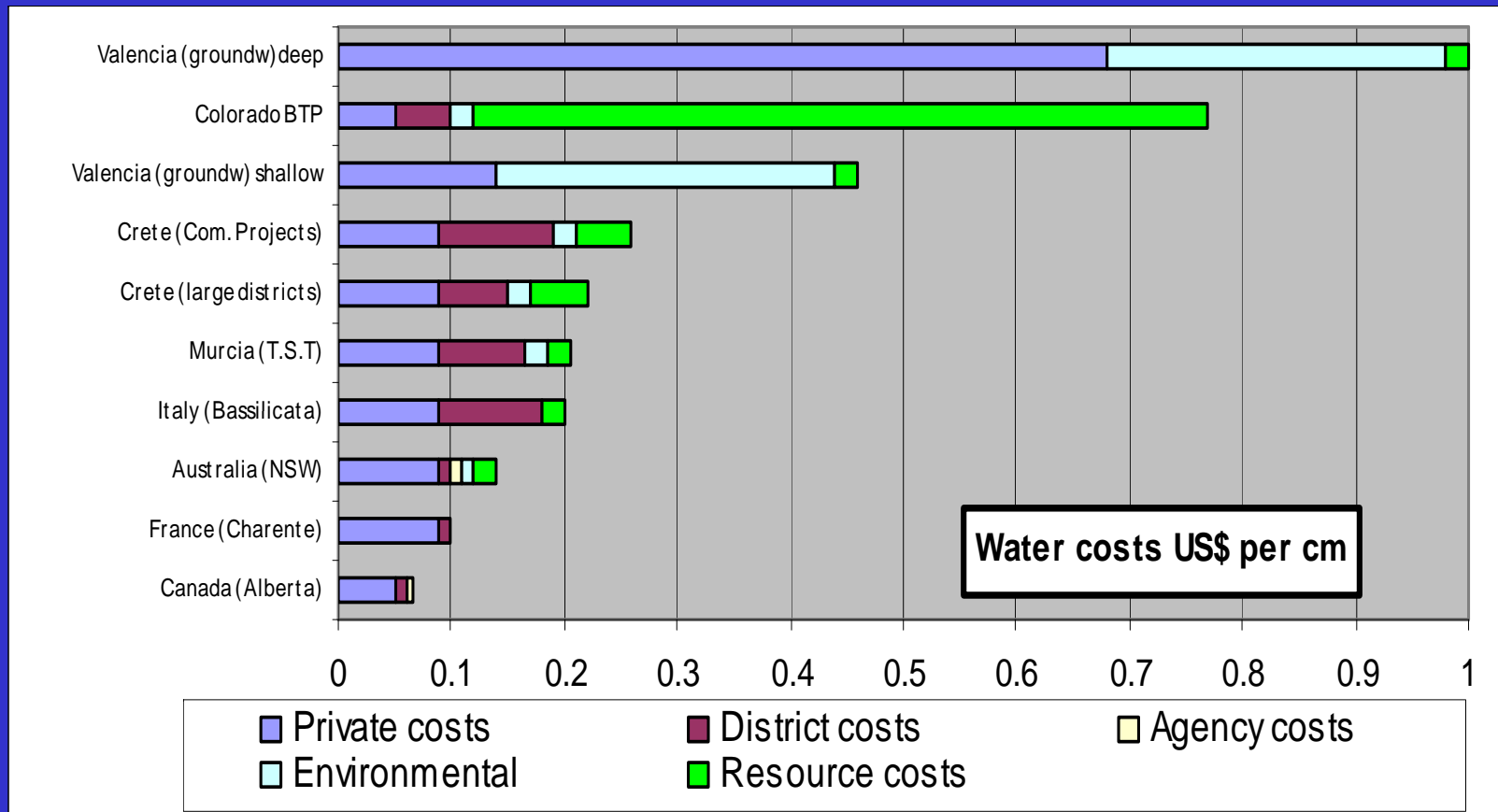
Source: AEAS (2004)

4.1. Economic instruments

Water Tariffs & Markets

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Increasing water tariffs in the Agricultural Sector



4.1. Economic instruments

Water Tariffs & Markets

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- Water markets
 - 1999 Reform (liberalisation)
 - 2005 water banks defined
- Experience so far:
 - Scattered exchanges (very significant !!)
 - Cautious expectations
 - Many voices against 'water trading'

4.2. Managing Intensive use Groundwater resources

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- 20-years of failed attempts to revert cases of unsustainable GW use
- Water transfers: the wrong approach
- Very few examples of success (Barcelona, La Mancha Oriental)

But...

- Realism + pragmatism + (a lot of €) may alleviate some of the most pressing problems

4.2. Managing Intensive use Groundwater resources

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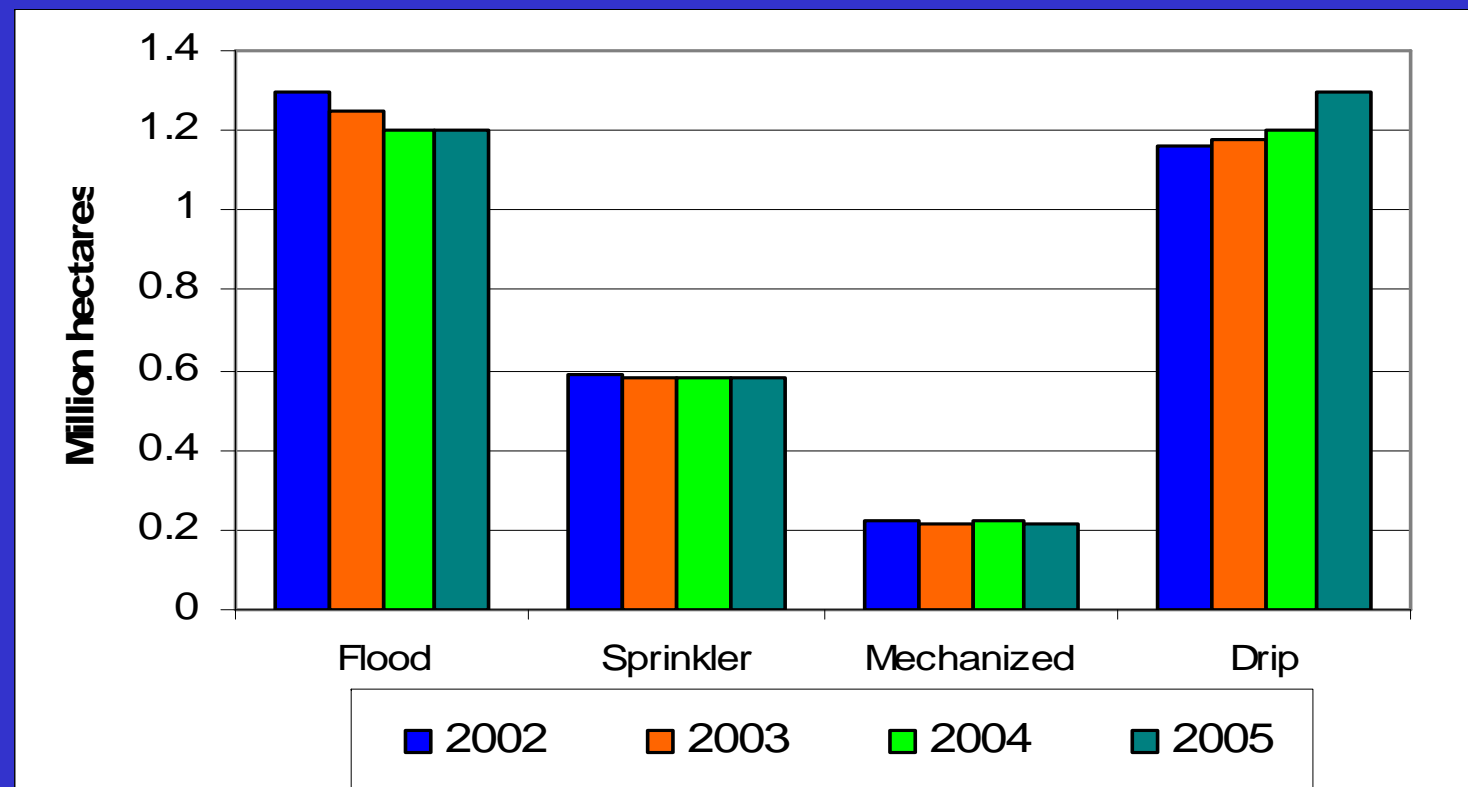
- The Special Plan of the High Guadiana
 - Managing plans
 - Education
 - Engineering

- Water markets
 - Permanent buy-outs of water use rights
 - Buy-out of irrigated acreage
- Pending issues: illegal users

4.3. The revolution in irrigated agriculture

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- More than 1.2 million hectares fully refurbished (€ 3 billion)
- Increasing use of efficient irrigation



4.3. The revolution in irrigated agriculture

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- ...coming up:
 - Fully decoupled CAP modes of support
 - Full-cost recovery prices for farmers
 - The Spanish 'hydrological footprint'
 - Virtual trade

5. Concluding remarks: drawing lessons from the Spanish case

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- Large water projects are not the solution to unsustainable water uses or enhance water supply reliability
- Flexible and adaptable solutions, that rely on technologies, infrastructure and demand management instruments are more complex and require multiple standpoints and longer maturation periods
- Actual costs of supplying water at subsidized prices multiply spilling over other users, the taxpayer and the environment, especially when scarcity becomes acute

5. Concluding remarks: drawing lessons from the Spanish case

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- Rigid, hierarchical and top-down planning models fails when water hegemonic thinking and political coalitions break down
- Accessible information, science-based decision making and public participation are key elements to breakthrough entrenched and adversarial positions;
- Innovative water policies require strong budgets, sound finance and equitable burden distribution