

## OECD Workshop

### Improving the Information Base to Better Guide Water Resource Management Decision Making,

4-7 May, 2010, Zaragoza, Spain

### Session 6: Developing the Economic and Financial Data Sets Needed for Water Management

### The Information and Knowledge Component of Water Policies: The Case of Spain

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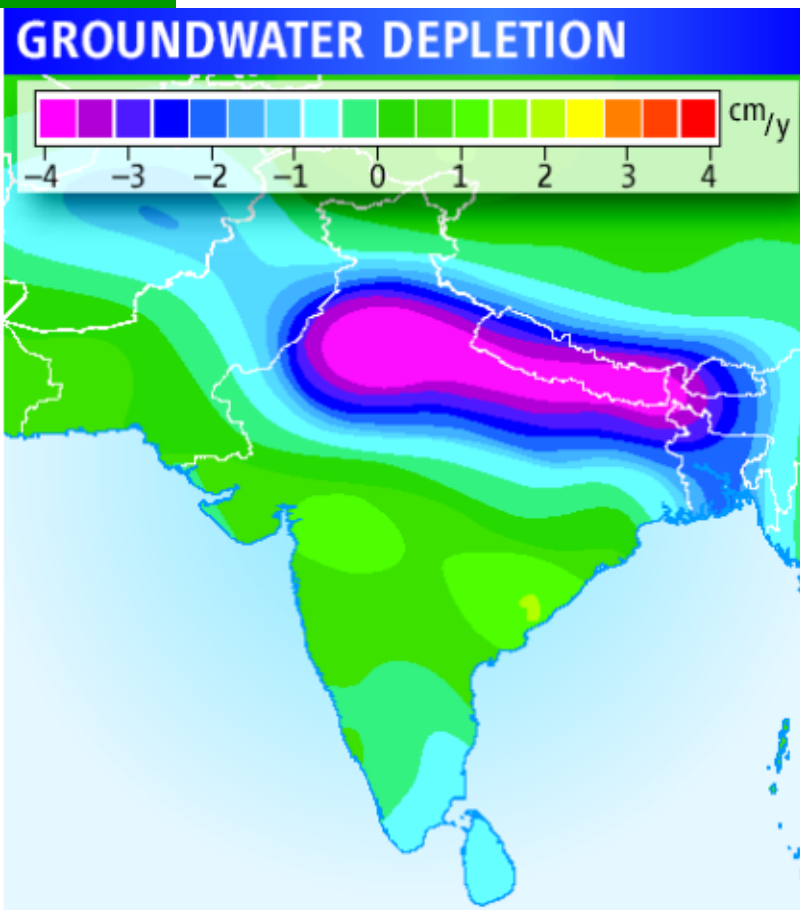
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Since the industrial revolution, the extraordinary growth in human activities is pressuring natural resources and leading to extensive environmental damage.

Antropogenic water extractions have climbed from 600 km<sup>3</sup> to 3,600 km<sup>3</sup> between 1900 and 2000, along with the growth of population from 1.7 to 6.0 billion. Predictions for 2050 are 9,000 million inhabitants.

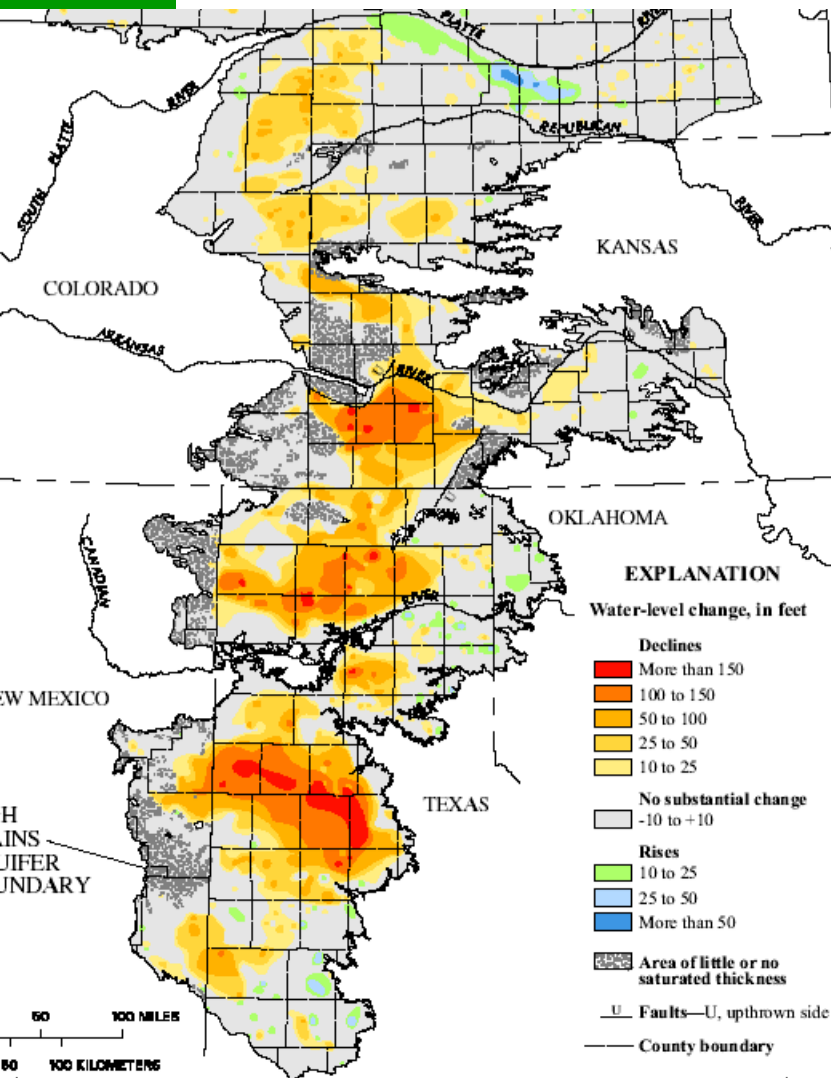
There are severe scarcity and quality problems in almost all the important rivers in arid and semiarid regions: Ganges, Indus, Yellow, Yangtze, Tigris, Euphrates, Amu and Syr Daria, Murray-Darling, Colorado and Rio Grande

Examples of large aquifer systems being depleted are those of the Indus basin, the Ganges basin, the Northern China plain, and the North America high plains.



The region of the Indus, Ganges and Brahmaputra basins is the larger irrigated area in the world, and groundwater overdraft has been estimated at around 50 km<sup>3</sup> per year

The Ogallala aquifer in the North America high plains: withdrawals  $26 \text{ km}^3/\text{year}$  and  $10 \text{ km}^3$  overdraft.



The current storage amounts to  $3,610 \text{ km}^3$  and the accumulated depletion is estimated at  $310 \text{ km}^3$ .

The only measure taken so far is monitoring of water level changes, but no control measures to stabilize or reduce overdraft have been taken yet.

Plethora of scholarly discussions surrounding valuation procedures, presuming that valuation would elicit action by policy makers (is valuation key issue?).

Valuation for first-best (sufficient info & knowledge) or second-best policies (incomplete)

- **Current environmental policy:**

- i) compensate private benefits through economic instruments
- ii) promote conservation with large investments in protected natural reserves

- **Needed environmental policy:**

- i) collective action of stakeholders managing resources, with policies nurturing cooperation

Groundwater is a common pool resource, and there are two basic economic approaches to deal with commons:

- 1) Coase solution of privatizing resources
- 2) Pigou solution of public ownership and taxing extractions

Tragedy of the Commons: population pressures require private or public property coupled with access regulation

But Ostrom questions common property leads to tragedy, and evidence shows failure of coercive rules because lack of legitimacy and local knowledge

General absence of policy regulation on groundwater, supported by Gisser & Sanchez and ensuing literature: free markets are good enough.

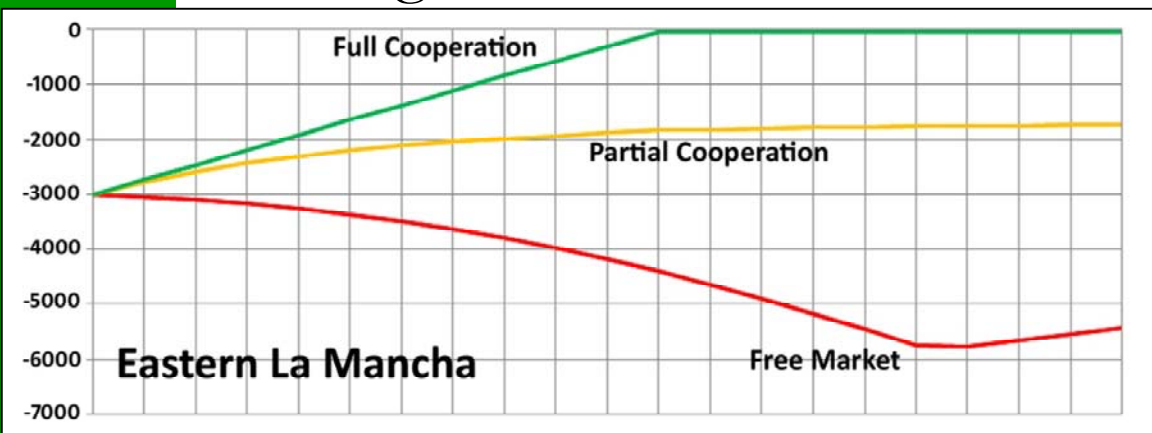
This is based in disregard for ecosystem damages.

Empirical example of water policy outcomes from Eastern and Western La Mancha aquifers questions current environmental policies approaches: compensation through economic instruments & large investments in protected areas



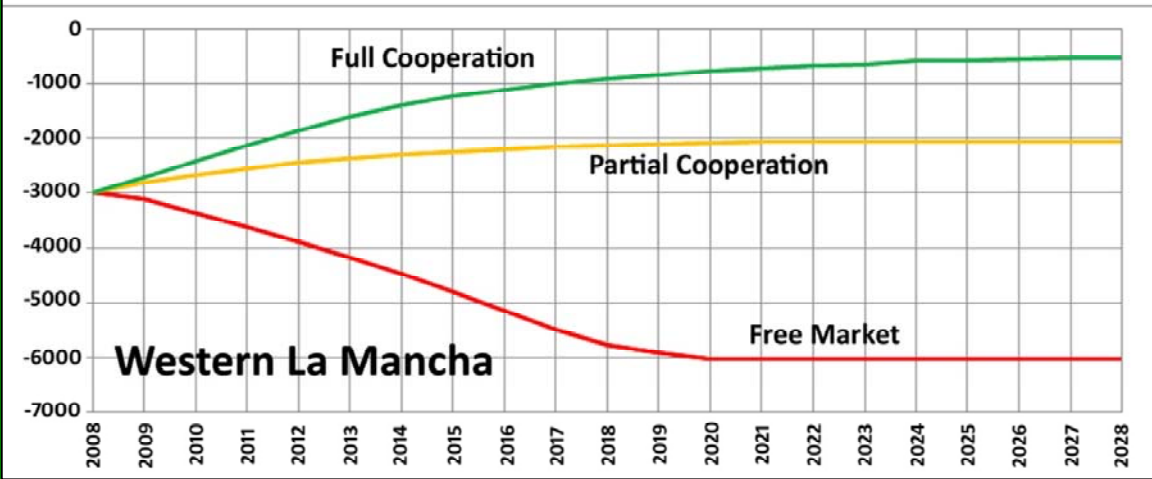
Western La Mancha: mismanagement and failure of pure economic instruments

Eastern La Mancha: progress towards sustainable management because success of collective action



Eastern La Mancha

extractions reduced below recharge, partial cooperation achieved



Western La Mancha

extractions growing after compensation payments (250 million euros) and huge investments planned (5 billion euros)

## Lessons from La Mancha

- 1) ecosystem damages call for policy intervention
- 2) failure of current policy mix: compensation payments through market instruments, and investment schemes in nature protection

Information & knowledge in Spain: quite sophisticated

- Automatic Hydrologic Information System (SAIH) in every Basin Authority
- Technical studies by Planning Offices and support by CEDEX. Comprehensive basin plans, institutions, large management experience
- Management decisions taken and implemented in watershed boards by stakeholders in Basin Authorities

Large investments in Spanish water policies: National Hydrological Plan, the National Irrigation Plan, Upper Guadiana Plan, First and Second Sanitation Plans, all with multibillion budgets ranging from 5 to 20 billion euros.

The key question in Spain is: are water policies going to be able to stop or dampen down the progressive scarcity in river basins?. The answer will determine if river basins become closed with escalating degradation of water resources and damages to ecosystems, threatening also human activities.

The answer calls for strengthening institutions and nurturing stakeholder cooperation, not for pure economic instruments and huge investments.