



Un-authorized Groundwater Use: institutional, social and ethical considerations

**5th Botín Foundation Water Observatory
“WATER AND FOOD CONFLICTS VERSUS
COOPERATION IN A GLOBALIZED WORLD”**

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Questions

- Are there solutions to (un-authorized) intensive groundwater use that protect people, nature and...tax money?
- What is the role of individual's choice/accountability in the causes/solutions? Why is it often disregarded?



Presentation content

- Introduction
- Typologies of non-authorized groundwater use
- Effects of un-authorized water use
- Roots causes of un-authorized groundwater use
- Conclusions/open questions



Setting the stage

Talking about...

Water for agriculture as an economic activity
Industrialized countries

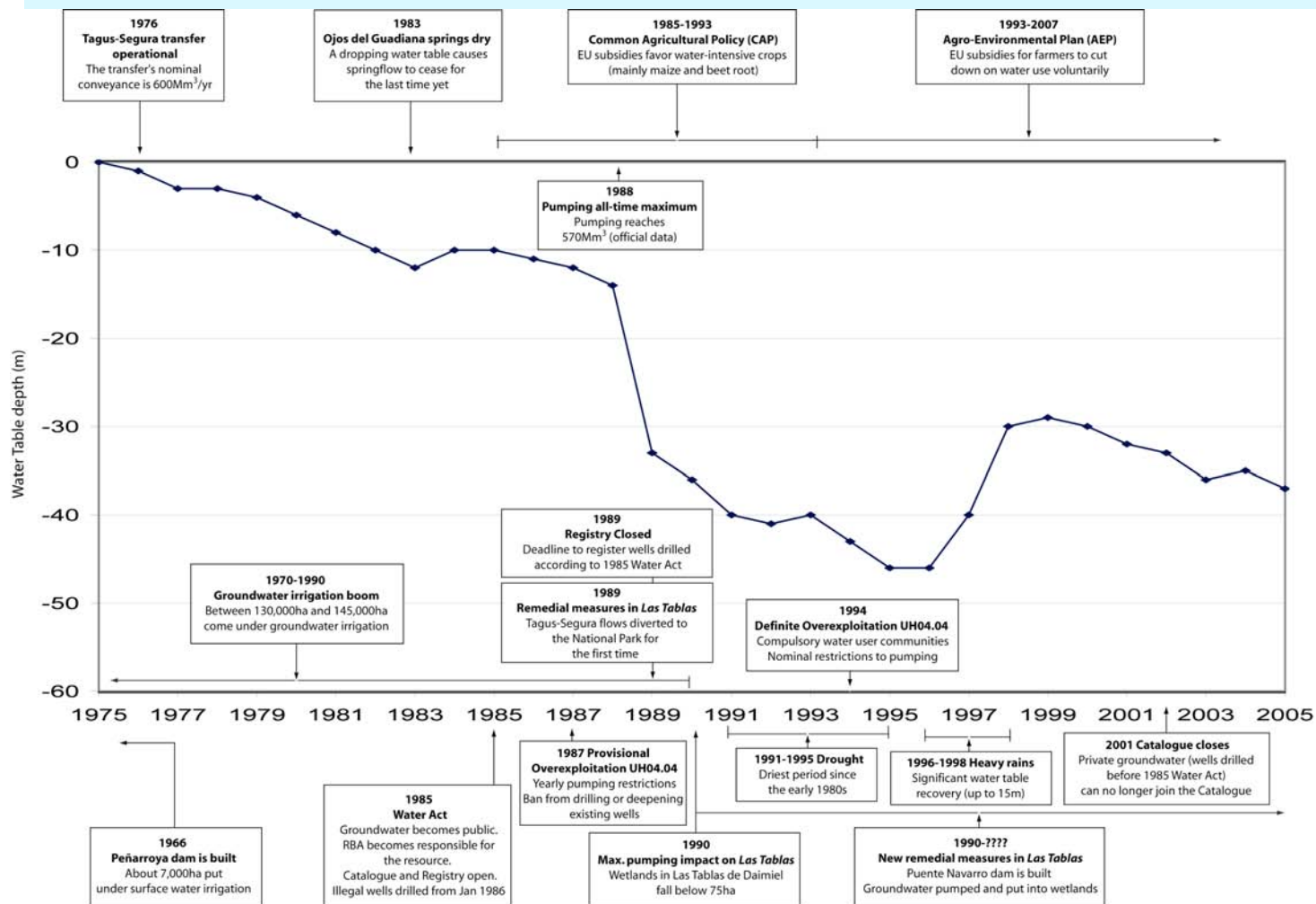
And not about...

Water for drinking
Water for 'real' subsistence economy
Developing countries

Why is it relevant?

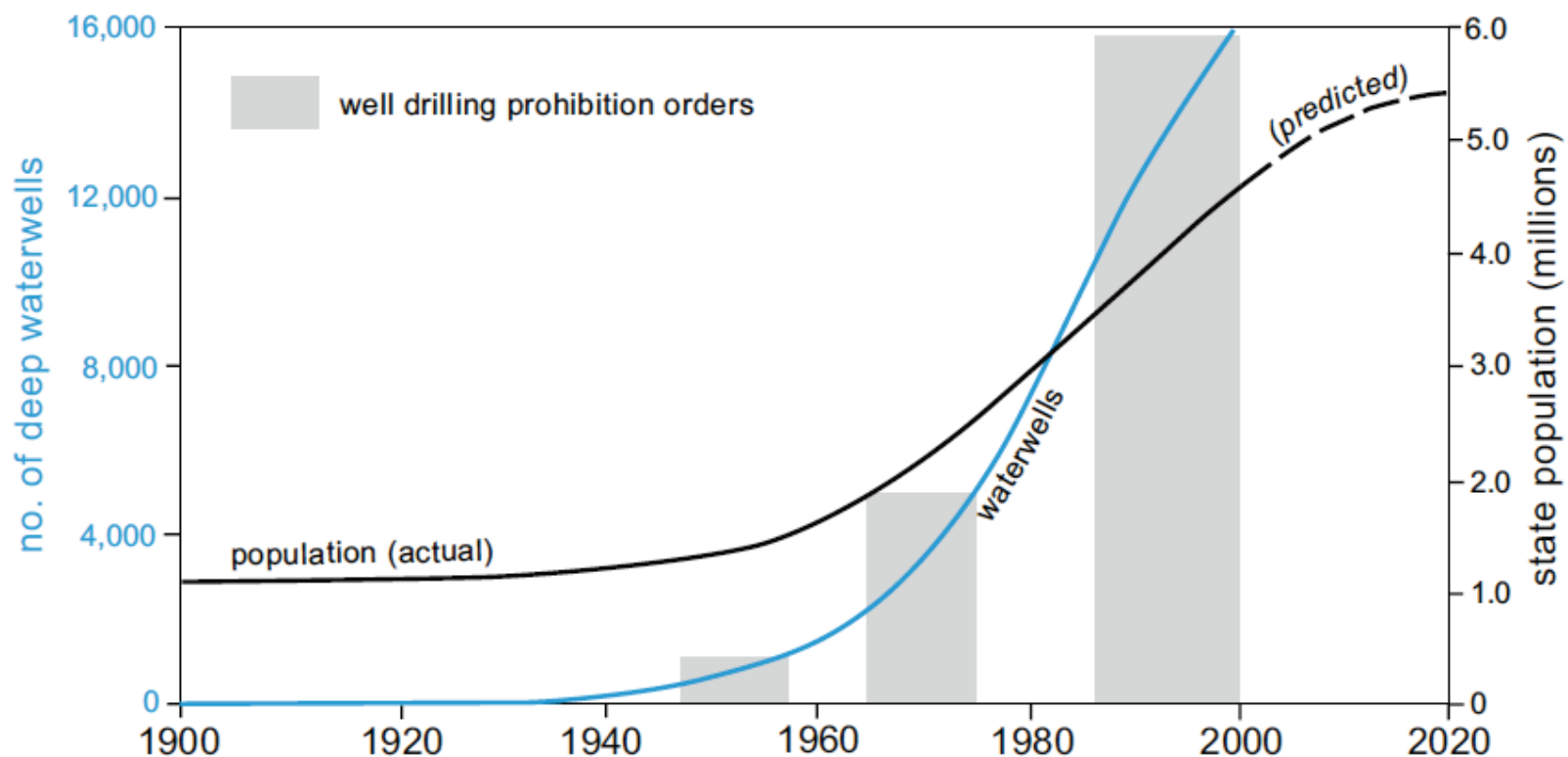


GW users vs. Law



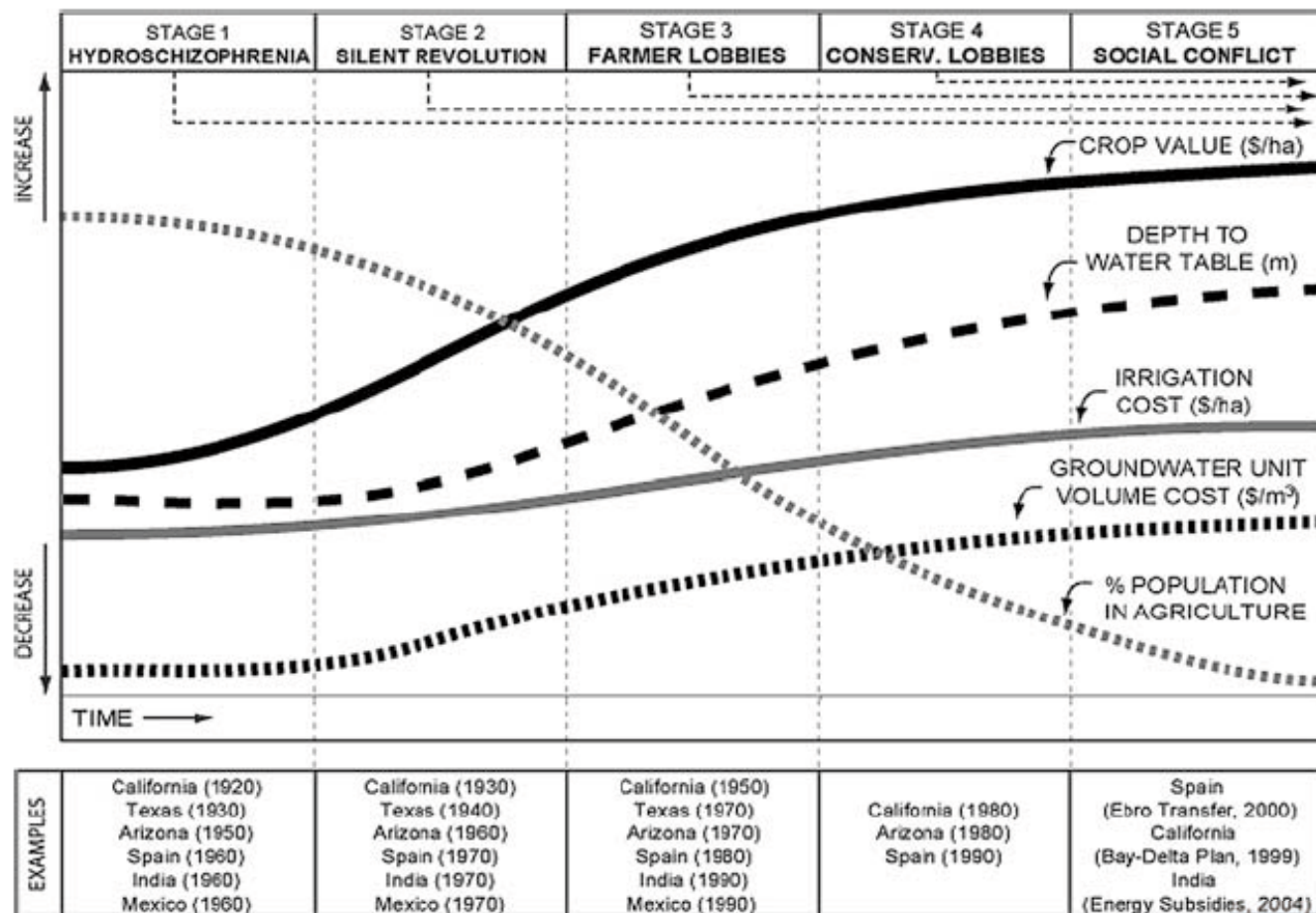


GW users vs. Law





GW users vs. Law





Some estimates

- **Spain:** 510,000 un-authorized wells ($> 7,000 \text{ m}^3$), 3,600 millions of m^3/year , representing the 45% of the total amount of abstracted groundwater.
- **Italy:** 1.5 million un-authorized wells. In eight Southern regions, only 830,000 ha out 1.6 millions ha of land are irrigated legally.
- **Malta:** 15 million m^3 pumped with permits, while un-authorized abstraction was 18.5 million m^3 .



Does it matter?

- Water users without water in their wells
- Water and soil land degradation
- Disappearance of springs and reversal of the river/wetlands-aquifer dynamics
- Need for more water treatment
- Need for new water development (dams, water transfers, desalination)
- Need for more public spending

-> *Social tensions*



Why regulating GW use?

- To keep track of groundwater abstraction, with the objective of planning uses and pre-empting problems
- To implement actions that protect the resource from degradation and other users from damages.

Wells registration is key to any management actions (regulatory, financial, voluntary, technical, political)



Typology of un-authorized

Water right: the water (quantity and quality of the water, the source and location), the holder (use and duration) and the administration of the right (ownership and transfer, security and enforcement).

- Abstraction without license
- Abstractions with pending licenses
- Non-compliance of withdrawal limits
- Un-authorized change of use
- Non-authorized water trades
- Non-authorized changes in the well characteristics



Un-authorized use: why?

The net benefit of un-authorized uses is often positive (value of perceived potential gains > anticipated punishments and risks)

AND

The intrinsic nature of groundwater, social expectations, norms and actors' social identities will influence the choice of individual water users.



Intrinsic Nature of Groundwater

- It does not need big investments
- Reliable and readily available resource
- Difficult attribution of externalities to specific users
- Hidden resource
- Focus of the authorities is often still on surface water

Command-and-control extremely difficult

How to achieve voluntary compliance?



Imperfect Institutions

- Distrust of water users in the water authorities, leading to decreased legitimacy (past track of inefficiency, so-perceived unfairness, lack of ownership of solutions)
- Administrative complexity of water rights allocation and management (discourage users, decrease efficiency)
- Laxity in enforcement (socio-political reasons, lack of resources)
- Saturated and rigid water allocation system
- Rules or incentives that discourage compliance

(Perverse) Social Norms

Social tolerance for non-authorized groundwater use due to:

- Different perceptions of values on what needs to be preserved and how
 - Damage is not so evident or is distributed
 - Perception of lack of alternatives for GW users
 - Un-authorized use as an economic driver
 - No serious collapse of economy/environment due to over-abstraction
- > Peer-pressure in a context of generalized non-compliance





'Solutions'

Generalized non-compliance treated as a collective problem.

'*Collective solutions*' through externalization of damages and/or conflicts:

- External surface water resources
- Public funds for changing GW use patterns
- Environmental damages or
- Public funds for mitigating damages
- *Import of goods?*



Conclusions

- Tragedy of the commons leading to 'solution of the commons' and more 'tragedy of the commons'.
- Little incentives for individuals that originated the tragedy.
- Why don't we question or at least discuss also the 'ethical' choice/accountability of individuals, as we would do in other cases of law-breaching practices or un-authorized appropriation of other common goods?

A scenic landscape photograph showing a calm lake in the foreground, a dense forest of evergreen trees in the middle ground, and a large, snow-capped mountain peak in the background under a clear blue sky. The text "Ideas?" is overlaid in the upper center.

Ideas?

Thank you for your attention
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