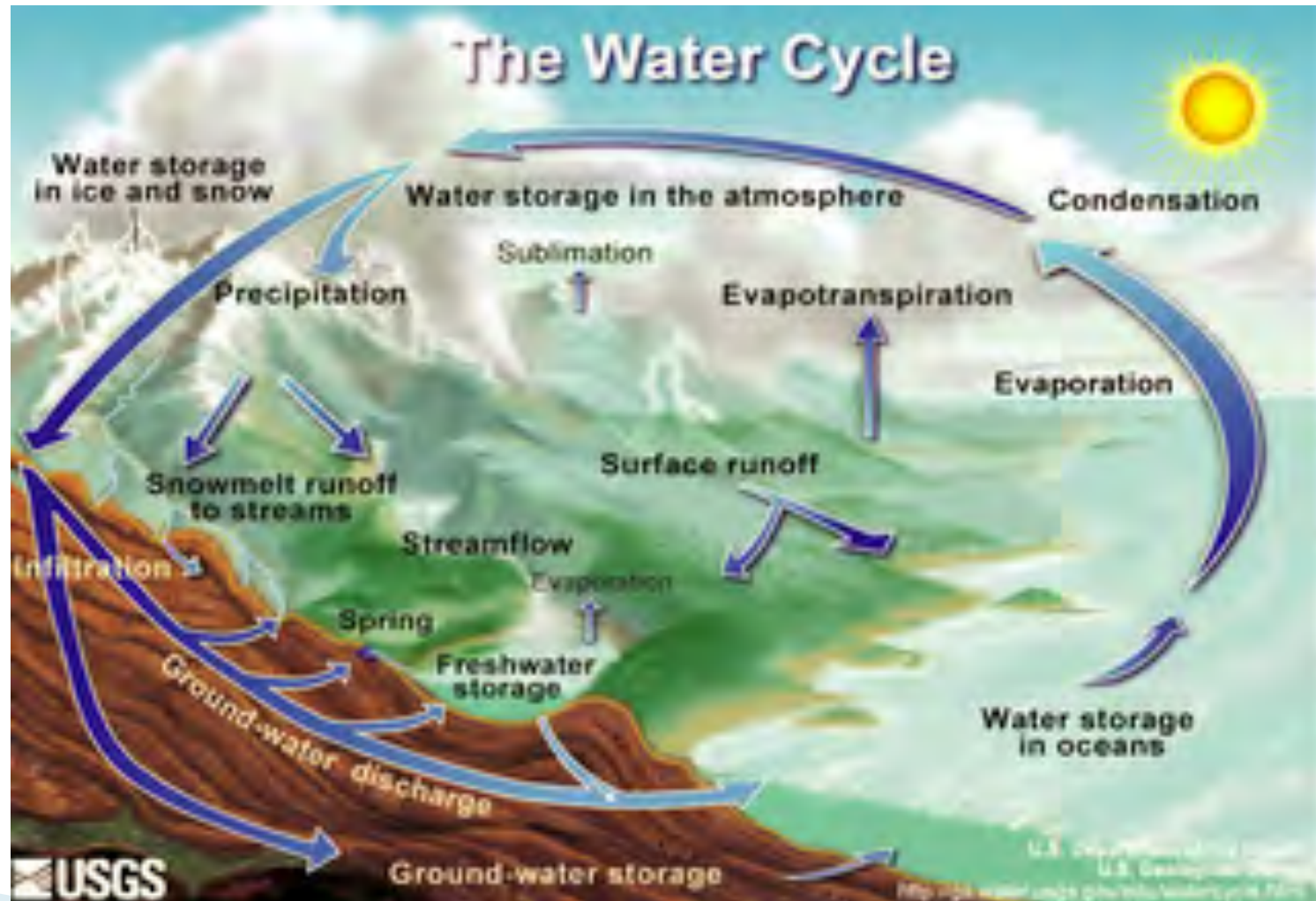


Climate Disruption and the Obsolescence of Groundwater Legal Regimes

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The Hydrologic Cycle



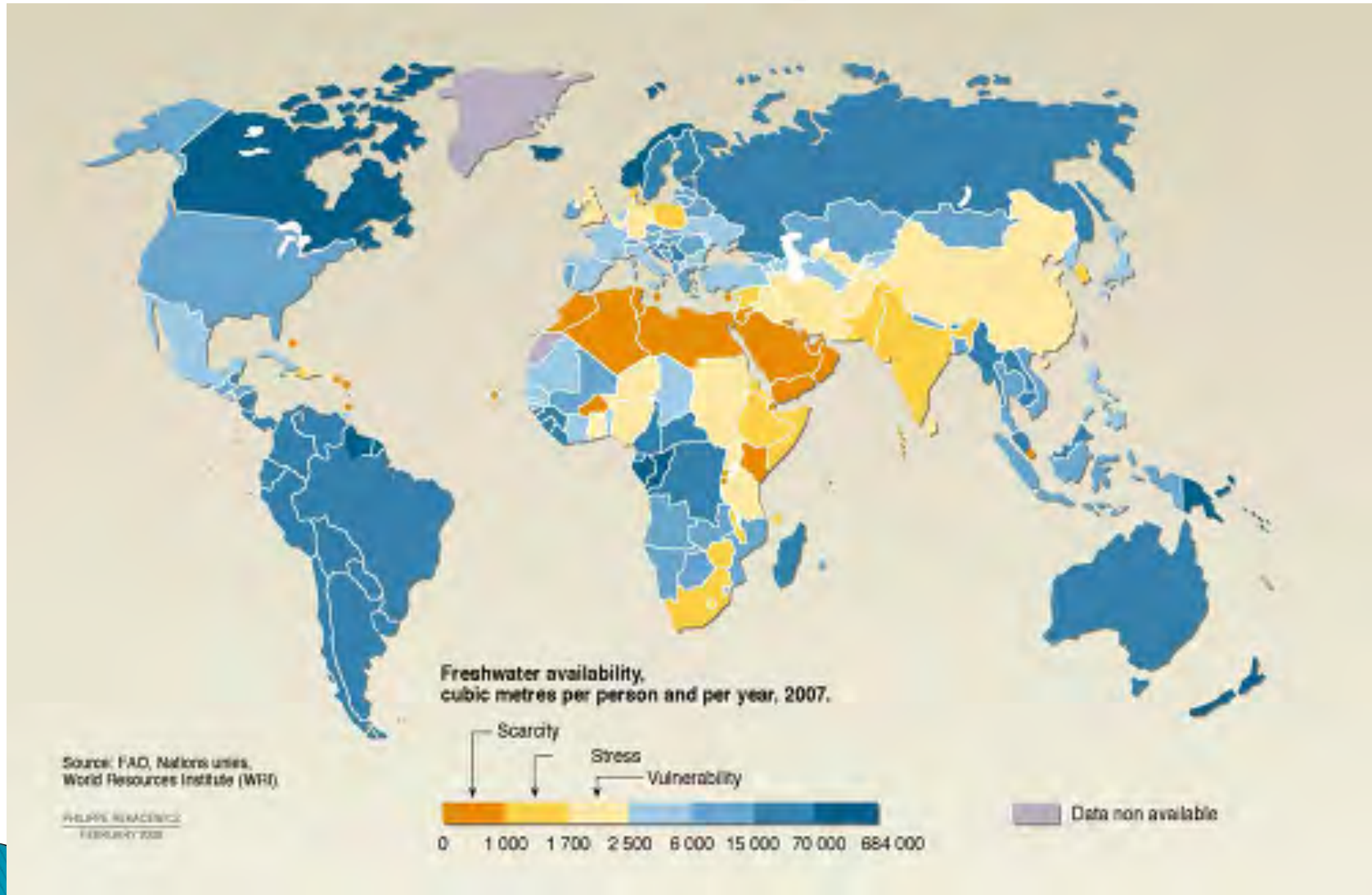
Basic Premises of Sound Water Law

- Water is vitally important for people and other beings
- Water is a public good
- Water moves
- Water must be conjunctively managed
- Water management must be integrated with the management of related resources
- Water use responds to economic incentives

Water Law Today Is Under Stress

- Demand is growing exponentially
 - Global population has grown from 1,500,000,000 in 1900 to more than 7,000,000,000 today
 - Patterns of use have changed even more dramatically
 - In everything we consume, we consume water
 - With increasing affluence, we consume more of everything
 - These trends are only somewhat countered by greater efficiencies driven by rising costs
 - Deriving from increasing competition for supplies; and
 - Deriving from increasingly tight regulation of waste water
- Usable supplies of water are diminishing from
 - Pollution
 - Overuse
- Leading to a shift from surface sources to groundwater
- Different forms of water law respond to stress differently

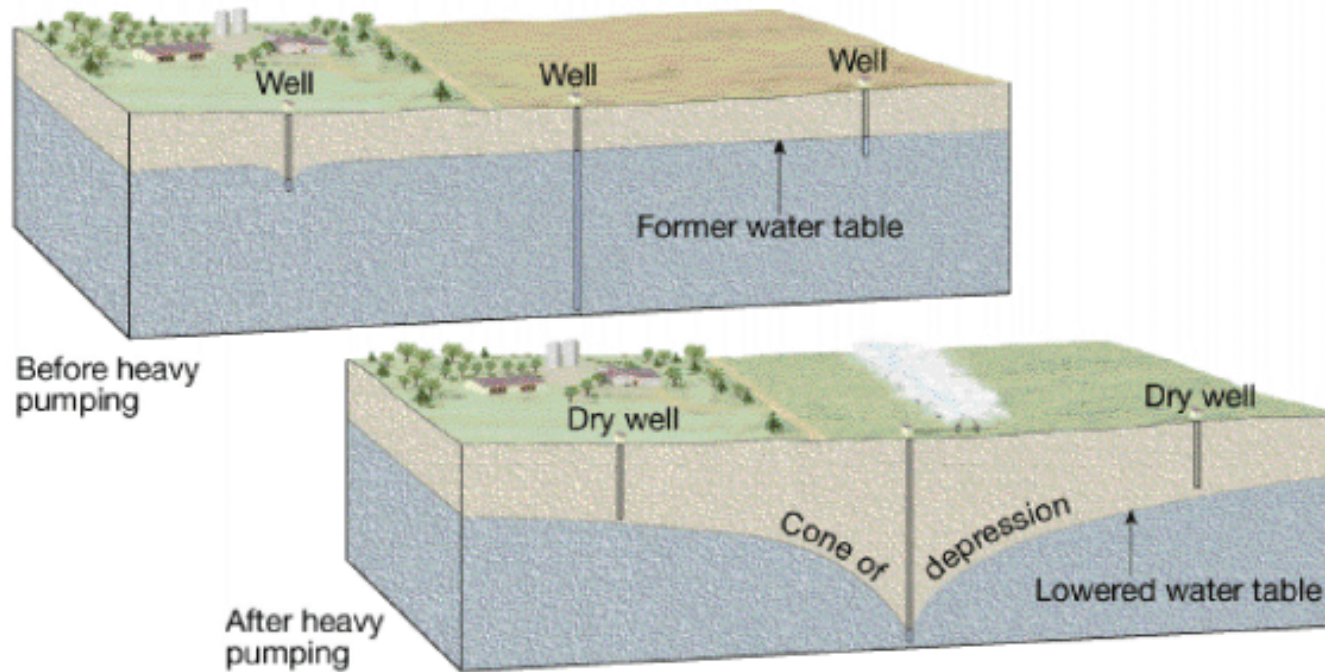
Water Stressed Regions



A Conversation about Water from Duckboy.com



What Happens in Exploiting Groundwater



Drivers of Groundwater Law

- ▶ Groundwater has been exploited on a small scale since prehistory with generally small impact on aquifers or on other water users
- ▶ The major transformation: Large scale dewatering
 - Efficient dewatering of mines and construction sites began with Watt's steam pump (1776)
 - The invention of high-pressure turbine pumps in 1937 completely changed the use of groundwater
 - Unless the law compels a different result, the most powerful pump wins
- ▶ The need for information generated steady improvements in the ability to gather and analyze groundwater data, but it remains expensive and time consuming

The Origins of Groundwater Law

- ◆ A near complete lack of knowledge regarding groundwater
 - [T]he existence, origin, movement and course of such waters, and the causes which govern and direct their movements, are so *secret, occult and concealed*, that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would be, therefore, practically impossible.—*Frazier v. Brown*, 12 Ohio St. 294 (1861) (emphasis added)
 - Similar expressions common from courts throughout the world in the nineteenth century
- ◆ Given the lack of knowledge, courts declined to provide a remedy, allowing whosoever obtained the water to keep it and use it as they chose
 - Often described as the absolute ownership or absolute dominion rule
 - Sometimes referred to as the rule of capture

Modern Alternatives for National or Local Groundwater Law Today

- ▶ Modern water law regimes often include overlays and contradictions
- ▶ Usually there is little or no correlation between the law applied to surface waters and the law applied to groundwater
- ▶ Five approaches to groundwater law are now found around the world
 - Allocation by capture (the property of no one; US: absolute dominion)
 - Allocation by location (common property; US: reasonable use)
 - Allocation *pro rata* (*quasi* private property; US: correlative rights)
 - Allocation by priority (private property; US: appropriative rights)
 - Allocation by public authorities (public property; US: regulated riparianism)

Getting from Potential Conflict to Potential Cooperation

- ▶ Disagreements and disputes are inevitable
- ▶ What mechanisms might be used to resolve these problems?
 - Violence
 - Markets
 - Ethics
 - Law
- ▶ What is the technique we use in ordinary civil society to preclude individual violence?

Can Ethical Appeals Prevent the Tragedy of the Commons?

- ▶ What happens if some heed ethical appeals to behave responsibly?
 - Consider the Canadian lobster (or the Atlantic cod)
 - What about “commons” that have functioned successfully for centuries?
- ▶ Ethical appeals can mobilize political will, but that will must be expressed in law to be effective
- ▶ Water’s nature as an economic good suggests that a sound system of ethics would incorporate economic incentives (not necessarily markets) as management tools

Are Markets the Answer?

- ▶ The utility of markets for raw water
 - Markets are not a natural system, but a creation of society, shaped by social expectations and law
 - Markets are the best system when they work
 - Market fundamentalists insist it is the answer for nearly every problem
 - Markets for raw water have been rare in practice
 - The California “markets”—administration masquerading as a market
 - The Chilean markets—Carl Bauer, *The Siren Song* (Resources for the Future 2004)
 - Numerous recent experiments in privatizing water systems have stumbled
- ▶ True markets are not good management tools for water because:
 - Water is a public good
 - Water’s importance to life
 - Water’s mobility
 - Water’s high transaction costs (the *Coors beer* case)
- ▶ Desalination could prove to be a game changer

Ric Masten, Stark Naked in '69 and '79 (1980)

To Nuke
or Not to

is it not disturbing to consider
that everything in and about
a nuclear power plant
will be furnished
by the lowest bidder

Conclusions

- ◆ If violence, ethical appeals, and markets are not the answer, what is left is public management through appropriate laws
- ◆ Integrated (conjunctive) management requires integrated law
- ◆ The same rules should apply to both groundwater and surface water, even though the differing characteristics of the two stages of the hydrologic cycle will require careful application of those rules attuned to the particular circumstances
- ◆ The two ASCE Model Codes provide a model for how this could be done
- ◆ The *Berlin Rules on Water Resources* ch. 8 (ILA 2004) suggests the ways in which international rules applicable to all waters can be adapted to the particular characteristics of groundwater generally as well as to particular aquifers

Further Reading



edited by Joseph Dellapenna and Joyeeta
Gupta

Springer Science + Business Media BV 2009