

Private groundwater use in a context of state-led irrigation development: the case of North Africa

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North Africa's groundwater economy: important and fast-growing

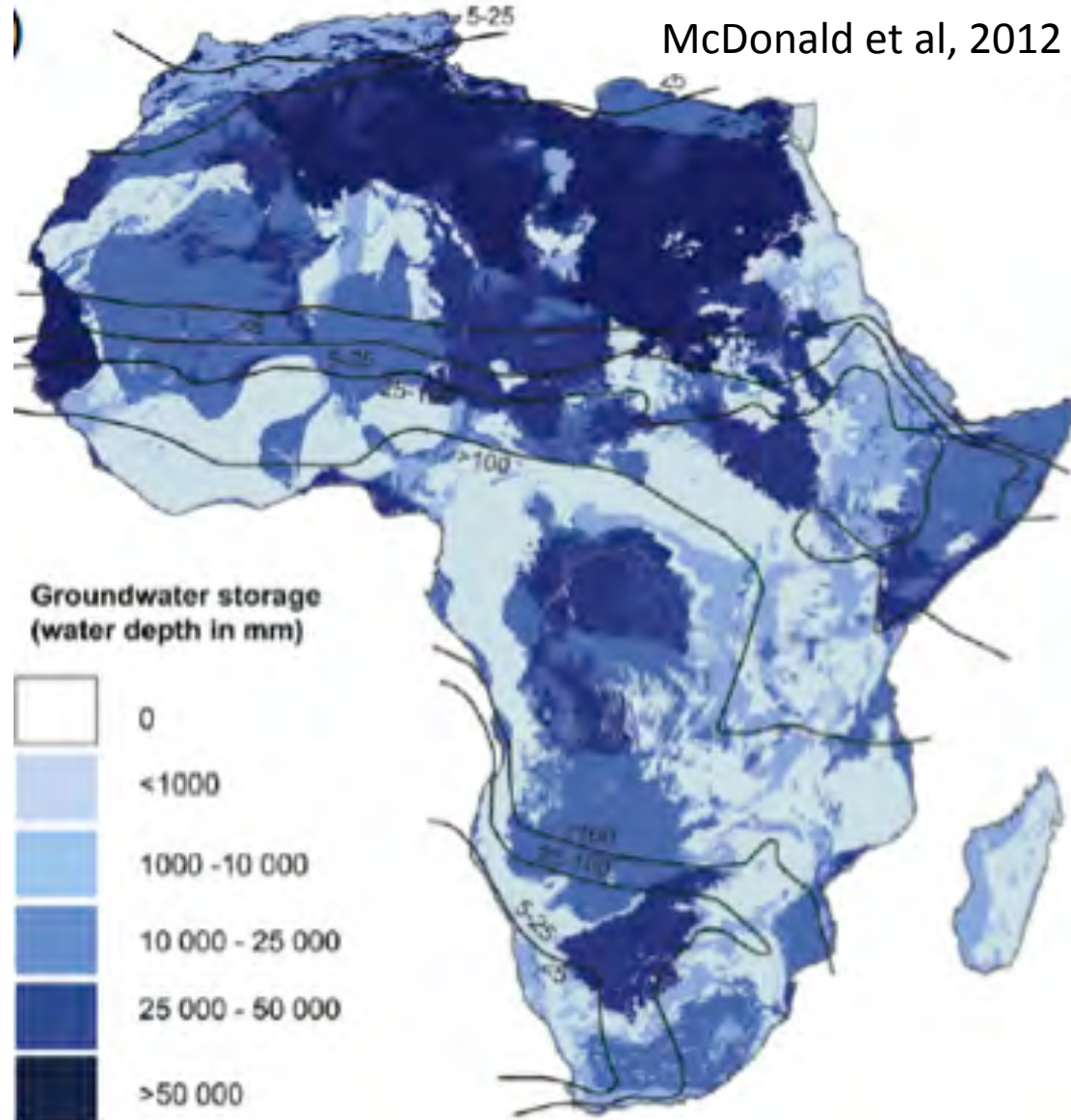
	Algeria	Morocco	Tunisia
Irrigated area (ha)	1 006 198	1 458 160	401 000
Irrigated by groundwater	883 004 (88%)	615 881 (42%)	252 000 (63%)
Overexploited aquifers	Nord: 23/38 Sud: tous	57/99	71/273
Number of wells, tubewells	144 050 wells 62 967 TW	100 000	138 000 wells 4 700 TW
Number of farms	293 033		

Based on official data from the different ministries in charge of agriculture and water (Kuper et al, 2015). Data relates to the period 2006-2012

Redesigning the irrigation map of North Africa

McDonald et al, 2012

- Very rapid expansion of irrigated land; e.g. in Algeria from 228,000 ha in 1985 to more than a million in 2011
- Farmers obtain more and more access to confined aquifers
- More than 50% of the aquifers in North Africa are overexploited



Groundwater: liberation or anarchy?



- Economic efficiency: groundwater 3-10 times more efficient than surface water (*Llamas & Martinez-Santos, 2005*)
- Intensification, diversification crops
- Emancipation from State Water
- Social status, modernity
- Survival of farmers in times of drought

Liberation

“South Asia’s smallholders developed three times more gross irrigated land in 30 years than constructive imperialism had in 150 years, and they recaptured the irrigation initiative from the state” (Shah, 2009)

Groundwater: liberation or anarchy?

- Overexploitation and imminent crisis of the “groundwater economy”:
 - Groundwater levels go down (0.5-5 m/yr), degradation of water quality
 - 10% of the global food production depends on overexploited aquifers (Postel)
- Problem of governance (access, sustainability...):
 - The ‘state’s writ does not run’: illicit tube wells, informal lessees, legitimacy of the State to intervene...
 - Few example of collective action (Ostrom, Blomquist, Shah)
 - Social and economic differentiation (Prakash, 2005; Amichi et al, 2012)



Anarchy

The role of the state often underestimated in groundwater economies

- Groundwater use emerged in a period with dominant discourse on “less state, more market”
- The initiative, investment and management of the groundwater economy in the hands of the private sector
- Informal arrangements for the access to water, land and other productive resources

In North Africa, the State remained active actor in the Groundwater Economy

- Public tube-well schemes; e.g. these schemes constitute 30% of the pump-irrigated area in Tunisia
- Infrastructure, such as roads, electricity accompanying the extension of pump-irrigated areas
- Legal framework inspired by IWRM; official authorization procedures, although many tube-wells remain informal
- Groundwater is officially part of the public domain
- Indirect subsidies (energy, drip irrigation, fruit trees)
- Solutions in case of collapse of a local groundwater economy

State intervention does not obey to a monolithic, uniform logic

- Multiple objectives: agricultural development, prevent social unrest in the wake of the Arab Spring, protect natural resources, such as groundwater aquifers
- In some cases, administrations responsible both for water protection and agricultural development (Faysse et al, 2011)
- Difficulty to have an integrated vision of sustainable agricultural development

Conclusion

- North Africa's current groundwater economy:
 - Considerable social and economic stakes
 - Issues of inequity (20% of farmers only have access to groundwater) and overexploitation by (mainly) private water use
- Need for public intervention?
 - Current dynamics unsustainable (inequity, overexploitation)
 - However, state intervention may “cement” existing inequalities
 - How to create “space for change” (Leeuwis & Aarts, 2011)?