Re-allocating yet-to-be-saved water in irrigation modernization projects

Reducing waste in efficient irrigation: What pathways and who gains? World Water Week

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Why reducing waste in irrigation?

Reducing waste: gain or re-allocation?

1) Waste streams are often already used

2) Whether efficient technologies indeed save water is yet to be seen

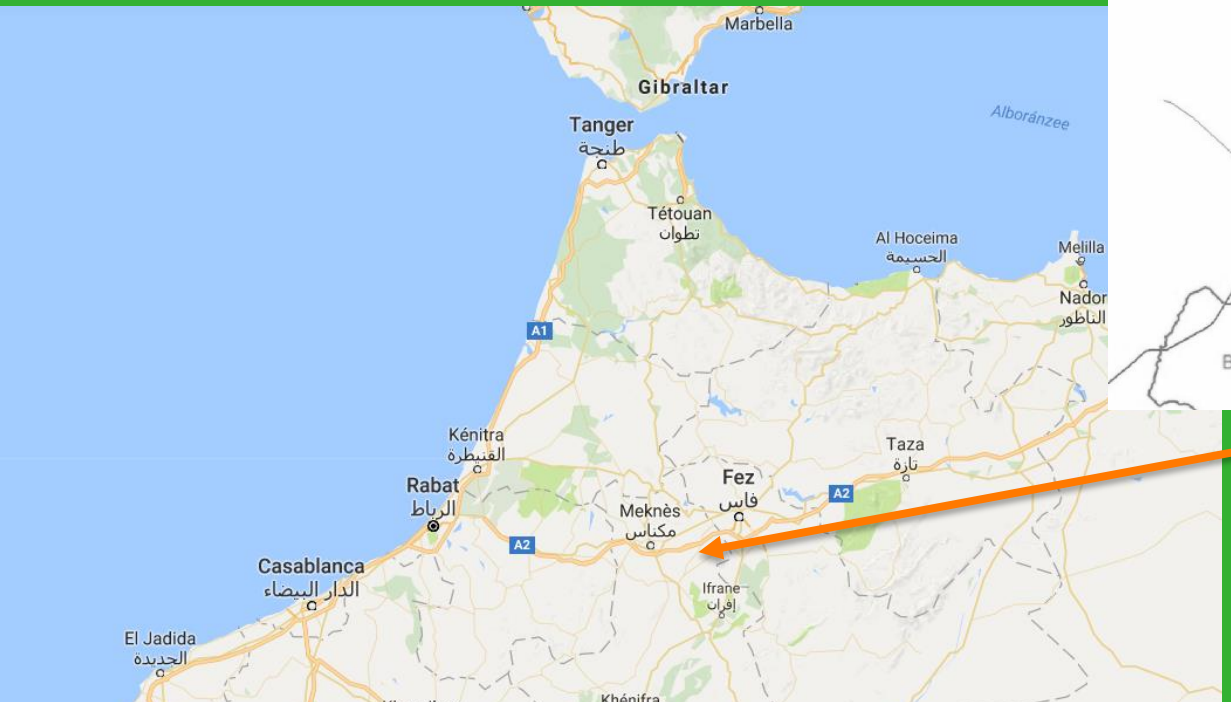
3) The ‘gain’ is limited.

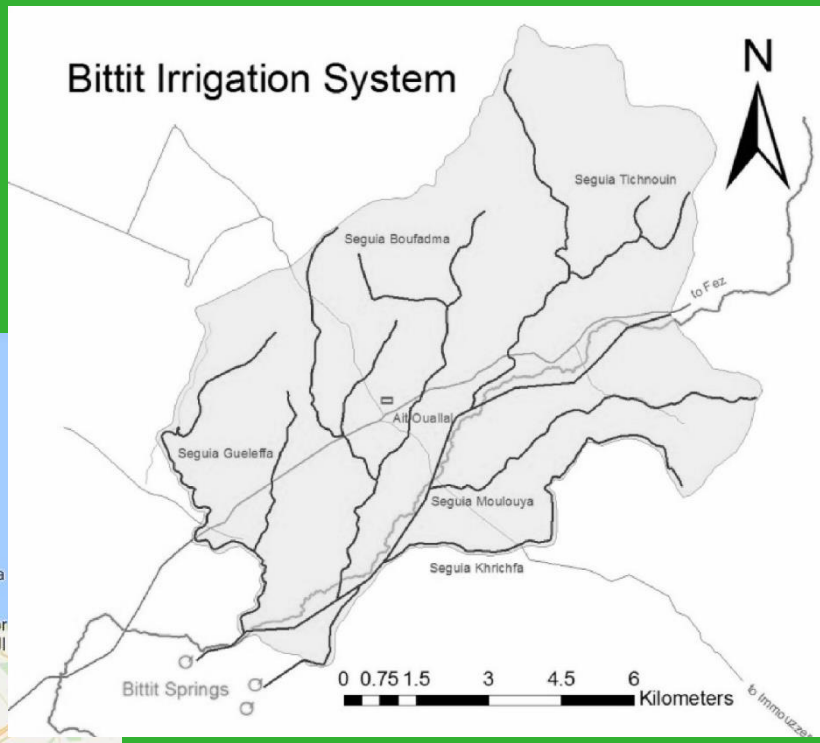
It’s impossible to just ‘create more water’ by using efficient irrigation technologies...

Case study Ain Bittit, Morocco

Reducing waste in Ain Bittit: re-allocating yet-to-be-saved water

- Drip irrigation
- Lining canal infrastructure





Drip Irrigation – gains & allocations

Drip irrigation subsidies of 80-100 % in the National Water Saving Program in Irrigation 2007 (PNEEI)

Aim: save 826 Mm3 per year

- 514 Mm3 in large-scale irrigation (increasing productivities)
- 312 Mm3 in private irrigation (saving groundwater)

- Green Morocco Plan (shift to higher value crops and extend agricultural area)
- River Basin Agencies (protect aquifer)

Estimates of annual wasted water to be gained increase: 1440 Mm3 (Belghiti, 2009) or 1500 Mm3 (Arrifi, 2009)

Drip irrigation in Ain Bittit

Drip irrigation in Ain Bittit

- Extensions of agricultural land
- Drilling of tube-wells to support drip irrigation projects

Lining projects in Ain Bittit

1949: Using arguments of losses and wastage of water, the State claims a right to the Bittit springs, which it uses as drinking water for Meknes

...the water rights have been calculated according to the discharge that is used in reality... which is no more than 4/10th of the total discharge of Aioun Sidi Tahar, Sidi El Mir and Ain Sebaa (the three sources that together form the Ain Bittit springs), because of the losses that occur in the existing infrastructure. The committee clearly points out that the fractions of the discharge that represent the losses will not be available... until the infrastructure is lined and the marshes of the Bittit river bed are drained. (p.2, Direction des Travaux Publics, 1949)

1980s, rehabilitation project:

914 hectares irrigated with 1282 l/s = 1.41 l/s/hectare = 50% efficient.

→ Lining recommended (design efficiency 65%), remaining water allocated to extensions of agricultural land and drinking water for Meknes

Conclusion

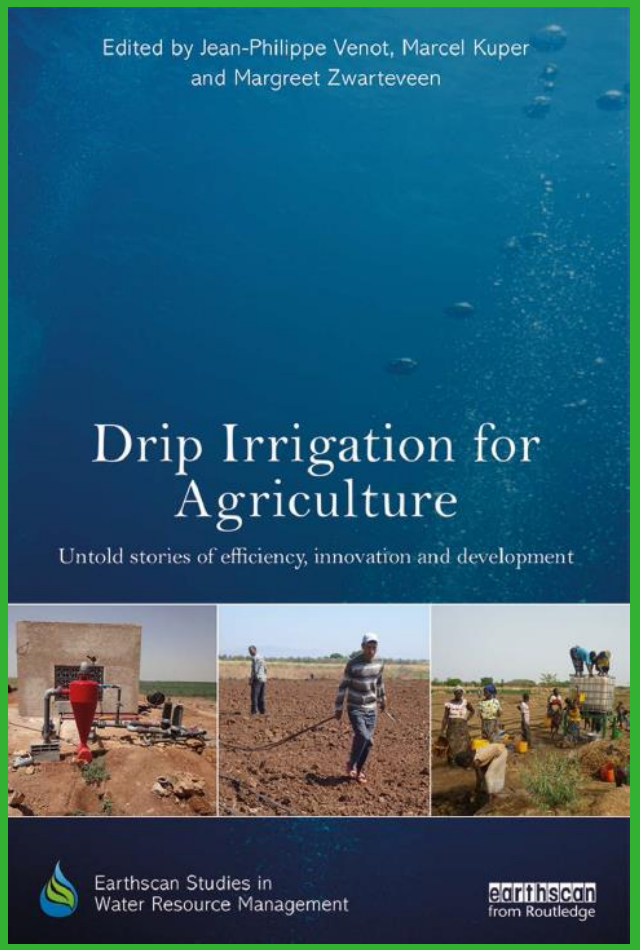
- All stakeholders in drip irrigation projects feel ownership to the to be saved water

  → resulting in too many claims on already scarce water

- Openly discuss who will benefit from the gained 'waste'

- Think about actual water savings rather then basing re-allocations on high expectations.

Thank You!



Van der Kooij, S., M. Kuper, C. de Fraiture, B. Lankford and M. Zwarteveen (2017). Re-allocating yet-to-be-saved water in irrigation modernization projects. In: *Drip Irrigation for Agriculture, untold stories of Efficiency, Innovation and Development*. Eds. Venot, J.P., Kuper, M & Zwarteveen, M. Routledge

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