Food and Agriculture Organization of the United Nations

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ESCWA

Guidelines on Improved Water Allocation for Agriculture

Introduction

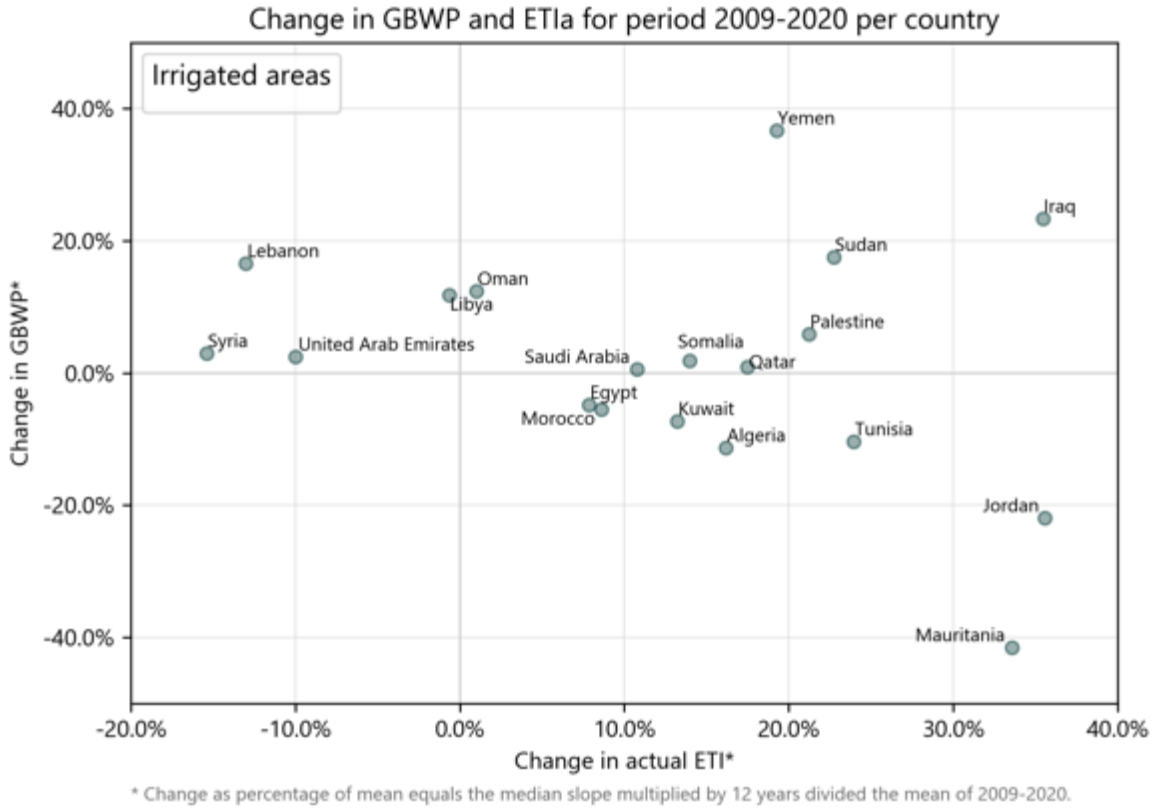
03-10-2022

1 History

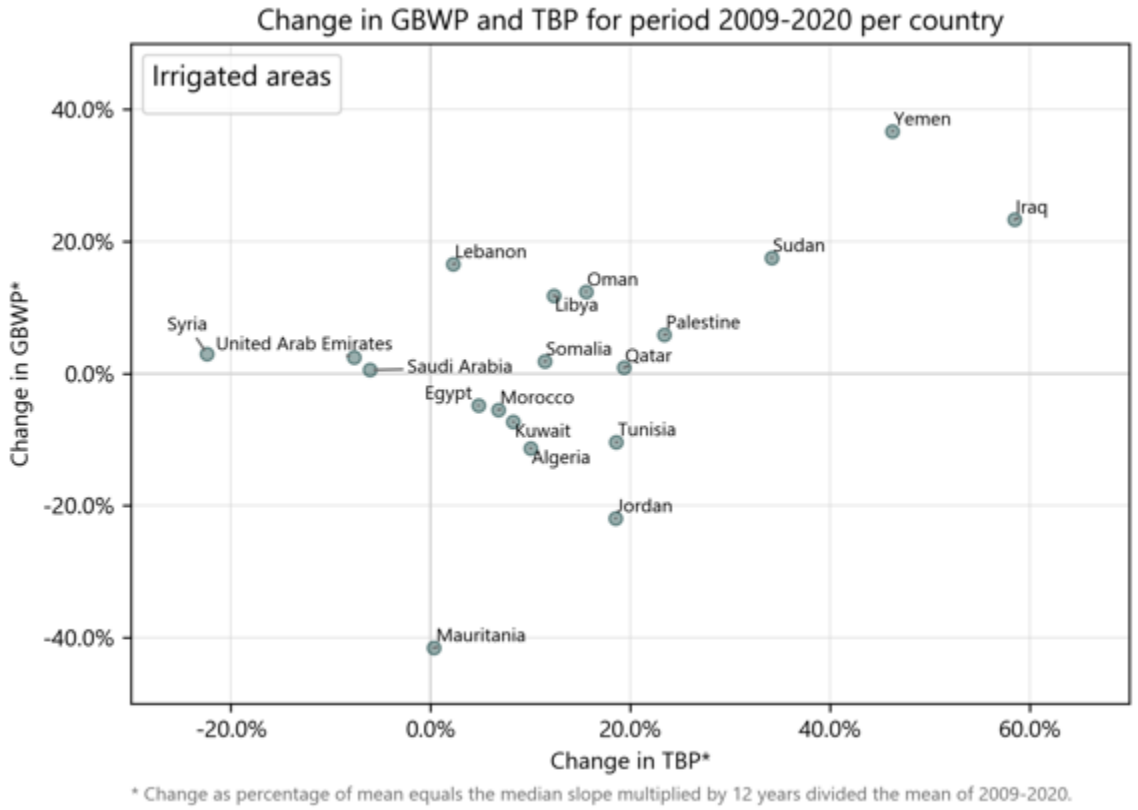
- Commissioned by the High-Level Joint Water-Agriculture Technical Committee of the League of Arab States
- Preparation undertaken by FAO and ESCWA
- Interviews, analysis, literature review
- Approved by Ministerial Conference van Arab League on 27 January 2022
- Putting these in practice through pilots

The urgency

- Increased water consumption in 2009-2020
- Biomass production not keeping up with population increase in 2009-2020
- Biomass water productivity is static/erratic in LAS in 2009-2020
- Climate change does not explain it, effects varied, though generally more demanding
- Water use has gone up – even if corrected with climate effect – in times of scarcity



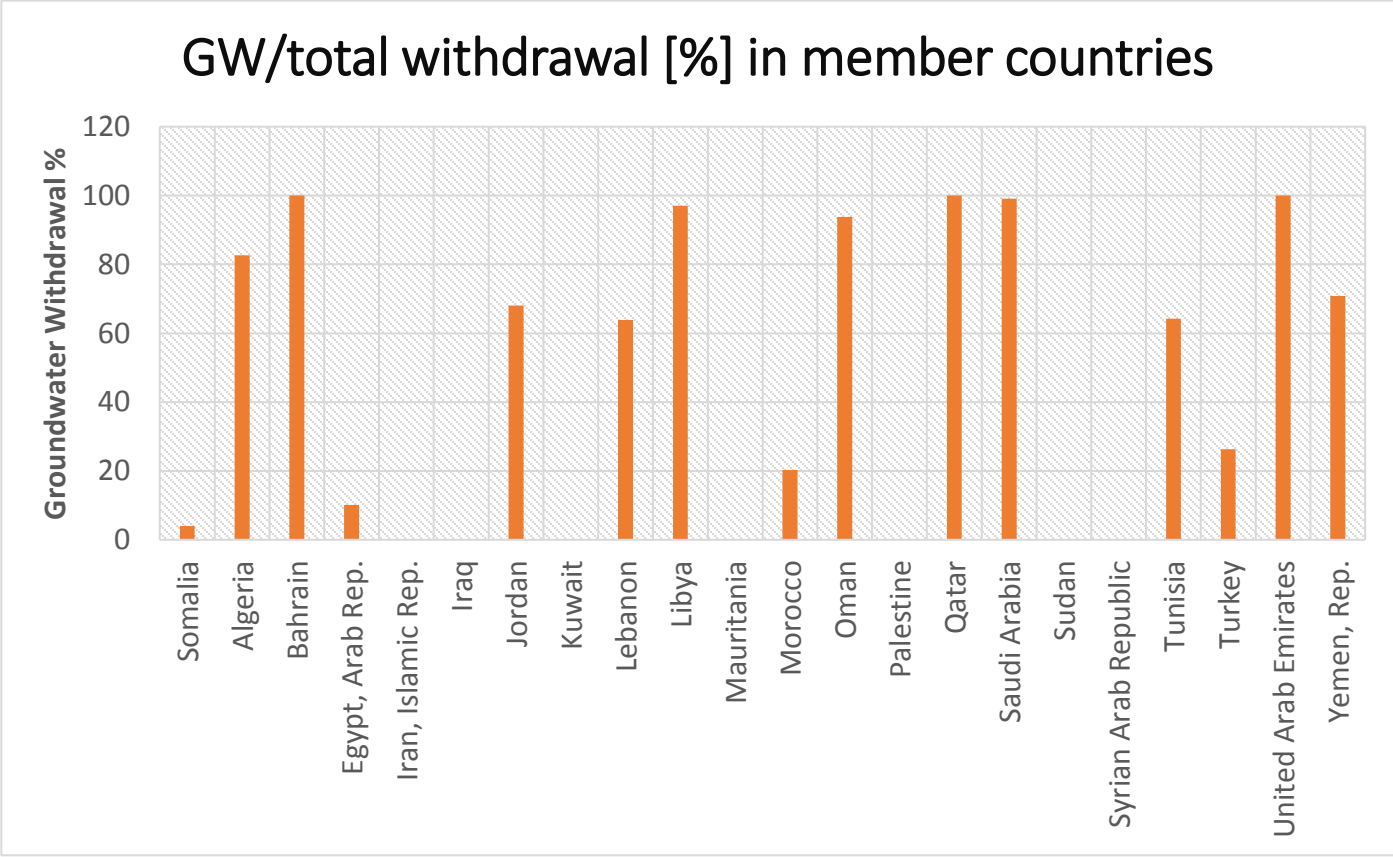
- In 15 out 19 LAS countries water consumption in irrigated areas increased from 2009-2020
- In spite of concerns over water scarcity, 12 out of the 19 countries had more than 10% increase in water consumption!
- This does not account for new irrigation system development



* Change as percentage of mean equals the median slope multiplied by 12 years divided the mean of 2009-2020.

- Biomass production in irrigated areas increased in 14 out of 19 countries
- Only in 3 countries it kept up with the population growth

Special concern



- Unsustainable groundwater use
- in a huge concern:
- Use exceeds recharge
- Exhausting fossil stocks
- Pumping saline water from 600 m
- Not many examples of successful regulation

Purpose and content

- Guidelines on improved water allocation for agriculture

- Systematic guidance to decision makers and water resource planners in the Arab countries on improving water allocation for

1

Scan

- of the necessary governance arrangements

2

Systematic assessment

- of improvements of water allocation

3

Guidance

- on the process for change

4

Agenda tool

- for pilots

Definition (OECD 2015)

"**Water resources allocation** determines who is able to use water resources, how, when and where….

Definition (OECD 2015)

- Evolved in a piecemeal fashion over time
- Exhibit a high degree of path dependency,
  - Manifests in laws and policies,
  - Design and operational rules of long-lived water infrastructures.

This means that water use is often "locked-in" to uses that are no longer as valuable today

In essence, (re)allocation is a means to manage the risk of shortage and to adjudicate between competing uses…"

Often a blind spot and missed opportunity

'Who gets what, how, when and where' is at the heart of water governance and economies and societies at large

At the same time often a **blind spot** (or 'lock-in'):

- In many cases, formal water allocation is not a topic of discussion
- Practices accepted as they are, with no plan to improve
- No center of excellence or community of practice

Missed opportunity:

- Many opportunities to critically improve, very much so for agricultural sector
  - Agriculture main water user: 80-92%
  - Much scope to improve water allocation within agriculture (timing, quantities)

2 Conducive governance arrangements

- …

Scan of the necessary governance arrangements

- Water allocation to be part of water governance, in the management of existing systems and in the development of new systems.
- Different elements of water governance facilitate the attention for improved water allocation and support its implementation

Governance for improved water allocation for agriculture

- ✓ Clear policy and regulation
- ✓ Institutional leadership
- ✓ Transparent public private roles
- ✓ Clear water tenure
- ✓ Routine integration in operations
- ✓ Systematic stakeholders and user coordination

Accurate metrics

- Accurate metrics on main parameters of water availability and water use
- Common understanding
- Agreement, at least tacit

Clear policy and regulation

Operationalize generic water policies

- space for optimizing water allocation

Mention of:

- Allocation between sectors and within sectors
- Prioritization
- Reallocation

Example:

- Water reallocation/ Water substitution and reuse policies of Jordan

Institutional leadership

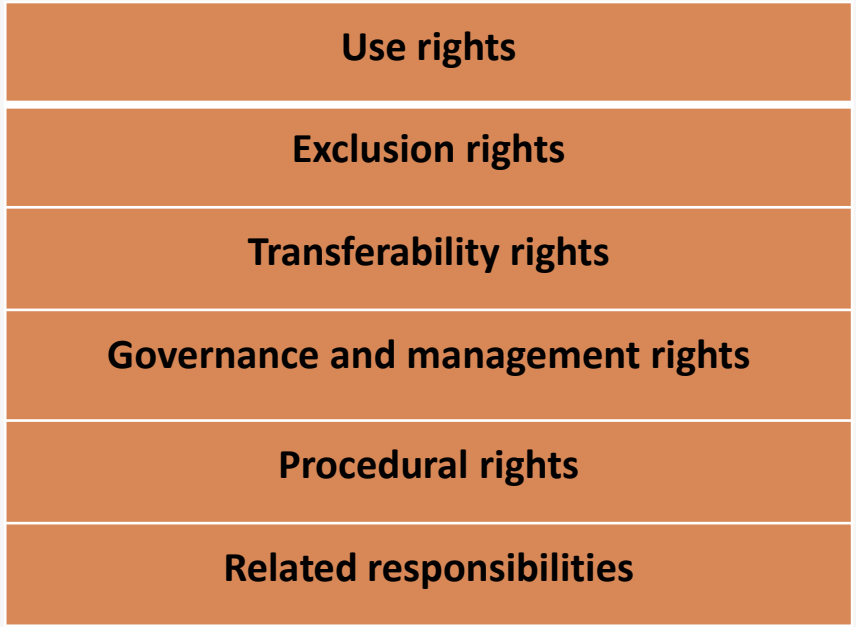
- Support at policy level
- Access to implementation
- Institutionalized
- systematic communication between state and water users
- Find ways to deal with challenge of no effective state control over parts of the agricultural water management system - as in groundwater

Transparent public private roles

- Engage with local stakeholders
- Short and long terms benefit and cost scenarios
- Recognize pre-existing land use
- Recognize in situ and downstream water use
- Undertake risk analysis
- Have clear and univocal arrangements
- Include performance standards
- Exclude liability claims
- Examples: Sudan, Egypt
- Future: focus on efficiency/ saving rather than capture/ development

Clear water tenure

- '… The relationship, whether legally or customarily defined, between people, as individuals or groups, with respect to water resources…' (FAO 2020)
- Clear entitlements
- Define the bundle of rights >
- Codification



Routine integration in operation

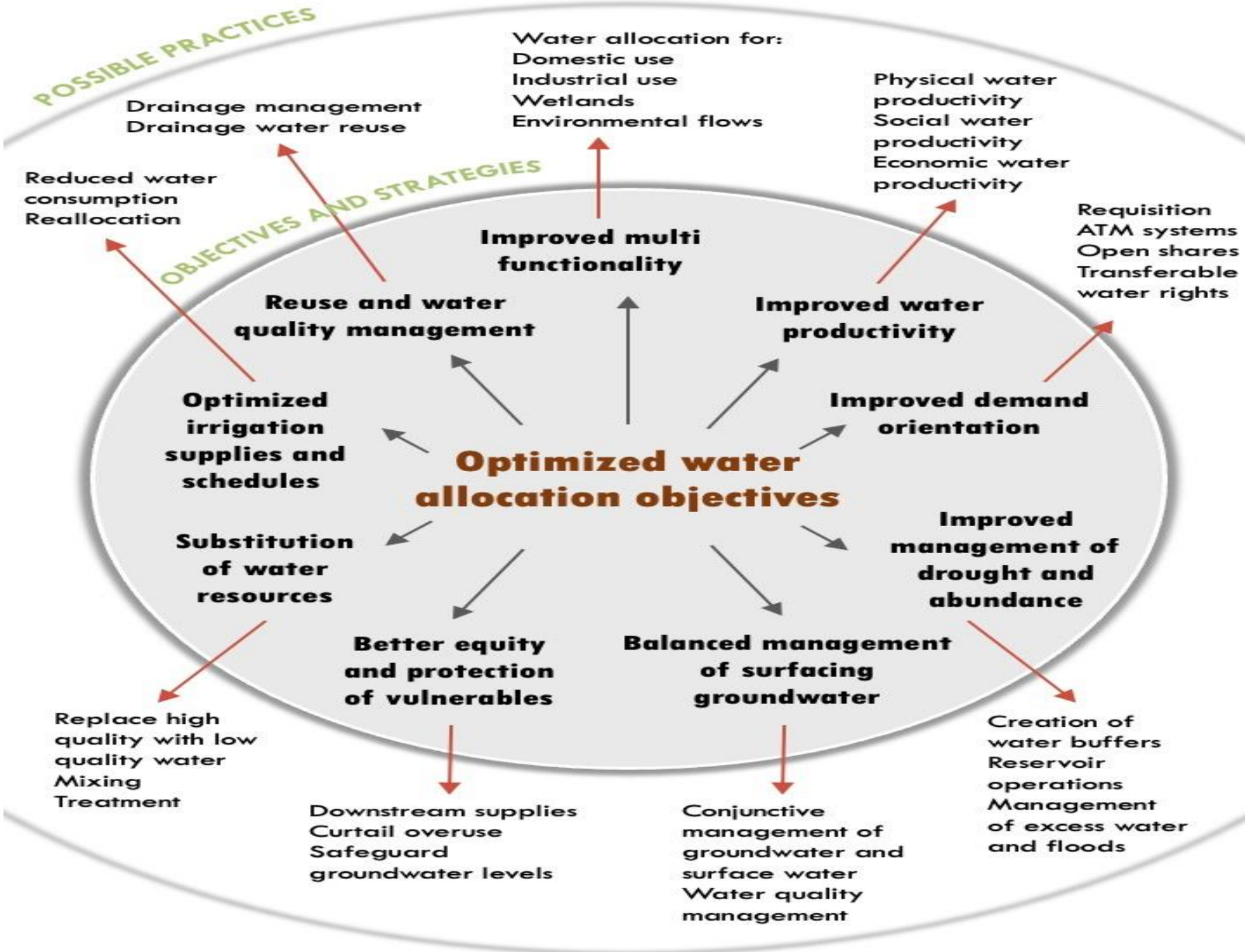
- For water operators:
  - Optimize water allocations on a regular basis
  - Especially in pre-arranged supply-based systems

Systematic stakeholder and user coordination

- Bundling users interest is useful:
  - Water users associations as part of overall water governance (beyond project)
  - Basin organizations with clout (beyond consultative)

3 Water allocation optimizations in agriculture

- System of water allocation should as much as possible align with national strategic objectives
- Reallocation contributes to different (complementary) objectives:
  - addressing water scarcity,
  - (somehow) keep up with food security needs,
  - giving space to non-agricultural water uses
  - dealing with the likely occurrence of droughts and floods,
  - freeing up high quality water
  - creating more flexibility and demand orientation
  - contributing to sustainable water use.


POSSIBLE PRACTICES
OBJECTIVES AND STRATEGIES
Optimized water allocation objectives
Improved multi functionality
Reuse and water quality management
Improved water productivity
Optimized irrigation supplies and schedules
Improved demand orientation
Substitution of water resources
Improved management of drought and abundance
Better equity and protection of vulnerables
Balanced management of surfacing groundwater
Water allocation for:
Domestic use
Industrial use
Wetlands
Environmental flows
Drainage management
Drainage water reuse
Reduced water consumption
Reallocation
Physical water productivity
Social water productivity
Economic water productivity
Requisition
ATM systems
Open shares
Transferable water rights
Replace high quality with low quality water
Mixing
Treatment
Downstream supplies
Curtail overuse
Safeguard groundwater levels
Conjunctive management of groundwater and surface water
Water quality management
Creation of water buffers
Reservoir operations
Management of excess water and floods

System planning level

- ...

Improved water productivity

- More than bio-physical water productivity ('crop per drop')
- Also:
  - Economic water productivity
  - Social water productivity
- Undertake Social Water Productivity Check

Improved management of droughts and abundance

- More surface water storage
  - head of the system,
  - decentralized within the system
  - out of the system (i.e. flood escapes)
- Make better use of freshwater aquifers (routing excess flows)
- Improve water management, the more so for C3 crops.

Improved multi-functionality

- Agricultural systems are multifunctional:
  - water for domestic use,
  - water for industries,
  - wetlands or
  - environmental flows
  - others
- Optimize and recognize these multiple functions and make part of the water allocation system
- Also in groundwater systems

Improved demand management

- In general: overcome rigidity
- Methods such as:
  - Water requisition systems
  - Special unallocated water shares
  - ATM systems

Substitution of water resources

For instance:

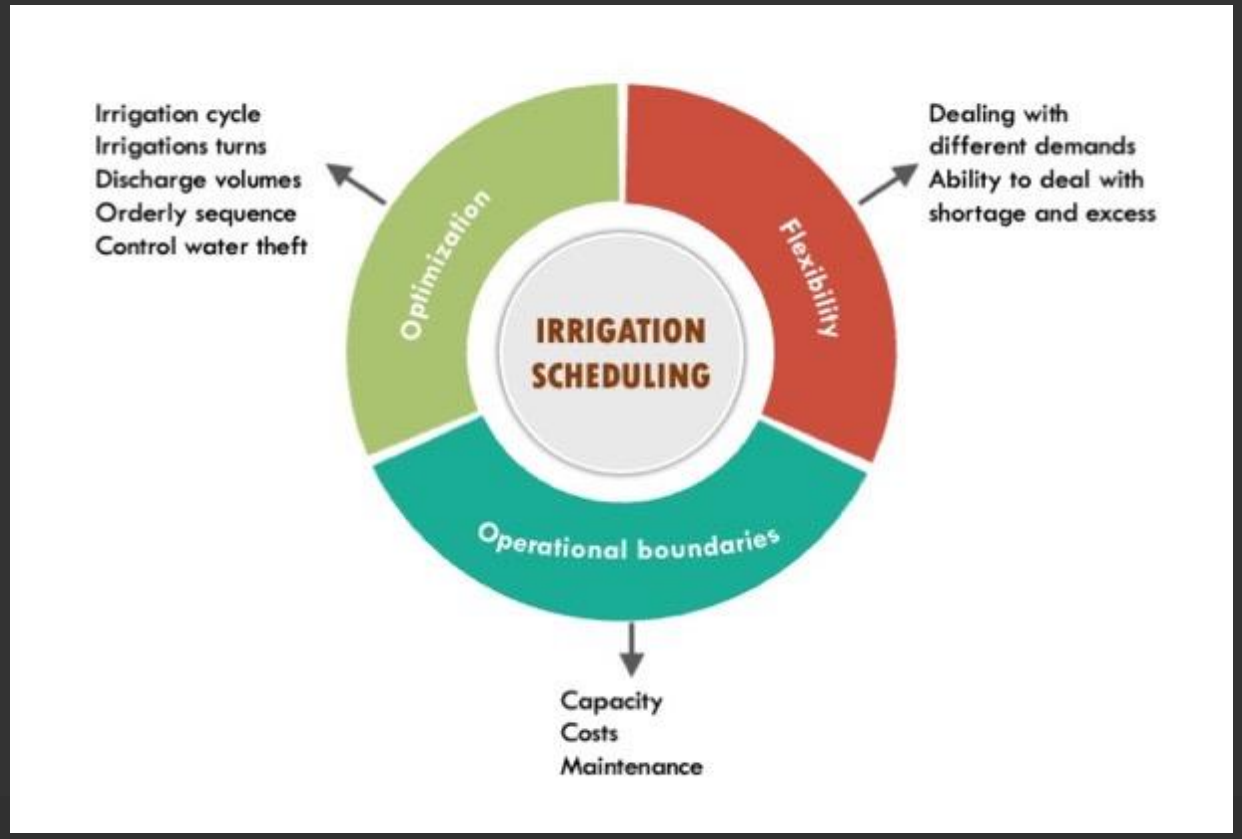
- Substitute fresh water with treated water
- Replace depleted groundwater with treated water or surface water
- Free up water for non-agricultural uses

Quality of substitute water needs to conform to quality norms

System operations level

- …

Optimized irrigation supplies and schedules



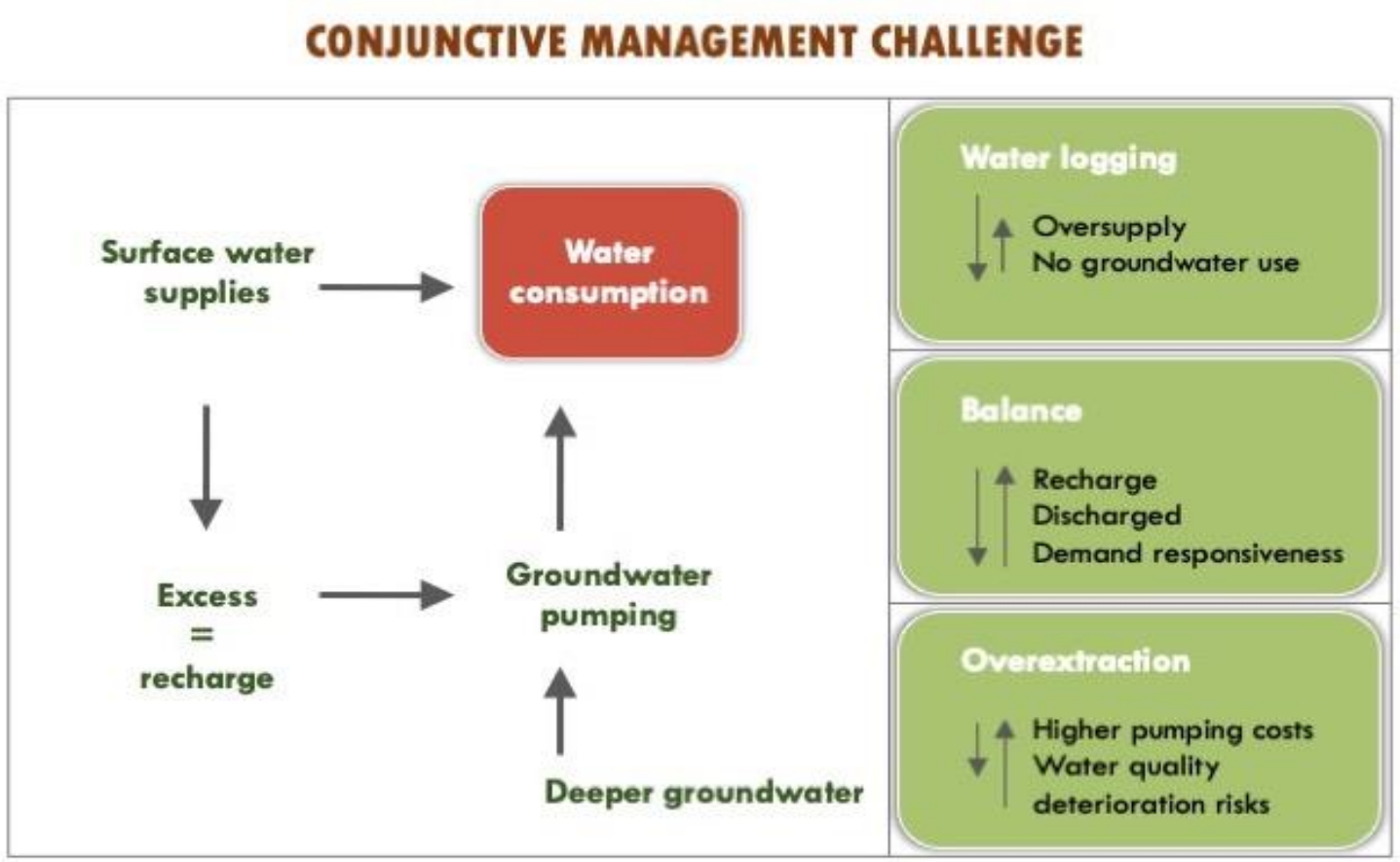
- Allocations should harmonize with the actual or preferred cropping pattern
- Decisions on where to use water that is saved should be part of efficiency improvement plan

Reuse and water quality management

- Optimize drainage and reuse
- Safeguard quality of water
- Mixing strategies

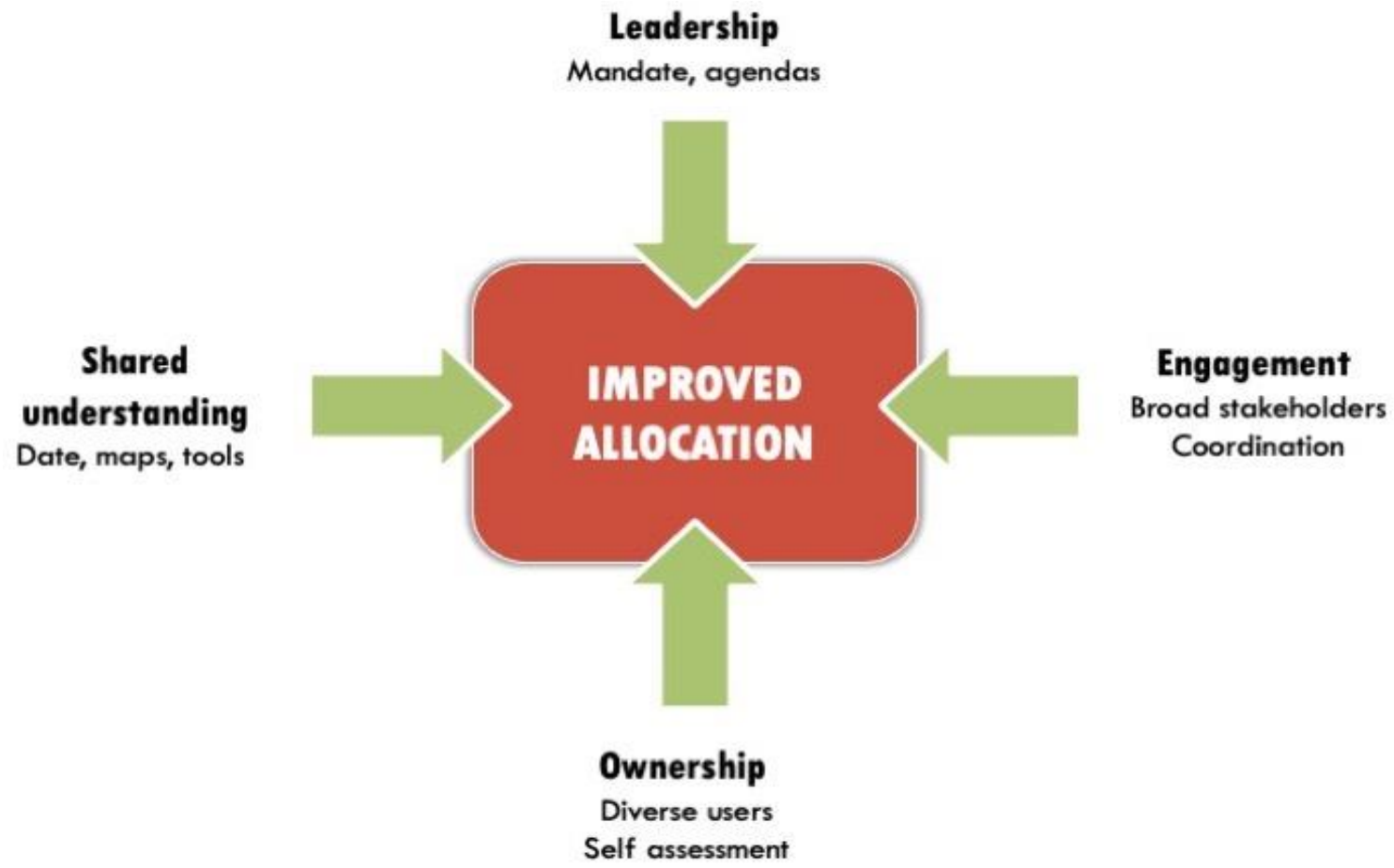
Conjunctive management of surface and groundwater

- Finding balance of ‘optimum seepage and reuse’
  - No wastage, no shortage
  - Demand orientation
  - Buffer
- Water quality factor

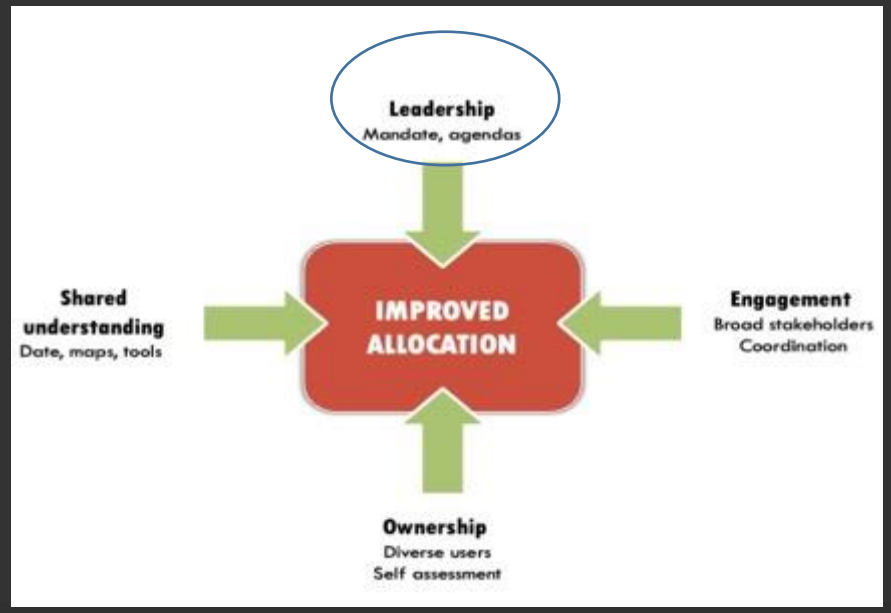


4 Getting the process to move

Four factors:



Create an agenda for improved water allocation



Change leaders to:

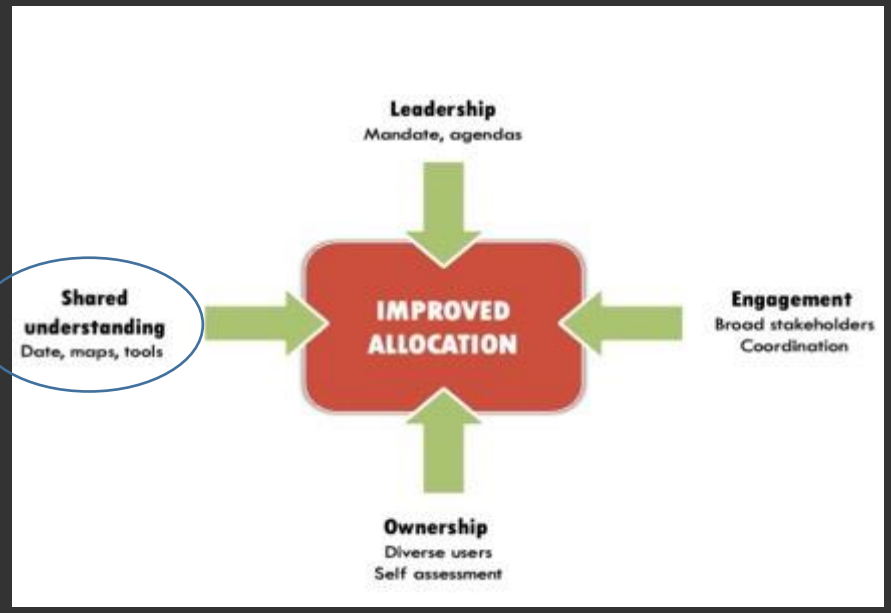
(1) bring different stakeholders together
(2) invest in developing the shared evidence-based understanding
(3) give space to the diverse group of users
(4) connect to higher level leadership and follow up processes and
(5) give all the confidence that the process is under control

Political endorsement

Publicity

Institutionalization

Having a shared data set

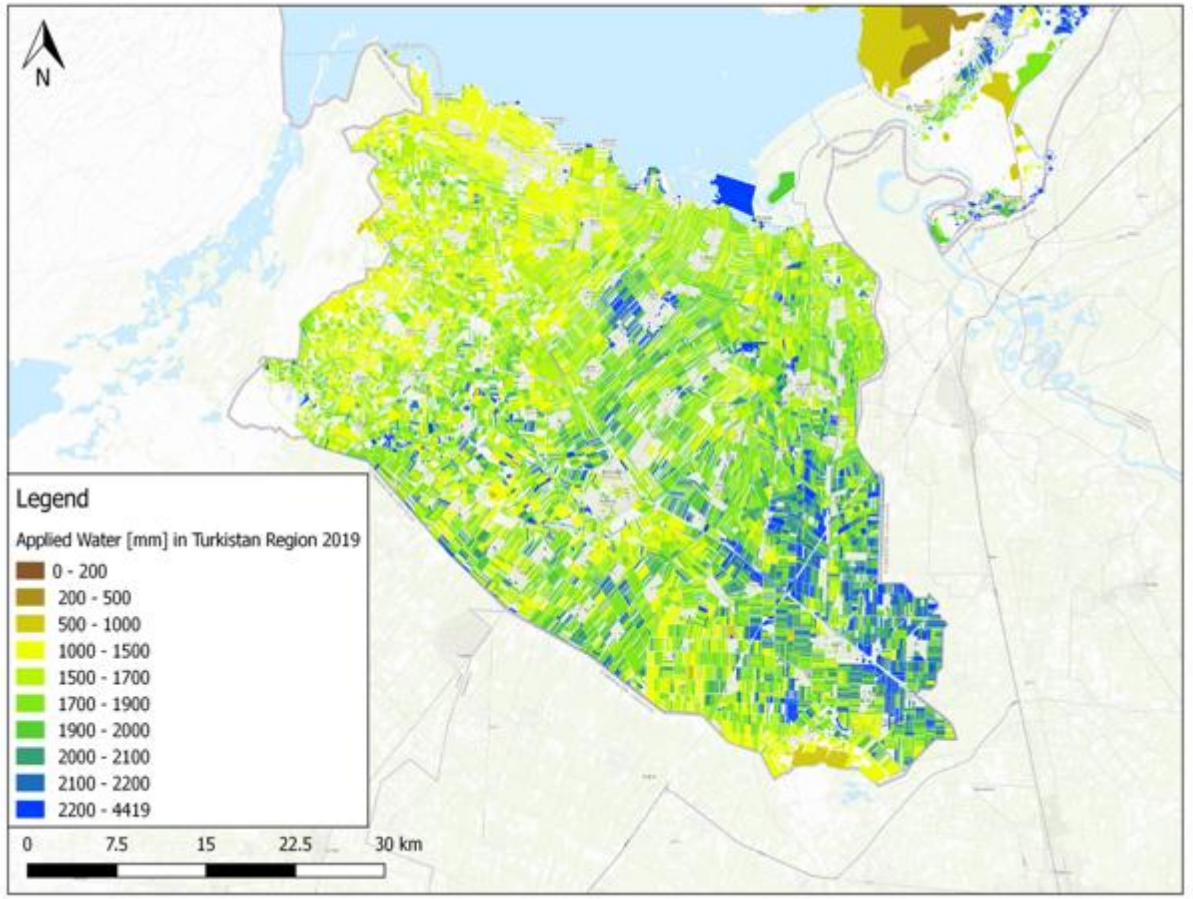


Catalytic

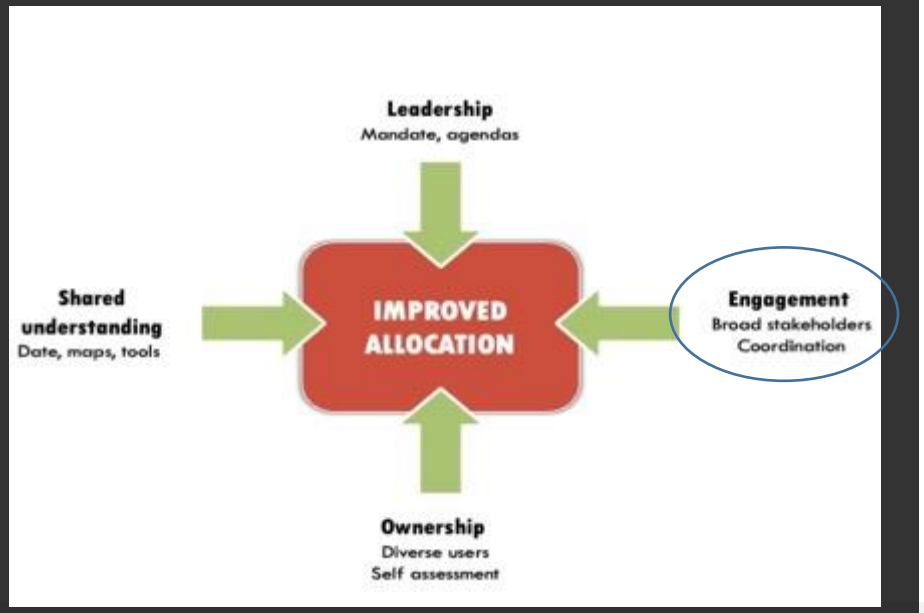
- Overview
- Discussion
- Agreement

Instruments

- SCADA
- Water Accounting Plus
- Remote sensing

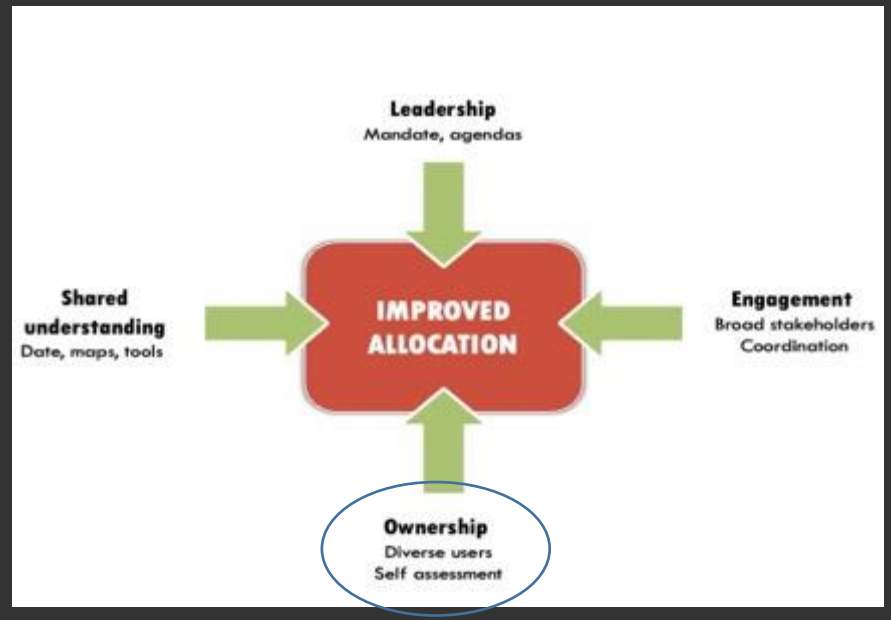


Stakeholder engagement



- Processing of get to know each other and appreciate different positions
- Reflect on different interests and positions
- Create common perception preferably by maps and data
- Create structured process with delegated subgroups
- Make use of local activists

Ownership of diverse users



Diverse users:

- Agriculture and others
- Different parts of the system

Self assessment as tool

ThankYou

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