



Food and Agriculture Organization  
of the United Nations



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ESCWA

# Guidelines on Improved Water Allocation for Agriculture

Introduction

26-09-2022





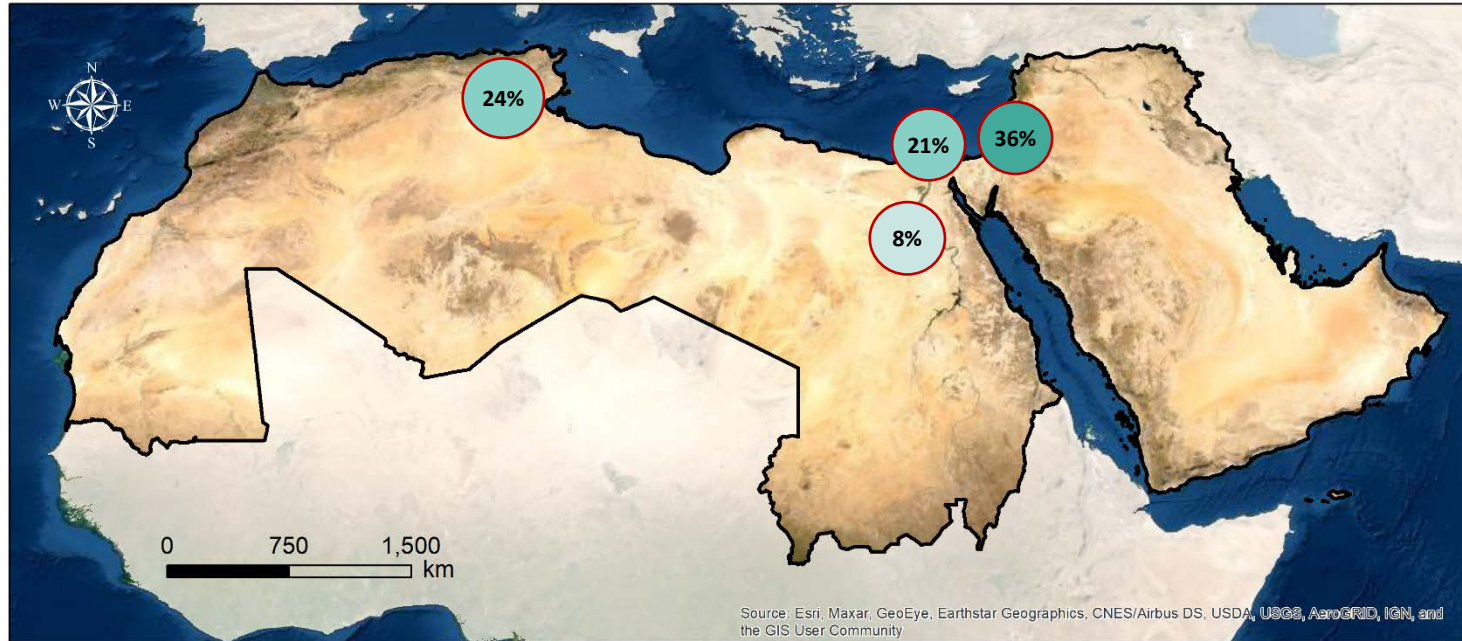
# 1

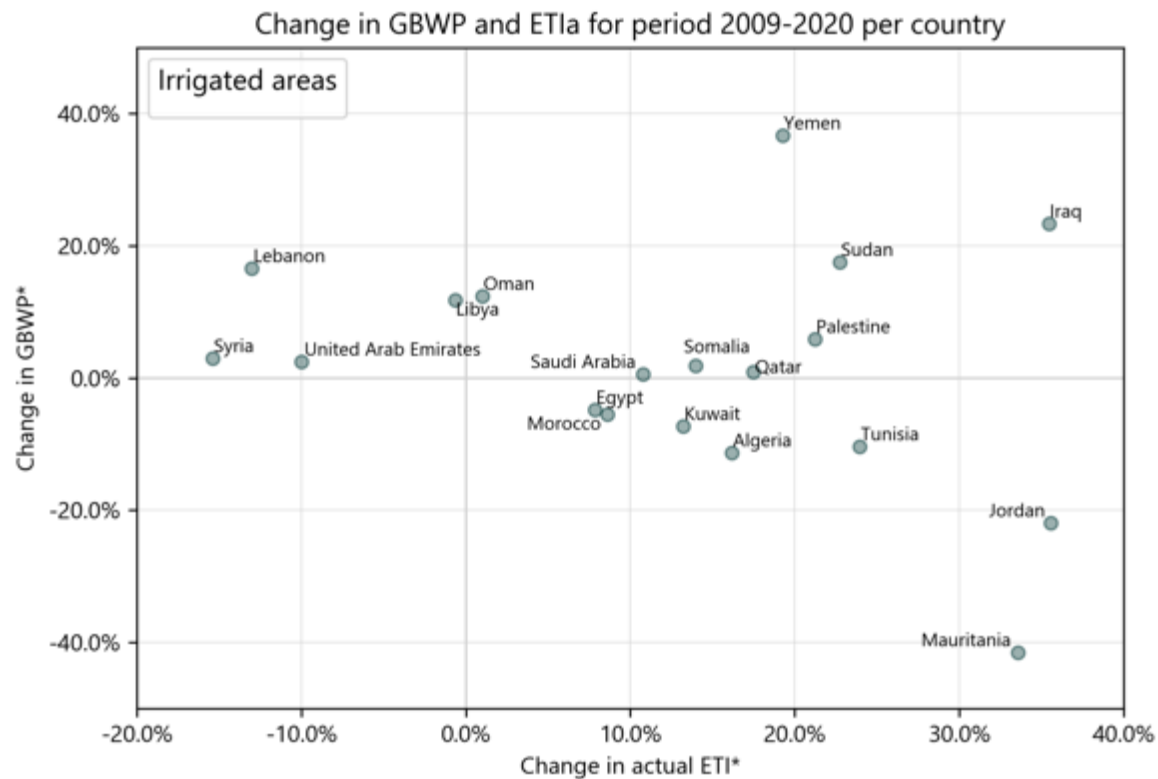
## History

INFO

- 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/1 Increased water consumption in 2009-2020



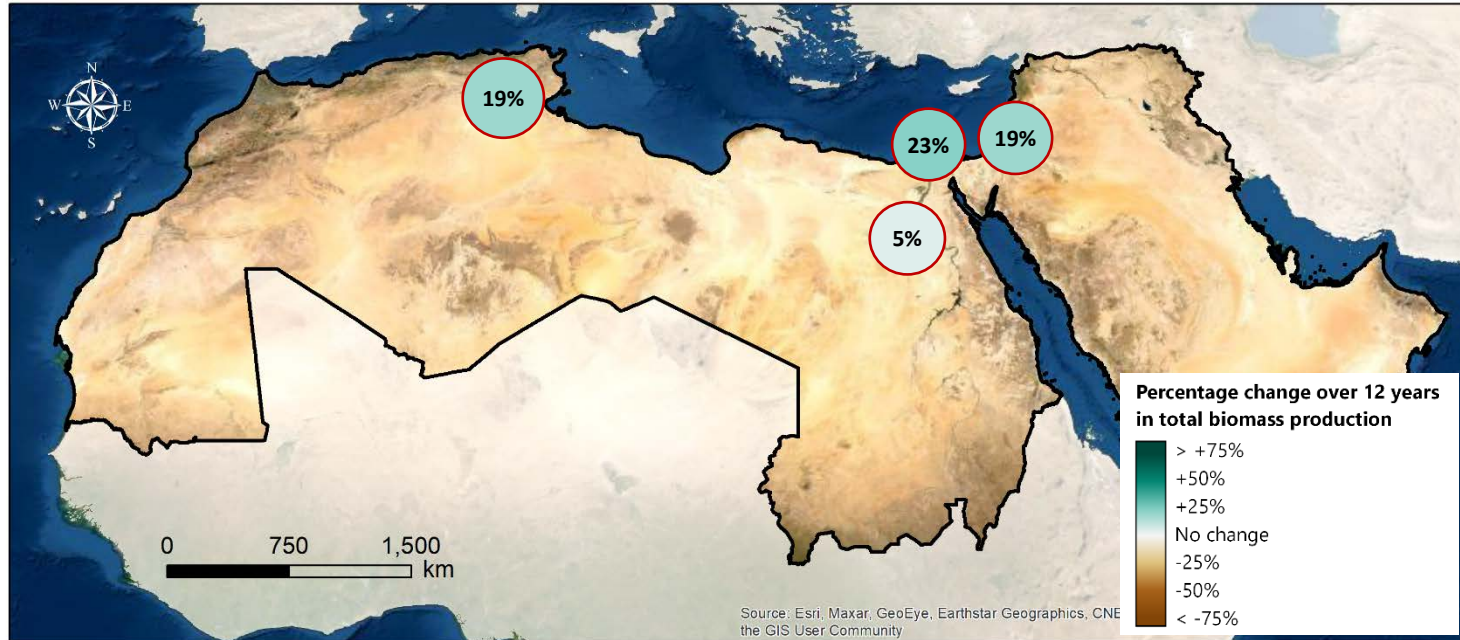


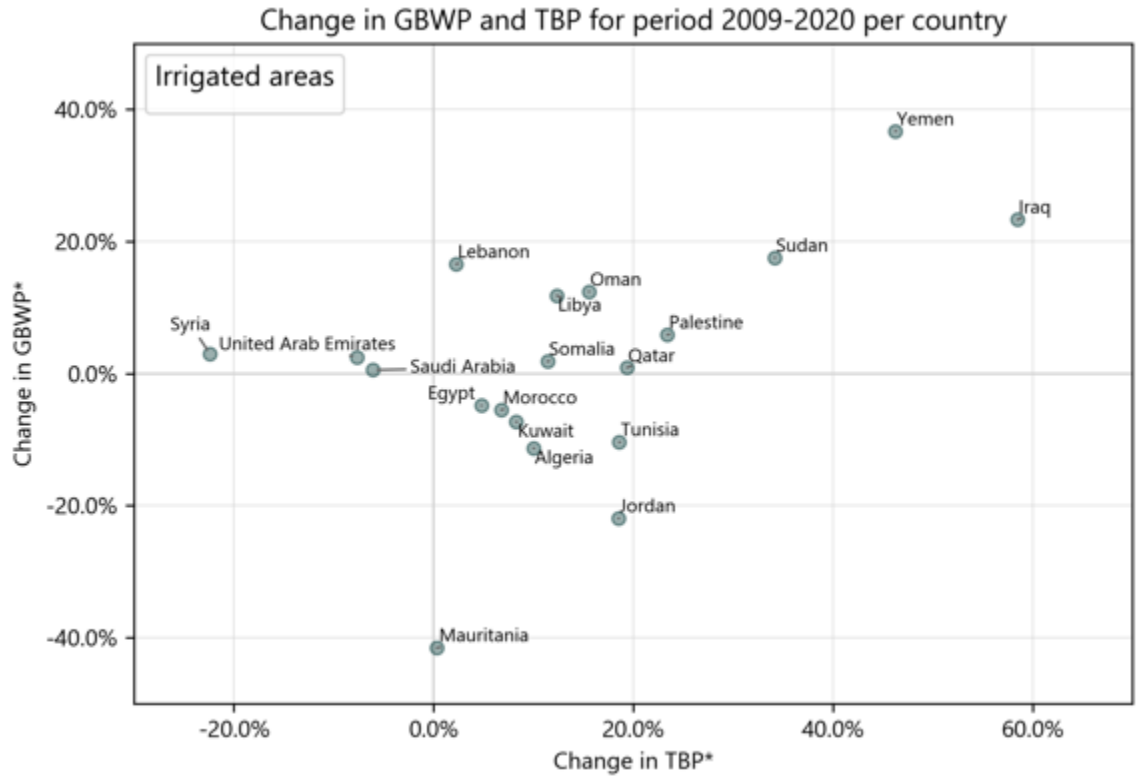
- In 15 out 19 LAS countries water consumption in irrigated areas increased from 2009-2020
- **In spite of concerns on water scarcity, in 12 out of the 19 countries the increase was more than 10%!**
- This does not account for new irrigation system development



# The Urgency/2

## Biomass production not keeping up with population increase in 2009-2020





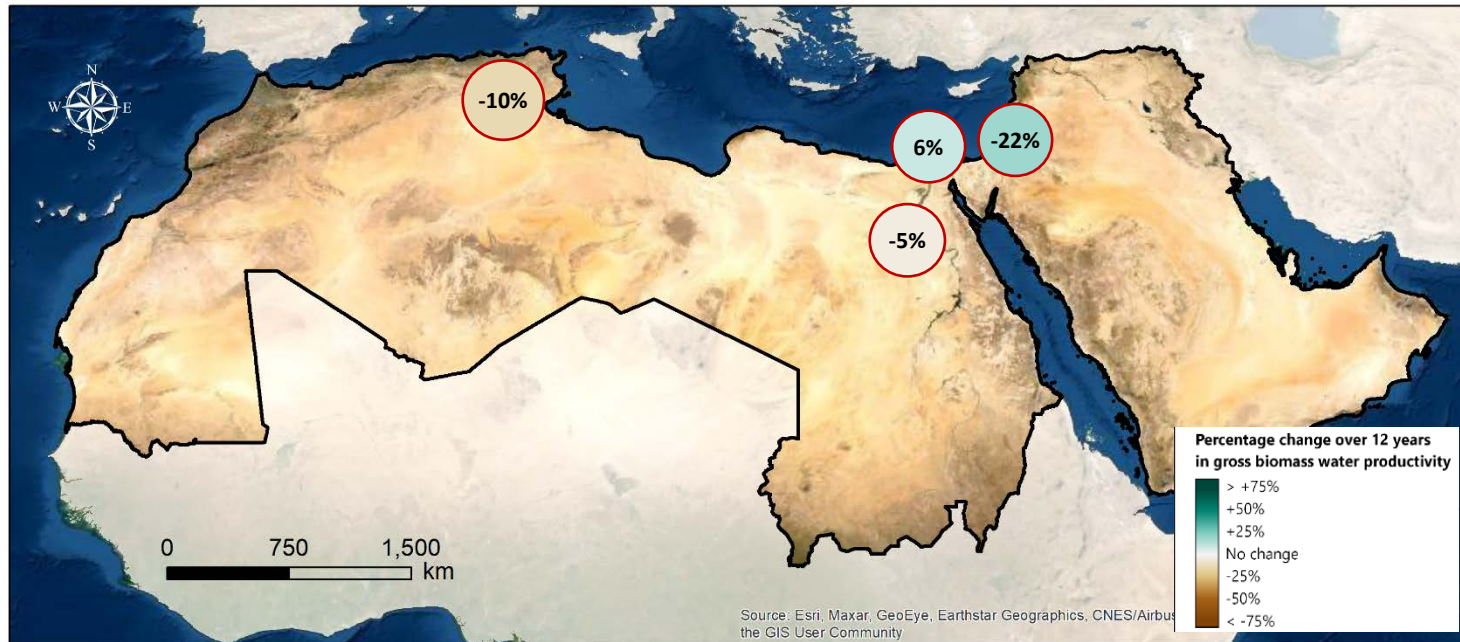
\* Change as percentage of mean equals the median slope multiplied by 12 years divided the mean of 2009-2020.



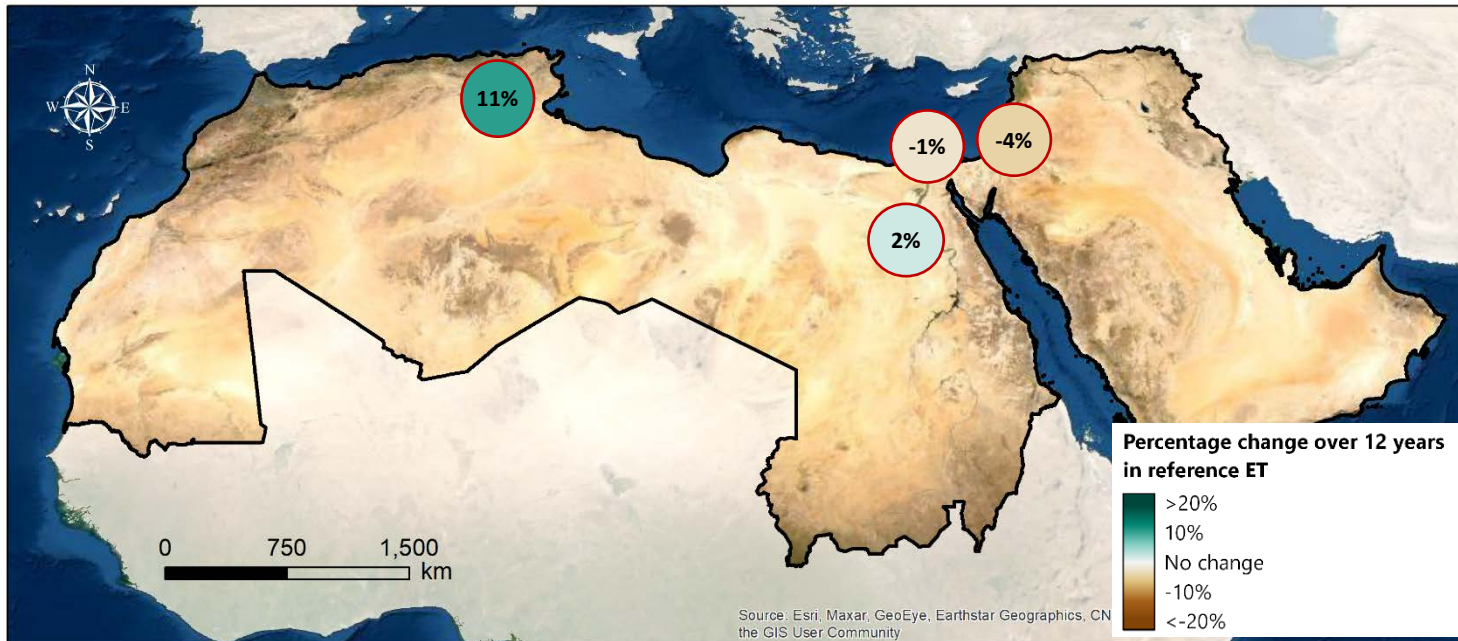
- Biomass production in irrigated areas increased in 14 out of 19 countries
- Only in 3 countries it kept up with the population growth

Biomass water productivity reduced in 7 countries, was static in 5 countries, improved in 7 countries

The urgency/3  
Biomass water productivity is static/erratic in LAS in 2009-2020

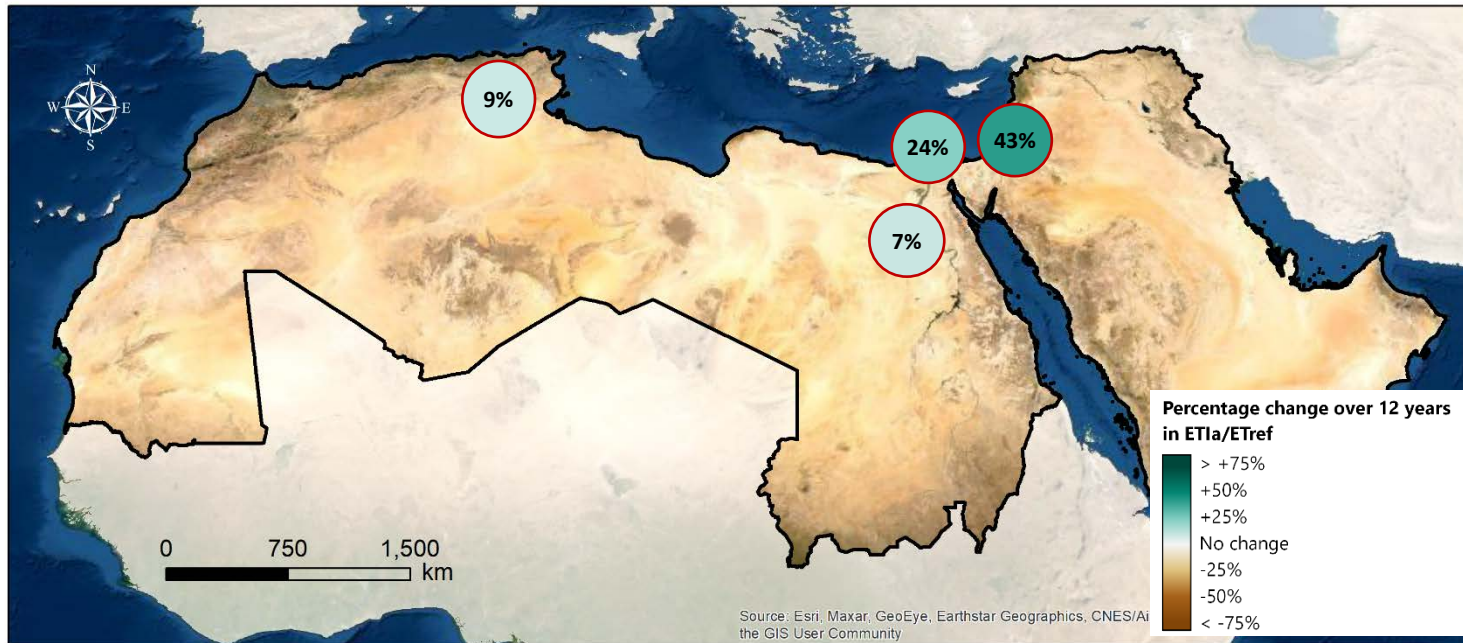


The urgency/4 Climate change does not explain it, effects varied, though generally more demanding



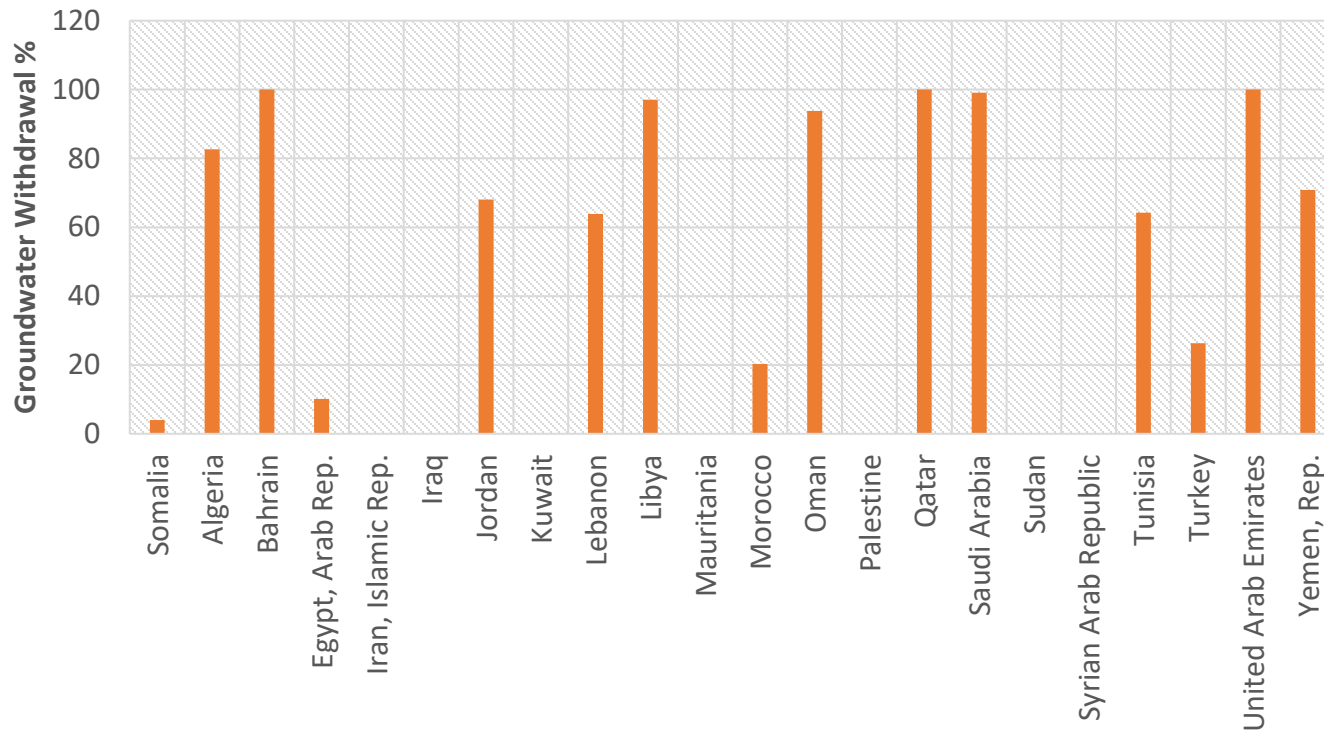


The urgency/5 Net water use has gone up – even if corrected with climate effect – in times of scarcity



# Special concern

GW/total withdrawal [%] in member countries



- Non sustainable groundwater use
- in a huge concern:
- Use exceeds recharge
- Exhausting fossil stocks
- Pumping saline water from 600 m
- Not much 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....

They have often evolved in a piecemeal fashion over time and exhibit a high degree of path dependency, which manifests in laws and policies, and even in the 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





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# Clear policy and regulation



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## Operationalize generic water policies

- space for optimizing water allocation

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## Mention of:

- Allocation between sectors and within sectors
- Prioritization
- Reallocation

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## 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

**Use rights**

**Exclusion rights**

**Transferability rights**

**Governance and management rights**

**Procedural rights**

**Related responsibilities**



# Routine integration in operation



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

# Systematic stakeholder and user coordination

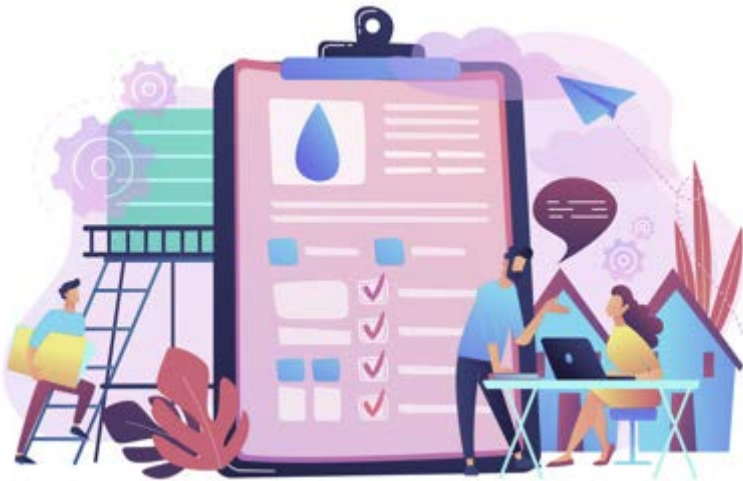


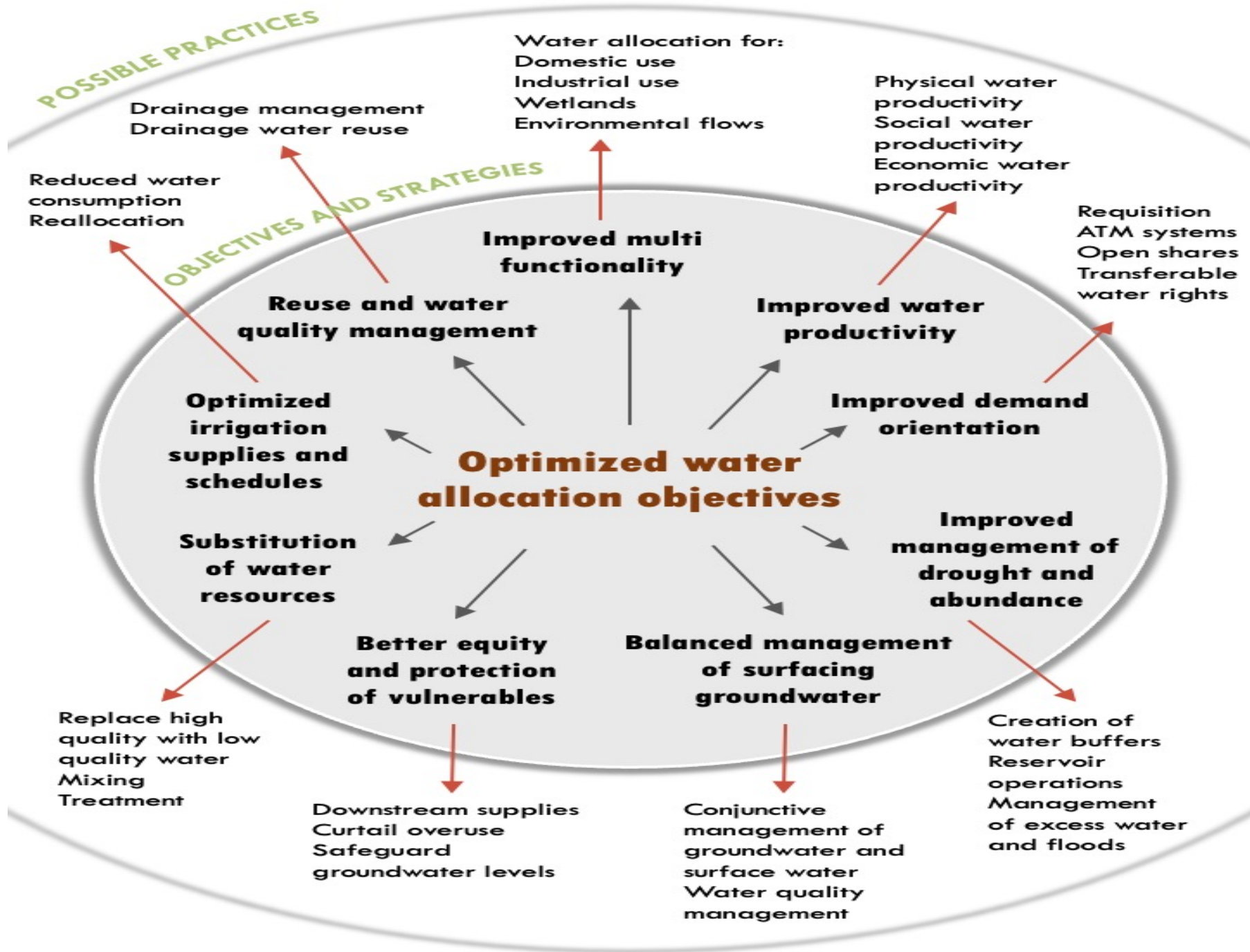
- Bundling users interest is useful:
  - Water users associations as part of overall water governance (beyond project)
  - Basin organizations with clout (beyond consultative)

# 3

## Water allocation optimizations in agriculture

- System of water allocation should as much as possible align with national strategic objectives
- Reallocation contribute 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.







# 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

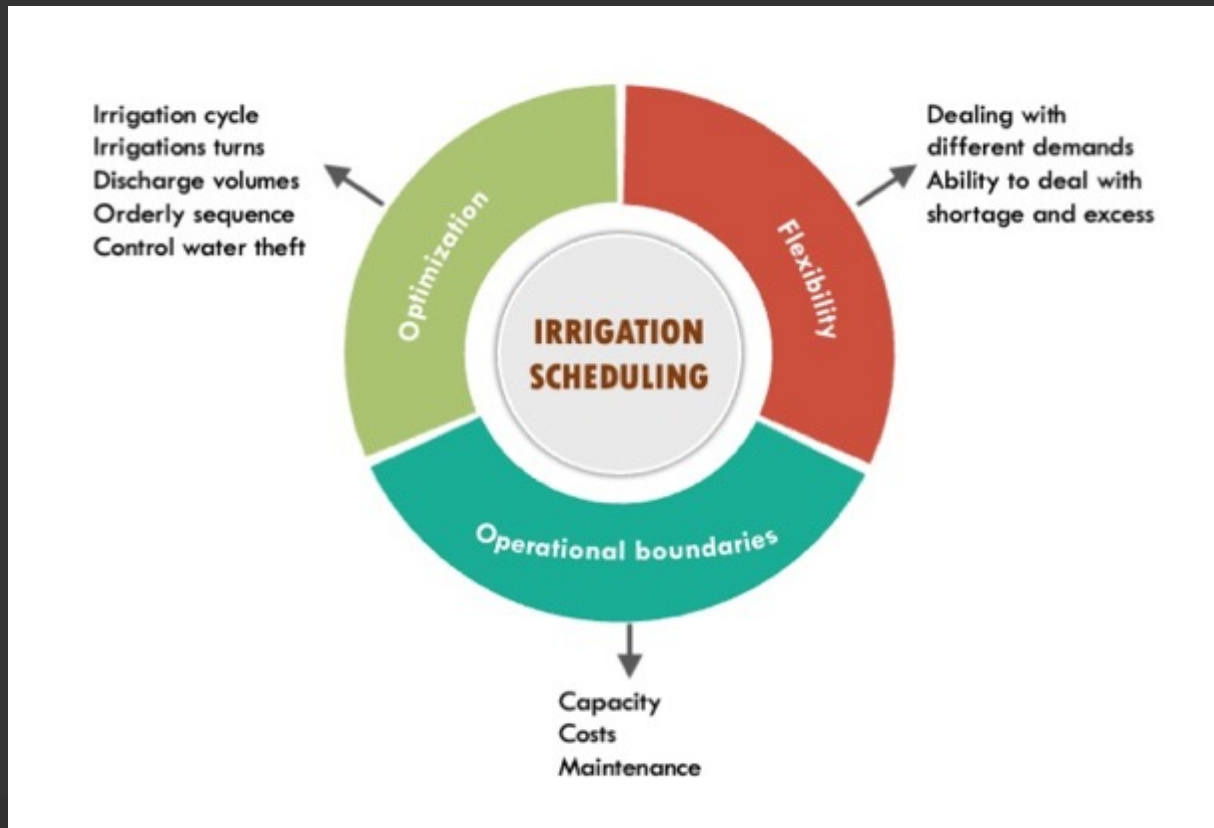


# System operations level

- ...



# 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

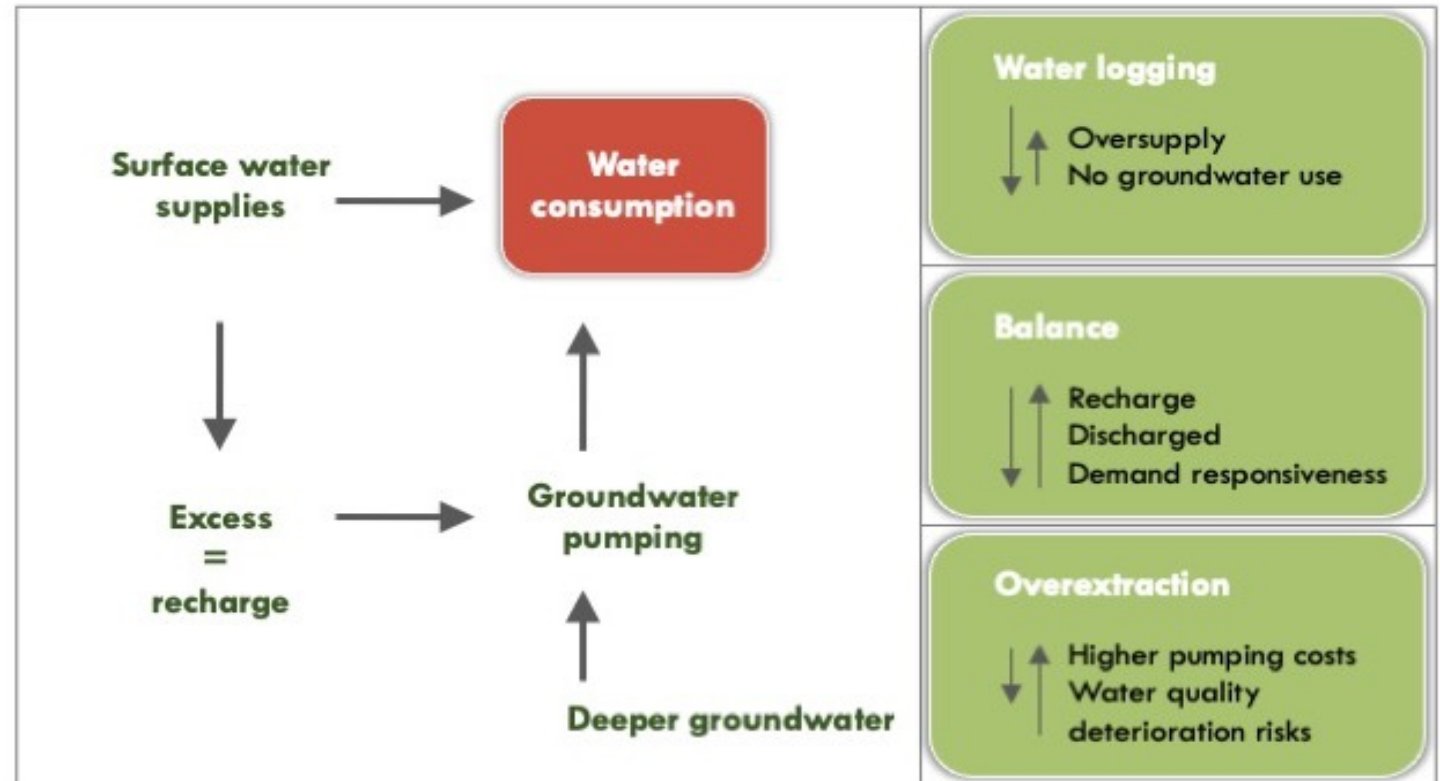


# Conjunctive management of surface and groundwater



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

## CONJUNCTIVE MANAGEMENT CHALLENGE



# 4 Getting the process to move

Four factors:



**Shared understanding**  
Data, maps, tools



**Leadership**  
Mandate, agendas



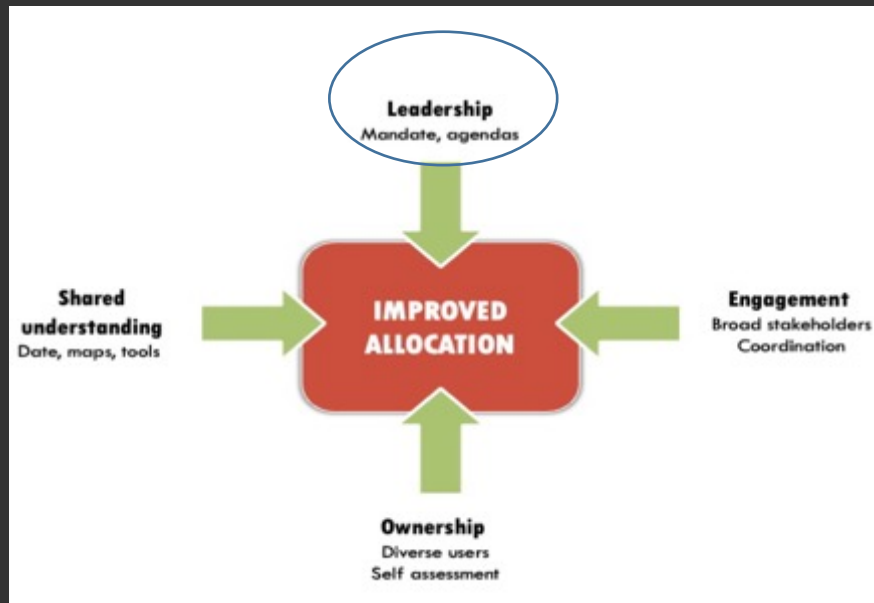
**Engagement**  
Broad stakeholders  
Coordination



**Ownership**  
Diverse users  
Self assessment



# 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

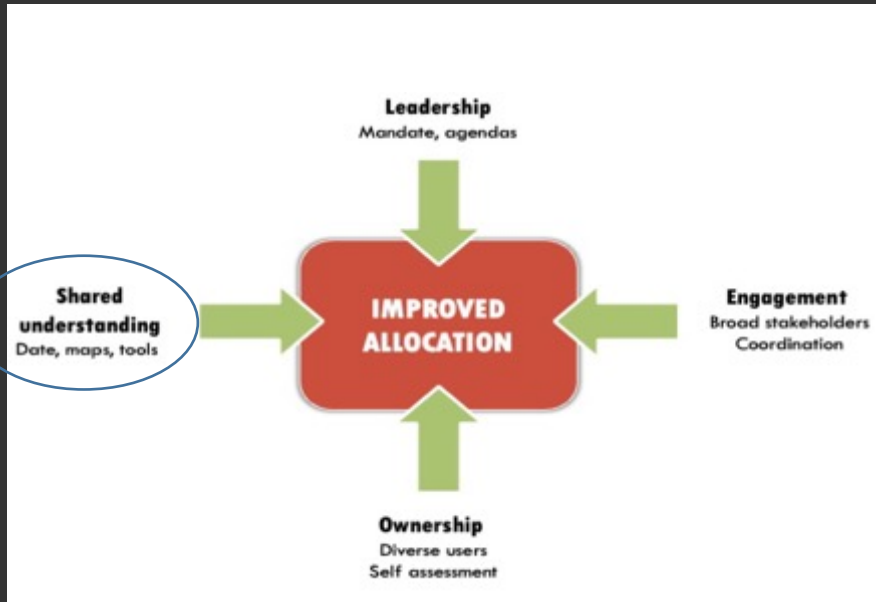
## Political endorsement

## Publicity

## Institutionalization



# Having a shared data set

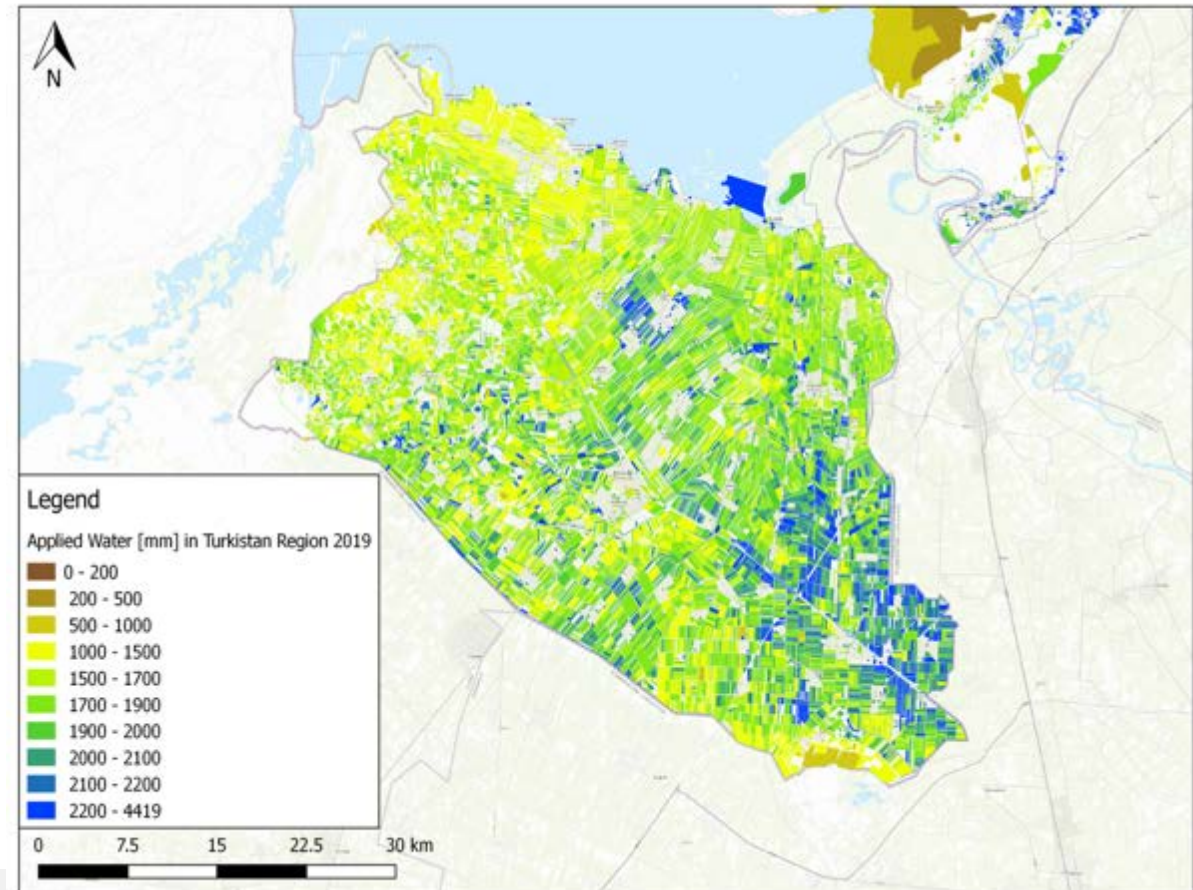


## Catalytic

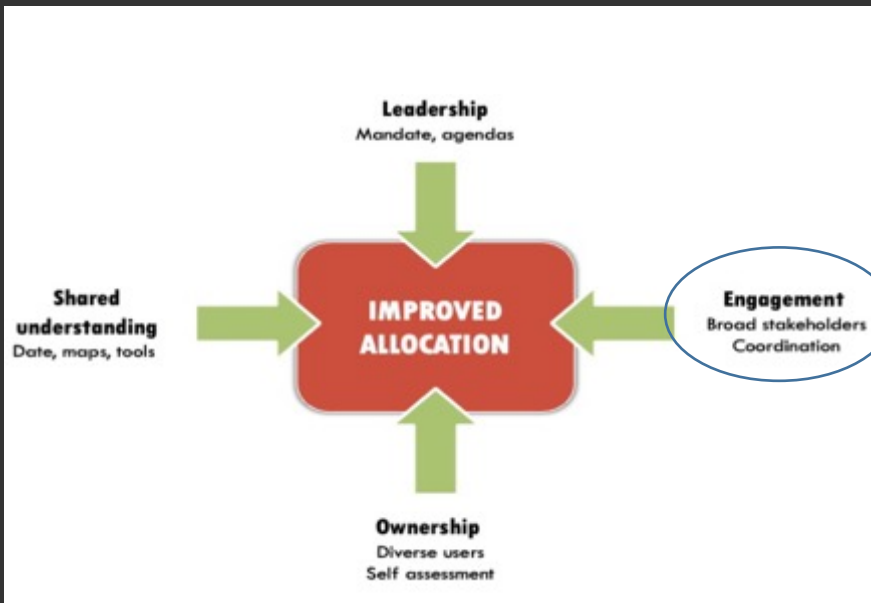
- Overview
- Discussion
- Agreement

## Instruments

- SCADA
- Water Accounting Plus
- Remote sensing

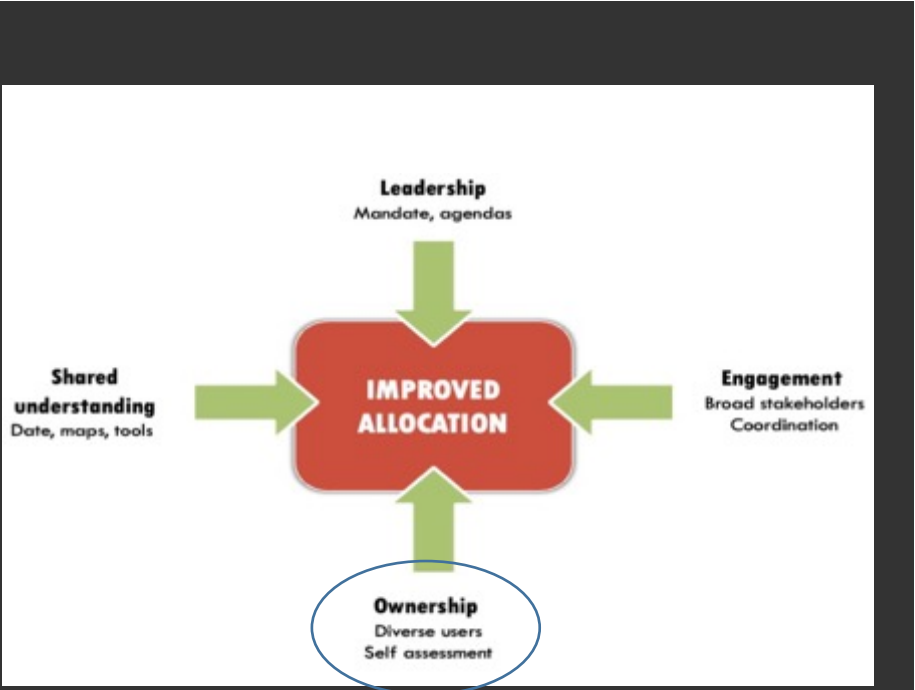


# Stakeholder engagement



- 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



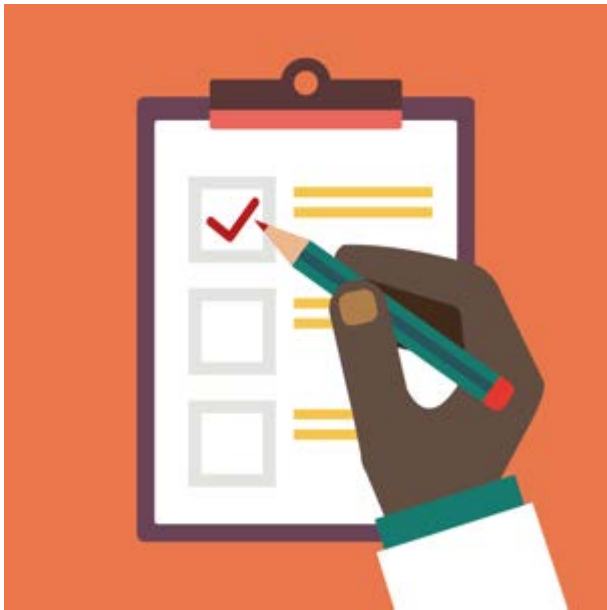


An aerial photograph of a vast agricultural landscape. The terrain is divided into numerous rectangular and irregular plots of land, each with a different color, ranging from light tan to dark brown, indicating various crops or stages of growth. Several prominent circular features are scattered across the fields, which are characteristic of center pivot irrigation systems. The overall scene is a complex mosaic of agricultural activity.

# **Moving Guidelines into Action: the country pilots**

# 5

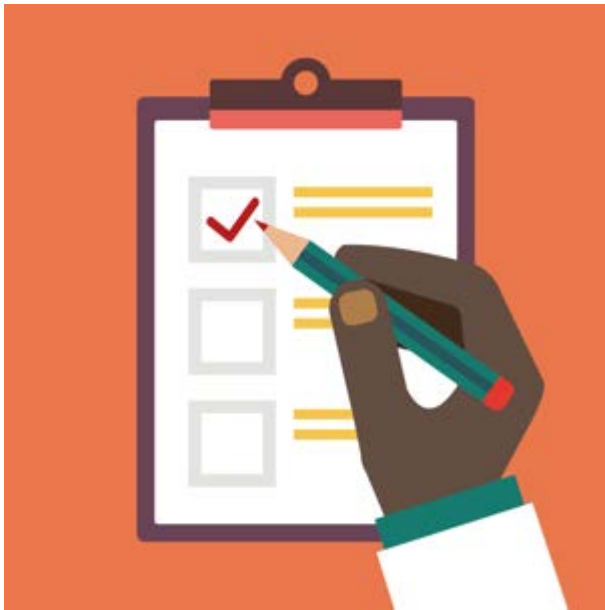
## Selecting Pilots - process



- Understand trends in water use, production, climate in the country (WaPOR, others)
- Use agenda tool to understand and prioritize water allocation challenges in the country (work on this with small group)
- Communicate and engage to wider group of stakeholders
- Preselect possible pilot areas

# 5

## Selecting Pilots – guidance criteria



- Representative for water (allocation) challenges in the country
- Manageable size
- Good chance of improvement
- Positive local ownership and interest
- Data availability



# Work plan for Pilot

INFO

1. Description of area and challenges
2. Proposed improvement in water allocation
3. Proposed activities:
  - Stakeholder engagement (incl role play)
  - Improved water allocation preparation and introduction (use agenda tool)
  - Improved governance arrangements
  - Supporting studies (incl water accounting)
  - Supporting capacity building
  - Monitoring, reporting, sharing





# Thank You

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