Food and Agriculture Organization of the United Nations

CIHEAM IAM BARI

AgWA Partnership for agricultural water for Africa

Emerging practices from Agricultural Water Management in Africa and the Near East

Thematic Workshop

Theme 6

Water Accounting

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Theme 6:
Water Accounting

PRESENTATION OUTLINE

- Introduction to methodology
- Country-specific approach
- Preliminary findings and lessons learned
- Guiding questions for discussion

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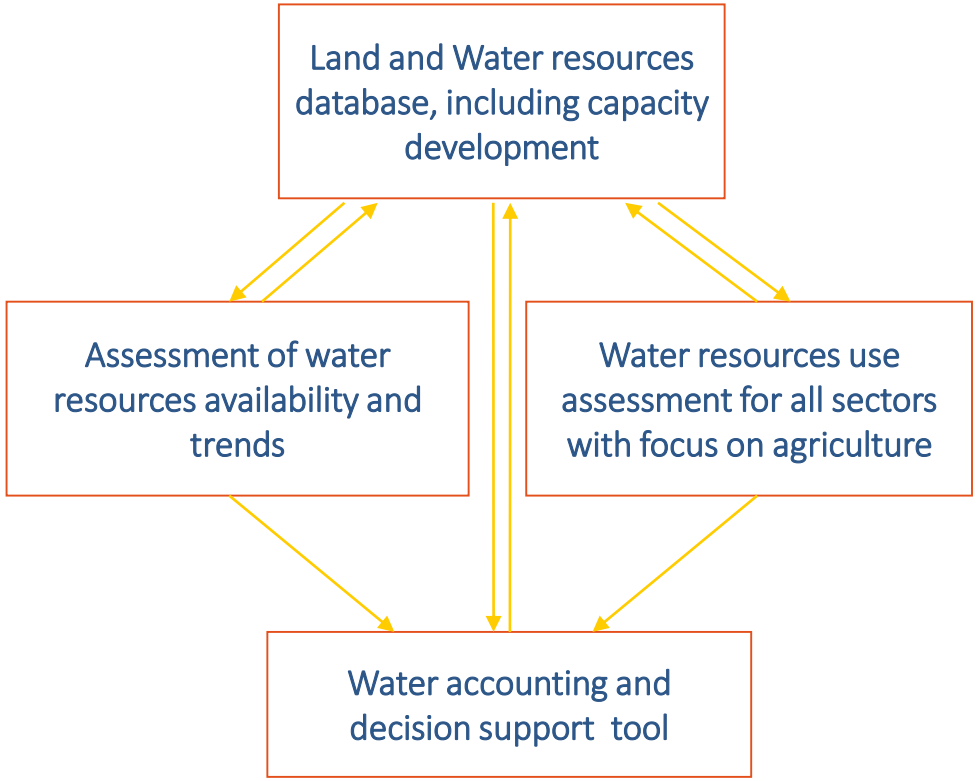
INTRODUCTION TO TOOLS/METHODOLOGY



- Tailored to local context through inception phase
- Focused on same basin of other project components to strengthen basin approach to AWM

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INTRODUCTION TO TOOLS/METHODOLOGY

Land and Water resources database, including capacity development

Review and stocktaking of available information, data gaps identification

Water Accounting - stocktaking of information base			
Category	Variable	Availability (Y/N/Partially) and source	Description of available information
Precipitation	Quantity, trends, inter and intra-annual variability, extreme events		Time period covered, gaps, number of stations, adequacy of monitoring network
Stream flows	Quantity, trends, inter and intra-annual variability, extreme events		" "
Groundwater	Levels of groundwater and trends		" "
Water quality	Types of pollution, status and trends of water quality		Time period covered, gaps, number of stations, adequacy of monitoring network
Basin	Basin and sub-basins delineation		Method, spatial resolution, accuracy, DEM source
Climate	Temperature, wind speed, humidity, sunshine		" "
Infrastructure	Distribution and capacity of water supply, storage and treatment infrastructures		Year(s), completeness and gaps if any
Inter-basin transfer	Location, capacity and operating rules of water import/export systems		Year(s), completeness and gaps if any
Land use	Spatial distribution of land uses and trends		Year(s), classification, spatial resolution
Irrigation systems	Distribution, extent, cropping patterns, irrigation types, return flows		Time period covered, spatial resolution, completeness and gaps if any
Water uses	Withdrawals, consumptive uses in space and time by sector, return flows		Time period covered, sectors covered, informationa available (records/estimates, withdrawals/consumptive use)
Environmental flows	Environmental flows recognition		Recognition year, approach used, application, area of interest

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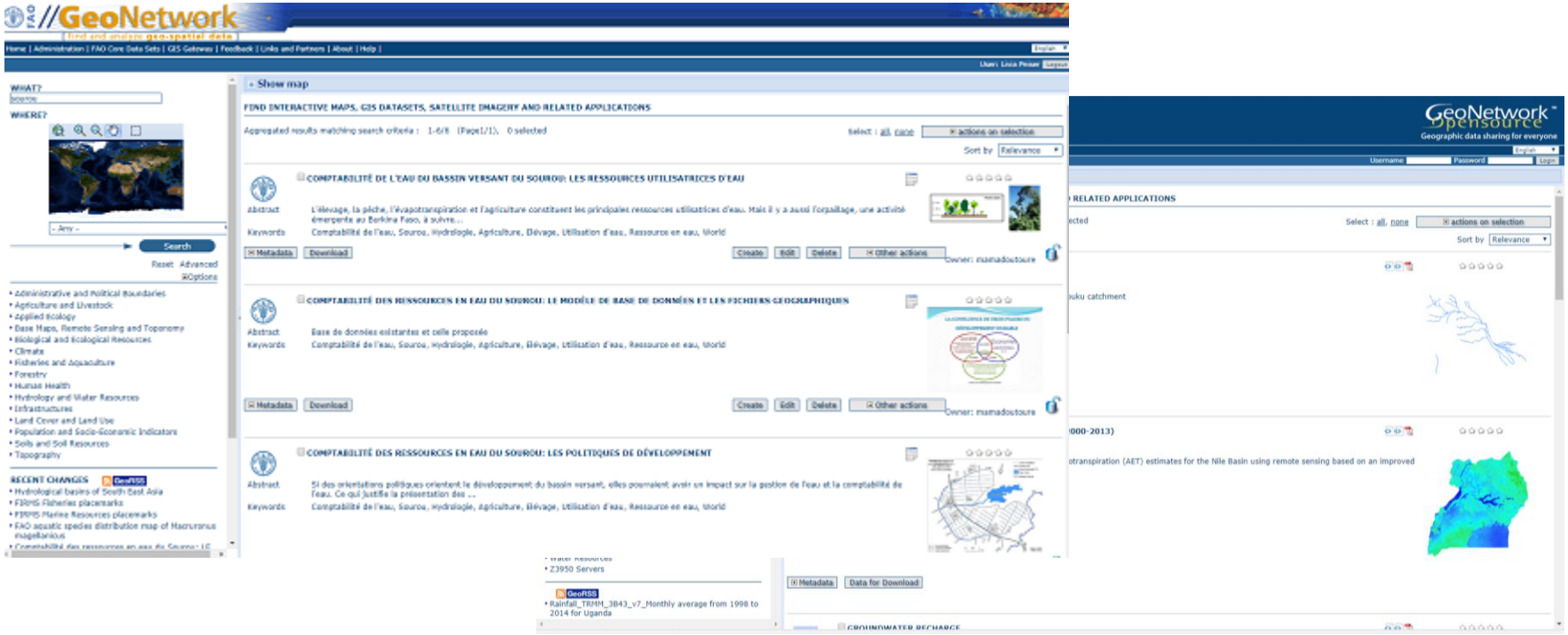
INTRODUCTION TO TOOLS/METHODOLOGY

Land and Water resources database, including capacity development

FAO //GeoNetwork

[Find and analyze geo-spatial data]



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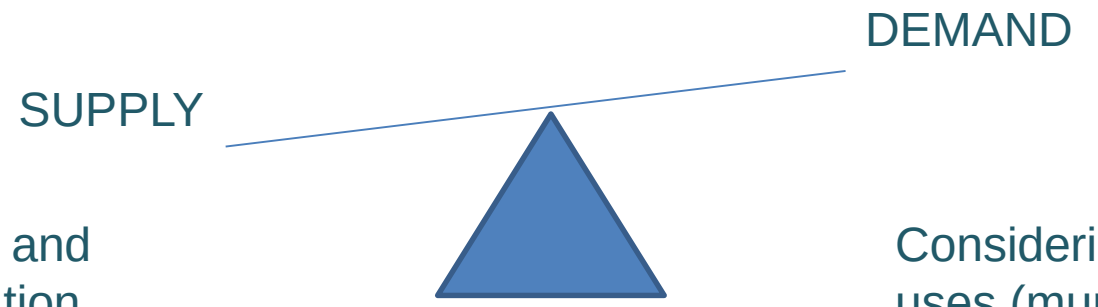
INTRODUCTION TO TOOLS/METHODOLOGY

Assessment of water resources availability and trends

Water resources use assessment for all sectors with focus on agriculture



Analysis of status and trends in precipitation, discharge, groundwater levels.

Considering all water uses (municipal, industrial, environmental) in the domain of interest (basin, watershed)

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INTRODUCTION TO TOOLS/METHODOLOGY

Water accounting and decision support tool

Water balance equation

$$P = Q_{NET} + ET \pm \Delta S$$

Objectives:

- Assess potential impacts on water balance of changes in management (e.g. irrigation expansion)
- Assess whether levels of consumptive use are sustainable
- Identify/quantify components that are difficult to measure (groundwater recharge) assuming they are residual in water balance equation

How:

- Builds on tools and capacities available in the area of interest (model-agnostic).
- Provides water balance analyses, with distinction between **consumptive and non-consumptive uses.**
- Focuses on identified issues and concerns
- Can be RS based, lumped, semi-distributed…or back-of-the-envelope guestimates and fact-checking

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PARTNER IN IMPLEMENTATION

Institut International d'Ingénierie de l'Eau et de l'Environnement

Implementation summary

- Inception phase findings: data scattered among different institutions (DGRE, BAs, etc.). Need for database accessible to different institutions;
- No host institution for local GeoNetwork installation, use of FAO GN;
- Sourou is a complex basin, both tributary and distributary of the Black Volta under natural circumstances, transboundary basin (Mali).

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PARTNER IN IMPLEMENTATION

Agence du Bassin Hydraulique du Tensift

Implementation summary / approach

- Inception phase: meetings with MAPM, ORMVA Haouz, ABHT, LMI-TREMA;
- Land and Water database developed through AGIRE, need for common information base updated and accessible to ORMVA, ABHT and others;
- Issues of concern: understanding the real impact of conversion to drip and “water saving” policies on water balance at basin/aquifer level;
- Focus on Ghdat sub-basin, where Haouz-R3 is located

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PARTNER IN IMPLEMENTATION

NILE-SEC
NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

Implementation summary

- Inception phase findings: Land and Water spatial data developed at MWE, challenges in maintaining the database accessible and documented
- GeoNetwork installation and training on its administration and use for staff of MWE, MAAIF, NBI, Universities
- NBI-DSS application to Mubuku
- Enhanced capacity on L&W database and NBI-DSS

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PRELIMINARY FINDINGS AND LESSONS LEARNED

- WA requires multidisciplinary teams: hydrologist, GIS/DB, irrigation engineer, socio-economic experts, depending on specific issues of concern;
- GeoNetwork (or other equivalent spatial data catalogue and database) is well received, but resources (time) are needed to maintain it and make it useful for all concerned institutions;
- Explore potential for using RS derived ET maps to monitor consumptive use: cross-check with available data, triangulate, quality assessment;
- Challenge: different capacity levels -> Opportunities for sharing experiences between countries;
- Challenge: no pre-defined tool (or model) -> strengthens adoption of existing tools/capacities (ex. NBI-DSS, ABHT, etc.).

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/A number of slides to follow with the attempts to answer questions set for discussion/

Group discussion guiding questions

1. Does the proposed Water Accounting approach respond to the need for better understanding of the status and trends in water supply and demand for all water users in a given domain?

2. Water accounting requires a large amount of data and measurements: how can accounting be effective in realities where there is little overall understanding of dominant biophysical characteristics and scarce data available for calibration and validation of the assessments?

3. Are there adequate solutions to bridge the quantitative information gap in areas where data is not available or sufficient? Remote sensing proves to be adequate in monitoring consumptive water uses but what solutions exist for non consumptive uses?

4. How can water accounting and auditing approaches be applied to foster evidence- and data-based policy making in agricultural water management? Is water accounting useful for decision making only in water scarce areas?