“Water Accounting for improved water allocation”

Virtual Technical Workshop
Improved Water Allocation for Agriculture in the Arab Region
3-4 October 2022

Dr. Salvadore Elga

https://wapor.apps.fao.org/
Water Accounting can support the creation of a shared understanding.
Water accounting is a tool to support decision making
Name comes from financial accounting
Identification and tracking of sources of revenue and expenses

“What Water Accounting makes sense of how much water is available and how to use it”

“What Water Accounting is the systematic quantitative assessment of the status and trends in water supply, demand, distribution and accessibility”

Definitions from: FAO, Water Accounting for Water Governance and Sustainable Development

Reporting system to translate data to useful information
Water Accounting uses a three-step approach

Data collection
- gaps identification

Data analysis
- from data to information

Communication
- making information available to stakeholders
Water Accounting analyses water resources and their use in a specific geographical domain.

**Irrigation Scheme Level**
- Kamping Pouy Reservoir
- Command Area

**Basin Scale**
- Tonle Sap basin elevation, HydroSHED data

**Country Scale**
- Cambodia and the Mekong river system

Bing VirtualEarth and data from the Irrigated Agriculture Improvement Project (Cambodia)
Building a Robust Water Accounting system: Reducing uncertainties and increasing confidence in WA

(1) Know your water: establishing robust water accounting systems

“Water Accounting Guidelines” Draft v0.9 (WB & FAO). Publication expected in November 2022
“Water Accounting protocol”: building blocks of water accounting systems to support Water Allocation

Institutions & governance:
- Stakeholder engagement / participation
- Supportive institutional arrangements
- Communication & awareness raising
- Political support
- Capacity development

Technical:
- Water information management
- Selection or development of a WA framework
- Data & metadata acquisition
- Information analysis & modelling

Applications of WA:
- Management of uncertainty
- Making decisions under deep uncertainty
- Applications of water accounting
  - Policy
  - Action
  - Management

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Many different water accounting systems exist.
Water Accounting Plus (WA+) – a water accounting procedure for complex river basins based on satellite measurements

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Water Accounting Plus (WA+): using RS for water resources management

Rainfall

Evapotranspiration

Land use

Soil Moisture

Water Levels

Groundwater

Rainfall, GPM: NASA Goddard Space Flight Center from Greenbelt, MD, USA [Public domain]
Evapotranspiration, and biomass WaPOR: FAO, IHE-Delft.WaPOR quality assessment
General overview at river basin scale of
- water availability vs water consumption
- non-consumed flows
- manageable vs unmanageable flows
- over-exploitation
- green and blue water
Water demand = 35.0
Irrigation efficiency = 60%
Return flows = 50% of losses
Remote Sensing data can provide vital information about agriculture.

Precipitation over command area:
1,432 mm/year

Annual water consumption over command area:
1,065 mm/year
Seasonal water consumption

Matheswaran et al., 2020. Water Accounting and Productivity. Assessment of four irrigation schemes, Cambodia. Project report for ADB by IWMI
Detailed Water Productivity analysis

Rice yield

Matheswaran et al., 2020. Water Accounting and Productivity. Assessment of four irrigation schemes, Cambodia. Project report for ADB by IWMI
Detailed Water Productivity analysis

Rice crop water productivity

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Detailed Water Productivity analysis

Rice crop water productivity

Scheme average

Potential Target

Crop water Productivity (kg/m³)

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