Under the Patronage of **HRH Prince Faisal bin Bandar bin Abdulaziz**
Governor of Riyadh Region

وزارة البيئة والمياه والزراعة
Ministry of Environment Water & Agriculture

VISION 2030 رؤية المملكة العربية السعودية KINGDOM OF SAUDI ARABIA

منتدى المياه السعودي
saudi water forum SWF 2022
Water Sustainability.. A Responsibility for All

IWMI
International Water Management Institute

Water Accounting: an opportunity for better water management with International case studies

Marwa Ali
Water Resources Management and Water Accounting
International Water Management Institute (IWMI)

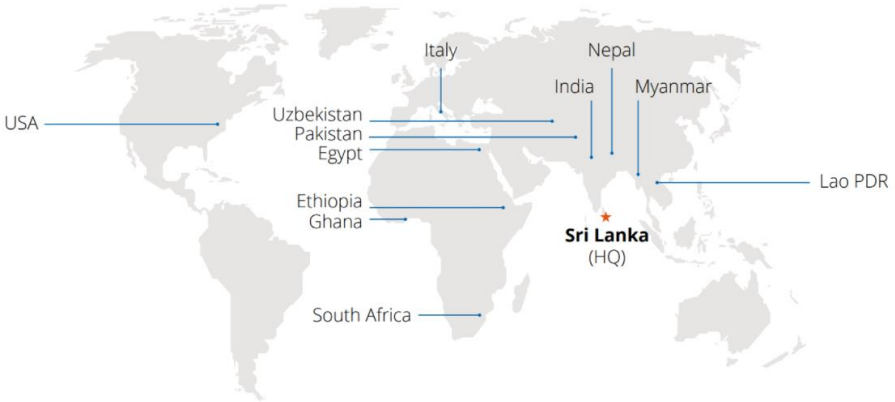
ORGANIZING PARTNERS

EXECUTED BY

TECHNICAL ADVISOR

6-8 March 2022 • Hilton Riyadh Hotel & Residences

Who?



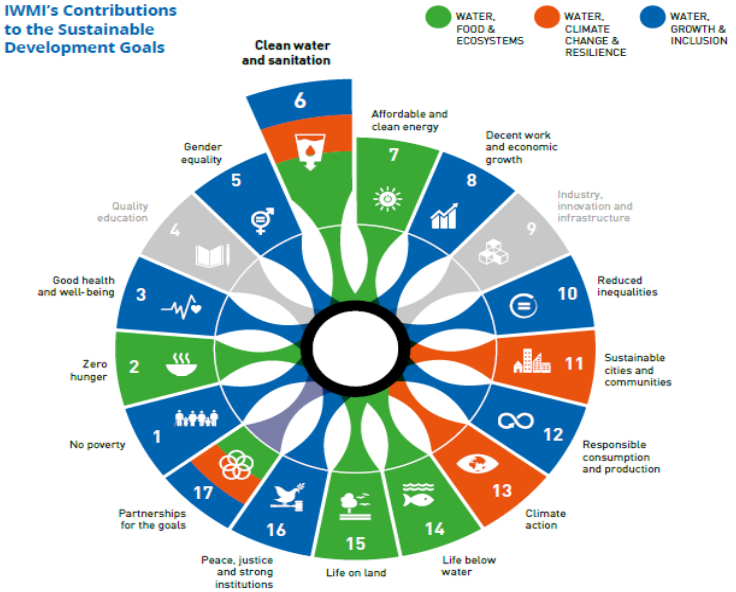
- International Water Management Institute (IWMI)

- Research-for-development (R4D) organization

- The lead center for the CGIAR Research Program on Water, Land and Ecosystems (WLE).

-13 Offices

Our Contribution in SDGs

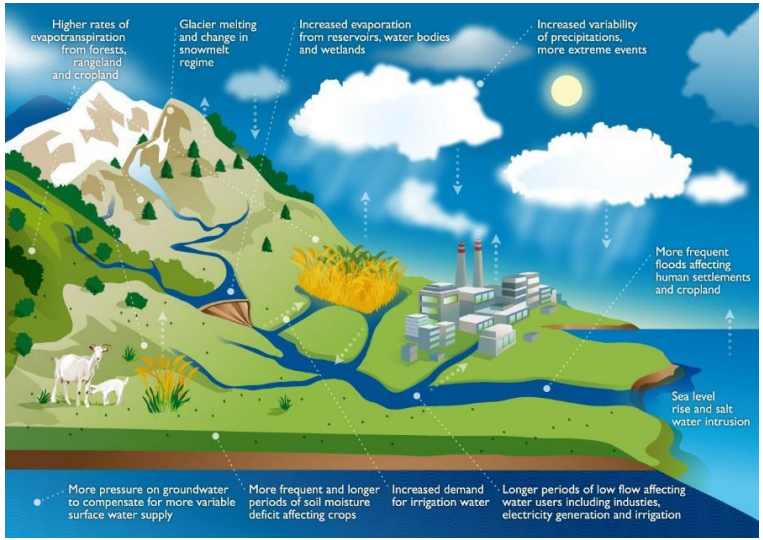


A water-secure world

Water Accounting

Accounting

Definition



Water accounting (WA) can be defined as the systematic quantitative assessment of the status and trends in water supply, demand, distribution, accessibility and use in specified domains, producing information that informs water science, management and governance to support sustainable development outcomes for society and the environment (FAO, 2012, 2016)

Why WA?

Source: www.depositphotos.com/stock-photos/objective.html/

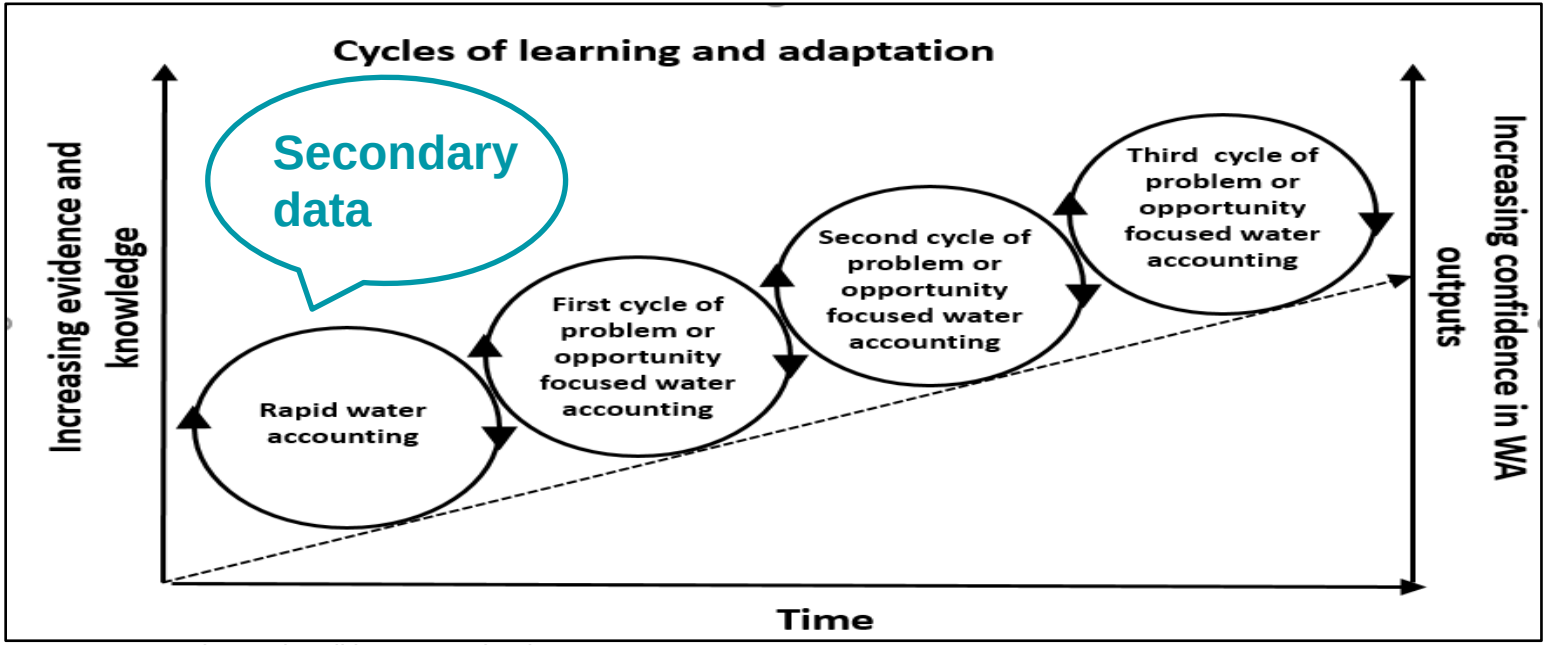
- Provide information on water resources status in a way that can be understood by a nontechnical audience - **awareness**
- Give water users and investors, and other actors confidence in water reporting - **consistent and reliable**
- Inform water resource management and planning processes, and ensure their **transparency**
- **Highlights gaps** and inconsistencies in data, knowledge, and methods, **allowing improvements** to be made to water information base.
- **Provide** decision makers with a **set of policy options** to increase the capacity to cope with water scarcity

Basic concept

Raw Data

Information

Basic concept



Source: water accounting and auditing source book

Water Accounting phases

1. WA Planning
- Identification of problems and key questions

2. Information collection and management
- Information needs assessment
- Information collection
- Data processing and quality control
- Proper storage and sharing of the information

3. Assessment/Analysis
- Conducting analysis needed to answer key questions (e.g. trend analysis)
- Cross checking of the findings with other sources

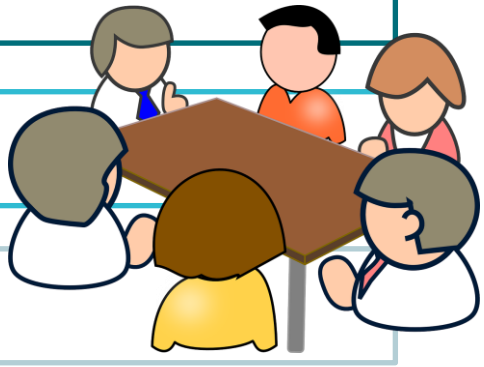
4. Reporting (and scenario analysis)
- Summarizing the methods and findings in a report
- Create sheets, charts, graphs etc. for presenting the findings
- Sharing the results with stakeholders
- Recommendation for the next cycle of WA

Source: Jiro Ariyama – Intro to WA – Nov 2020

1st Cycle: Rapid Water Accounting (RWA)

What?

- Identify the issues, major concerns and achievements



Who?

- A multi-disciplinary WA team

Where?

- Specify the domain

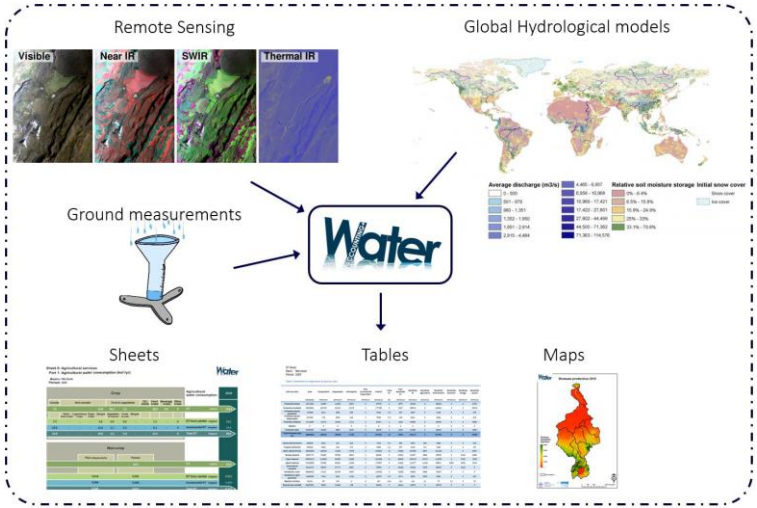
Support?

- Building partnerships

Output: Rapid Water Accounting (RWA)

- **Preliminarily Report**
  - Domain Characteristics
  - Type of information available
  - Source of data
  - Data gaps Identification
  - list of estimations/assumptions made
  - list of previous work
  - simple visual aids (e.g. charts, diagrams)
  - General view on existing issues
  - Recommendation for further analysis and way forward

2nd Cycle: Advanced Water Accounting (AWA)



- Use of technological advances for filling data gaps (e.g. RS, meters)
- Use of spatially distributed data on water
- Ability to capture temporal changes
- Providing wide range of water related information (e.g. benefits, productivity, …)

Skills Needed

- Irrigation & Agro-hydrological modelling
- Open channel Hydraulics, Hydraulics Structures
- Hydrology & hydrological modelling
- Coding
- Hydrogeological modelling
- Spatial analysist (GIS)

•Remote sensing of Evapotranspiration

- Land use / crop mapping
- Field technicians –monitoring, measuring, running filed equipment
- Pollution monitoring, pollutant transport, analysis and modelling (Water Quality)

Tools WA

- System of Environmental-Economic Accounts for Water (SEEA-Water)
- FAO's AQUASTAT
- Australian WA System
- Water Accounting Plus-WA+

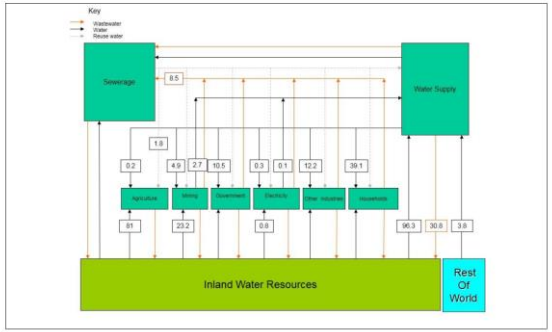
Output: Simple Report

Table 2.1: Physical supply and use for 2015-16 (MCM)

		Agriculture	Mining and Quarrying	Electricity	WUC	Sewage	Government	Other Industries	Total agr & ind	households	Rest of the world	Total
I. Physical use table												
From the environment	1. Total abstraction	81.0	23.2	0.8	96.3	0.0	0.0	0.0	201.3	0	0	**201.3**
	1i.Surface water	32.4	0.7		55.9	0.0	0.0		89.0	0	0	**89.0**
	1ii.Ground water	48.6	22.4	0.8	40.4	0.0	0.0		112.3	0	0	**112.3**
Within the economy	2. Use of water from other economic sectors	2.0	4.9	0.3	2.4	8.5	10.5	12.2	40.5	39.1	0	**79.9**
	3. Total use of water (1+2)	83.0	28.1	1.1	98.7	8.5	10.5	12.2	242.1	39.1	0.0	**281.3**
II. Physical supply table												
Within the economy	4. Supply of water to other economic units	0.0	2.7	0.1	72.1	1.8	0.0	0.0	76.7	0.0	3.8	**80.5**
Into the environment	5. Total returns	0.0	0.0	0.0	30.8	0.0	0.0	0.0	30.8	0.0	0.0	**30.8**
	6.Total supply of water (4+5)	0.0	2.7	0.1	102.9	1.8	0.0	0.0	107.4	0.0	3.8	**111.2**
	7. Consumption (3-6)	83.0	25.4	1.1	-4.2	6.7	10.5	12.2	134.7	39.1	-3.8	**170.0**

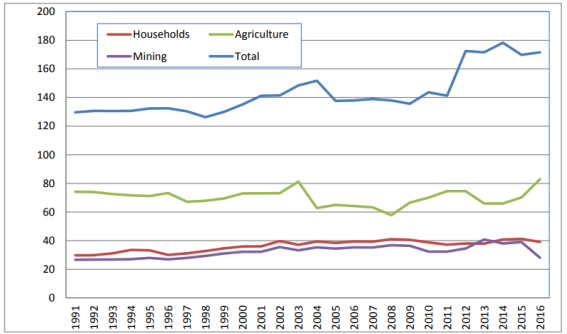
Tables

Figure 2.1: Diagram of physical water supply and use in Botswana, 2015-16 (MCM)



Diagram

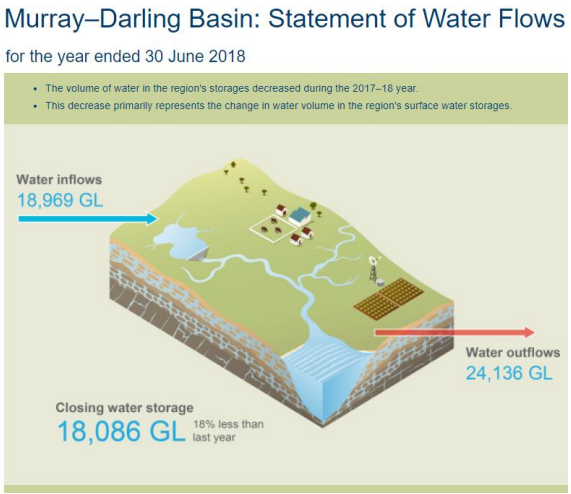
Figure 2.2: Long term time series for water consumption within selected sectors (MCM)

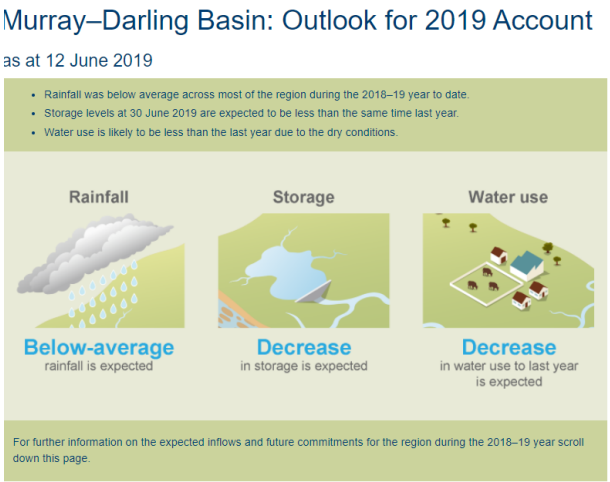


Linear chart

Source: Botswana Water Accounting Report 2015/16

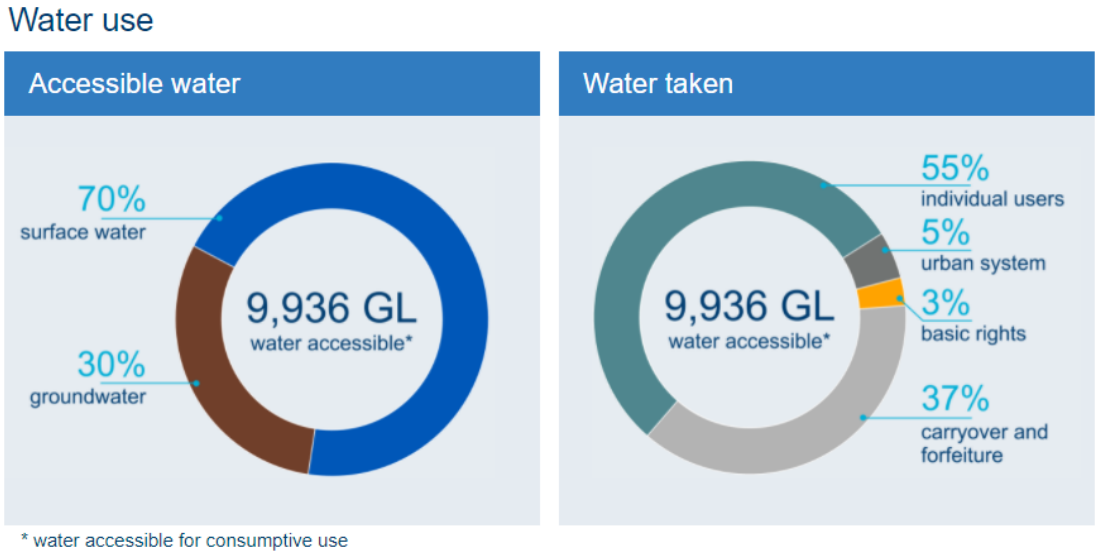
Output: info graphs





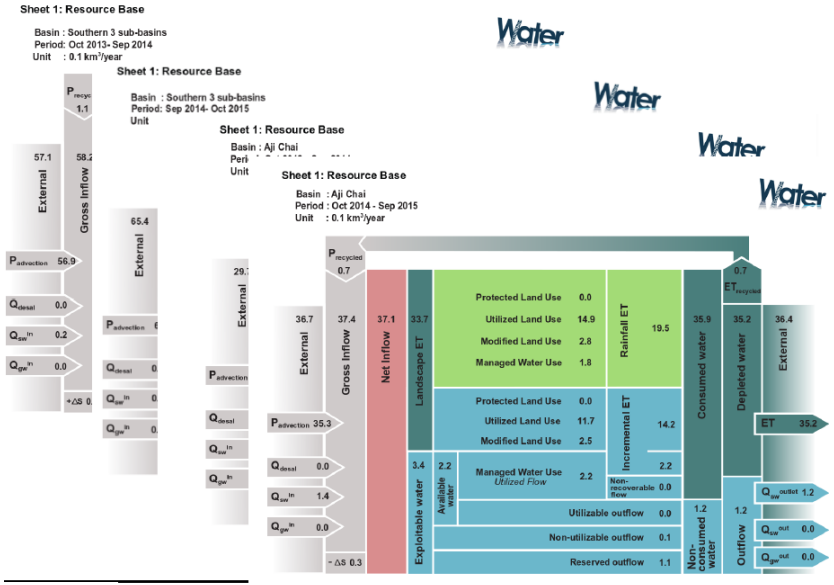
Source: www.bom.gov.au/

Output: charts



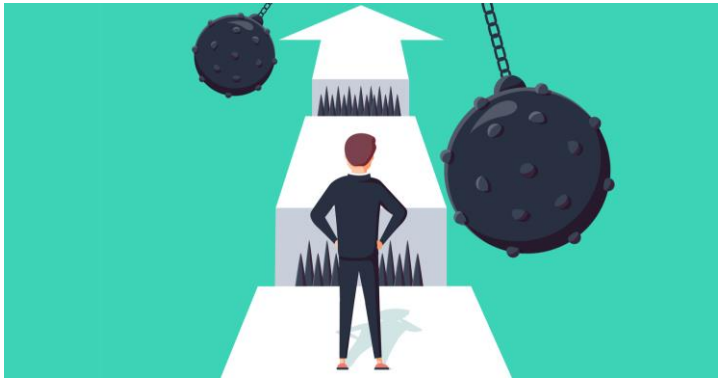
Source: www.bom.gov.au/

Output: Multiple years analysis



Source: WA+

Key challenges



Terminologies: different perspectives from different persons

Data Availability: data scattered between diff. actors

Team harmony: different backgrounds, knowledge

Commitment: between partners

Nature of the study area: Complexity of the boundary selection

Awareness: between all actors for the importance of WA

Lessons Learned

Source: Search Engine Journal

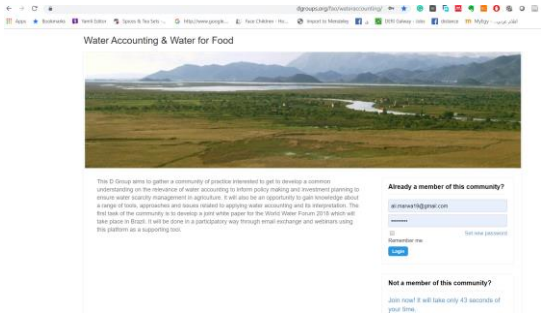
- Adopting common standards for evaluating the resources availability **improve the management**
- **Engagement of senior leadership** has a major impact on the success of the Project
- **Financial support** is necessary for some activities
- **No fixed approach** is needed for a successful implementation
- **Stability of the team** is playing an essential role

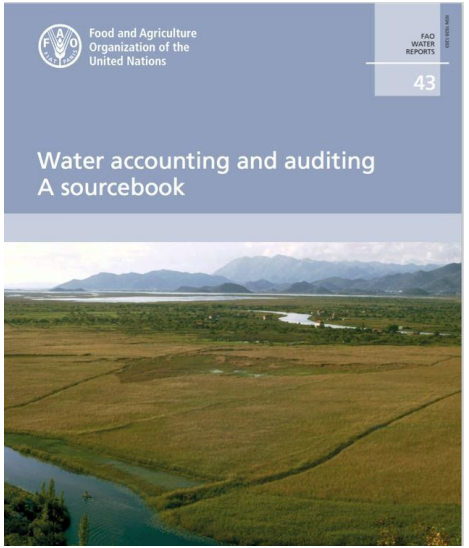
Think Sustainable

Glimpse from previous projects

Sources to know more

- **FAO water accounting and auditing source book: *http://www.fao.org/3/a-i5923e.pdf***
- **Water accounting for water governance and sustainable development:** http://www.fao.org/3/I8868EN/i8868en
- **Join the Community of practice on water accounting :** https://dgroups.org/fao/wateraccounting/





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