

SESSION I.

Diagnosis and Challenges of Agricultural Water Management in smallholders' traditional irrigation systems in Africa

Introducing the diagnostic approaches of assessing
Agricultural Water Management in small-scale irrigation
schemes in Africa

Trends and Outlook:

The current state of smallholders' Agricultural Water
Management in Africa: the consequences of low
water use efficiency and water productivity in food
insecure developing countries

Maher Salman

Senior Water Officer

Food and Agriculture Organization
Land and Water Division



OUTLINE

Figures and Facts

Agricultural Water Management as key to food security

Smallholders' role in AWM

Definitions

Water Use Efficiency and Water Productivity as measures of AWM



AWM Contribution to Sustainable Development Goals

Sustainably increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6 CLEAN WATER
AND SANITATION



End hunger
End all forms of malnutrition
Double the agricultural productivity and incomes of small-scale food producers
Ensure sustainable food production systems and implement resilient agricultural practices
Increase investment in rural infrastructure



2 ZERO
HUNGER



Figures and Facts

Current yields do not exceed the
40 %
of the potential in the continent

5%
of the Africa's potential water
resources are currently
developed

North Africa region withdraws
the **175 %**
of its renewable freshwater
resources

Irrigation agriculture
stimulates economic growth as
investing in small-scale
irrigation in the Sahel stood at
33 %

5%
of Africa's cultivated land is
irrigated

Irrigation scheme efficiency in
Sub-Saharan Africa is the 2nd
lowest in the world at
28 %

Agricultural water withdrawal
counts the
82 %
of total withdrawal in Africa

Agricultural Water Management as key for food security

Physical interventions

Rehabilitation



Upgrading of infrastructure



Construction of new infrastructure



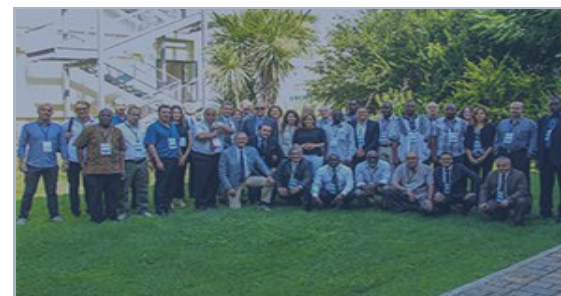
Non-physical interventions

Raising public awareness



Policy approaches

Legal frameworks



Institutions and service delivery



Agricultural Water Management as key to food security

Africa has the **highest prevalence rate** of hunger

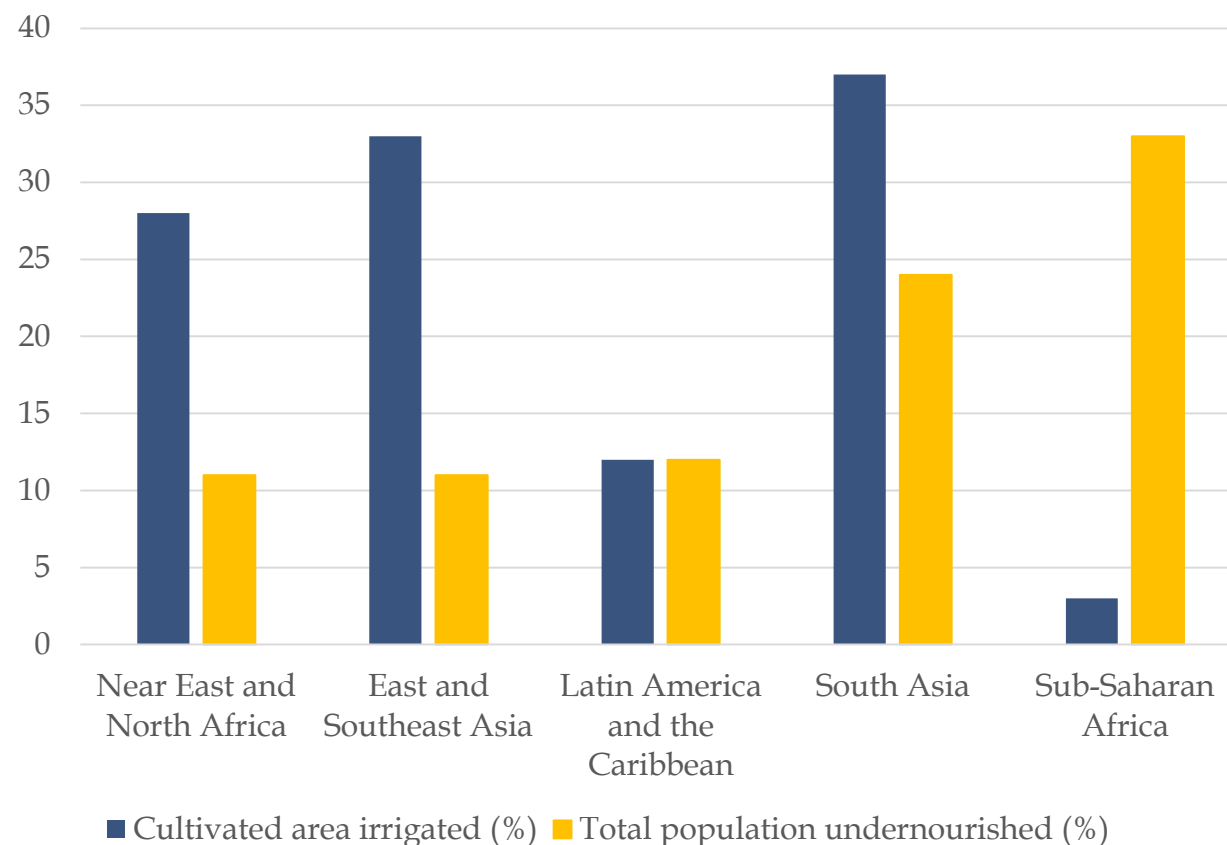
World's growing population will require about **50 % more food** by 2030 compared to 1998

Irrigated land in developing countries will increase by **34 %** by 2030, but the **amount of water used** by agriculture will increase by only **14 %**

Irrigation can **increase yields** of most crops by **100 to 400 %**

Every **10 %increase in yield**, there has been an estimated **7% reduction in poverty** in Africa

Correlation between irrigation and undernourishment (1998-2000)*



Agricultural Water Management as key for food security

Criteria to improve AWM

Institutionalized mainstreaming

lack of strong understanding hinders the application of AWM interventions while institutional approaches would enable broader scale-out

Sustainable water management

most of the world's available water resources are consumed by food and fibre crops

Scalable solutions

Countries' Poverty Reduction Strategy Paper does not feature AWM despite the direct link between food security and AWM – through increasing productivity

Integrated policy out of silos

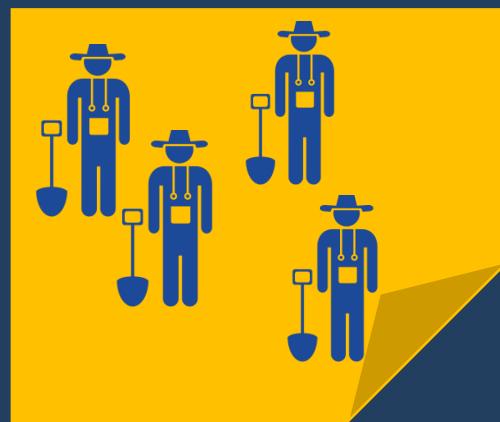
AWM has many stakeholders, it integrates infrastructure with a wide range of products and services for farmers and empower them to take responsibility for their livelihoods

Smallholders' role in AWM

Out of the 2.5 billion people in poor countries living from food and agriculture sector, **1.5 billion** people live in **smallholding** households.



Smallholder farms in Sub-Saharan Africa represents the **80 %** of total number of farms (around 33 million)



Majority of the smallholders applies **surface irrigation** despite its low irrigation efficiency



AWM interventions can significantly increase water use efficiency, for example farmers who switch from surface irrigation to **localized irrigation** can cut their water use by **30 to 60 %**



Water Use Efficiency and Water Productivity as measures of AWM

AWM



WUE



WP

Agricultural Water Management:
„continuum from rainfall management through to irrigation for food production, including: field water conservation practices, water harvesting, supplemental irrigation, ground water irrigation, surface water irrigation and drainage - considering both development and management of water for food.” (CAADP, AgWA)

Water Use Efficiency:
“the ratio between effective water use and actual water withdrawal. It characterizes how effective is the use of water.”

Water Productivity:
“measure of the economic or biophysical gain from the use of a unit of water consumed in crop production”

Water Use Efficiency and Water Productivity as measures of AWM

Evolution of Water Productivity



Enhancing CWP at **plant level**: most significant improvements come from breeding technology

Enhancing CWP at **field level**: crop selection, planting methods, minimum tillage, synchronized irrigation, nutrient management, improved drainage, etc.

Accounting CWP: land-use planning, improved irrigation scheduling, conjunctive management etc.

Policy tool for CWP: promoting government intervention, sufficient operation and maintenance, policies and incentives, etc.

Water Use Efficiency and Water Productivity as measures of AWM

Objectives of Water Use Efficiency:

- Water resources management
- Service to irrigated agriculture
- Cost-effectiveness of infrastructure management



Higher focus on capacity building to sustain WUE results



Improving design for more efficient operation and management



More accurate measurement and recording of water services



Better harmonization and regulation with irrigation system



Water Use Efficiency and Water Productivity as measures of AWM



Food and Agriculture
Organization of the
United Nations

Water Use Efficiency



Integrated approach to enhance
water use efficiency

Crop Water Productivity



Crop growth model to increase
crop water productivity

Special thanks for our further speakers to lead us
out of the rabbit hole

