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Water Management for Sustainable Agriculture Production

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Water in the Agenda 2030



"Water is a precious resource, crucial to realizing the Sustainable Development Goals, which at their heart aim to eradicate poverty"

> Ban Ki-moon, UN Secretary General



Water withdrawals





High Income

Low Income

Domestic
Industrial
Agricultural

Globally, agriculture accounts for 70% of water withdrawals



Proportion of total water withdrawal withdrawn for agriculture

Agricultural water withdrawal as percentage of total water withdrawal for agricultural, municipal and industrial purposes





Future importance of irrigated agriculture



- Food production must increase significantly by 2050 to meet the demand of the world's growing population (UN, 2009)
- 60% of the extra food requirement in the future should come from irrigated agriculture (FAO, 1996, World Food Summit)



Projected Impacts of Climate Change in Africa

Stress on water resources



Water scarcity less than 1 000 m³/person/year Water stress

1 000 to 1 700 m3/person/year

Water vulnerability 1 700 to 2 500 m³/person/year

Freshwater Stress and Scarcity in 2025



- Developing countries are highly dependent on water for their growth and development
- Many developing countries have low investment in irrigation systems, dams, and ground water and do not have enough water storage to manage demand
- Discharge reductions for the largest African water basins (Niger, Chad and Senegal) could be as high as 40 to 60%
- By 2050 the area experiencing water shortages in Sub-Saharan Africa will increase by 29%
- The number of African countries experiencing water stress will rise to 18 and affect 600 million people (WB)
- Due to the transboundary nature of many water basins, conflicts over water resources will be exacerbated

Current situation

- In Africa, only 7 percent of arable land is irrigated, with an even lower 4 percent in sub-Saharan Africa.
- 93 percent of the African farmers rely on rainfed agriculture for their livelihoods.
- Agricultural growth is key to reducing poverty in Africa and driving economic development.
- Africa is well endowed with water resources, yet water withdrawals are less than 3 percent of total renewable resources.
- Additional investment in agricultural water management would pay great dividends.

An integrated approach building water resilience in Sub-Saharan Africa (SSA)

- Establish and vulgarize knowledge based good practices on water development, conservation and management
- Establish appropriate infrastructure at appropriate level
- Coordination of institutions' activities and harmonization of water related policies and strategies.
- Establish and strengthen water users' associations and water boards for proper water governance,

Improved water control and watershed management in a rain led environment



An integrated approach building water resilience in Sub-Saharan Africa (SSA)

- Build reliable long-term data on water resource (Surface and Groundwater). The importance of collection of reliable data on water resource on many consecutive years is yet to be anchored in many government and non-government institutions.
- Increase number of water specialists in all fields (Engineering, Governance, Administration, Socioeconomic development, health, legal and ITC related Environment and ecosystems)

Appropriate irrigation development

- In SSA, the maintenance of many large-scale irrigation schemes was no longer ensured by government money and some irrigation schemes were abandoned. The large irrigation schemes are now only viable if owned by private entities.
- Small-scale irrigation schemes are the only option affordable and manageable by farmers or groups of farmers. This is being the standard for many SSA countries in terms of irrigation development.



How to build stronger effective partnerships between the public and private sectors to build Africa's water security?

- Favorable and clear policies, strategies and laws are crucial to engage private sector operators.
- Human Resources (specialists) and infrastructure development
- Not only water related legal instruments will have to be developed but also all business related legal instruments will be well defined to protect businesses.

Opportunities offered by FAO for sub-Saharan Africa agriculture response to the climate crisis

- Improved water control and watershed management in a rain-fed environment
- Farmer led irrigation;
- Small scale irrigation technologies;
- Solar Powered irrigation systems;
- water access technologies;
- water governance





• Farmer-led irrigation Development (FLID)



FAO's tools on land and water at regional and global levels

CROPWAT: (CROPWAT 8.0 for Windows), a software program developed by the FAO's Land and Water Division for the calculation of crop water requirements and irrigation requirements based on soil, climate and crop data.

CLIMWAT: a climatic database to be used in combination with the computer program CROPWAT and allows the calculation of crop water requirements, irrigation supply and irrigation scheduling for various crops for a range of climatological stations worldwide.

Water accounting... in its simplest form Water accounting helps to make sense of how much water is available and how it is allocated to make sure the taps do not run dry. But it is much more than this. Water accounting is about understanding the hydrological cycle, assessing spatial and seasonal variations in rainfall with unpredictable extremes of floods and droughts. It must take account of medium and longterm changes in demand across all water users - communities, farming, energy, industry, and the environment - and inform water infrastructure investment such as pumping, storage, and planning for climate change. (https://www.fao.org/3/I8868EN/i8868en.pdf)

FAO's tools on land and water at regional and global levels (Cont')

The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the context of national food security (VGGT) (<u>https://www.fao.org/3/i2801e/i2801e.pdf</u>);

The Voluntary Guidelines for Sustainable Soil Management (<u>https://www.fao.org/3/bl813e/bl813e.pdf</u>);

The Principles for Responsible Investment in Agriculture and Food Systems (RAI) (<u>https://www.fao.org/3/au866e/au866e.pdf</u>);

Water Governance, Sustainable Water Management, Water Scarcity in Agriculture, Water Platform and Agroecology, Climate smart Agriculture (CSA) and Farmer Field School (<u>https://www.fao.org/wasag/resources/en/</u>).

WaPOR, FAO's portal to monitor Water Productivity through Open access of Remotely sensed derived data, monitors and reports on agriculture water productivity over Africa and the Near East. (<u>https://www.fao.org/in-action/remote-sensing-for-water-productivity/wlpa-introduction/introduction/en/</u>)

Countries are invited to widely use these tools to develop policies and programs in favor of food and nutrition security.

SPIS Main System Components- Mounting systems







Conclusions and Recommendations

- 1. Sustainable use of water resource requires holistic, integrated and concerted long term planning;
- 2. Available water technologies should be adapted to the local context and made affordable to users according to their socio economic situation.
- 3. All programs and projects should target multipurpose use of available water resource. It is in that sense that all programs should target the Improvement of the efficiency and diversity of water use and the productivity of agricultural systems for Food Security and Nutrition;
- 4. All available sources of water should be considered even if it requires long term sensitization for mindset change/adaptation;
- 5. FAO is ready to engage into partnership to the development / consolidation of inter-sectoral partnerships at the global and regional levels, and their declination to the national level /representations in favor of the mobilization of funding including strengthening the food-water-energy-environment security link.

THANK YOU FOR YOUR ATTENTION

