



## Water for Production in Uganda. Progress and constraints in reducing the dominance of rain-fed agriculture

### Overview

Water for Production (WfP) refers to development and utilisation of water resources for productive use in crop irrigation, livestock, aquaculture, rural industries, energy and other commercial uses. Globally Water for Production accounts for over 80% of water withdrawn for use. However, in Uganda, less than 2% of water is used in production but there is a sharp increase in demand primarily due to climate change and degradation of natural resources (MWE, 2020).

For Water for Agricultural Production(WfAP)/Development, the Ministry of Water and Environment (MWE) is responsible for “off-farm” activities, while the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is responsible for “on-farm” activities. “Off farm” refers to development of water sources and transmission (bulk transfer to farm gates) and “on-farm” refers to irrigation infrastructure, water use and management. The MAAIF and MWE undertake several interventions in the development and utilization of water resources for productive use in crop irrigation, livestock, aquaculture, rural industries and other commercial uses to improve people’s livelihoods in rural areas through increasing the storage volumes for water for production. This is being done through construction of large and medium irrigation schemes, small scale irrigation schemes, earth dams, valley tanks, deep boreholes and bulk water transfer schemes.

These interventions contribute to the third National Development Plan (NDP III) objective of: Increase production and productivity, and the corresponding intermediate outcomes which are: a) Increased cumulative water for production storage capacity; b) Increased area under formal irrigation; and c) increased percentage of functional water for production facilities and d) increased percentage in irrigable area.

The main thrust of this policy brief is on Water for Agricultural Production/Development. Water for agricultural production refers to the availability of water within reach of farmers for crop and animal husbandry among others. This policy brief examines the progress and constraints of Government of Uganda (GoU) efforts to reduce dominance of rain fed agriculture in Uganda. The assessment is based on monitoring findings from the Budget Monitoring and Accountability Unit (BMAU) and other secondary data sources for FY2021/22.

### Introduction

The country is increasingly facing a major challenge of prolonged droughts and unexpected floods due to climatic change and variability. It is predicted that the country will be water stressed by 2025 (UBOS, 2022).

Cognizant of the climate variability and the importance of water for production, the GoU prioritised during the NDPIII period to increase access and use of water for agricultural production through five sub-interventions: i) Completion of the irrigation schemes under construction/rehabilitation namely: Doho Phase II, Mubuku Phase II, Wadelai, Tochi, Rwengagu and Olweny; ii) construction of new irrigation schemes: Ngenge, Acomai, Atari, Amagoro, Nabigaga, Rwimi, Nyimur, Musambya, Kibimba, Kabuyanda, Matanda, Igogero, Angololo, Namatala, Namulu, Sipi, Unyama, Lumbuye, Palyec, Porongo, Lopei and Imyepi.

The other sub-interventions were: iii) development of infrastructure and services for bulk water storage and transfer including water abstraction systems, transmission mains, water pumping systems, storage tanks, and water distribution networks; iv) development of solar-powered small-scale irrigation systems for smallholder farmers

### Key Issues

- The MWE and MAAIF missed three (75%) of the four water for production intermediate outcomes targets that contribute to increase in production and productivity partly due to poor planning, and sequencing of project activities, and delayed completion of the Resettlement Action Plan. Consequently 83% of the agriculture communities in Uganda continue to depend on direct rain in season as the source of water for production.
- Poor coordination and mandate overlaps between MWE and MAAIF partly explains the limited access and use of water for production facilities among the communities engaged in agriculture.
- Low access to agriculture finance excludes small holder farmers from accessing UglIFT microscale irrigation technologies. The situation is worsened as the project design requires 100% farmer co-payment.

outside conventional irrigation schemes; and v) promotion of water use efficiency in agricultural production.

### Progress

The MWE and MAAIF completed Doho phase II (Butaleja), Mubuku phase II (Kasese), Tochi (Oyam), Rwengaju (Kabarole), and Ngenge (Kween) and technically commissioned. The five completed schemes

were utilized by the farmers who recorded improved production and productivity due to increased access to water for production.

For instance, in Doho II scheme the farmers recorded an improvement from 700kg of yield per acre to between 1,100kg to 1,200kg. The yield was however lower than expected due to a lack of fertiliser and pesticide application. The MWE and MAAIF however missed three of the four water-for-production intermediate outcomes targets that contribute to an increase in production and productivity (Table 1).

**Table 1: Water for Production (WfP) Indicator Performance for FY2021/22**

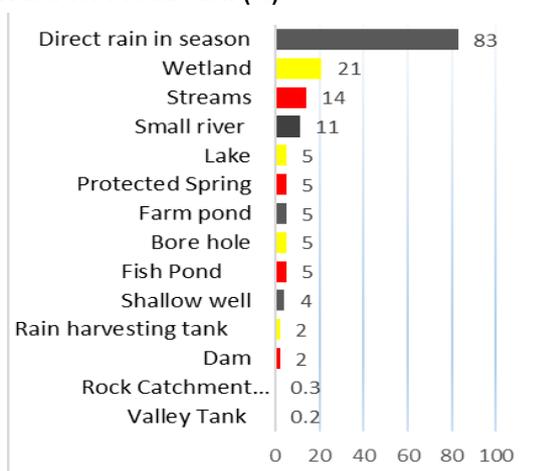
Indicator	Target	Achieved
The cumulative water for production storage capacity (Mcm)	55.72	52.48
Area under formal irrigation ( ha)	19,938	22,797
% of functional water for production facilities	88.2	68
% increase in irrigable area	81	77

Source: ABPR-2022, Agro-I Performance Report 2021

The unmet need for WfP persists despite the progress as 83% of the agriculture communities in Uganda depend on direct rain in the season as the source of water for production, followed by wetlands (21%) and streams (14%) (Figure 1). The least used operational sources of water for production included valley tanks (0.2%) and rock catchment rainwater harvesting (0.3%) (UBOS, 2022).

The limited availability of valley tanks and earth dams as operational sources of water for production especially for livestock among other uses underscores the unsatisfactory performance of the MAAIF Department for Agriculture Infrastructure, Mechanisation and Water for Production and MWE.

**Figure 1: Operational Community Source of Water for Production (%)**



## Progress Details

### i) New irrigation schemes constructed

Major new large irrigation schemes were behind schedule for at least two years for varied reasons. Delayed completion of the Resettlement Action Plan (RAP) mainly affected Atari in Kween where the grant financing agreement between GoU and JICA requires full compensation before the commencement of works. Inadequate capacity of contractors and flooding and heavy rains mainly affected Acomai Irrigation Scheme in Bukedea and Bulambuli where work either slowed or halted, while procurement delays mainly affected Kabuyanda Irrigation Scheme in Isingiro District.

### ii) Multi-purpose water development schemes including valley dams and tanks developed

By 30<sup>th</sup> June 2022, works were in advanced stages for the construction of 11 valley tanks in the districts of Katakwi, Pader, Omoro, Adjumani, Kyotera, Kibaale, Gomba, Kazo, Moroto and Kotido and the rehabilitation of three valley tanks in the districts of Amudat, Mubende and Abim were ongoing.

Examples of completed works included: Opiyai valley tank (Soroti). The 35,000m<sup>3</sup> storage capacity tank was constructed to boost the availability of water to 15 existing fish ponds, and Opiyai Small Scale Irrigation Scheme. Three of the fish ponds were stocked with fingerlings, whereas seven fishponds were undergoing clearance for restocking following a period of non-functionality due to a lack of adequate water supply in the dry spell. The Opiyai valley tank supported **46 fish farmers, and 34 vegetable farmers** in the small-scale irrigation scheme.

In Kamuli District, MAAIF completed the excavation of a community valley dam in Kagumba Parish. The beneficiaries were very happy with the government intervention as it improved the reliability and availability of water for animals in the community. The beneficiaries recommended improved publicity of the available interventions to the farmers to enhance improved access to water for production.

### iii) Microscale Irrigation with support under UgIFT

The aim of the Uganda Intergovernmental Fiscal Transfers Program (UgIFT) is to support farmers to purchase and use individual irrigation equipment through a co-funding/cost-sharing modality. The program targets to support at least 5,000 smallholder farmers in the selected 40 District Local Governments (DLGs) to purchase and use micro irrigation equipment every FY.



By 30<sup>th</sup> June 2022, the Program had registered 21,300 farmers expressing interest (largely exceeding the target of 10,000 EOIs), and 6,960 successful farm visits indicating steady progress towards the target of 5,000 farmers per year.

Actual installations of micro-scale irrigation systems to the selected beneficiaries as planned were minimally done as the majority (85%) of the districts monitored did not absorb the disbursed funds partly due to late or failed farmer contributions, late initiation of procurements and late completion of works. Districts (15%) that flouted the project guidelines and allowed farmers to make their co-payment contributions in instalments registered progress in project uptake though at a slow pace as farmers completed their instalments in June 2022.

#### **iv) Solar-powered small-scale irrigation systems for small-holder farmers outside conventional irrigation schemes developed**

As of 30<sup>th</sup> June 2022, only 32 of the 95 schemes were under construction. The bulk of the small-scale schemes (50 schemes) were to be constructed under Project 1666 Development of Solar Powered Irrigation and Water Supply Systems (also referred to as Nexus Green). The schemes under Nexus Green did not commence construction as they were required to undertake feasibility studies and designs which were not done before project initiation underscoring poor planning and sequencing of project activities.

### **Constraints**

#### **i) Weak policy framework**

The current shared mandate in Water for Agricultural Production (WfAP) facilities between MWE and MAAIF affects the effective and efficient attainment of WfAP objectives. This is partly because of a lack of coordination, and mandate, roles and responsibilities overlap among MWE and MAAIF partly demonstrated by the presence of staff with agronomic skills in MWE which is responsible for off-farm, and irrigation development engineers in MAAIF which is responsible for on-farm activities.

In addition, the expected relationship between MWE and MAAIF has not been achieved due to the lack of a well-coordinated procedure and policy for the handover of the completed schemes to MAAIF, demonstrated by the presence of MWE hired operation and maintenance personnel at the completed large irrigation schemes. Despite the shift to the programmatic approach to planning, budgeting and implementation, MWE and MAAIF continued to plan and budget as independent

entities for WfAP. Uncoordinated budgeting impacts investments for WfAP hence spreading resources thinly.

#### **ii) Limited access to agriculture financing, and high incidence of poverty**

Smallholder farmers experience constrained access to agriculture finance to support the acquisition of water for production technologies. They lack the collateral required by the commercial banks, this is exacerbated by the limited financial inclusion in Uganda where 51% of households keep money at home/secret place.

Similarly, the uptake of Agricultural finance under block allocation of the Agriculture Credit Facility of the Bank of Uganda which does not require collateral also remained ineffective since most beneficiaries especially in marginalised regions of North and East mainly accessed microloans ranging from Ug shs 100,000 to Ug shs 500,000. The loans were to finance farm inputs like pesticides and fertilizers for farmers in the region and could not support the acquisition of water for production technologies. This was partly due to limited awareness of the maximum threshold of Ug shs 20 million under block allocation and limited aspirations among the farmers.

#### **iii) Poor or inappropriate project design or implementation procedures**

The project designs/implementation modalities for interventions that support the acquisition of water for production technologies through co-funding such as UglIFT are inappropriate. These require full payment of the farmer contributions which cannot easily be attained especially among the rural population where nearly 33.8% of them are living in poverty.

#### **iv) Substandard irrigation technologies on the market**

Nearly half of the irrigation systems established in Kayunga District as demonstration sites under UglIFT were not functional six months after installation by 25<sup>th</sup> January 2022. For instance, the sprinkler irrigation system established at a secondary school in Kinyala Village, Nateeta Parish, Nazigo Sub-county was not functional. The sprinklers were weak and often blocked thus requiring frequent repairs, with some failing to rotate and thus sprinkling water in the same place and at short distances.

Similarly, the sprinkler irrigation system installed on Mr. Lwanga's farm in Kabalila Village, Nakivubo Parish, Kitimbwa Sub-county, Kayunga District was non-functional. The irrigation system was installed in



the coffee and banana plantation in August 2021, with two sources of power – solar panels and generator. The solar system worked for one month. In addition, the quality of the sprinklers was poor as they got blocked and did not function well within the one month of operation. The prevalence of substandard systems is exacerbated by limited quality assurance, due diligence and connivance during procurement.

**v) Delayed completion of Resettlement Action Plans (RAPs) exacerbated by inappropriate financing conditions**

Works at Atari Irrigation Scheme in Kween District had not commenced even with 75% land acquisition. This was because the grant financing agreement between JICA and GoU required 100% compensation before the commencement of works. Similarly, the time overrun (extended three times and not completed) at Wadelai in Pakwach District Irrigation System was largely attributed to delays in land acquisition and RAP. In addition, the project-affected persons often dispute approved values from the Chief Government Valuer as speculators perceive the government's need for the land as an opportunity to gain more money than the true value of the land.

**vi) Low prioritization of fuels and lubricants to support the timely completion of works**

Despite the heavy investments in water for production to support the excavation of community earth dam, and valley tanks among others under MAAIF's Improving Access and Use of Agricultural Equipment and Mechanization Project, the majority of the allocated sites during FY2021/22 had not commenced, while those that started were ongoing at a slow pace mainly due to diversion of logistics to other activities. In addition, other reported sites could not easily be traced for monitoring due to a lack of clarity on the geographical locations.

**vii) Limited community awareness of government programmes that support water for production**

All the beneficiaries visited reported that they learnt about the intervention of the excavation of community dams, and valley tanks through relatives, or friends who knew staff working at MAAIF as opposed to other more effective awareness creation mechanisms such as mass media and mobilisation campaigns among others. This underscored the missed opportunity that farmers and communities can exploit to improve water for production. The services of the Department of Agriculture Infrastructure, Mechanisation and Water for

Production are not well known at the grassroots to be demanded.

**Conclusion**

The GoU efforts to reduce rain-fed agriculture remain unsatisfactory as the plans are dismally being translated into outputs and outcomes. The high prioritisation of WfAP by the government has the potential for abuse as it attracts high-value allocations. There is therefore an urgent need for increased surveillance, monitoring and inspection of the water for production initiatives to ensure that the goal of reducing high dependence on rain-fed agriculture is attained.

**Recommendations**

- Review the mandates of MAAIF and MWE, and allocate the responsibility of WfAP to a single ministry to improve effectiveness, efficiency and accountability.
- Restructure UglIFT to allow poor farmers to contribute their co-payment in instalments.
- Uganda National Bureau of Standards (UNBS) should strengthen the monitoring and inspection of irrigation systems equipment. Certification of irrigation equipment dealers can reduce counterfeit products due to the increased traceability of the suppliers.
- The Directorate of Debt and Cash Policy should appropriately advise the Minister of Finance, Planning and Economic Development to renegotiate any financing agreements that require 100% compensation due to unavoidable technicalities in land acquisition. The provision for compulsory land acquisition should be explored to reduce time delays in RAP.
- The Office of Auditor General (OAG) should conduct a value-for-money and forensic audit of MAAIF's Improving Access and Use of Agricultural Equipment and Mechanization Project.

**References**

MFPED (2022), Annual Budget Monitoring Report, FY2020/22.  
UBOS (2021), Uganda National Survey Report, 2019/20.  
UBOS (2022), National Service Delivery Survey, 2021 Report.  
MWE (2020), Ministry of Water and Environment Sector Performance Report.  
MAAIF (2020) Agro-Industrialization Programme Annual Performance Report, FY2020/21.  
MFPED (2022) Annual Budget Performance Report FY2021/22.  
MWE (2021), Natural Resources, Environment, Climate Change, Land and Water Management Programme Annual Performance Report FY2020/21.

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