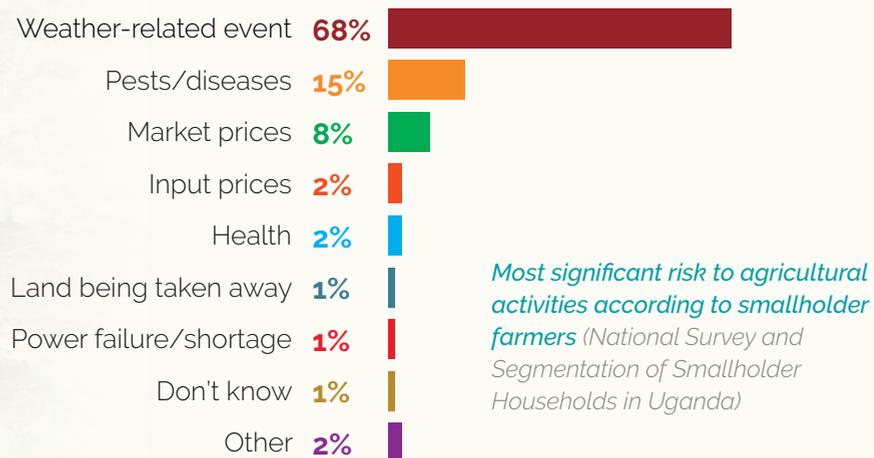


Ugandan Smallholder Farmers Lead Climate Adaptation through Irrigation



Climate change is forcing smallholder farmers in Uganda to adapt to less favorable rainfall patterns

Historically, two rainfed cropping seasons have secured annual production across most of the country. Over the last decade, however, the long rains have shortened from nine to six or seven months, the onset of rains has been uncertain, and long dry spells within the wet season have reduced production. **Smallholders – the vast majority of farmers in Uganda – now perceive weather to be their greatest production risk.** When facing weather-related shocks, they must adapt quickly to sustain their crop production and livelihoods. The adoption of irrigation is one quick response.



The expansion of irrigation for increased agricultural production – for both internal and regional export markets – is a priority growth path for Uganda.

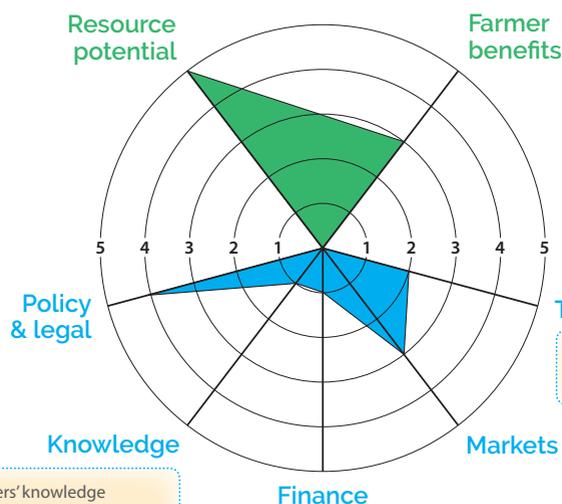
Currently, **less than 2% of the irrigation potential is utilized**, with only 77,000 ha of irrigated land on record. The National Irrigation Policy sets the ambitious target of 1,500,000 ha of total irrigated area by 2040. Half of the irrigation potential is close to surface water resources, making it possible for farmers to establish their own micro-irrigation systems and thus eliminating the need for major infrastructure, which has relatively high unit costs and considerably longer construction timelines.

An estimated 21% of smallholder farmers in Uganda are keen to transition to market-oriented business farming but currently face a number of constraints. The main challenges for smallholders wishing to develop irrigation are a **very weak knowledge base** and **unaffordable equipment costs**, exacerbated by an **absence of micro-financing options**. Irrigation equipment costs are 30% to 50% higher than in neighboring Kenya, due to low sales volumes, importation tariffs, and logistical challenges. Equipment is available in major centers but not in smaller locations close to farmers. There is also a problematic abundance of cheap, low-quality equipment that is attractive but inevitably costly for smallholders in the long run.

The creation of a more conducive enabling environment is key to accelerating the uptake of irrigation equipment towards increased resilience.

- Public sector officers' knowledge development
- Farmer learning and demand-led service provision

- Improved access to loans
- Partial subsidy



- Ensuring quality standards
- Using IT to reduce overhead costs

Rationale for support and enabling environment (with priority interventions) for smallholder irrigation expansion in Uganda

The Micro-scale Irrigation Program

In 2020, the Government of Uganda launched the Micro-scale Irrigation Program to support individual smallholder farmers to develop irrigation through a partial subsidy system combined with access to knowledge. The program is led by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). The World Bank is supporting the program with a USD 50 million loan, expected to be matched by up to USD 24 million of farmers' contribution. Key elements include *IrriTrack* – a tailored digital farmer registration and technical advisory app – and intensive online training for approximately 1,000 government field personnel involved in the program.



In the first few months of implementation, the program has seen 22,000 farmers expressing interest. Government staff carried out 9,000 farm visits, and the first 600 farmers have received irrigation equipment over the past few months.



For more information, go to:

<https://www.agriculture.go.ug/micro-scale-irrigation-program/>

The story of one beneficiary

In Rukungiri District, Western Uganda, Phionah Barekye and her twin sons, Ismael and Arafat, have been driving the 5 ha family farming as a full-time enterprise since 2015. They grow high-value crops for market (coffee, bananas and vanilla), with some maize, yams and cassava for own consumption. The farm is heavily intercropped and mulched for erosion control, fertility improvement, and moisture conservation – all practices they learned from the extension services.

Despite a relatively high rainfall (1,200 mm/yr), the coffee and vanilla plants dropped their flowers due to water stress, resulting in heavy crop losses. This critically undermined the family's production and profits and, along with the slow coffee and banana growth in the dry-season, was a key factor in their decision to invest in irrigation. Prior to joining the Micro-scale Irrigation Program, they were paying labour to carry irrigation water during critical times, at an extreme cost of USD 13/cu.m – about 100 times higher than international irrigation service fee norms.

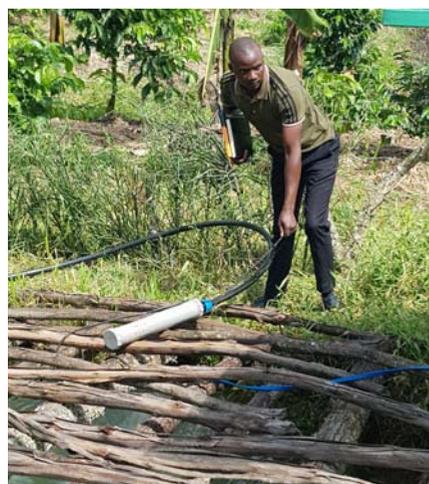
Under the Micro-scale Irrigation Program, the family acquired a solar pump, a water tank and a hand-hose. The cost was approximately USD 4,000, of which the family paid 25% and the

Government subsidized 75%. The brothers constructed a hand-dug well and installed the solar-pump, with a header tank that supplies tapstands in 1 ha of irrigated land. They mounted the solar panels on a stand with a lockable steel cover to protect them from theft or damage.

Since the installation of the system, in mid-2022, the increased water availability has had a marked positive impact on the family's coffee and vanilla crops, and they predict yield increases based on current fruiting. In addition, they have been able to harvest coffee continuously, which aids cash flow. They harvested 4 tonnes of coffee over the past year, with earnings of approximately USD 10,000. The experience has prompted plans to expand the irrigated area as higher income is generated.

An important co-benefit of the system is the supply of domestic water not only to the family's own home, but also for their neighbours, eliminating drudgery for the girls and women who do most of the water hauling.

The installation has secured increased production and profits for the Barekye family, as well as improving their domestic quality of life, strengthening their social relations, and inspiring their vision of a greatly expanded commercial farming operation.





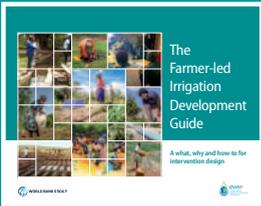
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The Farmer-led Irrigation Development Guide

is a resource pack to support the design of public interventions to catalyze farmer-led irrigation development (FLID)

Scan the QR code to access, download and share the electronic FLIDguide or find it at

www.worldbank.org/farmerledirrigation

