



ACTIONS FOR UPSCALING DRIP IRRIGATION IN SOMALIA

TECHNOLOGY DESCRIPTION

TECHNICAL DESCRIPTION

Drip irrigation is a high-efficiency irrigation technology that is particularly well-suited for arid and semi-arid regions where water scarcity is a significant concern. Through a network of pipes, emitters, drippers, and other essential components that transport water from water sources to the roots of the crop, drip irrigation ensures that a concentrated and precise amount of water is applied to the roots of the crop consistently. By keeping the soil at a consistent moisture level in the root zones, the system promotes optimal nutrient utilisation and creates an ideal setting for robust root systems in plants. This irrigation system can produce greater crop yields due to its enhanced uniformity and increased application efficiency. The implementation of drip irrigation yields numerous advantages for adaptability, including enhanced water management and reduced susceptibility to plant diseases, such as fungi. Furthermore, the technology is able to perform well in a wide variety of topography and soil conditions, except for soil that is composed of thick clay. From an ecological perspective, drip irrigation is preferable since it reduces runoff and evaporation, boosts groundwater recharge, enhances soil quality, and slows erosion.

CURRENT TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

Small-scale farmers in Southern Somalia have traditionally used the Juba and Shabelle rivers for irrigation. The Shabelle and Juba River Basins are critical resource bases for Somalia since they supply the country's rice bowl and development. Irrigation barrages were built in the middle and lower Shabelle and Juba River Basins of Somalia to irrigate land for commercial and food crops. Gravity irrigation has been possible because of the suitable topography and a network of canals. The Shabelle and Juba Rivers' 10 barrages are Somalia's most important irrigation infrastructure components. They were built to improve the river's depth and redirect the flow for agricultural reasons. However, many farmers in Somalia still rely on rain-fed agriculture and are therefore susceptible to climate change effects. Drip irrigation technology is still at development level in Somalia and is mainly deployed at small scale. To build community-based drip irrigation systems throughout all areas, certain sociological and climatic requirements must be considered. Promoting irrigated agriculture must consider issues such as water-stressed areas, underprivileged groups, and gender-related issues. For smallholder farmers, the costs of setting up, running, and maintaining a community-based irrigation system may be prohibitive. Many factors influence the choice to switch to drip irrigation, including the cost of cultivation, productivity, yield gain factor, and irrigation demand. These characteristics differ from crop to crop, location to location, plot to plot size, and farmer to farmer.

CLIMATE RATIONALE OF THE TECHNOLOGY

The crop and livestock subsectors have been greatly hampered by Somalia's increasingly frequent and severe droughts and floods, as well as the country's already severely damaged natural environment. Climate change-induced temperature increases continue to alter rainfall seasonality and intensity, thus disrupting agricultural crops and



livestock. In comparison to pre-industrial levels, temperatures in Somalia are expected to rise by 1.4–1.9 °C by 2030, 1.5–2.3 °C by 2050, and 1.4–3.4 °C by 2080 (Binder et al., 2022). Severe droughts resulting in water scarcity, significant flash flooding, current and emerging pests and diseases, and the collapse of most irrigation and flood-control infrastructure have contributed to poor performance in the agriculture sector. Climate change is therefore a significant impediment to Somalia's progress towards attaining the Sustainable Development Goals and alleviating poverty and hunger. Climate change endangers agricultural output and is an immediate and serious threat to the country's food supply. Drip irrigation has the potential to increase yields by up to 232% in tomato crops, 180% in beans and 90% in maize crops (Chidavaenzi et al., 2021). This will increase farmer income, boost food security and create new jobs in system installations and maintenance, and the production of components.

AMBITION OF THE TECHNOLOGY

SCALE FOR IMPLEMENTATION AND TIME-LINE

Drip irrigation is an exceptionally well-suited technological solution for the arid and semi-arid regions of Somalia, where the lack of a perennial surface water source throughout the year poses a significant obstacle to maintaining a consistent water supply. Farmers are obligated to preserve the meagre water supply that is received from intermittent rainfall and flash floods. The proposed target is to set up drip irrigation systems on 150,000 hectares of land by 2032. This ambition is in line with National Water Resource Strategy (2021-2025), whose one of its core actions is to support innovative and alternative approaches towards irrigation and agriculture development that support improved water use efficiency and enable sector growth. The initiatives to be undertaken include establishing and enhancing the capacity of local farmer organisations to operate and manage drip irrigation; providing training, demonstrations, and opportunities for local farmers to become familiar with drip irrigation systems; and training extension workers to advise and assist farmers with drip irrigation installation and maintenance.

EXPECTED IMPACTS OF THE TECHNOLOGY

Drip irrigation technology is expected to advance farming methods in Somalia, aid in the management of soil fertility, improve replenishment of ground water, reduce surface runoff by 50% and aid adaptability to climate change and food security. The following are other anticipated impacts of the technology.

- Reduction in susceptibility to seasonal changes in the patterns and intensity of rainfall.
- Prevention of crop diseases by minimizing water contact with the leaves, stems, and fruit of plants.
- Enhanced and consistent increase in farm yield and revenues by over 150%.
- Saving in time, money, and water by about 60% because of the efficiency of the drip irrigation system.
- A reduction in the impact of drought and climate change on food production
- Less dependency on weather and reduction in the risks of crop failure
- Robust local irrigation management organisations



POLICY ACTIONS FOR TECHNOLOGY IMPLEMENTATION

EXISTING POLICIES IN RELATION TO THE TECHNOLOGY

Drip irrigation technology aligns with Somalia’s updated NDC, which advocates for the development of irrigation systems, including dams, channels & water reticulation systems, as a priority adaptation action between 2021-2030. Irrigation is considered a critical intervention to address climate change-related water shortages which undermine agricultural production. The National Development Plan 9 2020-2024 (NDP-9) recommended rehabilitation of the pre-war irrigation and flood control infrastructure in southern Somalia to improve the supply of surface water availability and Improving irrigation techniques to reduce soil salinisation and waterlogging through effective water use planning and regulation. The Draft National Transformational Plan 2025-2029 (NTP), which builds on the achievement of NDP-9 recognizes Environment and Climate Resilience and Sustainable Economic Transformation as two of the five pillars of the NTP. The Agriculture Land Use and Irrigation Policies provide recommendations for sustainable land use based on soil and topography study, agroecological principles, and social and demographic assessment. Somali Agricultural and Inspection Services (SARIS) is also a sector-specific institution and policy related to quality in agricultural processes, including drip irrigation. Somalia’s National Water Resource Strategy 2021-2025 recommends the development of infrastructural and institutional capacities, extension services and cross-border cooperation to maximize the potential of irrigation along the Juba and Shabelle rivers.

PROPOSED POLICIES TO ENHANCE TECHNOLOGY IMPLEMENTATION

To enhance implementation and uptake of drip irrigation in Somalia, policies in the following areas will be necessary.

- Reformulation of policies and budgetary allocations to allow investment of public funds in drip irrigation systems
- Provisions for training of extension personnel to provide advisory support for drip irrigation systems to farmers
- Provisions for institutions and policies to facilitate the management of drip irrigation systems by enhancing the capacity of water user communities and farmer groups
- Provisions for programs, training and mediation to mitigate the likelihood of disputes over water, land, and infrastructure ownership

COSTS RELATED TO THE IMPLEMENTATION OF POLICIES

Policy/Strategy	Cost (USD)
Reformulation of policies and budgetary allocations to allow investment of public funds in drip irrigation systems	3,600,000
Provisions for training of extension personnel to provide advisory support for drip irrigation systems to farmers	32,000
Provisions for institutions and policies to facilitate the management of drip irrigation systems by enhancing the capacity of water user communities and farmer groups	41,000
Provisions for programs, training and mediation to mitigate the likelihood of disputes over water, land, and infrastructure ownership	127,000
Total	3,800,000



References

- Binder, L., Šedová, B., & Rüttinger, L. (2022). *Climate Risk Profile Somalia: Summary for policymakers* [Policy Paper]. Potsdam Institute for Climate Impact Research.
https://weatheringrisk.org/sites/default/files/document/Climate_Risk_Profile_Somalia_Summary_for_Policy_makers.pdf
- Chidavaenzi, F. R., Mazenda, A., & Ndlovu, N. (2021). Household survival and resilience to food insecurity through the drip irrigation scheme in dry rural areas. *Jàmbá Journal of Disaster Risk Studies*, 13(1).
<https://doi.org/10.4102/jamba.v13i1.985>

USEFUL INFORMATION

CONTACT DETAILS

TNA Coordinator

Hafsa Omar Abdilahi - Tel: +252634536811 Email: climate@moecc.gov.so

Champion from the Government

Najib Ahmed - Tel: +252613983913 Email: najeb@moecc.gov.so

LINKS TO TNA REPORTS

Relevant links

<https://tech-action.unepccc.org/country/somalia/>

<https://moecc.gov.so/policies-and-strategies/>

<https://moa.gov.so/department-of-irrigation-and-early-warning/>

<https://moa.gov.so/department-of-agribusiness-cooperative-development-and-food-reserve/>

<https://mop.gov.so/national-development-plan/>