



Farmer-Led Irrigation Development: What Role for the Engineer?

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Kenya's food security facts

Small-scale farmer incomes



~8 million

Kenyan's earn income from farming, even if only ~350,000 formal jobs exist in the sector

~60%

of production including 60-70% of all maize production. But only 10-15% of incomes for these farmers come from maize

<7%

of land is irrigated, most arable land is rain fed⁴

2nd

largest livestock herd in Africa, 13th largest number of dairy cows in world, but 138th yields due in part to cold chain storage

Agricultural output and value add



~25-30%

of total GDP, ~70-80% from crops, 13-20% from livestock, <2% fish and aquaculture, and % others¹

~2.3%

of national budget² (~KES 60bn) of which ~KES 5bn spent on subsidies (equivalent to ~13% of MOAI budget)

KES 100bn

Opportunity for Kenya to capture from closing yield gaps in maize, beans and tea to best in class regional peers⁷

1/8

value add per agricultural worker compared to SSA peers⁸. Kenya at KES ~80k, peers at KES 350-750k

Household food resiliency



1.5 million

Chronically food insecure Kenyans in ASALs, primary due to drought. Increases to ~3.7mn Kenyan's during severe droughts

2x

more price volatility than rest of EAC peers³ including Uganda, Tanzania, Rwanda, Burundi for key staples

6 of 7

water catchment areas under severe stress by 2030

90%

of all fish caught in Kenyan waters is left for domestic consumption, a significant opportunity to increase and protein nutrition

Irrigation (thus Water & Food) at the centre of 12 SDGs

1 NO
POVERTY



2 NO
HUNGER



3 GOOD
HEALTH



4 QUALITY
EDUCATION



6 CLEAN WATER
AND SANITATION



7 RENEWABLE
ENERGY



8 GOOD JOBS AND
ECONOMIC GROWTH



9 INNOVATION AND
INFRASTRUCTURE



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13 CLIMATE
ACTION



14 LIFE BELOW
WATER






15 LIFE
ON LAND



Achieving 100% food security as part of Kenya's Big Four agenda requires a transformation of the whole agriculture sector

"FARMER" IMPLIES SMALL-HOLDER, PASTORALIST, FISH

Pillar	How transformation can support a path ¹ to 100% food security
Increase small scale farmer incomes 	<ul style="list-style-type: none">▪ Double harvests from better feeds, irrigation and fertilizer² for local consumption▪ Raise ~5mn Kenyans out of poverty (~1.3mn households³) by shifting farmers from subsistence to market-oriented output
Increase agricultural output and value add 	<ul style="list-style-type: none">▪ Double contribution of agro-processing to GDP (~KES 200bn increase) and create markets for small and large scale commercial farmers▪ Grow an additional ~0.5mn tonnes of maize³ from private farms operating state owned land⁴
Increase household resiliency 	<ul style="list-style-type: none">▪ Streamline national Strategic Food Reserve (SFR) operations to better serve ~4m vulnerable Kenyans during emergencies▪ Employ cost-effective methods (e.g., cash transfers) to stabilize prices year-round▪ Bolster resilience of households in ASAL regions (e.g., drought resistant crops) to ensure that food is available to Kenya's ~1.5mn chronically food insecure populations

Characterization of Kenya's Irrigation by Scheme Sizes

Category of Irrigation	Holding size (ha)	Irrigated Area (ha)	Percentage of total
Public and national schemes	40 - 12,000	22,028	10.9%
Community-based schemes	<40	99,964	49.5%
Private commercial farms		79,970	39.6%
Total Irrigated area		201,962	100%
Total irrigation potential & percentage of total land irrigated	All	1,342,000	15.0%

Data source: Irrigation Guidelines (2020)

Note

- *The extent of individual irrigated farms (FLID) is largely unknown, i.e. not included national databases*
- *The Irrigation Potential (1,342,000 ha) is underestimated. It does not include areas that could be irrigated using water harvesting*

Large-scale public scheme e.g. Ahero



Examples of Categories of Irrigation Schemes in Kenya

Small-scale community scheme



Private commercial farm



What is Farmer-Led Irrigation Development (FLID)?

FLID is a “process where farmers assume a driving role in improving their water use for agriculture by bringing about changes in knowledge production, technology use, investment patterns and market linkages, and the governance of land and water” (*African Union, 2020*).



Typologies of FLID



Individual (private) irrigation:
The farmer is independent,
entrepreneurial, self-driven,
private financing and initiative



Small-scale community-based irrigation -
mainly developed through community-driven
development (CDD), or social fund projects

Characteristics of FLID

FLID in the Kenyan Context:

- Started by farmer(s)
- Includes both individual initiatives and group schemes
- Is/was self funded (mostly)
- Is largely managed by farmers
- Is small-scale (< 40 ha) and
- Excludes highly commercial farms – *some of which are small in size e.g. flower farms*
- Excludes small scale irrigation schemes developed & operated by GoK, NIA, donors (*public funding*) – *these have a father/mother*



Legal, Policy, Institutional Contexts impacting on FLID

1. Several Laws that articulate small scale irrigation (SSI) schemes e.g. Irrigation Act 2019 are silent of FLID (*it is presumed covered*)
2. Apex policies e.g. Kenya Vision 2030 supported small scale irrigation and private enterprise (*FLID was not known then*)
3. NGOs (*since they are public entities*) support FLID, but it is not clear who is doing what, where
4. The Water Act-2016 heavily dwells on drinking water, including environmental flows, but completely omits irrigation
5. The ASTGS (2019) tends to favor large scale irrigation at the expense of SSI & FLID
6. FLID has survived with minimal policy support, e.g. the benefits accorded to SSI in publicly developed/ funded irrigation schemes do not reach FLID
7. Institutional support e.g. capacity building, incentives access to information is not always availed to FLID.

Main Challenges facing FLID

- FLID is not new. However, it was recognized as a sub-sector recently (*Woodhouse et al., 2017*). This invisibility means that the sub-sector has missed out on planning across all sectors.
- FLID doesn't feature when irrigation is being enumerated. Thus farmers miss out on subsidies/incentives (*compared to those in formal schemes*).
- Most individual farmers do not belong to groups, hence have no means to express their problems or gain from group marketing etc.
- The contribution of FLID to irrigation largely remains unknown (yet it is huge and growing), and thus not adequately accounted for or factored in development planning.
- Farmers in FLID are almost their own – Majority of them have never seen an engineer!

Way Forward

- GoK/NIA should conduct a mapping of who/ where FLID occurs and stakeholders engaged (*you can't plan for what you don't know*)
- Irrigation Act 2019 is currently under review- entrench FLID in it
- Mainstream FLID into development Plans/Strategies and funding streams
- Accord FLID opportunities to benefit from public supported projects and incentives.
- When water user charges get increased, those for small scale irrigation should be subsidized as an incentive to support FLID
- Provide institutional support e.g. capacity building, incentives, access to information and capacity building for FLID farmers.
- Engineers should offer their services to FLID which is a growing and thriving sub-sector (*design of water pans, individual irrigation systems, drip systems, solar powered irrigation etc*).

THANK YOU



For more information, visit
www.aiap.or.ke

All photos by Bancy Mati