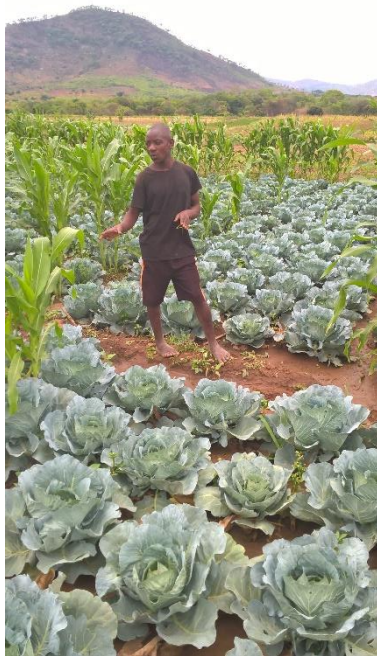


Farmer-led irrigated agricultural development (FIAD): Catalysing development in Mozambique

Irrigation in Mozambique



Farmer-led irrigated agriculture refers to Mozambican farmers who initiate a process of agricultural intensification for commercial purposes at their own farms. Our research demonstrates that under certain conditions Mozambican farmers take action to develop irrigated agriculture without direct outside support. The application of water for irrigation is a key indicator in this process, characterized by commercial production.

In policy discussions these farmers are often lumped together as smallholders. However, farmers who practice irrigation in Mozambique can have large fields under cultivation (ranging from 0.1 to more than 10 hectares) and they produce significant volumes with a commercial orientation, selling their produce at markets. In short, a farmer who practices irrigation is a commercial farmer. Even a small intensively cultivated horticultural areas (smaller than 0.5ha) can generate a significant farm income.

In our research, we intentionally step away from the term “smallholder” because it is wrought with a stigma of subsistence farmers. We prefer to speak more generally about Mozambican farmers and we use the term farmer-led irrigation as it clearly indicates the driving force behind the development efforts – farmers who initiates irrigation. Irrigation is a clear sign of commercial agricultural practices and hence, it is a very useful indicator to identify commercial agriculture. Through research on these processes of agricultural intensification by Mozambican farmers, new opportunities for support policies in agriculture can be identified. Supporting these processes may lead to more sustainable agricultural development as it links up to ongoing processes in which Mozambican farmers themselves invest in agricultural intensification.

Understanding why and under which conditions farmer-driven commercial agricultural intensification takes place will help to catalyse Mozambican agriculture at its roots. Our research aims to understand the drivers of this self-developing sector and to study the scale of farmer-led irrigation in Mozambique. Our goal is to inform experts and offer services to both the private and public sector in agricultural development. This policy brief summarizes the first results of the research done by Resiliência Moçambique, together with Instituto Politecnico de Manica and the University of Wageningen in the Centre of Mozambique. It also provides some first suggestions to engage with this vibrant sector.

FIAD Research background:

Our research estimates that Mozambicans farmers have already developed over 100.000 ha of irrigated agriculture over the last 20 years with almost zero capital support. Typical forms of irrigation that are initiated by smallholders are sprinkler and drip systems, furrow and small pumped irrigation systems and also, bucket irrigation. In contrast, by 2011, just 20.000 ha had been developed through formal agricultural and irrigation development projects, using millions of investment capital. Some of these projects focussed specifically on smallholder irrigation development (like the WB program PROIRRI), but most were large scale commercial farms.

We stress that this situation is not unique to Mozambique. In Tanzania and Kenya, for instance, these emerging farmers are studied in a research project that is called "SAFI" (Studying African Farmer-led Irrigation), led by Manchester University (UK). Nor is the emergence of these farmers happening suddenly. Research on farmer-managed or traditional irrigation has been done from the 1980s onwards, showing that farmer-led irrigation is going back far in history. However, it is often discarded as backward, insignificant and unsustainable. Today, popular terms for farmer-led irrigation are also "small-and-private" or "individual" irrigation.

Even though farmer-led irrigation is not new, it has remained under the radar of irrigation experts and policy makers. Farmer-led irrigation often has an individual character even when it is managed in a group, taking place in informal settings, on small plots and dispersed over remote areas. Additionally, it often makes use of small water sources – sources and amounts of water that are normally not considered for commercial applications. These conditions make mapping efforts difficult and time consuming. Furthermore, there is an engineering bias towards modern irrigation methods which disregards farmer-led irrigation as "not serious" irrigation and therefore not relevant for mapping purposes. As a result, unawareness of the scale of farmer-led irrigation leads to an image of smallholder farmers as being a stagnant group that needs support for development to occur. Clearly, such a view contrasts sharply with the pace of expansion of commercial irrigated agricultural development, as it is being realised by Mozambican farmers.



One of the main problems for experts and policy makers is that no real mapping exercise of farmer-led irrigation has been done to date. We recognise that this cannot simply be explained by a professional neglect in the sector of farmer-led irrigation. It also is a matter of the geographical area of the country, the remoteness of many of the irrigated areas, the informal (and undocumented) operations of farmer-led irrigation, and the recent growth of

this sector, just 25 years after the civil war Mozambique. Yet, evidence of farmer-led irrigation is often characterised as anecdotal, as being applicable only to areas where the research was done. This attitude towards farmer-led irrigation leads to a disregard of grassroots, agricultural growth in Mozambique.

Aim of the FIAD research:

Through this FIAD Research we aim to demonstrate the size and scale of farmer-led development in irrigated agriculture. We seek to understand the drivers behind it. We aim to develop and test tools and methods to engage with stakeholders in the sector (GoM, NGO's, Service providers: Traders, Whole sellers, Banks, Private agricultural companies, and Mozambican farmers). We aim to inform policy makers through knowledge sharing activities.

To demonstrate the scale of farmer-led irrigation, we are developing methods for the use of Remote Sensing data and hydrological research to identify farmer-led irrigation development. We have four case study sites with different types of farmer-led irrigation, characterized by different technologies-in-use and different hydro-geological conditions.

First results:

The first research results on the drivers for FIAD show that it is strictly for economic gain. Water is applied with commercial intent. Farmer will not irrigate subsistence crops but only start to develop irrigation activities and irrigate a cash crop when they have market opportunities in mind. These market opportunities can consist of informal contracts for input supply and mouth-to-mouth guarantees of local traders to buy the products of farmers. Trader networks are extensive, reaching the whole country. In fact, they supply services where formal programs often have failed, for example: inputs such as fertilizers and chemicals, price guarantees for harvested crops and credit loan schemes. High value market crops, such as horticulture and fruticulture, are the most preferred. For these crops, small, intensively cultivated plots can provide an adequate farm income, putting it in reach of even the poorest farmer, even though the markets for the products are volatile.

Farmer-led irrigation exists in many shapes and forms. Furrow systems and small pump systems are the most common. Farmers who start with bucket irrigation often switch to pump irrigation, upgrading their methods of farming. More recently, Mozambican farmers have also started using drip and sprinkler irrigation. Therefore, we characterize any farmer that applies water for production as a commercial farmer.

Migration is a key driver behind the introduction and expansion of farmer-led irrigation development. For instance, it is introduced by a farmer who comes from an intensively irrigated area and moves into a new area. Alternatively, it is introduced by (city) elites who invest in agriculture and start using new technology. Sometimes they have a degree in agriculture or they hire services from a private company. Their farms and those of migrating farmers demonstrate the use of new methods for irrigation. They function as a local model farmer who then are copied by neighbouring farmers, who in turn experiment and branch out or diversify their production system.

We have observed that clear prospects for economic gains is a key trigger for farmers in making a decision to invest in irrigation. Farmer-led irrigation often starts with one person. Collectively managed systems are common, especially when it concerns furrow systems, but the management is often characterized by individual "ownership". In case of furrows, it is often the "dono de canal" (boss of the canal) who initiated the construction and determines the rules for water sharing. With pump systems, a clear preference for individual ownership is visible as joint operation and maintenance of pumps are deemed too risky. We also observed that most functioning systems do not follow formal democratic

procedures, as stipulated by laws for Water User Associations. They tend to be managed by one owner, who organizes access to water based on consensus and using local rules. In fact, we find that the introduction of formal regulations can undermine existing forms of consensus-based management of irrigation. Introducing formal procedures may actually have a detrimental effect on existing practices of water sharing. Instead, formal associations in irrigation primarily are used to secure benefits in relation to all sorts of projects and interventions – they have little to do with actual irrigation practices in the field.

First Conclusions:

- Farmer-led irrigation takes place in a vibrant setting and mostly in informal settings. It remains mostly under the radar and therefore, it is underestimated and underappreciated. Recognition of farmer-led irrigation is hindered by an engineering bias and technology preference in formal policy settings. Only high-tech forms of irrigation are perceived as “modern” agriculture. Such a view makes the irrigation practices of Mozambican farmers practically invisible.
- Possible modes of engagement with the FIAD-sector are, for instance: farmer-to-farmer training, subsidies on inputs and market linkages through support to trader networks. However, as long as the FIAD sector remains unrecognised as an existing and vibrant sector, formal efforts to create an “enabling environment” in agriculture have the risk to achieve exactly the opposite – more hurdles for farmers to set up irrigation and start commercial production. We argue that strengthening and diversifying the informal sector will have a more efficient and catalysing effect on the intensification of agricultural production through irrigation. We plea therefore to redirect irrigation and agricultural policies in Mozambique.



To be able to engage with this sector, farmer-led irrigation must be put on the map of policy making, literally and metaphorically. Farmer-led irrigation must become known. This requires a change from:

"Identification of the potential areas for (new) agricultural development"

to

"The identification of existing irrigated areas in Mozambique to capitalize on grassroots irrigated agricultural growth in the country".