Towards irrigation entrepreneurial development

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A completed Water Research Commission (WRC) project has successfully evaluated appropriate development paths for expansion from homestead food gardening to smallholder irrigation farming.

Background

In South Africa, unemployment and poverty are closely associated and the rural areas are nodes of both unemployment and chronic poverty. The challenges in tackling poverty are compounded by high unemployment, most visibly reflected in youth unemployment, which in 2015 was estimated at 45.3%.

Rainfed agriculture is an important means of livelihood in rural areas, meaning that agriculture makes an important contribution to food security, particularly for the poorest households.

Agriculture is also seen as one of the key strategies opportunities for employment and rural development.

Enhancement of entrepreneurship is seen as key to growth in a free-market economic system, including in the agricultural sector. Two categories of informal enterprise have been identified: survivalist enterprises and micro- or growth enterprises.

WRC research project

This research project pivoted on three dominant themes. They were irrigated agriculture, rural livelihoods and entrepreneurship. The project identified three main populations of irrigators which were the focus of the study.

The first population was home-food gardeners which comprises individuals engaged in agricultural production within their homestead. Water for irrigation is typically supplied from roofwater tanks, greywater reuse or water from municipal piped domestic systems.

The second population comprises farmers active on smallholder irrigation schemes, where a scheme is defined as the hydraulic system which is shared by a group of farmers.

The third population comprises independent irrigators who are solely responsible for their own irrigation system and typically pump from adjacent rivers or boreholes.

The key proposition in the project was that increased local, regional and national benefits from smallholder irrigated crop production will be driven by entrepreneurs who identify opportunities, develop strategies to exploit these and turn these into viable and profitable irrigated crop-production (and perhaps processing) enterprises.

Research approach

The research was conducted using a multiple-case study approach, conducted at two research sites covering the three populations.

Thulamela Local Municipality, located in Vhembe district, was the first site and Greater Tzaneen Local Municipality, located in Mopani District, was the second. Both are located in Limpopo Province.

Main findings

Irrigated smallholder agriculture, entrepreneurship and livelihoods

Comparison of the livelihoods of three groups of households (home gardeners, scheme irrigators and independent irrigator) at two research sites provided compelling evidence that irrigated smallholder agriculture and improved livelihoods were closely associated. In terms of natural capital base, irrigator households differed primarily from the largely landless home gardeners by having access to land and also to water to irrigate that land.

The study results showed that the human, physical and financial capital base of irrigator households were also significantly greater than that of home gardener households. Concomitantly, the incomes of irrigator households were also two to three times higher than those of home gardeners and, on average, well above the upper-bound poverty line.

Thus, smallholder irrigation is considered to be a **successful poverty alleviation tool** when it paved the way for increased consumption, asset accumulation, nutritional improvements, and reduced persistent poverty among users. Over time, these gains lead to institutional feedbacks that support sustained economic development.

This exciting observation requires some caution, however. A concern identified during the study was the fact that irrigator households were mostly male-headed, while among home gardeners female-headed households are dominant. Other research in South Africa has identified female-headed households as one of the groups most prone to be stuck in chronic poverty.

Home gardening and irrigated farming

One of the striking differences between home gardening and irrigation farming was the purpose of production. Where home gardening was done primarily for own consumption (i.e. subsistence), irrigation farming was done primarily for market (i.e. commercial). The second important difference was that irrigation farming required more purchased inputs, such as fertilisers, compared to home gardening.

This study showed, however, that production in home gardens and other farming activities made a significant contribution to food consumption. In Thulamela, for example, home gardener households consumed on average R27.88 worth of food per day and farming activities (R680) supplied this food value for 24 days.

Irrigated farming and entrepreneurship

The enquiry into entrepreneurship among households at the two sites produced interesting results. Farmers in the three groups were assessed in terms of three psychological traits that have been associated with entrepreneurship based on a self-assessment. These were: 'need for achievement', 'locus of control', and 'risk-taking propensity'. Generally, limited differences were observed between the three household groups in terms of psychological traits.

The aspiration of the large majority of farmers was to grow their farm enterprise, irrespective of the group they belonged to or the study site. Home gardeners aspired to expand garden production to raise their food production, while irrigators aspired to grow their farming business by expansion, acquisition of farm assets and gaining access to new markets.

The primary goal of home gardening at both sites was to obtain food for home consumption. By contrast, the primary goal of irrigated cropping on scheme plots and independently irrigated plots was to generate monetary income by marketing what was being produced.

It can be concluded that rural entrepreneurship, which included the production of crops and livestock for markets and also any other local business activity, made a significant contribution to the livelihoods of between 30% (Greater Tzaneen) and 40% (Thulamela) of the samples of households that participated in the study.

In households where entrepreneurship was significant for livelihood outcomes, necessity appeared to be the motivating factor for most, but there was also a minority that appeared to be motivated by opportunity.

This pattern resembles that described for the informal business sector found in the cities of South Africa, where also only about one of ten informal enterprises was motivated by opportunity and the rest by necessity.

Obstacles to irrigation development pathways

Water tenure security, land tenure security and access to markets arose as critically limiting issues in relation to expansion, both within schemes and for those moving onto schemes, as well as for independent irrigators. The confusing, conflicting and variable interpretations of land institutions are a major limitation to irrigation development pathways, and a strong disincentive to irrigation development.

Fear of losing land to lessees was a dominant theme limiting land-leasing transactions for scheme and independent irrigators. The weak land rental agreements, the prevalence of water stress, combined with the widespread absence of allocations and formal mechanisms of access and control compounds the institutional risks faced by both scheme and independent irrigators.

Recommended strategies

1. **Identify and secure irrigation land for small-scale farmer settlement outside the former homeland areas**. The most evident place to find irrigation land for small-scale farmer settlement is on existing white-owned irrigation schemes. Land acquisition, identification of suitable farmers, establishing selection criteria and supporting establishment are key issues to be addressed.
2. **Legislate individually-held title deeds on irrigation land under traditional tenure.** Trusted links must be developed between small-scale farmers and fresh produce markets. This will require the setting up and monitoring and evaluation of a value chain in which the interests of small-scale farmers are considered and protected to the same extent as those of large commercial producers.
3. **Roofwater collection for home-garden supply.** It is proposed that rainwater harvesting techniques suited to serve small gardens within the homestead are identified and that their implementation is rolled out by appropriate agencies. Roof water harvesting and underground storage are a suitable option for local conditions.
4. **Grant and/or loan funding for bulk and infield irrigation infrastructure.** Irrigation in the homestead or on irrigation farms requires significant infrastructure investment. The DWS Resource Poor Farmers Subsidy is one highly suitable instrument to provide funding for water-infrastructure feasibility studies, bulk water investment and operational subsidies, water-harvesting tanks and reservoirs, among other categories of support. Alignment of increased funding with proposed irrigation settlement scheme interventions, such as land and water management, is, however, essential.
5. **Dedicated support to acquire water-use licenses**. The absence of water-use licenses and the widespread insecurity in relation to both the legal right to use, and the quantity that can be used, presents a high risk to smallholders and is a critically limiting factor. Active institutional support is needed for historically disadvantaged farmers to register their use, or to secure water-use licenses.
6. **Scheme irrigation management organisational development**. Intensive effort is needed to establish self-financed, farmer managed irrigation institutions on schemes. While somewhat valiant attempts have been made by the DWS in the past these were isolated from other essential interventions such as investment to ensure a functioning irrigation scheme (i.e. water infrastructure); alignment of agricultural support to ensure profitability and thereby a basis for irrigation service fee payment; and development support for the acquisition of scheme water-use rights.

Conclusion

The findings show that irrigation is strongly associated with improved livelihood outcomes and a strengthened human, physical and financial capital base. The incomes of irrigator households were significantly higher with all irrigator households above the upper-bound poverty line, while home gardeners were on or below this line.

Irrigator households were also more food secure with greater food diversity than home gardener households. Entrepreneurial farmers with varied characteristics, but sharing a business outlook, were identified in similar numbers to classical peasant-farming categories, with true capitalist farmers a rarity.

Obstacles to successful farming were severe and were dominated by institutional disincentives in the acquisition of secure land and in obtaining secure water supply. The wholly inadequate, even chaotic, communal land-tenure arrangements, combined with high risks related to inadequate irrigation water supply turn development pathways into somewhat treacherous endeavours.

Relocation of promising farmers onto well established (previously white-owned) schemes, fundamental reforms in communal land-tenure systems on smallholder schemes, investment in water management institutions, marketing support, and water management interventions are all strategies that would have to be pursued in parallel to achieve results.

Irrigation can, it seems, provide the much sought after development outcomes but this requires a new political will to re-set the development direction, drive profitability initiatives and re-institutionalise the smallholder irrigation sector from a land and water perspective.

Further reading:

To obtain the report, *Smallholder irrigation entrepreneurial development pathways and livelihoods in two districts in Limpopo Province* (**WRC Report No. 2179/1/16**), contact Publications at Tel: (012) 761-9300; Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.