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Farmer management of government irrigation systems: A viable option for Africa's smallholders?

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Summary

This research assesses the widespread transfer of government-run smallholder irrigation schemes in Africa to the management of organized groups of farmers in the light of decades of experience by various countries. The comparative study of the Irrigation Management Transfer (IMT) suggests that it can work if certain preconditions are met. These include a supportive legal-policy framework, secure water rights, local management capacity building and the presence of an enabling process to facilitate management transfer.

Even with all these conditions fulfilled, this research finds that IMT is unlikely to work for African smallholders. Here, the institutional alternatives most likely to succeed are those that address the whole complex set of constraints that African smallholders face. The first step for African governments must be to enhance the income-creation potential of smallholder irrigated farming by strengthening market access, promoting high-value crops and improving systems for providing extension and technical support to smallholder irrigators. This approach, rather than focusing exclusively on the direct transfer of irrigation management, will help create the right climate for IMT in these regions.

In general, IMT or farmer-managed cooperative irrigation has worked in situations where individual stakes are high and the irrigation community has been able to take the additional burden of self-management—financial and managerial—in its stride. This ability is strongly linked with the microeconomics of irrigated production, which propels the typical farm household economy upward by generating powerful incentives for self-management.

In many respects, the situation of the sub-Saharan African smallholder differs from the situations found in areas where IMT has proven successful. *The path to sustainable institutional evolution for farmer-managed irrigation in the African smallholder context needs to take full cognizance of the differences and devise strategies that are appropriate to the special challenges faced by these schemes.*

Challenge 1: A history of dependency

The discussion of IMT in the African context in recent years began with management reforms that entailed the drastic curtailment of the functions of the parastatal agencies. These agencies were responsible for the provision of support services and management of irrigation schemes. Smallholder schemes were managed in an 'estate mode'; farmers, under parastatal management, did not make any entrepreneurial or managerial decisions.

In South Africa, for example, for over three decades, the Agriculture and Rural Development Corporation (ARDC) has managed smallholder irrigation schemes through an elaborate top-down command and support system, which has eventually proven unsustainable. Under a version of contract farming, irrigation to smallholders was fully subsidized, and the ARDC organized mechanized cultivation, planting and fertilizer application in the schemes.

All that the plot holders did was weed, harvest and move the irrigation pipes around. They did not deploy much working capital; nor did they need to make any decisions about farm management, which was pretty much centralized. The parastatal also organized the marketing of pooled produce; it deducted all its expenses before turning the residual sum, such as it was, over to farmers.

The support systems operated by parastatals for smallholder irrigation schemes in many African countries have left behind a strange legacy of impoverishment and dependency. In some cases, these had degenerated into oppressive 'spoils systems' that destroyed all preexisting informal institutions, thereby compelling farmers' dependency—and robbing them of their enterprising and elementary skills to manage input and output markets.

The parastatals' abrupt withdrawal has had a telling effect on smallholders. Cropped areas in many South African smallholder schemes dropped sharply in less than a year after government withdrawal simply because plot holders were unable to organize by themselves the working capital needed to hire tractors, buy seeds and fertilizers, and obtain services.

Challenge 2: High cash costs due to mechanization

Partly as an outcome of the 'estate-type' farming mode the parastatals adopted, African smallholder irrigated farming has turned into an unviable, high cash-cost enterprise. A major contributor to the high cash cost is the high level of mechanization of farm operations. Parastatals like the ARDC in South Africa used heavy equipment for ploughing and land preparation, spraying and harvesting. As a result, the tradition of using animal power has disappeared in many smallholder schemes.

With the withdrawal of parastatals, accessing equipment at affordable rates has emerged as a major problem. The development of local equipment rental markets has been slow and variable, and rental rates are high. This has squeezed the smallholder farm economy from two sides: the margins from irrigated farming have been hit and working capital requirements have increased.

Challenge 3: Absence of credit, input and output markets

Matters are complicated further for African smallholders by the missing or highly imperfect input and credit markets facing them. Most smallholder schemes in South Africa, for instance, are located in former homelands in remote areas away from towns and cities with which they often have poor linkages. With the rise of the 'estate mode of farming' under parastatals, such markets as existed previously gradually disappeared; and now that the parastatals have withdrawn, there is a huge institutional vacuum.

Challenge 4: Insecure land tenure

The African smallholder also suffers the disadvantages of communal landownership with insecure tenure. The present tenurial arrangement does not provide much room and incentive for uninterested farmers to sell out and for interested and capable ones to expand their holdings. Nor does it lead to the emergence of flexible rental markets in irrigated land, thus keeping it from achieving its full productive potential. As already mentioned, inability to offer land as collateral for obtaining credit works as another disadvantage. Often, the lack of clarity amongst the plot holders about what their rights precisely are with respect to their plots seems more problematic than the absence of ownership.

Challenge 5: Smallholder hedgehog behavior

The reading of international IMT experience suggests that all or a majority of farmers in successful IMT cases are full-time farmers deriving a substantial proportion of their livelihoods from irrigated farming. This builds their stake in self-management of their irrigation system and their willingness to commit time and resources to it.

In the African smallholder context, farmers who work tiny plots smaller than one hectare are forced to pursue what Robert Chambers calls the 'hedgehog strategy' of depending on a variety of sources of earning a livelihood. The inability to depend upon irrigated farming for all or a substantial proportion of their livelihoods forces menfolk to seek urban jobs while women stay behind to cultivate the plots.

The smaller the plot, the stronger this tendency. For instance, in a smallholder community in the Northern Province of South Africa studied by Johann Kirsten of the University of Pretoria, 75% of the households earned income from cropping but this amounted to just 5.8% of their total income. But 66% got remittances, which constituted 33% of the total income.

This has many implications. First, plot holders are often more interested in keeping their plots—as some form of a security or insurance—rather than working them to their full productivity potential. Second, there are stringent limits on the time, effort and resources a typical smallholder irrigator is willing and able to make on the irrigated plot if it involves sacrificing other livelihood options.

Third, the large number of members even on a small scheme greatly increases the invisible 'transaction costs' of collective self-management—such as costs of fee collection, responding to complaints, delivering water to each user, extracting consensus on key decisions, of checking 'wanton irrigator misbehavior of blocking canals, cutting off embankments, illegal lifting of water by pumps or siphons and breakage of control structures'—all invisible costs that vary directly with the number of irrigators.

IMT success factors

For students of institutions, South Africa's irrigation situation offers uncommon insight into what will work and what will not. Here, on the one hand, the government and NGOs are trying to coax smallholders, who are running away from farming, to accept IMT. And in this very same locale, we find some very successful water user organizations, composed of large-scale commercial farmers. These organizations, known as Irrigation Boards, have always turned government irrigation systems into their instruments for wealth creation.

When IMT was tried on government-managed irrigation systems in these 'white' areas, it clicked effortlessly. It did so because, first, IMT merely formalized and legitimized the high *de facto* farmer participation in irrigation management that existed from the start. With reasonably large farms (25-1,000 ha), access to capital to invest in commercial crops, and average household net farm incomes of up to US\$150-250 thousand (see, e.g., Tren and Schurr 2000), South Africa's commercial farming community is ideal for IMT. Farming is their only (or the primary) source of livelihood and income; and in their case, the double-coincidence of *need* and *capacity* for IMT is well established. Smallholder groups have neither: their present tiny farms give them little net income (some suggest it is negative if full value of family labor is costed), and they do not have the resources and management capacity to operate their schemes viably.

The 'pattern of failure'

Crosby (2000), a leading South African observer writes: 'It is unbelievable that with the exception of sugar projects there are virtually no (smallholder irrigation) schemes that have been successful.. [and] the pattern of failure is so similar that it is not really necessary to undertake a needs analysis for individual projects'. This similar pattern of failure is what we refer to as 'downward ratchets'.

Policy research must touch small farmers and the poor



Examples from South Africa

South Africa faces the considerable challenge of implementing its progressive National Water Act (Act 36 of 1998) to achieve the key objective of 'beneficial use in the public interest', which encompasses poverty eradication, economic growth and integrity of the resource base. Supporting this process is one of the priority tasks of IWMU's research theme on Water Resources Institutions and Policies in South Africa. We are working to help find answers to the water reform question in a context where it is no longer sufficient to consider only the financial returns of allocations to the different water use sectors within river basins.

IWMU is making contributions to this new knowledge base in several ways.

For the Department of Water Affairs and Forestry (DWAF), we are reviewing the process of establishing a Catchment Management Agency in the Olifants River Basin. An important aspect of this work is advising how poor communities can participate meaningfully in the consultation processes on the establishment of the Agency and in the formulation of a future catchment management strategy.

We are well placed to play a central role in policy development, implementation and testing of Water User Associations, which have been newly introduced into South African water legislation. Here, our focus is helping small-scale irrigators to benefit from lessons learned – locally and in other countries where IWMU works – in the realm of sustainable institution-building.

The topic of gender and poverty is of particular relevance in the South African context, where the majority of small-scale farmers are women and rural poverty is rife. IWMU has completed several studies with local partners to profile the plight of these women and assist in policy formulation to improve their livelihood opportunities. This work includes research on small, robust and affordable technologies like treadle pumps, which are well-known and widely used in South Asia currently but not available in South Africa. This is a good example of how our researchers' detailed knowledge of situations and practices in many regions (in this case research in East Africa and South Asia) can be of direct benefit to smallholder farmers in another area (southern Africa).

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In Crosby's analysis, the downward ratchets are evident in the 'common aspects [which] are: total dependence→water-supply infrastructure dilapidated→ineffective water management→low production levels→little knowledge of crop production or irrigation→ineffective extension→lack of markets and credit→difficulty in sourcing inputs→expensive and ineffective mechanization services →unrepaired fencing →damaged soils.'

A policy proposal prepared by a group of South Africa's most experienced scholars, led by Professor Backeberg, appropriately asserts that: 'Irrigation farming can be very remunerative provided the following are present: high quality management, markets and infrastructure, and sufficient equity capital' (Backeberg et al. 1996). Africa's smallholder irrigation farmers have none of these; and without these, IMT can easily become a millstone around their neck.

Lessons for development professionals

In conclusion, our review of global and African experience suggests that nowhere in Africa is there a significant body of positive experience to suggest that straightforward Irrigation Management Transfer (IMT) will work in smallholder irrigation as it has in the US, Mexico, Turkey, New Zealand and Columbia.

Indeed, it would be surprising if, even with all necessary stress on 'process' and capacity building, IMT programs will meet even the moderate expectation of success, that it 'saves the government money, improves cost effectiveness of operation and maintenance while improving, or at least not weakening, the

productivity of irrigated agriculture.’ There are important questions about the viability of most smallholder farming itself, leave alone irrigation systems. IMT may well be the last straw in the collapse of a smallholder agriculture run for decades in an ‘estate mode’, and barely surviving on the oxygen of government subsidies and supports.

This is not to say that African smallholders do not or cannot manage irrigation; or that they cannot engage in sustainable cooperation. Indeed, some of the most efficient, livelihood-creating irrigation types in Africa is private smallholder irrigation. Similarly, there are many outstanding examples of large-scale cooperation amongst small-scale dryland farmers of Africa. But transferring the management of government irrigation schemes involves a different ball game all together.

For example, most of South Africa’s 180 smallholder schemes would not have been built if they were to be turned over to farmers because their financial viability was always doubtful unless water users generated fairly high levels of income/ha. And no reasonable planner would have ever assumed that smallholders would attain value-productivity levels comparable to commercial farmers unless they had access to truly high-quality support institutions.

Lesson 1: IMT has to make good economic sense to farmers

We often think that building people’s economic institutions is essentially a matter of ‘getting the process’ right. This is one of the many situations that shows that nothing could be further from truth, especially in catalyzing economic institutions. No amount of ‘process and organizational savvy’ or collective vision-building will get a group of rural poor—in Africa or in Asia—to accept a deal that does not make good ‘here-and-now’ sense to them. And where the deal does make sense—as IMT did for Irrigation Boards—virtually no investment was required in instituting an ‘organizing process’.

South Africa's Irrigation Boards are as outstanding examples of self-organizing irrigation institutions as are North Gujarat's tube well companies; both show that people organize swiftly—and without the benefit of catalysts or facilitators—when organizing makes good economic sense. If development professionals have problems organizing poor people around an idea, they must take a hard look at what they're offering; most often, it would be a rotten deal.

Lesson 2: The larger the number of farmers involved, the higher the management costs

IMT faces problems in smallholder communities not because smallholders are less able or less cooperative but partly because most of them are half-hearted farmers and more importantly, because the management cost of an irrigation system—like most service institutions—increases faster with the number of customers than with the volume of business. A 1,500 hectare system that serves 1,500 irrigators costs much more to manage—in terms of the logistics of service delivery, fee collection, maintenance, and so on—than a similar system that serves 5 large farmers. Moreover, it is a lot easier for 5 large customers to come together and agree to the rules of self-management than for 1,500 smallholders to do.

Lesson 3: IMT must offer improved livelihoods at an acceptable cost

Where irrigated farming is a viable enterprise, IMT will work if the cost of sustainable self-management is a small proportion of farming incomes. Where this is not the case, IMT will eventually fail. Indeed, four conditions must be met before a farming community makes a success of an IMT intervention:

- IMT must hold out the promise of a significant improvement in the life situations of a significant proportion of members involved.
- The irrigation system must be central to creating such improvement.
- The cost of sustainable self-management must be an acceptably small proportion of improved income.
- The proposed organizational design must have—and be seen to have—low transaction costs.

Lesson 4: To work, institutional reforms need to go beyond irrigation management

While sectoral thinking makes good analytical sense for organizers and analysts, for the poor people, only livelihood thinking makes sense. In the African smallholder situation, for instance, irrigation departments' concern is institutional reform only in the irrigation sector; but what smallholders need is broad-based multi-sectoral institutional reform, sweeping credit, input and output markets, land tenure and extension services. For, only such broad, multi-sectoral institutional reforms will make their unviable farming viable.

The institutional alternatives that have the best chance for success in the smallholder situation are those that help smallholders move to a substantially higher trajectory of productivity and income from where they can take, in their stride, the additional cost and responsibility of managing their irrigation system. The best place to start seems to be markets. Bring smallholder communities in contact with stable, reliable markets for value-added products. Once their irrigated holdings provide them with decent livelihoods, African smallholders will be ready and eager for IMT.

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