Institutional and financial considerations for self-managed irrigated agriculture in West Africa: Examples from Burkina Faso and Niger

Considérations institutionnelles et financières pour l'autogestion de l'agriculture irriguée en Afrique de l'Ouest: Exemples tirés du Burkina Faso et du Niger

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Abstract

The paper presents and discusses findings about the actual performance of nine small irrigation systems in Burkina Faso and Niger. All of these were built by the government, and have since been transferred to the organisations of their users. The paper first discusses the general policy background, including reasons why transfer policies have been widely adopted, and sets of conditions that are considered to be prerequisites for a successful transfer. The specific circumstances in Burkina Faso and Niger are then described, with emphasis on financial and institutional aspects of the transfer arrangements. Performance of the nine monitored systems, over 5 or 6 years, is presented in terms of ten indicators, covering three major management areas: water management performance, agricultural production performance, and organisational / financial performance. In the closing discussion, the author notes the need for continued government involvement after the transfer, but recommends that to avoid continued dependency of the users' organisations on such government involvement, the roles of the three principal partners (government, irrigators' organisation, and individual farmer) need to be clarified.

Résumé

Cet article présente et analyse des résultats des performances observées de neuf petits périmètres irrigués au Burkina Faso et au Niger. Ces périmètres ont tous été mis en place par l'Etat et ils ont été transférés par la suite aux exploitants. Après une discussion de la politique générale d'irrigation dans les deux pays, l'article aborde les raisons qui ont motivé l'adoption des politiques de transfert ainsi que les conditions préalables pour garantir la réussite des transferts. Les situations spécifiques du Burkina Faso et Niger sont ensuite décrites en mettant un accent particulier sur les aspects financiers et institutionnels liés aux transferts. Les performances des neuf périmètres, couvrant des périodes de cinq à six ans, sont exprimées en termes de dix indicateurs qui englobent trois domaines de compétence: gestion de l'eau, performance agronomique, et performance organisationnelle et financière. Pour terminer, l'auteur souligne la nécessité de prévoir une certaine implication de l'Etat même au-delà du transfert. Cependant afin d'éviter une trop grande dépendance de la part des organisations d'usagers vis-à-vis le gouvernement, il recommande que les rôles et responsabilités des trois partenaires principaux, à savoir, l'Etat, les organisations d'usagers, et les exploitants individuels soient clarifiés.

1. Introduction

The withdrawal of governments from direct involvement in the development, operation and maintenance of irrigation schemes has led to a search for alternative ways to improve and sustain irrigated agriculture. Options range from the transfer of management (and, on rare occasions, ownership of assets and facilities) of irrigation schemes to the beneficiaries, to various forms of private-sector participation in the building, operation and maintenance of irrigation schemes.

The management of an irrigation system reposes on a number of inter-related functions carried out by various parties with interests in the system. The functions are driven by the flow of information and resources between the different participants. Decisions are made based on such exchanges and on the respective strategies of the actors. The performance of these functions is also affected, if not conditioned, by the bio-physical, institutional, and macro-economic environment in which the irrigation system is embedded. The functions can be grouped into the following three categories:

- a *water management function*, relating to the operation and maintenance of the irrigation and drainage infrastructure;
- an *agricultural production function,* where the water made available is used for crop production;
- an *organisational function,* broadly covering the planning, co-ordination and implementation of the tasks and activities (including accounting, resource mobilisation and cash-flow management) that must be correctly performed for the smooth operation of the irrigation system.

This paper, based on the results of field research carried out in Burkina Faso and Niger, examines institutional and financing questions relating to the self-management of government-sponsored irrigation schemes. It considers the interactions between these three functions, as reflected in the performance of the nine irrigation schemes in these two countries, and discusses their relative strengths and weaknesses. Prospects for self-management will be assessed and ideas provided to stimulate discussion on the scope and potential for the involvement of private-sector operators and service providers in government-sponsored irrigation schemes.

2. General overview of institutional and financial issues

Irrigation systems are complex with many participants and many objectives. The ease of establishing a widely-supported set of objectives could vary depending on whether the irrigation systems are developed, or controlled and operated by (a) local people in response to their needs, or (b) a public agency with little involvement of the beneficiaries.

The former category better fits the notion of private initiative and enterprise, whereas the latter is typical of government-sponsored schemes. While governments make the initial investments for their creation, they often find themselves confronted with a dilemma thereafter.

On one hand, there is the need (if not the responsibility) to ensure that the returns from irrigated agriculture are commensurate with the investments made; hence, governments may feel that they should continue to be directly involved in irrigation system management. On the other hand, they would not like their financial responsibility to continue indefinitely; especially when there are competing claims and pressures on national budgets from other sectors. They could also face arguments on the following lines: By building irrigation systems, hasn't the government conferred a substantial advantage on their users? Is it then fair to other citizens that the government continues to finance and support the functioning of those systems?

Hence there is a trend favouring government disengagement from irrigation system management, whereby responsibility for certain functions and the related expenditure is transferred to the users. This results in a special situation where private-sector management and production take place on State-owned systems, giving rise to a number of institutional and financial considerations. For example, have the rights and responsibilities of the different parties (government, farmer organisation, individual farmer), as well as the ownership of assets and facilities been clearly enunciated? Have the "rules of disengagement" been discussed with and agreed to by all participants? Or have farmers and even agency officials been taken unawares, and are they thereby ill prepared to cope with such changes? What residual role, if any, must governments play – must it be purely regulatory or should it remain directly involved in some activities such as the provision of support services? What should be the (future) relationship between the farmers and the bureaucracies? The answers to such questions will determine the future course, performance and sustainability of these transferred irrigation schemes.

On the financial front, let us first examine the cost side. The costs can be broken down into the following components:

- capital costs to build the irrigation facilities and accompanying infrastructure;
- recurrent costs to operate and maintain the facilities;
- costs of major repair and renewal of the facilities;
- indirect or overhead costs to cover the functioning of a managing organisation.

Whoever provides the capital would usually own the facilities, decide on any further development and expansion, and determine the expectations about returns to investment, taking into account the bio-physical, social and economic environments. In government-funded irrigation schemes, beneficiaries are usually not called upon to contribute to the capital cost. On the other hand, the motivation and attitude of private investors would be quite different from that of government. In private irrigation, as in any other private-sector undertaking, profitability and returns to investments are major driving forces – willingness to take risks must be rewarded by commensurate returns. Seckler (1989) enumerates six conditions for feasible private-sector irrigation:

1. The additional costs of conversion to irrigated agriculture must be offset by commensurate increases in agricultural production;
2. Availability of good quality land and water in proximity to each other;
3. Reliable and economic supply of inputs and labour to realise the production potential;
4. Markets for the purchase of these inputs and the sale of produce;
5. Reasonable transport facilities between production areas and markets;
6. Input and output prices that are not only at the right level but are also stable.

Similarly, Brown and Nooter (1992) identified the following characteristics that are common to successful irrigation schemes in the Sahel, recognising of course that the criteria for success could vary, given the multiple uses and users of irrigation systems:

1. The use of simple technologies (such as low-lift pumps drawing water from shallow aquifers, rivers or streams), with affordable levels of capital investment, maintenance and replacement costs;
2. The assurance of a secure supply and individual control of water;
3. A supporting infrastructure that facilitates access to inputs and to markets;
4. Institutional arrangements that are private and individual; in the case of collective arrangements, the most effective appear to be extended family groups, with water users' associations and co-operatives at the other end of the scale;
5. A judicious choice of technology and crops that offers high financial returns and makes farming profitable;
6. The farmer is an active and committed participant in project design and implementation.

The extent to which these sets of conditions apply in Africa could provide useful insights into the scope and potential for private-sector investments in irrigation in the continent.

Insofar as income is concerned, a common source of revenue for the management entities of irrigation schemes is fees and charges paid seasonally or annually by the farmers for services rendered. This could take the form of a flat charge, or an irrigation service fee or water charge based on the size of land-holding, or in some cases, on the actual measurement of water deliveries. These amounts are supposed to cover, partially or completely, the cost of providing water and irrigation services. Other mechanisms for generating resources for operations and maintenance include (a) membership fees, (b) profit on procurement and sales of inputs and produce, (c) hiring of equipment, (d) fines and penalties for non-compliance of rules, etc.

3. Irrigated agriculture in Burkina Faso and Niger: The physical context

In Burkina Faso and Niger, as in many semi-arid regions of sub-Saharan Africa, rainfed agriculture, which is practised extensively, is still the source of livelihood for a vast majority of the population. But, given the vulnerability of rainfed agriculture to the quantity and reliability of rainfall, the production and productivity of traditional rainfed cereals such as sorghum and millet are low and highly variable. Increasing populations and expansion into increasingly marginal soils further exacerbate this situation. In response, governments began to make major investments in irrigation as a means of stabilising agricultural production, improving productivity and guaranteeing national food security.

In both countries, public irrigation development began in the 1960s, but really took off in the 1980s in response to the serious droughts that occurred around that time.

Although these two countries are neighbours, and have broadly similar climates, their water resources situations are different. Niger has a major perennial river that crosses the south-western part of the country. Burkina Faso on the other hand occupies a plateau region containing the headwaters of the medium-sized Volta River, and also has many smaller rivers, most of which flow only for a few weeks or months of the year. These differences have determined the different irrigation development paths chosen by the two countries. In Burkina Faso, a large number of storage reservoirs have been constructed, for irrigation and other purposes, while irrigation in the Niger river valley is based on electrically powered pumping stations that deliver water to land located fairly close to the river.

The sizes of the irrigation schemes in the two countries are relatively modest—typically, about 50 hectares in Burkina Faso and 200 hectares in Niger. In both countries, the individual land holdings are also very small, typically 0.25 hectares per household, though there are several irrigation systems where the average size of land holding is smaller. One consequence of this is that, although the irrigation systems are quite small, the size of the farmer organisations is usually very large – certainly a few hundreds of members, and sometimes even exceeding 1,000. Another consequence is that the irrigated land holdings cannot, in general, satisfy all the household's needs, and farmers are obliged to pursue other economic activities such as livestock, fishing, handcrafts, and trading.

A notable feature is the interaction of irrigated agriculture with rainfed agriculture and livestock farming. This can lead to scarcity of labour during the major cropping season, because farmers are obliged to make resource allocation decisions between rainfed and irrigated agriculture, based on their judgement of how best to maximise their overall returns. An analysis of the comparative returns from rainfed and irrigated agriculture in Burkina Faso (Sally 1994) revealed that production from the irrigated farm, although representing only 5 percent of a typical total family land-holding, was nearly equal to that from the rainfed farm. The returns to labour, expressed in terms of the amount of cereal produced per unit of labour (kg/hr), from irrigated agriculture were also shown to be three times as much as from rainfed farming.

So, while irrigation does help to overcome many of the constraints inherent to rainfed agriculture, the challenge is to find out how this can be done in ways that make the best use of the available land, water, financial, human, and other resources, while not engendering adverse social and environmental impacts.

4. Financial considerations

Given the limited financial resources at their disposal, modern irrigation development in Burkina Faso and Niger has been financed mainly by grants and concessionary loans from donor governments and international development-assistance organisations. Inasmuch as neither the governments nor the users could have afforded the capital investment in respect of these irrigation systems, it is also difficult to expect that either party alone will be in a position to bear the costs of major repairs, equipment renewals, or rehabilitation.

Both countries have, therefore, adopted policies aimed at promoting farmer organisations, to which the responsibilities of performing and financing operation and maintenance of the irrigation systems were transferred. At the same time, the governments have been reluctant to abandon all their control over the irrigation systems. They continue to maintain presence and deliver assistance to the farmers.

However, the low levels of literacy and the dearth of requisite management skills in the rural environments of these countries, impose a constraint on the effectiveness of these farmer organisations. They thus face a lot of difficulties in carrying out the tasks and functions that were formerly done by State agencies, especially when there is pressure on these organisations to operate in a self-sustaining manner.

In the reservoir-based irrigation systems of Burkina Faso, the reservoirs are the biggest element of capital cost. But, once installed, these systems can convey and deliver the stored water for irrigation under gravity (with some exceptions where the irrigated command area is located upstream

of the reservoir, in which case pumping is required to lift the water). In contrast, in the Niger systems, water has to be pumped from the river, using very costly electrical power.

In Burkina Faso, although the large capital costs are large, farmers are not called upon to contribute to these, whereas in Niger the government does require them to contribute a share of the capital cost. Where operating costs are concerned, they are relatively low in Burkina Faso whereas in Niger they are about five times higher, mainly on account of the energy cost.

The need to adhere to fairly rigid and complex government-imposed financial management procedures, together with their larger size, means that the Niger systems have to employ a range of full-time staff such as accountants, storekeepers, and pump-operators. All expenditure must be recorded and classified among 30 different expense categories. There must be separate accounts for each member of the organisation, and all financial transactions with members must be individually recorded.

Furthermore, irrigation service fees are computed every season based on the costs incurred by the organisation in the previous season. All operation, maintenance and management costs, government-specified fixed charges representing certain percentages of the capital costs of building the irrigation system plus savings towards future renewal of equipment, as well as a contribution towards the overheads of the government irrigation agency, are included. Thus, members of farmer organisations in Niger pay towards all the four major cost components: capital investment, operations and maintenance, future repair and renewals, and government agency overheads. The capital and renewal payments are not transferred to the government but are supposed to be retained by the farmer organisation in interest-earning restricted bank accounts. While the government has tried to ensure that such savings accounts are not used for general purposes, this is difficult to achieve in practice.

In the Burkina Faso organisations, while the government provides overall direction and lays down standard forms of the basic organisation, the accounting system is much less rigorous than in Niger. The levels of recurrent costs and consequent financial and cash-flow pressures are also less. Financial stresses are most acutely felt in the gravity systems of Burkina Faso when flood events occur and the organisation has to face substantial repairs to infrastructure such as flood protection dykes, and perhaps canals or dam spillways. But farmer organisations do not appear to try to accumulate savings to face such events. In fact, although the organisations in Burkina Faso have the freedom to decide on irrigation service fees, they seem to be fixed at levels lower than what is required (Sally 1997). They usually appeal to government or non-governmental agencies to solve such disasters, but as such agencies do not always have budgets for these purposes, there is a growing amount of overdue repair and maintenance work in these irrigation systems, which is done neither by the organisations nor by the government.

Questions related to financial viability are discussed in greater detail in Abernethy et al. (2000).

5. Policy and institutional considerations

The self-management of irrigation schemes is an important policy goal in Burkina Faso and Niger. Both governments have made adjustments to their legal and institutional frameworks to help achieve this goal: farmer organisations have been promoted, government departments and agencies re-organised and re-structured, and agrarian and land reform programmes implemented.

Both countries, however, retain some presence and provide support to farmer organisations via one or more public-sector agencies at central or local level, or both. This is especially useful in irrigation schemes located in remote rural areas where it is not always easy for farmers to obtain agricultural inputs and market their crop surpluses. Those located close to urban areas can satisfy their needs from the private sector and have easy access to urban markets. They will also be in a better position to respond to changes in consumer preferences, such as greater demand for vegetables. In more remote locations, the greater demand for farmer organisations to accomplish functions other than water management and crop production could also give rise to greater pressures on them concerning fee collection and cash flow management. Any shortfall or delays could compromise the performance of the scheme, in the short term as well as a cumulative effect in the long term.

Although much progress has been made in the legal frameworks, shortcomings and ambiguities still persist about the exact status of ownership of land, water and irrigation facilities, and the rights to use these resources and to transfer them to others. For example, the farmer organisations in Burkina Faso are not in a position to exert any rights over the use of water resources stored in their reservoirs. Evidence of this is that agencies of the government are able to plan other uses of the reservoir, such as domestic water supply to other communities, without needing permission from the irrigators' association. In other instances, a lack of legal status and collateral could seriously hamper the ability of a small farmer to procure loans and credit, however productive he or she may be.

The organisational model typically promoted by governments is the co-operative. But the constitution and internal rules governing them are not always tailored to the specific case of irrigation, but are rather standard models catering to a general kind of rural co-operative. However, membership in the organisation is a necessary pre-condition to qualify for allocation of an irrigated landholding.

The co-operative model is based on concepts of solidarity and collective decision-making that are sometimes inconsistent with some characteristics of traditional rural societies such as domination by and deference to village chiefs and elders. Indeed, some organisations tend to be dominated, or taken over, by a few influential persons or groups. So there is a need for more objectivity and transparency in decision-making and in the administrative and financial management of the organisation. Decisions that are supposed to be taken by the general membership must not be taken by a small group of office-bearers.

Furthermore, the need for a clear definition of roles and responsibilities of the principal actors (the State, farmer organisation and the individual farmer) and actual adherence to what is stated is evident. In particular, the responsibility for major repairs has been left vague with the result that neither the government agency nor the farmer organisation attends to it, leading to the inevitable deterioration of irrigation facilities and degradation of the productive capacity of the irrigation system.

6. Irrigation system performance

Tables 1 and 2 show ten performance indicators for each of the nine irrigation systems in the two countries,[1] as reported in Abernethy and Sally (2000). These performance data were gathered and analysed as part of the comprehensive case studies carried out between 1991 and 1997 of the functioning of five reservoir-based systems in Burkina Faso and four pump-based irrigation systems in the Niger River valley (IIMI 1997; IIMI 1998).

For the Burkina Faso systems, one more indicator is added, the gross product value per cubic meter of storage volume, which is an indicator that gives some idea of the productivity of the major investment cost.

These tables illustrate the difficulty in deciding whether an irrigation system is well managed or not. As already highlighted in the introduction, the observed system performance is the resultant of water management, crop production and organisational functions. So, it is not surprising that some of the irrigation systems studied are above average with respect to some of the indicators, and below average according to some others. Nevertheless, these results will be used to identify strengths and weaknesses in system performance, and possible reasons for these:

[1] The 9 systems have been denoted by letters as follows:

Burkina Faso systems: A = Gorgo; B = Itenga; C = Mogtedo; D = Savili; E = Dakiri;
Niger systems: F= Kourani Baria I; G = Kourani Baria II; H = Saga; I = Tillakaïna

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Table 1. Performance of five irrigation systems in Burkina Faso.

Irrigation system →		A	B	C	D	E	Mean
Indicator	Units						
Crop intensity	%/year	93	128	202	94	196	143
Crop yield	Kg/ha/season	4,700	6,200	4,300	5,400	4,800	5,000*
GPV per cultivated hectare	US$/ha/season	759	1,130	793	1,976	738	1,079
GPV per developed hectare	US$/ha/year	706	1,442	1,596	1,848	1,442	1,407
Water consumption	mm/y	1,140	2,560	2,550	1,240	2,650	2,028
Water productivity	US cents/m^3	6.9	9.3	6.0	16.1	6.0	8.9
GPV/m^3 of storage volume	US cents/m^3/year	3.2	2.9	2.3	4.2	1.7	2.9
Inequity of yields	%	35	33	43	34	40	37
Fee collection rate	%	85	96	75	100	92	90
Fee rate/GPV	%	18.6	6.5	6.1	4.7	4.6	8.1
GPV/management cost	--	5.4	15.4	16.4	21.3	21.7	16.0

Note : GPV = Gross product value. * Only rice-based systems (i.e., except D)

Table 2. Performance of four irrigation systems in Niger.

Irrigation system →		F	G	H	I	Mean
Indicator	Units					
Crop intensity	%/year	193.6	180.8	191.2	89.1	163.7
Crop yield	Kg/ha/season	4,020	4,600	5,070	-	4,560
GPV per cultivated hectare	$/ha/season	608	799	1,089	2,235	1,183
GPV per developed hectare	$/ha/year	1,074	1,382	2,032	1,977	1,616
Water consumption	mm/y	3,211	2,838	2,003	2,783	2,709
Water productivity	US cents/m^3	3.76	2.83	9.94	7.92	6.11
Inequity of yields	%	35	36.5	27	44	36
Fee arrears	$/ha	364.5	119.9	144.9	132.0	190.3
Fee/GPV	%	21.5	16.0	12.0	20.4	17.5
GPV/management cost	--	17.5	23.8	31.2	18.5	22.8

Note : GPV = Gross product value.

An assessment of the strengths and weaknesses of irrigation system performance in the two countries follows:

- Land utilisation is good, with moderately high cropping intensities achieved in both countries. But average cropping intensity in Niger is higher than in Burkina Faso. Crop intensities in D (Burkina) and I (Niger) are below 100 percent because they are used only for growing horticultural crops (in the dry season). On the other hand, dry season cropping is not possible in A (Burkina) because the small reservoir capacity, equivalent to only 27,000 m^3/ha, does not allow any water to be carried over between seasons.
- Yields in Niger are high in some schemes but poor in others, mainly due to non-observance of crop calendar. The yields in Burkina are moderate, stationary or declining.
- Although the gross product value per hectare in both countries is reasonably good, the actual income per farm household is small because of the small size of irrigated holdings (around 0.25 ha).
- The fee collection rates are generally high in both countries. Niger while moderate in Burkina Faso. But irrigation service fees are much lower in Burkina Faso (around 5% of gross product value) compared to almost 20 percent of gross product value in Niger. When this factor is taken into account, the Nigérien systems could be considered to be performing moderately better than those in Burkina Faso.
- Water productivity in both countries is low (less than 10 US cents/m^3, except in system D).

7. Discussion

What lessons can be drawn from the above analyses about the prospects for the self-management of irrigation systems, and particularly for the participation of the private sector in government-sponsored schemes?

The irrigation systems in Niger perform better, on average, than the Burkina Faso systems. Does this mean that, in spite of higher operation costs, users in pump-based systems are more conscientious about payments and getting the best returns? Farmers realise that failure to pay fees and charges will result in the stoppage of water deliveries—a strong incentive for members of the organisation to pay their dues. This may also explain why system D in Burkina Faso, which also depends on pumping (from a reservoir) and is, therefore, different from the other four (gravity) schemes in the Burkina Faso sample, ranks better than even the Nigérien systems in many respects.

Though the systems in the two countries have different rules and procedures for accounting and financial management (tight government control in Niger versus more flexibility in Burkina Faso), none of the farmer organisations are financially independent and self-sustaining. They all lack working capital, and none of them are accumulating sufficient savings. As a result, they are unable to cope with the costs of any major emergencies, and there are deficits in major maintenance. Most of these systems would be technically bankrupt, if they were true private-sector businesses.

In the Niger organisations, the critical financial problem is the delayed payments of fees and charges, rather than their non-payment. In effect, farmers do not have to pay for fertiliser and other inputs, obtained from the co-operatives at the beginning of a season, until the end of the following season, which is about one year later. And even then, some members pay only after further delays. There are substantial arrears due to the organisations, which are then obliged to make use of the supposed capital savings accounts, to solve this liquidity problem.

Irrigated farming is not a full-time occupation for farmers in government-sponsored irrigation schemes in Burkina Faso and Niger. However, irrigated agriculture is generally profitable for the farmer – returns to land and labour are much higher compared to rainfed agriculture. But, because the irrigated holdings are small (about 0.25 ha), actual incomes are insufficient to meet the needs of farmer households. They tend to spread their risks by pursuing non-irrigation activities in parallel, especially rainfed farming. This gives rise to difficulties, such as the competition for labour resources at critical times in the crop cycles of both the rainfed and irrigated crops, with adverse consequences for both.

The experience of these two countries also suggests that it is desirable for the government to play a residual role in support of farmer organisations. Whether this should be a purely regulatory role or imply involvement, through an appropriate agency, in such things as technology choice and transfer, credit, marketing, or improving financial procedures is an open question. However, any such involvement must be very clearly demarcated, so that the farmer organisations do not remain permanently accountable to, and dependent on, the government.

The governments in both countries wish the farmer organisations that have been entrusted with the responsibility of managing government-sponsored irrigation schemes to be self–sufficient. For this to succeed, ambiguities about ownership and user-rights in respect of land, water and irrigation infrastructure have to be addressed. Farmers in irrigation systems do not own their land and they do not have transfer rights. Farmer organisations do not have rights over the use of water stored in their reservoirs.

Under these circumstances, the scope for direct large-scale private-sector participation in government-sponsored irrigation schemes seems to be limited. They could of course intervene as service providers (maintenance, repairs, account keeping, fee collection, etc.) and some private-sector operators are already involved in contract farming on some irrigation schemes (e.g., scheme D in Burkina Faso). A key element is that these operators must be able to demonstrate to farmers and farmer organisations, their competence and the benefits that would accrue as a result of their intervention, and to justify the payments farmer organisations will be called upon to make for their services. Otherwise, this may result in further erosion of the organisations' already precarious finances.

On the other hand, other forms of irrigation that are more amenable to small-scale private sector participation with a livelihood-generating and poverty-alleviation focus seem to offer more promise.

For example, there is now considerable interest and expansion in the promotion and use of affordable and cost-effective technologies such as low-lift muscle-powered pumps, and simple drip kits.

The on-going experiences in the promotion of private-sector irrigation projects in Burkina Faso and Niger will provide valuable insights in this regard.

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