

Political and Economic Dimensions of Privatization and Turnover of Irrigation Schemes in Sudan

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PERSPECTIVES ON PRIVATIZATION AND TURNOVER

JUST AS MUCH as the 1960s and 1970s were characterized as the era of state expansion, the closing two decades of this century will be associated with de-nationalization and market-oriented reforms. The vigor with which countries at different levels of socioeconomic development, with regimes of dissimilar ideological orientations and political character are striving to curtail the scope and magnitude of the state, and adopt policies which place greater reliance on the private sector and market forces, is astounding. Privatization programs worldwide encompass such diverse areas as manufacturing, telecommunication, electricity, municipal water supply, education, prison management and even garbage collection.

Irrigation schemes have not escaped from the global jump on the bandwagon of public-sector reform programs. From the mid-1980s, governments in countries which have a substantial irrigation sector have been trying to change the prevailing relationship between state agencies managing the irrigation facilities and the farming community. The magnitude of the change varies from country to country under an assortment of labels, from the outright transfer of the ownership of irrigation schemes or facilities to water users (New Zealand, Bangladesh, Indonesia),⁴ shifting of a function such as transferring operation and maintenance (O&M) responsibilities of secondary and tertiary canals to farmer groups (Sri Lanka, Philippines)⁵ or the state disengaging itself from the provision of support services for irrigated agriculture (Sudan).⁶

The impetus for the privatization and turnover (P&T) of irrigation institutions stems from the dominant perception that irrigation agencies, like other government bureaucracies, lack the incentives and responsiveness to optimize management performance. Farmers have a direct interest in sustaining the cost efficiency, profitability and physical conditions of irrigation systems (Vermillion 1992). Other reasons advanced include: cost saving for the public sector; increased allocative efficiency through water markets; improved management of irrigation systems as the collection of user fees would induce management agencies to improve their services to their clients (Small and Carruthers 1991; Seckler 1993).

The foregoing perspectives provide a strong economic rationale for P&T of irrigation systems. After all, it was the fiscal and budgetary crises which governments encountered as a result of decades of highly interventionist policies that initially propelled the mass movement towards privatization.

Whilst rationalizing privatization programs in terms of the potential economic gains as legitimate and pragmatic, it downplays the motivating power of noneconomic factors and their consequences. This aspect merits some elaboration as in most country situations, the turnover of irrigation systems is being implemented within the overall context of macro-economic and political adjustments.

It is noteworthy that the current wave of privatization is being pushed forward by politicians and state officials rather than being driven by the demands of social groups. The motivations of a government could be a deliberate attempt to relax its control over the economy and reorder its political goals, or it could involve the state maintaining a controlling interest in the economic and political outcomes whilst the mechanisms for implementing these goals are being reformed.⁷ In the latter case, the private sector would then find itself operating within the nexus of economic and institutional control, where prices for key factors of production are administratively set; access to key resources,

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⁴See Farley (1984), Johnson et al. (1992).

⁵See Vermillion (1992), Wijayarathne and Vermillion (1994).

⁶For a global review of privatization and turnover of irrigation institutions see Vermillion (1992).

⁷See Ikenbury (1993).

particularly capital, dependent on political decisions; and state patronage a vital element for success. In such a setting, competition would be stifled and rent-seeking behavior would be the order of the day.

Shifting responsibilities from the state to NGOs or the private sector alters the institutional framework through which stakeholders articulate, arbitrate and advance their individual and collective interests. In a general sense, it entails the transformation of the prevailing modes of production. Where public agencies have been in charge of irrigation schemes for a significant time, a stable system of relationships develops between the agency and the farming community, often based on welfarism.⁸ Divesting of the state of management puts in place an alternative sets of equivalents. Private-sector management sees ends and means differently. Their principal aim is maximization of returns to investments. The pursuit of this aim could result in the management taking actions that could be to the disadvantage of the farming community and in extreme cases exploitative. Similarly, where user groups take over the management, the interests of the more powerful groups on the basis of class, caste and even political affiliations could dominate production relations to the detriment of the less-powerful members of the community. These provide fertile conditions for major conflicts which could stifle P&T programs.

Consequences of P&T programs as outlined above are indicative of the political character of P&T. Therefore, ignoring the political perspective would mean missing a larger set of dynamics which could undermine the sustainability of the effort.⁹ Yet, this remains an underresearched area.

SCOPE AND OBJECTIVES

This paper presents the results of a case study in Sudan which examines the political and economic ramifications of the country's recent attempts at privatization of its irrigated sector. This initiative by the Government of Sudan (GOS), which symbolized a radical shift in public policy pursued for nearly three decades, forms part of a larger effort at macro-economic adjustment under the National Economic Salvation Program 1990-93. The program got underway in the wheat season of 1991-92 with the restructuring of the White Nile Agricultural Services Administration (WNASA), a parastatal body vested with the responsibility of managing the White Nile pump schemes.

This paper also reviews privatization and turnover policy in Sudan as it relates to the White Nile pump schemes. It highlights the key provisions of the policy and their implications. It describes the ways in which various stakeholders had responded to the policy signals and analyzes the consequences of their actions in relation to scheme management and production relations that had evolved. In addition, some preliminary results on the comparative analysis of the performance of the new management modes are presented.

The paper concludes by highlighting useful lessons for privatization and turnover of irrigation schemes in countries with a similar political and economic environment, and outlining a set of conditions which must be satisfied if an effort of this nature is to succeed.

THE STATE AND THE IRRIGATED SECTOR

To place the current efforts at P&T in Sudan in perspective, it is necessary to have a broad understanding of the government's role in the irrigated sector and the country's institutional legacy.

State intervention in irrigated agriculture started in the first quarter of the century when the colonial government initiated a program to develop "livelihood pump schemes" in the Northern Province along the Main Nile. Similar schemes were developed along the White Nile after the construction of the Jebel Aulia Dam in the late 1930s. In 1950, the Government inherited the Gezira Scheme following the expiry of the 25 years' lease to the Sudan Plantation Syndicate, a group of foreign private entrepreneurs.

The 1960s and the early 1970s marked the beginning of a new economic era in Sudan when state interventions became highly visible. The government nationalized a number of private-sector enterprises and stepped up its intervention in productive activities, especially in agriculture (World Bank 1986).¹⁰

State involvement in irrigated agriculture centered on five key areas: i) the creation of new facilities, ii) the formation of parastatal agencies to manage the irrigation facilities and control the means of production, iii) regulating the relationships between the farmers and the management agency through the tenancy contract and periodically

⁸The role of public management agencies is not entirely economic. Usually, social and welfare objectives are given a prominent place.

⁹An elegant account of the political underpinnings of privatization is given in Feigenbaum and Henig (1994).

¹⁰Prior to this there were only nine public enterprises outside the financial institutions. By 1984, this number had grown to 136 establishments with government equity amounting to about Sudanese Pounds (Ls) 940 million. Sixteen of these were parastatal bodies concerned with the country's agriculture sector. This includes state bodies which managed the irrigation schemes and the Sudan Cotton Corporation which regulated the market for cotton, the principal crop grown in the irrigated sector.

transforming it, iv) intervening in the crop production by specifying cropping patterns, planting dates and crop rotations, and v) regulating product marketing, especially through the compulsory procurement of cotton at administratively set prices. Steps have now been taken to reduce the role of the state in the economic affairs of the country and encourage the private sector. Attempts have been made to restore markets, price controls have been removed, imports of production inputs have been liberalized.¹¹ There has been some expansion in commodity circulation. However, it is not clear just how much autonomy the private sector has gained through these measures. The economy is still characterized by chronic shortages; hyper-inflation and prices bear little relationship to real costs. Taxation is very high.¹² The exchange rate policy which had been the bane of the country's irrigated sector and the economy at large, continues to remain in a state of flux causing added confusion and uncertainty in national markets. Furthermore, the tradition of state dominance continues to be reflected in the institutional framework which remains largely unchanged. Political patronage is still a major factor for private-sector participation in economic affairs and rent-seeking behavior is very evident, particularly in the context of the privatization of the White Nile pump schemes. These are indeed difficult circumstances for the smooth implementation of a privatization program, but the process initiated seems to hold out some hope for the future.

SOME CHARACTERISTICS OF THE IRRIGATED SECTOR

The Gezira is undoubtedly the "jewel in the crown" of Sudanese irrigation. With a command area of some 900,000 hectares (2.1 million fedans), it accounts for about half the total irrigated area of 1.8 million hectares developed by the government over the last five decades or so. The remaining half comes under two major gravity schemes (Rahad and New Halfa), two systems with flood control devices (Al-Gash and Tokar) and several river lift pump schemes located along the banks of the Blue Nile (60 schemes) and White Nile (174 schemes) and in the north on the main Nile (15 schemes).¹³

The families of some 200,000 tenant farmers are dependent on these schemes for their livelihoods. Cotton and wheat are the principal crops cultivated. Other crops which occupy a substantial acreage are sorghum and groundnut. Fodder and a variety of horticultural crops are also cultivated on a smaller scale.

The organizational form and the production relations established in the Gezira Scheme served as the model for the other schemes developed by the government. Each scheme is administered by a public corporation functioning under the Ministry of Agriculture. The irrigation facilities in the respective schemes came within the purview of the Ministry of Irrigation.

The overall administration and the organization of production are based on the so-called "triple partnership" between the government, the corporation and the tenants. The government provides the land and water; the corporation, the means of production (i.e., seeds, fertilizer, machinery and equipment) and the management (specifying the cropping pattern, cultivation schedule, the irrigation dates and marketing of cotton and wheat).¹⁴ The tenants on their part are responsible for organizing labor for cultivation and harvest (Abdalla 1989). In return for their efforts the tenants are paid a "profit" through an "individual accounts" system which is applied to cotton and wheat crops which are financed by government.

The tripartite arrangement has for long been a rather contentious issue. Until 1982, the tenancy contract was based on the share cropping (or joint account) system between the tenants and the government where costs and proceeds were shared on a 50-50 basis.¹⁵ There was no levy on land and water. With the change to the individual account system in 1982, the tenants had to incur the total cost of production inputs for the quantity determined and supplied by the Corporation at administratively set prices. In addition, land and water charges were introduced.¹⁶

¹¹The price of cotton however remains regulated by the Sudan Cotton Company which was "privatized" recently.

¹²At present, direct taxes and levies alone account for some 20 percent of the gross proceeds from agricultural products.

¹³In addition, there are some privately developed irrigated areas. The exact number is not known.

¹⁴The uniformity of measures and their execution were controlled by Block Inspectors who have the authority to sanction deviations.

¹⁵The system was found deficient as it permitted inefficient producers to benefit at the expense of the efficient tenants. Much of the decline in cotton output in the 1970s was attributed to the inappropriate allocation of costs and revenue among tenants under the joint accounting which prevailed at that time. Furthermore, the greater emphasis on diversified cropping and demand for effective coordination have brought into question the centralized provision of services and the traditional systems of planning, management and control (Deloitte, Haskins and Sells 1990).

¹⁶Initially, the tenants' union had strongly resisted the change which culminated the 1982 strike organized by the Gezira tenants' union. The tenants subsequently accepted the new system which is still being continued.

The White Nile Pump Schemes

As the focus of this study is on the White Nile pump schemes a brief account of their salient features is warranted.

The White Nile pump schemes include all the pump schemes on the eastern and western banks of the White Nile. The first pumps were installed in 1929 by private entrepreneurs. There was a substantial increase in private investments in pump schemes for cotton production along the Blue Nile and the White Nile following the 1950 Korean war boom. A decade later, the depression in cotton prices led to reduced profits and a decline in tenants' incomes and resulted in major conflicts between scheme owners and Tenants' Unions. In view of the rapid deterioration of the schemes and also as the government policy at the time was oriented towards socialism, most of the private-sector pump schemes along the White and Blue Nile were nationalized in 1968.

At present there are some 174 pump schemes located on the banks of the White Nile. The net commandable area in these schemes is around 151,000 hectares (360,000 fedans).

About 31,000 tenants live in these schemes growing food crops and cotton. The rotation designed for these schemes was originally cotton - sorghum - fallow with a cropping intensity of 50 percent. The pattern has not been followed systematically and several combinations with varying cropping intensities are found. The rotation commonly practiced at present includes wheat-sorghum-fallow with 67 percent cropping intensity.

Some of the White Nile pump schemes have suffered from design faults. In some cases, the location of the pump stations had been inappropriate. There some 50 different makes of pumps installed, many of which are obsolete and break down frequently.

THE PERFORMANCE OF THE IRRIGATED SECTOR

Sudan's economic fortunes depend substantially on the performance of its irrigated sector. Cotton which is the principal crop grown in the irrigated areas accounts for some 43 percent of the export earnings. Irrigated wheat is important in terms of national food security.

Over the last decade or so, the performance of the country's irrigated sector had been well below its potential. Cotton output had recorded a significant drop from 5.8 million metric tons in 1983 to 2.3 million metric tons in 1990. Yields have stagnated or even declined and area under irrigated cotton has come down from 331,795 hectares in 1981/82 to 281,526 hectares in 1989/90 (Table 1). Productivity levels are particularly low in the White Nile pump schemes where the yield levels are about half the national average.

Table 1. Irrigated cotton area and productivity levels, 1981-1990.

Season	Total Irrigated		White Nile Pump Schemes	
	Area (hectares)	Yield (kantars/ha)*	Area (hectares)	Yield (kantars/ha)*
81/82	331,795	9.28	26,517	5.95
82/83	359,492	11.19	33,523	7.38
83/84	368,932	11.42	25,907	8.33
84/85	346,158	11.42	27,320	6.90
85/86	314,151	8.81	21,914	5.95
86/87	334,377	11.42	23,017	6.66
87/88	306,358	10.21	24,984	5.24
88/89	303,237	11.02	16,533	5.71
89/90	281,526	9.75	13,416	5.00

* 1 kantar=141.56 kg.

Source: Advisory Unit for Agricultural Corporations, Ministry of Agriculture, Khartoum.

Against this background the public agencies managing the country's irrigation schemes are in serious financial difficulties and there is a high level of indebtedness amongst tenants.¹⁷

The cumulative effect of a number of factors acting over a period of time, accounts for the poor performance of the irrigated sector. These include a drop in the international market price of cotton; mounting cost of production in the face of high inflation; inappropriate exchange rate policies; inadequate capital, especially foreign exchange for investments in the rehabilitation of irrigation facilities, including replacing the antiquated pumps or those which had fallen into a state of disrepair.

EVOLUTION OF PRIVATIZATION AND TURNOVER POLICY

Discussion of privatizing Sudanese irrigation dates back to the mid-1960s following a recommendation made by a visiting World Bank mission (World Bank 1986). Nonetheless, recognition of the complexities of such an exercise given the enormity of the irrigation schemes, their importance to the Sudanese economy, the need to maintain economies of scale, the presence of strong Tenants' Unions and government policy biased towards socialist values did not favor the active pursuance towards privatization. The only step towards transforming the highly state-regulated management and production system is the introduction of the individual accounts system in the early 1980s.

The idea was rekindled around the mid-1980s, this time on the initiative of the GOS, which was deeply concerned with the rapid deterioration of cotton production in the pump schemes along the Blue and White Nile and the enormous debts accumulated by the two public corporations responsible for their management.¹⁸ The two corporations were dissolved and management of the schemes was vested with two newly created bodies, the White Nile Agricultural Schemes Administration (WNASA) and the Blue Nile Agricultural Schemes Administration (BNASA), until their future was decided.

A noteworthy development at the time was that the decree of the Minister of Agriculture allowed schemes in the Blue Nile and White Nile with pump sizes of 12" diameter to be converted to tenants' agricultural cooperatives and pumps of less than 12" diameter to be turned over to the private sector. Another prominent feature was that tenants were given freedom in the choice of crops as far as it is practically feasible according to the rotation system and the availability of water.¹⁹

RECENT POLICY MEASURES

The Economic Salvation Program 1990-93 reaffirmed GOS's commitment to macro-economic reforms, including the privatization of several public-sector entities and liberalizing the economy. An innovation under the program was the creation of the High Level Technical Committee for the Disposition of Public Enterprises under the auspices of the Ministry of Finance. This committee was vested with the responsibility of coordinating and supervising the divestiture of state-owned enterprises and service organizations including those managing the country's irrigation schemes.

As far as the irrigated sector is concerned, the key provisions of the privatization policy are as follows:

1. In the major gravity irrigation schemes (Gezira, Rahad and New Halfa), greater participation of the tenants in the scheme management is facilitated. Towards this end, half the membership of the Board of Directors of the respective corporations were allocated to tenants. Ancillary service units of each corporation (i.e., machinery unit, Gezira light railways, ginnery) were to be privatized.
2. In the pump schemes, divesting of parastatal agencies providing support services to the schemes and transferring of their functions to the private sector and farmer organizations.
3. The irrigation facilities are not the object of privatization. They will remain under the jurisdiction of the Ministry of Irrigation which would also set out the basic operating rules.²⁰

¹⁷According to a study carried out by Deloitte, Haskin and Sells (1990), in the Gezira Scheme where the tenants on average are relatively more prosperous, the accumulated tenant debts to the Gezira Board as of June 1989, amounted to Ls 476.5 million.

¹⁸GOS (undated), The Future of the White and Blue Nile Pump Schemes.

¹⁹Mobilizing resources to follow alternative cropping patterns and the difficulty in organizing input supplies and irrigation did not facilitate the freedom of crop choice.

²⁰There is now a growing recognition of the need to privatize irrigation facilities especially the pumps. It is envisaged that under the proposed White Nile Irrigation Rehabilitation project the ownership and management of the pumps would be transferred to water users' associations.

In essence, P&T of irrigation institutions in Sudan as currently conceived entail the transferring of responsibilities for providing support services for irrigated agriculture and not irrigation management functions. This is in marked contrast with most other country situations where irrigation management functions are being devolved.

The program got underway in the wheat season of 1991-92 with the partial divestiture of the White Nile Agricultural Schemes Administration (WNASA).

IMPLICATIONS OF POLICY AND SOME OUTCOMES IN THE WHITE NILE AREA

Divestiture of WNASA

Some authorities on privatization argue that speed in implementation is a vital factor for privatization to succeed. This notion has some relevance in the case of White Nile schemes. Divesting of WNASA had been contemplated since 1986. However, action was not taken until 1991 when WNASA withdrew its administration from all but 38 schemes and retrenched some 70 percent of its staff.

The retention of 38 schemes was considered an interim measure pending the ultimate disbanding of the organization. However, the selection criteria were such that WNASA retained its control over the most productive schemes. In the other schemes (estimated to be some 136) the tenants were expected to make their own management arrangements.

The sudden withdrawal of WNASA administration surprised the tenants. In some schemes they could not make alternative arrangements on time and were compelled to leave their lands fallow.

At present, sixteen schemes have been taken over by a private-sector company—the White Nile Holding Company (WNHC). Thirty three schemes in the Dueim Province have been provisionally brought under a management organization set up on the initiative of the provincial political leadership. The fate of the remaining schemes is unclear. Field inquiries revealed that a large number of such schemes in Kosti and Renk provinces did not have any form of management and lay abandoned. Some of the tenants interviewed indicated that they intended forming a company or such organization to manage the schemes, but they were unsure as to whether they could mobilize the necessary financial resources to do so.

The New Management Systems

Private-Sector Management

WNHC commenced operations in the White Nile area in 1991 with the takeover of 6 schemes for wheat cultivation and expanded its operations to cover 16 schemes as referred to earlier. The total area under these schemes is 16,300 fedans (6,933 ha) of which 13,632 fedans (5,725 ha) are devoted to cotton and the rest to wheat. WNHC concentrates its efforts on the cotton cultivation program.

Private-sector companies must obtain the approval of the Committee for the Disposition of Public Enterprises. Besides the payment of a nominal fee of Ls. 25 per fedan annually and obtaining the consent of tenants in the respective schemes to enter into a "partnership" with the company, there are no set terms and conditions laid down by the state for the private-sector operations. The management contract awarded to the company is for a period of one year. There is no formal contract with the tenants other than the company informing the tenants' representatives of its investment plans.²¹

The reasoning behind the annual contract is that it would give an opportunity for the private sector and the tenants to try their arrangements and if it is to their satisfaction, to continue the contract for another year. Though there is some logic to this, it has resulted in uncertainty in the minds of the management and the tenants; consequently, the management in particular, is reluctant to carry out major or long-term development activities. In addition, it enables the company to withdraw its activities once it finds that major investments are required to sustain the current levels of production.

The management system is similar to that previously adopted by WNASA. In fact, most of the company's staff of about 70 personnel are employees of WNASA who had been seconded to WNHC. The staff includes 14 agriculturists who supervise cropping activities and also liaise with the tenants.

Provisions have been made for tenants' participation in management. Representatives of the tenants are members of the Production Committee and the Advisory Committee. The function of the Production Committee is to formulate and implement the agricultural plan for the season including the distribution of production inputs among tenants and also supervise cultivation practices and irrigation. The Advisory Committee concerns itself with marketing and financial

²¹Field interviews carried out by the authors revealed that the majority of the tenants were not aware of the conditions under which their representatives had agreed to the company taking over the management of the schemes.

matters including the scrutiny of tenants' accounts maintained by the company. These committees also serve as channels for resolving conflicts between tenants and WNHC.

A distinctive feature of company management is the reintroduction of the *musharaka* or the share-cropping arrangements. However, unlike previously when share-cropping was based on joint accounts, the present arrangement is based on individual accounts. Under this system, the company provides all inputs in kind, arranges for land preparation and harvesting, and advances a small amount of cash. Once the crop is harvested, the company procures a part of the produce equivalent to the value of the inputs supplied, administration costs, water charges, and other taxes and levies. The remainder of the harvest is shared on the basis of 60 percent to the tenants and 40 percent to the company.

There is a fundamental contradiction in the prevailing *musharaka* system. Whilst the company operates on commercial principles with the principal objective of profit maximization, tenants' production activities remain regulated. Decisions about cropping patterns, cultivation methods, the quantity and timing of input use are controlled by the management. The difference is that tenants' activities are now controlled by a private-sector company whereas previously they were regulated by a parastatal agency. This in effect amounts to the privatization of scheme management and not privatized irrigated agricultural production. Tenants' opinion about the present arrangements with WNHC was mixed. Some 52 percent of the tenants interviewed stated that this system was better than having no management for at least, it ensured the availability of funds for their cultivation. The rest were apprehensive about it especially because they had no idea about the basis of costing. Moreover, the accounts are maintained by the company and had not been shared with the tenants or their representatives in the Advisory Committee. At present, there are no legal provisions which obligate the company to reveal its accounts as there is no formal contract with the tenants. A majority (54%) of the tenants who were skeptical about private-sector management indicated that they preferred state management and only 14 percent favored management by tenants' organizations.

Notwithstanding the misgivings, the tenants expressed satisfaction with the provision of services under private-sector management, especially irrigation. The latter was accomplished by the company taking the initiative to carry out minor repairs to the irrigation pumps and conveyance structure and deducting the costs involved from the water charges payable to the Ministry of Irrigation (MOI). In addition, the company made an "incentive payment" to MOI officials to ensure an adequate and timely supply of water for its schemes.

Dueim Tenants' Management Organization

The initiatives taken by the tenants of Dueim Province to set up their own management organization is unique. It is the first time in the history of irrigated agriculture that the cultivators had taken full charge of the management of the schemes.²² This was facilitated by the presence of a strong Tenants' Union and political leadership which fully supported the tenants efforts.

The organization structure consists of 33 schemes grouped into 10 units. Each unit has its Board of Directors comprising 5 elected tenant representatives and a nominee of the Tenants' Union. The unit organizations are federated at the provincial level to form an organization which overlooks all 33 schemes. The provincial level organizations consists of a Board of Directors with 10 unit representatives, 3 from the Tenants' Union and 10 officials attached to local-level public agencies.

Production relations are relatively more liberal than under the other systems of management. Although freedom in the choice of crops is limited, the tenants have the freedom to make their own financing arrangements, purchase of inputs from the open market and sell their produce commercially. Several tenants had self-financed their operations either from their own resources or from informal credit. For those who are unable to self-finance their operations the management arranges for loans through the banks on an individual basis.

The Dueim system represents the first step towards a privatized farmer-managed irrigated agriculture. A key factor at the farm level facilitating this trend is that tenants in this area were once freeholders of land who had become tenants on their own holdings when their land was absorbed by the creation of the irrigation scheme. The tenants maintain the identity of their holdings and are currently clamoring for the return of their lands. This signifies the importance of property rights in P&T.

Management by WNASA

Although WNASA currently functions with a substantially reduced staff its organizational structure has not changed. Production relations based on the "individual accounts system" which is the practice in all agency-managed schemes

²²There are several private small pump irrigated holdings which are farmed individually. But the Dueim case represents a collective management effort.

is still in force. Yet, the lack of financial support from the central government and the threat of closure seems to have energized the staff of WNASA. According to the cross-section of the tenants in the 38 schemes managed by WNASA, the provision of services had improved substantially. And, in the last wheat season, the highest yields were recorded in a WNASA-managed scheme (Table 4).

Whilst the post-restructuring phase of WNASA has so far been encouraging, the pressure to become a self-financed organization had resulted in the management adopting "cost-recovery" practices which place the tenants at a disadvantage. As was done previously, WNASA supplied all production inputs to the tenants on credit. The cost of inputs is predetermined at the start of the season and recovered in-kind from the tenants after harvest. Under this arrangement WNASA makes a substantial profit on inputs as product prices increase within very short periods because of the high inflationary trends in Sudan.²³

Perceptions of Stakeholders

The constituency for P&T in Sudan remains small. The program is being pushed through on the initiative of the Ministry of Finance with the aim of "load shedding" and removing future liabilities to the state by way of financing agricultural activities in the schemes. The program is endorsed by senior technocrats in the government and some professionals who are now outside the mainstream of public service but function in various advisory capacities. The private sector has so far been unenthusiastic.²⁴

A noteworthy feature is that the Tenants' Union—a well organized and politically powerful body—has so far remained passive. A plausible explanation for this is that, although the national leadership exercises its power in negotiating better prices and services, it seems to be less inclined to take on regional issues. These are left to the unions of each scheme.²⁵

The key actors in the privatization of the White Nile pump schemes are: i) private-sector companies, ii) tenants represented by the Tenants' Union, and iii) WNASA.

The Private Sector

Private-sector involvement in the management of the White Nile pump schemes has so far been negligible. So far only one company, the White Nile Holdings Company (WNHC) has come forward. WNHC concentrates its activities in the Kosti Region. This is partly for logistical reasons which facilitate management, and partly for other considerations of a strategic nature.²⁶ The company was not interested in schemes in the other areas especially in the Dueim Region, where the Tenants' Union is strong. WNHC prefers to negotiate with tenants directly without the intervention of the union. The company also has very stringent selection criteria which ensure that the schemes selected are those in which the irrigation facilities are in proper order and the soil fertile. Besides these, the company will only intervene if its terms are satisfied, which include the tenants consenting to a sharecropping arrangement.

A key question is why other private-sector institutions have shown little interest in managing the schemes. Officially, there are no restrictions for any private company to take over the management of the schemes as long as it has agreed on the terms and conditions with the tenants. Moreover, the private sector has invested substantially in rain-fed agriculture since the 1950s.²⁷

Inquiries revealed several reasons for the disinterest amongst the private sector for irrigated agriculture in general and the White Nile schemes in particular. Foremost among these is the continued government control over irrigated agriculture. Government intervention in irrigated agriculture remains pervasive at all operational levels ranging from decisions regarding the production of irrigated cotton and wheat to intervening in the pricing and marketing of cotton.

²³In the last wheat season (1993/94) WNASA recovered the cost of inputs supplied to tenants in-kind at the rate of Ls 3,500 per sack (100 kg). The open market price of wheat at the time was Ls 7,000 per sack.

²⁴Discussion with the authorities revealed that the private sector has a greater interest in the services and the industrial sectors where there has been considerable progress. The reasons for their poor response towards irrigated agriculture are analyzed in a subsequent section.

²⁵The role of the Tenants' Union in the White Nile schemes is discussed in a subsequent section.

²⁶WNHC avoided taking over schemes in which the political climate was not very conducive for its involvement.

²⁷At present, 18 private-sector companies have invested in rain-fed agriculture covering an area about 158,000 hectares. The area developed by each company varies from 850 hectares to 34,000 hectares.

Another major constraint is the difficulty of mobilizing financial resources. At present, financing of agriculture is done through state banks and some private Islamic banks. Besides a government's credit ceiling for agriculture, rigid lending conditions prevent easy access to financing. WNHC had been very efficient in this respect. It had been able to mobilize resources from a consortium of eight financial institutions, which includes some state banks and private banks. As to whether other companies could benefit from similar facilities from the existing financial institutions remains unclear.

In addition, the poor physical infrastructure in the White Nile area, uncertainty about government policy, heavy taxation, and coordinating input supplies and services were some of the other reasons advanced by the private sector.

The foregoing circumstances are not conducive for wider involvement of the private sector. In the absence of competition, this represents a shift from state monopoly in the provision of services for irrigated agriculture to private monopoly.

The Tenants' Union

The group of people who are significantly affected by the privatization program are the tenants. As in other irrigated schemes, all tenants are members of the Tenants' Union. The responses of the union of the respective schemes were mixed. In Kosti Region where the union is relatively weak, the tenants were willing to enter into a partnership with the private sector. Tenants from the Dueim Province where the union is strong, and those in schemes managed by WNASA, firmly rejected any involvement of the private sector or at least with those currently operating in the White Nile area. The reasons for this go beyond the fact of private-sector intervention to issues which are more political in nature.

Field inquiries revealed that most of the tenants had no idea about the P&T program except for the fact that WNASA had ceased to manage their schemes and they had to make their own arrangements to cultivate their holdings. The Dueim tenants had succeeded in setting up a management organization with the backing of the provincial political leadership. But those in other areas, except for the 16 under the management of WNHC, are in a desperate situation without any form of management structure. In some of these schemes informal land transactions such as leasing are reportedly gaining ground.

The WNASA

Following the restructuring, WNASA had pruned its staff from about 2,000 to the present level of 500 employees. Some of its present staff are on secondment to the private sector or to the newly set up farmer-managed schemes. The fate of the remaining staff is unclear.

WNASA is now expected to self-finance its activities. This is accomplished through the collection of land charges from the tenants for the services it renders. In addition to this there is revenue generated through the supply of inputs and from the purchase of wheat from tenants at prices well below those prevailing in the open market. The financial viability of WNASA under its present organizational set-up is unclear. Besides, the reduction in staff numbers there has not been a major change in its operational mode.

SOME PERFORMANCE RESULTS OF SCHEMES UNDER THE NEW MANAGEMENT

It is too early to provide a detailed analysis of the performance of the schemes under the three management modes discussed earlier. This section provides a preliminary assessment of certain performance parameters. These include: i) efficacy in the provision of support services ii) cost-effectiveness of service provision, and iii) impact on production.

Efficacy in the Provision of Production Inputs and Services

As noted earlier, the essence of P&T in the Sudanese context entails the transfer of responsibilities of providing support services for irrigated agriculture from state institutions to the private sector and tenant organizations. A sample survey was carried out in selected schemes to ascertain the effectiveness in the provision of support services under the three management modes. The results are summarized in Table 2.

The responses of tenants given in Table 2 clearly indicate that the provision of support services has substantially improved under WNASA management. The major reason for this is that the Corporation currently concentrates its efforts only on a limited number (38) of schemes whereas previously it had to service some 174 schemes. Besides this, government regulations at present permit only wheat cultivation in the WNASA-managed schemes, unlike earlier where cotton was grown in addition to wheat. The focus on a single crop enabled the Corporation to coordinate its services more effectively.

Tenants in the Dueim tenant-managed scheme reported the worsening in the provision of support services under the present management. The tenant organization is still in its formative stages and suitable organizational arrangements

have still not been created. The organization functions with a skeleton staff most of whom are employees of WNASA who have been seconded to the tenant organization. Another important reason for the deterioration in support services in the tenant-managed schemes is that with the withdrawal of state support, tenants have to rely on the open market for their production inputs and services. The private sector is not adequately developed and shortages in inputs and fuel are rampant. Such conditions pose considerable difficulties for the tenants to obtain their inputs and services on time.

Table 2. Efficiency in service provision under the management modes.

Nature of Service	Percentage of Farmers Reporting								
	WNHC (n = 51)			WNASA (n = 52)			DUEIM FMS (n = 57)		
	Better	Worse	No Change	Better	Worse	No Change	Better	Worse	No Change
Seed Supply	70	20	10	47	19	34	19	55	26
Timeliness of Land Prep.	40	60		88	12		30	70	
Provision of Machinery	60	27	13	92	2	6	17	72	11
Fertilizer Supply	45	31	24	79	6	15	38	53	9
Irrigation	95		05	30	10	60	35	40	30

Source: Authors' Survey Data.

Comparison of Cost Structures

Table 3 shows the cost structures of the three management modes. The overall costs of service provision are the least under WNASA management. This is primarily because tenants opted for manual spraying of insecticides as against the aerial spraying adopted by the other two management systems. This was in response to the tenants' demands to utilize the existing stock of chemicals and manual sprayers available with the Corporation. In respect of most other inputs and services, the costs are less in the farmer-managed systems.

Table 3. Cost of inputs and services(S./Fedan) 1993/93 wheat crop.

Cost Item	WNHC	WNASA	DUEIM FMS
INPUTS			
Seeds	3,358	3,125	3,217
Fertilizer	8,223	4,860	4,842
Insecticides	2,160	375	3,348
Sacks	180	327	317
SERVICES			
Land preparation	2,000	1,850	1,040
Harvesting	2,900	2,050	1,640
Water charge	1,500	1,500	1,500
Administration	500	330	200
Other costs	1,300	---	64
Average Cost/Fedan	22,574	16,450	17,339

Source: Collected from the administration accounts.

Except for sacks, the rates for inputs and services charged by the White Nile Company are higher than the other management modes. The fertilizer costs levied by the company, suggest that the company had applied almost double the quantity applied in the schemes managed by WNASA and tenants.²⁸

Some of the high costs as shown in the accounts maintained by WNHC and WNASA cannot be justified. For instance, machinery costs for land preparation and harvesting charged by WNHC and WNASA are above the charges levied by the private sector for tractors and combined harvesters.

Although all three management types collect a nominal administration charge, WNASA and the company levy other charges which are not reflected in Table 3 particularly relating to the use of their own machinery.

Comparison of Farm Business Returns

The farm business returns are based on survey data of six selected schemes; two under each management mode. The schemes as well as the tenant sample were selected at random. Yield estimates as shown in Table 4 indicate better performance by the Corporation schemes, followed by the tenant-managed schemes. The variation of yields within these schemes is the least among tenants in the WNASA schemes and is the highest among the company-managed schemes.

The gross return was calculated using a fixed market price of Ls. 6,000 per sack. This might overestimate the returns for some of the tenants of WNASA and tenant-managed schemes who were compelled by the management to deliver part or all of their produce at a lower price to recover the loan taken.

Overall, the net returns per fedan were highest in the WNASA-managed schemes. In one of the company-managed schemes the net returns were marginal (Ls. 1,455 per fedan) whereas in the second scheme the returns from wheat were negative. The reasons for the lower returns in the company-managed schemes is that they are located in the marginal wheat-growing areas and hence, productivity levels are lower. In addition, the company concentrated its efforts on the cotton-growing schemes and failed to organize its cultivation schedule in the wheat-growing areas on time.

Table 4. 1993/94 Wheat Crop-the Farm Business Returns (Ls/Fedan).

Scheme Management	Yield/Fedan (sacks) ¹	C.V.	Gross Return	Cost of Production	NET RETURN
<u>Corporation</u>					
Scheme 1	7.91	.30	47,640	16,647	30,813
Scheme 2	6.71	.30	40,260	16,254	24,006
<u>Farmers</u>					
Scheme 1	5.09	0.41	30,540	17,464	13,056
Scheme 2	4.30	0.35	25,800	17,214	8,586
<u>Company</u>					
Scheme 1	4.02	0.50	24,120	22,665	1,455
Scheme 2	3.01	0.61	18,060	22,483	(4423)

1 sack = 100 kg.

CONCLUSIONS

Sudan is one of the many countries in transition from a planned to a more market-oriented economy. It is one of the few countries attempting to go through the process without pressure from external sources. Mounting economic difficulties in the country had forced the government to engage in a "load-shedding" exercise. The "privatization" of the agencies managing the country's irrigation schemes was part of that endeavor.

Privatization is a complex and costly exercise. This is particularly the case with the irrigated sector of Sudan, given the capital intensity of irrigated agriculture, and the intricate socioeconomic and political environment in the irrigation schemes. Moreover, decades of rigid government control of the economy have stifled the private sector both in the agriculture and industrial sectors. The institutional framework had been structured to cater to the needs of a state-dominated economy. Although the government had embarked on P&T in 1991, it has concentrated its efforts exclusively on divestiture of the parastatal agencies. It had been somewhat lax about delineating the means of implementing and adopting measures which would ensure that the new management systems function effectively. In

²⁸As the company had not divulged its accounts it is yet not clear whether a larger amount of fertilizer had been actually applied or whether it has charged an enhanced amount from its tenants.

addition to the highly interventionist policies, the absence of a developed input and product market, high taxation levels and the presence of powerful Tenants' Unions act as disincentives to the private-sector participation. As noted earlier, only one company had shown interest in taking over the management of the pump schemes. The absence of competition may lead to private-sector entities exercising monopolistic powers which could be detrimental to the interest of the tenants and pave the way for exploitative tendencies to emerge. This problem may aggravate in the absence of formal measures for regulatory oversight of public-sector activities. Thus, whilst providing the right environment for private-sector involvement appropriate mechanisms to safe-guard the interest of the tenants should be in place.

Given the capital intensity of irrigated agriculture in Sudan, the availability of credit facilities is a major determinant of success in agricultural production. At present, credit facilities are channeled through state banks and some private banks. The lending conditions are such that access to credit is difficult for most entities. Access to credit was a major constraint encountered by the Dueim Tenant Management organization and some private-sector companies. Thus, availability of credit is an essential precondition for P&T.

Tenants in the irrigation schemes in Sudan had functioned under rigid state control. Under P&T, tenants have taken the initiative (as in Dueim) to set up their own management organizations. However, these organizations lack managerial expertise. Training is needed in scheme management and for the development of the entrepreneurial skills of tenants.

Viewing P&T solely as a way of transferring management responsibilities from the state to nongovernmental entities is simplistic. It is not the end in itself rather than the means to an end. As Vermillion (1992) observes, if P&T are to lead to sustainable and positive results, it would require more than policy enactments. It is a change which would require an evolution towards liberalizing the fundamental institutional environment of irrigated agriculture. Where this has not yet transpired, turnover policies should be more gradual and focused more on creating viable local institutions.

KEY ISSUES

a. The Need for a Vision

There is need to formulate a clear vision of the role of the irrigated sector in the economy and appropriate policies to steer its development in the desired direction.

b. Choosing Complementary Macro-Economic and Sectoral Policies

The mere change in ownership or management systems will not guarantee the desired results. Appropriate macro-economic and sectoral policies which could involve deregulation and liberalization, and providing incentives to foster greater competition need to be put in place.

c. Institution and Capacity Building

Before management turnover can take place in countries that have, for several years, been highly state regulated, the basic foundations for nongovernmental entities to function effectively need to be constructed. This would require not merely the relaxation of state control, but also legal frameworks and institutions relating to property rights, water rights and the rights for nongovernmental organizations such as farmer organizations. New institutions are needed not only at the macro-level, but also at the micro or scheme-level where the policy is being implemented.

d. The Role of the State

A clear redefinition of the responsibilities of the state in irrigation management and the elucidation of the role of the private sector and NGOs both at the national level and at the scheme level is needed. These should be widely communicated to instill confidence among the various stakeholders and prevent misunderstandings of the intentions of the government.

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