The Viability of Small-Scale Farming at the Tyhefu Irrigation Scheme, Eastern Cape

Thesis

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Abstract

This investigation is conducted against the background of current attempts to rehabilitate and revive the now defunct Tyhefu irrigation scheme. The poor track record of many irrigation schemes (despite huge investments) in the former homelands has prompted the government to reconsider its active and direct role in small-scale irrigation farming. This has resulted in the closure of many irrigation schemes including Tyhefu irrigation scheme. The new policy framework in South Africa, known as the irrigation management transfer, is premised on the transfer of ownership, authority and responsibility of small-scale irrigation schemes from government to the farmers.

Tyhefu irrigation scheme was a state-driven, top-down initiative. This study argues that the justifications for the Tyhefu irrigation scheme were conflated, with the result that the need for political control of the Tyhefu area far outweighed the considerations regarding the financial viability and sustainability of the proposed project. Given the repressive political climate of the time in South Africa, the planners' proposals were a mechanism for the realization of the socio-political and economic agendas of the apartheid state and Ciskei government. Although technical factors critical for project success were examined, little or no attention was paid to the socio-economic aspects. For the planners, the main requirements for success entailed centralized managerial control, no participation of the beneficiaries, capital intensive and sophisticated agricultural techniques and the production of high value crops. Therefore, it can be argued that the nature of the planning and implementation of the Tyhefu irrigation scheme was ill-conceived, short-sighted and misguided.

A review of the literature on irrigation development on the African continent provided useful insights for this study. The lessons from irrigation development experience in Sub-Saharan Africa indicate that the continent is littered with examples of derelict and costly failures. What stands out in many of these irrigation projects is their over-emphasis on technical issues to the complete neglect of human and other social aspects. Working partnerships between the farmers and irrigation scheme management could, thus, not be realized. Almost without exception the case studies used here indicate that the industrious type of farmer was never developed as was envisioned in the planning documents. Neither were rural livelihoods improved in a sustainable manner.

The findings of this study suggest that irrigation management transfer is a complex and delicate process. In this new set of arrangements, beneficiaries face formidable challenges in terms of capacity (human and financial) if small-scale irrigation farming is to become a viable sector. No doubt, the viability and sustainability of the Tyhefu irrigation scheme demands a comprehensive package of interventions that address various issues of markets and marketing, capital investment and access to finance, technology, education and training, support and extension services. It is evident that institutional aspects and the related issue of functional literacy require much more attention than thus far. As a result, at the moment there is no possibility for independent agricultural production.

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To my family, especially my parents – thank you very much.

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CHAPTER 1
INTRODUCTION

This investigation is conducted against the background of current attempts to rehabilitate and revive Tyhefu Irrigation Scheme (TIS). Tyhefu irrigation scheme is one of several irrigation schemes established in the Eastern Cape between 1976 and 1985, including Keiskammahoek (1976), Ncora and Shiloh (1979), Zanyokhwe and Xonxa-Bilatye (1985). Whilst most of these performed reasonably well, there was a marked decline during the late 1980s which led to their eventual collapse. On the whole these irrigation schemes suffered from a combination of technical, institutional and organisational constraints which include inter alia poor management, project planning and design; lack of farmer participation and consultation, farmer selection, quality of extension and other types of support services.

The concept of small-scale farmer is highly contested and value laden. Whilst small-scale farming is viewed as an important policy objective by the government and an important sector of agricultural development, the concept remains ill-defined and controversial. Up until now the government has not articulated any clear and comprehensive policy or strategy. There is a need for the clarification of the concept and what it actually means in practice.

Not only are several terms used to define small-scale farmers, there is also, increasing realization that this group is not homogenous. The terms used include smallholder, resource-poor farmers, subsistence farmers, peasant farmers, food-deficit farmers, household food security farmers, land reform beneficiaries and emerging farmers (Machete and Mollel, 1999:3). In addition several criteria are used to classify them in terms farm size, purpose of production, income level and racial group.

In this study small-scale farming refers to black farmers who are found largely in the former homelands, whose primary objective is market-oriented farming. Implied is the assumption that these farmers are constrained in terms of their capacity (human and financial) and complementary resources such as research, support and extension services, access to markets, marketing and key production inputs.

With approximately 60 percent of the total population of the Eastern Cape living in the rural areas of the former Transkei and Ciskei, improving agricultural productivity, especially small-scale farming, is a crucial but not a sufficient condition for the eradication of poverty. There is widespread skepticism regarding the potential of small-scale farming to generate sustainable rural livelihoods. Currently, the small-scale farming sector continues to battle with the seemingly insurmountable task of moving from its subsistence status to market-oriented production. It is well known that the agricultural sector in the homelands performed dismally compared with the white commercial agricultural sector. Whether agricultural productivity can be improved remains controversial. Several studies (Manona, 1999) raise doubt about the potential of agriculture to generate increased livelihoods for the rural population. Manona in his study of the Melani village, in the Eastern Cape, illustrates the virtual collapse of agriculture and the consequent dependence of rural people on wage labour, remittances and social welfare for their livelihoods. The question is whether agriculture should be left depressed as it is or whether alternative ways should be found to address the problem, especially in view of the absence of employment opportunities.

A major feature of the agricultural sector in South Africa has been its dual structure. The dualism with significant differences in cost, infrastructure and level of production is well documented (Kirsten and Vink, 2000; Lipton, 1977; Schrire, 1992; World Bank, 1994). According to these sources agricultural development has been viewed in terms of the efficient, capital intensive, largely white-owned, technologically advanced, large-scale commercial sector. Consequently, the government believed that this kind of agriculture to be the one to contribute to economic development. Conversely, small-scale agriculture has been characterized as a traditional, backward, unproductive and inefficient subsistence sector and generally associated with the homelands. Kassier and Groenewald (1992:347) describe the commercial farming sector as reminiscent of the farming sectors in the developed world, producing surpluses and using considerable amounts of purchased inputs. In turn, the subsistence sector has many of the characteristics of subsistence farming as experienced elsewhere in sub-Saharan Africa.

Extension and support services have always emphasized the dichotomy between commercial and subsistence agriculture. As a result major service institutions were biased in favour of white commercial agriculture. All this was made possible by a long history of direct state

intervention in South African agriculture. Effectively, therefore, whilst the interests of white commercial farmers were met through various institutional support structures such as finance, marketing structures, technical services, pricing policy, many small-scale farmers in the homelands either had limited or no access to support services. Where such services existed the quality has been inferior. The cumulative effect of these measures is a small-scale farming sector that has been restricted to low input levels. Consequently, small-scale farming has not been able to meet the needs of the rural population, who thereby became net food importers from the white agricultural sector (World Bank, 1994:22). This situation has been compounded by mass migration of the rural population to urban areas in search of employment, resulting in labour shortages in agriculture. Vaughan (1992:421) argues "the historical undermining of smallholder production, which so substantially reduced the significance of the peasantry as a social and economic category, contributed to the widespread assumption that a smallholder class no longer exists as a significant locus of production in South Africa agriculture".

Small-scale farming has a long history in South Africa and has been promoted in various guises since the Tomlinson Commission's report in 1955. Tomlinson Commission promoted the concept of small-scale farming as a means of alleviating poverty and promoting economic development. The Commission believed that small-scale farming in "traditional black areas" had the potential to produce surplus agricultural commodities (1955:117). The concept of "economic unit" farm size was central. Tomlinson envisioned the emergence of a middle class farmer group with the capacity to produce a livable income through full-time farming. The viability of this strategy required the provision of supporting infrastructure in terms of farm inputs, transport and agricultural extension in addition to the planning of the farm areas into economic units. The government rejected these recommendations, with the result that viable small-scale farming never became a reality.

Generally, the results of small-farmer development programmes have been disappointing. They have failed to bring about the expected social and economic development of the rural population. Van Rooyen and Nene (1996:329) sum up small-scale farmer development as follows "experience with small farmer strategies highlights several problems, of which insufficient participation, lack of ownership, ad hoc participant selection, lack of property rights to farm land and deficient support services play a significant role, in failing to establish

a small farmer category in the country". The shortcomings in the promotion of small-scale farming suggest "the concept was never introduced under fully supportive conditions under which large-scale farming was promoted in the commercial areas" (van Rooyen and Nene (1996:327).

The current climate is hostile to the development of small-scale farmers, despite various legislative and policy changes initiated since1994. Prospects for revitalising agriculture in the former homelands and establishing a new class of emerging farmers are bleak. The dual nature of agriculture remains very much intact. Until such time a supportive environment is provided, small-scale farming cannot be judged what its potential is.

Goals of the Research

This investigation was conducted against the background of current attempts to rehabilitate and revive the now defunct Tyhefu irrigation scheme. The poor track record of many irrigation schemes in the former homelands has prompted the government to reconsider its active and direct role in small-scale irrigation farming. This has resulted in the closure of many irrigation schemes including the Tyhefu irrigation scheme. The new policy framework in South Africa, known as the irrigation management transfer, is premised on the transfer of ownership, authority and responsibility of small-scale irrigation schemes from government to the farmers. The research examines the following interrelated issues:

- To identify the main constraints, challenges and needs the farmers face at the Tyhefu irrigation scheme
- To establish progress made with regard to the rehabilitation and revival of the Tyhefu irrigation scheme
- Can small-scale irrigation farming at the Tyhefu irrigation scheme generate sustainable rural livelihoods?

Structure of the Study

This study is divided into six chapters.

Chapter One – Introduction

This chapter provides the background to the study.

Chapter Two and Chapter Three

These chapters provide the theoretical basis to the study.

Chapter Two – Irrigation Development in Sub-Saharan Africa

This chapter focuses on irrigation development in Sub-Saharan Africa in order to provide a comparative perspective on irrigation development in South Africa. It begins with a brief review of selected case studies on the African continent. An attempt is made to identify and discuss the commonalities and shortcomings that emerge in the various case studies. Lastly, this chapter explores irrigation management transfer programmes, as one of the measures instituted by governments to transfer either complete or partial responsibility for the management of public irrigation systems to water user groups or other non-governmental organisations. These measures are part of the rehabilitation process and implemented against the backdrop of the high failure rate of the many irrigation schemes and macro-economic reform measures.

Chapter Three – Irrigation Development in South Africa

This chapter provides a brief history of land dispossession and proletarianisation of the Black majority in South Africa. The history of irrigation development in the so-called white South Africa and the homelands is presented. Selected case studies are used to illuminate the discussion. The last part of the chapter discusses post-1994 agricultural policy and the approach to dealing with small-scale irrigation schemes in the homelands.

Chapter Four - The Tyhefu Irrigation Scheme: An Illusion of Development

This chapter examines the planning and implementation of the Tyhefu irrigation scheme. The last part looks at the current process of reviving and rehabilitating the Tyhefu irrigation scheme.

Chapter Five – Data Presentation and Analysis

The survey research approach was adopted in order to obtain the required information. For the purposes of this study the questionnaire method was used. The researcher decided to use personal interviews instead of mailed questionnaires. These promoted flexibility by allowing the researcher to clarify questions, to probe and make sure that all the questions have been answered. In addition, the low level of literacy in the community favoured the use of this approach.

Given the problems of unwillingness of the people to cooperate with the researcher in the community and mistrust, the sampling procedure used in this study is snowball sampling. This is a form of non-probability sampling. Interviews of approximately an hour and a half took place at the respondents homes. Information obtained from interviews was supplemented by informal discussions with various stakeholders and villagers. Where necessary telephone calls are made to clarify points with key informants and to keep up to date about new developments.

Once all the interviews were completed, data was analysed in the light of the stated objectives of the study.

Chapter Six - Conclusion

This chapter gives the overall conclusions based on consolidating main arguments, findings and data analysis.

SIGNIFICANCE OF THE STUDY

It is hoped the study will contribute to the available body of literature for the understanding of irrigation development in South Africa. Equally important, it seeks to shed light into the many challenges and constraints small-scale irrigation farmers in the former homelands are faced with. Furthermore, it seeks to stimulate debate among policy makers and rural development practitioners.

CHAPTER TWO
IRRIGATION DEVELOPMENT IN SUB-SAHARAN AFRICA

Introduction

The post-World War II (WWII) era witnessed an increasing emphasis on irrigation as one of the major trends of agricultural development globally. As a result massive investments in irrigation, particularly in developing countries took place. The height of this investment was reached during the mid-1980s. This period saw about US $2,5000 to 3,000 million committed per year by external funding agencies (Ruotsi, 1995). After decades of rapid increases in investment in irrigation development, there has been an equally dramatic decline since the 1980s. This reflected not only relatively low agricultural prices, rising construction costs and growing concerns about environmental sustainability, but also disillusionment by international institutions such as the World Bank, donors and other financial institutions with irrigation performance in Africa and elsewhere. Generally, the net impact of irrigation on total agricultural production has been modest. Meanwhile, several irrigation schemes have required rehabilitation in a period of not more than ten years of their existence due to lack of maintenance, while others had to be abandoned. Therefore, early enthusiasm and optimism with irrigation development has been replaced by a more pragmatic evaluation of irrigation prospects. Given the poor track record of many irrigation schemes the role of irrigation in development has come under critical scrutiny.

The problems experienced in many irrigation schemes have raised several issues: the appropriateness of irrigation development policies implemented by donors and governments during the past decades; is irrigation development necessary?; do current reforms such as Irrigation Management Transfer (IMT) implemented in various countries, including South Africa, provide a viable solution?

To provide a comparative perspective on irrigation development in South Africa, this chapter begins with a brief review of selected case studies on the African continent. A review of the literature reveals that the African experience is not unique, but shares many similarities with the South African situation. For example, many irrigation projects have suffered from a

combination of technical, institutional and organisational constraints. These include inter alia poor management, project planning and design, security of tenure, lack of farmer participation and consultation, farmer selection, size of the units, debt repayment, product prices, marketing, operation and maintenance, quality of extension and other types of support services. As will be discussed in this chapter, an examination of the Africa experience shows that the top-down or centrally planned approach in the planning and implementation of many irrigation schemes was unsustainable. A disturbing feature is that the lessons of evaluation studies on irrigation schemes failed to be incorporated in newly planned ones. As a result many of the shortcomings and problems identified in old irrigation schemes continued to be repeated and experienced.

Lastly, this chapter will explore the IMT programmes, as one of the measures instituted by governments to transfer either complete or partial responsibility for the management of public irrigation systems to water user groups or other non-governmental organisations. These measures are part of the rehabilitation process and implemented against the backdrop of the high failure rate of the many irrigation schemes and macro-economic reform measures.

THE STATE OF IRRIGATION DEVELOPMENT

Estimates on the present and potential irrigated areas in Africa vary widely. Nevertheless, according to Ruotsi (1995) the total irrigated area on the African continent is between 12-13 million hectares of which 5.02 million ha (40%) are in Sub-Saharan Africa. Ruotsi (1995) summarises the value and practice of irrigation in the following statement:

> The importance of irrigation varies a great deal from country to country, and while Egypt has 99% of its cultivated land under irrigation, a large country like *Zaire* (Democratic Republic of the Congo) has only 0.2% of its arable land under irrigation. Furthermore, a wide range of water management situations can be observed in Africa, from simple traditional ones to highly sophisticated full-control irrigation schemes. In many African countries, the absence of medium-sized, commercial operators means that irrigation systems are polarised between a few, large-scale government schemes, and numerous very small-scale independent irrigators. The sharing of experience between these two types of irrigation systems has proved to be very difficult in most African countries.

According to Underhill (1983) with the exception of the Nile Delta, large-scale irrigation was unknown in Africa until this century (20th). While large-scale formal irrigation dates back from the colonial period, "small-scale irrigation has been practiced since time immemorial in many varied forms according to local circumstances" (Underhill, 1983). The former were designed primarily for the production of cash crops, often highly mechanised, under the management of government or private companies. Generally, traditional irrigation is poorly developed, using simple inexpensive technology. Ethnic groups such as the Chagga, the Sambaa and the Para of Northern Tanzania made elaborate networks of man-made channels.

Irrigation schemes have been a popular form of development with governments, planners, donors and international agencies such as the World Bank. Official investment in irrigation has been channeled almost entirely into ambitious and expensive large-scale projects, few of which have justified their costs (Harrison, 1987:155). The main reason for this pre-occupation according to Ball (1986:342) is because they are highly visible, account for large expenditures in a short period, create an impression of activity and progress, and introduce a cash-flow into usually economically deprived areas. In addition, Ball argues "development banks have pressures brought upon them to speed up investment. This may lead to top-down planning causing imbalanced and extravagant development which often creates more debt than the participants can repay, and more dissatisfaction and misery than existed before the intrusion are engendered".

A review of the literature (Bembridge, 1986b; Underhill, 1987; Groenewald, 1986; Carruthers, 1988) on the performance of irrigation schemes shows that the history of irrigation schemes in Africa is littered with examples of derelict projects. Ball (1986) describes this as an "unblemished record of failure", whilst Bembridge (1986b: 602) describes them as 'expensive failures, similarly Harrison (1987:155) quoting a senior World Bank agriculturalist declares "irrigation in Africa a disaster area". In turn Vaughan (1997:8) notes that irrigation schemes in the former homelands in South Africa are generally perceived to have been unmitigated disasters. Furthermore, Bembridge (1986b: 607) argues "there is a large gap between predicted and actual performance. Schemes which were convincing on paper have yielded disappointing results giving very low rates of return on investment".

The above concerns are, also, reflected in the World Bank report (1981:76-78). The report notes that despite considerable investment in irrigation development in the 1970s there was hardly any increase in cultivated area in several countries because of land abandonment or rehabilitation needs, thereby offsetting subsequent additions to the developed area. According to the Report not all developed areas are farmed and not all farmed areas are harvested. Furthermore, yields have in most cases either stagnated or fallen. In addition to technical problems related to water management, insufficient levelling of land, soil problems, input supply bottlenecks, use of varieties not adapted to local needs, poor economic incentives to farmers are identified as prime factors of poor performance.

The corollary of the high failure rate and cost of irrigation is a radical slowing down of the progress in African irrigation due to a decline in investment. As Harrison (1987:157) argues "the expansion of irrigation in Africa has probably reached a standstill, where new land coming under irrigation barely balances the losses of irrigated land through deterioration. Meanwhile, major donors have become extremely cautious about investing in ambitious new irrigation projects, with the result that by 1985 the World Bank had virtually stopped lending for new large scale projects".

These irrigation schemes are, generally, characterised by low productivity. As a result Bembridge (1986b: 600) argues that at present irrigation plays an insignificant role in African agriculture because of its failure "to bolster food production meaningfully and not succeeding significantly in softening climate-induced risk" (Groenewald, 1986:6 67). The highest production levels and farm incomes from irrigation schemes are reported in Asia and Latin America. According to FAO (1995) in Africa no comparable levels of productivity have taken place and performance has been disappointing. Harrison (1987:156) explains:

> The low yields are not surprising. The ... schemes are usually designed by engineers and based purely on physical considerations. Suitable crops are then chosen for promotion, with little or no regard for local needs or experience. Farmers are rarely consulted... Pumping and control equipment is imported, and liable to the usual failures due to poor maintenance, lack of spare parts or fuel. The management of most projects has been highly centralised. Professionals ran the show and farmers little better than labourers, were told what to grow and where. Low prices paid to farmers did not help encourage efficient production.

According to Bembridge (1985:99) the prospects for those that are still operating are not good. As Bembridge (1986b: 600) points out "... with few exceptions the economic success of irrigation projects falls far short of the expectations of planners, politicians and development agencies. Even on the few relatively successful projects there appear to be increasing social and ecological problems which will eventually have negative economic effects". Some of the earlier successes like the Gezira in the Sudan or the Kilombero in Tanzania are according to Moris, Thom and Norman (1984:1) candidates for rehabilitation[1]. According to Kortenhorst et al (1989:19) notable exceptions of successful projects can be ascribed to the "fortunate" situations of a particularly lucky project concept or to a charismatic project manager.

Selected Case Studies

The **Kwarre Irrigation Scheme** in Nigeria is one of the expensive large-scale projects undertaken by the Department of Agriculture in Nigeria during the colonial period. It was initiated as a pilot irrigation project. Even though the scheme enjoyed partial success during its first few years, it has been defunct since 1963. Despite its questionable "philosophy" and design, Kwarre irrigation scheme continued to serve as a model for large-scale irrigation development into the 1970s. Kwarre Irrigation Scheme was based on autocratic control of the farmers, who were often viewed as lazy and recalcitrant, by irrigation scheme management. The colonial officers concluded that the farmers needed to be coerced into taking up the land and cultivating it in the approved manner (Palmer-Jones, 1981:83)[2].

[1]Rehabilitation involves much more than the upgrading of the deteriorating irrigation infrastructure. Ultimately, the intention of many governments in Africa since the 1980s (in South Africa since 1994) has been to transfer either complete or partial responsibility for the management of public irrigation systems to legal entities such as water user associations. Effectively, this gives the beneficiaries greater control over management, decision-making and day-to-day running of the irrigation schemes, something that they have been denied in the past.

[2]As will be evident in all the case studies that will be discussed here total control of the farmers, with no decision-making powers was considered one of the main prerequisites for the success of the irrigation schemes. Farmers did not have a sense of ownership and control over their own development. This type of development thinking which emphasised top-down and blueprint plans was not limited to irrigation schemes only but to the whole development endeavour in general. This was indicative of the colonisation / apartheid process and societies in which superordinate (colonisers) and subordinate (colonised) relations prevailed. It has since been realised that prescriptive planning and imposed solutions have had little impact in improving the living standards of many communities. The current trend is that development should be participatory.

The institutional framework did not provide appropriate economic incentives for farmers but one that imposed penalties and compliance with the regulations. According to Palmer-Jones (1981:86) "the assumption that the cause of the problems experienced was that farmers were not cooperative led management to disregard or deny the complaints of farmers, except where the farmer was socially or politically prominent, and to act in more authoritarian and arbitrary ways. The result was that farmers became more uncooperative, which helped to reinforce the attitude and views of management". In the final analysis, failure of the Kwarre Irrigation scheme can largely be ascribed to lack of adequate incentives to farmers, autocratic control coupled with the marginalisation of the farmers, bureaucratic ineptitude, inappropriate and inefficient supplies of inputs.

On some of the irrigation schemes in Nigeria a highly skewed distribution of benefits favouring those with the smallest need was evident (Palmer-Jones, 1980). These included the wealthy elite and tribal authorities who were not entirely dependent on agriculture. As a result the efficiency of these projects was not their primary concern. This made it impossible to forge cooperation among the farmers due to the inequalities that existed.

In **Gambia** the World Bank Agricultural Development Project (ADP) initiated between 1972 and 1977 an irrigation project, at a cost of US $1.5 million, to counter growing cereal imports. This it would achieve by expanding pump-irrigated rice production among 3000 thousand smallholders. The Gambia had been expanding irrigated areas since the 1950s as part of a drive to achieve greater self-sufficiency in rice. Initially the project did meet its objectives (for a few years) by increasing farm productivity, improving food security, while at the same time providing participating households with opportunities to invest in various assets (Webb, 1991:339). When direct World Bank involvement ceased in 1977, project performance was already below original expectations. Less than two-thirds of the area earmarked for irrigation was developed. Meanwhile land was planted below its optimal capacity during the dry and wet season respectively. As a result, production never reached the levels predicted by the planners, especially during the wet season. Webb (1991:347) explains "While yields were falling, farmers found themselves unable to adhere to the biannual cropping timetable. Given delays in ploughing and pumping, the dry season crop was often not completed before the rains arrived in June, thereby impinging on the wet season irrigated crop and on the cultivation on rainfed crops. As a result many farmers decided to suspend the

wet-season pump-irrigated rice crop and to return to former patterns of rainfed agriculture".

An evaluation by the World Bank (1984) cited technical and socio-economic reasons for failure. From the planner's point of view there was no question that the cause of the project's collapse was the failure of the project's participants to make 100 percent loan repayment[3] (Webb, 1991:350). According to Webb on a superficial level this is true but points out that on a profound level the loan problem was merely a symptom of deeper ills relating to other areas of project design and implementation (1991:350). On the one hand there were technical deficiencies not only related to the quality, timely supply and suitability of the machinery to local conditions but also to its operation and maintenance. There was no training and extension programme for the participants in case of machinery failure. The result was the improper use of machinery by untrained participating users.

Also, the lack of user participation in the planning of the project contributed to widening the knowledge gap between the planners and the participants about the value and significance of the project. This is clearly evident in the reasons given by the farmers for participating in the project. Some farmers cited the need to achieve household food security, desire to earn cash, peer pressure or the betterment of the community. Webb (1991:351) elaborates:

> In order to achieve national food security objectives, and at the same time for the project to be economically viable, farmers were expected to cultivate two irrigated crops per year and to sell most of their harvest on the open market. The farmers on the other hand, equally concerned about food security, decided that irrigated rice yields during the wet season were too unpredictable, and that most of the rice should be consumed rather than sold. As a result, the double-cropping schedule was never achieved, and debts accumulated from the very first season.

[3]Each household involved in the irrigation project was expected to pay for all the inputs supplied at the end of the harvesting period. Meanwhile, participation in the project "brought not just the potential for increased wealth, but also access to credit on a scale previously unknown...Few households did not avail themselves of the opportunity to acquire implements through credit" (Webb, 1991:345). The decline in yields as well as marketed surplus impacted directly on the ability to repay loans. From the onset loan repayments and recovery posed difficulties. As a result a ruling was issued to farmers that no further credit will be given unless repayment is up to date (Webb, 1991:348). This had little effect. On the whole this increased the running costs of an already ailing project. As the irrigation project failed to live up to its original expectations as well as the farmers increasing indebtedness there was a consequent decline in the acquisition of productive assets and a rise in the dispossession rate of previously acquired assets.

Other institutional or management problems related to the fact that "project design left ownership and responsibility for the pumping equipment entirely in the hands of the state. No provision was made for eventual private ownership" (Webb, 1991:350). According to Bembridge (1986b) and Backeberg et al (1996) this has increased over-dependence on government services and lack of sense of ownership on the part of participants.

Further, the project found itself competing with other non-farm activities. The project was based on the assumption that the farmers would give priority to irrigated rather than rainfed crop because of its potential for higher yields. This would mean that farmers would, transfer labour from rainfed to irrigated crops. What seems clear is that the planners did not appreciate the various uses of labour and how the society coped with the various labour demands. In the end labour shortages were inevitable, which was met primarily through hired labour.

Equally important, the explanation for the project's collapse lies with the neglect by the development planners of the social and sexual division of labour within the household as a production unit (Fisser, 1988:19). Women have traditionally played an important role as primary producers and consumers operating independently from their husbands' control. This is true if one considers the role they played in the cultivation of rice both for consumption and private cash sale. The reaction of the women to the irrigation project was mixed. With irrigation many women transferred labour from their traditional private rainfed rice production to the pump-irrigated fields under their husbands' control (Webb, 1991:343). Women were thus deprived of the opportunity to grow rice on their own account (Fisser, 1988:19).

The immediate consequence of these problems was input supply uncertainties (such as periodic fuel shortages and that of spare parts) resulting in work delay or stoppages. Overall, the cumulative effect was the inability of the participants to adhere to the biannual cropping programme with a consequent decline in yields, the production of a marketable surplus and loan repayments. At the household level the impact of the project's demise in 1983 was a rapid decline in the standard of living, though this was felt differently by different households. Webb (1991) reports a sudden increase in divorce rates and migration by young men, a decline in the acquisition of productive assets and a rise in the dispossession rate of

previously acquired assets. Some had to resell their assets at a loss.

According to Harrison (1987:156) the early years of the vast **Rahad irrigation project** in eastern Sudan was typical of the costly and damaging failures in this sphere. The project cost a total of $400 million, covering an area of 25km wide and 160km long. The land earmarked for development was taken over from its owners without compensation. The former owners of land became tenants. At the same time outsiders, in particular nomads, were brought in. The first two years of the project saw a drop in cotton yields by more than half and lower than projected prices due to low world market prices and an overvalued Sudanese currency. Farmers found themselves operating at a loss. A USAID evaluation concluded that tenants with no source of income other than the official activities were worse off with the project than they had been before (Harrison, 1987:156). A view, also, expressed by Webb (1991:339) who states "when development projects fail the first losers are the participants themselves. Having risked an investment in resources in the adoption of new technologies, it is they who bear the brunt of a scheme's demise".

A careful examination of the institutional / management structure of the Rahad irrigation scheme reveals that the centralisation of power was at the core of poor project performance. Management took all decisions regarding types of crops to be grown, inputs, as well as the nature and timing of operations. Farmers had no voice in the day-to-day running of the scheme. They were expected to comply with all corporation directives, failure of which was dealt with stringently in terms of fines or evictions. "The rationale was that experts must know better than illiterate farmers. The opposite proved that the opposite is true. Corporation services such as tractor ploughing, seeding and weeding were often late, due to breakdowns, shortages of spare parts and fuel, lack of trained drivers and mechanics" (Harrison, 1987:156-157). Undoubtedly, management failed dismally in providing even basic services such as timely land preparation services, provision of inputs as well as effective mechanical and support services.

Niger has approximately 20 irrigation projects of different sizes in the Maggia valley. Problems relate to serious mistakes in project design, operation and maintenance of the irrigation schemes. Other problems relate to poor participant selection, enforced participation and labour shortages (Bembridge, 1986b: 607).

The performance of the **Vuvulane Irrigation Scheme** in Swaziland has not been spectacular either. It is managed as an "outgrower" with standard allotments. These have posed limitations on those successful farmers with proven entrepreneurial ability to increase their holdings. Farmers grow sugar cane on 70 percent of their land whilst the remainder can be used to grow crops of their choice. The irrigation scheme does not meet its operating costs. It receives subsidies from the state. Some tenants have failed to meet work requirements and have a debt load. After 20 years external management is still felt necessary partly because local staff have found it difficult to impose discipline (Fisser, 1988:22).

The World Bank's **Bura irrigation and settlement project** in south-eastern Kenya has also been a notable failure. The project was crippled when newly arrived settlers from the overcrowded highlands deserted in droves, often within days of arriving, because the health and education services they had been led to expect were not there (Harrison, 1987:62). In addition, infant mortality due to malaria and other resources were lacking. Furthermore, the complete ban on imports of chemical fertilisers which were provided free of charge during the early years of the project exacerbated the already poor situation.

In **Zimbabwe**, the failure of irrigation development can, also, be ascribed to the same type of factors that have been isolated in the case studies above. What seems to stand out in the then Rhodesia (as in South Africa), is the relationship between state policy vis-à-vis African population and irrigation development. This undoubtedly, influenced the limited success of many irrigation schemes. Using the example of two smallholder irrigation schemes in Karangaland, Weinrich (1975) points out that smallholder irrigation was promoted in the late 1960s by the Rhodesian government as a means of coping with an increasing population, widespread unemployment whilst not abandoning the policy of racial segregation. Large numbers of blacks were settled on comparatively small acreages, whilst what remained of the country's land resources could be reserved for the use of a comparatively small number of whites (Holbrook, 1992:25). Irrigation development was done on the basis of government constructing schemes for farmers without consultation with the would be beneficiaries. The government would, also, select the irrigators from within the local community and where there were no local people with an interest to irrigate, farmers would be brought in from other

provinces or districts (Chitsiko, 1999:4). Not only were the schemes expensive to construct, maintain and operate for the government, farmers did not see these as their own. As a strategy and policy, irrigation schemes in Rhodesia were not popular among the African population as Weinrich (1975:312) points out "constant supervision, interference in their lives and regimentation bring forth nothing but bitterness and resentment".

The question of whether the **Gezira irrigation scheme** in Sudan has been a success or not is an unresolved issue and has been debated for some time. Bembridge (1986b: 603) has described it as "one of the most successful in Africa" while Pollard (1981) refers to Gezira as "a study in failure", in turn Barnett (1977) labelled it as an "illusion of development". According to Pollard contrary to being a "model of agricultural development" and a "classic example of developing underdeveloped areas" Gezira has been dogged by problems (1981:21). Bureaucratic centralised management, justified by the ideology of the "lazy tenant", "suppressed individuality, innovation, farmer motivation and best use of resources" (Groenewald, 1986:668). According to Barnett (1977:161) in the colonial situation the native had to be defined as the "other" in order that he could be treated in a way which legitimised measures of control, with the result that the administrative approach was adopted rather than any attempt at participation. Thus, organisationally, the relationship between management and the farmers remained highly mechanistic and hierarchical. Farmers were given a low level of responsibility in terms of management and decision-making. Thus, as in the case studies discussed above, entrepreneurial decision making was vested in the hands of the "bureaucrats who eventually became the least equipped to do the job" Groenewald, 1986:668). Referring to the impact of the Gezira irrigation scheme on the farmers, Pollard (1981:21, 29) argues "in the period of its operation Gezira has not fulfilled its promise of material prosperity for tenants... development by any definition has yet to be realised for the Gezira people". Hoyle (1977) considers the ecological and health impact of the Gezira scheme to be negative. He mentions the high incidence of diseases such as bilharzia, malaria and the loss of tree cover as a result of the expansion of irrigation.

The experience of irrigation development in South Africa will be the subject of the next chapter.

Common Constraints to Successful Irrigation Development

There are several commonalities that emerge in the various case studies discussed above. Clearly, the reasons for failure are numerous and complex in any given context. Constraints to irrigation development can basically be divided into three types: technical, institutional and socio-economic. The literature reviewed suggests that successful projects depend on the effective integration between technology, management, participants and the socio-economic situation, while poorly functioning projects suffer from lack of such integration (Bembridge, 1986b; 2000; Backeberg et al, 2000). Groenewald (1986:668) similarly, views irrigation projects as consisting of three interactive subsystems: the social, economic and physical components. According to Groenewald any deficiencies or shortcomings in any of these elements or absence of synergy between them may cause sufficient distortions to cause a project to fail. As is evident above, the social aspect has often been neglected, with a strong emphasis on the technical components. As Bembridge (1986b: 612) argues "at the basis of this is the attitude of many project planners and managers who primarily measure the success of projects according to physical development and agricultural production. Such a view neglects the fact that projects have not only a technical but also an equally significant socio-economic character." The issues raised in this paragraph will be discussed in greater detail below.

Firstly, experience has shown that many irrigation schemes have failed largely because of deficiencies in the project planning process, of which feasibility studies, physical design, beneficiary participation are important aspects. According to Gillet (Groenewald, 1986:669) project design deficiencies have been major contributors to failure. Research evidence suggests that donors, governments and other role players fail to allocate sufficient time for adequate and thorough project preparation. For the World Bank (1982) this results in projects taking longer to come to maturity and costing more than planned. In contrast, thorough project preparation does not necessarily mean an increase in the total cost of the project but rather guarantees better chances for implementing projects that are sustainable. Poor planning is related according to Cloete (1987:547) to the perception that irrigation schemes can fulfill an urgent need to improve food production through their perceived ability to transform production in a relatively short space of time. Therefore, the urgency of implementation leads to insufficient pre-implementation planning.

Feasibility studies into the project's future costs and benefits tend to be incomplete, exaggerated and unrealistic. The nature and quality of project proposals on prospects of irrigation development in the Sahel is summarised in a USAID report by Moris, Thom and Norman (1984) "... project proposals were riddled with inconsistencies, grossly overestimated benefits, failures to weigh likely implementation capacity, naive political assumptions and optimistic assumptions about revenues". As a consequence, feasibility studies are incomplete, lacking sound time-series data and being limited to those technical variables that can easily be measured and observed in the limited time available (Kortenhorst et al, 1989:21). As it turns out, production costs are much higher than expected while net benefits to the farmers are often low or negative. Problems arise with meeting recurrent costs, which in the case of South Africa has had to be met by subsidies from the state. According to Kortenhorst et al (1989:21) great uncertainty regarding the benefits, combined with an almost absolute certainty (although not realised) about high costs and often unreliable supplies and services, often makes irrigation more risky than the farmers' original rain-fed agriculture.

Equally important, yet ignored are farmers' abilities and constraints to build the necessary expertise in coping with the new demands. It has been taken for granted that farmers will have to perform, failure of which will be met by heavy penalties. Related to this is the fact that in addition to the top-down approach to development there was a strong emphasis on physical design aspects. In many instances technology choices have been inappropriate since it was not adapted to local physical, economic, social conditions as well as the participants' capabilities. For example, the appropriateness of the Taiwanese irrigation model in the Gambian case study was not fully evaluated and modified; instead it was transplanted and copied, resulting in the long-term in several technical deficiencies.

The issue of consultation with the intended beneficiaries with the aim of securing their active involvement and to prepare for their training is an issue that has received lots of attention in the literature. This is an area that has been neglected completely and deliberately in many project concepts and planning designs. Generally, there has been insufficient involvement in all phases of the project. The lack of consultation has not only posed a threat to the sustainability of irrigation projects but has been singled out as one of the primary causes of failure. This is in glaring contrast to the preparation of many government projects in

developed countries, where all who are directly or indirectly involved can have their say, and where the entire preparation process is allowed to take 10 years or more (Kortenhorst et al, 1989:21). Bembridge (1986b) captures this practice in the following paragraph:

> Frequently, the cart is being put before the horse in Third World irrigation development planning. Political structures and means of communication that would enable the needs and desires of local people to be expressed ... are usually inadequate. Up to now small-scale farmers in Africa have had little say in their own development and needs. Irrigation development projects are consequently often being imposed from above, with the resulting problem of trying to fit traditional farmers and socio-economic systems into high technology farming systems ...Planners tend to have a macro rather than a micro level approach. It is therefore not surprising to find that farmers often have a passive or negative attitude to projects.

In such situations farmers are viewed "merely as a labour force needed to make the project work" (Kortenhorst et al, 1989:24). Whether the project meets the felt needs of the beneficiaries is not taken into consideration. Undoubtedly, this reduces the chances that the project's content matches the intended beneficiaries' real needs, wishes and interests. Furthermore, there is often insufficient socio-economic analysis of the merits of the project on the intended beneficiaries as well as national and regional level.

Institutional aspects have not received priority in irrigation planning. Of particular importance are the managerial problems that have bedevilled many irrigation schemes in Africa. First, research evidence suggests that the competence and expertise of the managerial staff has been overrated. Not only were they ill-equipped to deal with many of the technical problems that arose at project level (even though their orientation emphasised attention to these), but were hopeless in dealing with any social problems that occurred. For example, this is evident in the unreliable and erratic nature of input supplies as well as poor operation and maintenance. Any problems that occurred were defined either as technical, or the result of the farmers' incompetence or their recalcitrant and uncooperative attitude.

Organisationally, the farmers were a subordinate category in relation to the managerial staff, and defined as a group to be controlled and coerced under strictly defined guidelines. Farmers worked in a strictly controlled environment in which decisions were made for them by management. In practice, they were situated at the bottom of the bureaucratic structure and production chain. Compliance was emphasised, with severe penalties (e.g. eviction from the

land) imposed in the event of non-compliance. In effect, therefore, farmers were restricted in the manner and degree in which they could affect and influence decision-making. As a result, conflict between management and farmers was endemic in many irrigation schemes and manifested itself in many ways. The relationship can at best be characterised as adversarial in many cases. According to Palmer-Jones (1981:86) a cycle of conflict may develop where management disregards or denies the complaints of farmers because of assumptions that they are not cooperative. The relationship between scheme management vis-a-vis the farmers is described by Harrison (1987:156) "the management of most projects has been highly centralised. Professionals ran the show and farmers, little better than labourers were told what to grow and where". Barnett (1977:178-179) elaborates "if the tenants were considered to be capable of taking a greater part in the management of the [Gezira] scheme, then large numbers of officials might become redundant. There is, then, a contradiction in the present organisation of production. It is not in the interests of the administrators as a class to pursue policies that will enable the tenants to participate more fully in management. There is also the associated contradiction that if there were fewer administrators then there might be more money available for the tenants".

Even though in some irrigation schemes attempts at devolution were initiated, such efforts have largely failed. Referring to such attempts Barnett (1977:164) states "... the core productive processes of the organisation have hardly altered... The basic structural features, the relationships of authority and control, the division of profits, the determination of policy, remain the same, highly mechanistic and hierarchical..." It can thus be concluded that such a situation was not conducive for the training and skills development of the farmers. As Backeberg et al, (1996:59) argues "projects have been ineffective mainly because of inadequate decentralisation of power and responsibilities and non-accountability on the part of decision-makers. The project participants have over the past decades developed serious misgivings about their ability to manage their own affairs. This has resulted in farmers depending on government or government-appointed management agencies for the operation and maintenance of projects, resulting in inefficiency and cost-ineffectiveness".

The role of expatriates in the management of irrigation schemes is worth mentioning. Expatriates, who were in most cases not conversant with the local culture, have at some point managed most of the irrigation schemes. As a group, they constituted a priviledged class of

their own compared to the farmers. The nature of the relationship is epitomised in the statement by Scudder (1989:144). He argues that while external assistance at some point in time appears crucial, too little will prove insufficient to deal with the problems at hand, while too much substitutes outside control for local control, undermines local initiative, and runs the risk of creating factionalism, dependency or both. Using the example of Kenya's Provincial Irrigation Units Scudder further elaborates "...they are dominated by foreign experts and money, therefore the control at overall policy level is largely foreign. The foreign irrigation experts take advantage of the absence of local irrigation experts to perpetuate their stay and domination. The notion of training for the local counterparts does not work as the latter are easily diverted to other functions. Thus a dependency situation is established and perpetuated".

Another social aspect of failure is the role played by irrigation development in the creation of rural elites, thereby increasing economic stratification and perpetuating relations of inequality (Holbrook, 1992:18). A problem arises when irrigation development benefits the already small and priviledged elite. This may be based on several social criteria such as kinship, age, education, religion, wealth, authority and proximity to sources of power and influence in a given setting. The fortunate few who are selected as project participants are settled at high cost and become the recipients of incomes several times higher than those of their neighbours outside the project (*including other participants in the project*) (Holbrook, 1992:19). Often this situation results in factional conflict as individuals compete over scarce resources.

A major reason for failure according to Harrison (1987:155) has been the high cost of formal projects which are more than double those of other continents. Not only are irrigation schemes in Africa expensive to build, but they also demand considerable cash outlays for their operation and maintenance. As Kortenhorst et al (1989:16) quoting a 1984 FAO report point out " ...in South Asia, costs start at US $1600 per hectare. In Africa they start at US $9500 per hectare, raising problems not only of funding but sometimes of economic viability..." Harrison blames the geographic landscape of the African continent. He explains "Africa lacks basic infrastructure...needed for large-scale construction works. These overheads ... have to be added to project costs in Africa. Foreign contractors are normally used for construction". Such costs call for more increased production. High investment costs require high net annual returns, which usually come from the production of high unit value

crops, but few cropping patterns can produce such high returns over extended areas (World Bank in Underhill, 1987:26). Scudder (1989:40) concurs " ...capital costs have been escalating with some exceeding $20 000 per hectare. Even with double cropping of high value crops, it is not possible to pay off such costs; indeed, frequently projects do not even cover recurrent costs. Scudder echoing Bembridge's (1985:287) concerns questions why irrigation projects are implemented when their economic prospects are in doubt. Examples of irrigation projects which have failed to achieve increased yields and instead achieved lower benefits than had been estimated abound.

IRRIGATION MANAGEMENT TRANSFER

Irrigation Management Transfer (IMT) has been referred to variously in different countries: privatisation, government disengagement, post-responsibility, participatory management, commercialisation, self-management. IMT is justified on several grounds. First, the argument revolves around the need to relieve and reduce the financial burden on governments for operation and maintenance. Further, government bureaucracies lack the incentives and responsiveness to optimise management performance (Vermillion, 1997:1). Secondly, there's the urgent need to enhance productivity as well as improving the maintenance of irrigation facilities and irrigation service. Vermillion (1997:1) elaborates "farmers have a direct interest in enhancing and sustaining the quality and cost-efficiency of irrigation management. When given the authority and incentives to act collectively, farmers will act to contain the cost of water management while improving the operational performance because it is in their interest to do so". Lastly, the objective is to promote a spirit of self-reliance among the farmers. Thus, the savings to government, improvement to the cost-effectiveness of operation and maintenance, can assess the success of IMT whether it maintains or increases the productivity of irrigated agriculture (Sam-Amoah and Gowing, 2001; Vermillion, 1997).

Since the 1980s many governments in Africa, Asia and Latin America have been transferring the authority and responsibility for the management of irrigation schemes to farmer groups, local and non-governmental organisations. The introduction of Structural Adjustment Programmes (SAPs) has seen many governments under pressure to reduce their overall budgets, including subsidies to the agricultural sector. Similarly, in South Africa following budgetary reprioritisation after 1994 financial support for management, operation and

maintenance of many irrigation schemes in the former homelands was withdrawn. The influence of GEAR as a macro-economic strategy is relevant here. According to Keating (Vermillion, 1997:1) among the key outcomes of the Earth Summit, 1992, was the recommendations that water should be treated as an economic good, that water management be decentralised, and that farmers and other stakeholders should play a more important role in the management of natural resources, including water. Early efforts of this strategy and process can be traced back from the 1950s through the 1970s in the US, France, Colombia and Taiwan.

Irrigation management transfer in its present form is relatively new. IMT can either involve transfer of full responsibility which involves the actual sale or disposal of all public assets, a case of complete privatisation, or a partial transfer. In most cases, IMT programmes are designed to transfer the bulk of the burden for operation and maintenance costs to users, thus reducing the demands for subsidies from the national budget (Vermillion & Johnson, 1990). Such is the case in South Africa.

Irrigation management transfer is still a growing area of research. There is still a paucity of data on many aspects of IMT, to provide a comprehensive picture on its impact. While there is a growing body of literature on operational and financial performance, "less evidence is available on effects of management transfer on maintenance and economic performance of irrigated agriculture" (Vermillion, 1997:v). At the same time comparative country studies are few, while comparisons between IMT and non -IMT cases are rare. Considering that governments initiated IMT to reduce the costs of operation and maintenance, it is surprising that a limited number of studies have been done on the impacts of IMT on governments. Equally, the absence of a standardised analytical paradigm to date makes it difficult to arrive at general conclusions or policy implications.

Conclusion

The lessons from irrigation development experience in Sub-Saharan Africa indicate that the continent is littered with examples of derelict and costly failures. What stands out in many of these irrigation projects is their over-emphasis on technical issues to the complete neglect of human and other social aspects. Generally, irrigation scheme management and consultants

were primarily oriented to dealing with the technical / agronomic and not the human challenges associated with irrigation development. Farmers in all cases were situated at the bottom of the production chain. Farmers worked in a tightly controlled environment which emphasised compliance with all the irrigation management directives. In an environment in which centralisation of all functions was key, farmers were restricted in the extent to which they could affect and influence irrigation scheme management. Effectively, therefore, the farmers worked in an organisational context not suited to their needs. The reductionist approach adopted by the planners meant that working partnerships between the farmers and irrigation management could not be realised. In any case they were never designed to accommodate this. Almost without exception the case studies used here indicate that the industrious type of farmer was never developed as was envisioned in the planning documents. Neither were the rural livelihoods improved in a sustainable manner.

The above literature review has shown that lack of attention to the human and social aspects is a recipe for disaster. The current trend is that development should be participatory where the beneficiaries play a major role in the development process. How far the reforms in irrigation development will ensure the viability and sustainability of the irrigation schemes remains to be seen.

CHAPTER THREE
IRRIGATION DEVELOPMENT IN SOUTH AFRICA

Background

It is not possible to discuss irrigation development as an agricultural strategy without reference to the history of dispossession and proletarianisation of the African peasantry in South Africa. The country has a long history of direct state intervention in the agricultural sector in support of white commercial agriculture to the exclusion and marginalisation of black farming. Effectively, this meant the systematic dispossession of crucial means of production that would offer some hope of the emergence of a black propertied class (Kimemia, 2000: 33). Through this several distortions were created, which not only ensured a highly skewed distribution of land ownership but also differential access to resources. This process of dispossession and proletarianisation of the African peasantry was given formal recognition through various policies and legislative measures.

The transformation of traditional African farming from a surplus-producing entity and its eventual destruction has been a subject of considerable debate among academics (Bundy, 1979; Beinart, 1987; Legassick and Wolpe, 1972; Levin and Neocosmos, 1987; Lipton, 1977; Hendricks, 1990; Lonsdale, 1987 and Krikler, 1987). Successful African farming occurred amidst chronic labour shortages in the mining sector and white commercial agriculture. These developments were a major source of concern for the white farmers, mining and industrial capital. Short of labour large settler farmers persuaded the colonial government to intervene on their behalf by limiting African competition in the market place and setting up native reserves of tiny pieces of land to create an artificial land shortage in order to force Africans to seek work (World Bank, 1994:46). What followed was a series of measures to constrain African farming and ensure a continued supply of labour. Most notable of these was the Glen Grey Act, No. 25 of 1894. According to Hendricks (1990) the Act reflected the combined interests of an alliance between the industrial capitalists, the white commercial farmers and the liberal merchants. Hendricks (1990:30) argues no doubt, the priority of the Glen Grey Act was to restrict the independence of the Africans and their possibility for reaping sustenance from the soil and compel the remainder into wage labour.

The systematic dispossession of Africans of their land through colonisation reached its zenith with the enactment of the Native Land Act, No. 27 of 1913. The 1913 Land Act, regarded as a watershed in land policy in South Africa, laid the basis for South Africa's distinctive pattern of racially unequal ownership and destroyed independent peasant production: 13% of the land area as against 87% for whites. According to Brand et al (1992:355) the decades after the passage of this Act saw a large-scale conversion of peasant farmers into farm labourers.

Other enabling legislation helped shape the present structure of agriculture giving white commercial agriculture a competitive edge over African farming. These include amongst others the following: Land and Agricultural Bank Act of 1912; Cooperative Societies Act, of 1922, Native Trust and Land Act, No.18 of 1936; Marketing Act of 1937. The cumulative effect of these was the elimination of a source of competition from Africans, transformation of the reserves from self-supporting and surplus producing areas to labour reservoirs and importers of food. As the World Bank (1994:22) states "small-scale farming has been unable to meet the needs of the rural population, who thereby became net food importers from the white agricultural sector".

In addition to these policy measures, government support for commercial farming (direct state grants, loans and other government financed credit schemes, subsidies, tariff protection, tax concessions on machinery purchases and government spending on agricultural education, research and advisory services) further widened the gap between black and white farmers. These policies were closely intertwined with other socio-economic and political policies, which in effect meant institutionalized and perpetual underdevelopment of the black majority. Undoubtedly, therefore, the combined effect of these was the promotion of a highly mechanised and capital-intensive forms of agriculture - producing a marketable surplus in the presence of widespread poverty, unemployment and considerable costs to consumers.

Kassier and Groenewald (1992:347) describe the commercial farming sector as reminiscent of the farming sectors in the developed world, producing surpluses and using considerable amounts of purchased inputs. The subsistence sector, on the other hand, has many of the characteristics, and shares many of the problems, of subsistence farming as experienced elsewhere in sub-Saharan Africa.

IRRIGATION DEVELOPMENT IN THE REPUBLIC OF SOUTH AFRICA

Irrigation was introduced to South Africa soon after the arrival of European settlers (Van Averbeke et al, 1998:1). Several irrigation projects were developed between 1652 and 1912. Details of the early history of irrigation development, particularly during the colonial period to mid-1800s, are sketchy and vague. Information on irrigation development history is pieced from several sources which include diaries and journals of travellers. Vague accounts refer to "speculation as to the possibility of van Riebeeck having irrigated the first vegetable garden. However, definite reference is made to small-scale irrigation development along the Olifants River during 1797 (Bruwer and van Heerden, 1995:3). According to Malan (Bruwer and van Heerden, 1995:4) irrigation development by missionary societies for indigenous people took place between 1827 and 1840, a case being the development of irrigation at Cambria on one of the tributaries of the Gamtoos River in the Eastern Cape. Also in the Northen Cape the London Missionary Society is reported to have assisted the Tlhaping with irrigation in response to the persistent failure of seasonal harvests and a general decline in the condition of livestock. All these attempts appear to have been of a small-scale nature employing relatively inexpensive technology. Some irrigation projects formed part of town development whereby water was supplied for irrigation to certain plots within municipal boundaries, as in the case of Cradock[4].

The early history is generally characterised by uncoordinated irrigation developments. The establishment of the Hydraulic section in the Cape Colony in 1875 and the promulgation of the Irrigation and Water Conservation Act in 1912 were efforts designed to address this problem. The period from 1912 saw active attempts by the government to coordinate irrigation development.

The impact of the Great Depression and the fact that the South African economy was crippled by an economic crisis exacerbated by a severe and protracted drought provided impetus for the Government for its continued commitment to extensive investment in agriculture. During

[4] Bruwer and van Heerden (1995:4) explain "when the town of Cradock was founded fairly large plots with irrigation rights were laid out. These plots were supplied with water after the completion of the town weir during 1816. Some of the older towns have water furrows along streets, from which owners can divert water for irrigation onto their properties at certain times of the day or week".

this period the development of government irrigation schemes was designed primarily to address the poor white problem. This was a means of keeping whites productive in the rural areas who would probably otherwise have drifted to the towns and aggravated the already chronic unemployment problem (Shillington, 1986:328). This resulted in the construction of large dams such as the Great Fish and the Hartebeesport dam and the development of large-scale irrigation schemes such as the Vioolsdrift, Rietrivier, Pongola, Boskop and Vaalharts. Settling farmers were usually allocated holdings of between 30 to 40ha.

Apart from the fact that irrigation schemes were achieved at great expense to the State, large capital subsidies to irrigation boards to serve the interests of white irrigation farmers were made available. These were also made available to private irrigators for the development of private irrigation schemes. The promotion of commercial agriculture at the expense of African farmers through the provision of these subsidies and other extra economic measures is one of the enduring legacies of the apartheid state.

Extension surveys of these irrigation schemes found that irrigation efficiency was low. Three factors were identified as main causes: inappropriate design, poor management and low aptitude of the farmers. As Bruwer and van Heerden (1995:5) argues "this inefficiency leads to a wastage of irrigation water and suppression of crop yields and tends to increase inputs unnecessarily. Irrigation farmers tend to over-irrigate in winter and under-irrigate in summer". Furthermore, in many of these early irrigation schemes water allocation was inadequate for the practice of full irrigation. The above together with the fact that the average age of the farmers was high, their educational level poor and lack of ambition were identified as having a negative impact on the viability and sustainability of the irrigation schemes. Generally, plots were found to be small to form economically viable units "mainly because farmers were growing relatively cheap staple foods such as maize and wheat (van Averbeke et al, 1998:1). Basically, few irrigation schemes operated on a cost recovery basis. Few (if any) recovered operating and maintenance costs. Eventually, many farmers left the irrigation schemes (Van Averbeke et al, 1998:1).

The planning of new irrigation schemes took into consideration all the problems encountered with the old. Most importantly, a policy was followed to select mainly new young farmers, with a reasonably high level of education, improved managerial ability and available capital, instead of the usual practice of auctioning new farms.

A dimension that has not been explored so far is that of land dispossession that accompanied the construction and development of the irrigation schemes. To illustrate this the Vaalharts Irrigation Scheme, in the Harts River Valley will be used as a case study. Vaughan (1997) argues "historically irrigation schemes were bound up with settler accumulation and African dispossession". In documenting the history of the Vaalharts Irrigation Scheme, Shillington (1986) provides useful insights into the broader trajectory of irrigation development. The concept of agricultural irrigation in the Harts valley can be traced as far back as 1850.

Shillington (1986:311) demonstrates how a combination of capital investment, technology and the state apparatus intervention were used in the development of the irrigation scheme.

> This region has witnessed the growth of the largest single irrigation scheme in Africa. It therefore provides a local perspective on the injection of high technology, capital-intensive farming into a particular political economy. Furthermore, since the development of large-scale irrigation generally requires the coordination of huge capital investment, a large labour force, and the reorganisation of land allocation and usage, the only way to bring about the necessary degree of rural transformation has been through the successful combination of heavy capital investment and direct state intervention.

This scenario according to Shillington contrasts sharply with the pre- and colonial situation which was generally marked by waning political commitment on the part of the state. As a result the project was abandoned several times before it eventual implementation. Thus the inability of the state to commit funds frustrated earlier attempts to establish the irrigation scheme in the Vaal/Harts valley. First, according to Shillington, (1986:321) the interests of commercial agriculture were of low priority compared with the struggle to establish a diamond monopoly in Kimberley. Besides the exhorbitant costs of irrigation development and the fact that investment in costly projects was viewed as a private enterprise, part of the Government's reluctance according to Shillington was the fact that Africans heavily inhabited the land. The area around the Vaal/Harts pedicle earmarked for irrigation was a contested one. The impact of colonial land alienation was increasingly being felt by Africans, as dispossession continued unabated. Fierce resistance accompanied land alienation. Successive colonial governments had to grapple with the idea of how to deal with African occupancy in this area. The attitude of the authorities is summarised by the statement of the inspector of locations, F.R. Thompson, who argued that the "the native locations were merely crownlands still undisposed of" (Shillington, 1986:319).

Shillington echoes Bundy's[5] views on African farmer prosperity during the 1800s. African farmers managed to out compete their white counterparts. Shillington adds "this was illusory and short-lived" due in large part to low rainfall which led to the persistent failure of seasonal harvests. Meanwhile, the ambitions of the colonialists to derive their livelihoods from the land full-time were thwarted by the realisation that irregular rainfall mitigated against the attainment of reliable returns "unless it was supported by heavy and determined investment in some large-scale system of irrigation" (Shillington, 1986:316). Thereby, bringing to the fore and reinforcing the need for the idea of irrigating the Vaal/Harts area.

The result was a survey report on irrigation possibilities in the area in 1882. As the Government geared itself for the development fierce competition for access to land and water between the various racial groups intensified. Direct state intervention and capital investment in the Vaal/Harts area was evident in the 1930s when the government sought ways of dealing with the poor white problem and the economic crisis referred to earlier. Already at this time a commitment to extensive investment in agriculture to promote white agricultural interests was in place. The proposed development of a large-scale irrigation network appeared, also, a viable undertaking since it provided the opportunity for South Africa to compete on world markets.

Implementation of the irrigation scheme was made possible because "the state already had at its disposal a large part of the necessary land since the confiscation of the Phokwani reserve which had been approved in 1897" (Shillington, 1986:329). The 19 000 hectares of the Taung reserve required for the irrigation scheme were obtained after negotiations between the departments of land, agriculture, irrigation and Native Affairs, in exchange for a free supply of irrigation water to the rest of the reserve. To "compensate" for the loss of the 19 000 ha of irrigable land, an equivalent area of non-irrigable land was offered. In an effort to rationalise the area under irrigation, evictions in the Majeng location occured in the 1970s. Protests and arrests ensued.

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[5] Bundy's book *The Rise and Fall of the South African Peasantry* (1979) provides an account of how Africans responded to the new opportunities offered by the mineral revolution. He paints a picture of a prosperous peasantry when he states " it was an era in which a large number of peasants, the majority of the Cape African people achieved and retained a measure of economic independence and as such the wage labour force was emasculated and insufficient for the times" (113-115).

Construction on the Vaal River storage dam commenced in 1933, providing the much needed relief work for the unemployed white labourers. Plots of 17-25 ha were made available on a probationary basis. Inputs were provided free until the farmers became "independent".

The former Bophuthatswana government replicated the Vaalharts model of irrigation development. As Shillington (1986:330) explains "in its attempt to decentralise and give greater credibility to its apartheid policies, the South African state, through its subsidiary the Bophuthatswana government, is now at last prepared to invest in the latent potential of African farmers ... Consequently, the Bophuthatswana authorities have recently mounted a huge investment programme to utilise the Vaalharts irrigation water for developing intensive African commercial agriculture, along lines even more up to date and efficient than those of their neighbouring white agriculturalists". This move necessitated a reorganisation of land allocation and usage in order to establish the Taung irrigation. Standardised plots were given to selected farmers on a probationary basis.

IRRIGATION DEVELOPMENT IN THE HOMELANDS

At least three approaches to agricultural development in the homelands can be identified: betterment planning, farmer support programmes and irrigation schemes. Generally, none of these brought any lasting benefit to the local population. Instead the reserves continued to slide into ever-increasing poverty and widespread environmental degradation. The irrigation schemes can be seen as Government's response to low agricultural productivity and "the absence of commercial agriculture in the homelands to what was attributed to the perceived lack of entrepreneurial and managerial ability among black farmers" "offering a deceptively simple solution to the problem" (Brand et al, 1992:356; Cloete, 1987:546-547). This combined with the philosophy of optimal resource use was taken to dictate that expatriate management should be introduced to develop agriculture (Brand et al, 1992:356). Consequently, large-scale centrally managed estate or project farming in both irrigated or dryland production became the main focus.

Minor irrigation developments occurred before the publication of the Tomlinson Commission report in 1955. The Commission noted that interest in irrigation farming varied widely from region to region. It found that most enthusiasm was in some parts of the Transvaal. On the contrary interest in irrigation in the Transkei and Ciskei was considered to be low, with 28

out of 37 small irrigation schemes having fallen into disuse. The Commission found that irrigated holdings of 1,5 to 2 morgen (1,3 to 1,7ha) "were large enough to provide a family with a living which would satisfy them, whereby the whole family would work on the holding" (1955:121). Where irrigation schemes existed the Commission found that living conditions were better off.

The Commission made elaborate recommendations regarding the future of irrigation schemes in the Bantustans (1955:121-122):

- Determined action be taken to improve and replan all existing schemes so that each holding can provide a full-time living
- Irrigation schemes be regarded as integral parts of rehabilitation schemes
- The [Native] Trust should acquire ownership of the land before fresh schemes are developed, all lands belonging to individual Bantu or tribes and which fall under the proposed scheme, should be bought up to permit of unhindered development of the schemes; while former owners of such lands should be given preference when holdings are allotted on completion of the schemes
- All schemes should be placed under proper control and supervision, with uniform regulations as regards water rates, credit facilities and conditions of settlement
- All schemes which are not on Trust land should be proclaimed as betterment areas in terms of Proclamation No. 116 of 1949
- Those to whom irrigation holdings are allotted should be required to relinquish all agricultural interests they may have in the remainder of the Bantu areas, in order to give their full time and attention to their holdings
- An agricultural officer should be appointed as superintendent of each large irrigation scheme or a group of smaller schemes in a single district. In the first instance, European technical officers should be employed until trained Bantu with sufficient experience, are able to take charge.

Most of the irrigation schemes developed during the 1950s and 1960s followed the above recommendations closely. These were essentially aimed at providing participating farmers with an acceptable income from full-time farming using relatively simple and inexpensive technology (Van Averbeke et al, 1998:7). Examples of these are the Qamata irrigation scheme in Transkei and in Ciskei these can be found at Cata and Upper Gxulu. These irrigation schemes and many that followed emphasised top-down planning. This approach did not allow for farmer participation in the initial planning process, design and implementation phases. Thus, authoritarianism characteristic of the apartheid state and Ciskei government fed into irrigation scheme design. Farmer participation would run counter to the principles of exclusion, and the narrowing of political space on which the South African state was firmly grounded. Generally, strike action and or any form of unrest was not tolerated in any way. At best it was suppressed through violent means. Effectively, this meant that the farmers had no rights and no legal recourse.

Irrigation Development Consultants

In its attempt to achieve self-sufficiency in an economic sense, Ciskei had to rely on the importation of economic and technical expertise (Holbrook, 1992:177). In the field of agricultural development this group consisted of development specialists, who became the most influential actors in irrigation development. According to Holbrook (1992:177) the political role of expatriates was more noticeable in the implementation and management of [irrigation] development schemes, for it was here they played a role in the allocation and control of resources under the auspices of the Ciskei state.

The main consulting agent in irrigation planning and implementation in the Ciskei and Transkei were Loxton, Venn and Associates. "The company aimed at the lucrative field of homeland development and billed itself as specialist agricultural consultants. It had been involved in a number of development projects in the homelands, generally, working on a contractual basis for a number of years" (Holbrook, 1992:203).

Central to their approach was strict centralised control over all the activities of the farmers, capital intensive and technologically advanced agricultural projects with an emphasis on cash crops. Van Averbeke et al (1998:9) argues "it may have suited the consultancy firm to employ expensive technology, because it appears that their fee was a function of the total capital requirement for the establishment of the schemes. Furthermore, the use of sophisticated technology created the need for an external management agent, often provided for by a subsidiary of the same consultancy firm". Undoubtedly, the technology was not suited to the needs of the farmers and ensured that it was beyond their reach in terms of its use.

In addition, the consultant's development plan was based on the assessment of the physical environment (water and soil analysis), engineering aspects, a market survey, crop technology criteria with little or no attention to the human aspects. This type of development was based on the mistaken assumption that technological innovations per se would be sufficiently attractive to automatically stimulate farmer participation (Backeberg et al, 1996:59).

All the irrigation schemes that were planned and implemented by Loxton, Venn and Associates have not performed well. By 1994 when the democratically elected government came to power all were technically insolvent or defunct. Van Averbeke et al (1998:9) asks a particularly pertinent question "why the same model of irrigation development was allowed to be repeated over such a long period time[6], using an approach which had long been shown to be ineffective in other parts of the world".

The consultants proposed a dual function for the irrigation schemes (social and economic). The irrigation schemes were thus mainly divided into two components. Estate farming was designed to contribute to the GGP of the region. Also, profits generated would be used to pay for production and investment costs. Almost 75% of the irrigated land was reserved and used for estate farming. To realise the social objective, small plots and allotments were given to members of the community in exchange for making available their rainfed land for irrigation development. Farming here was geared towards subsistence rather than the market. However, farmers were able to sell some of their produce on the local market. In some irrigation schemes, such as Ncora, Tyhefu, Shiloh and Keiskammahoek, a third component was added. Its main objective was to create a selected and viable class of commercial farmers. This objective was never realised. Instead of becoming independent producers targeting production at maximising food security or dynamic entrepreneurs responding to market demands, they became at best glorified farm labourers (Van Averbeke et al, 1998:8). Similarly, Vink and Kirsten (2000:20) argue "these farmers were little more than paid wage labourers with virtually no control over their production activities"[7].

Selected Case Studies

The **Qamata irrigation scheme** regarded as the second largest smallholder irrigation scheme in Southern Africa was constructed in 1965/66 at a cost of R6 million. This amount excludes funds spent by the Government in terms of betterment planning. Bembridge described the irrigation scheme as a moribund and expensive failure. Bembridge conducted an indepth analysis of the project in 1979. Management was autocratic, top-down and inefficient.

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[6] Loxton, Venn and Associates have been involved in irrigation development in the homelands / self-governing states since the 1960s.

[7] For a full discussion on the position of farmers and their relationship vis-à-vis irrigation scheme management see Chapter 2 (***Common Constraints to Successful Irrigation Development***)

Because of lack of selection, farmers had little or no experience of modern irrigation (Bembridge, 1986b: 603). The study by Bembridge found that the production potential of the project was well below its projected level, attributable to the lack of skills development among the farmers due to the incompetence of the extension officers and the quality and nature of extension thereof. Extension officers lacked training, guidance, motivation and clear-cut policies and lacked an objective and extension and development programme (Bembridge, 1986b: 604). The low yields achieved meant that the project could not / failed to provide and meet the basic needs of the farmers and improve the standard of living of the community, with the result the farmers were caught in a vicious cycle of poverty. According to (1986b: 604) farmers perceived that they were better off than before the project started. Other problems related to the lack of markets, finance for inputs and organised credit, size of the holdings, debts, poor coordination and cooperation between the various stakeholders, failure to provide land preparation services timely, and the deterioration of irrigation infrastructure due to poor maintenance.

The disappointing results at Qamata irrigation scheme necessitated the implementation of a new approach at Ncora irrigation scheme (1979). Sound planning on a commercial basis and strict control of the activities of farmers were recommended by the politicians (Rossouw and Bembridge, 1989:88). The development plan proposed by the consultants focused mainly on the analysis of the physical environment and a market survey, without regard for the social aspects. The commercialisation approach adopted sought to "stimulate demand for services and production inputs by modernising traditional agriculture, and at making the projects self-supporting through fees paid by the farmers" (Rossouw and Bembridge, 1989:88). However, this approach was not innovative in any way. Farmer participation was overlooked, with the result that the needs and problems of the farmers were not addressed. Little scope was provided for the farmers to choose the services they needed since these were largely prescribed. The relationship between management and the farmers was often marred by conflict.

The **Xonxa-Bilatye irrigation scheme** was established in 1985 and operated until its closure on 24 May 1994. It had a promising start but soon disintegrated. Several factors account for its failure. These are similar to the experience of other irrigation schemes highlighted above: failure of the government to consult local people, conflicting claims over ownership of the irrigated land, lack of expertise in various critical areas (management, technical), poor

financial records resulting in overspending and unauthorised expenditure, absenteeism, poor supervision of the workforce, over-employment, abnormally high wages paid to non-productive workers, general corruption, poor operation and maintenance. Generally, there was an absence of controls in various parts of the production chain.

The experience of irrigation development in kwaZulu-Natal and kaNgwane in the form of **contract farming** offers another perspective. Small-scale irrigation development in the former kaNgwane has taken what can usefully be termed a classic small farmer route (Vaughan, 1997:5). The notion of "economic farming units" advocated by the Tomlinson Commission was adopted. KaNgwane is regarded as the only context within which the principle of economic units has been successfully applied. Arable land holdings have been demarcated into such units and re-allocated to small farmers. The situation in kaNgwane differs from the one in kwaZulu-Natal in that the homeland government in conjunction with a parastatal agricultural developmental agency, Agriwane, drove the agricultural model. In kwaZulu-Natal the small farmer development model was industry-led by sugar millers and timber companies. Agribusiness provided farmer support (credit and extension services), taking as collateral the small holders' harvest (McIntosh & Vaughan, 1995:113). While enabling participation in commercial agriculture and facilitating production of additional income, this form of credit stifles entrepreneurial independence and effectively prevents farmers from managing their own budgets and causes tension between millers and farmers (Vaughan, 1997). In addition, this situation fostered over-dependence and reliance on the millers for operation and maintenance. However, "a narrowly focussed commodity interest, guaranteed markets and the retention from farmer income of adequate funds for operation and maintenance" has made it possible that these types of irrigation schemes achieve a certain degree of success compared to government established irrigation schemes (Vaughan, 1997:6).

The original pattern of traditional land settlement and allocation was accepted by the developers in kwaZulu-Natal, with the result that irrigation design has allowed the retention of traditional land holdings. Limited land re-allocation (accompanied by land grabbing and dispossession) occurred in some irrigation schemes through the intervention of traditional authorities, such as in the case of the Biyela irrigation scheme. The result is that irrigated holdings remained small and generally sub-economic, thereby preventing the development of a class of economically viable small farmers. Whilst at the same time limiting the opportunity for full-time farming. This has necessitated the need for supplementary income. In contrast,

the kaNgwane experience allowed the farmers to obtain high net income through full-time farming, resulting in the emergence of successful small-scale farmers.

Research on **independent individual irrigation farmers** in the former Transkei by McIntosh, Vaughan & Quinlan (1993) has highlighted numerous problems: "they have complained of the difficulties of obtaining adequate factors of production, assistance and farmer support. Appropriate and sufficient - land, capital, inputs, labour as well as technical advice on irrigation systems, information on crop water requirements and scheduling were hard to come by. Also, appropriate infrastructure is poorly developed". Crosby et al (2000) elaborates on the issue of lack of support services "The most serious of these is a lack of specialised irrigation extension technicians with regard to cropping aspects and lack of technical advice on engineering aspects. Maintenance support services are often poor or non-existent. Spare parts are seldom locally available. Irrigation management and equipment installation and operation is usually conspicuous by its absence".

Insecurity of tenure is widespread among the independent irrigators, resulting in unsustainable farming practices. The land used for irrigation was obtained either from the traditional authority, leased from a mission or was rented from other people. Concerns revolved around the nature of the contractual relationship - how binding it is. Vaughan (1997:9) summarises this situation as follows "The escalation in the productive value of the land as a result of irrigation development was the issue around which lease agreements typically disintegrated. Unrealistic rentals which had not taken account of the inevitable leap in land value consequent upon irrigation development lead to jealousy which caused lessors to take the land back".

Community gardens present in urban and rural areas represent an important sector of irrigation farming. Crosby et al (2000) estimates that approximately 150 000 growers participate on community gardening projects in South Africa. Their success according to Crosby et al (2000) is in sharp contrast to the problems of many of the sophisticated top-down managed larger irrigation schemes such as Tyhefu, Ncora, Qamata, Zanyokhwe and Keiskammahoek irrigation schemes. As farmers they have a greater degree of control and autonomy in decision making over most aspects of production. As a group their success depends to a large extent on their ability to cooperate around the shared water supply, infrastructure and equipment. A study by McIntosh, Quinlan and Vaughan (1993) in Transkei

revealed problems similar to the ones experienced by independent irrigators. Unavailability of inputs and lack of means to purchase inputs, poor transport facilities (*and marketing*) availability of labour were critical constraints. On the question of organisation Vaughan (1997) explains "organisation was difficult to create and sustain. Organisational incoherence impacted negatively when technological problems developed in the irrigation systems". Also, their dependence on the Department of Agriculture for maintenance of equipment has led to delays and frustration, impacting negatively on efficient functioning of the whole enterprise. Even though community garden experience is mixed, community gardens have improved food security and income of the participating households, and have offered production opportunities to the urban and rural poor. As Vaughan (1997:9) argues "most community gardens have not worked well as commercial ventures, but the development of community gardens has been an important food security intervention".

IRRIGATION AND AGRICULTURAL POLICY IN POST- APARTHEID SOUTH AFRICA

The process of formulating a new irrigation policy was initiated through a discussion document on future irrigation that was published in 1995 by the Department of Water Affairs and Forestry (DWAF). This was followed by a joint publication from DWAF and the Department of Agriculture (DoA) entitled "Towards an Irrigation Policy for South Africa" (1996). Subsequently a White Paper on a National Water Policy for South Africa (1997) and the National Water Act, No. 36 1998, were adopted.

Apartheid policies caused the skewed distribution of access to water and land and agricultural services. There is a great degree of complementarity between agricultural, land and irrigation policy in South Africa. These policies seek to address equity, efficiency and sustainability issues, something that was overlooked during the apartheid years. Theoretically, land reform is seen as inextricably linked with the restructuring of agriculture by opening up opportunities to emerging / new small-scale farmers, targeting in particular Blacks. The intention is to transform the inherited agrarian social structure characterized by racial inequalities in terms of landownership. This requires dealing with the artificial dualism created by centuries of dispossession, policy distortions and preferential treatment of white commercial agriculture which destroyed black farming. Specifically, the overall objectives of agricultural policy

reform involve creating opportunities for the smallholder and resource-poor farmers, improving efficiency and the competitiveness of the sector and utilising resources sustainably.

Fulfilling these objectives requires an irrigation policy that allows for the efficient utilisation of water. In turn, the White Paper on National Water Policy and the National Water Act, No. 36, 1998 make provision for water to be protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner to the benefit of all people (Department of Agriculture, 1998:64). Therefore, irrigation policy seeks to "provide an incentive framework to improve efficiency, develop criteria to be applied in the development of new irrigation capacity, which will address the inequalities resulting from past policies and open up irrigation possibilities to new farmers, provide for self-management of irrigation schemes and provide for training and extension" (Department of Agriculture, 1998:65).

Despite these legislative and policy changes initiated since 1994, prospects for revitalising agriculture in the former homelands and establishing a new class of emerging farmers are bleak. At the moment land reform has failed to dislodge white (and the elite in the homelands) monopoly ownership of land. As it is, land reform has transformed ownership relations marginally. Even if widespread agrarian reform might be achieved, the impact of such reforms will be limited by the lack of access to inputs such as credit, training, and extension services. Small-scale irrigation farming faces critical challenges if it is to become a viable sector. The marked inequalities in the distribution of wealth and resources necessitate the carrying out of comprehensive rural and agricultural restructuring.

Irrigation Management Transfer in South Africa

Consistent with the overall agricultural policy principles there is a move away from government-owned irrigation schemes. The main objective is the transfer of ownership to the beneficiaries in a way that guarantees the chances of self-sustainability, efficiency and growth. The process requires the establishment of relevant institutional structures to allow legal transfer of ownership, farmer cooperation and appropriate support services. Effectively, this means that the irrigation schemes are to be totally owned, managed and maintained by participant farmers, in the form of Water User Associations (WUAs). The primary purpose of

WUAs is to provide for the effective representation of small-scale irrigation farmers on the irrigation schemes at a local level as well as managing water on behalf of their members. The establishment of WUAs provides small-scale irrigators with greater scope for self-management. Maritz (n.d: 6) states "although WUAs are water management institutions their primary purpose is not water management. They operate on a restricted local level, and are in fact cooperative associations of individual water users who wish to undertake water-related activities for their mutual benefit". The ability of the WUAs to assume their responsibilities is a formidable challenge. International experience has shown that developing the capacity of WUAs is long-term, and that it takes several years before they can be able to assume full responsibility. No doubt the Departments of Water Affairs and Agriculture need to play a crucial role in capacitating WUAs.

There are two key innovations in the New Water Act: water charges[8] and redefined water allocations to balance supply and demand. The underlying rationale is that poor cost recovery is often regarded as one of the major stumbling blocks to the sustainability of irrigation schemes. Basically, few (if any) of the state irrigation schemes recovered full operation and maintenance costs. Prior to 1994 governments in the former homelands were responsible for operation and maintenance and finance. Besides the fact that there was rampant corruption, irrigation scheme management found that their entire budgets were consumed in running and maintaining the economically non-viable irrigation schemes. The new policy requires that costs be recovered from beneficiaries.

There are several motivating factors for the adoption of irrigation management transfer policy in South Africa. First, this revolves around the issue of disparities in the degree of support provided to state and private irrigation schemes. Secondly, the government found the financial burden of maintaining and operating unproductive irrigation schemes, through the provision of annual subsidies, impossible to justify and sustain. Consequently, financial

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Generally, the record of cost-recovery has been disappointing, jeopardising the financial viability of continued infrastructural expansion (Alence, 2002:699). There is evidence that in many rural communities the new water sources are under-utilised since many communities do not afford costs whether in the form of pre-paid meters or agreed-upon monthly tariffs. The result is that communities continue to use unsafe drinking water. In addition, questions about project sustainability abound. According to Ruiters and Stein (2002:266) Mvula Trust acknowledges that almost half of the projects it established would fail because of inability to maintain the system. They elaborate further "reasons for unsustainability invariably include very real affordability constraints and an unwillingness to pay for communal standpipes... Other important reasons for failure include poor quality of construction, areas within communities without service and intermittent supply" (Ruiters and Stein, 2002:267).

support was withdrawn resulting in the collapse of many irrigation schemes. Lastly and most important external pressures on the government have dictated the path which the government should take with regard to service delivery. Specifically, the macro-economic strategy, GEAR, in line with WTO rules calls for deregulation and reduction of support (in terms of providing subsidies) for the agricultural sector. As such irrigated agriculture is deemed to be a lower order user of scarce resources and therefore must be seen to be moving towards self-sustainability (Maritz, n.d :3).

To facilitate the process, the government has undertaken to upgrade irrigation infrastructure of the existing irrigation schemes at government cost as a once-off subsidy before the transfer of ownership to the farmers or their institutional entity. There is no intention to develop new irrigation schemes. Also, the requirement is that each irrigation scheme be examined individually to determine its financial and economic viability. This is based on the fact that commercial banks and other lending institutions will finance only profitable projects.

Irrigation scheme rehabilitation and upgrading is being used as the primary driver in the process to introduce irrigation management transfer to small-scale irrigation farmers (and to some extent commercial enterprises) (Maritz, n.d:10). It is envisioned that the process be fully participatory. As such irrigation management transfer requires maximum involvement of all stakeholders in every aspect of project development. The key role players are the farmers, their committees, extension officers, consultants, relevant government departments, local government, non-governmental organisations. This differs considerably from the way in which the irrigation schemes were planned and operated in the past.

Irrigation management transfer in South Africa is still in its infancy. As such it is not possible to give a comprehensive evaluation of the process.

Conclusion

This chapter has demonstrated that systematic dispossession of Africans which later culminated in the suppression of black farming and extensive state support for white commercial farming has created distortions in the agricultural sector which have proved unsustainable. Effectively, therefore, whilst the interests of white commercial farmers were

met through various institutional support structures such as finance, marketing structures, technical services, pricing policy, many small-scale farmers in the homelands either had limited or no access to support services. Where such services existed the quality has been inferior. The cumulative effect of these measures is an agricultural sector that has been restricted to low input levels.

Generally, the performance of the irrigation schemes in the former homelands has been disappointing. They have, generally, been characterised by low productivity. Overall, they have failed to bring about the expected social and economic development of the participating farmers and the local population.

On the whole these irrigation schemes suffered from a combination of technical, institutional and organisational constraints which include inter alia poor management, project planning and design; lack of farmer participation and consultation, farmer selection, quality of extension and other types of support services. What is evident is that policies designed to address agricultural development, in particular, irrigation development were ill-conceived, short-sighted and misguided. Irrigation development was a mechanism for the realisation of the political and economic agendas of the colonial and apartheid state as well as the homeland governments.

The lessons from irrigation experience in Sub-Saharan Africa as well as the current direction of irrigation development must be premised on farmer management and participative planning. This means beneficiaries must be partners in all development endeavours.

Despite legislative and policy changes initiated since 1994, prospects for revitalising agriculture in the former homelands and establishing a new class of emerging farmers are bleak. At the moment land reform has failed to dislodge white (and the elite in the homelands) monopoly ownership of land. As it is, land reform has transformed ownership relations marginally. Even if widespread agrarian reform might be achieved, the impact of such reforms will be limited by the lack of access to inputs such as credit, training, and extension services. Small-scale irrigation farming faces critical challenges if it is to become a viable sector.

CHAPTER 4
TYHEFU IRRIGATION SCHEME: AN ILLUSION OF DEVELOPMENT[9]

Introduction

Tyhefu Irrigation Scheme consists of five settlements (Ndlambe, Pikoli, Ndwayana, Kalikeni, and Glenmore) along a stretch of approximately 25km of the lower Fish River. Of these five settlements Ndlambe is the focus of the study.

The planning and implementation of the Tyhefu Irrigation Scheme was affected and influenced by broader Ciskeian politics. Various competing and conflicting interests sought a stake in the proposed irrigation development, thereby dividing the rural population in the process. On the one hand there was the need on the part of the apartheid / Ciskei government to assert its authority in the Tyhefu area through the installation of chiefly authority. At the village level a complex web of relationships and interactions existed: the role of the village elite, the Tribal Authority, Tyhefu irrigation scheme management and the farmers. The first part of this chapter examines the impact of the apartheid policies at the time and how these played themselves out at the village level. The second part looks at the planning and implementation of the Tyhefu irrigation scheme. The next section will focus on the planning documents of the consultants, Loxton, Venn and Associates, the organization of the Tyhefu Irrigation scheme, its management structure as well as its economic performance. The last part looks at the current process of reviving and rehabilitating the Tyhefu irrigation scheme.

Background

Political and constitutional origins of the Ciskei can be traced back from the end of the nineteenth century when various legislative measures such as the Glen Grey Act of 1894, the Native Land Act, No. 27 of 1913 and the Native Trust Land Act, No.18 of 1936 set in motion the process of racial segregation and dispossession. Underlying these was the principle that Africans should exercise their civil and political rights in the reserves. This process received

[9] This title is adopted from the study of the Gezira irrigation scheme in Sudan entitled "The Gezira Scheme: an illusion of development by T. Barnett

a boost with the coming to power of the National Party (NP) in 1948. The stated intention of apartheid policy was that of separate, self-governing states delineated on an ethnic basis.

According to Stadler (1990:133) the Bantu Authorities Act, No. 68 of 1951 became the most important instrument in establishing the basis of the apartheid system. The Act brought the chief back into the administrative network and restored some of his traditional powers but at the same time subjected his legitimacy to contamination by association with the apartheid system (Graaff, 1990:65). The chiefs were given wide-ranging executive and administrative powers, which were subject to abuse by the incumbents. Following then was the restructuring of the political landscape in the Ciskei, from regional, territorial to tribal authorities. Other enabling legislation designed to fast-track the process included the Promotion of Self-government Act, No. 46 of 1959; Promotion of Economic Development of Bantu Homelands, No. 46 of 1968; Bantu Homelands Citizenship Act, No. 26 of 1970 and the Bantu Homelands Constitution Act, 21 of 1971[10].

In pursuit of the policy of separate development Ciskei was declared a self-governing state in 1972. Subsequently, on 4 December 1981 Ciskei became the fourth homeland to accept nominal independence from South Africa. Independence brought a new and distinctive pattern of personal rule, monopolization of power (high concentration of power on the executive level), patronage politics of domination, nepotism, and corruption. Salient features of President Sebe's rule were authoritarianism, repression, elimination of constitutional constraints on the presidency, single-party rule, the narrowing of the public sphere and subordination of the judiciary (Haysom, 1983; Graaff, 1990). Graaff (1990:56) refers to these as "ugly methods of survival driven by the legitimacy crisis which the incumbents suffered from". The consequence of this was the exercise of unchecked political power by the president, which represented the need to cling to power at all costs. All this was indicative of the realization of the vulnerability and uncertainty of homeland leadership and rule. Unlike post-colonial African leaders who had the support of the masses, homeland leaders were very

[10] The cumulative impact of these statutes was to fast track the process of granting political independence to the reserves. Africans were denied political representation and participation in so called white South Africa, with the result that a homeland citizenship status was imposed. Africans were regarded as temporary sojourners who were there to provide for the labour needs of white South Africa. What followed was massive forced removals to the economically depressed and resource-poor homelands which could not absorb the surplus population. Those who remained behind in the urban areas were subjected to harassment and brutality of the apartheid state through a plethora of other legislation that defined their stay.

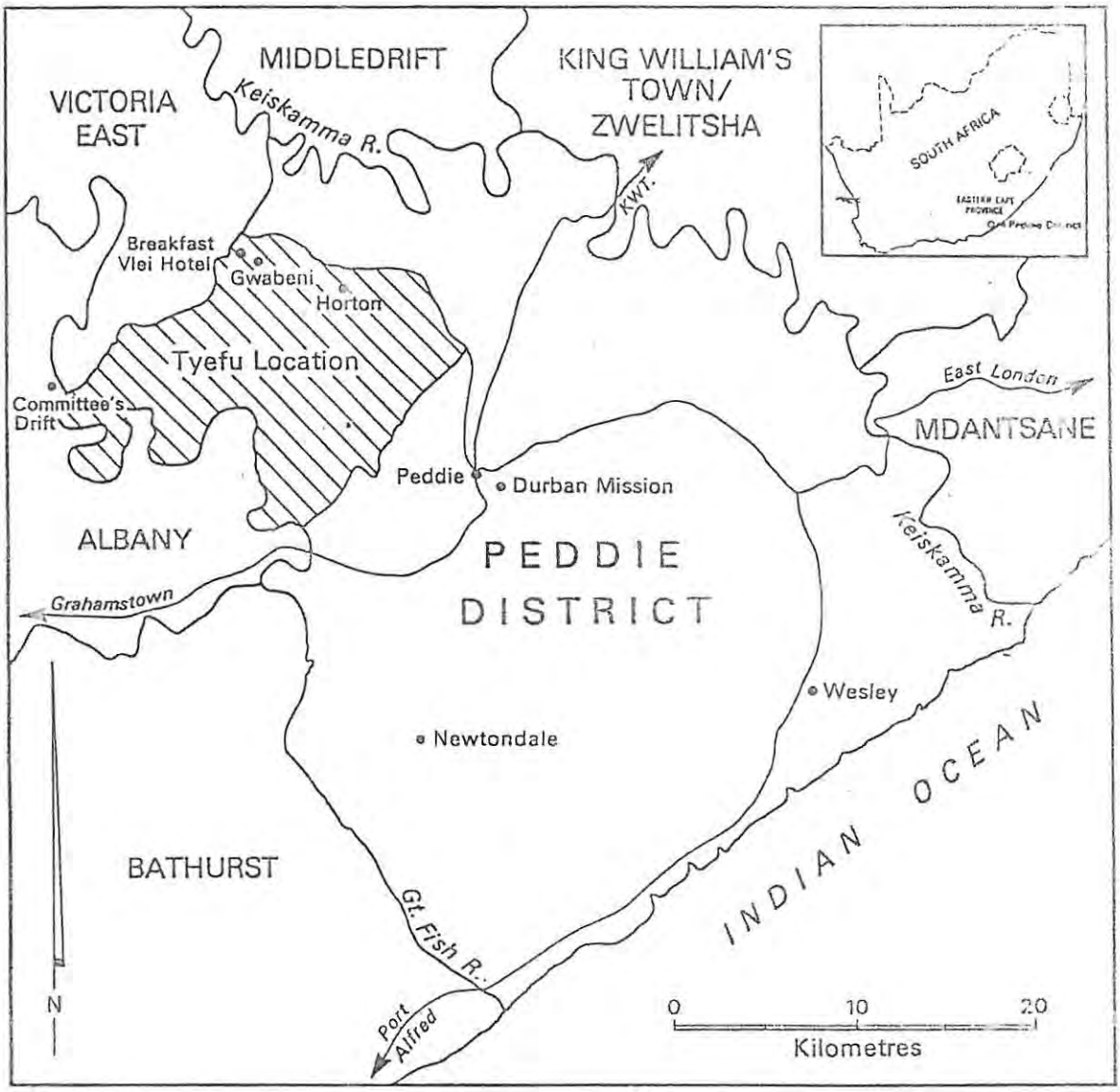
unpopular, and hence the legitimacy crisis. Autocratic rule in the Ciskei was not conducive to fostering public participation.

The Tyhefu area, where the Tyhefu irrigation scheme is located, proved an enormous challenge for the configuration of Bantu authorities. Prior to the creation of separate tribal, regional and territorial authorities, settlements in the location and later reserve area roughly west of Peddie to the Fish River were under the jurisdiction of the South African Magistrate (Holbrook, 1992:182). These settlements were later placed under the control of the tribal authority in terms of Government Notice No. 285 of 1959.

The Tyhefu Tribal area was originally named the Mpahla Tribal Authority. This was later changed to Tyhefu Tribal authority following the death of Chief Gladstone Mphahla in 1965. Nkebeza Tyhefu, considered senior to Mpahla, was denied chieftainship because of his support for the ANC as well as his trenchant opposition to the Native Affairs Department (NAD) and betterment planning. As a result Nkebeza's son, Douglas Msuthu, was appointed after Mpahla. Chief Nkebeza Tyhefu had been suspended from his post as headman on successive occasions since 1933, largely because under his leadership, Tyhefu men had refused to participate in elections for the Bunga (Ciskei General Council) or to follow its leaders (Mager, 1995:57)[11]. "In November 1952, the police cracked down ... Movements in and out of Peddie were monitored meetings prohibited and the militant Chief Msuthu exiled" (Mager, 1992:774). In spite of his banning from the area Tyhefu commanded a big following. People "continued to regard him as their leader, they held meetings at his home, making it impossible for the headman to operate independently" (Mager, 1995:57). As a result the Tyhefu Tribal area was never subjected to betterment planning even though it was surveyed in 1963. This according to Ainslie (1998:78) can be attributed to the fact that the state machinery had lost its enthusiasm by then to go into an area with the reputation for resistance such as the Tyhefu location. Thus, the lack of development in the area has been associated largely to antipathy of the people towards the state and official services.

[11] Resistance to betterment planning in the Ciskei was uneven. Measures included militant confrontations with the authorities and fence cutting. Chiefs and [3] headman occupied hot positions. As Mager (1992:769) points out those who supported the authorities were repeatedly left "standing alone" while those who "stood with the people" were accorded folk hero status. Nkebeza Msuthu was regarded as one of the militant chiefs. With the assistance and influence of the African National Congress (ANC) he wielded an enormous influence in the area.

Map of the Tyhefu Area in Peddie District



Competing and Conflicting Interests

The period before the implementation of the Tyhefu Irrigation Scheme and formal establishment of the Mhala Tribal Authority was characterized by overt tribalism[12] in the Ciskei. Ciskei politics at national level filtered down to the village level. In the case of the Ndlambe village the need of the conservative village elite to find a chiefly candidate who would advance the Xhosa cause became more pronounced. Holbrook (1992:187) summarises the initial challenges faced by this group "The Ciskeian Territorial Authority was chaired by a prominent Mfengu chief, Mabandla. The men felt it would be fruitless to appeal to a Mfengu for help for promoting Xhosa interests".

Meanwhile, in an attempt to curtail the power and influence of the Tyhefu Tribal Authority over all the settlements under its jurisdiction, the Ciskei government looked into the possibility of inventing and establishing the Lower Tyhefu Tribal Authority (LTTA). The latter would cover the villages of the Tyhefu irrigation scheme, in particular Ndlambe and Pikoli. These villages have traditionally been regarded as predominantly Xhosa settlements.

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[12] According to Hendricks (1991:1) Afrikaner nationalist ideology of multi-nationalism and its implementation in the bantustan policy of apartheid propped up tribalism, shaped existing divisions or created these where there were none. The jostling for political control in the Ciskei along tribal lines represents what Mamdani (2001) calls a citizenship crisis. The rise of tribal consciousness and rivalry in the Ciskei originated in the Frontier Wars of the 1800s. Whilst it is not possible to narrate this history in detail here, suffice to say that the fact that the Mfengu fought along side the colonial forces has been a source of tension since then. Institutionally entrenched discriminations against the Xhosa further exacerbated the already poor relations. How these poor relations found expression from the late 1960s is my focus. The main players in the unfolding tribalism that continued to bedevil Ciskeian politics were Justice Mabandla, who in 1968 became the first Head of the Ciskei Territorial Authority, and LLW Sebe who occupied the portfolio of Minister of Education. Both represented the Mfengu and Xhosa respectively. The working relationship between the two is summarized as follows "Mabandla accused Sebe of holding secret meetings and plotting against his government Sebe accused Mabandla of ethnic favouritism and blocking the aspirations of the Rharhabe chiefs for government recognition. When Sebe was dropped to the less glamorous agriculture portfolio, he began to organize his own political party, the Ciskei National Independence Party (CNIP) for the upcoming 1973 elections" (Vail, 1989:399). The expressed sentiment by CNIP was "Why should we be ruled by the Fingo?, thereby awakening the historical and material grievances ... and rallied them to the Sebe cause" (Vail, 1989:399). The rise of Lennox Sebe, despite being a commoner, is striking. From his appointment in the Ciskei Territorial Authority in 1968, to him being the declared life president at independence managed to ingratiate himself and his party in Ciskeian politics and life. In a "landslide victory" which was marred by corruption practices, this practice became the central feature of his presidency. Power struggles within the CNIP were not uncommon, resulting in the dismissal of opposition from within. His support and power base consisted mainly of chiefs and co-opted local elites. Sebe not only revived old Xhosa chieftainships but also created them. In 1985 the Ciskei National Assembly had 57 members of which 28 were chiefs. In 1978 the opposition party, the Ciskei National Party, headed by Justice Mabandla, ceased to exist and Ciskei became a one-party state which became more and more intolerant of opposition groups (Manona, 1995:16). "After attaining a position of unquestionable power " Sebe began the nation-building exercise "by attempting to heal the ugly breach which he himself between the Xhosa and the Mfengu which he himself had done so much to inflame" (Vail, 1989:401). This he demonstrated by promoting selected Mfengu (including his arch-rival, Justice Mabandla) to positions of power. Effectively, therefore, broadening his power base. Patronage politics remained one of survival strategies.

This became the site of struggle between the LTTA (later replaced by the Mhala Tribal Authority), the headman, irrigation scheme participants and management and the village at large.

In anticipation of the establishment of the LTTA Diba Msuthu, the brother of the incumbent chief of the Tyhefu Tribal Authority, established his "Great Place" closer to the Ndlambe / Pikoli villages, thereby becoming the de facto head. Predictably, as a Mfengu Msuthu was not welcome. This sparked outrage and swift reaction from the dominant, conservative and elite members of the Ndlambe community. Under pressure Msuthu had to leave. However, the group still had to contend with the Lower Tyhefu Tribal Authority which was active in the organisation and implementation of the Tyhefu Irrigation scheme.

According to Vail (1989:400) new chieftainships in the Ciskei were established in one of three possible ways. The population of a given location could reject the authority of their officially recognized chief and invite in a new chief. There are several examples of the creation of new chieftainships when Sebe gained power in 1973 such as the Gqunukhwebe, Ngcangathelo, Ngxalase. This is the route taken by the conservative elite in Ndlambe to bring in someone "acceptable" to them. As discussed earlier, the [Lower] Tyhefu Tribal Authority was always in dispute.

Ndlambe men's attempt to secure a chiefly candidate received a boost in 1973 with the coming to power of the Xhosa-aligned Ciskei National Independence Party (CNIP) under the leadership of LLW Sebe. They subsequently approached the new "government" after which they were told to identify the royal lineage from which they would select their chief. Their search ended with the Ndlambe Tribal Authority headed by chief Menziwe Makinana. His response was positive. This paved the way for the submission of a claim for a new tribal authority, with Hamilton Makinana identified as the suitable candidate. Soon after this the chief moved to the Ndlambe village near Tyhefu irrigation scheme headquarters awaiting his official appointment. Summarising the overall impact of the whole process Holbrook (1992:192) states "the crisis that exploded in the arena of village politics was precipitated by the group looking for the chiefly candidate and the new chief and represented a serious breach of norm-governed relations, a breach that led rapidly to a split in the irrigation community and the village as a whole".

The Mhala Tribal Authority (MTA) was formally established in terms of Ciskeian Government Notice No. 84 of 1983, thereby marking the demise of the LTTA which was never officially promulgated and recognised. Its jurisdiction was limited only to the villages of Ndlambe, Pikoli, Woodlands and Runlets. The latter two villages were located outside the original Tyhefu Tribal Authority. At the same time they are not part of the Tyhefu Irrigation Scheme. Here subsistence agriculture is rainfed. In the political process that had unfolded the influence of the Tyhefu Tribal Authority was firmly confined to the administration of the Mfengu villages that had little direct interaction with the Tyhefu irrigation Scheme (Holbrook, 1992:200).

The rule of Chief Makinana was turbulent. Faced with the crisis of legitimacy, accusations of favouritism, corruption and inefficiency as well as the opening of political space in the Ciskei in the late1980s, Chief Makinana had to flee the area. However, Mhala Tribal Authority's power and influence in the village and Tyhefu irrigation scheme cannot be under-estimated.

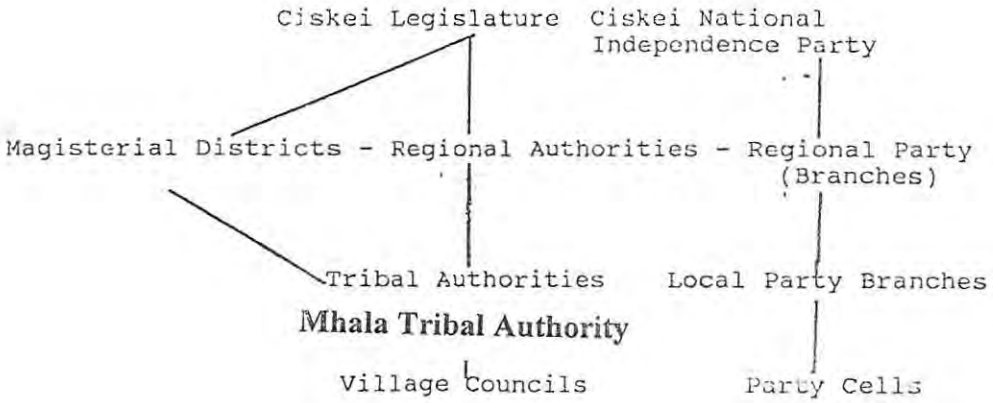
The Mhala Tribal Authority was made up largely of the commercial farmers[13] of the Tyhefu Irrigation scheme which consisted of the powerful rural elite faction that saw Chief Makinana rise to power. Consequently, the MTA was concerned with these sectional interests rather than those of the whole community. On the whole the MTA was made up of individuals who could not be regarded as representatives of the people. This situation was not unique to the MTA as Manona (1995) demonstrates in the study of Tribal Authorities in the Keiskammahoek district "the Tribal Authority as a conservative body could not reflect the ... diversity of the people it served".

The role and responsibility of the Mhala Tribal Authority with regard to the Tyhefu irrigation scheme proved to be a source of tension and conflict for irrigation scheme management. As Holbrook (1992:201) argues "the emergence of the Mhala Tribal Authority was a critical element in the village political factions to challenge the authority of the scheme in irrigation matters". The Mhala Tribal Authority demonstrated its ability to overrule management

[13] The concept of commercial farmer in the Tyhefu irrigation scheme referred to a 4 ha plot of irrigated land. It implied that the "farmer" will be involved in the commercial production and marketing of high value crops under strict centralized control from irrigation scheme management. Thus, according to van Averbeke et al (1998:8) the commercial farmer component in many irrigation schemes was directed at providing selected households with an opportunity to become involved in small-scale market oriented production, the main objective being to create a class of black commercially oriented farmers. None of the commercial farmers in all the irrigation schemes managed to farm independently of irrigation scheme services. The income they derived from farming was limited and were always in a continual state of indebtedness.

decisions at the Tyhefu irrigation scheme through direct intervention in irrigation matters on behalf of commercial farmers. This not only threatened the effective functioning of the irrigation scheme management but through its behaviour the Mhala Tribal authority sidelined the rest of the communities under its control. As Holbrook (1992:210) argues "the growing power of the commercial farmer / tribal authority elite occasioned a great deal of concern for the scheme's Interscience management and its Loxton Venn consultants for it threatened the continued operation of the scheme altogether".

Political and Administrative Structure of the Ciskei vis-à-vis the Mhala Tribal Authority in 1990 (Manona, 1995:7)



NB *The Ciskei National Independence Party (CNIP) was the ruling party which nominally shared its authority with the Tribal Authority over the community (Manona, 1995:8).*

Another dimension concerned the unresolved question of the position of the headman[14] vis-a-vis the Mhala Tribal Authority and Tyhefu irrigation scheme. Elections called by the Ciskei government in 1984 to resolve the issue did not help matters either. The functions and responsibilities of the headman were limited to minor issues in the Ndlambe village (conflict resolution, land allocation, general enforcement of the law). In contrast, the Mhala Tribal

[14] Below the Tribal Authority was a convocation of senior men and the headmen of each constituent village (Pikoli, Ndlambe, Runlets and Woodlands (Holbrook, 1992:205). The first two villages are part of the Tyhefu irrigation scheme whilst Runlets and Woodlands are not For Ndlambe and Pikoli the government-appointed and paid headman of Pikoli village had jurisdiction over the two villages. The Pikoli headman focused more on his own immediate village, whilst delegating his Ndlambe responsibilities to the unpaid sub-headman in Ndlambe. Both headmen had circumscribed powers in relation to the MTA.

authority was responsible for collecting and distributing land rentals from the irrigation scheme, for proposing irrigated land allocations and with representing the interests of the "villagers" (*commercial farmers)* vis-a-vis the irrigation scheme (Holbrook, 1992:199). In effect, the Mhala Tribal authority's primary interests were with the commercial farmers and not the village as a whole. Whilst higher-level decision making vested primarily in the Tribal Authority, the headman, also, had the duty of implementing all directives from the Tribal Authority. The two were further distinguished by the manner and nature of the meetings they held. The meetings held by the headman can be described as more open to the public and its "transparent" nature. Conversely, those of the Mhala Tribal Authority were more secretive, lacked transparency, limited only to the Tribal Authority and its inner circle. There was, also, closer interaction between the Mhala Tribal Authority and Tyhefu irrigation scheme management, a priviledge not accorded the headman. On the whole, the Chief participated minimally in community affairs. Instead he delegated his authority to his councillors. His main interests were the Tyhefu irrigation scheme and broader Ciskeian politics. Referring to the Keismmahoek district tribal authority Manona (1995:16) summarised its role as follows "chiefs generally were no longer directly responsible to their people but were civil servants with specific obligations to the government. In the same sense, the Tribal Authority was an arm of government, and its decisions were made with that as its primary objective. Much of its power came from above..."

During the initial phases of the rehabilitation process community divisions regarding the future role of the chief in the Tyhefu irrigation scheme surfaced. A letter by Rainbow Valley, Social Consultants, (2000) alludes to the problem "... there are sensitive land allocation issues that keep surfacing and have a potential to derail the process if not resolved or at least openly debated in a public forum. Until decisions are made by the affected parties, it looks likely that a protracted and unnecessarily long process is set to take place and if it continues may jeopardise the economic viability of the scheme". The minutes of 7 December 2001 are more revealing "Chief Makinana called for an indaba on land allocation during the consultative process to assist the community with the land allocation. The calling of an indaba by the Chief caused uneasiness with the Project Steering Committee (PSC) as it was perceived as interference in the PSC's role and responsibilities". From the informal discussions held with various community members and their elected representatives there appears to be a unanimous decision not to allow the Chief to have any role to play. Initially, the ex-commercial farmers and some loyalists favoured the active participation of the now defunct

Mhala Tribal Authority. Generally, the majority of the community does not want the participation of the Chief in any way. Members of the community believe that the community and its elected representatives should drive this process.

Agricultural Potential in the Tyhefu Area

The Ciskei Department of Agriculture and Forestry annual report (1984/85) described the Tyhefu area as "one of the most eroded and impoverished areas of the Ciskei. Some of the drier parts are virtually beyond rehabilitation. The area is densely populated and is so drought prone that the people are unable to subsist from the land: a truly depressed area". In addition, Loxton. Venn and Associates (1979) identified advanced erosion and veld degradation. They described the area as having very limited agricultural potential and only moderately suited to extensive and semi-intensive livestock production than cultivation.

Research evidence (Manona, 1997; Monde-Gweleta et al, 1998) suggests that agriculture adds to rural livelihoods in a modest way, and hardly ever constitutes the main and reliable source of income and food security. According to Nagel and Spencer (2000:34) earnings from agriculture in the Ciskei account for less than 10% of household income for the majority of the rural households. State transfers in the form of old age pensions, child welfare and disability grants, remittances constitute the most important source of income.

Where farming takes place, the land is not utilised to its optimal capacity. Despite the fact that in some areas of the Eastern Cape Province there is overcrowding, much of the land remains unutilised. Agricultural productivity in the Tyhefu area is further limited by the agro-ecology of the region. This includes poor soils, low and irregular rainfall, water quality problem, high evaporation rates, seasonal extremes of temperature and a poor resource base. Other constraints to successful farming for the majority of the rural population include access to credit and finance, poor (or non-existent) support and extension services and poor infrastructure.

In view of the above, the agricultural objectives of the Ciskei were detailed in the report of the Commission of Inquiry into the Economic Development of the Republic of Ciskei (Swart Commission) (1983). The Swart Commission identified two key objectives of agricultural

development: developing Ciskei's agricultural potential to the optimum and the commercialisation of the agricultural sector. With regard to the latter the Swart Commission (1983:44) stated "the aim is to upgrade the level of farming from sub-subsistence to subsistence and the conversion of subsistence farming into commercial farming, thus placing farmers firmly in the cash economy". Underlying this were several interrelated objectives, which include inter alia: active participation of the farmers in all management functions; development of farmer skills and other competencies; establishment of a full-time class of commercial farmers whose income will compare favourably with other non-farming enterprises; ensuring food security and employment creation; and the generation of various linkages within Ciskei's economy and that of South[ern] Africa as a whole. The Tyhefu Irrigation scheme is a prime example of how these objectives were not met. This will be clearly evident in the discussion that follows.

THE PLANNING AND DEVELOPMENT OF THE TYHEFU IRRIGATION SCHEME

The South African government first considered the possibility of developing an irrigation scheme in the Tyhefu area in the mid-1930s. At the time one of the constraining factors was the high salinity of the Fish River water, with the result that the project never got off the ground. The idea was revisited in 1975 by the Ciskei Department of Agriculture and Forestry when it commissioned Loxton, Venn and Associates (the main consulting firm in irrigation scheme planning and implementation in the Ciskei and Transkei) to conduct feasibility studies. The primary objective of the feasibility studies was the development of an irrigation scheme on the eastern side of the Fish River. Subsequently, Loxton, Venn and Associates recommended a large-scale, capital intensive and technologically advanced agricultural project in the Fish River Valley, to be initiated in the form of a pilot project, later known as the Tyhefu irrigation scheme.

As mentioned earlier, widespread poverty in the Tyhefu area and its limited agricultural potential is cited in the planning documents as one of the driving motives for the proposed implementation of the Tyhefu irrigation scheme. However, the above together with the "perceived need to change the antagonistic relationship between the people of the Tyhefu area and the state" (Holbrook, 1992:63) lies at the heart of the intervention. The people of

the Tyhefu area have long been described as "recalcitrant and difficult" adopting an uncooperative attitude towards betterment schemes[15] (Department of Agriculture and Forestry, 1984:1). In addition, the consultants stated "the Department (of Agriculture and Forestry in the Ciskei) hopes to use the irrigation scheme as a nucleus from which rehabilitation planning[16] can be extended to the whole tribal area" (Loxton and Venn, 1977:29). It is for this reason the inhabitants of the Tyhefu area believe that the Tyhefu irrigation scheme was of strategic importance to the government. Its planning and development is regarded more as a way of extending state control over the Tyhefu area, appeasing the local population as well as legitimizing homeland rule. This is reflected in the reaction of the Ndwayana village, the first village approached about the proposed irrigation scheme in the area. Residents in the village point out that their resistance to the proposed development was seen as part of a broader struggle against colonialism, the apartheid state and its policy of separate development. After failing to convince the Ndwayana community, the planners approached the villages of Ndlambe and Pikoli "whose response was much more positive" (Van Averbeke et al, 1998: 47).

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[15] Footnote 15 & 16 must be read together. Betterment Planning (also known as soil conservation and agricultural rehabilitation) - refers to successive attempts started in the 1930s by various South African and homeland governments ostensibly to combat the deterioration of the natural resources and improve agricultural production in the reserves. The driving impetus for betterment stems from the 1932 Native Economic Commission which seemed to have sent panic in the government about the declining resource base in the reserves. Unlike previous Commissions it called for urgent remedial measures to halt the situation and revive the reserve economies. The Commission aptly stated " In the economic development of the reserves must inevitably be sought the main solution for the native economic problem ...our problem is therefore not only as it is in agriculture to teach the Native how to use their land more economically, but is also a race against time to prevent the destruction of large grazing areas, the erosion and denudation of the soil and drying up of springs" (Yawitch, 1981:9). Whilst concerns about conservation date back long before the 1930s as far as betterment is concerned these are rooted in the Native Trust and Land Act, No.18 of 1936. The government attributed the bad state of the reserves to bad farming practices, laziness and the irrational desire to accumulate livestock rather than questioning the nature of its policies.

The procedures and processes for betterment planning were first outlined in Proclamation 31 of 1939 and later Proclamation 116 of 1949. An important requirement was the development of a land-use plan, which included the division of the rural areas into residential, arable and grazing areas. This together with the limited pasture areas meant that no commercial farming could ever take place let alone meeting subsistence needs.

On the whole, betterment planning failed to achieve the desired results. Far from conserving the environment, improving agricultural productivity, betterment had the opposite effect. Reserves continued to slide into ever-increasing poverty. The policy had nothing to do with environmental conservation and agricultural development but more to do with ensuring a steady supply of migrant labour and the control of the rural population. Evidence abounds (de Wet,1985, 1995) that betterment created more erosion, ecological and social problems than it had solved. According to De Wet (1994:362) betterment could not have succeeded in its basic aims because trapped within the land allocations of the 1913 and 1936 Land Acts, it could not relieve the pressure on the land.

[16] Rehabilitation planning (see footnote 15)

Up until the planning and implementation of the project the state did not have its grip on the area. Thus, the nature of the Tyhefu irrigation Scheme discourse entailed the politicization of the development. This is clear from the following extract "the most important benefit has been the 'winning over' of the local community, who are now collaborating with the authorities and have sent a delegation to request the rehabilitation planning of the whole tribal area, something to which they were previously strongly opposed. This is a most significant and heartening change" (Ciskei Dept. of Agriculture and Forestry, 1984:5). Furthermore, the Loxton Venn and Associates (1977) stated that within the area "lay seeds of trouble" and argued that one of the benefits of the project would be "the easing of the troublesome political problem".

In an effort to overcome the problems discussed above the Consultants recommended strict centralised managerial control over the activities of the farmers. This strategy has since become controversial for several reasons. This approach did not allow for farmer participation in the initial planning process, design and implementation phases. Research evidence (Lowdermilk,1985; van Rooyen, 1985; Bembridge (2000) suggests a strong correlation between farmer participation in planning and decision making and the economic viability of irrigation schemes. According to Bembridge (1986b: 612) success depends on integration between technology, management, participants and the socio-economic situation. Thus, authoritarianism characteristic of the apartheid state and Ciskei government fed into the Tyhefu irrigation scheme design. Farmer participation would run counter to the principles of exclusion, and the narrowing of political space on which the South African state was firmly grounded. Generally, strike action and or any form of unrest was not tolerated in any way. At best it was suppressed through violent means. According to Van Averbeke et al (1998:4-5) during the late 1980s the growing awareness among the irrigation scheme workers of their rights, the demand for higher wages led to a general decline of most of the irrigation schemes in the Eastern Cape as well as the erosion of the authority of irrigation scheme management.

One of the major requirements proposed for the economic success of the Tyhefu irrigation scheme was a new system of land tenure. This was based on the notion of "voluntary alienation" of traditional land rights. In effect, this meant the scrapping of all the existing land rights and subsequent re-allocation of land. Oral testimonies point out that not all people approved such alienation, instead people demanded that they retain their dryland holdings. Small plots and allotments were allocated to members of the community in exchange for

releasing rainfed land for irrigated production ((Monde-Gweleta et al, 1997:619). The Lower Tyhefu Tribal Authority "approved" the alienation of all land rights. This effectively gave the management of the Tyhefu irrigation scheme total control over land. As Holbrook (1992: 70) puts it 'they could allocate land, determine how land was to be used and could evict participants from the land". To ensure that the irrigated land would be used optimally, Loxton, Venn and Associates proposed the following guidelines: selection of farmers subject to satisfactory performance; farmer servicing and training; economic discipline (1977:27). This made it possible for management to "evict" non-performing farmers. According to the former farmers eviction was not a widespread practice even though this appears to have been applied stringently during the early years.

The salinity of the Fish River water presented the planners with problems which threatened the viability of the project. Suffice to say that despite all attempts with the problem the general quality of the water remained poor. To contain the problem emphasis was on saline-resistant, high value crops and the use of sophisticated production techniques.

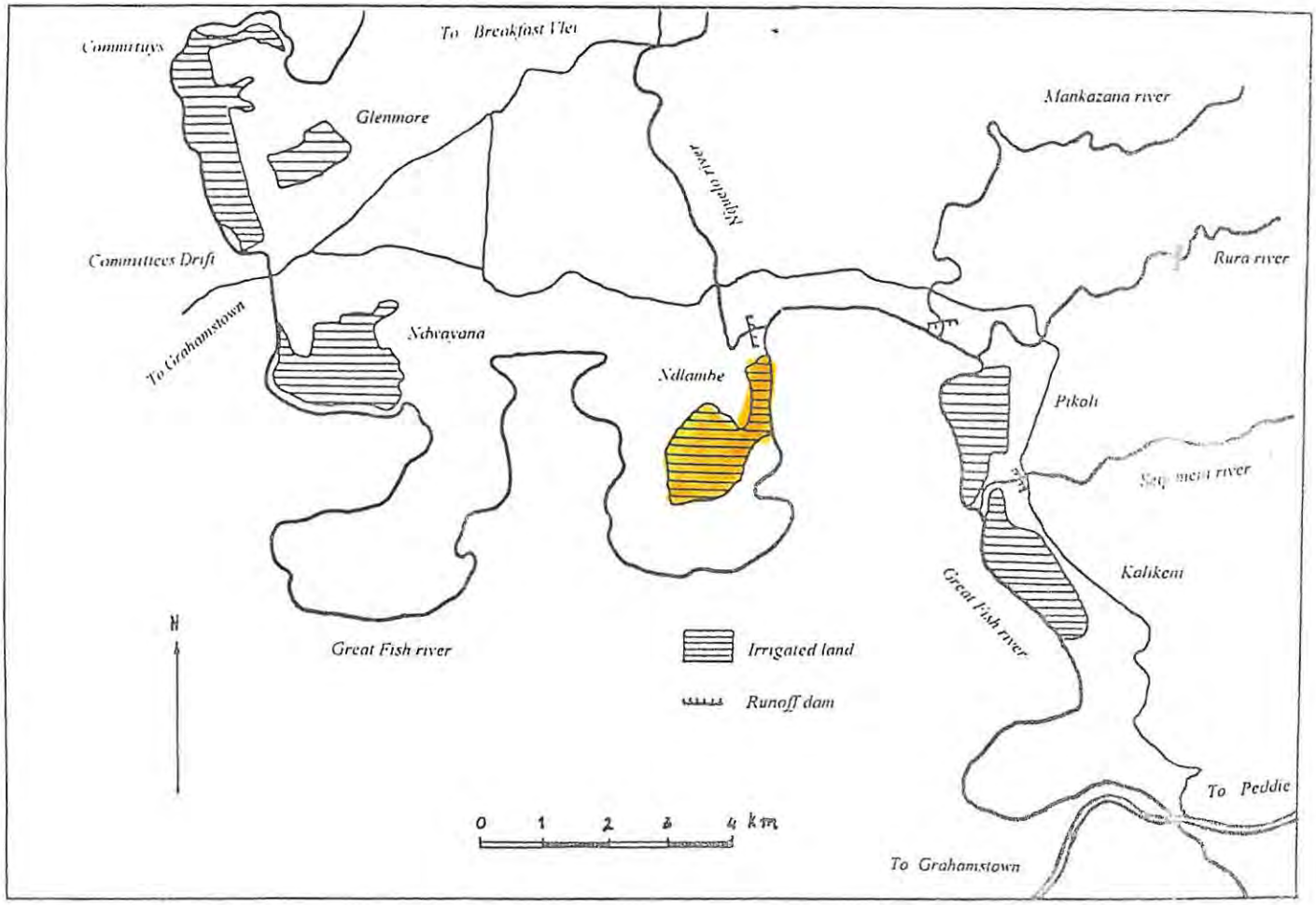
The economic success of the Tyhefu irrigation scheme was in doubt from the start. Loxton, Venn and Associates were clear from the outset that the scheme was not economically viable. They stated "as a result of high pumping costs the pilot project is not economically viable *sensu stricto,* but because it will be superseded by the main gravity scheme and because of the tremendous benefits it is producing, this is acceptable to the Ciskei Cabinet" (Dept. of Agriculture and Forestry, 1984:5). In addition, water quality problems and the limited range of crops that could be grown affected the yields at Ndlambe, Pikoli and and Kalikeni. As a result the Tyhefu irrigation scheme was running at a large operational loss (circa R1 million) prior to management withdrawal in 1995 (Bembridge, 2000:37).

Loxton and Venn's development plan was based on the assessment of the physical environment (water and soil analysis), engineering aspects, a market survey and crop technology criteria with little or no attention to the human aspects. This type of development was based on the mistaken assumption that technological innovations per se would be sufficiently attractive to automatically stimulate farmer participation (Backeberg et al, 1996:59).

The Tyhefu irrigation scheme was started in 1977 as a pilot project implemented in various phases. The pilot project started with the development of 121ha at Ndlambe (headquarters). The aim of the pilot project was to investigate the suitability of the area for irrigated crop production, especially high value crops for the urban market. According to Bembridge (1986b: 608) the implementation of a pilot project represented a notable exception to the approach taken to much irrigation development in Africa, since pilot projects or demonstration farms aimed at addressing technical and socio-economic problems have rarely preceded large-scale development. Approximately 1000ha of potentially irrigable land is undeveloped. This area is expected to be extended once the scheme becomes functional. At the time of the closure of the Tyhefu irrigation scheme the total irrigated area was 694 ha.

The implementation of the Tyhefu Irrigation Scheme had an effect on spatial planning in the village. The number of families relocated as a result of the implementation of the Tyhefu irrigation scheme and the construction of the Mhala Tribal Authority headquarters is unclear. It is estimated that at least 30-50 families had to be relocated. Even though compensation is reported to have been paid, this is considered insufficient. Resettled families moved to already populated areas. The effect was the centralisation and concentration of the village. At the same time, the scheme's infrastructure closed off some areas for settlement and restricted settlement to other areas and, in addition, settlement increased as people moved to the area in response to the area's economic opportunities (Holbrook, 1992:95).

Map of Tyefu Irrigation Scheme.



The Organisation and Management of the Tyhefu Irrigation Scheme

Tyhefu irrigation scheme was first administered by management agents, Interscience (Pty) Ltd., a subsidiary of Loxton, Venn and Associates, on behalf of the Ciskei government until 1984. They remained as advisors to the Ciskei government. Interscience (Pty) Ltd was in charge of planning and implementing cropping programmes, budgeting and financial control and evaluating performance (Bembridge (1986:605). From the1985 to 1997 Tyhefu irrigation scheme was managed by Ulimocor, Ciskei Agricultural Corporation. This take over did not mean the end of the influence of old management, since they became advisors to Ulimocor. In the meantime, Loxton, Venn and Associates management staff was re-employed by Ulimocor. In effect therefore, changes in management did little to change the structural

principles on which Tyhefu irrigation scheme was based. Essentially decision making was still vested with the old management. At the same time relations between irrigation scheme management and the commercial farmers continued to deteriorate.

Relations between the various farming groups and irrigation scheme management were structured hierarchically. At the top of the hierarchy was irrigation scheme management followed by the commercial farmers, the small plotholders or allotment holders and the labourers. What distinguished the above groups from each other is the amount of land each held as well as the size of the group. For example commercial farmers were numerically the smallest group but farmed more land, whilst labourers did not have access to any irrigated land. Holbrook (1992: 75) explains "the two variables in the hierarchy – land holding and group size, could be said to stand in a inverse relationship to each other – the smaller the group, the more land it held, the higher on the hierarchy it stood".

Of the various farmer categories, commercial farmers were carefully controlled by irrigation scheme management according to the scheme's plan which emphasised centralized managerial control and decision-making. Management style can be described as autocratic and top-down with little (if any) farmer participation. The effect of this was the non-accountability of management, feelings of incompetence among the farmers, inadequate training and development of local institutions (Bembridge, 2000). According to Backenberg et al (1996:61) on most schemes the relationship between farmers and project management is that of customer and supplier. Farmers had no sense of ownership. This was not conducive for effective interaction and cooperation with irrigation scheme management. Thus, the farmers were limited in the degree to which they could affect and influence management. As a commercial enterprise, Tyhefu irrigation scheme management interpreted their role as one of ensuring efficient production through the provision of various inputs and marketing of the crop.

At the time of closing Tyhefu irrigation scheme none of the management functions had been transferred to the farmers. This is proving counter-productive since the ultimate aim of reviving the irrigation schemes is the transfer of all responsibilities to the farmers. With no managerial and other skills critical for the viability and sustainability of the irrigation schemes, capacity building is essential.

Sub-Division of Irrigated Land

After the alienation of existing land rights the Tyhefu Irrigation scheme's plan proposed the sub-division of irrigated land into three types of production units: tribal farms, commercial plots, food plots / allotments. Specifically, the land was subdivided as follows: 22 commercial farms of 4 ha each; 223 food plots of 0,25 ha; 3 tribal farms totalling 183 ha; 66 allotments of 0,16ha (Van Averbeke et al 1998:45).

Tribal farms or central unit occupied about 50% of irrigated land on each site. The functions of the central unit were to manage estate farming in pursuit of an economic objective, and to provide farmer support services to food plotters and small-scale commercial farmers in line with the social objective (Van Averbeke et al, 1998:8). The tribal farms were managed and farmed as commercial units on behalf of the Tribal Authority, with the profits "to be used for community development purposes". Oral testimonies reveal that none of the money was used for such a purpose, except the enrichment of the Tribal Authority and close associates. Perhaps an explanation of how the Tribal Authority used its finances is contained in the following quote by Holbrook (1992:206/207) "The Mhala Tribal Authority was greatly concerned with raising funds for political purposes...". It was common practice for the Ciskei government (and by implication CNIP) to demand large sums of money from the Tribal Authorities who in turn extorted it from the populace. Failure by the Tribal Authority to do this drew heavy criticism from the state, which at times meant falling into disfavour and the withdrawal of certain priviledges. Considering the high level of corruption in the institution of chieftaincy generally, the fact that they were poorly paid state functionaries, their fragile position vis-a-vis the Ciskei government and that they constantly had to prove their loyalty to the government, it can be inferred that income from the Tribal farms was embezzled.

Besides the perceived short-term benefits of improved food security and access to employment, all respondents are unanimous that the scheme's impact on the village and region as a whole has been limited. The respondents point to the lack of development of the area. Available evidence on many irrigation schemes suggests that "the distribution of benefits was limited in relation to total need and to aggregate resources available for development. Although higher levels of resource use, production and wage employment were achieved through modern farming enterprises ... little was done to promote a class of self-employed farmers or to improve farming conditions for smallholders outside these

schemes...The projects... often incurred losses, and rarely involved spill-overs or linkages with the surrounding communities" (Vink and Kirsten, 2000:20). Bromberger and Antonie (1993: 23) referred to the irrigation schemes as "islands of prosperity amidst an ocean of poverty".

Farming on the tribal farms was discontinued in the late 1980s and the land subdivided into small plots and allotments.

Commercial farms formed 40% of the Tyhefu Irrigation Scheme. The objective being to establish a class of full-time black commercial farmers. Selection was done by the Tribal Authority and subject to endorsement by irrigation scheme management. Residents point out that this was done in an undemocratic manner and the process was closed. According to local residents commercial farmers were supposed to receive intensive training. After which based on their performance they would 'graduate' and be given access to more land where they would farm independently of the irrigation scheme. This vision never materialised. Backeberg et al (1996:56) commenting on the selection criteria of farmers notes "with few exceptions, there had been no selection of participants on small-irrigation schemes on the basis of farming, entrepreneurial ability or trainability". Undoubtedly, this had an impact on the economic performance of many schemes.

At the time of the closure of the Tyhefu Irrigation scheme in 1997, the commercial farmers had not accumulated sufficient income to farm independently of scheme services. There does not appear to have been any attempt on the management's part to relinquish control over the activities of the farmers. At the same time many of the farmers incurred a heavy debt burden. In addition the number of assets acquired is minimal.

Generally, commercial farmers belonged to Ndlambe's largest, dominant and influential kinship groups, made up basically of what is referred to as the original inhabitants of the area[17]. They enjoyed a much higher and priviledged status compared to those who had

[17] Holbrook (1992:111) explains " in Ndlambe a distinction is made between people who lived in the area before the scheme and those that arrived after it had been established. Those people from old Ndlambe families enjoy a higher status in the village. The premium placed on being from Ndlambe's "original" families achieved particular value after the implementation of the scheme because the planner's land-use plan restricted access to those people who had previously held land rights in the area". Former farm workers evicted from farms in the Republic of South Africa, residents of the Glenmore resettlement camp as well as staff of the Tyhefu irrigation scheme who did not have any kinship relations in the village were regarded as total foreigners. A term

relocated to the area. Such a distinction determines who plays a major and dominant role in community affairs. More importantly, this was an automatic mechanism of exclusion.

Whilst a smaller group, commercial farmers farmed more land (4 ha each) and had preferential access to scheme's resources compared to small plotholders and allotment holders. The main services offered by the scheme to the commercial farmers included water supply, land preparation, extension, marketing, cropping regimes, seed and seedlings, fertilisers and pesticides, access to credit. In return, they were expected to care for the land and crops. Commercial farmers were charged for all these services. Commercial farmers were, thus, able to generate more income than other farming groups. Furthermore, as mentioned earlier, "commercial farmers were the most powerful local farming group by virtue of their position in village kinship networks and their preferential access to political power and irrigation scheme resources" (Holbrook, 1992:207). Furthermore, their close association with the Mhala Tribal Authority strengthened their position. The Tribal Authority did not represent the interests of its constituents and hence the poor support it enjoyed from the community at large. Its favouritism of commercial farmers threatened and affected community unity.

Generally, the relationship between irrigation scheme's management and the commercial farmers was far from cordial, culminating ultimately in the challenge of scheme management in 1987. Main grievances centred around racism, composition of irrigation scheme management, corruption and mismanagement, marketing policies, the credit and financial management system. Holbrook (1992:89) elaborates "although the opposition between management and the farmers was made visible in a number of ways its recurring theme was ... that of race. The core day-to-day decision-making group within management was not only made up of "foreign" professional experts, but it was exclusively white. A central dimension to the conflict, therefore, was that participants were black while management, who exercised economic control over the participants, was white". Consequently, a black project manager was appointed. At the same time other black staff were either appointed or promoted to junior positions. As it is such a change was insignificant in terms of the management of the scheme

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commonly used to refer to this group is "**iranuga**". According to Kropf (1915:369) uku**ranuga** refers "to go on tramp seeking work". Implicit in the meaning is the notion of being a foreigner. It should be noted that people from neigbouring villages and the Peddie area were never regarded as foreigners but strangers or outsiders. Being territorial is not something unique to the village of Ndlambe but happens in varying degrees in many societies.

and policies pursued since essentially decision making was still vested with the old management. Thus, the basic structural features of the Tyhefu irrigation scheme as well as the relationships of authority and control remained the same. For example the black project manager "relegated to the status of "figurehead" ... and unsure about applying himself to the task of making complex economic and managerial decisions found his role decline significantly" (Holbrook, 1992:990).

Small plots and allotments were a form of compensation to those community members who gave up their rainfed land for irrigation development. A small plot covered an area of 0,25ha whilst an allotment was 0,16ha. In practice, the two were regarded as the same category. Women dominated in these categories. Farming here was geared towards subsistence rather than the market. In many instances the farmers did generate a small cash profit. Farmers had lots of freedom compared to the commercial farmers regarding the crops they could grow and marketing.

The Economic Performance of the Tyhefu Irrigation Scheme

In an investigation into food plot production at irrigation schemes in the central Eastern Cape Van Averbeke et al (1998:58) noted the difficulty of obtaining an accurate record of actuals. The report stated "we had to rely on budgeted amounts only. It was impossible to separate the financial data applying to food plot sub-sections from those of other scheme components. Financial analysis at sub-scheme level was, therefore impossible". Referring to the Tyhefu irrigation scheme Holbrook (1992:128), also, pointed to the difficulties of collecting accurate data concerning yields, financial profits and losses. The above sums up financial mismanagement that characterized many irrigation schemes in South Africa.

Whilst Tyhefu Irrigation scheme was able to maintain sustained production it was a financial failure. The study by Hill (1984) on the "*Economic Viability Studies on Three Irrigation Schemes in Ciskei*" provided a detailed analysis of the economic performance of the Tyhefu Irrigation Scheme. Hill (1984:2) concluded that all the existing schemes were sunken costs. He made several observations regarding the Tyhefu Irrigation scheme. Hill (1984:1) noted that already by 1984 the Tyhefu Irrigation scheme had not produced a positive cash flow, even in the operational sense. Over eight years in operation the scheme's high electricity pumping costs totalled R4 015 000 while the scheme's operating costs and cash-flow

incomes were recorded at R4 817 000 and R3 444 000 respectively (Hill, 1984:14). Hill estimated development costs at R1 500 per hectare per annum. Hill (1984:28) concluded "over a projected 30 year life of the scheme, Tyhefu is a net drain on the Ciskeian economy of more than R6 million. These findings are supported by Van Averbeke's et al., (1998:58) financial analysis in the period 1984/91 who states that Tyhefu incurred a deficit every year.

It is clear from the above that Tyhefu irrigation scheme did not operate in a cost-effective manner. A pertinent question is why Tyhefu irrigation scheme after almost twenty years of existence could not register a positive cash flow. Related to this is why the Ciskei government committed itself on an annual basis to subsidizing poor functioning irrigation schemes. Such a decision to continue subsiding the irrigation schemes cannot be justified in the economic sense. Obviously, in any economic venture a good return for one's investment should be key. At another level it does not seem that performance appraisal was ever done throughout the life span of the project. Nor were there any performance indicators in place. It is also evident that there was no monitoring mechanism in place to counteract any shortcomings or to suggest any adjustments when and wherever needed. Considering that Tyhefu irrigation scheme started off as a pilot project in 1977, the decision to continue expanding the irrigation scheme seems short-sighted and ill-conceived. The Consultants' earlier reservations concerning the economic viability of Tyhefu irrigation scheme were proven to be correct. They stated "the pilot project is not economically viable ... because of the tremendous benefits it is producing this is acceptable to the Ciskei Cabinet" (Dept. of Agriculture and Forestry, 1984:5). From this it can be inferred that Tyhefu irrigation scheme was doomed from the start. Whether management agents or the Ciskei government had any interest in ensuring the financial viability and sustainability of the project in spite of the Consultants' concerns is questionable. Hence the government's ongoing commitment to funding an ailing project.

A number of factors can be attributed to the poor economic performance of the scheme: corruption, lack of participation by farmers, poor management, centralised control and decision making, water quality, labour intensity, the use of electricity as a source of power, fixed market prices for crops. With regard to the latter Holbrook (1992:87) explains "... the central role Harvestime factory came to play as a market affected decision making as it applied to the scheme's cropping regime... cropping programmes were designed in close consultation with the representatives of the freezing factory. The freezing factory indicated

the amount and type of crops it required in a particular season and advanced capital for the necessary inputs. The scheme was then paid for growing the crop. The scheme gained the benefits of having a secure market, but the range of crops it could grow was to a large extent restricted by the schedules laid down..." Undoubtedly, this not only limited the income-generating capacity of the scheme but also affected the income farmers received. Furthermore, because the cropping programme was predetermined without consultation with the farmers, this gave the farmers little room to manouevre outside these.

The Rehabilitation Process of the Tyhefu Irrigation Scheme

Overall agricultural policy in South Africa stresses the need to transfer ownership of the irrigation schemes to its beneficiaries. The implication of this is that the irrigation schemes are to be totally owned, managed and maintained by participant farmers. The underlying rationale is that poor cost recovery is often regarded as one of the major stumbling blocks to the sustainability of irrigation schemes. Basically, few (if any) of the state irrigation schemes recovered full operation and maintenance costs. Prior to 1994 governments in the former homelands was responsible for operation and maintenance and finance. Besides the fact that there was rampant corruption, irrigation scheme management found that their entire budgets were consumed in running and maintaining the economically non-viable irrigation schemes. The new policy requires that costs be recovered from beneficiaries.

On its accession to power in 1994, the government found the financial burden of maintaining and operating unproductive irrigation schemes, through the provision of annual subsidies, impossible to justify and sustain. Consequently, financial support was withdrawn resulting in the collapse of many irrigation schemes. Lastly and most important external pressures on the government have dictated the path which the government should take with regard to service delivery. Specifically, the macro-economic strategy, GEAR, in line with WTO rules calls for deregulation and reduction of support (in terms of providing subsidies) for the agricultural sector. As such irrigated agriculture is deemed to be a lower order user of scarce resources and therefore must be seen to be moving towards self-sustainability (Maritz, n.d. :3).

Against this background, a policy decision was taken by the Eastern Cape Provincial Government that the agricultural functions performed by agricultural parastatals, Tracor and

Ulimocor, Transkei and Ciskei respectively, at certain irrigation schemes including Tyhefu would have to be rationalised. This means that the services that the parastatals rendered to farmers would have to be transformed (DALA/DWAF, 1997:1). Of importance is the emphasis on the fact that the irrigation scheme should be owned, managed and maintained by the farmers themselves. Subsequently, in 1997 the Eastern Cape Provincial Department of Agriculture closed all irrigation schemes in the province and subsequently liquidated the two agricultural parastatals, Tracor and Ulimocor. In the case of the Tyhefu Irrigation scheme this was done without consultation with the farmers and communities. Also, no interim measures were put in place to ensure that farming continues, thereby protecting the livelihoods of the communities. At present Tyhefu Irrigation scheme is considered to be technically insolvent or defunct. The land has been lying fallow since 1997.

In 1998 the community of Ndlambe wrote a letter to the Minister of Water Affairs and Forestry requesting the urgent revival of the Tyhefu irrigation scheme. The Minister's (1998) response is contained in the following statement "It is clear from the information supplied to me ... that a number of issues regarding irrigation need to be addressed, apart from the question of adequate water supply. These include the restoration of effective management, the development of the further irrigation potential originally planned... I have accordingly requested that the whole question of development, adequate water supply, water tariffs, sustainability and management of irrigation be investigated...". Basically, this statement sums up the major challenges facing the farmers of the Tyhefu irrigation scheme, which does not seem to be understood at the village level. The elected representatives have a much clearer understanding of the situation.

The Departments of Agriculture and Land Affairs (DALA) and the Department of Water Affairs and Forestry (DWAF) have since undertaken the decision to jointly rehabilitate and transfer the irrigation schemes to the farmers, the beneficiaries. The Minister of Water Affairs and Forestry appointed a Task Team in 1997 to advise DWAF and DALA on all water-related aspects of the schemes. With regard to Tyhefu Irrigation Scheme this involved the proposed extension of the water pipeline. In addition the Task Team was to make recommendations about which government departments and/or structures are responsible for what functions. The report entitled *'Report on Investigations into ways of Rehabilitating the Water Supply Aspects of Certain Irrigation Schemes in the Former Transkei and Ciskei*" (hereafter referred to as the Report) was presented in August 1997. DWAF was assigned the

tasks to take over all the bulk water supply management responsibilities, rehabilitation of bulk water infrastructure where necessary and the creation and capacity building of Water User Associations (WUA). The responsibilities of the Provincial Departments of Agriculture and Land Affairs (PDALA) related to on-farm activities. In the Report it was indicated that rehabilitation of TIS would be implemented in three phases at an estimated cost of R75 million. It was envisaged that the process would start in September 1997 and be completed in March 1999. Since then the proposed schedule and costs have had to be revised. The availability of funds being cited as the main obstacle.

The Departments of Water Affairs and Forestry (DWAF) and Agriculture and Land Affairs (DLA) commissioned LawGibb (technical consultants) in June 1999 to conduct feasibility studies. The main objective was to determine whether the construction of a bulk pipeline from the Lower Fish River Government Water Scheme, with all associated works, to supply irrigation water to the rest of the Tyhefu Irrigation Scheme will be viable (LawGibb, 1999). Furthermore, the Minister of DWAF requested that the restoration of the pump systems be looked at as a matter of priority, so that farmers can resume farming. Subsequently, in August 1999 Argus Gibb undertook visual inspections to assess the condition of all the infrastructure. They found that since the closure of the irrigation scheme in September 1997, the infrastructure has deteriorated considerably. This includes pump installations which require major refurbishment due to a combination of theft, vandalism and poor maintenance. Physical rehabilitation for Phase One started in 2002, with the whole operation expected to be completed in 2004.

Several alternatives have been investigated on how to provide reliable, affordable and good quality water to the rest of the Tyhefu irrigation scheme. First, the installation of a solar pump system for the Ndlambe section was considered. Strategic consultants were appointed to investigate the use of the solar system for domestic and irrigation purposes. Following the submission of the consultant's report, a decision was taken that the solar system with an expected cost of R973 154,00 does not provide a long-term solution. The amount of water that could be supplied was insufficient for both domestic and irrigation purposes. Furthermore, the proposed use of the solar system did not address the water quality problem, and failed to answer critical questions such as whether solar energy is a feasible alternative to electric power. Should the decision have been taken to use the solar system, the collapse of the scheme for the second time was going to be an inevitability in the long run.

According to Maritz, (n.d.: 10) irrigation scheme rehabilitation and upgrading is being used as the primary driver in the process to introduce Irrigation Management Transfer (IMT) to small-scale irrigation farmers (and to some extent commercial enterprises. One of the main requirements is that the process be fully participatory. As such IMT requires maximum involvement of all stakeholders in every aspect of project development, hence their mobilization is considered critical to project success. The key role players are the farmers, their committees, extension officers, consultants, relevant government departments, local government, non-governmental organisations. This differs considerably from the way in which the irrigation schemes were planned and operated in the past (i.e. top-down and super-imposed on the communities).

The rehabilitation process requires the establishment of relevant institutional structures. These will act as important links between the community and other stakeholders. A Project Steering Committee (PSC) was formed at the beginning of the rehabilitation process. The PSC is a temporary structure which will be disbanded once the Tyhefu irrigation scheme becomes operational. Its main task is to oversee the whole rehabilitation process as well as work hand in hand with all the stakeholders.

The Water User's Association (WUA)[18] was established in terms of the Water Act No. 36 of 1998. The list of prospective members of the WUA in March 2001 for the various irrigation sites is as follow as: Ndlambe (251); Pikoli / Kalikeni (606); Ndwayana (401) and Glenmore (366).

The underlying principle is that the Tyhefu Irrigation scheme should become a viable, self-sustaining scheme where the farmers and other users of water from the scheme assume responsibility for the use of the scheme to the mutual benefit of all users (PDALA, 2001:2). Ultimately the WUA, as a legal body, will be responsible for a range of issues. This responsibility includes, inter alia, the functions of internal distribution amongst the plot

[18] At the initial meeting of DALA/DWAF Task team in 1997 one of the main problems identified was the selection of a suitable legal entity to replace the water- related functions of the parastatals (DALA/DWAF, 1997:5). After several deliberations the WUA concept was explored. The Task team, subsequently, recommended that a WUA be created at each irrigation scheme. Each WUA is required to have its own constitution to suits its particular needs and circumstances – it can therefore decide on what functions, duties and powers it wishes to have (DALA/DWAF, 1997:12/13). The constitution of each prospective WUA must be approved by the Minister of Water Affairs and Forestry before the formation of a WUA.

holders, the levy of an equitable and affordable tariff on water users to ensure the financial security of the scheme, the management of the scheme and the use of all funds for the benefit of scheme (PDALA, 2001:2). Bembridge et al (2000:63-64) elaborates "the WUA should be able to take over scheme assets, take over collective loans, operate accounts and institute by-laws enforceable by its members... It would be responsible for arranging input supplies, draught power, and marketing". As it is at the moment it cannot be claimed that WUA at the Tyhefu irrigation scheme possesses any of these skills to carry out the necessary tasks. Capacity building of the WUA is undoubtedly vital for the successful operation and long-tem viability of irrigation schemes. International experience shows that developing the capacity of WUAs is long-term process. Regarding this the DALA/DWAF task team (1997:34) stated "the DWAF may have to fulfill this role during a bridging period, at the end of which the WUA ought to have sufficient capacity to run its own scheme and affairs. Owing to a severe staff shortage as well as lack of internal expertise in this field, DWAF will probably have to employ specialist consultants ... it can barely be expected of a fledging WUA inheriting a defunct scheme of dubious economics to finance the employment of such consultants, whether by a loan or from water levies... the state will have to foot the bill ... until such a time the WUA is self-sufficient".

A commitment has been given by members of the project steering committee to farm cooperatively on a commercial basis. How this cooperative relationship will work out in practice in not clear at the moment. All prospective farmers from the immediate community have registered. Understandably, the attraction is the prospect of the resumption of farming, job creation and improvement in the standard of living.

Other outstanding issues relate to the crops - which will be planted, issues of marketing. Several crops have been suggested including sugar beet, Jojoba beans, citrus, wheat and various vegetables. The Industrial Development Corporation (IDC)[19] is promoting the adoption of sugar beet as a principal candidate crop, which will be processed in a factory in Cookhouse. It is expected that the building of the processing factory be completed in 2004, during which produce will have to be ready for processing. According to IDC 12 000 ha are

[19] IDC is a self-financing, national development finance institution. It focuses on contributing to economic growth, industrial development and economic empowerment through its financing activities. The sugar beet project is the IDC initiative in the Eastern Cape. It involves securing agricultural land from both the commercial white farmers and small-scale farmers in the ex-homelands. The project is the culmination of production trials and harvest assessments conducted since 1998 (Daily Dispatch, 2002).

needed in the Eastern Cape for the venture to be viable. Only 400 ha are need at the Tyhefu Irrigation scheme. The remaining hectares will come from the white commercial farmers. It is unlikely the Tyhefu Irrigation Scheme will be fully operational at this stage because of the delays in constructing the pipeline and issues of capacity building which are not being attended to adequately at present. There are, also, many logistics (access to finance, shareholding) that have to be worked out between Tyhefu Irrigation Scheme and IDC.

According to Sugar Beet Growers Association chairperson, Hilton Collett, the introduction of sugar beet in the Fish River valley represents a valuable opportunity to enhance the economics of irrigated agriculture in the region and has the potential to deliver economic benefits for the Eastern Cape province as a whole (Daily Dispatch, 2002). On a less optimistic note Bembridge (2000:45) cautions "after encouragement by the commercial sector and *social facilitator* (my emphasis), the majority of the irrigators were keen to grow sugar beet ... They were led to believe that an income of R6000.00 to R8000.00 per ha was possible. This still has to be proven on the scheme". Bembridge (2000: 45) elaborates further "... however, the proposed sitting of the mill at Cookhouse some 140 kms distant may make marketing costs a problem in the long term". Similarly, Backeberg et al (1996:52) observes "an unfavourable economic location renders the profitable production of many products ... impossible. It also reduces the ability to produce many fruits profitably". The Tyhefu area is located far away from major industrial centres and main markets. The absence of tarred roads act as a major disincentive for farmers and the prospective buyers alike. The cost of transportation prohibits selling of produce to large markets such as King Willliams Town, East London, Grahamstown and Port Elizabeth, unless produce is pooled and transported in bulk (Van Avebeke et al, 1998:56). In the absence of good telecommunication services Tyhefu irrigation scheme management found it impossible to exploit favourable market opportunities (Van Averbeke et al, 1998:56). The above quotes highlight an important issue not to raise unrealistic expectations which can never be met. A realistic assessment of all the risks and opportunities pertaining to issues such as agricultural / income / marketing potential is vital.

It can be concluded that the rehabilitation process is uncertain and is likely to be a lengthy process. This is a source of concern for the community. Their argument revolves around widespread poverty, unemployment in the area and an appeal for government assistance.

Conclusion

Tyhefu irrigation scheme was a state-driven initiative. In general the justifications for the Tyhefu irrigation scheme were conflated, with the result that the need for political control of the Tyhefu area far outweighed the considerations regarding the financial viability of the proposed project. Although technical factors (assessment of agro-ecology) critical for project success were examined, little or no attention was paid to the socio-economic aspects. The root problem for the failure of the Tyhefu irrigation schemes lie at the project planning process (how it was conceptualised). For the planners, the main requirements for success entailed centralised managerial control, no participation of the beneficiaries, capital intensive and sophisticated agricultural techniques and the production of high value crops. Given the repressive political climate of the time, the planners saw no contradiction in their proposals. Instead their proposals were a means of meeting the requirements of the state whilst ignoring the needs and expectations of the beneficiaries. Therefore, it can be argued that nature of the Tyhefu Irrigation scheme discourse was ill-conceived, misguided and has since proved unsustainable.

The extent to which "an appropriate diagnostic analysis to pinpoint major constraints and problems as a basis for innovative changes in the design, concept, management and economic participation of the farmers" (Bembridge et al, 2000:xvi) has been undertaken is unclear. The rehabilitation and revival of the project will also fail unless based on proper and realistic assessment of all relevant issues pertaining to project feasibility. The lessons of previous development projects including irrigation schemes, necessitate a move away from top-down approaches to participatory ones. This is the primary emphasis of irrigation management transfer worldwide. As the revival and rehabilitation process of the Tyhefu Irrigation scheme is underway several questions are important in this regard: Is there a need to rehabilitate and revive of the Tyhefu Irrigation Scheme; Are the current costs justifiable in terms of the viability and sustainability of the scheme; What are the alternatives?

It is clear that the rehabilitation of the Tyhefu irrigation scheme involves not only high costs but also a degree of risk in terms of ensuring sound management of the scheme, as well as in terms of individual farmers effectively utilising available crop production and irrigation techniques to achieve projected gross margins (Bembridge et al, 2000:61). Such costs can only be justified "on the understanding that the rehabilitation and restructuring of the scheme

is a poverty relief measure" (Bembridge et al, 2000:63). There is a contradiction between the need to farm commercially and what is possible at the Tyhefu irrigation scheme: the amount of income that can be achieved is no doubt an area of concern. At the moment there is no possibility for independent agricultural production.

The planning and design of the new scheme rests largely with the consultants. The participation of the community seems limited to the report backs by the consultants during meetings. It cannot be claimed that the community and consultants are equal partners in the process. Community's participation at these meetings is far from satisfactory. The October / November (2000) progress report does highlight some of the problems "Minutes are an issue. They need to reach them on time and a summary in Xhosa done. Members of the PSC have been patient considering that the meetings are conducted in English and Xhosa ... the extent to which the community can participate is constrained by language of communication in this forum". Furthermore, the problem seems to lie in the gaps in knowledge as regards the intricate details of the process. The Community does not seem to have all the documentation that relates to the rehabilitation process. Access to these is vital so that the community can scrutinise these with the help of the social consultants, Provincial Department of Agriculture and Land Affairs (PDALA), NGOs and other stakeholders operating in the area.

Complicating the problem is the fact that there does not seem to be proper institutional support either from the social consultants or the government. Concern is that the community is likely to get into contracts without a full appraisal of the situation. One of these relates to the deal being negotiated with IDC. It was clear during the meeting on 27/11/01 that the community lacked information, hence the confusion that existed. Also, IDC was not forthcoming with answers to the questions raised. For example how much income can the farmers expect, questions of access to credit (a loan or a grant?). In addition, the social consultants had already taken a decision that IDC is the only company that can best represent the interests of the farmers. Whether this is the case, the social consultant's comments seemed to close off any other possibilities.

The process of rehabilitating and reviving Tyhefu Irrigation scheme is complex and delicate. There are many details and agreements to be entered into by the community. In many ways this seems to be beyond the comprehension and scope of the community and their elected representatives. The institutional structures need to be fully conversant with the conditions

and terms of the contracts they are likely get into. Considering that the potential business partners are sophisticated (and will protect their own interests at all costs) with competencies not immediately available to the community, there is a need to capacitate the PDALA, NGOs as well as other people working in the area so that they can render effective professional advice to the community. If need be outside expertise should be sought. Expediency on the part of the community to see the project running as well poor institutional support for the elected structures and insufficient training are areas that need to be addressed urgently.

CHAPTER FIVE
DATA PRESENTATION AND ANALYSIS

Introduction

The poor track record of many irrigation schemes (despite huge investments) in the former homelands has prompted the government to reconsider its active and direct role in small-scale irrigation farming. This has resulted in the closure of many irrigation schemes including Tyhefu Irrigation Scheme (see chapter 3 for this history). It is within this context that the focus of this study is located. More specifically, the primary purpose of the study is to investigate the prospects of promoting successful small-scale irrigation farming among the former farmers at the now defunct Tyhefu Irrigation Scheme. This investigation is conducted against the background of current/ recent attempts to rehabilitate and revive Tyhefu Irrigation Scheme. The new policy framework is premised on the transfer of ownership of small-scale irrigation schemes from government to the beneficiaries. In this new set of arrangements, beneficiaries face formidable challenges in terms of capacity (human and financial).

The first part of this chapter describes the research design and methodology used in this study.

RESEARCH METHODOLOGY

Orientation and Planning

This study commenced in 1999 when the research topic was discussed with and approved by the project supervisor. Fieldwork was conducted intermittently over a period of two years (2000 and 2001).

A critical part of this orientation and planning phase was a review of the literature, consulting with officials / experts on various aspects of the research. The literature review entailed the perusal of a wide range of documents (commission / research / consultant's reports, South African government policies and legislation, journal articles and books). Locating primary documents pertaining to the planning and operation of the Tyhefu Irrigation Scheme has been difficult. The same goes for accessing reliable statistical information. One of the reasons for this is that when the Tyhefu Irrigation scheme was closed, all the documentation was removed.

What has been left behind in the dilapidated administrative building could not assist the researcher. Attempts to locate these documents have proved futile. Furthermore, the dynamic nature of the process of upgrading and rehabilitating Tyhefu Irrigation Scheme means information is changing all the time. Literature on Third World irrigation schemes, particularly those in Africa proved an important source of information. A common strand is the high failure rate of irrigation development schemes in many countries, attributed mostly to the marginalization of the beneficiaries during the initial planning, design and implementation phases.

A reconnaissance survey was carried out in June 2000. This involved consultation with local leadership structures and some community members where the scope and objectives of the research were outlined and discussed. The attitude of local leadership was more positive compared to that of the community. Clearance was obtained to conduct research in the area. The community was notified about the pending research project, its scope and objectives at a report back community meeting about the progress made thus far regarding the upgrading and rehabilitation of the Tyhefu Irrigation Scheme. The researcher was not present.

The legacy of apartheid has resulted in the community's reluctance in accepting the presence of researchers, questioning their legitimacy and research raison d'etre. As a result it became quite evident that feelings of mistrust, antagonism and sometimes even hostility towards researchers and other outsiders were prevalent in the community. These frequently manifested themselves during the interviewing process. Such attitudes stem from among other things the perception that "we are not benefitting anything from the research conducted in our communities". Questions such as "what's in it for us", "how is the research different from previous ones" were common. Concerns ranged from being over-researched, complaints about researchers and research organisations which consistently fail to communicate research findings despite promises to do so, to researchers making unfulfilled promises. Some members of the community narrated stories of how outsiders had manipulated them in the past, with some still continuing to do so even now. The community did acknowledge their vulnerability to exploitation since feelings of helplessness and hopelessness are prevalent because of their impoverishment. The effect of all this has meant that the community has taken measures to protect itself. This means that everyone coming into the community has to be "screened" before any permission is granted. Over and above the concerns mentioned above, the underlying deep-seated feelings of frustration about the closure of the Tyhefu Irrigation

Scheme and slow progress made in upgrading and rehabilitating it seems to explain the community's current attitude towards "outsiders". Despite all the hostility, the community accepted the researcher and hoped that she could play a critical role in influencing the direction of the rehabilitation of Tyhefu irrigation scheme.

From the foregoing discussion it seems that the research ethics of informed consent, voluntary participation, confidentiality, anonymity, avoidance of deception and protection of respondents from harm are violated routinely for a variety of reasons. The initial suspicions and or fears of the community were addressed by upholding the aforementioned ethics of social research. During the course of the fieldwork, I was conscious not to raise any expectations. The concerns of the community, further, raise the need for appropriate developmentally orientated research.

The researcher attended various community / committee meetings on invitation, playing, in most instances, the role of an observer rather than a direct participant, except where an opinion/direct advice was solicited. These meetings provided the opportunity for informal discussions with the various stakeholders during the initial stages of and throughout the research period. Most importantly, these meetings led to a better understanding of the complexities involved in the upgrading and rehabilitation of the Tyhefu Irrigation scheme, accumulation of additional data and provided the basis for the drafting of the questionnaire.

Constructing the Questionnaire

The survey research approach was adopted in order to obtain the required information. It is one of the fundamental methods of data collection in the social sciences. For the purposes of this study the questionnaire method was used. The researcher decided to use personal interviews instead of mailed questionnaires. These promoted flexibility by allowing the researcher to clarify questions, to probe and make sure that all the questions have been answered. In addition, the low level of literacy in the community favoured the use of this approach.

Two types of semi-structured questionnaires were compiled based on the literature review and preliminary informal interviews with various stakeholders, namely (a) for the ex-farmers of

the Tyhefu Irrigation Scheme (b) a questionnaire for members of the Board of Directors[20], Project Steering Committee (PSC)[21] and Water User's Association (WUA)[22] of the Tyhefu Irrigation Scheme, *hereafter referred to as institutional structures.* No distinction is made between these various structures since all are involved in the process of overseeing the upgrading and rehabilitation of Tyhefu Irrigation scheme, even though their mandate differs.

The questionnaire for the former farmers consists of two sections. Section A deals with demographic as well as socio-economic factors (age, educational level, sources of income and labour, income derived from farming, farming experience, contribution of Tyhefu Irrigation Scheme to rural livelihoods /scheme impact). Section B focuses on farmers' perception of constraints, challenges and the process of reviving the irrigation scheme. The questionnaire for the institutional structures focused on the constraints, challenges and the rehabilitation process.

Pre-testing the Questionnaire

Pre-testing is designed to test the questionnaire on a small sample of respondents with the objective of improving the questionnaire by identifying and eliminating potential problems. The first stage involved a peer review by fellow classmates and the project supervisor(s). On the basis of the suggestions some modifications were made. The second stage involved pre-testing the questionnaire on five respondents (the former farmers at TIS) who resembled the target population. Further changes to the questionnaire were made based on the feedback received.

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[20] This is a structure that will take over the irrigation scheme assets once they have been handed over by the government. The understanding at the moment is that the government will repair all assets in bad condition.

[21] The PSC is one of the institutional structures established at the Tyhefu irrigation Scheme at the beginning of the rehabilitation process. It acts as an important link between the community and other stakeholders. It is a temporary structure which will be disbanded once the Tyhefu irrigation scheme becomes operational. Its main task is to oversee the whole rehabilitation process and to work hand in hand with all the stakeholders.

[22] The Water User's Association (WUA) was established in terms of the Water Act No. 36 of 1998. The primary purpose of WUAs is to provide for the effective representation of small-scale irrigation farmers on the irrigation schemes at a local level as well as managing water on behalf of their members. Specifically, responsibilities will include levying an equitable and affordable tariff on water users, and the use of all funds for the benefit of scheme. Bembridge et al (2000:63-64) elaborates "the WUA should be able to take over scheme assets, take over collective loans, operate accounts and institute by-laws enforceable by its members... It would be responsible for arranging input supplies, draught power, and marketing".

The Sampling Process

According to Churchill (1996:476) once the researcher has clearly specified the problem and developed an appropriate research design and data collection instruments, the next step in the research process is to select those elements from which the information will be collected. Since it is impossible to collect information on every member of the target population a sample should thus be drawn. This being a sub-set of the population from which generalisations can be made if the sample can be regarded as representative.

The target population for the study was all the former farmers at the Tyhefu Irrigation Scheme (whether they operated as food plot holders or as commercial farmers – see Chapter Four for this distinction). Also, all 6 members of the Board of Directors, Project Steering Committee and Water User's Association of the Ndlambe section of the irrigation scheme formed part of the target population. No sampling frame existed for this study, since no reliable list of former farmers existed. Using estimates of between 300 and 350 farmers in the Ndlambe section, it was decided to interview 10% of the target population. According to Alreck and Settle (1995:62) it is seldom necessary to sample more than 10% of the population to obtain adequate confidence. Determining the size of the sample for this study, also, took into account time and cost limitations. The sample was, therefore, made up of 37 farmers. Twenty-one of the respondents were female.

In view of the problems identified earlier, the sampling procedure used in this study is snowball sampling. Essentially, snowball sampling entails "collecting data on the few members of the target population you can locate and then asking those individuals to provide information needed to locate other members of the population whom they happened to know" (Babbie and Mouton, 1998:167).

Data Collection and Analysis

During my initial visits to the village, I managed to get myself a research assistant. She played an important role in helping establish contacts with respondents. The actual interviews were delayed because people were initially suspicious, unwilling to cooperate and failed to keep appointments. The presence of my research assistant, the opportunity to describe and discuss with the respondents the nature, purpose and significance of the research helped dispel any

fears and concerns they had. Interviews of approximately an hour and a half took place at the respondents' homes. By the time all the interviews were almost done, the community was more receptive of the researcher and thus willing to be interviewed. Information obtained from interviews was supplemented by informal discussions with various stakeholders and villagers. Where necessary telephone calls are made to clarify points with key informants and to keep up to date with new developments.

Once all the interviews were completed, data was analysed.

DATA PRESENTATION AND ANALYSIS

SECTION ONE

Socio-Economic Profile of the Farmers

Table I

Characteristics	No.	Percentage
Age		
20-30	-	-
31-40	10	27
41-50	13	35
51+	14	38
Educational level		
No schooling	5	14
Lower Primary	15	37
Higher Primary	9	26
Secondary	8	23
Tertiary	--	--
Sources of Income		
Farming	–	–
State transfers	23	60
Remittances	15	43
Formal employment	4	11
Informal economic activities	23	66
Other : Sale of livestock	7	14

The data in Table One provides a summary of the age distribution of respondents, their educational status as well as their sources of income. Frequency scores are used to present the data. It is clear from the table above that the age distribution of the majority of the respondents (62%) ranges between 31 and 50 years. A study by Kepe (1992:61) on the various irrigation schemes in the Ciskei (Tyhefu, Zanyokwe, Shiloh and Keiskammahoek) found that people with interest in continuing farming were farmers between the ages of 46 and 55 years. Thirty-eight percent of the respondents are in the category of what can be regarded as older farmers. According to Bembridge et al (1998:51) increased age does not seriously impair the ability to manage the small-scale agricultural holding at least up to 60-65 years of age. However, he argues "besides lacking physical strength, this age group does not have the same incentive and motivation to increase income and living standards, and are largely dependent on income from pensions." They, undoubtedly, have an interest in achieving food security for themselves and their families.

Based on the quote above by Bembridge et al (1998) it can be argued that not all the older farmers can be commercial farmers. Depending on what the subdivision of land is going to be, the older group is best left on the food plots rather than being subjected to stringent / rigorous conditions and requirements of commercial farming. This is particularly so if one considers that one of the major premises of rehabilitating Tyhefu irrigation scheme is that it will pursue a commercial approach. It is the expressed wish of the majority of the respondents (91%) to adopt a commercial approach to agriculture so as to progress from subsistence to full-time commercial farmers. This "is the only way we can secure a steady flow of income for our families. We know its not going to be easy since we lack many resources (human and financial)", was a general comment. However, there is concern among those in the fifties and beyond that they might not be able to realise this because of age and endless delays in reviving the scheme.

The absence of the youth is captured in the following remarks:

> "***The youth are not interested in farming but sport.***
>
> ***Our children have not seen any real benefits from farming, hence the lack of interest They've seen us struggling with the management of the scheme before and thus prefer either working in the urban areas or starting their own businesses. The majority of the youth are job seekers in the urban areas***
>
> ***Perhaps with poor job prospects everywhere, the rehabilitation of the scheme might***

prove a major incentive for the youth. A majority of them have registered as potential farmers. It's a wait and see approach if they will actually get involved".

Catling and Saaiman (1996:174) suggest that "many young people associate working on the land with the negative experiences of the past and a stigma is attached to agriculture. In order to improve agriculture and to encourage new livelihoods in the rural areas, more must be done to promote agriculture amongst the youth".

Overall, the standard of education is very low. Various studies have reported similar low levels of formal education in the former homelands (Steyn, 1988; Williams and Rose, 1989; Kepe, 1992 and Bembridge, 2000). Illiteracy and the age of the farmers has been linked to the lack and / or reluctance of farmers in adopting new technologies, innovations and have a negative effect on agricultural productivity and the provision of extension services (Van Averbeke et al, 1998; Bembridge, 1985).

More than half of the respondents have not reached standard five. According to educationists, people with less than four years education are unlikely to have attained any degree of functional literacy (Koshy in Bembridge, 2000:51). This observation holds true for the respondents of this study who have expressed concern about their lack of essential skills such as management, marketing, financial management, record keeping, and application of new agricultural techniques. Their perception is that illiteracy is a major hindrance to successful commercial farming. In spite of the fact that over 60 percent expressed confidence about their farming skills, all highlighted the need to improve their competency in areas such as seedbed preparation, seedling care, crop produce storage and meeting the standards required by the customers.

Household Income Sources

The findings indicate that the majority of respondents are not dependent on one source of income but on a combination of various means. State transfers in the form of pensions and disability grants constitute the main source of gross cash income for sixty three percent (63%) of the respondent's households. According to Monde-Gweleta et al, (1997:620) the overall contribution of state transfers to household income has risen significantly since 1990, from 15,2% for the entire Peddie district to 54,8% to the household income of plot holding households at the Tyhefu Irrigation Scheme. Ainslie and Ntshona (1997) research on

households in the dryland environment in north-west Peddie confirm the importance of state transfers to household income. According to this study 65,3% of the households that were interviewed identified state transfers as their main source of income. Similarly, Van Averbeke et al (1998:116) found that the contribution of pensions to gross cash household income was 60% or more at the Tyhefu, Keiskammahoek and Shiloh Irrigation schemes. State transfers are regarded as the most predictable and stable source of income compared to remittances and informal economic activities. The decline in the contribution of remittances can be attributed to retrenchments in the urban areas and mines. Thirty percent of the respondents mentioned the occasional sale of livestock.

Informal economic activities include building construction and brick making, beadwork and sewing projects, chicken / piggery / cattle projects. An early learning centre provides employment to a group of four women whose salary comes from the Provincial Department of Welfare. The chicken / piggery /cattle project is new and has not yielded benefits for anyone. Those involved expressed concern about the viability and sustainability of the projects. They pointed to the saturation of the local market with similar products since these have been established in many villages in the Peddie area.

It is quite evident the respondents are struggling to make ends meet with the meagre financial resources at their disposal and the limited employment opportunities available. The effects of deprivation / poverty is cushioned, albeit on a limited basis, by kinship and reciprocity.

Farming Experience

The age of the respondents at the Tyhefu Irrigation Scheme is positively correlated with their farming experience and their level of education. The older the farmers, the less formal education they have. On the other hand, the younger they are the better the standard of education. Although those in the 31-40 age group constitute the smallest number of the respondents, they have reached secondary level. Despite the fact that they have less farming experience, they are more willing to learn the new agricultural techniques, adopt new innovations and are more open to change.

The farming experience of the respondents needs to be located in context. Since the beginning of the Tyhefu Irrigation Scheme many people in the village were employed by the scheme

performing different tasks ranging from operating pumps, seedling care, planting, weeding, application of fertiliser and pesticides to harvesting. They managed to gain some farming experience. Some people who did not have land were helping other family members or friends with farming. This explains why none of the respondents has less than five years experience. Over seventy percent of the respondents have farming experience of up to twenty years. This group is made up of farmers who received land since the irrigation scheme started in 1977. Before the implementation of the Tyhefu irrigation scheme many respondents claim to have been practicing limited subsistence farming. After Tyhefu irrigation scheme became operational, this continued on a lesser scale in home gardens which form part of residential sites. Major crops included maize, sorghum, potatoes and other vegetables. All respondents pointed out that subsistence farming has traditionally been hindered by unfavourable agro-ecological conditions and lack of inputs. Even though they claim that subsistence farming was an invaluable experience, the general perception is that the introduction of irrigation entailed a radical change in their way of doing things. Not only did their subsistence farming experience become insignificant, they ceased having any control over their production activities.

Sources of Labour

Table 2

Sources of labour	Frequency	No.	%
Husband	All the time	30	81
Wife	All the time	37	100
Children	Occasionally	27	73
Relatives	Occasionally	28	76
Hired labour	Seasonal	15	41

The respondents did not consider availability of labour a constraint. Most of the farmers tended their fields by working on the land with members of their families, with husband and wife assuming most of the responsibility. However, there are variations in terms of husband-wife labour contributions. These are attributed by the respondents to other family commitments other than farming. Other explanations in the literature reviewed revolve around the sexual division of labour in traditional African societies and the absence of men due to labour migration. Backeberg et al (1996: 57) found that women play a crucial role in all the irrigation schemes particularly in weed control and harvesting operations. Similarly, Bembridge (1984); Steyn (1988) and Williams (1994) have observed that women are more

active in crop production than men.

Children were, also, an important source of labour, though their contribution was far less compared to their parents. This is associated with several factors such as the age of the children, household chores, schooling and other activities such as sport which tend to occupy the youth as well as their migration to cities in search of employment.

Kin-based labour and the use of seasonal labourers were common, especially with the commercial farmers during peak periods such as planting, weeding and harvesting. This ensured a small-cash income for relatives and more importantly the sharing of the harvest. At the same time this provided the much needed source of income for the unemployed in the surrounding villages. However, the hiring of labour did not contribute meaningfully to employment in the area around the scheme (van Averbeke et al, 1998:ix).

Income Derived From Farming

Since the closure of the Tyhefu irrigation scheme there is no income derived from farming. During fieldwork it became clear that the amount of income derived from farming varied considerably between the commercial farmers and small plotholders. According to the respondents income ranged from as little as R300,00 per season for the small plotholders to R10,000 for the commercial farmers. No records were provided to confirm this. Dissatisfaction among the farmers is quite evident, especially the ex-commercial farmers, about the income derived from farming.

It is clear from the research findings that agriculture contributed to the livelihoods of the farmers in a modest way. This is particularly so if one considers the unpredictable nature of the income derived from farming by all the farmers at the Tyhefu irrigation Scheme. This supports the conclusion of the research by Monde-Gweleta et al (1997) that in both dryland and irrigated environments in the Peddie district, agriculture does contribute to the livelihood of many households, but rarely constitutes a livelihood in its own right.

In a review of the Tyhefu Irrigation Scheme, Bembridge (1986b: 607) notes "a problem is that individual incomes of commercial farmers do not give as a good a return on labour as in the urban sector. There is therefore a need for a more dynamic incentive system which allows

farmers who have proved themselves to increase their income". Backeberg et al (1996:57) commenting on the actual performance of many irrigation schemes and the income of the farmers states "although irrigation farming has contributed to household food security and income, household incomes were in most cases well below minimum subsistence levels. On some of the larger "commercial" irrigation schemes ... farmers carry high debt loads and not more than one in four showed a profit from farming. A general conclusion is that ... income from irrigation farming has been disappointingly low. The viability of many schemes becomes questionable". Similarly, van Averbeke et al (1998:117) reached a conclusion that many plot holding households on the schemes lived in poverty. Van Averbeke et al (1998) found that irrigated crop production on small plots contributes to gross cash household income in a minor way, whereas at schemes with large plots, irrigated crop production was an important source of income. These observations suggest that the contribution made by irrigated crop production to the gross cash income of plot holding households is positively related to the area of irrigable land to which the households have access (van Averbeke et al, 1998:117).

The accounting systems and payment method used by scheme management was a source of discontent for all the farmers. In addition, the farmers pointed out that they were in a vicious circle of indebtedness, having to use credit all the time in order to pay for inputs. The following sums up their responses:

> ***"There was lack of transparency on the part of management regarding our financial records. We never knew how much per season we were going to earn. Management robbed us. We were always charged for inputs we never used. Uneducated as we are, we made sure that we kept records of what was provided by the scheme. Unfortunately, most of the time our records, never tallied with the scheme's records. At the end of the day, the scheme's records were taken as the correct ones. Management made sure that the financial management / accounting and credit system was beyond our comprehension. The resulting problem is that some of us were unable to service the loans we received from the Ciskei Agricultural Bank (CAB). Some of us still owe the Bank. It has not been made clear to us if the debts will be written off or not. We know that the scheme still owes us lots of money. The question is how we will recover that, now that the scheme is closed".***

The majority of the respondents claim that they are still in possession of the financial receipts given to them by Scheme management. At the same time they claim to keep the "correct" ones which they kept for themselves. Stories are rife about the many farmers who at the end of each season did not get income "because scheme management claimed that input costs far exceeded crop yields". "My mother at one point collapsed and has not been well ever since. She decided to quit farming. I took over her allotment. I experienced the same problems as my

mother and other farmers" said one respondent.

The situation of the farmers at the Tyhefu irrigation Scheme bears lots of resemblance with that in the Gezira Irrigation Scheme, Sudan. As Barnett (1977:73-76) observed "The holder of a tenancy is party to a complex system of payments which mould his entire financial situation unless he has sources of income other than the tenancy... The tenants are paid ... in terms of their cultivation performance ... Before payments are made, various deductions will have been made... On the whole agreements have had to be settled to the disadvantage of the tenants... Most tenants find it very difficult to relate their income to the effort which they put into their work. They also find it very difficult to understand the payment system..." It operates very efficiently as a mechanism for the production of cotton at a price which creates continual indebtedness for the majority of the tenants (Barnett, 1977:132).

In a study of various irrigation schemes in central Eastern Cape van Averbeke et al (1998:181) found that the only scheme from which money spent on operating costs was not recovered fully through cash sales was the Tyhefu irrigation scheme. Consequently, Tyhefu irrigation scheme has always had a deficit. According to Cloete (1987:547) the high costs of production led to much dissatisfaction from landholders who find that their share of the harvest, after deduction of costs, is little better than they would have achieved on their own account. This is one of the reasons identified by the farmers which stifled their opportunities for development.

Contribution of Tyhefu Irrigation Scheme to Rural Livelihoods / Development

Sixty percent of the respondents believed that Tyhefu irrigation scheme made an important contribution in improving the quality of life (poverty alleviation, food security, employment creation, skills and household income). Hence the revival of the scheme is considered critical to rural livelihoods. The remaining forty percent were ambivalent about the impact of the Tyhefu Irrigation Scheme. Even though TIS contributed significantly to food security "not all the food requirements of the households were being met by crop production" (van Averbeke et al, 1998:x).

Besides these perceived short-term benefits, all respondents are unanimous that the scheme's

impact on the village and region as a whole has been limited. The respondents point to the lack of development of the area. A view, also, echoed by Vink and Kirsten (2000:20) "the distribution of benefits was limited in relation to total need and to aggregate resources available for development. Although higher levels of resource use, production and wage employment were achieved through modern farming enterprises ... little was done to promote a class of self-employed farmers or to improve farming conditions for smallholders outside these schemes...The projects... often incurred losses, and rarely involved spill-overs or linkages with the surrounding communities". Bromberger and Antonie (1993: 23) referred to the irrigation schemes as "islands of prosperity amidst an ocean of poverty". Referring to the Gezira Irrigation Scheme Barnett (1977:122) states "no great wealth and no great changes in the material conditions of the people has yet resulted..."[23]

The following statement might shed some light into the above scenario "... It is not the duty of the future Gezira management to administer general services for the population within its agricultural boundaries. Its duty is to promote the welfare of its workers, mainly tenants; the welfare of the general population and the concomitant services remain the duty of the government"[24]

SECTION TWO

Perception of Constraints, Challenges and the Process of Reviving the Tyhefu Irrigation Scheme[25]

Respondents were asked about the factors that affect the degree to which they can farm successfully, based on their experiences as former farmers at the now defunct Tyhefu irrigation scheme. Eighteen items were used to measure the perceived main constraints and challenges. These can broadly be divided into the following categories:

- Quality and nature of support and extension services
- Skills and training needs: agricultural training, information and research
- Input and product markets
- Physical factors influencing irrigated crop production: climatic conditions, soil and water quality and availability, pests and diseases, tenure security and farm size

[23] Quoting unpublished notes by Gaitskell- first Chairman and Managing Director of the Sudan Gezira Board
[24] Unpublished note by H. Wooding, Managing Director, Sudan Plantations Syndicate,
[25] Data is not tabulated- see Appendix for questionnaires

The respondents identified the perceived constraints and challenges using the following ratings.

1. No problem
2. Problem can be ignored
3. Needs attention
4. Serious problem
5. Very serious - needs urgent attention

Findings in this study indicate that the views of the respondents (particularly the former farmers and the institutional structures) differ markedly in terms of the perceived priority constraints and challenges. This can be attributed to the proximity of the institutional structures to the various agents involved in the revival and rehabilitation process. As a result they show a clear understanding of the complexity of the process. On the other hand, the farmers seem to have a limited vision of the challenges that lie ahead.

The responses of the ex-farmers are more concerned with survival and the "here and now". This is clearly illustrated in the following statement " We are starving, we are battling to make ends meet. Our survival hinges on the revival and rehabilitation of the irrigation scheme". Hence, the immediate concern of the former farmers at the Ndlambe section of the Tyhefu irrigation scheme is the reliable supply of affordable, good quality water, the reconnecting of the electricity to the pumps and the construction of the pipeline so that farming can resume. It is for this reason that water quality and availability is considered by all the respondents to be main constraints, with salinity posing problems for crop development. They mentioned that the proposed construction of the pipeline is likely to address the water salinity problem and effectively cut down the cost of providing the water to the irrigation scheme than was the case in the past. Water availability is the main reason mentioned for lack of any farming since the TIS closed in 1997.

In contrast, the responses of the institutional structures centre around issues of the viability and sustainability. Therefore, of the constraints and challenges listed in the questionnaire, access to markets and marketing facilities, agricultural training, information and research; access to finance and credit; level of functional literacy, support and extension services are rated as very serious and requiring urgent attention. More or less the same items identified by the institutional structures are closely related to the ones identified by community based

organisations and local farmers in the Western Cape. They identified four major problems: finance and credit; access to land and tenure; water for livestock and irrigation and lastly training, extension and support services (Catling and Saaiman, 1996:164). Vandalism, theft and deterioration of irrigation scheme infrastructure is another area of concern for the institutional structures:

> ***"We have called community meetings to address these issues and have reported this to the police. The problem continues unabated. We know who the culprits are but the community seems powerless or unwilling to do something. We are concerned that when the irrigation scheme assets are handed over to us and when farming is ready to resume there'll be nothing left. This is definitely a step back for us.". That irrigation scheme infrastructure is deteriorating rapidly has been discussed in the technical Consultants' reports*** (Gibb Africa, 1999).

QUALITY AND NATURE OF SUPPORT AND EXTENSION SERVICES

Support and Extension Services

The quality and nature of support and extension services was described by eighty percent (80%) of the respondents as very good during the early years of the irrigation scheme. However, all respondents were quick to point out that the service deteriorated considerably during the 1980s until its closure in 1997. Respondents are critical of the type and nature of the service rendered. The service is described as having been top-down and authoritarian.

In spite of the presence of extension staff on the irrigation scheme premises farmers indicated a limited rate of contact. Extension officers were described as working more in their offices and rarely doing any on-site visits. "This made it difficult for us as farmers to get advice and establish good working relationships with the extension officers. In most cases the type of service was irrelevant to the real needs of the farmers". Overall the respondents in the study rated the quality of service as poor, ineffective and misdirected. The result was that farmers relied more on their colleagues for advice and assistance.

The views expressed by the ex-farmers are shared by the institutional structures. The respondents pointed to the need to establish a good working relationship with extension officers than was the case in the past. "We regard them as critical to the success of the future rehabilitated TIS. We need well trained competent extension officers resident on the irrigation scheme particularly during the first few years. They are an important link between us and new

developments in the sector, especially, agricultural training / information and research". Respondents are unanimous that the extension service structures need to be overhauled, revamped and re-oriented to address the needs of all farmers, especially small-scale farmers. According to Mashaba (2000:7) "extension service remains an important factor to the development and support of most of the illiterate small-scale farming communities. More focused and high level extension services will enable small-scale farmers to engage in agricultural production as entrepreneurs". In addition to the above emphasis is the need to upgrade and reorient research and extension services to focus on the needs and problems of small-scale and emerging farmers. On this Catling and Saaiman (1996:165) argue "New research will have to be carried out to address the problems of small farmers and to develop appropriate farming systems. Many of the standard recommendations for intensive, high input agriculture developed on experimental stations will not apply to small farms".

That "the general level of training and agricultural competence of the extension staff is far below standard" (Botha and van der Wateren, 1993:80), has long been identified as one of the main contributors of poor agricultural performance. Bembridge (2000) conducted a study among extension officers at Tyhefu Irrigation Scheme and Bululwane Irrigation Scheme. Extension officers were asked to rate their own knowledge of irrigation, farm economics and extension. According to Bembridge extension officers expressed deficiencies in their own knowledge and competency. This impacts directly on their ability to provide sound training and advice. The study identified the need for further training in irrigated crop production, irrigation scheduling, water application and farm economics, extension programming, and irrigation techniques. Further more, the study found that there was an ad hoc approach to extension on the irrigation schemes. A study of the Qamata Irrigation Scheme by Bembridge (1984) and Fisser (1988:25) found that extension officers lacked training, guidance, motivation, clear-cut policies and lacked an objective extension and development programme. Backeberg et al (1996:62) concurs with the findings of Bembridge (2000). He states "... there is a dire need to train extension workers in irrigation methods, crop technology, farm management recording, as well as in communication skills in transferring knowledge and technology to farmers with low levels of literacy..."

The issue of agricultural extension in South Africa has been explored in varying degrees by a variety of authors (Machete & Moller, 2000; Botha, 1994; van Rooyen and Vink, 1996; Thomas and Tyobeka, 1998; Chikanda and Kirsten, 1999; Botha and van der Wateren, 1993;

Backeberg et al, 1996). Generally, the adequacy and appropriateness of extension services in the former homelands is questioned. There is widespread acknowledgment that the dualistic nature of extension services along racial lines has done more harm to the agricultural sector in the ex-homelands whilst it favoured the development of large-scale commercial farmers.

The history of the agricultural sector mirrored the [racial] divisions within South African society. A major feature of the agricultural sector in South Africa has been its dual structure. This dates back as far as the 1913 Native Land Act. This dualism with significant differences in cost, infrastructure and level of production is well documented (Lipton, 1977; Schrire, 1992 World Bank, 1992). According to these sources agricultural development has been viewed in terms of the efficient, capital intensive and largely white-owned, technologically advanced large-scale commercial sector. Conversely, small-scale agriculture has been characterized as a traditional, unproductive and inefficient subsistence sector and generally associated with the homelands. Extension and support services have always emphasized this dichotomy between commercial and subsistence agriculture. As a result, the major service institutions were biased in favour of white commercial agriculture. The interests and needs of white commercial farmers were catered for through the various institutional support structures such as finance, marketing structures, technical services, pricing policy, tax concessions on machinery purchases, tariff protection and government spending on agricultural education, research and advisory services. At the same time they have traditionally been served by relatively few but well qualified staff compared to their homeland counterparts. This further widened the gap between black and white farmers. In contrast, many small-scale farmers in the homelands either had limited or no access to support services. Where such services existed the quality had been inferior. As a result, this sector has been restricted to low input levels. This not only limited the way people could participate in agriculture, it also constrained the emergence of a true picture of the potential and productivity of small-scale farming as a development strategy (Vaughan, 1992:421). Vaughan (1992:421) further argues "the historical undermining of smallholder production, which so significantly reduced the significance of the peasantry as a social and economic category, contributed to the widespread assumption that a smallholder class no longer exists as a significant locus of production in South African agriculture". This bias has resulted in an inappropriate extension message (Chikanda and Vink, 1999:151). According to Catling and Saaiman (1996:172) encouraging progress is being made in closing the gap between the powerful commercial farming sector with its range of support services, and the small disadvantaged farming communities of the Western Cape. It is doubtful if the

same can be said about the Eastern Cape or the rest of the country, in spite of the institutional restructuring of agricultural services that has taken place.

INPUT AND PRODUCT MARKETS

Access to Markets and Marketing Facilities

There was a marked difference between the responses of those who were commercial farmers and small plot /allotment holders. Generally, all the small plot/allotment holders did not consider the marketing of produce a constraint. This is probably because of the size of their plots and the fact that the bulk of the produce was meant primarily for consumption and small cash for profit. However, their main problems and concerns centred around intense competition among themselves, poor or no storage facilities, cost and lack of access to transport. According to them successful marketing, also, depended mainly on establishing informal networks. From the responses, a large proportion (85%) of the farmers did not transport their produce elsewhere because of the costs involved. They relied on traders coming to the scheme or selling from home. This effectively meant that produce got spoilt before it reached the market, thereby resulting in reduced profit levels to the extent that it was impossible to generate surpluses critical for re-investment, improved productivity and growth. From the foregoing, it is clear that marketing by the farmers was not organised, poorly developed based on the availability of buyers, and marketing skills were limited and was done on an ad hoc basis.

Unlike commercial farmers they did not feel constrained by the scheme's marketing policies, since they were not obliged to use the scheme's services. At least forty percent (40%) mentioned that they used the scheme's marketing services occasionally. According to them, they were able to market their crops much more profitably on local markets than when using the scheme as a marketing agent. Van Averbeke et al (1998:174) found that the main complaint at Tyhefu irrigation scheme and Hertzog Agricultural Cooperative Irrigation Scheme (HAIS) with scheme marketing services was the low monetary returns they received from selling their produce when using the scheme as a marketing agent.

The ex-commercial farmers, on the other hand, were quite vocal and expressed dissatisfaction about the scheme's restrictive production and marketing policies. They felt that their produce

was sold well below its market value. Furthermore, they could only know their income / profit / loss once the scheme has deducted all the inputs and the loans received. In most cases, they were dissatisfied with the monetary returns. Both the commercial farmers and small plot holders preferred having a greater degree of control on what, who, when and how they sell - to be independent.

The key constraints that block the development of small-scale rural producers have been an important focus of attention (Arnon, 1981; ILO, 1995; Lele, 1982). For example Lele (Fenyes, 1982) has observed that insufficient information concerning present and future market conditions is one of the most common shortcomings in less developed areas, due to mainly the large number of small producers, inefficient communication systems, low levels of education and administrative problems related to the accumulation and distribution of marketing information.

That the success of any business venture hinges on the efficient functioning of the marketing system, of which a proper transportation network is part, is beyond dispute. The village / rural infrastructure (roads and telecommunications) though not regarded by 77% of the respondents to be an impediment needs to be upgraded. The study area is served by poorly maintained secondary roads. Together with a poor functioning telecommunication system, has made it difficult, if not impossible, to exploit favourable market opportunities. The absence of tarred roads means that vehicle owners are likely to charge a lot of money for transportation of goods (van Averbeke et al, 1998:56). Consequently, the expense of delivering produce to the market can even exceed the cost of production making the produce very expensive to the consumer (Van Averbeke et al, 1998:21). Backeberg et al (1996:52) further, argues " irrigation, even with the existence of sufficient water resources, will remain an undeveloped farming activity in some former homelands until good transport and other communications have been established".

For the institutional structures access to markets and marketing facilities are considered major constraints. Related issues are the type of produce that will be grown, the ability to adhere to high production and quality control standards and meeting contract obligations. The challenge is the development of a marketing system that will serve as a mechanism through which farmers can channel their produce. The responses of the institutional structures are captured in the following quote "We need a well-defined market so as to counteract the problem of

distance to markets, transport and transaction costs and poor infrastructure". There's a recognition that for Tyhefu irrigation scheme to be economically viable it needs to farm on high value crops which will provide good economic returns. It is for this reason that sugar beet, jojoba beans, citrus and some of the vegetables that were produced previously at the Tyhefu irrigation scheme are being considered as prospective candidate crops. The institutional structures argued "At present sugar beet seems to offer the best long-term prospect of a sustained economic return. Marketing problems for this crop are resolved as the produce will be sold at a processing plant which will be built in Cookhouse. Some members of the community have been sent abroad to learn more about the crop. At the same time, the crop has been tested at Tyhefu irrigation scheme as part of a feasibility study and was found to be suitable for sugar beet". According to Sugar Beet Growers Association chairperson, Hilton Collett, the introduction of sugar beet in the Fish River valley represents a valuable opportunity to enhance the economics of irrigated agriculture in the region and has the potential to deliver economic benefits for the Eastern Cape province as a whole (Daily Dispatch, 2002).

This optimism is not shared entirely by Bembridge (2000). He states "after encouragement by the commercial sector and *social facilitator* (my emphasis), the majority of the irrigators were keen to grow sugar beet ... They were led to believe that an income of R6000.00 to R8000.00 per ha was possible. This still has to be proven on the scheme". Bembridge (2000: 45) cautions "... however, the proposed sitting of the mill at Cookhouse some 140 kms distant may make marketing costs a problem in the long term". Similarly, Backeberg et al (1996:52) observes "an unfavourable economic location renders the profitable production of many products ... impossible. It also reduces the ability to produce many fruits profitably". In addition, if the crop will be sold abroad this ignores the major challenges sugar beet or any other primary product will face in international markets. The issue of subsidies given to overseas farmers as well as the declining prices of agricultural products is currently not being addressed.

Level of Functional Literacy and Farming Skills

The poor educational level of the farmers is positively related to the their level of functional literacy. Over eighty percent (80%) of the farmers expressed concern about their level of functional literacy and are fully aware of the limitations this imposes on successful farming. In

spite of this the majority (66%) is not worried about their farming skills. They believe that they gained "reasonable" knowledge and experience over the years. Conradie (Lipton, de Klerk and Lipton, 1996:166) confirmed that existing small scale Coloured fruit farmers in the Western Cape possess useful knowledge gained from their experience of working on and "looking over the fence"at commercial farms, but they need training in new practices and the selection of cultivars. Also, informal discussions with the ex-farmers did reveal that all the farmers need to acquire various skills through training if TIS is to be viable. This is especially the case with regard to the adoption of new technology, production techniques and basic skills like seedbed preparation, seedling care, weed control, use of pesticides, integrated pest management techniques, harvesting, and storage. It is for this reason that all the farmers regard agricultural training/information/research as one of the prerequisites to successful farming, a component that was missing in the past.

A persistent thread running through all the responses of the institutional structures is the limited resources (financial and human) available to the community. Skills considered lacking are the drawing of business plans, formulating and reading contracts, financial management / record keeping, computer literacy, adopting latest technology, project planning, management and evaluation, keeping minutes, communication, marketing and management, operation and maintenance, quality control. The institutional structures stated "We need training in various aspects of operation and maintenance so that we do not have to call for outside assistance. We need to do things ourselves. This can save us a lot of money and prevent unnecessary delays. The problem is that capacity building in many areas is not forthcoming".

For Bembridge (1996) lack of properly qualified management, extension staff and farmers is a major drawback to the effectiveness of many small-scale irrigation schemes. It is for this reason that Catling and Saaiman (1996:165) advocate that training or re-orientation is necessary at all levels - from farmer through extension worker, scientist to administrator, whilst at the same time accommodating different levels of literacy and education. In addition, Backeberg et al (1996:47) argues "investment in human capital through education, training and extension is more often than not the most important contributing factor to the economic success of irrigation schemes ... Training programmes at all levels should receive a high priority. Assessment of training needs should be the basis on any well-planned upgrading and restructuring of specific irrigation schemes".

Rogerson (2000) looking at rural producers in general and more specifically rural handicraft enterprises has identified numerous constraints faced by this sector. According to him the lack of management or business skills serves to worsen all the other problems of rural producers since they lack the capacity to analyse situations and chart ways to minimise the adverse impact of constraints on their businesses. This includes their inability to respond to new opportunities or changes in market conditions.

Access to Credit

The responses of the ex-farmers and the institutional structures indicate apprehension about access to loans / finance and credit in the new dispensation. This is clearly evident in the statement made by two members of the institutional structures "We need more information about the financial packages available to us. We are going to explore all the options. What worries us is that the Land Bank offers credit at market related interest rates". This seems to confirm the observation that even though institutional restructuring of agricultural services has been done, with formerly white institutions (Agricultural Research Council and Land Bank) re-orienting their activities to meet the needs of small-scale farmers, little has been achieved in this regard. A study by Mashaba (2000) among small-scale farmers in the Northern province indicates that the farmers are critical of the role of the Land Bank. Farmers argue that the failure of the Land Bank to develop favourable lending conditions acts as a negative incentive for small-scale farmers, who find it impossible to invest in agriculture. With regard to high interest rates the Land Bank has responded that this serves as an incentive discount for timely repayment (Mashaba, 2000:50). An informal discussion with members of a micro-lending agency which specializes in agricultural development in the Eastern Cape concurred with the views of the small-scale farmers mentioned above. This micro-lending institution sources its funds from the Land Bank at a rate of 14%. In turn they charge customers a much higher interest rate (approximately 17%). This is necessary in order to ensure ongoing liquidity of the agency. What is of concern to them is the high rate of defaulters in terms of repaying the loans as well as the number of agricultural projects that are collapsing on a wide scale for several reasons. These include among others lack of group cohesion and commitment among project participants, inattention paid by the micro-lending institution to issues of viability and sustainability of the projects, lack of training, poor understanding of the business plans since in most cases these are compiled by consultants.

In addition to the other constraints / challenges identified above, the question of access to finance, especially working capital, is often regarded a critical constraint on rural producers in the developing world. Fenwick (1998) found that small-scale farmers in KwaZulu-Natal are constrained by low levels of liquidity, high transaction costs, inadequate collateral and poor debt servicing capacity. With regard to the Tyhefu Irrigation Scheme the critical question therefore becomes the ability of the farmers to repay the loans. According to Dawson and Jeans (1997) in order to improve access to finance there is a need for improving the rural financial market performance as a whole which includes measures to improve the mobilisation of rural savings, augmenting the competitiveness and institutional diversity of the financial market and to increase the use of innovative financial structures.

The Strauss Commission into the Provision of Rural Financial Services (1995) was appointed to make recommendations aimed at improving financial services for rural households. Not much attention is given by the Commission to constraints inhibiting the development of small farmers. According to Bottral (Fenwick, 1998:4) if funds are to flow towards agriculture in rural areas, the environment needs to be as attractive as possible. A view supported by Van Averbeke et al (1998:31) who states " commercial banks wish to lend to creditworthy projects and individuals, but will be reluctant to lend money if the farmer is not certain on reaping the returns from the project". A lack of investment opportunities, or the perceiving of them, may play a greater in inhibiting the adoption of innovations than do credit constraints (Fenwick, 1998:4). Barriers to entry for small-scale farmers are real despite the various transformation initiatives by the Departments of Land Affairs (DLA) and Agriculture (DoA) since 1994.

The issue of access to finance and credit calls into question concerns around **tenure security and adequacy of plot size** at Tyhefu Irrigation Scheme. Ninety one percent (91%) of the farmers reported that their plots were too small for viable farming and expressed a wish to increase farm size. A view that is, also, held by the institutional structures. Van Averbeke et al (1998:144) in a study of irrigation schemes in Central Eastern Cape found that the interest shown by respondents in acquiring more land contrasts with the relatively low general use intensity of irrigated lands. Those who felt that the size of the farms was adequate were older farmers over the age of fifty-five who believed that they would not be able to manage a large farm. According to Backeberg (1996:46) policy on farm sizes should be flexible, leaving room for the better entrepreneurs / managers to expand, and also for poorer managers to contract should economic realities force them to do so. It has been decided by all the stakeholders at

the Tyhefu Irrigation Scheme that land subdivision according to various farm sizes will not be a priority. Land will be farmed by all those interested commercially on a cooperative basis. A small portion of land will be reserved for food plots. How this will work in practice has not yet been finalized.

Tenure security is not regarded a problem in the Tyhefu Irrigation Scheme by thirty four percent (34%) of the ex-farmers. Sixty six percent (66%) indicated that because they do not own the land they have no sense of security and ownership. There is always a feeling that they could easily be evicted from the land. According to them having title deeds is the only way tenure insecurity could be resolved. On the question of tenure security, the institutional structures believe that this will be addressed once the scheme is transferred to the farmers. They stressed the need for tenure security, and is considered vital to give the farmers a sense of ownership. More importantly, tenure security is associated with market oriented agriculture and possible involvement of the private sector. According to Van Averbeke et al (1998:31) increased tenure security in the form of land title, long-term lease may facilitate farmers' access to credit.

Physical Factors Influencing Irrigated Crop Production

Heat, wind, cold, hail and sometimes heavy rains are the main climatic constraints identified by all the respondents. Heat was regarded as a main constraint, especially during the summer months. This is because the area where the irrigated lands are located is regarded to be the hottest.

Overall the quality of the soil was perceived by seventy nine percent (79%) of the farmers to be good. Twenty-one (23%) identified soil texture, drainage and infiltration as main constraints. However, farmers did point to the decline in soil fertility, attributed to a reduction in fertiliser application rates by farmers since the scheme transferred soil nutrient management to farmers. However, since the soil has not been tilled for the past five years many believe the natural fertility of the soil has been restored.

With regard to pests and disease eighty three percent (83%) of the farmers identified insects and fungus, respectively and birds as constraints. Livestock were not a constraint before the closure of the scheme but with the vandalism of scheme infrastructure, which includes

fencing, farmers foresee problems if production resumes. Basically, most of the fencing has been stolen with livestock having free access to irrigation lands. They predict that by the time any farming starts there will not be any fencing left. This is a problem which the local resident's committee and the institutional structures are unable to deal with. They believe that this is likely to increase the refurbishment / rehabilitation costs of the infrastructure.

INSTITUTIONS TO HELP WITH THE CONSTRAINTS / CHALLENGES IDENTIFIED AND TYPE OF ASSISTANCE REQUIRED

The government is regarded as the principal agent that should assist farmers / community with all the problems they experience, with finance topping the list. The main reason given being that government is the only institution farmers and the community has been dealing with all their life. This is clearly reflected in the following comment made by all the farmers "We know only the government as the provider of services, and should continue as such. The government should assist us at Tyhefu Irrigation Scheme until such time we can stand on our feet (time frame not specified)". Members of the institutional structures have elaborated further on this " What we'd like the government to do is to prioritise us (small-scale farmers) as the needy in the agricultural sector. Without this it would be impossible for us to achieve our goals. The government has got the capacity to mobilise resources and other support services on our behalf. Its impossible to achieve this on our own". A sense of dependence on the government is clearly evident. As Backeberg et al (1996:59) argues " Farmers' perceptions have been affected by the "benevolent autocratic" style of management on most irrigation systems. This has resulted in over-dependence of farmers on government and other management agencies. This has discouraged grassroots initiative and endeavour". This can be attributed to the top-down nature of development in the past, where participation by the beneficiaries was the exception rather than the norm. In addition the impoverished nature of many of the communities makes it impossible for them to think of any other form of help that might be available. Generally communities have to grapple with the shift in terms of the development discourse in South Africa as well as the responsibilities and policy changes accompanying these.

The attitude of the respondents towards the government, NGOs and researchers is worth noting (see, also, methodology section). Whilst the government is regarded as the main player in ensuring the revival of the Tyhefu Irrigation Scheme, it has generally lost credibility. The

government's commitment and willingness to help is questioned. The respondents highlighted several key areas of concern when dealing with various government officials and NGOs. First of all the high rate of staff turnover which impacts on continuity. According to the respondents government employees do not inform communities when they resign or transferred to another department. This means that all that was discussed previously has to be narrated all over again. The consequence is that all decisions that were agreed on earlier are forgotten. With someone new, everything has to be started afresh because there's no smooth hand over. This has resulted in delays in implementation. Also, the frequency of visits is a problem – the time lapse between last and next visit is far too big. Equally, there has been a problem of poor or no coordination between the various government departments, NGOs and other stakeholders. Nonetheless, the government and NGOs are believed can assists with funding, training, advice, support and extension services. The majority of the respondents believe that NGOs are better placed to lobby the government on behalf of the community. At the same time, NGOs have an important role to play in complementing the government departments since they have valuable links with communities but the staff of some of these organisations will need training in appropriate service provision for small scale farmers (Catling and Saaiman, 1996:166).

With regards the public and private sector, this proved difficult for the majority of the respondents to single out their respective roles because of poor knowledge and lack of clarity about these institution's roles. Three respondents (9%) aptly stated "we still need to explore what services can be provided by the public and private sector. We have not yet approached them. The government as the main player should provide a facilitative environment for these institutions / agents to help us". Machete and Mollel (1999) looking at the provision of extension services, note a shift from the public sector as the sole provider to private sector, NGOs, farmers and other organisations.

However, unlike the ex- farmers who had problems identifying the roles of the private sector, the institutional structures believe the private sector could be a major source of funding in line with the government's public-private partnership approach. It became clear during the interviews that this is an area that needs to be explored further and the ramifications of such a partnership explained in a manner that is understood by all.

All the respondents associated the role of farmer organisations with advice, protecting and promoting farmer interests and rights, training and assisting with marketing of farm produce.

There was no indication if they belonged to a farmer organisation or not. Reference was, however, made to the history of conflict / division of the community farmer organisations brought to the community. All the respondents stated "We need a strong farmer organisation that can lobby the government, the private sector and other organisations to take our needs much more seriously than is the case at present". According to Chikanda and Kirsten (1996:152) the formation or strengthening of farmer's unions is increasingly being used for effective communication with input suppliers, as a basis of cooperative input buying arrangements and as a lobbying platform for the delivery of inputs such as research and extension services to smallholders.

The provision of agricultural training / information and research is regarded as the domain of agricultural colleges and universities. The respondents expressed the wish that these institutions develop training programmes that will cater for the needs of emerging farmers with a low standard of education.

The community is not associated with the provision of any resources because of the prevalence of poverty in the area. Their role was described as commitment and participation in the project in order to make it a success as well as operation and maintenance which should be preceded by training if they are to perform this task efficiently.

Two members of the institutional structures felt that the donor community could assist with funding so as to hasten the process of reviving the scheme. The argument is that "if the government does not have sufficient funds it should look elsewhere".

The experience of the Western Cape on how the various institutions can cooperate and work together is instructive (though lots of ground remains to be covered). Encouraging progress has been made on how to forge links between various organisations that have been divided along racial lines and in narrowing the gap between the commercial farming sector and the small farmer sector. At the same time, we have seen "the emergence of new organisations dealing exclusively with the problems of small farmers and strengthening of existing bodies serving small farmers and rural communities" (Catling and Saaiman, 1996:172). Operational problems included the duplication of effort and confusion among the various institutions. However, these have since been addressed with the major role players defining their roles and coordinating their programmes more effectively. This process must be accelerated before

noticeable improvements can be expected in the income and standard of living of small farmers and before many rural livelihoods are created Catling and Saaiman, 1996:172).

On the question on which institutions have adequate knowledge of their problems, the government, NGOs and agricultural colleges / universities and farmer organisations, were identified in order of importance. In doubt is the capacity (in terms of skills and resources) to deliver and the approach they adopt in dealing with the community as discussed above. The institutional structures believe that they've managed to lobby the government and some NGOs to help in reviving the scheme. However, with regard to the other agents / institutions nothing seems to have been done in this regard.

USER CHARGES AND WILLINGNESS TO PAY FOR SERVICES

Respondents were asked about the services they are willing to pay for. Basically, all respondents realise the importance of paying for the irrigation scheme services. Fourty three percent (43%) were non-committal stating as the main reasons lack of clarification as to how this will be done as well as the prevalence of poverty in the area. This concern is, also, evident among the fifty-seven percent (57%) who are committed to paying. Affordability featured prominently in all the responses. Services identified as warranting payment are: water, operation and maintenance, electricity, communication and land preparation services. These are considered critical to the smooth running of the irrigation scheme. This issue needs to be viewed against widespread nonpayment of water for household consumption in the village.

The introduction of user-charges in the water sector has been the most consistent policy prescription to emanate from the International Drinking Water and Sanitation Decade (IDWSSD), 1980-1990 (Schur, 1994:419). There are basically two lines of argument with regard to user charges. The first argument revolves around issues of equity. What informs this position is that water is a basic human need (and thus a fundamental human right) and should be supplied free of charge. It is therefore the state's responsibility to ensure that everyone has access to water and sanitation facilities.

Proponents of the cost-recovery argument view water as a scarce resource and hence an economic good (WHO, USAID, World Bank). They assert that the majority of people in the developing countries will continue to be denied access to safe drinking water if free water

policies are pursued and if cost recovery mechanisms are not introduced as important components of water supply projects (Katko in Schur, 1994:420). Thus, cost recovery is seen as key to water supply development. Poor cost recovery is often cited as one of the major constraints to the long term sustainability an economic viability of water supply schemes. What needs to be recovered has been one area of intense debate. For example bilateral agencies such as USAID have advocated that all running costs (operation and maintenance) be recovered. The World Bank's position has consistently been the recovery of both capital and recurrent costs. Emerging consensus in the literature seems to favour the recovery of recurrent expenditure as a short-term objective, while the long-term objective should be the recovery of full marginal cost.

Basically, few (if any) of the state irrigation schemes in South Africa recovered full operation and maintenance costs. Prior to 1994 governments in the former homelands was responsible for operation and maintenance and finance. Besides the fact that there was rampant corruption, irrigation scheme management found that their entire budgets were consumed in running and maintaining the economically non-viable irrigation schemes.

In South Africa institutions such as the Development Bank of South Africa (DBSA) had supported the cost-recovery argument long before 1994. In line with international trends on cost recovery especially from international development agencies the White Paper on Water and Sanitation Policy called for the recovery of at least the recurrent costs of water services through direct user charges (DWAF, 1994:21-22). This includes operating, maintenance and replacement costs. Given the poverty levels in the rural areas it would be unrealistic to expect the communities to pay for capital costs as well. As Schur (1994:425) argues " The assumption that utility user charging can raise enough revenue in rural areas is unrealistic in the present and in the future". The utilisation of community labour can reduce costs. This resource is used extensively already in South Africa in many water supply projects. Not only does this provide much needed employment but it also guarantees and enhances community commitment to project maintenance.

The record of cost-recovery has been disappointing, jeopardising the financial viability of continued infrastructural expansion (Alence, 2002:699). There is evidence that in many rural communities the new water sources are under-utilised since many communities do not afford costs whether in the form of pre-paid meters or agreed-upon monthly tariffs. The result is that

communities continue to use unsafe drinking water. In addition questions about project sustainability abound. According to Ruiters and Stein (2002:266) Mvula Trust acknowledges that almost half of the projects it established would fail because of inability to maintain the system. They elaborate further "reasons for unsustainability invariably include very real affordability constraints and an unwillingness to pay for communal standpipes... Other important reasons for failure include poor quality of construction, areas within communities without service and intermittent supply" (Ruiters and Stein, 2002:267).

A number of cost recovery issues at the Tyhefu Irrigation Scheme and the village at large still need to be finalized. The Water User's Association (WUA) was established in terms of the Water Act No. 36 of 1998. The underlying principle is that the Tyhefu Irrigation scheme should become a viable, self-sustaining scheme where the farmers and other users of water from the scheme assume responsibility for the use of the scheme to the mutual benefit of all users (PDALA, 2001:2). Ultimately the WUA, as a legal body, will be responsible for a range of issues. This responsibility includes, inter alia, the functions of internal distribution amongst the plot holders, the levy of an equitable and affordable tariff on water users to ensure the financial security of the scheme, the management of the scheme and the use of all funds for the benefit of scheme (PDALA, 2001:2). Bembridge et al (2000:63-64) elaborates "the WUA should be able to take over scheme assets, take over collective loans, operate accounts and institute by-laws enforceable by its members... It would be responsible for arranging input supplies, draught power, and marketing". As it is at the moment it cannot be claimed that WUA possesses any of these skills to carry out the necessary tasks. Capacity building of the WUA is undoubtedly vital for the successful operation and long-tem viability of irrigation schemes. International experience shows that developing the capacity of WUAs is long-term process.

PERCEPTION OF PROGRESS WITH REGARDS MOVES TO REVIVE THE TYHEFU IRRIGATION SCHEME

At present Tyhefu Irrigation scheme is considered to be technically insolvent or defunct. The land has been lying fallow since 1997. In 1998 the community of Ndlambe wrote a letter to the Minister of Water Affairs and Forestry requesting the urgent revival of the Tyhefu Irrigation scheme. The Departments of Agriculture and Land Affairs (DALA) and the Department of Water Affairs and Forestry (DWAF) have since undertaken the decision to jointly rehabilitate

and transfer the irrigation schemes to its users. The Minister of Water Affairs and Forestry appointed a Task Team in 1997 to advise DWAF and DALA on all water-related aspects of the schemes. The responsibilities of the Provincial Departments of Agriculture and Land Affairs (PDALA) related to on-farm activities. The report entitled *'Report on Investigations into Ways of Rehabilitating the Water Supply Aspects of Certain Irrigation Schemes in the Former Transkei and Ciskei*" (1997) indicated that rehabilitation of TIS would be implemented in three phases at an estimated cost of R75 million. It was envisaged that the process would start in September 1997 and be completed in March 1999. Since then the proposed schedule and costs have had to be revised. The availability of funds being cited as the main obstacle. Rehabilitation for Phase One started in 2002, with the whole operation expected to be completed in 2004. It can be concluded that the rehabilitation process is uncertain and is likely to be a lengthy process. This is a source of concern for the community. Their argument revolves around widespread poverty and unemployment in the area.

Respondents were asked if they are satisfied with the progress made with regards the efforts to rehabilitate and revive the Tyhefu Irrigation Scheme. Generally, feelings of frustration and helplessness prevail among the farmers. Eighty-four percent (84%) of the respondents are skeptical about the progress. They expressed disappointment and have reservations about government's commitment, willingness and sincerity to help. The response of the majority of the farmers is summed in the following quote "We have seen some development in other areas of the province and the rest of the country. Our area has disintegrated further since this government came to power". They called on the government to speed up the revival and rehabilitation process. The rest of the respondents (16%) were cautious and reluctant to answer the question and preferred not to commit themselves. Whilst a feeling of helplessness and skepticism is evident among the institutional structures, all the members are confident that Tyhefu Irrigation Scheme will be revived in the end. What is not certain is when production will resume. There is concern that the process is slow and needs to be accelerated.

A question was asked about the commitment of the community to meeting the objectives of the project. All respondents have confidence that the community is committed to meeting the objectives of the project. This is more so in view of the need to overcome widespread poverty, crime, unemployment and feelings of destitution in the community. Participation is seen as vital for the success of the scheme. The community wants to be part of all decisions taken and not be undermined as in the past.

Other

The institutional structures were asked about their short- and long-term vision for the scheme. Their short-term vision includes: resumption of farming to fight poverty, unemployment and crime; and skills acquisition. The Long-term vision revolves around the economic viability and sustainability of TIS by generating sufficient income so as not to rely on loans. "We would like to see TIS as a leader in the supply of fresh produce locally and / or internationally; raise the standard of living of the farmers and community in general; training new and emerging farmers"

The last question was about any comments and issues that have not been raised that can assist the researcher: 1) phasing of the pipeline : respondents believe that in order to speed the process, the construction of the pipeline need to be implemented at the same time rather than in phases as proposed by the government and Gibb Africa. 2) Interim measures as requested by the community impossible because of the costs involved. 3) Training - considered critical so that institutional structures can have confidence in themselves and perform the tasks effectively.

Conclusion

This study found that the poor educational level of the farmers is positively related to their level of functional literacy. Overall, the standard of education is very low. More than half of the respondents have not reached standard five. Feelings of incompetence among all the respondents are widespread. No doubt this is one of the major constraints on their ability to run and manage the irrigation scheme effectively.

None of the farmers has any formal agricultural training. The majority of the farmers are confident about their level of agricultural knowledge and farming skills because of their previous involvement in irrigation farming. This is insufficient for successful irrigation farming. There is a need for specialised training on various irrigation and production techniques. Equally important, critical skills are lacking in various key areas such as business and financial management, interpersonal skills, marketing, operation and maintenance and quality control.

It is clear from the research findings that agriculture contributed to the livelihoods of the farmers in a modest way. Effectively, irrigated farming generated income that can be said to supplement overall household income. This is particularly so if one considers the unpredictable nature of the income derived from farming by all the farmers at the Tyhefu irrigation scheme. In most cases income has been low and many families lived in poverty. The farmers, especially, the commercial farmers had a high debt load on a continuous basis.

The quality and nature of support and extension services was found to be poor, misdirected and ineffective. Respondents had reservations regarding the knowledge and skills of extension officers. It is evident from the findings that the competence of extension officers is questioned.

Clearly, the viability and sustainability of the Tyhefu irrigation scheme will demand a complex package of interventions that address variously issues of markets and marketing, capital investment and access to finance, technology, education and training, and institutional structures. The challenges that lie ahead for the community are enormous.

The revival of the Tyhefu irrigation scheme is considered critical to rural livelihoods. This is evident in the fact that the majority of the respondents believe that the Tyhefu irrigation scheme made an important contribution in improving the quality of life (poverty alleviation, food security, employment creation).

Though the process of reviving the scheme is proceeding slowly, respondents have, generally, not lost hope.

CHAPTER SIX
CONCLUSION

The poor performance record of many irrigation schemes, despite huge investments, in the former homelands has prompted the government to reconsider its active and direct role in small-scale irrigation farming. Basically, few (if any) of the state irrigation schemes have recovered full operation and maintenance costs. Prior to 1994 governments in the former homelands were responsible for operation, maintenance and finance. Besides the fact that financial mismanagement was widespread, irrigation scheme management found that their entire budgets were consumed in running and maintaining economically non-viable irrigation schemes. Consistent with the overall agricultural policy principles there is a move away from government-owned irrigation schemes. Internationally, there is a pervasive policy consensus in favour of reducing state control and management of irrigation schemes based on the argument that state managed enterprises are costly, oversubsidised, inefficient and tend to deepen state financial crises. Transferring state responsibility to farmers, according to proponents, relieves the state of financially burdensome obligations, while at the same time enhancing farmer involvement.

The new policy framework in South Africa, known as Irrigation Management Transfer (IMT) is premised on the transfer of ownership, authority and responsibility of small-scale irrigation schemes from government to the farmers. In addition, the new policy requires that costs be recovered from all participating farmers. Effectively, this means that the irrigation schemes are to be totally owned, managed and maintained by participant farmers, in the form of Water User Associations (WUAs).

Farmers and institutional structures at the Tyhefu irrigation scheme have welcomed this development to be able to take over management responsibilities. However, a shift in the mindset that the government is the facilitator and not the implementer of development could not be discerned in this study. The government is still expected to be directly and actively involved. This is hardly surprising considering that development projects have always been imposed. At the same time the high levels of poverty and deprivation reinforce this attitude.

Current policy thinking is a major departure from the previously top-down, supply-driven approach. Whilst this represents a notable innovation, participatory development alone is a necessary but not a sufficient requirement for the success of small-scale irrigation schemes. This shift exposes farmers to new challenges and creates new demands organizationally and in terms of production practices. The real test for irrigation management transfer is the extent to which it is accompanied by a comprehensive package of support and extension services and farmer empowerment so that the viability and sustainability of the irrigation schemes is assured.

While the need for the transformation of small-scale irrigation schemes is undisputed, the hurried implementation of irrigation management transfer raises questions about the long-term viability of these irrigation schemes. This study suggests that improving the situation of small-scale resource poor irrigation farmers, such as the ones at the Tyhefu irrigation scheme appear to be the secondary aim of this reform. In essence, fiscal capacity pressures (and international trends) have been the determining factor for the adoption of irrigation management transfer rather than the potential far-reaching effects of this reform on the livelihoods of the farmers and concrete evidence about enhanced performance and cost-efficiency and effectiveness in the South Africa situation. Farmers at the Tyhefu irrigation scheme need special support. Radical policy changes are vital before any significant improvements can be achieved in income, livelihoods, general standard of living and agricultural productivity. Without this the possibility for independent agricultural production is minimal.

The government needs to articulate a clear policy for small-scale farmers but also be prepared to commit sufficient resources. The possibility of establishing a special ministry for small-scale farmers within the Department of Land and Agricultural Affairs needs to be investigated. Given the supportive environment within which white commercial farmers thrived it cannot be claimed that the same exists for small-scale resource poor [irrigation] farmers. At a general level, despite the legislative and policy changes initiated since1994, prospects for revitalising agriculture in the former homelands and establishing a new class of emerging farmers are bleak. The dual nature of agriculture remains very much intact. In this sense small-scale farming needs to be targeted specifically. Currently, poor political support for small-scale [irrigation] farming is a perennial problem in spite of the fact that small-scale farming is viewed as an important policy objective by the government. Furthermore, the goals of achieving equity, efficiency and sustainability in the agricultural sector will remain elusive.

IMT raises critical questions about the nature and quality of participation and decision-making at local level. Whether IMT enhances farmer participation and decision-making or whether it concentrates these on the elite is an area for further research. In other words, how do power relations play themselves out at this level? Given the history of strife in the Ndlambe community, attention to group dynamics should be one of the areas that receive priority. Attention needs to be paid to issues of leadership and management, group cohesion, conflict resolution and commitment to the project purpose. There is evidence that many projects fail because of inattention to these issues.

Access to information by the farmers is vital for all to participate effectively in the process. Even though community report back meetings are held on the rehabilitation process at the Tyhefu irrigation scheme, findings in this study indicate that the views of the respondents (particularly the former farmers and the institutional structures[26] differ markedly in terms of the perceived priority constraints and challenges. This can be attributed to the proximity of the institutional structures to the various agents involved in the revival and rehabilitation process. As a result they show a clearer understanding of the complexity of the process. On the other hand, the farmers seem to have a limited vision of the challenges that lie ahead. The responses of the ex-farmers indicate that they are more concerned with survival and the "here and now". It cannot be claimed that all the respondents are fully conversant of the implications of the IMT process.

Research evidence suggests that South Africa has a wealth of lessons to draw from on the African continent on irrigation development and irrigation management transfer. Lessons indicate that the continent is littered with examples of derelict and costly failures. Many irrigation projects have suffered from a combination of technical, institutional and organisational constraints. A recurring theme in the literature is the lack of consultation with the intended beneficiaries with the aim of securing their active involvement and ownership of the projects. This has not only posed a threat to the sustainability of irrigation projects but has been singled out as one of the primary causes of failure.

Primary constraints and challenges identified by the respondents for the future rehabilitated Tyhefu irrigation scheme are finance and credit, markets and marketing, institutional support,

[26] Even among members of the institutional structures it cannot be claimed that the information held is uniform

training, support and extension services. These have the effect of undermining the viability and sustainability of the Tyhefu irrigation scheme.

The quality and nature of support and extension services was found to be poor, misdirected and ineffective. Respondents had reservations regarding the knowledge and skills of extension officers. It is evident from the findings that the competence of extension officers is questioned. Hence, it is believed this limited their ability to provide sound advice to farmers on key production and irrigation practices. Well-trained competent extension officers resident on the irrigation scheme particularly during the first few years are critical to the success of the Tyhefu irrigation scheme. Specialised training of new and serving extension officers should receive priority. There is a strong argument for the overhaul and re-orientation of the extension service to address the needs of small-scale [irrigation] farmers. Working partnerships between farmers, institutional structures and extension officers need to be forged. This relationship should differ markedly from the one that existed before the collapse of the Tyhefu irrigation scheme, which was top-down, technocratic and authoritarian. Extension service needs to strive through training towards encouraging greater farmer independence and collaboration rather than the subordination of farmers.

Related to the above is the need to upgrade and reorient research to focus on the needs and problems of small-scale and emerging farmers. It is for this reason that all the respondents in this study regard agricultural training/information/research as one of the prerequisites for successful small-scale irrigation farming. A major anomaly identified by the respondents is the inability of the farmers to access timely agricultural information and services. This includes information on new crop cultivars with high yield potential and market value, soils analysis, advice on fertilizers and pesticides, effective weed, pest and disease control, farm management methods and techniques. Research evidence suggests that previous research effort has been devoted largely to commercial farming and that such research output is marginally relevant to the needs of small-scale farmers (Catling, 1996).

There are several role players involved in the rehabilitation of the Tyhefu irrigation scheme. It is important to enlist the assistance and cooperation of individuals / organizations and institutions (such as white commercial farmers, agricultural institutions, farmer organizations) that have potential to contribute positively. There is a need, therefore, for greater cooperation between those role players with complementary competencies. Critical attention must be paid

to issues of closer coordination of programmes and services as well as the possibility of redefinition of their respective roles.

This study found that the poor educational level of the farmers is positively related to their level of functional literacy. Feelings of incompetence among all the respondents are widespread. All the respondents realize that they need to acquire various skills through training for greater independence. Critical skills considered lacking are the drawing of business plans, formulation and reading of contracts, financial control and management, record keeping, computer literacy, adopting latest technology, project planning, management and evaluation, keeping minutes, communication, conflict resolution, marketing and management, operation and maintenance, quality control. Research evidence (Cousins, Cousins and Theron, 1996:185) on small-scale commercial farmers in the Western Cape suggests that business management skills, which include keeping proper farm accounts and records, are often limited. According to Rogerson (2000:210) the lack of management or business skills serves to worsen all the other problems of rural producers since entrepreneurs lack the capacity to analyse situations and chart ways to minimize the adverse impact of constraints on their business. Thus, a high level of financial management will no doubt be one of the critical areas that need to be addressed.

None of the farmers have any formal agricultural training. Even though the majority of the farmers are confident about their agricultural knowledge and farming skills (as a result of their previous involvement in irrigation / subsistence farming, sometimes as farm labourers in the commercial farm sector) they need training in new production, irrigation techniques and practices. This is particularly important especially given the fact that the rehabilitation and revival of the Tyhefu irrigation scheme is premised on market-oriented farming. The skills they possess can largely be regarded as general farming skills such as weeding, fencing, driving. Specialised farming skills cannot be said to exist on a wide scale. Innovative practical training suited to the needs of the farmers is critical.

Marketing of produce for the majority of the farmers, particularly the food plotholders, was a serious problem. It is clear from the findings that marketing was, generally, not organised, and was poorly developed based on the availability of buyers. There was stiff competition among the farmers whilst at the same time they restricted their activities to narrow localized markets. In most cases this resulted in reduced profit levels. For the commercial farmers low monetary

returns when using the scheme's marketing services was a source of tension between the farmers and the irrigation scheme management.

In the past rural infrastructure and the fact that Tyhefu irrigation scheme is located far away from main markets made it difficult, if not impossible, to exploit favourable market opportunities. Overall, farmers at the Tyhefu irrigation scheme require both improved access and improvements in marketing of their produce. Also, one of the challenges is the development of a marketing system that will serve as a mechanism through which farmers can channel their produce. Similarly, an improvement in marketing information system is vital. Other areas of concern relate to the availability of storage facilities, the ability to adhere to high production and quality control standards and meeting contract obligations. The suggestion by van Averbeke et al (1998:203) that there is a general need for the identification of suitable crops that can be grown profitably, without being sensitive to market conditions and distance is valid. Even though sugar beet has been identified as a preferred candidate crop, no final decision has yet been reached as to the suitable crops. There is agreement, however, that emphasis should be on high value cash crops.

Respondents are apprehensive about their ability to access finance. They need credit for various short-, medium- and long-term purposes. More importantly, the fact that credit is offered at market related interest rates highlights difficulties the farmers are likely to have in servicing their loans. This is regarded as a negative incentive for small-scale farmers, who are likely to find it impossible to invest in agriculture. Farmers at the Tyhefu irrigation scheme are, also, constrained by low levels of liquidity, high transaction costs, and inadequate collateral. In other words, even though institutional restructuring of agricultural services has been undertaken to meet the financial needs of small-scale farmers, there are many requirements needed in order to qualify for financial assistance. In many cases they do not comply. The possibility of providing start-up finance on favourable terms requires further investigation. Equally crucial is whether the Tyhefu irrigation scheme will be able to have a positive cash flow in the long-term rather than relying on credit to sustain itself.

A number of cost recovery issues at the Tyhefu irrigation scheme still need to be finalized. The introduction of user charges and cost recovery is one of the thorny areas in South Africa. Generally, the record of cost-recovery is disappointing, resulting in the termination or discontinuation of a particular service. The fact that forty three percent of the respondents

were non-committal in terms of paying for services is a cause for concern. Affordability featured prominently in all the responses. When taking into account the socio-economic status of the respondents, it seems unrealistic to expect them to carry the full cost of operation and maintenance.

The Ndlambe community is eagerly awaiting the eventual resumption of farming at the Tyhefu irrigation scheme. They are pinning all their hopes for poverty alleviation, employment creation, income generation and the general improvement of the standard of living and rural livelihoods on this one project. There is potential for this, albeit on a limited basis in the short term. Whether the Tyhefu irrigation scheme can generate sustainable rural livelihoods is questionable and subject to debate, especially in view of the constraints and challenges that lie ahead.

It is clear from the research findings that agriculture contributed to the livelihoods of the farmers in a modest way. Effectively, irrigated farming generated income that can be said to supplement overall household income. This is particularly so if one considers the unpredictable nature of the income derived from farming by all the farmers at the Tyhefu irrigation scheme. In most cases income has been low and many families lived in poverty. It needs to be realized that the Tyhefu irrigation scheme is not and will not be a panacea for the socio-economic ills facing the community. Since agricultural development is just one aspect of the rural economy, for the rest of the community other income generating activities need to be considered. Rural development experience suggests that a complementary blend of interventions offers an integrated way of dealing with the various development problems communities face.

Diversification is widely regarded as an important risk management strategy for small-scale farmers. Since small-scale, capital-intensive commercial farming is a particularly risk-laden activity, farmers at the Tyhefu irrigation scheme rather than focusing on a single high value crop need to spread their risks.

The rehabilitation costs of the Tyhefu irrigation scheme are high. Based on previous economic performance, which was far from satisfactory, the decision to revive and rehabilitate the Tyhefu irrigation scheme is difficult to justify in economic terms.

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APPENDIX

Questionnaire for the Tyhefu irrigation scheme institutional structures

Main Constraints, Challenges Experienced by the Farmers

Which of the following factors affect the degree to which you can farm successfully? These are not organised in any order of priority. Indicate this by choosing the appropriate ranking. Give reasons for your answer.

1= No Problem
2= Problem can be ignored
3=Needs attention
4=Serious problem
5=Very serious - needs urgent attention

Access to markets	
Marketing facilities	
Rural infrastructure	
Irrigation infrastructure	
Farm size	
Tenure security	
Agricultural training /information/research	
Access to finance	
Support and extension services	
Water quality and availability	
Climatic conditions	
Farming skills	
Soil quality	
Theft	
Level of functional literacy	
Pests and diseases	
Theft	
Inadequate access to proper and timely land preparation services	
Other (Specify).	

ii)a Which of the following institution(s) should assist you with the problems you have identified? Elaborate.

Government	
Private Sector	
Farmer Organisations	
Agricultural Colleges / Universities	
Non-governmental Organisations	
Ndlambe Community	
Other (Specify)	

ii)b What kind of assistance do you expect form these institutions?

Training	
Finance	
Marketing	
Operation and Maintenance	
Support and Extension Services	
Other (Specify)	

iii) Which services are you willing to pay for" Explain.

Water Supply	
Operation and Maintenance	
Support and Extension Services	
Training	
Other (Specify)	

iv) Are you satisfied with the progress made thus far regarding attempts to revive Tyhefu

irrigation scheme? Give reasons for your answer.

v) How committed is the community to meeting the objectives of the project" Explain.

vi) What is your vision of a future rehabilitated Tyhefu irrigation scheme?

v) Any comments?

Thank you for you cooperation.

Questionnaire for the Former Farmers at the Tyhefu Irrigation Scheme

A. Socio-Economic Profile

i) Age

20-30	
31-40	
41-50	
51+	

ii Education

No schooling	
Lower primary	
Higher primary	
Secondary	
Tertiary	

iii) Sources of Income

Farming	
State Transfers	
Remittances	
Formal Employment	
Informal Economic Activities	
Other:	

iv) Farming Experience in Years

0-5	
6-10	
11-20	
21+	

v)a Sources of Farm Labour

Wife	
Husband	
Children	
Relatives	
Hired Labour	
Other (Specify)	

v)b How often do they help with the farming?

All the time	
Occasionally	
Seldom	
Never	

vi) Amount of income derived from farming per annum

Less than R100	
R100-300	
R400-R600	
R700-R100	
R1000+	

vii) What benefits did the Tyhefu Irrigation Scheme have?

Poverty alleviation	
Food security	
Employment Creation	
Agricultural Skills	
Other (Specify)	

Section Two

Main Constraints, Challenges Experienced by the Farmers

i) Which of the following factors affect the degree to which you can farm successfully? These are not organised in any order of priority. Indicate this by choosing the appropriate ranking. Give reasons for your answer.

1= No Problem
2= Problem can be ignored
3=Needs attention
4=Serious problem
5=Very serious - needs urgent attention

Access to markets	
Marketing facilities	
Rural infrastructure	
Irrigation infrastructure	
Farm size	
Tenure security	
Agricultural training /information/research	
Access to finance	
Support and extension services	
Water quality and availability	
Climatic conditions	
Farming skills	
Soil quality	
Theft	
Level of functional literacy	
Pests and diseases	
Theft	
Inadequate access to proper and timely land preparation services	
Other (Specify).	

ii)a Which of the following institution(s) should assist you with the problems you have identified? Elaborate.

Government	
Private Sector	
Farmer Organisations	
Agricultural Colleges / Universities	
Non-governmental Organisations	
Ndlambe Community	
Other (Specify)	

ii)b What kind of assistance do you expect form these institutions?

Training	
Finance	
Marketing	
Operation and Maintenance	
Support and Extension Services	
Other (Specify)	

iii) Which services are you willing to pay for" Explain.

Water Supply	
Operation and Maintenance	
Support and Extension Services	
Training	
Other (Specify)	

iv) Are you satisfied with the progress made thus far regarding attempts to revive Tyhefu irrigation scheme? Give reasons for your answer.

v) Any comments?

Thank you for your cooperation.