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LAND TENURE ISSUES IN AND AROUND TOMAS RIVER PROJECT KANO STATE, NIGERIA

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ABSTRACT

This study is an attempt to investigate land tenure - related problems which can be traced directly and indirectly to the establishment and management of the Tomas River Project (TRP) in the Dambatta area of Kano State.

The project is one of a number of large-scale irrigation projects established in northern Nigeria in the wake of the drought of the late 1960s and early 1970s. Established in 1979, it aims at improving the welfare of inhabitants of the area, through stimulating increased agricultural productivity. The project pursues a policy of allocating land, initially expropriated from local inhabitants, to prospective farmers on a seasonal tenancy.

Data for this study ware collected between October 1988 and September 1989, using structured and unstructured questionnaires, supplemented by informal interviews and discussions. A total of 203 people were interviewed. Data collected were analysed using percentages, graphs, etc.

Research findings reveal that there is an excess of demand for project plots over the available supply. Displaced farmers constituted the majority of tenants (57%), but controlled only about one-third of the total farmland area allocated to tenants.

The fact that plot allocations only lasted for a single season, and the absence of any guarantee that subsequent tenancies will be served on the same plot represent, overall, a type of insecurity of tenure. In this way, TRP land policy discourages farmers from making major investments in project land.

Other shortcomings identified in the running of the project include the inadequate supply of irrigation water to parts of the project site, and late planting, caused by untimely and inadequate supply of inputs.

The establishment of the TRP has resulted in out-migration of large numbers of livestock from the area.

In farmlands adjacent to the TRP, both the number of plots per family head, and the mean size of plots have reduced since project establishement. A slight shift from communal to commercial transactions in land was observed.

The study points to the need for the involvement of tenant farmers, particularly those displaced to make way for the project, in project land management. There also seems to be a need for management to give much greater thought to integrating livestock rearing in project activities.

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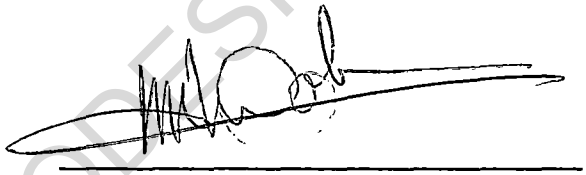
Needless to say, responsibility for the content of this thesis lies solely to the writer.

DEDICATION

To my parents, and my brothers Hammawa and Ibrahim.

CERTIFICATION

This is to certify that this work has been undertaken by Muhammed Mustapha Saidu in the Department of Geography Bayero University,Kano



Dr. R. A. Cline-Cole

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CHAPTER ONE

INTRODUCTION

1.1 AGRICULTURAL POLICIES AND DEVELOPMENT OF IRRIGATION IN NIGERIA

In most developing countries there is an increasing concern among governments over the welfare of citizents. The fact that about two thirds of the total population of these countries lives in rural areas and depend directly or indirectly upon agriculture for livelihood suggests that agriculture; the basis of rural economy, must be improved in order to increase real incomes and in turn raise the real welfare. In order to achieve the above and host of other, often contradictory, objectives, the governments embarked upon varied agricultural development programmes, often involving the improvement and, increasingly, the rehablitation of existing traditional agriculture. In Nigeria for example some of the concerted efforts made by successive governments, post independence, to develop and improve the agricultural sector are summarised under the following specific programmes: the National Accelerated Food Production Programme; the World Bank asssisted Agricultural Development Projects; the Operation Feed the Nation; the Green Revolution; the River Basin and Rural Development Programmes; the Agricultural Guarantee Scheme, and more recently the Food, Roads and Rural Infrustractural Development, and the Accelerated Wheat Production Programmes. A common component in many of these programmes is irrigation development.

Irrigation can be defined as the practice of applying water to soil to suplement the natural rainfall and provide moisture for plant growth (Wiesner 1978 in Barrow, 1987). It offers the potential, if

all goes well, for doubling or even quadrupling crop yield and considerably reducing risks of crop failure. It can also offer considerable indirect benefits like improving the sustainability of production.

The development of irrigation is gaining prominence in many countries of the world, particularly the developing ones. Between 1965 and 1977 there was an established 31.7 per cent increase in irrigated land in developing countries (Arnon 1981 : 68). A recent source (World Bank 1982) suggests that there are over 160 million hectares of irrigated land in developing countries, mostly in South and South East Asia. China has probably about 49 million hectares, and India, 39 million hectares. These two countries account for more than half of the irrigated land in developing countries (World Bank 1982: 62). Egypt's agriculture is virtually wholly irrigated, Peru's 75 per cent irrigated, and Iraq's is about 45 per cent (Arnon 1981:56). The Philippines, Thailand, and Sudan have considerably extended their irrigated lands in recent years.

Africa and Latin America are lagging behind in irrigation development. A large part of Africa's Irrigation development has been in Egypt and the Sudan; recently there have been more signs of activity elsewhere on the continent, particularly in Kenya and Nigeria. Between 1961 and 1971 African irrigation growth was slower than any other continental grouping of developing countries - a mere 13.4 per cent (Barrow 1987:201).

In Nigeria, the development of irrigation has, and continues to receive the attention of policy makers. The initial interest dates to colonial times, when it was considered as one of the vital tools

for the advancement of agriculture in Northern Nigeria. The colonial government undertook pilot projects, and attempted to formulate plans and collect data on the feasibility of, and methods for its irrigation programme. During that period, Kwarre Irrigation Project, located about 26 Km north-west of Sokoto town, and Badeggi Irrigation Project in Bida Division of the then Niger Province, were established in 1925 and 1951, respectively (Palmer - Jones 1987:149). Since independence irrigation has been an important strategy for agricultural development under both Military and Civilian governments (Palmer -Jones 1980:1).

In the First National Development Plan (1962-68), irrigation in the Northern Region received an allocation of £1.37 million out of a £4.07 million capital expenditure on Agriculture for the whole country. In the Second Plan (1970-74) the proportional allocation by the Federal Government to irrigation development in the country was almost identical. Within this plan period modern irrigation development consumed about 15.4 per cent of all agricultural expenditure at the State level (Table 1.1). The Sum of N627,000,000 was spent on irrigation in the Third plan (1975-80) by both Federal and State governments. In the budgets of the plan period, in Kano State, for example, over 80% or N87.646 million of the total allocation to the crop subsector was earmarked for infrastructural development, of which the development of irrigation facilities was to receive 87% or N76.24 million.

Within the 1975-80 plan period, Decree No. 25 of 1976 was enacted. This Decree divided the country into eleven river basins, each under the administration of a River Basin Authority. In the Fourth Plan (1981-85), N2,255,000,000 was allocatd for irrigation

in the country. The expenditure by Federal and State governments on the provision of irrigation facilities over the last ten years has been estimated at over N2 billion (New Nigerian of 7 June, 1988:1).It is thus clear that irrigation development is emerging, or has emerged as a cornerstone of Nigeria's agricultural development efforts.

Table 1.1 : Capital Expenditure on Modern Irrigation Development During the Second Plan Period (1970-1974)

State	(a)Total Planned Agric. Exp. (N million)	(b)Planned Exp. on Irrigaton Dev.(N million)	(b) as % of (a)
Benue & Plateau	2.924	0.285	9.7
Anambara & Imo	10.389	0.000	0.0
Kano	16.389	7.241	43.3
Kwara	2.370	0.190	8.2
Lagos	3.000	0.400	13.3
Bendel	4.100	0.000	0.0
Kaduna & Katsina	3.219	0.976	30.0
Borno, Bauchi & Gongola	4.130	0.688	16.7
Niger & Sokoto	4.267	2.072	52.0
Rivers	4.267	0.000	0.0
Cross River & Awka Ibom	7.655	0.000	0.0
Ogun, Ondo & oyo	14.053	0.000	0.0
TOTAL	76.828	11.852	15.4

Figures are directly applicable to a twelve -state structure

Source: Fed: Rep. of Nigeria, Second National Development Plan , 1970- 74, pp.119, cited in Baba (1984).

Most of the money allocated to irrigation development goes to 'large scale modern irrigation'. Interest in such large scale projects has been fostered by many factors which include

accelerating population growth, the need for agro-industrial raw materials, inadequate water resources during the dry season, and recurrent droughts (Oguntoyinbo 1982 : 78). Rapid population growth in the country, and the need for agricultural raw materialsfor industrial production call for modifications in the traditional farming systems which " have satisfied the peasant farmer but cannot stand up to the change of a growing popuation and a rapidly developing country" (FMA 1977 : 3). The drought-affected areas of the Sahelian region are believed to be experiencing a continuous decrease in their productive potential. This has stimulated interest in irrigation as a means of reducing dependene on a highly seasonal, and extremly variable rainfall (AID 1976).

The major objectives of large scale irrigation schemes in Nigeria are: increased agricultural production overall, self sufficiency in food production, rural development and modernisation, saving foreign exchange through the local production of wheat and other imported food crops, export of high value crops, drought and famine relief, and increased agricultural employment. Basically, these projects are aimed at improving the lot of the farmer, to enable him to increase production on the land, and thus be able to sell more crops and so increase his income and, therefore, his welfare. The projects allow for double cropping in one year, through making water available for dry season irrigation farming. Irrigation schemes, according to Impresit (1974) "will in fact cause an increase in employment ... double cropping will eliminate unemployment and seasonal migration" (pp.113).

However, many observers contend that large-scale irrigation

projects in the country are unproductive (see Olofin 1988, and Palmer-Jones, 1980, 1984 and 1987). For this reason, emphasis has now shifted to small-scale irrigation based an ground water development by hand-operated and small motor-driven pumps (World Bank 1981:80). This thesis reports on research on land tenure problems in the Tomas River Project, one of the large-scale irrigation projects in Nigeria.

1.2 LAND TENURE AND AGRICUTURAL DEVELOPMENT

A number of non-economic factors have been identified by economic planners and agricultural experts as inhibiting the pace of development in the agricultural sector. Among these, land tenure arrangements have received extensive treatment. Land tenure refers to the way in which people obtain, use and distribute rights to land. In most parts of Africa, land tenure arrangements are based on traditional law and custom, and is generally referred to as customary land tenure. Occupiers are granted cultivation rights over their holdings by the head of social groups. Retention of such rights depends on continued cultivation of the land, and the respect of more general social mores.

The systems of customary land tenure, according to planners, cannot cope with the increase in population being experienced in most African countries. The growth in population requires increased food production which, coupled with the desire of most governments for earning income from exporting agricultural products, has led to calls for change in customary land tenure arrangements. The latter are considered as a bottleneck in the way of increased agricultural production. Complete government

control over land has been advocated by some writers, while others have called for western-type 'private' land ownership. Objection to customary land tenure arrangements has been expressed by many writers and can be found in the reports of technical experts and government-appointed commissions. The Morse commisssion in Basutoland for example, reports that "traditional law and custom concerning the tenure of land throughout Africa appears clearly to be out of step with the reguirements for a modern cash crop agriculture, where the individual must take certain risks and therefore be assured that the reward of so doing will fall to him" (Verhelst 1970 : 635).

In Nigeria, since independence, economic planners and agricultural experts have also identified customary land tenure arrangements as one of the factors inhibiting agricultural development in some parts of the country. They have therefore, called for a change in the existing land tenure system. Adegboye (1969) views customary land tenure as a liability rather than an asset, and calls for land reform in the country. In the First National Development Plan, it is stated that "traditional farming methods and systems of land tenure inhibit the extensive use of land for farming as well as posing problems for efficient agriculture in the country (in Ega,1979 : 288). In the Second Plan, it is stated that "if Nigeria's agriculture is to develop very rapidly and to have the desired impact on the standard of living, there must be reform in the system of land tenure" (pp.100). Similarly, the Third National Development Plan identifies the land tenure system as one of the major causes of under - utilization of agricultural land.

Insecurity of tenure has been consistently cited as one of the

most serious problems associated with customary land tenure (Verhelst 1970; Famoriyo 1973). Ownership tends to be largely transitory. Security of tenure implies a feeling of permanence, and is widely considered to be a pre-condition for successful agricultural investment. It is essential for continuity of cultivation, improvement to land, and increased production (Lawrence and Mann, 1964). It serves as an incentive for farmers to make investment in land. Lack of security of tenure probably acts as a disincentive to improving the land (Whittermore, 1981) or even simply to preventing its deterioration (Verhelst, 1970). Insecurity of tenure is therefore disastrous for soil maintenance and thus for long term productivity (Block 1986).

Under Customary land tenure, individuals may, in some cases, find it difficult, if not impossible, to expand their holdings for efficient produtivity because of the existence of other individuals members of the community who also lay claim to the land . Another problem is the lack of clarity of rights in land. Traditional rules are unwritten, and often the validity of rights depends on oral evidence of living witnesses (Famoriyo, 1973). Consequently, disputes and litigation are common. These problems make it difficult for land held under customary tenure to be accepted by financial institutions as collateral for loans. This contributes to indequate capital availability for agriculture, a situation which has been regarded as one of the major obstacles to agricultural development (Oyeniyi 1986).

Fragmentation and subdivision of agricultural land as a result of inheritance practices, is also viewed as one of the problems associated with the operation of the customary land tenure

system. Fragmentation and subdivision lead to the loss of valuable farming land in boundaries, and time in travelling from one plot to another. Mechanisation is also made difficult. Customary tenure also restricts the use of land by strangers, and where this is allowed, stranger-tenants experience restrictions on the choice of crops they can plant. This may adversely affect agricultural performance. For all these reasons, most large scale irrigation projects adopt land policies which are aimed at overcoming, or at least minimising some of the problem associated with customary land tenure arrangements.

Despite the reasons advanced against customary land tenure systems, the latter have over the years successfully served the needs of a peasant production sector. First, they recognise the right of each member of the community to land for food production. Second, they specify that no member of the community shall be without land. Third, they ensure that no member of the community shall alienate land without the consent of the other members (Famoriyo, 1973). These provisions have sufficiently preserved the survival of each member of the community.

It is true that in some societies, land tenure does not provide for the long term enjoyment of customarily allocated agricultural plots. In the 'village ownership' system found in some parts of Eritrea (Ethiopia), for example, members of the village hold plots for approximately eight years. In contrast, it has been found that in many communities, customary land tenure systems ensure greater security of tenure. Individual rights to land are protected, so long as the person occupies the land or is presumed to have an interest in a particular holding. Uchendu(1968, in Verhelst 1970:4)

points out that :

"in traditional African economics, the security of right in land is guaranteed and protected by the very principle under which initial rights were acquired. In one community it might be the kinship principle, in others it might be principle of residence, clientage, service to higher authority or mere political affiliation or allegiance. As long as the social relations which give rights in land are maintained, the question of insecurity in land seldom becomes a live issue".

In some cases, ownership of farming rights remains with the farmer, irrespective of whether he continues to cultivate the land or not, provided he claims it (Vanderlinden cited in Verhelst 1970).

1.3 LARGE SCALE IRRIGATION PROJECTS AND LAND

Large scale irrigation development requires large areas of land. Apart from land needed for irrigation farming, large areas of land are also required for the construction of dams, irrigation networks, roads, staff quarters and offices. Dams which have been the backbone of irrigation development in most of these countries also occupy extensive tracts of land. Major irrigation dams like the Aswan High Dam in Egypt/Sudan, and the Ma-pong in Thailand cover approximate surface areas of between 4,000 and 6000 Km^2 (Barrow 1987).

In Nigeria the Federal Government planned to put about 877, 660 hectares of land under irrigation between 1981 and 1985 (Table 1.2). Combined with the land area previously under irrigation, this would have constituted about three per cent of the estimated 34 million hectares (FGN, 1975) of land believed to have been under cultivation in the country during this period. Individual

state governments also have plans for increasing the areas devoted to irrigation farming under their jurisdiction.

Table 1.2 Proposed Federal Government Financial Resources Allocation to River Basin Development Authorities During the Fourth Development Plan, 1981-85

River Basin Dev. Auth.	Estimated total project area (Hectares)	Financial Allocation 1981-85 (N Million Naira)	Approximate alloc. per hectare (Naira)
Sokoto-Rima	103,470	597	5,770
Upper Benue	154,300	118	765
Ogun-Oshun	41,100	145	3,528
Niger	110,650	146	1,319
Lower Benue	74,056	102	1,377
Hadejia-Jama'are	82,900	127	1,532
Cross River	76,800	80	1,042
Niger Delta	31,350	85	2,711
Chad Basin	134,000	170	1,269
Benin-Owena	28,640	132	4,609
Anambra Imo	40,400	105	2,599
Total	887,666	1,807	2,059

Source: Okigbo (1981, in Baba 1984).

In Kano State for example, the Kano River Project Phase1 covers about 22,000 hectares, while phase 11 based at Wudil, was designed to cover 40,000 hectares. Similarly, a 25,000 hectares project was planned for the Hadejia valley. Other eleven large scale state schemes cover about 7,000 hectares, excluding the area under dams. Here, between 1969 and 1980, twenty zoned

earthfilled dams were constructed, creating reservoirs ranging in surface area from less than 100 hectares to more than 17,000 hectares. These dams are meant to be multi-purpose, although they are currently used mostly for irrigation and water supply to nearby towns.

Irrigated areas are usually fertile, intensively cultivated and heavily settled. This is because irrigation development is largely associated with river valleys and adjacent lowland areas. Affected people are often forced to move out of these areas. Forced resettlement of relocatees has become one of the least satisfactory, and costliest aspects of these irrigation projects. Good alternative land for resettlement is difficult to find. Although cash compensation could substitute for alternative land, it is difficult to distribute fairly, and there is a risk that relocatees will not spend such money wisely, or that they may be relieved of the money by the unscrupulous, before they can use it to establish a new livelihood and home (see Wallace 1980).

These projects have caused alot of hardship to displaced people. In one of these projects, Bakalori, hundreds of displaced peasant families were massacred by anti-riot police in April 1980, for daring to complain of inadequate, and even, in some cases, a complete lack of, compensation for their land and property lost to the project (Beckman, 1984). Moreover, land tenure policies adopted by irrigation authorities are usually different from traditional tenural practices.

1.4 LAND TENURE ARRANGEMENTS ON LARGE SCALE IRRIGATION PROJECTS

A wide variety of land tenure arrangement can be found in irrigation projects world wide. A typology is given in Table(1.3), which shows diversity of a) security of tenure, and b) holding size.

Table 1.3: The Variety of Land Tenure Arrangements on African Irrigation Projects.

A. Degree of Security	B. Plot Size
1. Free hold.	1. Commercial scale (three hectares and above)
2. Communal tenure (secure use rights no transferability outside family)	a) Independent Commercial farms, primary expatriates and corporations
3. Fixed-term; long-term lease	b) Settlers associated with estates
4. Medium-term lease (eg.4-10 years)	c) plot holders on private pump schemes
5. Short-term lease (1 year) but with virtually guaranteed renewal and inheritability.	d) plot holders on large-scale commercial projects
6. Short- term lease (1 year) with Virtually guaranteed renewal but no guarantee of inheritability	2. Familly farm-scale (about 1 ha.) a) on any size small holder scheme. b) Individual or small-group works
7. Short-term lease (1 year) with no assurance of remaining on same plot from year to year.	3. Below family farm-scale a) Due to fragmentation b) Due to allocation according to equity criteria.

Source: Block (1986)

Together with management responsibilities of farmers, these two are the principal diamentions along which land tenure arrangements varry in irrigation systems. Security of tenure has two dimensions; assurance of access to some land within an

irrigation project, and stability of holding on to a specific plot of land. The latter normally ranges from freehold with transferable title, to the total absence of rights. Holding size ranges from 0.1 hectares or less to 5, 10 or more hectares, depending on the purpose of the project. Those projects which are aimed at producing marketable surpluses have average plot sizes larger than those whose goal is to satisfy the domestic demands of the farmer and his family. Generally, the upper limit on holding size does not exceed 2.0 hectares. This is usually for reasons of equity and efficiency: available irrigated land is distributed to as many people as possible, and an attempt is made to guard against a noticeable reduction in yields as farm size increase (Berry and Cline, 1979).

According to Block (1986) variations in tenurial arrangements in irrigation projects in Africa are caused by three principal factors. First, the cultural and legal-institutional traditions of farmers from different ethnic groups or countries vary. Second, irrigation projects are undertaken for different purposes, and third, the tenure arrangements instituted at the onset of a project may not be appropriate once the project has matured.

In Nigeria, Bird (1984) indentified two broad policy options for land tenure arrangements in irrigated areas of the northern parts of the country. Factors constraining land policy include land law, cost, engineering criteria already laid down, ease of operation of the project and socio-economic factors. The first option involves expropriation of project land by government. The land, after preparation, is allocated to farmers every season on a contract basis. Some of the irrigation projects where this policy option

has been adopted include; the South Chad irrigation project, Geriyo irrigation project (Gongola State) and Tomas River project (Kano State). Under the Second option, land is acquired temporarilly for construction of irrigation works, and is reallocated to the original owners, either in fragmented form or in consolidated blocks. The Kano River Project and the Bakalori irrigation Project represent examples of schemes which operate this second policy.

Policy option one has the advantage of overcoming the problems associated with customary land tenure. Under it, farmers are only tenants. They can lose their tenancy if they contravene rules laid down by the project management. According to NEDECO (1976), under the system, "it would be easy to impose conveyor belt, command type of management, demanding from the farmer a rigid work schedule" (pp.76). It can also help to check cultivation of crops which are undesirable, or those which jeopardise land, and preparation and planting schedules for dry season cropping. Tenants would be given order on what to plant and on what not to plant. However, under this system, the procedure for selecting tenants could be subject to abuse, and this could lead to the marginalisation of peasants. In the South Chad Irrigation Project, peasants are being gradually displaced by large firms (Tijani, 1976).

Control of land under the second policy option is largely based on existing customary land tenure principles. All individuals who have title to land in a given project area, except those whose land has been completely flooded by reservoir impoundment, or given over to the construction of housing, irrigation offices, workshops

and staff quarters, are reallocated land in the projects. This ensures that farmers holding customary rights of occupancy in the project land do get a chance to benefit directly from the project.Those whose land is under dams or construction works are compensated and / or resettled. However, some problems may be encountered during reallocation, unless an accurate and reliable data base is available. It was the lack of a good data base which caused the Bakolori civil disturances over the redistribution of irrigation plots in 1980. Other problems that may arise include plot subdivision, farm fragmentation, frequent plot transfer and late cropping (see Falola and Orogun, 1988). These may consequently bring about poor yields.

1.5 LAND ALLOCATION IN IRRIGATION PROJECTS

In most irrigation projects there is an excess of demand over supply for irrigated plots. Frequently there is not even enough for the residents of villages whose lands have been lost to the project. As a result, priority is usually given to people displaced by the projects; application for plots from other farmers from the local community and migrants are considered only subsequently (Block 1986). But this criterion has not always been applied carefully. Consequently, displaced peasants are often edged out of these projects by absentee farmers (rich businessmen and top civil servants) and project officials (Block 1986). Apart from the above groups, Abba et. al. (1985) observe that the bulk of the land in some of these irrigation projects is worked by the projects themselves in a form of efficient estate farming.

Absentee farmers are often excluded from access to land in

irrigation schemes in various countries . One view holds that they are unlikely to do any of the farming themselves, being more likely to rent their plots and, in this way, make a profit without doing any work. An alternative view, however, maintains that this group which is better educated, and also more likely to possess capital or access to credit than other farmers, will be more receptive to innovation and cooperative efforts to make irrigation work (Phillips, 1986).

Policy objectives of irrigation projects normally dictate the category of farmers required. Projects aimed at cash crop production for export, or food production for the domestic market, require heavy capital outlay interms of farm machinary, improved seeds, fertilizers and other inputs, and so tend to favour big, rich farmers. The Gezira scheme in the sudan is one of such projects. Projects aimed at local self sufficiency on the other hand, deal largely with small farmers.

The existence of small, poor farmers in some projects is often threatened by the money charged as land fees, and the high cost of farming inputs. Such fees are beyond the reach of some farmers. In some cases, a number of poor farmers combine to rent a plot in order to spread the cost (see Falola and Orogun,1988). Some farmers are completely 'phased out' in the process of land allocation, and turned into agricultural labourers or 'forced' to migrate to urban centres in search of substitute employment opportunities.

1.6 OTHER DISADVANTAGES AND ADVANTAGES OF LARGE SCALE IRRIGATION PROJECTS

Large scale irrigation projects are generally costly, capital extensive and involve large foreign loans. They absorb a considerable budgetary allocation in many developing countries (see pages 3-5). The World Bank (1981), reports that recent irrigation projects in Niger, Manuritania and northern Nigeria all cost more than $10,000 per hectare at 1980 prices. A recent CILSS/Club du Sahel report(1980), states that the cost of irrigation development in the Sahel is running at between $ US 5,000 and $ US 20,000 per hectare. Variations can be found between and within countries (Table 1.4).

Table 1.4: Unit Cost of Irrigation Schemes in West Africa 1977-78 (Naira)

Country	Cost of complete Irrigation scheme Per hectare (Naira)
Liberia	250.00
Ivory Cost	500.00
Ghana	1,068.00
Nigeria Average.	2,470.00
Nigeria (Bakalori)	7,540.00

Source:Federal Republic of Nigeria (1981:13) in Abbe et. al (1985).

The cost of these projects has also increased continuously over the years. The contract value of the Bakolori Irrigation Project (Nigeria), for example, rose from N159 million in 1975 to N300 million in January 1980. The same is true for many other

irrigation projects in the country. Only a small fraction of the Nigerian population, probably less than two per cent, may directly benefit from the projects. The projects clearly posses the potential for creating severe rural inequality within and between districts.

Despite the huge sums of money which have been spent on irrigation projects in many developing countries, the performance of these projects has not been encouraging. In Nigeria, for example, and despite major expenditure on irrigation projects since the 1960s, they have failed to match expectations. The country is yet to become self sufficient, or even nearly so, in any of the irrigated crops produced on these projects. Also, the cost of producing some crops in these projects is far higher than their world market prices. Many writers believe that farming communities may well have responded satisfactorilly to the challenge of growing demand, as they have done in the past, especially if they had been supported by well-organised state provision of credit, fertilizer and seeds, rural roads and other infrustructure (Adams 1986, Wallace 1981).

The projects also lead to massive dislocation of peasants from their settlement and farmlands, to make way for dams and irrigation land. Some have either been reallocated land by the state or given monetary compensation; some move away through their own effort to where land is available; others have ceased farming, and taken up non-farming occupations like fishing and petty trading to survive (Main, 1988). The right of fishermen and herders to exploit river banks occupied by these projects is also largely eliminated. These groups traditionally co-existed with cultivators along most river banks.

Many of these relocatees are faced with a lot of harship. Their conditions of housing are often worse than previously, and their farm lands poorer. Most have lost their economic trees, and grazing and fishing grounds. Many are unable to generate as much income from their new land and settlement circumstances as they did from their previous circumstance (Kaduna State, 1980). Many peasants have felt strongly enough about the loss of their land and unfair compensation to resist, some to the point of losing their lives (Beckman 1984, Jega 1987).

The construction of dams for these projects has serious consequences on the population living down stream of the dams. The *fadama* lands, low lying flood lands in the lower basins used for dry season farming, are often cut off from the flow of river water necessary for their utilisation. Because of this large areas of fadama have been rendered useless for dry season farming. This has had a serious effect on the socio-economic life of the former fadama farmers, who no longer have adequate land to cultivate (Kaduna State 1980; Bird 1984).

There is a range of human diseases associated with irrigation development. Schistosomiasis, a debilitating uninary or intestinal disease affecting about 250 million people in developing countries, is commonly associated with impoundments and irrigation development (Harris 1980, in Barrow 1987). Shallow reservoirs, canals and water bodies in irrigated fields are potential breeding sites for mosquitoes which can transmit malaria, yellow fever and filarial infection. Blackfly, a transmitter of river blindness, may breed where weirs, spillways or channels oxygenate rapid-flowing water. Sleeping sickness,

caused by the tsetse-fly, may be a problem where reservoirs are built and the movement of people increases.

The more common physical impacts of irrigation development are salinization and water logging. Irrigation-caused salinization is wide spread. World-wide, there are probably about 91 million hectares of cultivated land which are irrigated; at least a third, possibly even half, is in very poor state or completely unproductive due to salinization (Barrow 1987). Korda (1983, in Barrow, 1987) estimated that about 1 to 1.5 million hectares of land are lost to agriculture through salinization annually. Related to salinization is water-logging and alkanization. The World Bank (1982) estimated that there were over eight million hectares of water logged soils in the Indus Basin, largely caused through irrigation.

Irrigated soils may suffer suffusion (washing out of soluble salts) which result in subsidence, and dehumification (decrease in humus content of soils) which may alter the soil nutrient status and structure. Another is seepage from reservoirs, canals, distribution channels and the irrigated land itself. The result can be marked rises in local or even regional water-tables. Sometimes, ground water contaminated by agro-chemicals salt or disease organisms from sewage effluent applied to irrigated fields (Bull, 1982). Chemicals can also affect humus and wildlife. Large irrigation projects may affect local climates by altering the albedo of the area cropped.

Some other benefits are associated with irrigation projects. Dams may be exploited for the provision of water supply for

towns, hydro-electric power generation, resevoir fisheries, recreation and wildlife conservation. Reservoirs may control floods and lower river levels sufficiently, to allow areas of swamp land to be drained and farmed. For example, considerable areas downstream of Volta Dam have been reclaimed for arable cultivation. Many dams could also support pump irrigation of lands around their margin.

1.7 AIM AND OBJECTIVES OF THE STUDY

The customary land tenure principles of any society represent the equilibrium between the society's social structure and land (Lunging, 1965). But in some irrigation projects, the customary land tenure systems are being replaced entirely with new land tenure policies, which may not necessarily be in keeping with the custom and tradition of the people. Introduction of new land tenure arrangements in an area can bring about changes in land use patterns and the relationship of a farmer to his land. This will in turn, initiate changes in the market value of land, as well as in land ownership and distribution (Wallace, 1980). Palmer-Jones (1984) has observed that the introduction of new land tenure structures, combined with some other factors like faulty design of irrigation works, inappropriate economic incentives given to participants and insensitive or incompetent management, have all contributed to the uneven performance of irrigation projects. Some of these projects have failed completely (Riddell, 1986), many have performed below standard (Wallace, 1979), while some have been modestly successful for at least a few years (Philips, 1986).

It is in the light of the above that this project proposes to investigate land tenure issues in and around the Tomas River Project (TRP). The project is one of the large-scale irrigation scheme in the country, in which land was expropriated from peasants and reallocated, after preparation, on seasonal tenancies with no guarantee of renewal, and on recommended allotment sizes ranging from 0.8 ha. to 2.0 hectares.

The aim of the research is to identify changes in man-land relationship in and around the TRP, which have been initiated directly and indirectly by the latter's existence; to assess the desirability or otherwise of such changes; and to suggest appropriate measures for better project performance.

This study therefore has the following specific objectives:

i) To identify some problems related to land tenure on the project.

ii) To show the different manifestations of these issues on the land and people of the project area.

iii) To study the impact of the project's land policy on customary land tenure arrangements in areas surrounding the project.

iv) To propose measures and recommendations that will help in resolving land tenure problems raised in the project area .

CHAPTER TWO

THE STUDY AREA

2.1 LOCATION AND EXTENT

The Tomas River Project is located in Dambatta Local Government Area of Kano State, about 12-15 km south-east of Dambatta Town. It lies roughly between latitudes 12^0 41' N and 12^0 29' N, and longitudes 8^0 31' and 8^0 39'E (Fig. 2.1). It covers a total area of about 2097 hectares, some 1497 hectares of which have been flooded by the Tomas Dam Reservoir; the remainder (600 hectares) constitutes the project's irrigable land (Fig. 2.2A and 2.2B). The present study covers not only the project Area proper, but also the area adjacent to it.

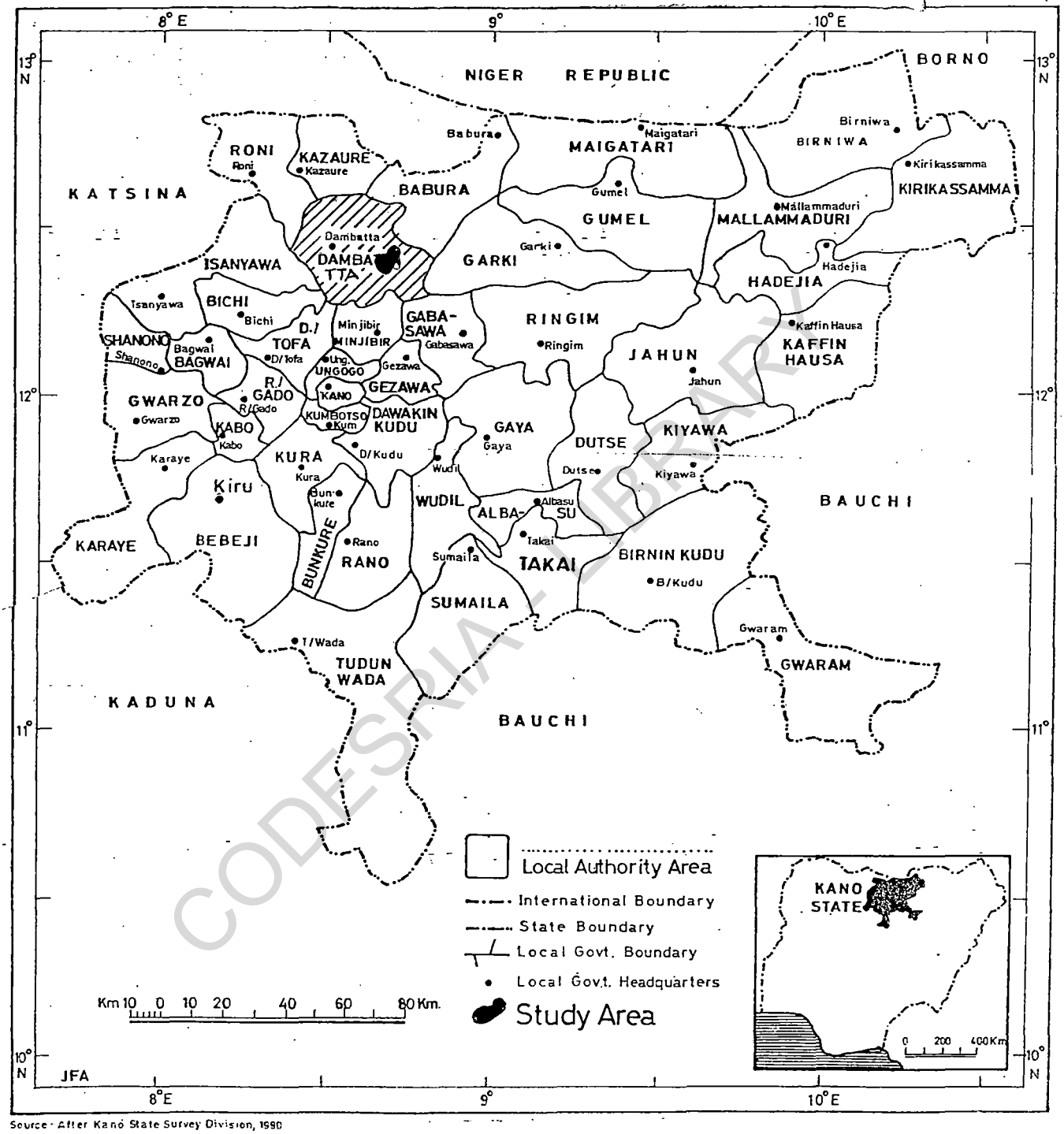
2.2 PHYSICIAL ENVIRONMENT

2.2.1 Physiography

The study area lies in the north western part of the Kano Region, and is entirely underlain by basement complex of pre-cambrian age which consists of igneous and metamorphic rocks, these include granites, granitised sandstones, migmatites, gnesses, philites etc. Overlying these rocks is a stratum of decomposed rock of varying depth; in some places there is wind drift composed of a mixture of loessic and dune sand material (Daniel, 1985).

The area lies on a relatively flat lowland plain which is slightly over 1500 meters above sea level. The central part of the Project

FIG. 2·1 : MAP OF KANO STATE SHOWING THE STUDY AREA



Source: After Kano State Survey Division, 1990

FIG. 2·2a : TOMAS DAM AND ENVIRONS

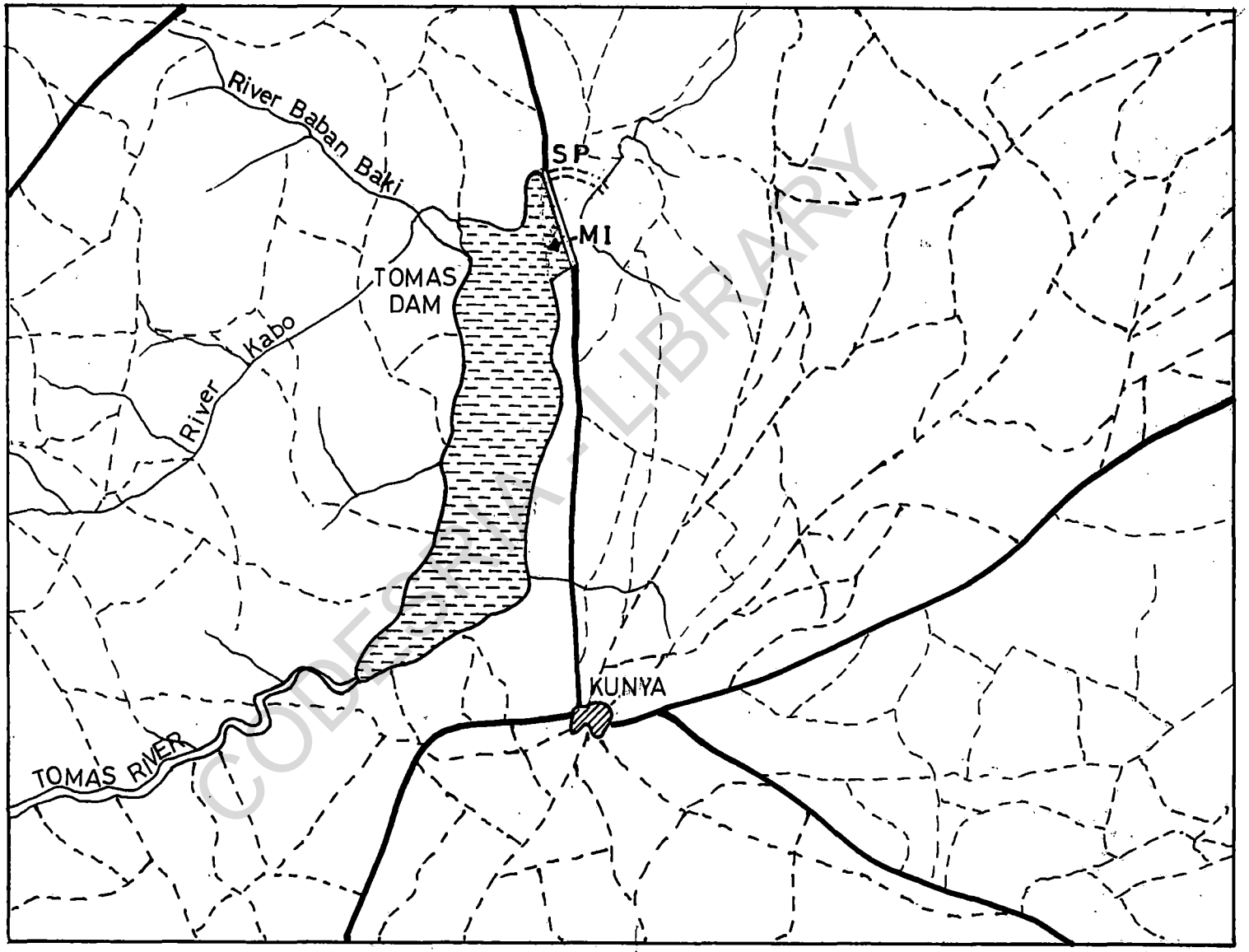
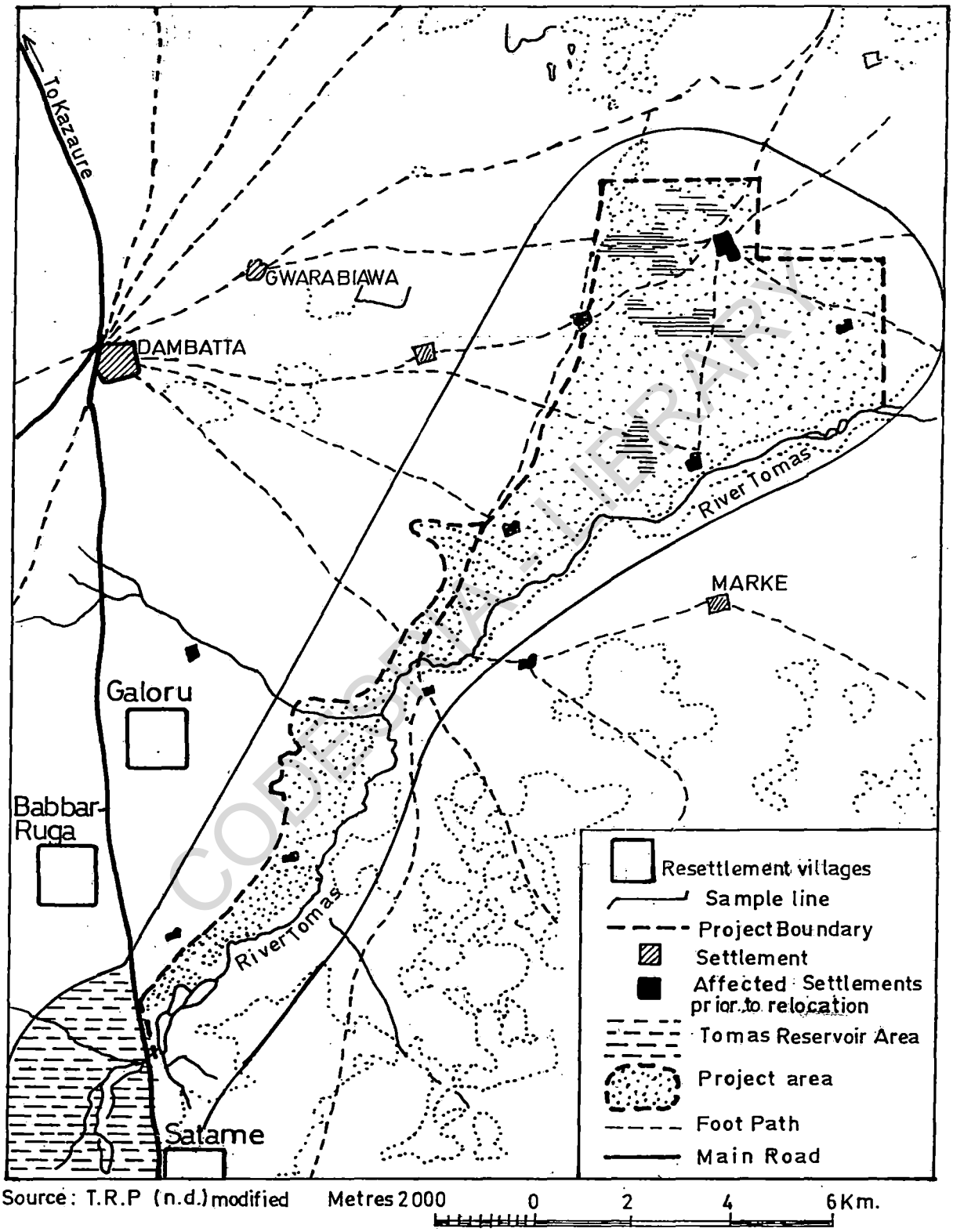


FIG. 2·2b : MAP OF TOMAS RIVER PROJECT AREA



Source: T.R.P (n.d.) modified Metres 2000 0 2 4 6 Km.

Area can be broadly categorised into upper and lower terraces (Fig. 2.3). The upper terrace is a slightly undulating plain which slopes gently towards the bank of the old Tomas River bed. The surface of this terrace is nearly level, with slight irregular micro relief features. Two shallow streams flowing eastward to join the Tomas River cut across the terrace. These two streams and the Tomas River are the major drainage channels in the Study Area. The upper terrace is borded by an extensive and relatively flat plain.

The meandering flood plain of the Tomas River Channel constitutes the lower terrace which is presently the area under gravity irrigation.

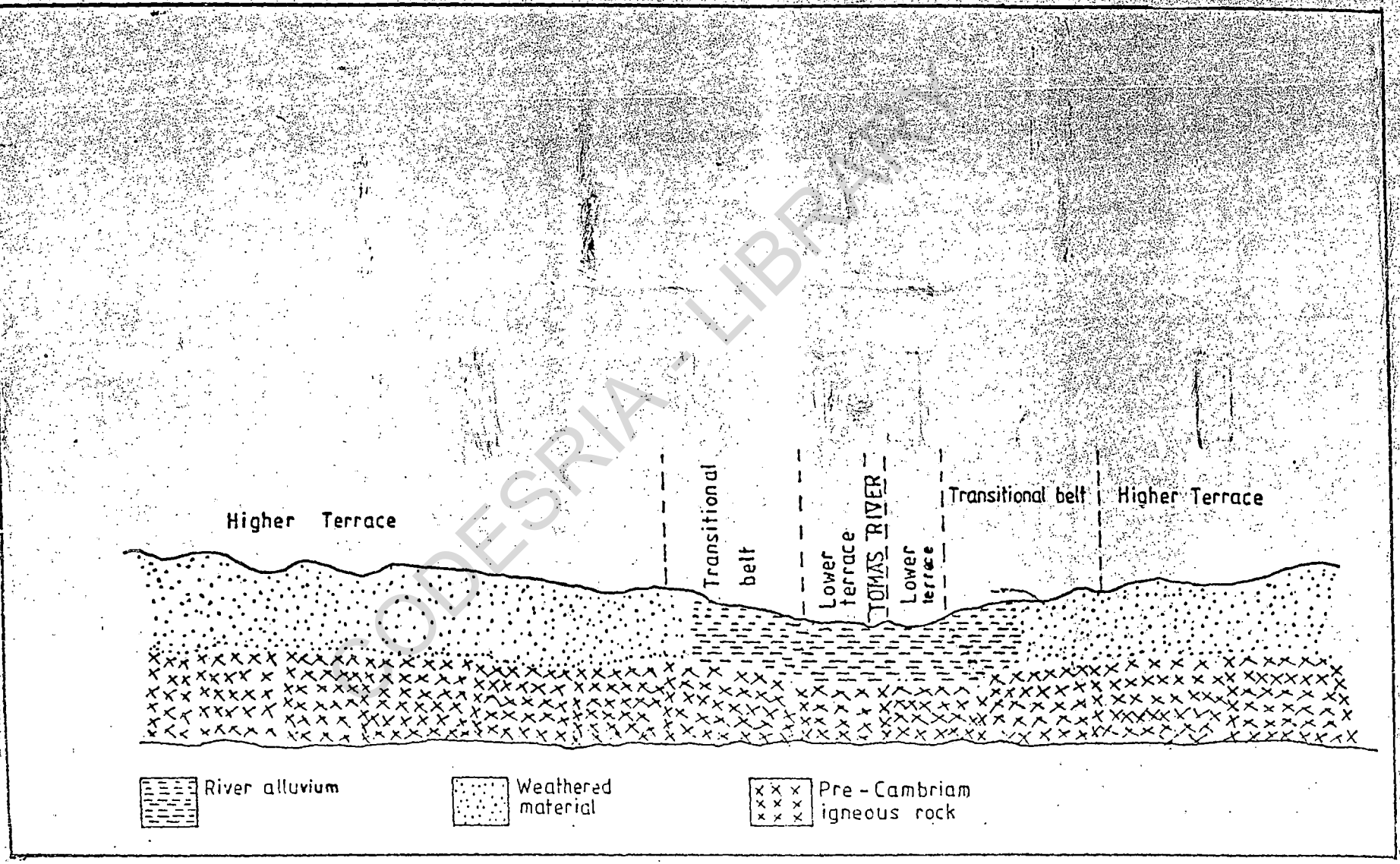
A transitional belt separates the upper terrace from the lower terrace. It slopes gently towards the old river bed and is characterised by slight irregular micro relief.

2.2.2 Climate

As is the case with all parts of northern Nigeria, the Study Area falls climatically under the influence of two alternating wind systems: the rain bearing South-East moonsoon winds (Tropical Maritime Air masses) and the dry dusty North-East trade winds (Tropical Continental Air masses). The area experiences distinct wet and dry seasons.

The dry season lasts from October to April, while the wet season commences in April or May and continues till September, with a unimodal peak in August. After August a relatively rapid decline of the rains sets in (Table 2.1).

Figure 2.3 A SKETCH CROSS PROFILE OF TRP AREA



Adapted and modified from Daniel, 1985

Table 2.1 Summary of Average Rainfall by Month (1967-76) Dambatta Station.

Month	Average RF in inches	Number of Years with Record Available
March	0.0(0.0)*	5
April	0.3(7.6)*	4
May	2.6(66)*	5
June	4.6(116.8)*	6
July	6.7(170.2)*	6
August	7.5(190.5)*	7
September	3.8(96.5)*	6
October	0.7(17.8)*	5

Note ( )* = Average Rainfall in millimeters.

Source: Kano State Statistical Yearbook, 1977 : 8.

The area lies within the Sudan Savannah zone which is characterised by an average annual total rainfall of 500-900 mm. The mean yearly precipation in the study area is around 838mm. There is considerable annual variation in the amount, duration and distribution of rainfall in the area. Of even greater concern is the irregularity of the rains at the beginning and end of the rainy season. The annual rainfall index (Percentage variation from the long-term mean annual rainfall of the rains for a particular year) for the Kano area varies from a minimum of about 50 to a maximum of 139 (ACE, u.d.). The length of the rainy season for Kano State ranges from an average of 95 days in the north to 150 days in the South (Kano State Integrated Rural Development Authority, 1979), a decrease of one day for every 5.5 km. as one moves northward (Kowal and Knabe, 1972).The number of rainy days varies from year to year (Table 2.2.)

Table 2.2: Number of Rainy Days at Kano Airport

(1961-76 average and Annual values, 1977-1981)

Month	Number of Rainy Days					
	1961-76 (average)	1977	1978	1979	1980	1981
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	0	0	0	0
April	1	0	1	0	0	3
May	6	3	7	6	9	5
June	9	10	10	13	10	5
July	13	6	21	14	14	14
August	15	20	15	16	18	10
September	8	5	6	9	3	8
October	2	3	2	2	2	0
November	0	0	0	0	0	0
December	6	0	0	0	0	0
Amount Total	53	47	62	60	56	45

Note: Kano Airport lies on the same latitude as the Study Area.

Source: Kano State Statistical Yearbook, 1981 : 12.

The area has a peak of high temperature before and after the rainy season. It has an average annual temperature of about 26^{0}C. The average minimum falls to about 21^{0}C around December- February, while the maximum is recorded around April-May (averaging about 38^{0}C with midday temperatures exceeding 40^{0}C) (ACE,u.d.) Temperature does not hinder plant growth in the area. However, the short growing season, and limited and unstable rainfall place considerable restriction on the types of crops that can be grown.

Drought is a recurrent phenomenon in the area. Constraints imposed by climate on agriculture have played a large part in the establishment of the Tomas River project, one of whose objectives is to provide water for dry season irrigation.

2.3 POPULATION

2.3.1 Size and Density

Precise population figures for the study area are hard to come by. Therefore figures for Dambatta Local Government Area, within which the Study Area is located, are used in describing population characteristics. According to the 1963 census, the population of Dambatta LGA was 187, 357. Official estimates (which are of projections based on an assumed annual growth rate of 2.5%), puts the Local Government's 1986 population at 326,000 (Table 2.3).

Table 2.3 Dambatta Local Government: Area, Census Population (1963), Projected Pop.(1981,1984 & 1991) and Population Density.

Year	Area(Sq. Km.)	Population	Density(Sq. Km.)
1963	1,720	187,357	109
1981	"	286,000	166
1984	"	309,000	180
1991	"	371,000	216

Source: Kano State Statistical Yearbook, 1981: 40.

The majority of the people are found in rural areas; less than 10 percent lives in urban areas.

According to the 1963 Census figures, Dambatta LGA had an average population density of about 109 persons per square kilometer. The estimated populations for 1981 and 1991 imply densities of about 166 and 216 persons respectively. However above-average densities are found around Dambatta Town and along the Tomas River Valley where intensive agricultural activities are found.

3.2.2 Ethnicity / Composition

The population of the study area is comprised of two major ethnic groups- Hausa and Fulani. The two groups have lived together and intermarried for generations. Fulanis make up about 70% of the population. About 99 % of the population is muslim by faith. Most of the Hausas are farmers living in nucleated settlements, ranging from hamlets of a few dozen people to small towns with several hundred inhabitants. Most adult males also practise one or more secondary occupations. Male adults also contribute the largest portion, about 70 per cent, of farm labour (Norman et. al. 1976) . Farming is organised largely on the basis of simple rather than composite (gandu) farmily units.

The Fulani on the otherhand are engaged primarily in rearing cattle, goats and sheep. Fulanis constitute the traditional political and religious elite. Most Fulanis maintain permanent homes, mostly in scattered compounds or small nucleated settlements. Some are, however, seasonal or trashumant pastoralists. Although the Fulanis depend largely on income derived from their livestock, some are actively engaged in farming. A reduction in the amount of grazing land, and the menace of livestock diseases such as rinderpest, tuberculosis, and anthrax have forced an increasing number of Fulanis to take up farming in recent times.

A small number of immigrant families, mostly government employees, are found in the area.

2.4 ECONOMY

Crop cultivation and livestock herding form the main economic base of the people. During the rainy season, most male adults and children engage in farming. Secondary occupations dominate dry season activity, particularly in the upper plain areas. However, localised dry season fadama cultivation has traditionally been practised in the seasonally flooded area along the Tomas River. Irrigation agriculture has expanded and now takes place in an extensive area around the Tomas Reservoir. It provides increased local dry season employment.

In addition to farming, most people have other secondary occupations which they pursue, particularly in the dry season when they are less occupied with farming. One of these is craft activity such as weaving, leather works, black smithing, mat making, house building and tailoring. Others engage in collection of valuable forest products like firewood, fishing, hunting, thatching grass and edible fruits. Other secondary occupations include petty trading, butchering, and barbing. Islamic scholars and students constitute another occupation group (few individuals however practice this occupation on a full-time basis). Men who do not have any marketable skill engage in wage labour, carrying water, etc., or doing farm work. Others migrate during the dry season to urban and extra - local areas, where they hire themselves out as labourers. Such dry season migration is known in Hausa as *cin-rani*.

Although economic activities appear to be completely in the hands of men, women, despite being confined to purdah, maintain important and independent budgets. They are active in commodity trading, the preparation and sale of various kinds of cooked food, craft industries and ownership of animals (Hill, 1969).

2.5 PRE-PROJECT LANDUSE PATTERN

Prior to the establishment of the TRP, land use in the area was dominated by farming and grazing. Most of the higher plains constituted upland fields which were used for rainfed forming. A limited portion was used for grazing. Fadama areas on the lower terrace supported crops throughout the year. Here, small scale dry season farming using either residual soil moisture or irrigation by shaduf and shallow wells, was practiced. This system still exists in some parts of the Project Area around the reservoir. Farming was done using traditional implements like hoes, cutlasses and knives.

Lower value crops such as millet, sorghum, maize, groundnuts and cowpeas are grown on the upland fields. The fadama was devoted to more labour intensive but higher value per acre crops such as rice, sugercane, and vegetables like tomatoes, pepper, onions, and water melon.

Some of the crops, like rice and sugercane, were grown in monocultures, while others (millet, Sorghum and cowpeas) were grown in mixtures. The potentially harmful shading effect of the tall dense stands of sugarcane, for example, means that it cannot be intercropped. Rice is often not planted in rows; weeding, cultivation, and harvesting would, therefore be difficult if other

crops are intercropped with it. On the other hand, millet is grown together with cowpeas, because millet is harvested in the middle of, or before the end of the growing season. Also, millet is commonly grown with sorghum as it matures early, and thus complements the growth cycle of the long-season sorghum (Norman et al., 1979). It also has a rooting habit which complements that of Sorghum (Andrews 1972, 1974).

During the pre-project era, rotational bush fallowing on the upland fields was practised, but increasing population numbers had put a stop to it long before the project was started. Studies have shown that in similar savanna areas, fallow land virtually disappears at population densities of about 200 persons per square mile (77 persons per square Kilometre) (Norman et.al.,1976). With the disappearance of fallow, intensificaton in the form of increased input of organic manure or chemical fertilizers, became the dominant means of maintaining soil fertility.

2.6 PRE- PROJECT LAND TENURE

The land tenure system embodies those legal and contractual or customary arrangements where people in farming gain access to productive opportunities on the land (Dorner, 1972). It constitutes the rules and procedures governing the rights, duties, liberties and exposures of individuals and groups in the use and control over the basic resources of land and water. Land tenure systems evolve in response to the need for food and shelter, and to protect the sovereignty of village lands in a way preferred by the dominant elements in a particular society. Each society has its own land tenure system which is adapted to a particular environment and a

particular way of life. These systems are not static. Changes may be caused by factors internal to society, or may be externally induced. Crocombe (1968) observes that the origin of any land tenure system lies far in the past, and as the system is transmitted from one generation to another, it is modified, sometimes a little, sometimes a lot, to meet changes in environment, population, economy and political organisation.

Land tenure in Northern Nigeria is constantly changing. Prior to the Fulani Jihad of 1804, land tenure arrangements were undocumented and the system varied from one area to another. This system was generally referred to as communal, and emphasized collective ownership of land. Occupiers were granted cultivation rights over their holdings by the head of a group. Retention of such rights depended on continued cultivation of the land. Should the land be left fallow for too long, it would revert to the community. Alienation or disposition through sale was not allowed. Women occupied a subordinate role and were rarely bestowed with the rights of ownership of land.

The first intervention in the land tenure system in Northern Nigeria came about with the establishement of the Sokoto Caliphate and the subsequent introduction of Islamic Law in parts of the Region. The law subjected all land to the control of the *Sultan*, and gave individual members of the society absolute right of possession over the land they were using. Lands of conquered territories were parcelled into estates, and given as fiefs to influential local leaders and members of the emir's court. These fief holders enjoyed jurisdictional sovereignty over their domain. Parcelling was, among other things, meant to facilitate the collection of tribute, and to aid

the administration of the caliphate in general. Fief holders did not themselves work land. They were mostly absentee landholders who lived in cities and engaged emissaries to oversee their interests. The peasant was left to till his land, and appeared for all practical purposes, to own it. He was however requested to pay taxes on both land and crops, usually in kind (Muhtar 1989). The Law recognised rights to full ownership of land, including the right to private ownership and inheritance, as well as the right to alienate land or dispose of it. It also conferred on females, the right to inherit land, the proportion of which was however smaller than that of males.

At the advent of colonial rule (1902), the British declared all lands in Northern Nigeria public land. The entitlement to land in each village was based on communal usufructary rights, with chiefs having purely administrative control over vacant lands. Shortly after this declaration, the Land and Native Rights proclamation Act (1910) which was later amended and became the Land and Native Right Ordinance (1916) was enacted. This Law vested powers of land disposal in the state. It conferred upon government absolute control and ownership of land in the territory, subject to disposition by the governor, who would however give due regard to native laws and customs existing in the district where such land is situated (Protectorate of Northern Nigeria, 1910, in Muhtar 1989). In effect, the Law, while preserving customary rights of the people, also introduced the concept of nationalisation, which enabled the Colonial Government to determine the form in which these rights might be developed in order to meet future needs (Meek 1957).

The colonial law however did not succeed in making any meaningful impact on the customary land tenure system. The position of the

Northern Nigerian peasant in relation to land remained unaffected throughout the colonial period. "The law remained a dead letter so far as native occupiers were concerned they were unaware that it had declared their titles to be invalid unless granted under a Certificate of Occupancy by the Governor (Lugard 1965 : 292).

After independence in 1962, the Northern Nigerian Government modified the colonial land law, passing the Land Tenure Law which was subsequently amended in 1963. One of the major declarations of the Law, like its predecessor, was that "all land in Northern Nigeria is under the control and subject to the disposition of the Governor and is to be held and administered by the Minister charged with the responsibility for land matters, for the use and common benefit of all Natives of Northern Nigeria" (Northern Nigeria 1963). The Law sought to continue with the legacy of traditional tenure and communal land ownership. Consequently, two types of titles to native land were recognised: customary rights of occupancy administered by traditional authority, and statutory right of occupancy administered by the State Government. Customary rights of occupancy were those held by a local community or indigenous members of a community occupying land according to local law and custom. The statutory right was a right of occupancy granted by the Minister, and evidenced by a Certificate of Occupancy, which may be on prescribed terms, and for a period of up to 99 years. In the case of customary occupation of land, the Minister may relinquish his authority to local administrators such as emirs, district heads or village heads. The Law categorically prohibited landholders under customary tenure from transferring land by any commercial means or reassigning land to non-indigenes without the consent of the Minister.

Section (34) of the Land Tenure Law (1962), empowers the Minister to revoke rights of occupancy for good cause: alienation of the land by the occupier without due approval, or land required by the Government of Northern Nigeria or a Native Authority in Northern Nigeria for public purposes. In the later case compensation, may be paid to the landholder, but only for 'unexhausted improvements' on the land, and for the inconvenience caused by his ejection. Subsequent developments in Nigeria have led to further modification at the Land Tenure Law, and its eventual replacement by the Land Use Act of 1978. The Act is a mere replica of the 1962 Law.

The Land Use Act of 1978 vests control over land to the relevant State Governors, who, with local governments in rural areas, are empowered to recognise and grant Rights of Occupancy. These Rights of Occupancy can either be customary or statutory. Customary Rights of Occupancy confer exclusive possession for an indeterminate term and are inheritable. Statutory Rights of Occupancy are registered with the appropriate authority (state or local governments, depending upon whether it is urban or rural land). They are held on leases (99 years in many cases) for which a minimal ground rent is paid. Land can not be expropriated, except according to the provisions of the Act. Only State Governors (and in rural areas Local Governments) are authorised under the Act to revoke (i.e. compulsorily extinguish) private rights in land. Federal Government agencies cannot do this without authorisation from the State Governor, and following such authorisation must adopt the procedures laid down in the Act with regard to compensation. When such Rights of Occupancy have been revoked, either alternative equivalent land has to be given to the former right holders, or

compensation becomes payable under Section 29 of the Act. In principle compensatio is for "unexhausted improvements", that is "any thing attached to the land clearly resulting from expenditure of capital on land by an occupier . . . and improving the productive capacity".

Despite the provisions of the pre-colonial and post-colonial land laws regarding commercial transactions in land held under customary tenure, new forms of communal access, some commercial in nature, had emerged prior to the TRP. These included trust, pledge, lease and sharecropping (Cole 1952, Mortimore 1967, Hill 1972). The adoption of these modes of land transfer led to the gradual replacement of communal forms of access by private property rights. Rowling (1949), writing on Kano Province, noted that "though in theory illegal, the sale of rights (in land) is known by every one to be universal and common" (pp.49). Writing on six villages in Katsina Province, Luning (1965), documented a large increase in the frequency of commercial transfers. In the villages surveyed, 25% of the fields where purchased, 9% loaned and 2% each, pledged and leased (cited in Muhtar, 1989).

Other aspects of land tenure changes relate to rising costs of land acquisition over time. It was reported, for example, that the average purchase price per acre of land in various parts of Katsina District doubled every five years between 1925 and 1960 (Luning 1961). Cases of commercial transaction were so common in the Region that Ega, in a study of four villages in Zaria and Ikara Local Government Areas (Kaduna State) conducted in late 1970's, concluded that " there was no communal control over the alienation of holdings to which individuals have permanent title . . .

individualization has became an acceptable principle of 'customary tenure' inspite of restraining legislations" (Ega 1984 : 96-7).

Perhaps the most important factors which have contributed to the transformation of customary land tenure in Hausaland have been population growth, urbanisation, commercialization of agriculture, and changes in environmental quality. Population growth and urbanisation often place growing pressure on land, leading to land scarcity and increased land values. Expansion of commercial agricultural production has been a very powerful influence on land tenure evolution, creating a demand for large tracts of land and encouraging the development of a monetary value over farmland. Factors like the growth of communication and greater accesibility in the region which have facilitated commercial agriculture, increased government participation in the improvement of the agricultural production techniques (via irrigation schemes and World Bank assisted Agricultural Development programmes), have also accelerated the process of individualization of land ownership.

2.7 TOMAS RIVER PROJECT

2.7.1 Brief Description

The Tomas River Project was first proposed in 1968 during the reconnaisance survey by the United States Department of the Interior which examined the prospect for irrigation development in the Chad Basin Complex. It is part of the Kano State Government's agricultural and rural development programme under the Second National Development Plan (1970-74). A more detailed feasibility study into irrigation development in the area was undertaken by the Associated Consulting Engineers Limited in early 1970's.

Tomas Dam, the major source of water for the Project was built in 1975 by a road construction firm handling the construction of the Federal highway linking Kano and Daura. The firm, in agreement with Kano State Government, built the dam instead of an ordinary bridge at the point where the highway crossed the Tomas River.

The major goal of the project is to improve the welfare of the prople in the area through increased productivity of the land. Other objectives include production of wheat and other food crops; rural development and modernisation and, drought relief. The project is also aimed at encouraging equity among local peasants, through restricting the upper limit on size of holding per farmer to 2 hectares (5 acres). This is designed to check the concentration of land in a few hands.

The dam is an earthen dam with a stone rip ramp on its upstream face and grass and laterite protection downstream. The spillway is on the left bank of the dam, with an intake tower in the middle of the dam. The capacity of the dam is nearly 150 cusecs. The reservoir has a surface area of about 1,497 hectares and a total storage capacity of about 60.3 m^3 million, with a dead storage capacity of about 3.7 m^3 million. The reservoir was estimated to be capable of supplying water for the development of nearly 4,000 hectares of land for irrigated agriculture. Furthermore, with the control of the river, most of the area downstream has been reclaimed. Additional agricultural production is also expected to be achieved on the periphery of the reservoir using reservoir water for irrigation in the dry season, and the land made available by the reservoir's receding waters for flood retreat cultivation. The reservoir is also capable of encouraging and sustaining fish

production, and providing water for livestock and domestic uses in the area.

Almost all the proposed land area for irrigated agriculture lie on the left bank of the Tomas River basin (see Fig. 2.2B) and is meant for gravity irrigation; some sandy or uneven areas are earmarked for sprinkler irrigation. Manual, semi-automatic, and fully automatic sprinklers were to be installed at sprinkler sites. The favoured automatic sprinkler is a 2 centre pivot system of the Ranger 7 type with a capacity of 100 hectares (250 acres); the semi-automatic type is a 2 Dolphin irrigator with a capacity for irrigating 20 hectares(50 acres); the manual or conventional type is capable of irrigating up to 40 hectares (100 acres). The main irrigation canal runs along the left bank of the proposed irrigable area. It is concrete lined with a capacity of 130 cusecs.

Out of a total proposed irrigation area of about 4000 hectares, some 600 hectares (1500 acres) were to be expropriated from local landholders and brought under the direct control of the TRP management. Land in the rest of the project Area was to be left under the control of the original owners. These different areas are referred to respectively as Project Land and Farmers Land in the rest of the thesis. Project land is divided into irrigation and grazing fields. Irrigation fields cover about 560 hectares(1400 acres) and are located near the dam; grazing fields occupy the remaining 40 hectares(100 acres).

The project was to be completed in seven years starting from April 1975, at a cost of thirty million naira (N30 million). About 2000 hectares of land for gravity irrigation were scheduled to be in use

before 1980, while the remaning 2000 hectares were to be developed between 1980 and 1982. With the total Project Area in full use, it was estimated that about 10,000 tonnes of food and cash crops would be produced annually from dry season farming alone.

However, the project has still not been completed, due largely to financial constraints. The programme schedule has been revised several times by the Government. So far, the dam and its spillway have been completed. About 5030 meters of the main canal, and nearly 100 houses for Senior and Junior Staff with offices, stores and workshops have been completed. About 560 hectares of Project Land has been developed for irrigation; 40 hectares are under gravity irrigation, while the rest is being irrigated by sprinkler systems. The remaining 40 hectares of Project Land have been set aside for grazing. In additon, some 160 hectares of farmers' Land have also been provided with irrigation facilities. However, with the recent emphasis on wheat production in the country, more land is being prepared for irrigation.

Between 1984 and 1987, dry season farming was halted due to lack of sufficient water for irrigation. In April 1986, for example, the volume of water in the dam was 9.30 m^3 mill., spread over a surface area of about 558 hectares. For the three years up to 1987, the volume of water was far below the 'Dead Storage capacity', of the Dam. However, the heavy rains of 1988 increased the volume of water in the dam, and dry season irrigation has since resumed.

2.7.2 Relocation of Affected People

Tomas River Project has resulted in the displacement and relocation

of about 665 farmers (Table 2.4). Compensation was paid for most of the affected farmlands by the Water Resources Engineering and Construction Agency (WRECA) and the Ministry of Agriculture and Natural Resources (MANR).

Table 2.4 Farmers Affected by TRP

Village	Number of farmers Displaced.
Galoru	186
Babbar Ruga	60
Wango	40
Maitsidau	20
Bakarari	27
Tangaji	93
Kaukai	46
Wailare	113
Satame	80
Total	665

Source: Field work, 1989.

WRECA was responsible for the payment of compensation to the farmers affected by the Tomas Dam Reservoir. Compensation was paid in cash for buildings, economic trees, and farmlands. In a few cases, land in government forest reserves was allocated to farmers as substitute for their lost farmlands. The affected farmers in Satame, for example, were resettled some 3 km. east of their former settlement, along the Kano-Dambatta road, where they were provided with residential plots. They were allocated farmland about a kilometre east of the resettlement site in a government forest reserve.

Those from Babbar Ruga were moved to the west of their former settlement, but were resettled within their old village Area. The farmers from Bakarari and Tangaji, lost both houses and farmland, but were not resettled and were not paid any form of compensation. The villagers had to make private arrangements for resettlement. Some of them moved to Dambatta town while others moved to areas as far away as Falgore. Only a few of them remained within their former villages. In the villages of Maitsidau, Wango, Kaukai and Wailari only farmlands were lost to the Project, but no provision was made either for resettling the affected population or for compensating them.

MANR was responsible for resettling and compensating those people affected by land acquisition for the Project farm, and the construction of the main canal, offices, and residential quarters of the project staff. All affected people here were from Galoru Village Area. They were paid compensation in cash for farmlands at the rate of N625 per hectare (N250 per acre). In addition, a resettlement site was provided at Danmarke in a forest reserve. The farmers were allocated residential plots, but were left to make arrangements for the construction of their houses and the acquisition of farmland on their own. Facilities, including a primary school,a dispensary, a market and pipeborne water, were provided at the resettlement site. (Fig.2.2b shows the location of the new resettlement Villages).

In general, both the residential land and farmland provided, and the cash compensation paid to farmers were grossly inadequate. Moreover, not all the affected people received compensation or substitute land for residential and farming purposes. Many were not paid compensation for their farmlands, especially those whose

houses and farmlands were submerged by the reservoir water. Such people had to move on their own without receiving any compensation.

Many of the displaced villagers complain that their new farmlands are agriculturally unproductive. There is also the problem of shortage of grazing land in the area because inadequate provision was made for this purpose. For these reasons, displaced farmers formed village associations which are designed to protect farmers rights and press for preferential treatment in the allocation of plots in the project.

2.7.3 Project Land Administration and Local Participation

Ownership of project land is vested in the government. After preparation, the land is broken up into smallholding allotments. Individual farmers who wish to utilize and benefit from the resources of the project, are offered a tenancy for one growing season, with no guarantee of renewal. Those who are lucky enough to be allocated plots on the project for longer than a season, have no assurance of retaining the same plot for the duration of their tenancy.

Allocation of plots is done twice a year, once each for dry season irrigation and rainfed farming. When there is insufficient water in the dam for irrigation, allocation is restricted to plots for rainfed farming. The order of priority during plot allocation is as follows: people displaced by the project, followed by farmers from other parts of Dambatta Local Government Area, other Kano State indigenes, and, finally, Nigerians from other states.

The minimum recommended allotment size is 0.8 hectares (2 acres); the maximum is 2 hectares (5 acres). The total amount of money involved in acquisition and development of a hectare of land is N21.50, with the following breakdown: N12.50 for land fees, N5 for harrowing and N4 for ridging. Charges are usually set at the beginning of every planting season.

According to project regulations, management enforces what is planted, so as to avoid the cultivation of crops which jeopardise the timely preparation of land for dry season cropping. Thus the planting of sorghum which is a late-maturing rainfed crop is discouraged. Farmers can lose their tenancy if they contravene project rules.

Farm preparation is mechanised, while manual labour is used for planting and harvesting. Farm implements used include tractors, hoes, shovels etc. Burning of grass during farm clearing is not allowed, although there are isolated cases of farmers burning small heaps of refuse and waste on their plots. Mulching is practiced for the protection of the soil from erosion. Chemical fertilizers like NPK, Urea and CAN are in frequent use. Organic fertilizer (farm yard manure and household refuse) is also often used, although not as much, or as frequently, as in the pre-project era.

Farm plots are arragned in basins, except where sprinklers are used. In the latter case ridges and furrows are preferred. Basins allow water retention, effective infiltration and the prevention of erosion from overflow. Also, the direction of water flow from one basin to another can be controlled. Average size of each basin is 16 square meters. Farms are irrigated once a week, although differences exist in the amount of water supplied to the areas under the two

irrigation systems. In areas under gravity irrigation, the amount of water supplied is controlled by the farmers, while in areas irrigated by sprinkler, water control is achieved through the manipulation of pressure gauges in pump houses, and the adjustable nozzles of the sprinkers.

Irrigation facilities have been extended to farmland areas outside the Project Area, but which are located along the main canal. The project assists farmers here in obtaining machinery for land preparation, it also supplies these farmers inputs like seeds and fertilizer at controlled prices. The farmers are in turn encouraged to plant only wheat on their irrigated fields. The only obligation that the farmers owe to the management is the payment of water charges. Presently such Farmers Land under irrigation is about 120 hectares (300 acres).

CHAPTER THREE

METHODOLOGY

3.1 PRE-FIELD WORK

This was the preliminary stage for the research. It included library research and a review of the existing literature; problem identification; the development of objectives; identification of hypotheses; research proposal design and reconnaisance survey.

3.2 RESEARCH DESIGN

The study was concieved and designed after a thorough search and critical review of the existing literature on large scale irrigation projects. It is based on the premise that the establishment of projects involving the expropriation of land by government creates problems for the populations occupying such affected areas. The establishment of such projects also increases pressure on land in areas adjacent to these projects, thereby inducing changes in the existing land tenure systems.Furthermore, land policies introduced as part of such projects are largely disadvantageous to affected people.

It is against this background that the Tomas River Project, one such project, was selected for close study, with the aim of giving an objective account of some of these issues within the context of a specific project.

Data were collected for two growing seasons, one wet and the other dry.

3.3. DEFINING THE STUDY POPULATION.

The study population was made up of three categories of respondents:

1. people who lost land to the TRP.
2. owners of farmland adjacent to the Project Area.
3. tenants of TRP, irrespective of whether they had been displaced or not.

3.4. DATA COLLECTION.

Data were collected during structured and informal interviews with farmers, community leaders and project staff. In addition, some information was obtained from project plot allocation records as well as from personal observation.

Three farmer questionnaires were used. The first (Questionnaire Ia) was administered to the displaced farmers who participate in project activities. Information was sought on how they used project land and the problems they encounter under the new arrangement. The second (Questionnaire Ib) was administered to displaced farmers who have never participated in project activities. Here, an attempt was made to find out (a) why such farmers do not take part in project activities, (b) the location of their present farms (if any), and (c) other effects of the existence of the project on their economic life. The last questionnaire (Questionnaire Ic) was administered to farmers around the Project Area. This was aimed at getting more information on the customary land tenure in the area, and the changes introduced into the system as a result of project activities.

The three questionnaires were tested and revised in the field (Appendix 1a, b, & c). Efforts were made to verify some of the information provided by the respondents.

Informal interviews were used to obtain information from the management Staff of the TRP and some key public figures like village heads, wardheads, and elders from the affected villages. Management staff were asked to supply information on land tenure issues in the area (particularly issues arising from insecurity of tenure and from non-compliance with management regulations) and to suggest measures that could be employed to ease the situation. More information as regards the customary land tenure was solicited from key public figures. Questionnaires for the management staff and, the key public figures are presented as Appendices II and III).

Further information on plot allocation and socio-economic characterisitcs of project farmers was sought from supplementary sources such as official project records and documents. Plot records for the 1988/89 dry season (November 1988 to March 1989) and 1989 wet growing seasons (April to September) were used.

Effort was also made to interview some of the tenants who were not among the displaced farmers, to find out if there is any major difference in their use of land or in their treatment by management, compared to the displaced tenants.

Data were collected between October 1988 and Sepember 1989. It was accomplished by the researcher with the aid of two research assistants who worked separately. Interviews were conducted in Hausa, and each interview lasted, on the average, about 20 minutes.

3.5 SAMPLE SELECTION

The list of farmers affected by the Project was used in the selection of the sample respondents for questionnaires Ia and Ib. Since the population of the area is relatively homogeneous in terms of its socio-economic base, a broad stratification based on the nature of displacement was adopted. The affected villages were grouped into two, according to whether they were displaced by MANR or WRECA (see section 2.7.2). Goloru Village Area located east of the dam was the only village in the first group and was therefore adopted as one of the sample villages. The other eight villages fell in the second category. These villages are further stratified, based on their location in relation to the Project Area. One village each was selected to the north (Babbar Ruga), West (Tangaji) and South (Satome) of the Project Area. Informal interviews were conducted with the farmers in the villages which fell outside the village sample.

Using plot allocation records and information obtained during discussions with villagers, lists of displaced farmers who have participated in project activities, and those who have never participated in project activities were drawn up for each of the sample villages. A sample of 75 present and past project farmers spread over the four villages was then selected for interview in a random fashion (Table 3.1). Thirty respondents were selected from Goloru village area because it has the largest number of affected population (186 persons). Their number represent about 28 percent of the total or 58 percent of the affected population in the four sample villages. Fifteen respondents were selected from each of the

remaining sample villages who all have between 60 to 93 affected farmers. The sample of 75 represents about 11% of the total number of affected farmers in all the villages. Actual sampling proceeded in the following way. The names of affected farmers were compiled and each name was allocated a number. A random table was then used to draw the sample. Simple random sampling was employed in preference to other probabilistic selection procedures, because the list of the affected people was available. Another group of 15 respondents among tenants from other areas outside the Project Area, two of whom were women, were also randomly selected for the interwiew.

Table 3.1 Total Sample Among Displaced Farmers

		Sample Distribution	
Village	No. of Farmers Affected	Project Farmers	Non - Project Farmers**
Galoru	186	30(34)*	8
Babbar Ruga	60	15(18)*	12
Tangaji	93	15(16)*	9
Satame	80	15(15)*	6
TOTAL	319	75(83)*	35

Source: Field work 1989.

*Number in village currently on the Project.

**Those who never participated in project activities.

Almost all (32 or 91%) available respondents of the second group of respondents (farmers who have not participated in project activites), were interviewed. These farmers make up about five per cent of the total displaced population.

The third group of respondents (owners of farmland around the Project Area) was drawn in a systematic manner. Walking along the 'sample line' identified on Fig. 2.2b (stating on the north edge of the embankment), the owner or operator of every eighth plot was interviewed. If the target farmer was not available or had already been interviewed as a project farmer, the owner of the next plot was interviewed instead. A total of 47 interviews were successfully completed in this way in the nine affected villages.

Thirty seven local leaders and elders were also interviewed, with atleast one local leader and elder from each of the affected villages. The conversations with this group provided a wealth of incidental data and an invaluable means of clarifying numerous subjects pertaining to changes in land tenue and problems of farming in the area. On the side of the management staff, seven people were interviewed: including the Project Manager, the Farm Manager, two Supervisors and three field staff.

3.6 DATA ANALYSIS

Frequency, diagrams, tables and charts were used in the analysis and interpretation of the results.

3.7 LIMITATIONS OF DATA.

Problems were encountered at various stages of the research. First were problems associated with sample selection. Project records are

incomplete. The lists used as a basis for sampling were therefore compiled from various sources. The reliability of these various sources could not always be established or verified.

A lot of problems were encountered during questionnaire administration. The major one related to difficulty in locating respondent farmers. Some were located only after several visits. Respondents who were out of town were substituted by owners of farmlands next to theirs. There were also problems of non-response from some respondents, although these were solved after consultation with such respondents. Communication difficulties posed problems too. Some of the questions could not be easily translated into Hausa. It is likely that some respondents may have had doubts about the 'real' meaning of questions and tailored their replies accordingly. To minimise these problems efforts were made to explain the 'real' meaning of words and sentences to the respondents. In addition, problems of memory recall were encountered; farm sizes and the exact nature and characteristics of previous land transactions were the most 'difficult' things to remember. Respondents were encouraged to think before responding to questions asked.

Perception of the purpose of the research by the study population may have affected responses. Some farmers linked the research to the government, creating 'courtesy bias' (Jones, 1963) and causing respondents to exaggerate or distort some of the information they provide. This was particularly evident among displaced farmers, who thought that the research was sponsored by government for purposes of providing compensation or assistance to them. Efforts were made to explain that the research had nothing to do with government.

Finally, there were some problems encountered in interviewing project officials and some village heads. They were careful and selective in the information they provided. They had to be assured that whatever they said would be treated in strict confidence, and that strenuous efforts would be made in presenting balanced and objective accounts of research findings.

CHAPTER FOUR

LAND TENURE ISSUES IN TRP

At the time of the introduction of the TRP, farmers owned and decided how the land in the area was to be used, and for what purpose. The change in the status of farmers from land owners to tenants, and the subsequent reduction in the total land area available for use by farmers (although double cropping is possible in some parts, over 70% of the land is lost to permanent works and the reservoir), raises major tenurial issues.

Those addressed in this chapter relate to: plot holder selection, security of tenure, size of holding and use of the rented plots. The shortfall in plot supply and its impact on project land administration are also examined. The discussion of these issues is preceded by a comparison of pattern of land distribution among affected farmers before and after the establishment of the project.

4.1 LAND DISTRIBUTION BEFORE AND AFTER TRP

The average size of farms in the area before TRP was 1.1 hectares (2.6 acres) and each household head controlled on the average about 3.9 plots.[1] The loss of an estimated total land area of about 2100 hectares to TRP (560 ha. to irrigation, 40 ha. to grazing and 1500 ha. to the Tomas Reservoir) has adversely affected land holdings. In the nine villages directly affected by the TRP(see Table 2.4), some

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1. Detailed Discussion on size and distribution of land holdings is presented in chapter 5.

farmers lost all their farms, others retained reduced portions of farms, and a few did not lose anything. Table 4.1 shows the total number of plots lost to TRP and what was retained in the four sample villages. On the average about 76% of farms were lost ranging from 56% in Satame to 85% in Galoru. Although, overall, 86% of all farms acquired were upland and the rest (14%) fadama, Galoru and Satame farmers lost a disproportionate number of fadama farms to the reservoir (87% and 82%, respectively).

Table 4.1 TRP Land Acquisition by Village.

Village Area	% no. of farms lost (upland)	% no. of farms lost (fadama)
Galoru	85	87
Babbar Ruga	72	47
Tangaji	54	68
Satame	78	82
Overall Average	75	73

Source : Field work 1989.

Many affected farmers tried to buy farms elsewhere, both in and outside their village areas. However, land in this section of the Close-settled zone (KCZ) was already in short supply prior to the TRP. In a feasibility report by NEDECO for the Kano River Project Phase I located in another section of the KCZ, it was remarked that compensation rate for the displaced should be increased because of the 'fact that farmers are assumed to be no longer able to find free, suitable land nearby in the project area'(in Wallace,1979 : 47). In another report, this time on phase II of the same project, it was pointed out that new land acquisition could not be readilly made

within the locality, while the bulk of those made (92%) were under temporary tenure (lease/loan and pledge) (NAPC, 1978). As a result of land shortage, affected farmers in the TRP could not adequately replace farmland lost to the project. In the fifteen years between 1975 and 1989, only 57% (number of plots) of lost farmland could be replaced, with the proportion of replacement plots acquired ranging from 23% (Maitsidau) to 36% (Galoru). Most of the plots bought were very small and expensive. The bulk (42%) of farming is done on *ard* land which can be reclaimed by their owners at any time.

Farmland ownership among affected farmers for the years 1975 and 1989, both in the post-TRP period, are compared with reported ownership in the period before the establishment of the TRP in Table 4.2. There was a 50% decrease in the number of landless farmers between 1975 and 1989. The number of farmers controlling 40 to 100% of their original plots, on the other hand, increased by 72%. A few farmers (2%) controlled more farmland than what they owned before the establishment of TRP.

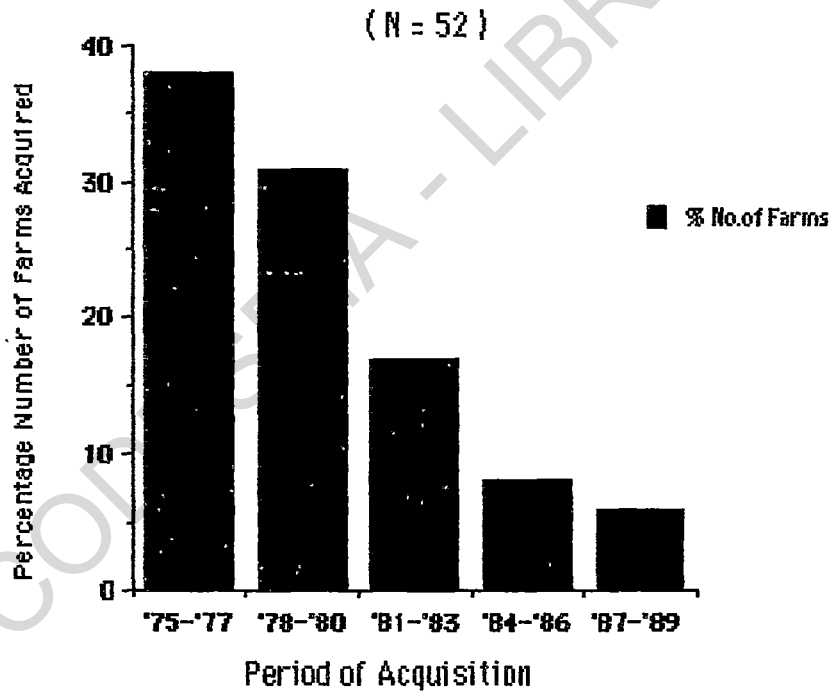
Table 4.2 Farmland Ownership After TRP

Degree of Dispossesion (%)	Percent Number of Farmers	
	1975	1989
100	6	3
99 - 60	76	64
59 - 30	12	22
29 - 00	2	9
Not Dispossesed	0	2

Source : Field work 1989.

Figure 4.1 shows the pattern of increase in the number of farms controlled by displaced farmers between 1975 and 1989. The highest rate of increase was recorded between 1975 and 1977, since when a decline set in. Most of the acquisitions between 1975 and 1977 were made by farmers displaced to make way for the Tomas Reservoir, who had to move after the completion of the dam in 1975. Later acquisitions between 1978 and 1980 were dominated by farmers who were more gradually displaced, as wider areas were irrigated.

Figure 4.1 Acquisition of New Farms After the Establishment of TRP



Recorded changes in farm size for the period 1975-89 shows the following: out of a total of 121 plots, about 74% did not change size; eighteen were reduced to between 20% and 50% of their original size, and another ten by more than 50%; two plots increased in size by 30 and 75%, respectively. Recorded decreases are caused by plot subdivision through inheritance and sale.

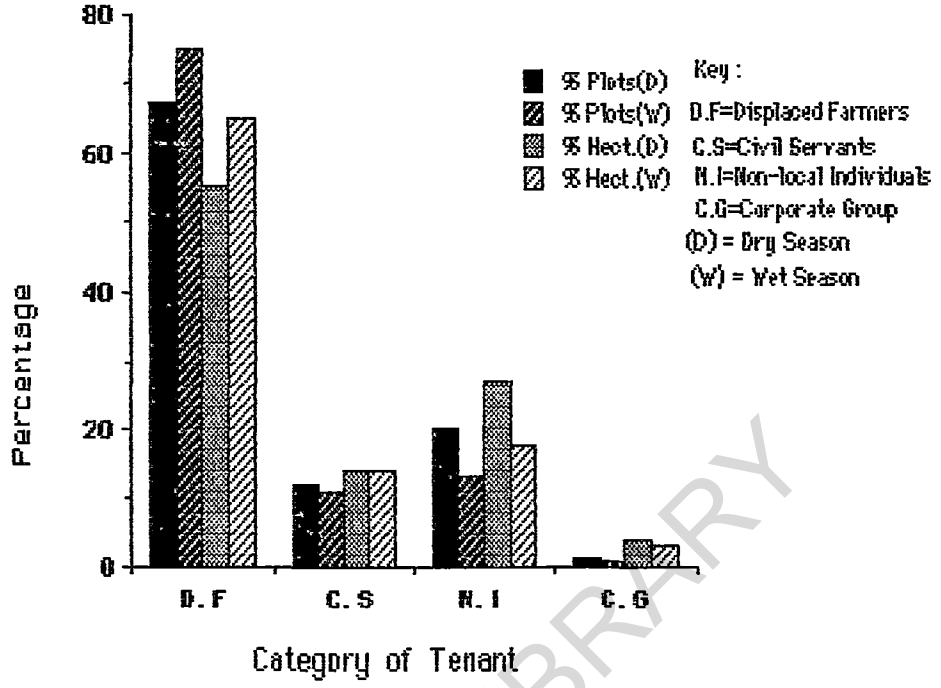
4.2 DEMAND FOR LAND IN TRP

Demand for agricultural land resources is influenced by many factors, most importantly population totals. "Increase in population always suggests increasing need for agricultural land since every new birth means a new mouth to feed..."(Barlowe 1972 :1). The area of land needed to meet these needs varies from place to place, and variation with land productivity, level of technological development and the consumption and buying habits of people. Better quality land is used before marginal and poorer grade land. For purposes of cropping, fadama is considered of greater value than upland. Farmlands which can be improved through irrigation are also highly rated for cropping. Thus the TRP receives a large number of applications for irrigable plots every year, at the beginning of each growing season.

4.2.1 Demand by Category of Prospective Tenant

Tenants in the TRP can be categorised into four groups:'displaced farmers', civil servants(local and those from Kano), individuals from outside the project area and 'corporate bodies' (including companies, organisations, and associations). As Figure 4.2 shows, overall, the majority of prospective farmers, for both dry and wet season plots were displaced farmers who are also accorded high priority during plot allocation. Although displaced farmers accounted for 71% of the total number of applicants, the hectarage they have requested represents only 60% of the total hectarage demanded by all categories of applicants. The table also shows a slight seasonal variation in the number of applications received from the group of displaced farmers, probably due to the high operational expenses involved in dry season farming (only wheat was planted) and seasonal migration of some farmers to urban centres for jobs in the dry season.

Figure 4.2 Demand by Category of Tenant and Number of Plot/Hectarage



Source : Field work 1989.

The breakdown of displaced farmer applicants (Table 4.3) shows that all the villages affected by land acquisition for the TRP were represented, with Galoru and Bakarari providing the highest and lowest number of applicants, respectively. In three of the villages(Bakarari, Tangaji and Kaukai), the number of applicants for dry season plots was higher than that for wet season plots. In Wango the same number of applicants were recorded for both wet and dry season plots.

The second largest group of prospective tenants were from outside the project area, excluding civil servants. This group constitutes about 17% of the applicants (20% and 13.3% for dry and wet season requests respectively). A higher number of dry season requests were recorded among this group, because almost all of them own farmlands in their respective villages which they cultivate during the wet season. Members of the group include full-time farmers (from the

local community), non full-time farmers from the local community, and other people from elsewhere largely merchants and petty contractors from Dambatta and urban Kano. The full time farmers account for about 69% of the composition of this group.

Table 4.3 Demand by Village Areas

Village	% of Displaced Applicants		
	Dry	Wet	Total
Galoru	30	31	30
Babbar Ruga	9.5	10	10
Wango	6	6	6
Maitsidau	3	4	3
Bakarari	4	3	3
Tangaji	11.5	11	11
Kaukai	6	4	6
Wailari	17	17	17
Satame	13	14	13
Total	100	100	100
n =	543	562	1105

Source : Field work 1989.

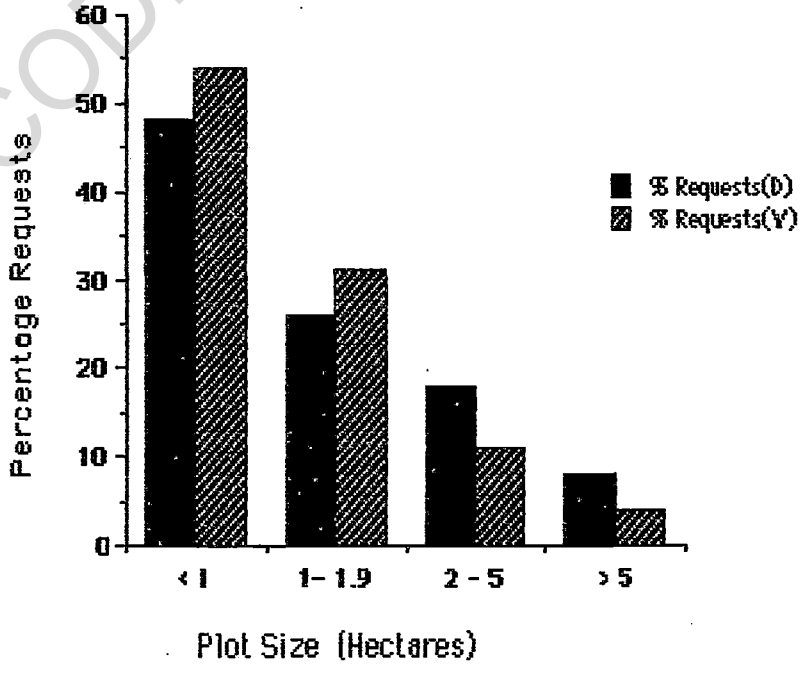
Civil Servants constitute about 12% of prospective tenants in the TRP. They include officials of the Dambatta Local Government Area, employees of Federal and the State establishments in the Local Government Headquarters and State capital. Officials of the State's Ministry of Agriculture and other related establishments, many of whom were directly involved in the management of the project, constitute about 72% of this category of applicants.

Apart from individuals, corporate bodies (organisations, companies and associations) also apply for plots in the TRP. During the 1987-89 farming seasons, three companies applied for plots in the dry season and two in the wet season, all of them agro-allied establishments based in urban Kano. The only religious organisation which requested for plot was also based in Kano town. Requests from these organisations were for both dry and wet season plots. Applications for plots were also received from five local youth associations, who together requested 3% of the total hecterage applied for. Individual members of these associations also applied separately for plots.

4.2.2 Demand by Size of Plot

The size of plots demanded by tenants in the TRP ranged from 0.25 ha. to 37.5 ha. Figure 4.3 shows that 48% of the requests for dry season plots and 54% of that for wet season plots fall below one hectare.

Figure 4.3 Demand by Size of Plots



Source : Field work 1989.

Some 91% of all requests came from displaced farmers (71%) and the other farmers (20%) who farm largely for subsistence. These two groups accounted for most of the requests for plots of between one hectare and two hectares in size. The few who applied for larger plots did so to meet the food needs of large families or to produce for sale.

The majority of civil servants (54%) requested plots ranging in size from 2 ha. to 5 ha.; 27% requested smaller plots, 8% larger plots, and the rest (11%) did not indicate the sizes required. All but one of the requests from the corporate bodies group was for plots of between 5 ha. and above. The exception, a youth association, applied for only 4 hectares.

The size of plot demanded was related to wealth or influence of the applicant. The richer and the more influential applicants request larger plots than the poorer and less influential ones. Of all the displaced farmers who applied for irrigated plots, only four asked for 5 ha. or more. All four of the applicants have either capital or influential connections or both. (This was discovered during discussions with the farmers).

Many of the applicants who failed to indicate the sizes of plots needed did so because they were not expecting allocation above the minimum range of 0.1 to 0.4 hectares. None of the prospective tenants applied for more than one plot.

4.2.3 Demand by Type of Land (Dry Season)

Irrigable plots in the TRP can be categorised into those which can be irrigated under gravity and those which are served by sprinkler

irrigation. Most farmers prefer allocations in the gravity irrigation sites where water availability is adequate. However, the area is extremely limited in extent (40 ha. or 6.7% of the total irrigable area). Allocation in the area was restricted mostly to a few largely influential applicants. (This was discovered during the field work). As this is common knowledge, site preference was not indicated by more than 90% of all applicants. Of those who did express a preference, 70 people or 93% requested for plots in the gravity- fed site (Table 4.4). The sprinkler site was associated with inefficient watering schedules which often resulted in crops experiencing moisture stress.

Table 4.4 Site Preferences Among Applicants for Dry season Plots in the TRP

Category of Tenant	Type of Land Preferred (%)	
	Gravity-Fed	Sprinkler-Irrigated
Displaced Farmers	100	00
Civil Servants	91	09
Other people outside TRP	100	00
Corporate Bodies	67	33

Source : Field work 1989.

In addition to the information in the table above it was noted that the single largest group of prospective tenants who indicated a site preference was that made up of civil servants ((57% of total). Some 21% of displaced farmers and 17% of 'other farmers' also indicated site preference.

The few applicants who showed any interest in the sprinkler site, did

so only to enhance their chances of securing allocations in the project area. During the wet season, site differences are not important as farming is largely rainfed.

4.3 ALLOCATION OF LAND IN TRP

Plot allocation procedure in the TRP aims at preventing the concentration of land in the hands of farmers other than those whose lands were acquired by the project. The highest allocation priority is given to displaced farmers, followed by other people from the local community, and, finally, people from outside the project area and its immediate environs.

4.3.1 Allocation by Category of Tenant

Of the four major groups of prospective tenants in the TRP, displaced farmers constitute the largest group by number of allotees, representing more than 50% of the total number of tenants. Table 4.5 shows that the group formed about 56% and 58% of the tenants for dry and wet season plots, respectively. However, allocations to this category of farmers represented only one third of total allocations by area.

When the tenants drawn from the displaced farmers were grouped according to their village of origin (Table 4.6), it was found that 34% were from Galoru, 18% from Babbar Ruga and 2% from Bakarari.

Table 4.5 Plot Allocation by Category of Tenant and Total Hectarage

Category of Tenant	% Number of Tenants			% Hectarage		
	Dry Season	Wet Season	Total	Dry Season	Wet Season	Total
Displaced Farmers	56	58.4	57	31	38	34
Civil Servants	25	27.9	27	38	39	39
Other people outside TRP	17	13.2	15	15	16	16
Corporate Bodies	02	0.5	01	16	07	11
Total	100	100	100	100	100	100
n =	169	197	366	299	301	600

Source : Field work 1989.

Table 4.6 Plot Allocation by Village of Origin of Allocatees

Village	Percentage Number of Allocations		
	Dry Season	Wet Season	Total
Galoru	36	32	34
Babbar Ruga	17	19	18
Wango	06	04	05
Maitsidau	10	12	11
Bakarari	03	02	02
Tangaji	05	02	03
Kaukai	04	04	04
Wailari	06	09	08
Satame	13	16	14
Total	100	100	100
n =	95	115	210

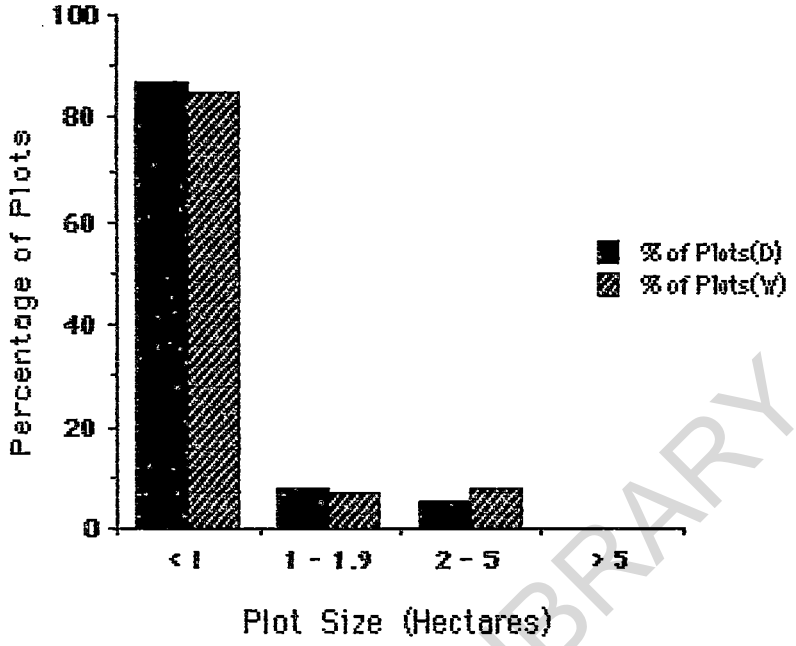
Source : Field work 1989.

Although civil servant tenants represented only one quarter of all tenants, they controlled some two-fifths of the total area allocated. Many of them (79%) were officials from the Kano State Ministry of Agriculture and other related establishments. Other farmers from outside the TRP constituted about 15% of the tenant population and controlled an area of land proportionate to their numerical strength (16%). The corporate bodies group which accounted for only 1% of all applications, was allocated about 11% of the total land area. With one exeption, there were no significant differences in allocation patterns and distributions between wet and dry seasons for the different groups of allotees. The exception was the total hectarage allocated to the corporate group 16% and 7% for wet and dry seasons,respectively. The corporate group is more interested in wheat farming.

4.3.2 Allocation by Size of Plot

The range of plot sizes was 0.1 -5 hectares. Figure 4.3 shows that over 86% of all plots in the area are less than one hectare. Of those 12%, were less than 0.4 ha.; 41% between 0.4 and 0.8 ha., and the remaining 47%, between 0.81 and 0.99 hectares. About 97% of the plots allocated to displaced farmers; 76% of those allocated to 'other farmers', and 54% of allocations to civil servants; all fall below one hectare. The number of plots of 1 ha. to 1.9 ha. in size, and those from 2 - 5 ha., represented about 7 % each of the total. Those controlling these plots were mostly influential locals, rich people and top civil servants. None of the allocations made to the corporate group was below two hectares.

Figure 4.4 Distribution of Plots by Size in TRP



4.3.3 Allocation of Plots by Site of Land

Due to the problems associated with sprinkler sites, particularly the supply of irrigation water, most farmers prefer to be allocated plots in the gravity-fed site. However, the limited extent of the land under gravity irrigation meant that most of the allocations made were located in the sprinkler site. Table 4.7 shows the composition of tenants in the two sites. Displaced farmers constitute about two-thirds of those in the sprinkler site, but only two-fifths of those in the gravity site. Civil servants, on the other hand, represented just one-fifth of the tenant population in the sprinkler site, but about two-fifth of those in the gravity area. This group has the largest number of influential tenants. The other two groups of tenants, those from outside TRP and the corporate bodies, were almost equally represented in each of the two sites. Among the 'other tenants' group most of those allocated plots in the gravity site were the influential or well to do in the community.

Table 4.7 Allocation of Plots by Category of Tenant and Site of Land

Category of Tenant	Percentage of Plots	
	Gravity Site	Sprinkler Site
Displaced Farmers	42	62
Civil Servants	38	20
Other people outside TRP	18	16
Corporate Bodies	02	02
Total	100	100
n =	50	119

Source : Field work 1989.

4.4 DIFFERENCE BETWEEN DEMAND AND SUPPLY OF PLOTS IN THE TRP

In TRP, just like many other such projects, there is an excess of demand for irrigated plots. There were not even enough plots to meet just the demand from villagers whose land was acquired for the project.

4.4.1 Demand and Supply by Category of Tenant

There was a wide gap between plot demand and supply in the TRP. Table 4.8 shows that only about a quarter of the total demand for plots was met. It further reveals that out of four tenant groups, only civil servants were able to get up to half of their total demand. The group of displaced farmers and that of farmers from outside the TRP, each got only about a fifth of their total demand.

Table 4.8 Plot Demand and Supply by Number and Category of Tenant

Category of Tenant	Numberof Plots Demanded (a)	Numberof Plots Supplied (b)	(b) as % of (a)
Displaced Farmers	1105	210	19
Civil Servants	180	98	54
Other people outside TRP	268	54	20
Corporate Bodies	12	4	33
Total	1565	366	23

Source : Field work 1989.

Differences also exist in the total hectarage demanded and that supplied. In Table 4.9 it can be seen that the proportion of area supplied to each of the groups of displaced farmers and other farmers from outside TRP , was proportionately less than the area demanded by them. The other groups on the other hand got proportionately more than they applied for. Although displaced farmers were responsible for 60% of total hectarage requested, they were allocated only 34% of the total hectarage distributed. The Civil servants on the other hand, requested about 14% of the total area applied for, but were allocated about 39% of the hectarage distributed.

Table 4.9 Plot Demand and Supply by Area of Land and Category of Tenant

Category of Tenant	% Demand	% Supply	Proportional Difference
Displaced Farmers	60	34	- 26
Civil Servants	14	39	+ 25
Other people outside TRP	23	16	- 7
Corporate Bodies	03	11	+ 8
Total	100	100	-
n =	1411	243	-

The breakdown of demand and supply schedules for the affected villages (Table 4.10) shows that with the exception of Maitsidau village, none of the villages got more than a third of the number ofplots applied for. Walari applicants obtained only 8% of the number of plots they applied for.

Table 4.10 Demand and Supply by Number of Plots and Village Area.

Village Area	Number of Plots/Tenants		
	Demand (a)	Supply (b)	(b) as % of (a)
Galoru	334	71	21
Babbar Ruga	110	38	34
Wango	70	11	16
Maitsidau	38	23	60
Bakarari	36	05	14
Tangaji	123	07	06
Kaukai	61	09	15
Wailari	188	16	08
Satame	145	30	11
Total	1105	210	19

Source : Field work 1989.

A comparison of demand and supply of plots of the 75 farmers in our sample revealed a pattern similar to that discovered in the allocation records (Table 4.11). The table shows that the area supplied represents only about a quarter of the total demanded and 13% of the area lost. Total area demanded was also 41% less than the area lost.

Table 4.11 Demand and Supply of Plots in Four Villages (n = 75)

Village	Sample Size	Area Lost (in ha.) (a)	Area Demanded (in ha.) (b)	Land Supplied (in ha.) (c)	(c) as % of (b)
Galoru	30	127	59.4	15	25
Babbar Ruga	15	42.5	23.5	06	25.5
Tangaji	15	54	27	04.6	17
Satame	15	47.8	29	05	17
Total	75	231	136	36.6	27

Source : Field work 1989.

An examination of the total demand by sample farmers shows that 85% of requests were for allocations of less than one hectare; 11% were for allocations of between one and 4 hectares; and 4% for allocations larger than 4 hectares. The schedule of actual allocations shows, on the other hand, that 90% of all allocations were less than one hectare in size; 7% were between one and 1.99 hectares, and the remaining 3% between two and 4 hectares.

Of the 75 farmers interviewed, only five were satisfied with their allocations (they had all secured allocations in excess of one hectare). The remaining Seventy needed more: to meet farmily needs (86%) and farm for cash (14%). None of the tenants got more than the size of plot applied for. Three of the tenants were discovered to have possesed one extra plot each, all acquired un-officially from other tenants.

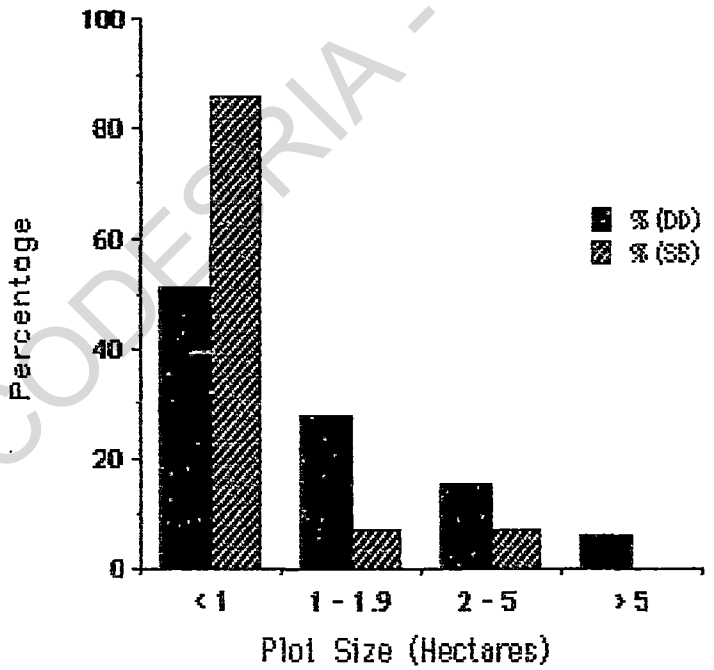
4.4.2 Demand and Supply by Size of Plot

Figure 4.5 compares the sizes of plots demanded and the sizes of those supplied. Although only half of all requests fall below one

hectare, more than four-fifth of total allocation were less than one hectare in size. Over 90% of the requests for plots within this size range came from displaced farmers and other farmers outside TRP; over 95% of the total allocations to these groups are less than one hectare in size.

Demand for plots of between 1 and 5 hectares represented about 43% of total requests, but actual allocations accounted for only 14% overall. Forty seven applicants (6%) requested for plots of more than 5 hectares in size. There were no allocations which were larger than 5 hectares in size.

Figure 4.5 Demand and Supply of Plots in TRP by Size



4.5 TENANCY-RELATED PROBLEMS

4.5.1 Security of Access and Length of Tenancy

Tenancy in the TRP is characterised by insecurity. Allotees have no guarantee that their tenancy will be renewed, or that they will be

allocated the same plot more than once. Tenants therefore lack the incentive to improve the land, or even simply to prevent its deterioration. Land improvement may include good soil management, or the use of inputs such as fertilizers, farmyard manure, seeds, insecticides or herbicides. Many writers have observed that insecure tenancy may lead to soil impoverishment (Verhelst 1970, Udo 1975, Whittemore 1981).

Between 1979 and 1989, there were sixteen different plot allocation exercises on the TRP. Out of a total of 90 sample tenants interviewed, 3% had been allocated land only once over this period; about 50% had been allocated land 2-5 times; about one-third reported 6-10 individual allocations; and the remaining 11% between 11 and 16 allocations (Table 4.12).

Table 4.12 Access to Farm Plots in the TRP

Number of Allocations (1979 - 1989)	Percentage of Tenants		
	Displaced	Others	Total
1	0	20	3
2 - 5	62	13	54
6 - 10	27	53	31
11 - 16	11	13	11
Total	100	100	100
n =	75	15	90

Source : Field work 1989.

Breakdown of allocations by tenants category shows that the majority of displaced farmers had been allocated land no more thanfive times. In contrast, ten out of the fifteen tenants from outside the TRP had benefitted from allocations on more than six occasions.

As already indicated above, tenants who are lucky to remain in the project for longer than a year have no gurantee of farming the same piece of land for the length of their tenancy. Only 16% of the tenants on record had been beneficiaries of three consecutive plot allocations; over 70% of these were never allocated the same plot twice in succession. Most of the people who serve out long tenancies on the same plots were either project officials or important personalities in the community. Short seasonal leases are considered unsatisfactory by the majority of tenants (68%) who are of the view that the tenancy period should be extended to allow for longer term investment in the land. About 40% of sampled respondents suggest that the length of tenancy should be fixed at between three and five years; 25% suggest tenancy of five to seven years; and 3% suggest a ten year tenancy. Thirty-two percent of respondents consider the present arrangement satisfactory. Farmers displaced to make way for the project were almost unanimous in advocating tenancies of three years and longer. They maintain that longer tenancies will enable farmers to make medium-to-long term investments in land (use of organic manure and investments in mordern machinery). People who support seasonal allocations agree that it allows a larger number of people to participate in project activities than would otherwise be the case. An applicant who fails to secure an allocation in one season only has to wait till the following season to reapply.

As a result of the tenancy arrangements in the TRP, many tenants have only a short-term interest in the land. They use the land for maximum returns, and do not employ management practices which enhance long term productivity. For example, tenants refuse to apply organic manure on rented plots because they do not have any guarantee of continued access to those plots to reap the benefits of such an investment, which may last for 2-3 years.

Another problem arising from insecurity of tenure is that which relates to capital generation for farming. Land held by tenants can not be used as collateral to obtain loans. Some tenants hold that lack of capital is one of the major problems affecting their farming activities. Some displaced farmers lacked enough capital for effective participation in TRP activities. In one case, a 0.4 hectare plot allocated to a single farmer had to be shared-cropped, because the allotee could not raise, on his own, enough money to cover management charges due to the TRP. Some farmers also could not operate on schedule, or with adequate imput, because of a shortage of capital.

4.5.2 Restrictions on Land Transfer and Plot Sub-division

The transfer of TRP plots between tenants is considered a breach of the agreement between tenant and management, and may lead to exclusion of guilty tenants from subsequent allocations. However, contrary to this rule, seven incidences of plot transfers were recorded, all of them involving displaced farmers. Six of these transfers took place immediately following allocation, while one occurred towards the harvest period. Some prospective tenants acquire plots at the controlled rate of about twenty naira (N20) per ha., only to sub-let them to other people at higher 'commercial' or 'black market' prices. The prices are between three and six times higher than official rents, depending on the season and location of plots. Highest prices were charged for dry season plots, and in the gravity-fed sites.

Two out of the six transfers made immediately after allocation were done for monetary gain; one, because the tenant did not like the

location of the plots (in sprinkler site); two were between relatives, and the remaining one was made because the original tenant lacked the financial resources needed to farm the plot.

Price and weather fluctuations associated with wheat farming encourage some tenants to sell their wheat farms prior to harvest. The price of one hectare of wheat before harvest depends largely on the condition of the wheat, and range from four thousand naira (N4000) to seven thousand five hundred naira (7500) per hectare. The only tenant who reported selling his plot of wheat before harvest, did so to raise money to cover the cost of the fare for performing pilgrimage to Mecca.

Four plot transfers involved people from outside the project area, while the remaining three were between displaced farmers.

Although plot sub-division is not allowed in the TRP, about six tenants admitted to subdividing their plots. Half each of three sub-divided plots were sold; another two halves were re-allocated to children by fathers; and one was share-cropped. Four of the subdivided plots were 0.8 hectares each in size, and the remaining two were 0.4 ha. and 0.6 ha. respectively.

4.5.3 Distribution of Water and Other Inputs

Farms in the TRP are irrigated once a week by project staff, each watering lasting for about two hours. But the sandy nature of the soils in the area coupled with the high temperature conditions often experienced during the irrigation season, result in high infiltration and excessive evapotranspiration. These make the weekly watering

schedule inadequate. While plots located in the gravity-fed site receive supplementary irrgation (their operators lift water from the nearby main canal), this is not possible in the sprinkler site which is located away from the canal, because available sprinklers are operated on a six-day rotation cycle. Sometimes the interval between successive waterings is longer than seven days. To make matters worse, the two-hour weekly watering schedule is not strictly adhered to by pump operators, due to negligence or water shortage. This explains why most tenants prefer plots in the gravity site. To reduce the risk of the water shortage, some tenants resort to the use of hand pumps to irrigate their plots. In such cases water is pumped from the main canal.

Another problem faced by tenants in the TRP concerns the supply of farming imputs, particularly seeds, fertilizers and herbicites. Imputs meant for tenants are either delivered late or end up in the hands of middlemen who later sell them at exhorbitant prices to farmers. Delays in the supply of wheat seeds forced some farmers to buy from the open market or to plant late. About 61% of tenants complained of insufficient allocation of fertilizers. About two-third made up fertilizer shortfalls by buying on the open market, while the remaining one-third made do with what they could obtain through official project channels. Unlike off-project farm operators, tenants were not willing to supplement fertilizer shortages with organic manure because they have no guarantee that their access to their plots will last for longer than one season.

The optimum yield of wheat under optimum conditions in the TRP is about 2.5 tonnes per hectare(TRP n.d.). But recorded production levels per hectare are only 0.7 tonnes in the sprinkler site to 1.8 tonnes in

the gravity site. The differences in yield observed between the two sites is largely due to variations in site quality, levels of water supply and fertilizer application.

4.5.4 Restriction on Cropping Schedules

The type of crops to be planted in the project area is dictated by the management of the TRP. In the dry season only wheat is planted; in the wet season tenants are allowed to plant crops of their choice. However, the planting of sorghum, a late maturing rainfed crop, is not allowed, because it jeopardises the timely preparation of land for dry season irrigation cropping.

Tenant crop preferences (Table 4.13), suggest that millet, sorghum and rice are the most favoured wet season crops. In the dry season wheat and rice are favoured, followed by vegetables (tomatoes, pepper and onions) and maize. None of the tenants contravened the cropping schedules for the wet season, but in the dry season, four tenants planted all their plots with tomatoes; three others planted tomatoes and wheat. Tomatoes were preferred by those farmers who did not have enough capital to grow wheat. Going by management policy, therefore, these tenants would not be included in subsequent allocations.

In both dry and wet season farming periods, majority of the farmers prefer single cropping (91% and 61% respectively). The remaining tenants prefer mixed cropping. Some others however expressed their wish to practice rotational cropping if their tenancy would persist over a longer period.

Table 4.13 Tenant Choice of Crops in the TRP (%)(n=75)

Type of Crop	Wet Season	Dry Season
Millet	23	0
Sorghum	19	0
Rice	16	27
Maize	13	9
Groundnuts	13	0
Tomatoes,Peppers,Onions	9	17
Wheat	0	47
Others(Sweet potatoes,Cassava, etc.)	7	0
Total	100	100

Source : Field work 1989.

4.6 ISSUES RELATED TO LANDUSE

Traditionally, both arable farming and pastoral nomadism co-existed in the Tomas River Valley. Herders used the river bank for grazing and watering their livestock during the dry season. With the establishment of the TRP., the rights of herders to use such land was almost eliminated. Only 40 ha. of project land is devoted to grazing. This area is grossly inadequate to meet the needs of an estimated 1500 heads of cattle and 5000 goats and sheep owned by displaced farmers. Moreover, the practice of ranching is alien to the local population. The inadequacy of grazing land and watering points has caused outmigration of herders and herds of cattle to other parts of the state, particularly to Dangora and Falgore Forest Reserve areas located 100-200 km south and southwest of the study area. Many more herders are still planning to move out.

Conflicts often arise between herders still remaining in the area and the irrigation farmers. There were four incidences of this nature recorded during the field work period, all involving damage to crops by livestock. Tenants see these incidents as willful acts of destruction, or of carelessness on the part of herders, and therefore seek redress from appropriate quarters. In one incident, serious fighting was reported. The case was later settled by the police. Two other incidents were resolved by the Galoru Village Head while the last was settled at an Area Court in Dambatta. In all cases, irrigation farmers were compensated for their damaged crops.

Another area of conflict is that between farmers displaced by the Tomas Reservoir and the Management of the TRP over non payment of water charges by the former. The farmers who use to irrigate lands in the 'risk zone' around the reservoir perimeter, are required to pay water charges (twenty naira per hectare per season). But many of them do not comply with the order. Some promise to pay after harvest but end up not paying. They irrigate their plot using the reservoir water with the use of hand pumps.

Fishermen are also required to obtain license from the Management of TRP before fishing in the Tomas Reservoir. A licence costs between fifteen and fifty naira depending upon the resources of the fishermen. Many fishermen operate without such licences. The Management is trying to draft a workable procedure for collecting the approved dues from both the 'risk zone' irrigators and the fishermen.

CHAPTER FIVE

CHANGES IN OWNERSHIP AND USE OF LAND IN AREAS ADJACENT TO THE TRP (1975-1989)

5.1 SIZE AND DISTRIBUTION OF LAND-HOLDING

Before the establishment of TRP land in the study area was controlled almost entirely by local farmers. In a rough estimate based on pre-existing land use map of the area, about 85% of the total land was cultivated -78% as upland or *ludu* farms and 7 % as fadama plots. Nine per cent was devoted to grazing and about six per cent was used for residential purposes. Most of the grazing land coincided with land along stream courses or topographical depressions, particularly where seasonal water -logging rendered agriculture difficult and unprofitable (fadama which were not farmed).

Each household in the area controlled at least an upland plot, and about 47% owned fadama plots. Multiple plot holding was the norm, with 76% of the sample reporting such holdings . The number of plots (both upland and fadama) per family head was 3.9 (range of 1-8 for upland, 0-5 for fadama land).

Table 5.1 gives a summary of land distribution by type, size and number of plots for the pre- and post-TRP periods. It shows a reduction in the total number of reported holdings following the establishment of the TRP and a 39% reduction in the area under such holdings. About two per cent of the sample have become landless since the TRP was established.

Table 5.1 Distribution of Land Holding Among Respondents(n = 154)

Type of Land	Total Number of Plots		(b) as %	Total Hectares		(b) as %
	Before TRP (a)	After TRP (b)	of (a)	Before TRP (a)	After TRP (b)	of (a)
Upland	512(3.3)*	340(2.2)*	66	539 (3.5)*	264 (1.7)*	49
Fadama	85 (0.6)*	52(0.3)*	78	38 (0.25)*	13(0.09)*	34
	(1.2)**	(1.1)**		(0.54)**	(0.28)**	
Total	597(3.9)*	392(2.6)*	66	577(3.75)*	277 (1.8)*	48

Source: Field Work 1989. Note: ( )* = Average per Farmer.
( )** = Average per Owning Farmer.

Farm plots in the area which were , on the average small, continue to decrease. Shortly before the project, the average size of plots was estimated to be 1.1 hectares (2.6 acres) on the upland and 0.45 hectare (1.0 acres) in the fadama. The averages have dropped to about 0.78 hectares(1.9 acres) and 0.25 hectares(0.6 acres) for upland and fadama respectively.[2]

Table 5.2 shows disparities in size of holdings. There has been an increase in the total number of holdings of less than two hectares(five acres) and a corresponding reduction in the number holdings of two hectares (five acres) and above. Similarly, the proportion of land in less than two hectares holdings has increased by 10% , the same margin by which total hectarage in plots smaller two hectares has increased . The proportion of household heads reporting ownership of three or more plots falls from 43% to 29% . This slightly conforms with the work of Wallace (1979), carried out in the same region, who found that less than 50% of households in a study area near Kano held three or more farm plots .

2.Figures for this changes between the periods were obtained by dividing items on the hectarage column in table 5.1 by those on total number of plots column.

Table 5.2 Holding Size Distribution Before and After TRP

Holding Size Class (hectares)	Upland				Fadama			
	%of holdings		% of total hectarage		%of holdings		% of total hectarage	
	Before	After	Before	After	Before	After	Before	After
Less than 0.8	56	60	34	40	93	96	82	85
0.8-1.9	35	36	40	44	06	04	13	15
2.0-3.1	05	03	11	10	01	00	05	00
3.2-4.7	03	01	10	06	00	00	00	00
4.8 and above	01	00	05	00	00	00	00	00
Total	100	100	100	100	100	100	100	100

Source : Field Work 1989.

The distribution of land holdings was slightly skewed in the pre-TRP period, with the top eight per cent of the holders controlling about 24% of the total land area. The share of land in the hands of this group dropped to 19% in the post-TRP era.

5.2 LAND TENURE

The land tenure system around the TRP need to be seen in the context of land tenure in Hausaland as a whole, where individuals could gain access to land through allocation, inheritance, gift, trust pledge, loan and purchase. Overall, inheritance remains the dominant mode of land acquisition although purchase appears to be expanding at the expense of both inheritance and gift (Table 5.3)

Inheritance involves the transfer of land right from father to son either prior to (when the son gets married, for example)or at the death of the father. Land is usually shared between a man's sons although daughters may also inherit (very small parcels of) land. Inheritance is based strictly on Islamic principles.

Purchase is the permanent transfer of land rights in exchange for money. This type of transaction usually takes place in the presence of two or more witnesses. Transaction in land has long history dating to the pre-colonial era, since when attempts to discourage it have been reported. But the practice has persisted, and now appears to be gaining momentum (nearly one-fifth of total farmlands before, and more than one-quarter after TRP were acquired through purchase - Table 5.3). Variations exist in the volume of land sales between upland and fadama. Purchase accounts for 16% of upland farmland acquisition before, and 27% after TRP; in the fadama it accounts for 25% and 44%, respectively. About 51% of total farm purchases occured in the last ten years ; in the upland only 24.2% occured over the same time period .

Two explanations may account for these observations. First, the displacement of farmers by the TRP has rendered many people landless. This encouraged trade in farmland. Second, there is a trend towards land concentration in the hands of some influential locals, and absentee farmers, who subsequently rent land at exhorbitant rates to interested people.

A hectare of fadama cost, shortly before TRP, about three hundred and seventy naira (N370) , it currently costs about two thousand eight hundred naira (N2800), an increase of over 700% . In the upland farm prices have risen by about 63%. Irrigable plots located within a 700 meters radius of the Tomas Dam commanded the highest prices.

About 90% of all land sold was land belonging to farmers in need of money to develop their remaining plots, or to respond to some urgent monetary demand. About 36% of total land purchases within the last

ten years have been made by absentee landlords and influential locals. This group accounted for about 66% of fadama, and about 29% of upland purchases.

Gift was the least popular means of land acquisition (Table 5.3). It accounted for less than 10% of total plot acquisitions both before and after TRP. It was more common, however, in upland than in fadama. Most transactions involving gift (72%) took place before TRP; the majority (74%) were from fathers to sons, and the rest transactions between relations.

Table 5.3 Means of Farmland Acquisition Before and After TRP

Mode of Acquisition	Upland % no. of respondents reporting		Fadama % no. of respondents reporting		Total	
	Before	After	Before	After	Before	After
Inheritance	77	68	62	50	75	66
Purchase	16	27	25	44	17	29
Gift	07	05	13	06	08	05
Total	100	100	100	100	100	100

Source : Field Work 1989.

Although farmland was acquired through one of the methods in Table 5.3, plots were held and operated under the regimes identified in Table 5.4 . Owner occupier exploitation (i.e land farmed by the owner or members of his family) was the dominant practice in the area. Before TRP, more than four-fifth of all upland fields and about three-fifth of irrigable dry season plots were held and operated by their owners. The proportion of farmlands operated by owners dropped slightly after the establishment of TRP to about

three-quarters and half in rainfed and fadama farming areas, respectively.

Table 5.4 Farmland Title Before and After TRP (%)

Type of Farmland	Owner-Occupier		Rent		Combined Owner-Occupier& Rent		Pledge		Total	
	Before	After	Before	After	Before	After	Before	After	Before	After
Irrigable	47.1	35.5	17.6	32.7	24.7	28.8	10.6	00	100	100
Upland	81.8	76.8	8.4	9.4	6.1	12.0	3.7	1.8	100	100

Source : Field Work 1989.

The term 'rent' (or lease or hire) is often used interchangeably with 'loan' (*aro*), meaning the act of giving out farmlands temporarily for a season or more on negotiated terms involving payment in cash or kind or service. This is common among farmers who have more land than they require or can work effectively, given constraints of time, labour and capital, rent or hire or lease out part of their land. Land hiring (or renting) has become more widespread after the TRP, particularly in the irrigable dry season farming areas, where its incidence increased by about 90% . It now affects more than one-third of all such holdings. The proportions of upland plots which are rented has also increased by about fifty per cent. This provides further proof of an increasing shift from communal to commercial transaction in land in the area.

Cash payments account for about 77% of total rent payments, the amount payable varying with plot size, quality and location. On the average, a hectare of land for rainfed farming attracted about fifteen naira (N 15) per growing season before TRP. A similar plot now

attracts about one hundred and fifty naira(N 150) an increase of about 1000%. Rent payment on a hectare of fadama , on the other hand, increased by about 1500% (from eighty-five naira - N85 - to one thousand three hundred naira - N1300) over the same period.

Payment is usually made before planting commences. Duration of use and types of crops to be planted are usually specified by owners of the farmlands. Tomato and wheat farmers are favoured by landlords of irrigable land, because these crops can be harvested in time to allow rainfed farming to be practised. The cultivation of pepper on the other hand, has many cycles, and can last, on occasion, for longer than a year. Consequently, landlords are often reluctant to rent their land to potential pepper farmers. Sometimes, landlords allow the cultivation of long cycle crops like pepper, but then inter plant their rainfed crop with the dry season crops.

Apart from cash payments, rent is negotiated on the basis of share-croping arrangements. Some owners of irrigable land rent part of their holdings to owners of water-pumps in exchange for a regular supply of irrigation water for their remaining fields. Land owners give out up to half of their holdings to pump operators and also fuel the latters' generators. Watering of landlords' fields is normally once every three days.

The various reasons why farmlands are rented out include; financial need, possession of more than sufficient holdings, piety, and lack of interest in farming especially dry season irrigation. Of the total number of farms rented out in the irrigable area, about 50% had been purchased. In the upland fields, however, only 20% of purchased farmlands were rented out. Some tenants are seasonal migrants from

surrounding villages, while others are locals with insufficient farmland. About a quarter of all tenants had rented more than one plot.

Farm pledging, a popular means of land transfer in the past is currently little-practised (see Table 5.4). This refers to the temporary transfer of land rights as collateral for a loan in cash or kind. The amounts to be paid are normally less than the market value of the land. The creditor farms the land until his loan is repaid in full. Pledging accounted for some ten per cent of total transactions in fadama, and less than six per cent in rainfed land prior to TRP. Currently, only six out of a total of 340 upland plots is pledged. The practice is non existent in the irrigable area. Since monetary returns to land is higher when it is rented than when it is pledged, farmers prefer to rent rather than pledge their farmlands when the urgent need for cash arises.

Trust (*riko*) is another form of land access. It implies the transfer of land rights to a relative or friend of a migrant or deceased person, pending the return of the migrant, or the attainment of adulthood by a deceased person's heirs'. This transaction may or may not involve payment in cash or kind by the trustee. No incidence of trust was recorded in the area. The system has been greatly affected by increasing land values and the shift from communal to private or individual rights in land. Migrants tend to rent their plots for the period of their absence, or pledge such plots to finance their journeys. Plots of young orphans were also rented and the proceeds used in meeting their living expenses: education, health, clothing, etc.

5.3 EFFECTS ON THE LANDUSE SYSTEM

Agricultural production is largely subsistence in nature. Farmers produce barely enough for the basic requirements of the family and to cover the cost of the few inputs required for further production - seeds, manure, animal feeds and home made tools. A small surplus may be sold in order to purchase those necessities that the farmer cannot produce, or to obtain cash for taxes, repayments of debts and certain social obligations such as festivities, dowries etc. Both methods of production and the commodities produced are largely traditional. Cattle, sheep, goats and poultry are raised. These animals are grazed on natural pasture and on stubble of crops.

5.3.1 Crop Production

The main crops grown by the farmers were millet, sorghum, rice, maize, beans and groundnuts. The latter was the major cash crop in the area. Subsidiary crops included sweet potatoes, cassava, tomato, pepper and onion. The establishment of the TRP and the activities of KNARDA do not appear to have brought substantial changes in the composition of crops grown, although their influence on the pattern of cultivation and the use of mordern farming imputs is noticeable. Table 5.5 shows changes in the number of plots planted to different crops.

The number of plots devoted to the production of maize, beans, rice and vegetables have increased at the expense of sorghum, millet and groundnut production. Maize is becoming a popular staple in the area. The crop is planted at the onset of the rains and matures in about 40 days. It is ready for consumption at the height of the rainy season

when food prices are high. The characteristic of quick maturity is an advantage in this area of irregular rainfall. The crop is planted in the wetter parts of the area around the dam. Sorghum production declined because of the frequent droughts experieced in the area. It takes the crop over 90 days to mature.The production of groundnut declined because of price fluctuations and market uncertainties associated with the crop. Other reasons are low rainfall and the rosette epidemic that almost eliminated the crop in 1975. Beans has almost replaced it as major source of cash to farmers.

Table 5.5 Plots Devoted to Different Crops And the Use of Improved Seed Varieties Before and After TRP.

Crop	% Plots Devoted to :			% Use of Improved Seed Varieties		
	Before	After	%Difference	Before	After	%Change
Millet	24	20	-4	00	64	+64
Sorghum	20	13	-7	00	50	+50
Rice	09	11	+2	02	43	+41
Maize	08	14	+6	05	48	+43
Beans	04	08	+4	13	67	+54
Groudnut	18	13	-5	08	32	+24
Tomato/Pepper & Onions	07	09	+2	na.	na.	
Cassava/ Sweet-potato & Suger cane	10	12	+2	na.	na.	

Source : Field Work 1989. Note : Some of these crops are planted in various mixtures the Table indicate themost important crop on the plots.

Wheat can be said to be the only new crop in the area. Although wheat has been planted on a small scale for long in parts of Kano State, its production in the study area dates to 1986, conforming with the ban on the importation of wheat into the country as part of the

Federal Government's Structural Adjustment Programme (SAP). Up till then, wheat and rice formed the core of food imports into the country, with the volume of imported wheat growing from less than 300,000 metric tonnes in 1970 to 1.37 million metric tonnes in 1982 (Appendix 5). To boost local production, the Accelerated Wheat Production Programme (AWPP) was introduced. The crop is grown in the dry season under irrigation. More and more irrigable land has been put to wheat cultivation in the period since 1986, particularly in the northern part of the country, where the climate is favourable for the crop.

The use of improved high yield seed varieties (HYVs), has gained wide acceptance among farmers, although the level of acceptance has varied between farmers, areas, and type of crop (Table 5.5). Most HYVs are quick maturing and drought resistant. HYVs of almost all crops grown in the area have been introduced. The Hyv's of millet and beans have been the most widely accepted being grown on over 60% of all plots devoted to their production. Improved groundnut has the lowest rate of adaption by farmers. The most popular wheat variety among farmers was *Ex-Barma*. There are four preferred sorghum varieties: *Yarwasha, Yargumel, Gaya early* and *Yar Dumigi*. Some of these improved sorghums take less than 100 days to mature. New varieties of beans in use in the area include *Tux 3236, Itaga, Ita 9716 and IAR 48*.

Some farmers prefer the old varieties despite the advantages associated with the use of new ones. They attach great importance and value to the former varieties. For example, the old variety of sorghum has long stalks which was used for making thatched roofs and erection of fences, but the new varieties have short stalks which

cannot be conveniently used for such purposes. The old variety of sorghum also has advantage over the new ones in the provision of fodder. Variation in the rate of acceptance can also be found between villages, may be due to variation in levels of extension services or levels of enlightenment among the farmers.

Traditional implements and methods of production remain largely unchanged. However, the use of tractors for harrowing has gained wide acceptance. But the tractors are scarce and costly to use by poor farmers. Many farmers were willing to use tractor services but find it difficult to get at the appropriate time. Therefore, they resort to the use of traditional hand tools like cutlasses and hoes . The use of ox-plough is also losing popularity because of difficulties involved in keeping such animals.

The use of insecticides and herbicides to minimise crop losses from combined effects of pests, diseases and weeds is also gaining acceptance in the area. However, the use of these chemicals is largely at an experimental stage, with less than 10% of plots being treated. This low level of adoption may be attributed to scarcity and cost of procuring these chemicals.

The above findings show that not much changes have been recorded in the farming system. It was the recent introduction of wheat and new agricultural technologies which have the potentials of increased productivity of land that explain the increases in land values experienced in the area. Dasgupta (1977) observes that price increases in land have generally been greater in areas where new technology was adopted. And the higher the price of land the greater the temptation for small farmers to sell off land. Also with

increasing productivity, the tendency of large farmers to repossess land for self-cultivation increases. These processes are currently taking place in the study area, and may worsen the skewness of land ownership.

5.3.2 Soil Improvement Techniques

To ensure long term productivity of land an adequate level of soil fertility needs to be maintained. In the past, this was achieved in the area through the practice of fallowing. But since the early Colonial period (early 1920s) the proportion of farmlands left to fallow has decreased continuously. This was largely the result of a rapid increase in population. Fallow has been replaced by the use of manure; where it still occurs, it is the result of capital shortage for the purchase of manure.

Manure was widely used in the study area before the establishment of TRP. Udo (1971) estimated an average application of 5 tonnes per hectare (2 tonnes per acre) annually in the Kano region. Many studies in and around the Kano close settled zone have reported average imputs of 2.5-5 or more tonnes per hectare (see Mortimore and Wilson 1965, and Handy 1977 as examples). The manure, largely derived from animals and household wastes, is transported to the fields during the dry season and placed in heaps which are spread at the beginning of the planting season. Chemical fertilizers were later introduced as alternatives. Some farmers use both chemical fertilizers and manure. The application of chemical fertilizers in reasonable quantities dates to the 1960s.

Table 5.6 compares the use of soil improvement techniques before and after the establishment of the TRP. There is a reduction in the proportion of plots applied solely with manure by 24%. Plots that receive mixture of manure and fertilizer increased by 9%.

Table 5.6 Manure and Fertilzer Use

Use of	% number of plots receiving: Before TRP	After TRP	% Change
Manure	57	33	-24
Fertilizer	14	28	+14
Mixed(Manure & Fertilizer)	29	39	+10
Total	100	100	_

Source : Field Work 1989.

The decrease in the rate of manure application has been attributed to a decline in the local animal population. The use of chemical fertilizers increased because of availability at some what affordable prices. It was first supplied in large quantities in the early 1970's as part of the Operation Feed the Nation (OFN) programme. In more recent times KNARDA has been the organ responsible for meeting farmers demand for the commodity in the area.

Despite the rise in the rate of fertilizer, its application in quantitative terms, for most crops, was below recommended levels. The recommended rate of application for sorghum and millet, for example, is about 200 kg of compound fertilizer per hectare (80 kg/acre), while that for groundnut is 100 kg of fertilizer per hectare (40 kg / acre). But only about 52% of the surveyed plots

received 70-100% of the recommended levels. This may be due to ignorance, capital shortage or more importantly the increasing cost of fertilizers due to the introduction of SAP. One of the major economic reform measures of the agricultural sector under SAP is the reduction of government involvement in direct agricultural production which led to, among other things, withdrawal of subsidies on agricultural inputs. Since then, the official subsidy on fertilizers was being reduced. The official price of a 100 kg fertilizer increased by 400% from about five naira in 1985 to about twenty naira in 1989 (when official subsidy was N100). Currently black market prices range between N40 and N60 per bag. Further removal of subsidy may make things even more difficult for the poor farmers. The increase in the proportion of plots that received a mixture of manure and fertilizers may be explained by the decline in animal population (see section 5.3.3) or the increase in price of chemical fertilizers. Some farmers mix manure and fertilizers to check total crop failure that may result from sole application of chemical fertilizers, during drought.

The practices of crop rotation and mixed cropping were also used by some farmers as a means of restoring soil fertility (Table 5.7). Leguminous crops like groundnut and beans which fix nitrogen are rotated with grains (millet and/ or sorghum). Millet, Sorghum, Groundnut and Beans are intercropped in various combinations on about four-fifth of the total number of farm plots. The commonest combinations were sorghum with millet, and groundnut and/or beans with sorghum and/or millet.

Table 5.7 Pattern of Cropping

Cropping Pattern	% number of plots affected		
	Before TRP	After TRP	% Change
Single	16.4	18.1	+1.7
Mixed	81.9	80.1	-1.8
Rotation	1.7	1.8	+0.1
Total	100	100	-

Source : Field Work 1989.

From the above discussion, three major trends stand out : a decline in the rate of manure application ; an increase in the cost of fertilizers; and a decline in groundnut production. These may have negative implications for soils fertility levels.

5.3.3 Livestock Rearing

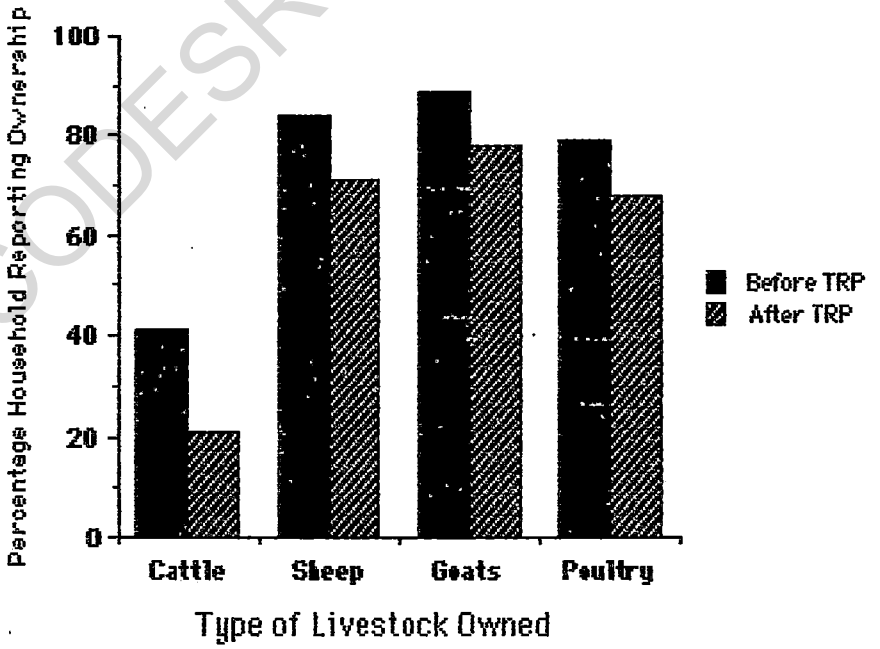
Livestock ownership in the area was widespread and all households aspire to it. The commonest type of livestock are cattle, sheep, goats and poultry which are raised to provide meat, milk, egg, manure and provision of farm energy (work bulls).

Before the establishment of TRP, the area used for grazing was largely restricted to uncultivable land. These were mostly found along stream courses or in topographical depressions along the Tomas River Valley. Fallow land and crop land (after the harvest of crops) were also used for grazing. The conversion of the grazing land and watering points along the Tomas River Valley to irrigated fields, and the subsequent change from seasonal to perenial cultivation as a

result of the establishment of TRP, have led to a decline in the size of available grazing area. The consequences of this decline include a drop in the animal population. It has also brought about an increase in the density of animals per unit of remaining grazing land, and an increase in conflict between herders and farmers (see section 4.6).

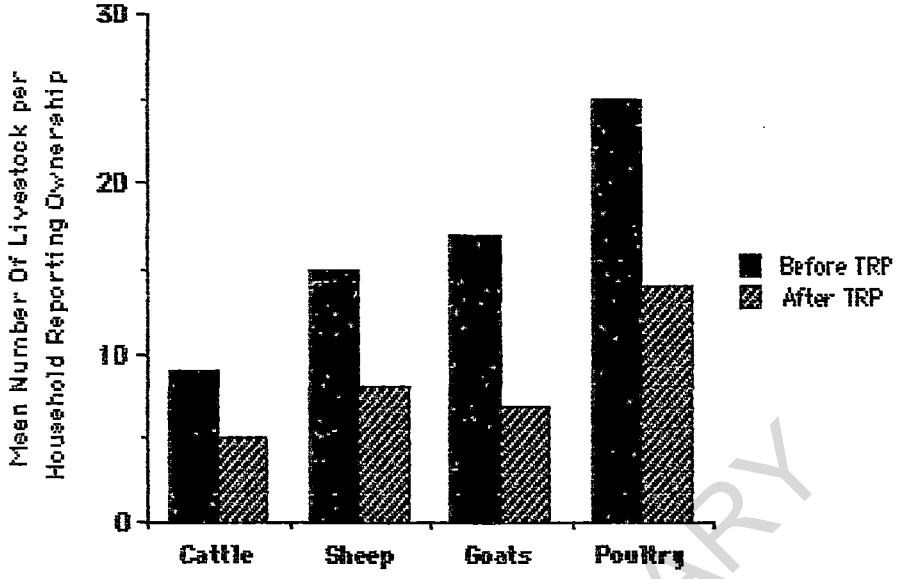
Figures 5.1a and 5.1b compares livestoct ownership before and after the establishment of TRP. Both the proportion of households owning livestock and the average size of livestock holding (expressed in terms of animal units per owning family) have declined. All livestock categories are affected. The greatest decline has been in cattle ownership because cattle are more difficult to maintain on the poorer and more restricted grazing areas.

Figure 5.1a Household Livestock Ownership Before and After TRP



Source : Field Work 1989.

Figure 5.1b Mean Livestock Ownership Before and After TRP



The decline in livestock population might also be explained by factors other than the decrease in grazing fields and fodder supplies. The drought of 1972-74 led to the death and sale of large numbners of livestock (Mortimore 1979). Livestock was also sold to meet urgent needs, sickness, and misfortune. Disease outbreaks have also contributed to the decline.The rinderpest epidemic of 1981-82 led to the death of many cattle in the area. Some major implications of the decline in livestock numbers include a reduction in the rate of manure production, and an increase in the cost of ploughing using animal traction.

The increase in animal density per unit of grazing land in the area is not easily quantifiable. No records of livestock population existed in the area. A qualitative proof for the increase density was the occurence of over grazed patches marked by lack of mature trees, bushes or grasses. This might also lead to soil degradation. Other related issue was the occurence of conflicts between cattle rearers and farmers. About half a dozen incidences were reported during the 1988/89 growing seasons, but they were amicably resolved by the local leaders.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 SUMMARY AND CONCLUSIONS

6.1.1 Land Tenure Issues in TRP

It has been found that there was an excess of demand over the supply of irrigated plots in TRP. The total area demanded was more than twice the project area, and about three-fifth of the total area lost to the TRP. Most of the area lost (71%) is under the Tomas Reservoir. Over two third of prospective tenants are people displaced by the project. They account for both the largest number of plots and the largest proportion of the total area applied for. All affected villages were represented, with the highest number of applicants coming from Galoru and the lowest from Bakarari villages. Other prospective tenants put together, represent about one third of total tenants. These include civil servants and other people outside the project area (e.g. merchants, traders, petty contractors, religious leaders and migrant farmers). Companies, organisations and associations also applied for plots.

Generally, there was a larger number of applicants for dry season plots than for wet season plots. This is because most of the prospective tenants own private farms which they cultivate during the wet season. However, there was a high number of applications from displaced farmers for wet season plots because some displaced farmers migrate to urban centres for employment during the dry season; more importantly, many displaced farmers lack the capital needed for dry season farming.

The total area available for use in the TRP was only 77% of the total area of land applied for, or about 13% of the area acquired to make way for the project. Displaced farmers constituted the single largest group of those allocated plots in the TRP. However, the total area allocated to this group was less than that of the allocations of all the other groups of applicants put together. These findings show that, in the allocation of irrigated plots in the TRP, outsiders are favoured at the expense of displaced local persons.

Civil Servants were the most favoured group. Tenants in TRP prefer plots of more than one hectare. However, four-fifth were allocated plots which were smaller than one hectare in size. About three quarters of all plots in the TRP fall below the official minimum size for allocation of 0.8 hectare, and about five percent were larger than the upper project working limit of two hectares. Plots were kept small to accommodate as many tenants as possible, and to avoid under utilization of the irrigated plots. Tenants allocated plots of more than one hectare were mostly top Civil Servants, project officials, influential Kano State indigenes and corporate bodies. The majority of tenants (over 90%) were not satisfied with the size of their allocations. This findig shows that the needs of individual farmers are not adequately considered during plot allocation.

The average size of plots was larger in the dry season (0.7 hectares) than in the wet season (0.6 hectares). This was due to the presence of a larger number of influential and richer prospective tenants in the dry season than in the wet season. Applications for wet season plots were dominated by displaced farmers. The average size of plots

in the gravity site were larger than those in the sprinkler site - 0.8 hectares as against 0.7 hectares.

The majority of prospective tenants prefer plots in the gravity sites. The inadequate and unreliable supply of irrigation water in the sprinkler site was the reason for this preference. Though displaced farmers are numerically dominant in both sites, they represent a higher proportion of total tenant population in the sprinkler site. Other groups of tenants were proportionately represented in the gravity sites.

There is no long-term security of tenure in the TRP. Sixteen seasonal allocations have been made since the inception of the project in 1979. Out of these allocations about half of the tenants have been allocated land not more than five times. Worse still, less than 20% of the tenants had been beneficiaries of three consecutive plot allocations. This uncertainty of remaining in the project area made many of the displaced farmers unhappy with the project. Also, it discouraged them from improving the land. Many farmers do not care for soil quality improvement. They do not apply sufficient quantities of fertilizers and manure on project land. This shows that, the absence of security of tenure among farmers in the TRP discourages the adoption of long-term land development practices Farmers called for a longer tenancy, probably of the order of 3-5 years.

Because of the insecurity of tenure, most tenants could not generate capital from loan agents and agencies because they could not use their plots as collateral. Many prospective farmers failed to secure

plot allocation, or to cultivate plots which they had been allocated because of a lack of operating capital.

The survey also reveals that some plot transfer had taken place on the project. Most transfers were made immediately after allocation. A few were, however, made towards the end of the harvest period. Transfers generally involved wheat farms. Most plot transfers were made for monetary gain, but some were between parents and children or friends and relations. There were also incidences of plot subdivision. This involved about 7% of the total project area. Some of the subdivided parts were sold, but some were given to relatives or friends.

The supply of irrigation water in the sprinkler sites was inadequate and unreliable. The weather and soil conditions of the area make the approved watering schedule of two hours a week inadequate. Moreover, even the weekly schedule is not strictly adhered to by staff operating sprinklers. As a result, about 10% of the area irrigated by sprinklers has been rendered agriculturally useless, and crop performance on another 40% of the sprinkler site is most discouraging. This explains why most tenants shun sprinkler sites. The bulk of plot allocations here consequently goes to the weak and powerless applicants.

Many tenants in the TRP encounter difficulties in acquiring inputs such as seeds and fertilizers. This problem has been aggravated by the reduction of the Federal Government subsidy on agricultural inputs. As a result, late planting and inadequate fertilizer application were evident on project plots. About a third of all plots

did not receive up to 70% of the required quantity of fertilizer. These and associated problems have led to reductions in output levels of between 28% and 100% of estimated project optimum yields.

With regard to cropping schedules, it was found that in the wet season, most farmers prefer to plant millet on their plot; a few opted for sorghum and rice. However, none of these farmers could plant sorghum because it was prohibited by the project management. In the dry season, wheat and rice were the preferred crops, but only wheat could be planted because of management rules. Some tenants planted tomatoes because of weather and market uncertainties associated with wheat production and commercialisation, or because they did not have enough capital to grow wheat.

The establishment of the TRP has resulted in outmigration of a large number of livestock to other parts of the state and probably beyond. The 40 hectares of project land devoted to range management is insufficient to support livestock population in the area. Both the proportion of livestock-owning households and the average number of livestock holding per household have declined. The livestock population in the area has dropped by more than 70%, and many more herders are planning to move out of the area.

Occasional cases of crop damage on project farms by herds of cattle were recorded. These cases were resolved either by the village head, the police or local area courts.

The reduction in the local livestock population may have an adverse effect on the rate of manure application which supplements the

application of scarse chemical fertilizers on off-project farms. It may also reduce the intake of meat and milk in the diets of the people in the area.

Farmers who irrigate in the 'risk zone' around the Tomas Reservoir do not pay approved water charges to the management of the TRP. Similarly, many of those who fish in the reservoir do not obtain licences to do so. These non-payment of charges reduce the level of revenue generated by TRP which is used in minor maintenances of the dam and other irrigation facilities.

6.1.2 Changes in Ownership and Use of Land in Areas Adjacent to the TRP (1975-1989)

The establishment of the TRP has affected the pattern of land ownership and use in the areas surrounding the project. It has led to total or partial loss of farmlands by some farmers. On the average, farmers in the nine affected villages have lost as much as three fifth of their total holdings. Many of these farmers tried to replace their lost farms through purchase, but there was very little free and suitable land nearby for them to acquire. Over the 15 years of the TRP's existence affected farmers could only replace 16% of what they lost.

Both the number of plots per family head and the sizes of plots in the area have dropped by 36% and 39% respectively. The proportion of household heads reporting ownership of three or more plots also dropped by one third.

There was a slight shift from communal to commercial transactions in land in the area. Acquisition of farmlands during both the pre-and post-project eras was largely through inheritance. But there was an increase in the rate of acquisition through purchase since the establishment of TRP. Many of the farm purchases were reportedly financed by absentee indigenes and some influential local inhabitants, who then rented the newly-purchased farms to other people.

Farm operations in the area are predominantly owner-operated, but land hiring has become more widespread since the establishment of the TRP, particularly in irrigable dry season farming areas. The practice of farm pledging is becoming extinct in the area. Despite the increase in local land values, farmers were more inclined to hiring out rather than pledging their farmland.

The major crops grown are millet, sorghum, rice, maize, groundnuts and beans. But the individual proportions of plots devoted to these crops has changed. The production of sorghum and groundnuts has lost popularity, while the appeal of maize and beans production has increased. Wheat production has increased in popularity since 1986. The use of improved high yielding seed varieties of most crops is also gaining wider acceptance among farmers. But some still plant the old varieties because they attached greater importance and value to those than to the new varieties. The use of tractors for harrowing and the application of insecticides and herbisides has equally gained acceptance in the area.

Before the establishment of TRP, manure was the major means of soil fertility improvement in the area. Chemical fertilizers were also

used but at low rates of application. Presently, both manure and chemical fertilizers are used by farmers, but the rate of chemical fertilizer usage has exceeded that of manure. This was due partly to the reduction in the local livestock population, and partly also to the increase in the local supply of chemical fertilizers. Despite the increase in the overall rate of chemical fertilizer usage, the rate of application were below the recommended levels for most of the crops grown. The observed decline in the rate of manure application and the already-mentioned increase in the cost of fertilizers, may have negative implications for soil fertility levels, leading to soil deterioration and, consequently, to reduced yield per unit area of land.

These recorded changes in the ownership and use of land shows that, the establishment of the TRP has induced changes in the customary land tenure system in the surrounding areas. However, other factors like population pressure, other agricultural development efforts, such as the Integrated Rural Development Programme and the Accelerated Food Production Programmes, and the introduction of S.A.P in the country might have also contributed to the changes recorded.

6.2 RECOMMENDATIONS

If the major goal for the establishment of the TRP (i.e. to improve the welfare of the people in the area through increased productivity of land) is to be achieved, there is a need to correct some inadequacies in the administration of project land.

There is, at present, a high level of unsatisfied demand for plots in the TRP, particularly among displaced farmers. This is caused largely

by the allocation of plots to people who did not suffer any adverse consequences resulting from project establishment. It is therefore necessary to review the formula for the allocation of plots in the project. Since most displaced farmers cannot find replacement farmland in the area, at least 80% of all project allocations should be reserved for them. The participation of Senior Civil Servants, big businessmen and corporate bodies should be kept to a minumum.The displaced farmers should be involved in the administration of the project land through their appointed representatives.

The policy, whereby land initially expropriated by government for the project is later allocated on seasonal tenancies is considered satisfactory by a large number of people in the area. But the length of tenancy should be increased to three years. Tenants should be allowed to remain on the same plot for the life-time of their tenancy. This will instill a feeling of permanence in tenants, and encourage them to make longer term investments such as more intensive manure application, and employ more effective soil management techniques (e.g. ridging) on project land.

Compensation and resettlement of the population affected by project establishment was unsatisfactory. In Nigeria the procedure and rate of compensation vary greatly from one state to another. Some State Governments (e.g. Bauchi) actually refer to compensation for "land" as opposed to improvements to it, and have different cash rates for compensation according to type and location. Others e.g. Borno State, do not have any rates and one can only assume that , following the Land Use Act, equivalent replacement land is given. In effect then, cash compensation is actually paid in order to obtain the

Right of Occupancy to land as well as for any improvements which appear on it. In areas where land is only temporarily acquired and then handed back to occupiers at a later date (e.g. in irrigation areas) distubance compensation should be paid (according to the 1962 Land Tenure Law), plus compensation for any improvements destroyed. Unfortunately , the cost of compensation is very rarely considered at the feasibity stage of irrigation projects, possibly as compensation costs, despite being high, are still small proportion of the enormous cost of constructing such projects. The biggest problem, however, is that they are not included as part of the construction cost of projects, and there is often very serious difficulty in making such money available, especially when compared with the ease with which foreign loans for the construction of projects have recently been obtained (Bird 1984). When funds do arrieve for compensation payment it is often too late to distribute them in a sensible phased payment programme that would lessen the risk of them being frittered away.

The compensation rate of six hundred and twenty five naira (N625) per hectare approved by Kano State Government for payment to some people displaced by TRP was inadequate, based on simple replacement cost compensation. The price of a hectare of land in the open market is about 4-6 times higher than this government - approved rate. Worse still, displaced farmers did not receive the full amount approved due to the predation of officials of the compensation team, Project officials and Village leaders. As the area is already heavily populated, farmers cannot find suitable land nearby in the project area; compensation should,therefore, be paid at market rates, in addition to a disturbance allowance.

The minimum allotment size of 0.8 ha. and the maximum of 2.0 ha given to tenants in the project area should be maintained, and should be strictly respected by management.

Dry season cultivation in the TRP should not be restricted to wheat alone. The project area should be zoned into four management units. The largest portion, 70%, should be devoted to wheat cultivation. Fifteen percent should go to rice production, ten percent to the cultivation of tomatoes, peppers and onions, and the remaining five percent given over to maize and other crops (e.g garden-eggs, cabbage, and carrots) tenants would like to grow. Many tenants hate to plant wheat because of weather and market uncertainties associated with it. At the same time an appreciable income can be derived from growing tomatoes and onions. If this zoning system is adopted, the minimum allotment size of plots in the area devoted to tomatoes and onions may be reduced to about 0.5 ha. This will increase the number of tenants that can be accommodated on the project.

Marketing of wheat, the only crop recommended for planting in the dry season, is bedevilled with problems. Local wheat processors have been reluctant to purchase locally-grown wheat, on the grounds that it is more expensive, and of a lower quality than imported wheat. Efforts should be made to improve the quality of locally-produced wheat.

The practice of plot sub-division and transfer should be checked. Tenants should not be allocated plots of a size larger than what they can effectively manage. The practice of excluding tenants, who sub-divide or transfer their plots, in subsequent plot allocation should be enforced.

The supply of water to the sprinkler-fed site should be regularised, and more sprinklers provided. The approved watering schedule of two hours a week should be changed to two hours every four days. This will enhance crop performance and reduce crop loss through moisture stress. Water in the Tomas reservior should be judiciously used to minimise effects of water shortage during drought years. The dam should also be maintained regularly to reduce water seepage from the reservoir.

Farmers who irrigate in the 'risk zone' around the reservoir perimeter as well as fishermen, should be allowed to use water in the reservoir free of charge. These 'risk zone' irrigators were not compensated for their land acquired to make way for the reservoir. Since much of their land is completely submerged by the reservoir during the wet season, these farmers should be allowed free access to reservoir water for irrigation purposes in the dry season as compensation.

Adequate farm imputs and farm machines such as tractors and combine harvesters should be provided. Seeds and fertilizers should be provided on time and in sufficient quantities. These inputs should be distributed to farmers through the farmers' association existing in the area.

The coverage of extension services to both project and non project farmers on the use of improved seeds and weed control practices, should be extended.

Government should assist both project and non-project farmers, by acting as guarantor, to procure loans from both private and government-owned banks and other lending agents.

The plight of livestock rearers should be given urgent attention, since there is no land available for extending the grazing area in or around the TRP. Herders should be educated on the need for and practice of ranching. Government should provide initial financial and technical assistance for this purpose. More watering points and grazing tracts should be increased in and around the project area. This will reduce the rate of decline in livestock population. It will also reduce cases of crop damage on project farms by herds of cattle.

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APPENDIX

Appendix Ia. QUESTIONNAIRE FOR DISPLACED FARMERS WHO PARTICIPATE IN PROJECT ACTIVITIES.

Biograhpic Data

1. Name Age Sex Village
2. Size of Farmily

Relocation

3. From which village were you displaced?

4a) Did you own farm plot(s) outside the project area before the displacement? Yes/No.

b) If yes, how many farm plots (i) upland (ii) Fadama land

c) Give the estimate size of each of the farm plots
(1) (2) (3) (4)

5a) Number of the farm plots lost to the project (i) upland (ii) Fadama land

b) What was the estimated size of each plot.?
(1) (2) (3) (4)

6a) Number of farm plots granted as compensation:

b) What was the estimated size of each plot.?
(1) (2) (3) (4)

7 If the number of farm plots granted as compensation is less the number lose to the project, why the difference?

8a) Were you paid cash compensation for the unexhausted improvements on your acquired lands. Yes/No

b) If yes. what did you do with the money?

9 What other occupations apart from farming were you engaged in before the project started?

10. What occupations apart from farming presently take some of your time?

11. If any change in occupation state reason(s)

Aspects of Land Tenure in the Project

12. How many times have you been allocated plots in this project area?

Year	Size of Plot
1	
2	
3	

13a) Are you the person allocated this plot for this growing season? Yes/No.
b) If no, from whom did you acquire it?
c) Why did he let it out to you.
d) On what condition did he let it out to you.
14a) What size of plot did you request for this growing season?
b) Would you need more than the size allocated to you? Yes/No
c) If yes, why do you require more? (explain)
15a) Do you subdivide your plot after allocation? Yes/No
b) If yes, why?
16a) Do you have more than one plot in the project area? Yes/No
b) If yes, from whom did you acquire the other plot(s)?
(i) project management (ii) friend (iii) lease (iv) others (specify)
c) If lease, why did the owner let it out to you?
d) On what condition did he let it out to you?
17. What are your obligations to the management?
18. What type of crops are you required to plant by the management?specify.
19. What type of crops do you prefer to plant? specify
20a) If answer to Q.19 differs from answer to Q.18 , has the difference affected you? Yes/No
b) If yes in what ways.
21. How do you prefer to grow your crop?
(a) single (b) mixed (c) Rotation. Explain
22a) What are the principal ways by which you dispose of your agric produce?
(a) Sale to Management (b) Mainly for consumption
(c) Sale to Market (d) others (specify)
23a) Have you ever been involved in conflict with pastoralist? Yes/No
b) If yes, what was the cause of the conflict? Explain
c) How was the conflict settled?
d) How do you think such conflict can be avoided? Explain
24. How do you see yourself in the project?
(a) Tenant (b) Owner (c) Labourer for government (d) Others (specify)
25a) Is the yearly tenancy satisfactory to you? Yes/No
b) If No, why not?
c) What length of tenancy do you consider satisfactory and why?

Farm Input

26. What soil quality improvement measures did you employ in your farms shortly before the project? (specify)

27. Fertilizer currently invested in the project farm

Type of Fertilizers	size of plot	quantity applied per growing season	estimate price.

28. What other soil quality improvement measures do you undertake on the project farms now? (specify)
29. What other modern farming imputs do you use in your farming operations?
30. What is the total estimat cost of farming imputs you employ in your plot?
31a) Do you get any financial assistance in your project farm? Yes/No
   b) If yes ,from whom?
   c) What for?
   d) If No, do you require any?Yes/No (i) How much? (ii) What for?
32. What other sort of assistance do you get in your project farm?
33a) Do you have any farmers association or cooperative soceity? Yes/No
   b) If yes, what are the functions of the association?
34. What is the general effects of the project on you (Positive/Negative)?

Appendix 1b. QUESTIONNAIRE FOR DISPLACED FARMERS WHO DO NOT PARTICIPATE IN PROJECT ACTIVITIES.

Biographic Data

1. Name Age Village
2. Size of Farmily

Relocation

3. From which village were you displaced?
4.a) Did you own farm plot(s) outside the project area before the displacement? Yes/No.
   b) If yes, how many farm plots (i) upland
   (ii) Fadama land
   c) Give the estimate size of each of the farm plots
   (1) (2) (3) (4)
5a) Number of the farm plots lost to the project (i) upland
   (ii) Fadama land
   b) What was the estimated size of each plot.?
   (1) (2) (3) (4)

6a) Number of farm plots granted as compensation:
b) What was the estimated size of each plot.?
(1) (2) (3) (4)
7 If the number of farm plots granted as compensation is less the number lose to the project, why the difference?
8a) What other things did you lose to the project?
b) Were you paid cash compensation for those things? Yes/No
c) If Yes, what did you do with the money?
d) If No, why not?
9. Do you have adequate farmlands as before? Yes/No Explain
10. How would you assess the qualify of soil in your new farmland(s)
11. In the old settlement:-
a) What was your main occupation?
b) What other secondary occupations did you have in order of their relative significance? (1) (2) (3) (4)
12a) What is your main occupation presently?
b) What other secondary occupations do you have here in order of their relative significance? (1) (2) (3) (4)
13. If any change in occupation state reason(s)
14. How did the project affect your occupation?
15a) Did you keep livestock before the project? Yes/No
b) If yes, what type did you keep?
(a) Goats (b) Sheep (c) Cattle (d) Paultry Others (specify)
c) What was the estimated number of each?
(a) (b) (c) (d)
16a) Did you keep livestock now? Yes/No
b) If yes, what type ?
(a) Goats (b) Sheep (c) Cattle (d) Paultry (e)Others (specify)
c) What is the estimate number of each?
(a) (b) (c) (d)
17. If answers to Q15 differ with answers to Q. 16 why the difference?

<u>Questions Partaining to the Project</u>

18. Have you ever been allocated plot in the project area? Yes/No
b) If no, why not?
i) Did you ever react? Yes/No
ii) If yes, in what way(s)?
iii) What was the out come?
iv) If no, why? explain.
19. Who are the group of people benefiting more from the project?
20. How would you like the allocation system to be done?
21a) Do you have any association which helps secure your right from the project management? Yes/No
b) If yes, Explain.

22a) Are there people who rent out their project plots Yes/No
b) If yes, on what conditions do they rent it out? Explain.
23a) Have you ever been involved in conflict with the former land owners in this settlement? Yes/No
b) If yes, what was the cause of the problem?
c) How was it settled?
24a) If the government is prepared to allocate the project land back to the original owners on payment of survey and other land development charges, are you ready to pay for the land? Yes/No
b) If no, Explain why?
c) If yes, how can you raise the money?

Land Tenure

25. Who controlled right or title to land in the old settlement?
(a) Individuals (b) Family (c) Community (d) others (specify).
26. Who control right or title to land in the new settlement?
(a) Individuals (b) Family (c) Community (d) others (specify).
27. What role does your village head play in matters pertaining to land?
a) In the old settlement
b) In the new settlement
28a) Do you use your farm every year? Yes/No
b) If yes, for how long do you leave the farmland?
c) Does this period differs from the situation before the project? Yes/No
d) In what ways?
29. What forms of land transfer existed in your old settlement
(a) gado (b) sayarwa (c) riko (d) noma mu raba (e) aro
(f) Jingina (g) haya (h) kyauta
30a) What forms of land transfer exist in your new settlement
(a) gado (b) sayarwa (c) riko (d) noma mu raba (e) aro
(f) Jingina (g) haya (h) kyauta
b) How frequent are these compared to the pre-project era?

	a	b	c	d	e	f	g	h
More								
Less								
Same								

31. What other new changes in land tenure exist in your new settlement, which were not found in the old settlement?

Seasonal Mobility and Out-migration

32. Did you go on Cin Rani before the project? Yes/No
33. How many times have you gone away on Cin rani after the project?

Year	Months away	destination

34a) Are there people who migrated out of the new settlementYes/No
b) What was the reason for their departure?
c) Where did they go?
35. What is the general effect of the project on you?
36. Do you have any other comment on the project?

Appendix 1c. QUESTIONNAIRE FOR OWNERS OF FARMLANDS ADJACENT TO THE PROJECT AREA WHO WERE NOT DESPLACED AND WHO DO NOT PARTICIPATE IN PROJECT ACTIVITIES.

Personal Information

1. Name Age Marital Status
2. Size of family
3. Where do you live? Name of the village:-
4. a) Were you born in this area? Yes/No
b) If no, when did you come to this area?
c) Why did you come to this area?

Land Tenure

5. What is the size of this plot.....acres
6. When did you acquire this plot?.....years ago
7. How did you acquire this plot?
(a) gado (b) Sayarwa (c) aro (d) haya (e) riko (f) Jingina (g) Kyauta (h) noma mu raba (i) others (specify).
8. From who did you acquire the farmland?
9a) Do you have any other farmlands? Yes/No
b) If yes, what is the total number? (a) Fadama land (b) upland
c) can you tell us when and how you acquire each of the farmlands?

S/No.	Size	Process	Years back	Fadama or upland

10. What forms of land transfer existed in this area before the project? (indicate F (Fadama) U (upland) B (Both)
(a) gado (b) Sayarwa (c) riko (d) noma mu raba (e) aro (f) Jingina (g) haya (h) kyauta (c) others (specify).
11a) What forms of land transfer exist in this area today?
(indicate F. U.or B. as in Q 10 above)
(a) gado (b) Sayarwa (c) riko (d) noma mu raba (e) aro (f) Jingina (g) haya (h) kyauta (c) others (specify).

11b) If answer to Q 11a differs from answer to Q10, explain why.

c) How frequent are these compared to the pre-project era?

	a	b	c	d	e	f	g	h	i
More									
Less									
Same									

d) Explain changes that have taken place in each form of land transfer after the establishment of the project and the reasons for each.

i) gado
ii) Sayarwa
iii) noma mu raba
iv) haya
v) Jingina
vi) Kyauta
vii) riko
viii) aro

12. a) Does your wife have any farm? Yes/No.

b) If yes, how many (a) Fadamaland
(b) upland

c) How did she acquire each of them?

S/No.	Size	Process	Years back	Fadama or upland

13. Do woman inherit land in this area? Yes/No
Explain

14. (a) Who controls right or title to land in this area
(i) upland
(ii) Fadamaland
(a) Individuals (b) Familyu (c) Community (d) others (specify).
(b) Does the situation differs with pre-project era? Yes/No.
(c) If yes, why the change?

15 (a) What role does your village head play in matters pertaining to land?
(i) Before the project
(ii) Now
b) If the roles played differ, explain why.

16 a) Do you use your farm every year?
(i) Fadama Yes/No
(ii) Upland Yes/No
b) If no, for how long do you leave the farmland?
(i) Fadamaland
(ii) Upland

16 e) Does these periods differ with the situation before the project? Yes/No.

(d) If yes, in what ways?

17. What other new changes in land tenure exist in this area which were not found before the project?

18. What type of crops did you grow before the project started?

Fadama	Upland

19. What type of crops do you grow now?

Fadama	Upland

20. If Q.19 answers differ from Q.18 answer, why?

21a) Did you keep livestock before the project started? Yes/No.

b) If yes, what type did you keep?
(a) Goats (b) Sheep (c) Cattle (d) others (specify)

c) What was the estimated number of each?
(a) (b) (c) (d) (e)

22a) Do you keep livestock now? Yes/No.

b) If yes, what type ?
(a) Goats (b) Sheep (c) Cattle (d) others (specify)

c) What is the estimate number of each?
(a) (b) (c) (d) (e)

23. If answers to Q.22 differ from answers to Q.18, why the difference?

24. a) Any incidence of land disputes in this area? Yes/No.

b) If yes, what was the cause ?

c) How often are these incidences compared to the pre-project era.

25. What system of farm work cooperation existed in this area before the project? Explain.

26. What system of farm work cooperation exist in this area today? Explain.

27. If answers to Q.26 differ from answers to Q.25, explain why.

28. I learnt that the government is trying to extend irrigation facilities to cover wider areas including private farmlands, would you like the facilities be extended to your farmlands. Yes/No.
Explain.

29. What is the general effect of the project on you (positive/negative)?

Appendix II. QUESTIONNAIRE TO THE MANAGEMENT OFFICIALS

1. Can you give a brief history of this project?
2. What are the objectives of setting up this tenure, and the rationale behind it?
3. What deficiencies in the customary tenure system did the planners identify which they thought they could overcome this way?
4. What is the the legal bases for expropriation.
5. Is the administration of the project going in line with the planners intentions?
6. What are the duties of the management and the services rendered to the tenants?
7. What are the duties and obligations of the tenants? Do they comply.
8. What are the achievements and benefits of the project?
9. In your own opinion what are the weaknesses of the project.
10. If one is to compare the land tenure policy here and the one obtained in Kano River Project, which one is better?
11. What other problems do you have in the administration of the project, and the measures adopted in solving such problems.

Appendix III QUESTIONNAIRE TO KEY PUBLIC FIGURES.
(VILLAGE HEADS, WARDHEADS, AND ELDERS).

1. Can you give us a brief history of your former settlement?
2. What was the nature of Land tenure in this area before the project (acquisition, use, and disposal)?
3. Did variations existed in tenure practices and Fadama and Upland farms?
4. (a) Are there new changes taking place within the customary tenure system?
   (b) What are the causes of these changes?
5. Has the introduction of the LUA 1978 made any impact on the customary land tenure practices in this area.
6. Can you comment on how the project affected people in this area; positive or negative.

Appendix IV. NIGERIA : IMPORTS OF WHEAT AND FLOUR

Year	Total Wheat Equivalent[a]		Percentage as flour
	Annual '000 metric tonnes	5-Year average Index 1960-64 = 100	
1934-38	3.6		100
1948-52	15.7		100
1955	40.8		100
1956	49.0		100
1957	62.8		100
1958	57.2		100
1959	71.0	66	100
1960	85.6		100
1961	86.3		100
1962	108.4		76
1963	52.8		8
1964	38.9	100	8
1965	56.5		4
1966	181.9		3
1967	123.8		2
1968	106.5		1
1969	192.2	178	9
1970	267.1		3
1971	410.7		13
1972	316.9		6
1973	454.7		5
1974	325.4	405	2
1975	407.6		0.1
1976	735.5		0.3
1977	769.7		7
1978	1,363.3		36
1979	1,338.9	1241	7
1980	1,176.4		9
1981	1,516.7		14
1982	1,375.0	1823[b]	6

Notes: [a] Wheat equivalent of flour obtained by applying a conversion ratio of 1:72 (according to FAO standards) [b] 3-year average.

Source: FAO Trade Yearbook various years, latest stated observation (cited in Beckman et. al. 1989).