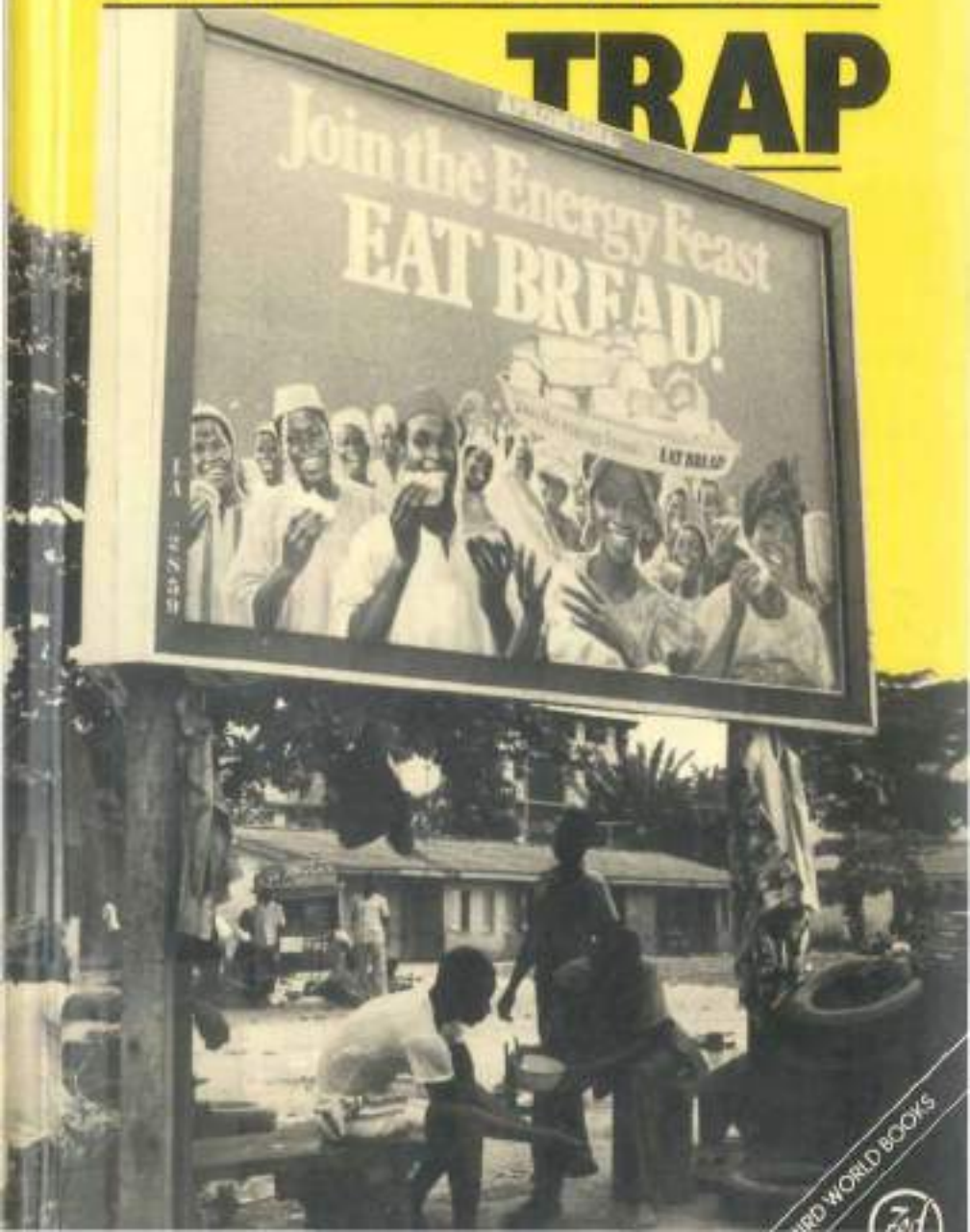
Gunilla Andræ and Björn Beckman

THE WHEAT TRAP



THIRD WORLD BOOKS

The Wheat Trap

Gunilla Andræ
and
Björn Beckman

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Bread and Underdevelopment in Nigeria

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Preface

This is a book about the politics and economics of food dependence. It explores the interaction between foreign, big business penetration and social transformation at the grass-root level in an African society. It looks at the connection between capitalist expansion, in manufacturing as well as in large-scale irrigated agriculture, and the reinforcement of agrarian underdevelopment in the context of the peasant-cum-petroleum economy of Nigeria. We discuss problems of food policy and national self-reliance, emphasising the acute dilemma confronting the wage-earners and the urban poor who depend most on the cheap food that is at present imported on a massive scale.

The book originates in two separate research projects, Andræ's on problems of agro-based industrialisation, and Beckman's on large-scale public investments in Nigerian agriculture. Both projects have received financial support from SAREC, the Swedish Agency for Research Cooperation with Developing Countries. Andræ is primarily responsible for the first part of the study (chapters 2–5), dealing with the food processing industry, and Beckman for the second half (chapters 6–8) dealing with the Nigerian wheat producing schemes.

Our research in Nigeria has been made possible through our association with Ahmadu Bello University, Zaria, where Beckman has taught in the Department of Political Science since 1978 and Andræ has been a research associate at the Centre for Social and Economic Research for the periods of field work. The original research proposal and early drafts were discussed with colleagues in Zaria, in seminars and conferences and individually. The present Dean of the Faculty of Arts and Social Sciences, Professor A. D. Yahaya, formerly Head of the Department of Political Science, and Mr Akin Fadahunsi, former Director of the Centre, have been particularly supportive. Professor George Abalu of the Department of Agricultural Economics and Rural Sociology at the Institute of Agricultural Research, and Dr Bright Ekuerhare of the Department of Economics have also taken an active interest in our work that is much appreciated.

More generally, we are indebted to the critical and combative atmosphere of Ahmadu Bello University, with its militant patriotism and its commitment to radical scholarship. To us, the continued association with Zaria is a privilege

and a source of inspiration.

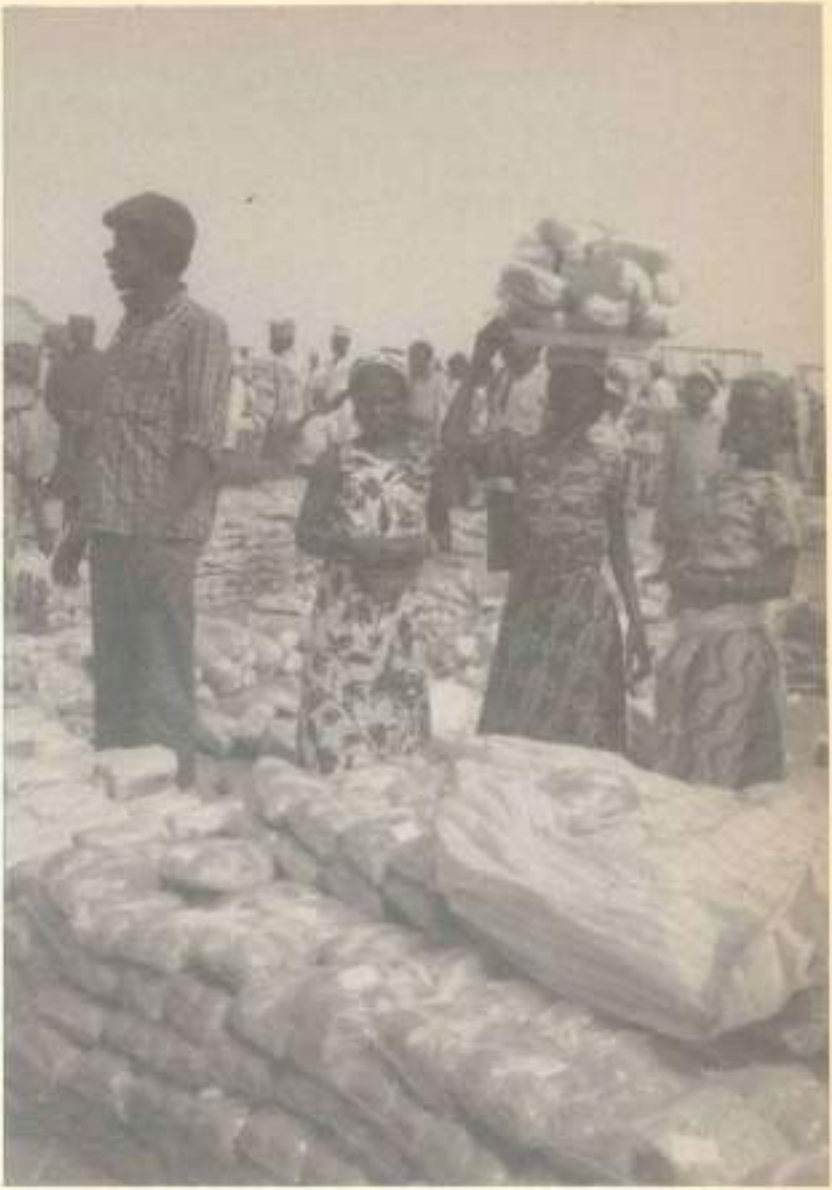
We are also indebted to friends and colleagues in and around the Review of African Political Economy editorial group, Gavin Williams in particular. We wish to take this opportunity to salute the memory of Jitendra Mohan, a member of that group, who sadly and unexpectedly died shortly after we had discussed the concluding chapter of this book, while staying with him and his family in their Sheffield home. Jitendra, a profoundly learned and committed Marxist scholar, once a lecturer at the University of Ghana and the Kwame Nkrumah Ideological Institute in Winneba, has been very important for our political and scholarly education ever since we first lived and worked together in Ghana in the 1960s.

Dr Richard Palmer-Jones of the Oxford Institute of Agricultural Economics has offered a mass of helpful comments on the second half of the study dealing with the northern Nigerian wheat growing schemes of which he has been a close student.

In developing our understanding of Third World politics we continue to draw heavily on the joint concerns and activities of the Uppsala-based research collective, the AKUT Group (Working Group for the Study of Development Strategies) of which we are members.

A large number of flour millers, bakers, farmers and officials of state institutions and private companies have provided the information upon which this study is based. Some of the informants are referenced by name in the text and listed at the end of the book. Many more are not named. We gratefully acknowledge their cooperation.

Gunilla Andrae Björn Beckman
Täby and Zaria, April 1985



Bread market

1. Introduction

'Bread Has Become the Cheapest Staple Food of Our People'

Many countries in the Third World have become heavily dependent on staple food which they import and for which conditions for local production are poor or non-existent. Once established, such a dependent consumption pattern is self-reinforcing. Alternative sources of domestic supplies are obstructed by taste preferences and rigidities in the linking of domestic producers and markets. Attempts at import substitution on the basis of existing products lead to misallocation of resources at the expense of commodities more natural to the domestic environment. Restrictions on imports, on the other hand, are resisted by those sections of the population who have incorporated this food into the daily diet. Resistance also comes from the importers, traders and administrators as well as those in domestic processing industries who have built their existence around the continued flow of imports.

In the colonial, post- or neo-colonial situation the pattern is reinforced by the external commercial orientation of the domestic bourgeoisie. It is easier (more profitable) to telex suppliers in the USA or Europe than to extract supplies from a fragmented and complex domestic production system. A domestic food processing industry can be developed more easily (more profitably) on the basis of a ready-made technology adapted to standardised international commodities. Domination by foreign capital further reinforces a preference for imported solutions to domestic supply problems.

This is the case with bread consumption and wheat imports in Nigeria. Until recently (the late 1960s) Nigeria was basically self-sufficient in food in market terms. She was a major exporter of agricultural commodities, including items which are also major domestic staples such as groundnuts and palm produce. The consumption of wheat bread had been introduced on a modest scale in the colonial period. It grew with the growth of towns, the working class and the salariat. It began as a luxury but has been transformed into a staple as pressures on urban food supplies have risen. The big leap followed the oil boom of the post-civil war era. Throughout the 1970s wheat imports grew at an average rate close to 20 per cent per annum.

By the early 1980s, imports had reached the level of one and a half

million tonnes per annum, making Nigeria a major buyer in the world market. Up to this point, the expansion of wheat imports had gone hand in hand with the overall growth in Nigeria's import capacity as brought about by growing earnings from petroleum exports. The peak was reached after the 1979 increases in the price of oil. Yet as the oil market contracted and export earnings declined drastically, wheat imports continued at their elevated level.

In late 1983, as the foreign exchange crisis deepened, the presidential regime of Alhaji Shehu Shagari was overthrown. The military government which took over was committed to sharp cuts in public expenditure and in 'unessential' imports. A virtual moratorium was placed on new development projects. Much of Nigeria's industries, state and private, had ground to a halt due to shortage of imported spare parts, raw materials and other inputs.

The flow of wheat, however, was not interrupted. In fact, the only 'good news' which local newspapers could bring to the headlines when reporting on the May 1984 austerity budget was the promise made by the new military regime to allow wheat to flow freely into the economy. The new Head of State, Major General Muhammadu Buhari, made it clear in his budget speech. Although it was the declared policy 'to protect local producers' and therefore to raise duties on 'selected imported agricultural products', this did not apply to wheat 'since bread has become the cheapest staple food of our people' (Buhari 1984).

The crisis of 1982-84, aggravated by the poor harvest of 1983, brought about sharp increases in domestic food prices. The price of wheat bread, on the other hand, remained fairly stable. The competitive advantage of imported over domestic food was further enhanced. According to the flour millers, government officials had appealed to them to keep up production, fearing the political consequences if the price of bread were to rise as well (interview Jutzi 1984).

The 1984 Budget is graphic evidence of the extent to which the wheat trap has closed up on Nigeria. This book seeks to demonstrate how the mechanisms of the trap work and why it is so difficult to get out of it once you have been trapped.

An Outline of the Study

The purpose of the study is to explain how and why Nigeria has been trapped. We want to identify the factors which have led to the entrenchment of wheat bread as a staple food. In the first part of the study, for which Gunilla Andræ is primarily responsible, we examine the evidence of wheat penetration in local markets and consumption patterns. We discuss the factors which make bread so attractive as a 'fast food' in the context of rapid urbanisation and changing household patterns. The falling relative price of bread vis-à-vis domestic food items, however, is an even more powerful source of attraction. In both respects (convenience and price), the pro-

cessing industry, that is, the flour mills and the bakeries, play a crucial role in making bread so competitive and so readily available. Bakers spearhead the development of new markets at all levels of society, including remote rural areas. A highly flexible technology, from village mud-ovens to large-scale electric bakeries in the cities, allows for maximum adaptability to market size, available investment funds and entrepreneurship. The flour millers, on the other hand, use the most advanced forms of international milling technology. They are closely linked to foreign wheat trading interests. We look at the world market for wheat and the political and economic forces which push this commodity into new Third World markets. US interests play a dominant role in the milling industry and most of the wheat that is imported comes from that country.

In the second part, for which Björn Beckman is primarily responsible, we examine the efforts to grow wheat in Nigeria for the purpose of import substitution. It is an expensive programme based on large-scale irrigation in the northern parts of the country. We demonstrate how this policy has little chance of succeeding and how the illusion of import substitution helps to entrench continued wheat imports. We seek to identify the social and political forces, domestic and foreign, which have brought about this massive misdirection of national resources away from more genuine ways of dealing with Nigeria's growing food problem.

In a concluding chapter we discuss the difficulties of getting out of the wheat trap. We are particularly concerned with the dilemma facing the workers and other classes who depend on bread. The continued mass importation of wheat undermines the development of domestic agriculture and rural incomes. It undermines simultaneously the necessary agrarian basis for successful industrial development. The expansion of domestic food production is vital for the reproduction of an expanding industrial labour force, but also for the deepening of the market for the manufacturing industry. It is therefore in the long-term self-interest of the workers to support a policy of self-reliance in food production. This is also the declared official policy of the Nigerian Labour Congress (Chroma 1984). In the short run, however, workers depend more than ever on bread to protect themselves against the drastic fall in real wages experienced during the recent years of crisis.

The Rise of the Petroleum Economy

According to the Director of the National Population Bureau, Nigeria's population was 94 million in mid-1984 (*West Africa* 24 September 1984).[3] By African standards, Nigeria is not only exceptionally populous but also prosperous in commercial terms. Peasant agriculture was commercialised on an unusually high level during the colonial period and the growth of the petroleum industry since the late 1960s has brought about a dramatic restructuring of the Nigerian economy which puts the country apart from its

less well-endowed neighbours on the African scene. This rapid transformation has, of course, had major consequences for patterns of food production and food consumption.

By the time of independence in 1960, Nigeria was an important Third World exporter of agricultural produce, including groundnuts, cocoa, and palm produce. These commodities were produced by independent smallholders which ensured a significant commercial impact in parts of the rural economy. The commercial transformation commenced in the period before formal colonisation, generating differentation and specialisation within the peasantry as well as the growth of intermediary strata, traders, craftsmen and other small producers of commodities and services. The import-export trade itself was controlled by foreign firms, enjoying colonial monopoly protection, but an embryonic domestic bourgeoisie emerged as buying agents, transport owners, and big traders.[2]

A substantial surplus was extracted by the state from peasant exports through the system of public marketing boards. The surplus was used to finance a significant growth in public sector services as well as some limited investment in manufacturing and a few minor agricultural schemes. The growing public sector provided a powerful source of patronage for indigenous businessmen and contractors. Politics were regionalised and centred on the control over regional marketing board surpluses.

By the mid-1960s, the decline in world market prices for the main exports had undermined the financial basis of public sector expansion, causing a major strain in the relations between competing, regionally organised elites. The overthrow of the Balewa government in 1966 and the subsequent civil war (the 'Biafra war') mark a period of crisis and transition from this regionalised, peasant-based political economy to the petroleum era. The prospects of large oil earnings intensified regional conflict while acting simultaneously as a powerful impetus for the centralisation of state power. Separatism and regionalism were undermined. Federal control over the oil industry was reinforced. A large federal army became a unifying force.

Petroleum exports were at first constrained by the civil war. As it came to a close in 1970, they reached an average level of one million barrels a day. Two million were reached already in 1973. Exports stabilised around that level for the rest of the decade. In terms of earnings, however, the dramatic growth set in after 1973, that is, after the first round of OPEC price increases.

Although earnings from oil exports had surpassed those from agriculture by 1970, they still constituted less than 60 per cent of total export earnings of less than one billion naira (one naira is roughly equivalent to one US dollar). By 1975, the picture had changed drastically. Total export earnings had jumped to some N5 billion, of which oil accounted for 93 per cent. By 1980 – after the 1979 OPEC price hike – total exports peaked at N14 billion, of which 96 per cent came from oil, according to Central Bank estimates. Federally collected revenue grew similarly in the same period from N0.6 billion in 1970 to N5.5 billion in 1975 and to N14.4 billion in 1980

(CBN 1982).[3]

Unlike the earnings from agricultural exports, virtually all oil entered the economy through state spending. Even more than in the past therefore economic activity rotated around the public sector as a source of employment, income, investment and contracts. The rate of public investment was high, first of all in public services: roads, airports, education, health, defence. Construction became the single most dynamic sector, involving a new set of multinationals, and their consultants, agents, and partners, but also a sprawling network of domestic contractors and subcontractors. Manufacturing industry, both private and public, expanded, with official figures suggesting a fourfold increase in the volume of output from 1970 to 1980 (CBN 1982; Forrest 1982).

Public spending as well as private investment was largely in the towns, in the big cities, state capitals and occasional rural and provincial headquarters. These served as centres for a flourishing 'informal sector' of small producers of goods and services, traders, and contractors. Wage employment, education, and such 'informal' activities combined to pull a massive flow of labour from agriculture. There are no useful figures on the overall development of employment in different sectors, but scattered indicators such as the rise in registered wage employment, number of students, teachers, health personnel etc., suggest that the average rate of increase in non-agricultural employment may well have been over 10 per cent per annum (CBN 1982). The shift of people out of agriculture was not just a case of urbanisation. Also within the rural areas there was a movement into non-agricultural activities, including trading, transport, and construction.

It is within this context of a major restructuring of the Nigerian economy that the problems of food production and food imports reached alarming proportions. The problems are by no means uniquely Nigerian. Nor are they peculiar to petroleum economies. They were exacerbated, however, in the Nigerian case, by the sudden rise in oil earnings.

Food Production in the Petroleum Economy

With this dramatic, oil-induced shift of population from agriculture to other sectors, Nigeria's inability to feed herself should come as a surprise to nobody. Domestic food producers faced an increase in demand of well over ten per cent per annum, while simultaneously undergoing major losses of labour. It was not just the outflow of farm labour as such. The cost of labour was simultaneously pushed up, creating serious bottlenecks for commercial producers (Beckman 1985b).

Official statistics – the 'Rural Agricultural Sample Surveys' of the Federal Office of Statistics – suggest a dramatic drop in the output of major food crops over the period 1969–81, some 15 per cent for millet and guinea corn, 20 per cent for beans, 30 per cent for yams, and still higher for cassava, that is, if we compare averages for the first and second half of the period (FOS

1983, table 2:1). The data are unreliable and the methodology used can be seriously questioned. Still, a decline of this order may be consistent with the dramatic population shifts.

Most of the food produced in Nigeria is still consumed in the households of the producers. It means that a fall in overall output says nothing about the amount actually made available in the market. This may well have increased substantially, although not to such an extent as to match the overall increase in demand. There is much evidence of an accelerated commercialisation of food production, including the shift from export crops to the production of food for the local market (Beckman 1985b). This is particularly evident in the move from groundnuts and cotton to grains in the North. Some crops which had previously been exported were also redirected to domestic markets. State marketing boards and vegetable oil processing companies found it increasingly difficult to compete with local consumers for such products as groundnuts and palm oil.

Attempts to justify the massive importation of grain with reference to the failure of domestic production must be treated with great caution, not least in view of impressive achievements in the past. Over ten million non-agricultural producers were fed primarily from domestic sources at the time of independence. Imports were marginal. This was the more noteworthy as the 1950s had witnessed a very significant growth in export production which in turn had financed a fast rise in public sector spending, wage employment and urbanisation. Nigerian farmers at that point were thus capable of expanding both food and export production at a fast rate (Helleiner 1966, Eicher and Liedholm 1970).[4]

The massive food imports of the 70s and 80s cannot be taken as evidence of the failure of domestic producers to respond to demand. It is not merely a question of imports filling a gap left by domestic producers. The gap itself must be seen as a result of unrestricted imports. We witness an increasingly uneven struggle between domestic producers and importers in expanding local markets, the rules of the game being tilted heavily in favour of the latter. In the next chapters we go into some of the mechanisms of discrimination, including technological advantages at the processing level and in the organisation of the international grains trade. More fundamentally, there is the shift in prices in favour of imports.

The prices of domestic food increased much faster than those of imports. Only a small part of this can be explained with reference to the general movement of world market prices for grain or by domestic supply constraints. The general price inflation in Nigeria, as precipitated by the high rate of oil spending, is the main reason why prices moved against domestic products and in favour of imports. The domestic rate of inflation, at an annual average rate of perhaps 20 per cent, was double the rate in those economies which supplied Nigeria's imports.[5] Backed by petroleum, the purchasing power of the naira was protected in foreign markets, while it was crumbling back home.

The unrestricted importation of food at increasingly more competitive

prices must in itself be taken as a major factor contributing to the sharp increase in the non-agricultural population. If imports had been restricted, domestic food prices would have helped to regulate and stabilise the flow of people and resources between the sectors of the economy. The upward pressure of domestic food prices would have dampened migration to the towns, while simultaneously expanding economic opportunities within agriculture itself.

Nigeria is unable to feed herself not because of the backwardness of her agricultural producers or their lack of commercial orientation. Their markets have been undercut by policies which have favoured the importers. Unrestricted imports have encouraged an excessive rate of increase in the non-agricultural population. The wheat imports can therefore not be seen only as a stopgap for a local deficit. The deficit is in itself to an important extent a result of the food imports.

The Crisis of a Dependent, Neo-colonial Economy

It could be argued that cheap imported wheat has been beneficial to Nigeria, precisely because it has facilitated the rapid movement of people into non-agricultural activities. By holding back food prices, imports have supported real wages and thus held back costs of production. Such an argument may have seemed more attractive at a time when the capacity to import was not a major constraint. The current payments crisis, however, suggests that it is a dangerously shortsighted view. The crisis underscores the extremely vulnerable, import-dependent nature of Nigeria's type of development, where dependence on food imports is one of the weakest spots.

The elected governments which came to power in 1979 at the federal and state level (Nigeria is a federation of 19 states) set public funds rolling at an unprecedented rate. The resources at their disposal were also unusually large. The OPEC price increases of 1979 brought about a doubling of federally collected revenue from N7 billion in 1978 to N14 billion in 1980 (CBN 1982). About half the revenue was passed on to the states. Public spending precipitated an import spree which reached its peak in 1981. The resources available to the economy were also replenished by credit. Nigeria was considered greatly 'underborrowed' in world financial markets which suffered from excess liquidity.

The success of the 1979 oil price increases, however, was illusory and self-defeating. The market turned against the oil producers. Continued recession in the advanced capitalist economies, new sources of energy supply and conservation policies, all combined with the sharp price increases to undermine the market. Throughout 1980, Nigeria still exported at the level of almost 2.1 million barrels a day. In 1981, the average fell to 1.4 million and the decline in sales continued at an alarming rate. By August 1981 it reached a rockbottom level of 0.7 million. Average sales in 1982 and 1983 stood at 1.3 and 1.2 million barrels per day respectively. With a reduction

in prices from the post-1979 peak it meant that export earnings were halved in absolute terms. In real terms (purchasing power), the decline was even greater (*Financial Times* 23 January 1984).

Public spending and imports responded only slowly to this change in the financial situation. Deficits were allowed to grow, partly financed by a drastic increase in internal and external borrowing, partly through the non-payment of bills, including some wage bills in the public sector. 'Austerity' policies were officially introduced in April 1982 (FGN 1982b), but it was only in the second half of 1983 when foreign creditors developed cold feet that Nigeria's import economy was brought to a virtual collapse. There were, of course, still current oil earnings capable of financing imports, albeit at a reduced level. There were also future oil earnings to be mortgaged. In that sense, the collapse may seem out of proportion to Nigeria's real financial standing in the world economy. The political and administrative machinery, for handling these resources, however, broke down under the acute pressure from conflicting claims. Unable to regulate galloping current trade debts, that is, unpaid bills, Nigeria finally came up against an international financial embargo, contributing to the downfall of the Shagari government in December 1983.

The military government ostensibly set out to re-establish Nigeria's international credit-worthiness through negotiations with the IMF and her foreign creditors. The austerity policies, half-heartedly pursued by the Shagari government, were reinforced. Federal and state budgets were slashed, public development projects abandoned or postponed. The foreign exchange squeeze had been allowed to play havoc with production. The manufacturing sector was largely paralysed from lack of spare parts, raw materials and other imported inputs. Public services were equally badly affected. Hospitals, for example, became empty shells without the most essential items necessary for running them.

There were mass retrenchments in the public and private sectors alike. Wage increases obtained in the early stage of the Shagari regime were wiped out by inflation. An official wage freeze was imposed by the military. Despite sharply recessionary policies, the rate of inflation continued to be high as the access to commodities had been thoroughly disrupted.

Food Imports and the Crisis

The acute foreign payments crisis faced by Nigeria is a recurrent feature of economies which are highly dependent on the export of one or a few primary commodities. In the Nigerian case, the situation was aggravated by the way in which available resources were handled. This applies as well to the manner in which food imports were allowed to build up during the 'good years'. What may have seemed at the time as the grease that facilitated expansion turned into a major obstacle.

Food imports absorbed a rising proportion of declining export earnings.

The share of food in total imports during the 1970s varied around nine per cent, with an increase from 7.6 per cent in 1970 to 11.3 per cent in 1980 indicating the general trend (Forrest 1981; Sano 1983). As total imports had grown so fast, this rather slight increase in relative terms meant very much in absolute terms. The value of food imports multiplied almost twenty times over the decade.

As export earnings were halved in 1981 to 1983, the share of food in total imports shot up. As this is written, 1983 trade figures have not been released, but it is likely that food imports absorbed as much as one-quarter of Nigeria's export earnings in that year. The contrast is sharp between the priority given to continued food imports and the failure to provide domestic industries with essential inputs. The Shagari government sought to bolster its declining popularity through massive imports of rice (the notorious 'Presidential Task Force') despite an official policy of austerity that seriously affected domestic production.

Wheat imports were maintained at the peak level reached in 1981. The Buhari regime, as we have seen, committed itself at an early point to the uninterrupted flow of wheat – bread having become 'the cheapest staple food of our people'. It contrasts with the piecemeal allocation of import licences and foreign exchange to a disintegrating manufacturing sector. Persistent high levels of food imports, on the one hand, and sharply rising debt payments, on the other, combined to eat deep into stagnant or falling export earnings, leaving a diminishing space for servicing and maintaining existing production and public facilities, not to speak of room for expansion.

The wage earners are those worst hit by the current crisis. Many have been thrown into unemployment. An even greater number find themselves (by mid-1984) in a state of extreme uncertainty. While still officially retained on the payroll, they suffer long periods of enforced leave, reduced working hours (and pay) or even just the non-payment of wages. All wage earners face a sharp fall in real wages as a result of inflation and wage freeze. Simultaneously, these are the people who have become the most dependent on imported food. Their continued access to bread in particular helps to shield them from facing the full impact of the disruption of the domestic economy. But the bread that offers this relief is also a contributing factor to disruption. Entrenched food imports stand in the way of such other imports as may help to revive industries and public services and help safeguard employment. Nigerian workers thus confront the dilemma which confront workers everywhere, that is, how to protect their income as well as continued employment.

In the concluding chapter we address problems of national and working class policies. We argue that the long-term interest of the workers is bound up with the ability of the nation to cut its dependence on large-scale importation of food, despite their immediate concern with cheap imports as a cushion against falling real wages.

The current crisis exposes the dependent, neo-colonial nature of the Nigerian political economy. The entrenchment of bread as a staple food

is a particularly serious aspect of this syndrome.

The Entrenchment of Wheat Imports

Entrenchment is a central concept in the study. The term is used to characterise the process whereby the dependence on imported wheat becomes built into the structure of Nigerian society in a manner which makes disengagement difficult. We argue that the entrenchment of wheat obstructs Nigeria's national development. It obstructs the commercial transformation of agriculture, the rise in rural incomes, a deepening of the domestic market for local industry as well as the reproduction of an industrial labour force.

Why it is that something so inimical to national development is allowed to entrench itself? Our study tries to identify the aspects of the Nigerian political economy that may help to explain why it happens. At one level it is a matter of identifying the social agents who have a stake in the promotion of wheat. At another level, one needs to look at the dynamics of this type of society and the logic of its mode of development.

The development of the petroleum economy, the dislocation of the national economy, the ensuing shifts in population and economic activity as well as the distortion of price relations go a long way to explain the demand for wheat and the emergence of classes who depend on wheat for their daily bread. The supply of wheat on the other hand is seen in the context of the world market and developments in the wheat producing countries, the USA in particular. We look at the policies of the US government and of the private US corporations that dominate the international wheat trade.

There is a close link between the international wheat-trading interests and the companies with a stake in the Nigerian milling industry. The mills institutionalise local demand and are therefore vital for the entrenchment of imports. They serve as bridgeheads. Traders in wheat processing technology similarly have a stake in expanding or maintaining wheat imports. Major producers of bakery machinery have been active in Nigeria. Their wares are heavily advertised.

Still at the level of the world market, foreign agri-business firms and their consultants promote technology for growing wheat locally. Superficially, they may seem to represent forces opposed to Nigeria's dependence on imported wheat. In practice, they reinforce this dependence by supporting an illusion of self-sufficiency. This illusion serves, we argue, to confuse and pacify opposition to the wheat imports. If these are gradually to be replaced by domestic wheat, what is the problem? The problem is that it is not likely to happen. In the meantime new flour mills are erected, ostensibly to take care of the output from the wheat growing schemes, while in practice relying totally on imports.

At the Nigerian end, local commercial and producer interests have a growing stake in the wheat trade. Some serve as agents or partners of the

foreign firms, as shareowners and directors in the flour mills, as flour distributors or as traders in bakery machinery. There are also Nigerian businessmen and state companies who have entered the wheat business on their own, in competition with foreign-controlled mills and importers. At a lower level, thousands of Nigerian commercial bakers have a stake in the continued flow of imports. Bakers have their own associations and pressure groups for the purpose of dealing with the millers and government.

The Nigerian state contributes directly to the entrenchment of wheat imports through state-owned flour mills and bakeries, through state credits and extension services to bakers, and by promoting bread consumption in schools and other public institutions. The state is also primarily responsible for the fictitious import substitution programme that serves to entrench imports further. More fundamentally, the state regulates the imports themselves, through tariff policies, import licences, and foreign exchange allocations, for wheat and wheat flour as well as for the machinery required by mills and bakeries.

The Politics of Underdevelopment

To explain the entrenchment of wheat we need to go beyond the identification of the groups, companies and institutions who have a stake in the wheat business. We need to ask why such interests are allowed to have their way. Part of the answer lies in the development of market forces, the mode of Nigeria's integration in the world economy. On that account, we can see how the entrenchment of wheat is a consequence of economic changes: the rise of the petroleum economy, the expansion of non-agricultural activities, the emergence of a food deficit, and the means available for taking care of it. These developments play into the hands of the wheat interests who, step by step, establish economic and political structures that ensure their reproduction.

Yet the accelerated expansion of wheat imports is not the only option, nor is it beyond state regulation. Not only the rate at which the imports have been allowed to expand but also the extent to which they perpetuate themselves through the building of flour mills are expressions of political choice, although not necessarily conscious ones.

Our analysis therefore concludes at the level of the state and the nature of the classes which constitute the basis for the exercise of state power. The manner in which transatlantic wheat interests have been permitted to structure Nigerian food policy needs to be explained in terms of Nigeria's incorporation, at this level of state and class forces, in a subordinate position in the world economy.

The study suggests the continued relevance of certain key positions of 'underdevelopment theory'. The argument in this respect is summarised in the concluding chapter, taking the point of departure from the current critique of such theories. The critics, in our view, have correctly pointed

out the weaknesses of some of the basic theoretical assumptions of the underdevelopment school, including that of 'blocked capitalist development' (Beckman 1980). They have tended to loose sight, however, of the distortions and obstructions of national development that go with integration, in a subordinate position, in a world economy that is highly unequal and stratified in terms of economic and political power. The wheat trap demonstrates how such subordinated integration obstructs national development. It also shows how a dependent, neo-colonial ruling class is instrumental in mediating this process of underdevelopment.

Part I: Join the Energy Feast

2. Why Wheat? Internal Demand and External Pressure

1. The Clamour for Bread – Indications and Trends

Bread in Village Markets in the Far North

Moving around the towns and larger villages of northern Nigeria, the importance of wheat bread in local consumption is very much in evidence. Coming for instance into the village of Danja in central Kaduna State on the afternoon of a Friday market in November 1981, after driving some 20 km on rather slowgoing dust roads, one would encounter on the main street along the market place a row of large vans stacked with bread, which had come from Zaria 40 km away. There were also three small bakers in Danja, each using some five to ten 50 kg bags of flour a week supplying the daily needs of this village.

From Danja supplies of bread also go to the surrounding villages, e.g., Dan Mahawayi which we passed on the road seven km before Danja. In this village the bread is distributed from four small tea-shops, the first established eight years earlier, frequented by farmers in the mornings before work or in the afternoon, and by 'take-away' customers through the day.

Similarly, one Sunday in November 1981 at the market in Sundu, 35 km by tarred road plus another kilometre by very dusty road north from Zaria, we counted six bakery vans and stacks of bread displayed on the ground among the wide range of other processed cereal foods that are part of the offerings of the ordinary weekly market in these parts. This busy market for the red-pepper harvest, with the wind full of sneeze-inducing dust, also has as many as 13 small tea-stalls selling bread with the tea, in addition to a stall where it was on sale together with Fanta and Coke, for a change.

Beyond the junction of the dust road joining the main Zaria road is Doka, which is within the market area of Sundu, but gets its bread straight from Zaria by paid transport as well as from Kudan further north on the road to Kano. It is sold in the afternoons from four tea-shops. This has been so since the late 70s and is evidently in response to a demand that has fairly recently developed at this rural level of the northern economy.

Doka and Dan Mahawayi were among the three villages surveyed for their consumption patterns by E.B. Simmons in the early 1970s (Simmons

1976a: table 5). She records for Dan Mahawayi only 0.8 calories per capita per day for bread, out of a total of 1907 calories. For Doka *no* bread was recorded at the time. In contrast mere physical observation shows that the rural spread has proceeded rapidly since the early 70s, and contributes its share to the average of 147 out of a total of 1964 calories per capita per day estimated for bread consumption in the country as a whole in 1980. This is according to the Green Revolution Food Production Plan for Nigeria quoted in the Fourth National Development Plan 1981–85, (FGN 1982a: Vol. 1, table 6.1).

Twenty years ago Kilby, in a major study of bakeries in Nigeria (Kilby 1965), painted a picture in which bread consumption had penetrated the southern parts of the country, but in the North was still largely concentrated in the largest cities, such as Kano, Kaduna and Zaria (see chapter 4). While probably an underestimation of the degree of dispersal even in the early 60s, the picture has certainly changed since then. Bread is now evidently consumed in the whole country all the way to the northern outskirts.

The village markets in the Katsina area in the far north (see map 4.1 below) give the same evidence as those near Zaria. In November 1981 Jibiya Sunday market, 60 km to the north-west of Katsina, for instance, displayed 19 bread stalls of which 16 had been supplied from Katsina bakers, two from local bakers and one from nearby Batsari town. Health office records for Katsina district list bakeries established in many of the larger villages and some smaller ones as well. Interviews with some of these bakers (to be discussed in chapter 4) indicate a further wide dispersal of sales into their hinterlands, suggesting a virtually total spread of some measure of bread consumption.

If the massive spread to the rural North is of recent origin the medium sized towns in this area were well covered as of the early 70s. In the town of Maiduguri, the capital of Borno State in the far north-eastern corner, 45 per cent of a population of households interviewed in 1972 were found to buy bread every day, and as many as 64 per cent occasionally, (Steckle and Ewanyck 1974). Recordings for Samaru, the large suburb of Zaria next to the Ahmadu Bello University further south, show that 69 per cent of grown-ups (over ten years old) and 95 per cent of children, take bread every day (Olugbemi 1980).

Rows of bread sellers found every evening in the streets of these and other northern cities, and a proliferation of tea-shops and stalls on the side-walks serving bread with a hot drink and sometimes eggs, tell the same story. Newspaper surveys of the state of the bread and flour industry in the 1980s repeatedly refer to bread as a staple food. Cartoons portraying people's sufferings when shortages make bread unavailable or more expensive are common in the daily press.

Import Figures – Racing Increase

The present level of penetration of wheat on the Nigerian market and its rapid rate of recent expansion can be confirmed by data on milling and

baking, as will be seen in chapters 3 to 5 below. Most graphically however it emerges from the figures for the importation of wheat grain and flour, as the bread industry entirely depends on imports. These figures kept a low and fairly even level below five thousand tonnes per annum from the beginning of the century up to the end of World War II. At this time they started to rise very steeply (Kilby 1965: figure 1). But, as table 2.1 brings out, the present volumes are the result of even larger increases, particularly since the late 1970s.

Table 2.1
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 ration of 1:72 (according to FAO standards) [b] 3-year average.

Source: FAO Trade Yearbook various years, latest stated observation.

From an average level of 75,000 tonnes per annum in the first half of the 1960s the imports had trebled by the first five-year period of the 70s. The next trebling had taken place already in the last part of the same decade. By the early 80s the annual three-year average reached 1,350,000 tonnes. This is 18 times the level of the early 60s. 1981 was a peak year with over 1.5 million tonnes imported. Since then the import restrictions generated by receding oil incomes have taken their toll, but only to slow down the rate of expansion. For 1984 a level of 1.8 million tonnes has been reported (*Business Times* 3 December 1984).

2. Changing Patterns of Food Demand

Why This Tremendous Expansion?

How can we understand this tremendous recent expansion in the consumption of an imported grain food in an economy which is still predominantly agricultural, and where grain is one of the main domestic products and a main staple food? As was outlined in chapter 1, the expanding oil economy of the 1970s has entailed great changes in the demand for food and in the conditions for the supply of these demands. These changes have occurred in a global context of great traded food surpluses, where wheat has been the dominating staple commodity on sale.

The changes in demand affect both the volume and the type of products required. They have to do with expansion in buying power generated by the oil incomes, which have greatly expanded the volume of food demanded. This trend has been added to an increase in the population the rate of which is among the highest currently recorded in the world.[6] Established patterns of consumption of processed foods traded in the local markets have been further encouraged by the transition to non-agricultural occupations and urban living which favour the consumption of 'convenience foods' that require little preparation.

On the supply side we can point to the lag in adjustment of the agricultural sector to this increase in demand, which is also discussed in chapter 1. Although the volumes of commercial supplies are evidently increasing, they fall short of demand. When it comes to the types of food supplied it would seem that the conditions for expansion in the traditional household-produced convenience foods have restricted their rapid adjustment to the great volumes demanded.

Bread has fitted straight into the current situation in Nigerian food markets. With its varied processing technology, backed by favourable global conditons of production and trade, it has had advantages in supplying both the volume and the type of foods demanded. We begin by looking closer at some demand aspects of this match.

Bread Fits into the Established Diet

Wheat, if not indigenous to northern Nigeria, has in fact been cultivated

there for several hundred years. It has long formed an exclusive part of the diet mainly of the aristocracy and for ritual purposes. There is thus a great variety of traditional uses of wheat. One main form is cooking the coarsely ground grain for recipes ressembling *couscous*, another is deep-frying dough made of fine flour in shapes of balls or patties, e.g. as *chin-chin* and pancakes. A kind of hand-rolled spaghetti, *taliya*, is a third form. (*Alkaki*, *pinkaso*, *gurasha* and cakes are other wheat-based items mentioned in the Maiduguri study). These processed forms are still sold in the market places in the North and have come to be more widely consumed with the increasing availability of imported flour.

In the form of bread, wheat enters into a consumption pattern where grain (millet and guinea corn/sorghum) and other starchy foods, such as roots and grain legumes, account for three quarters of the calorie intake in the average household. Referring to 1972, Abalu and D'Silva (1980) quote figures of 42 per cent of daily per capita intake for cereals and 22 per cent for roots and tubers for Nigeria as a whole. The Green Revolution document for 1980 (FGN 1982a: Vol. 1, table 6.1) gives about 50 per cent for cereals, 22 per cent for roots and tubers and some 5 per cent for legumes, adding up to some 77 per cent. According to regional ecological conditions of production, cereals dominate in the savanna North, accounting for 80 per cent of calorie intake in Simmons' (1976a: table 4) data for the three Zaria villages. Roots dominate in the forest zone of the South.

These staples are largely taken in the form of a pulpy cooked dough or mash in a range of shapes and consistencies and are eaten together with a soup of vegetables, oil and when possible some meat and fish. Preparation is tedious and time-consuming, and absorbs much of the time of the women in the household (Simmons 1976b). Mechanisation has proceeded very slowly, but is gaining ground in the form of custom milling of the grain, and in the specialised preparation of *gurri* from cassava. Rice is an exception, and along with wheat is a main gainer in the common diet also supplied by large imports.

We find imported wheat in some forms that fit directly into this pattern, as 'semovita' (semolina) or as macaroni. These are pre-prepared in a form to make them easy to cook, in comparison with local foods, but still do require more preparation than bread. Millers' data (see chapter 3) suggest that they are of marginal importance compared to bread, but rapidly expanding too (see also Steckle and Ewanyck 1974: table 24).

Wheat also fits into an already established pattern of consuming as much as ten to 15 per cent of the daily calorie intake as *processed food* bought in the market. Simmons (1976a: table 5) records ten per cent of the diet taken as processed cereal products in her surveyed villages (*koko*/*kunu*, *fura*, and *waina*, all made of millet or guinea corn, as well as cooked rice are dishes mentioned). Foods made of groundnuts (*kuli kuli*) or of beans (*daddawa*, *kosai*, and *alele*) and the sour milk (*nono*) sold with the *fura* add another two per cent to the component of processed staples in this rural diet, whereas bread was as yet of marginal importance at this time. (For a description of

these various dishes we refer to Simmons 1976a: 77 ff.)

Bread is Convenient

Expansion in the demand for processed food in general may thus be taken as part of the explanation for the increase in bread consumption. The extreme convenience of bread fits into the changing structure of demand generated by the emerging new patterns of working and living, namely, the ongoing break-up of the household structure with less labour available for home cooking and more people working and living outside their households at least periodically over the working day or the year. This convenience value refers first of all to ease of preparation in comparison with all unprocessed foods. Bread is a 'fast food'. But it refers also to the time that it can be preserved. This is longer than for most local processed foods, which turn sour, fermented or dry in a shorter time in the tropical climate. On top of this, bread has unique qualities when it comes to handling and carrying about by the consumer. The patterns of bread consumption confirm the importance of the convenience factor in this process of rapid spread.

Bread is thus entering the household diet. In the Maiduguri survey (Steckle and Ewanyck 1974), one quarter of the interviewed households were found to buy regularly some pre-cooked food for their meals, a tendency evidently on the increase. *Kosai* (bean cake) was the most popular, but other of the above mentioned items were also included. Asked what foods they would like to increase in their diet, the households mention a number of typical breakfast foods among the items enumerated (same: table 28). And it is also predominantly as a breakfast food that bread is found to enter into the diet of the household (same: table 24). In this function it is usually taken with tea and competes in particular with *kunu* and *kosai*, i.e., with a cereal gruel eaten with deep fried bean cakes.

Olugbemi (1980) records the same focus on breakfast, already mentioned consumption in his Samaru survey. Eighty-one per cent of the grown-ups eat bread at this time. As we saw above he further indicates a higher overall consumption for children (95 per cent against 69 per cent for grown-ups record daily consumption). The children however spread it more evenly over the day. 32 per cent eat bread at any time. The habit of bringing back bread from the village market as a treat for the children in particular was also repeatedly indicated in the market surveys we made.

Of school children in Maiduguri one third are recorded as eating bread for breakfast, (rice being next in importance with 19 per cent, while 21 per cent had no breakfast at all) (Steckle and Ewanyck 1974: table 50). But the data for this group also point to another major function of bread, and this is as a snack outside the home.

This form of bread consumption is hardly exclusive to school children. Farmers in the field form another group for which processed foods and notably bread have a high convenience value – being so easy to take along. Differentiation of production away from the household, as well as expansion in the education system, are processes that favour such convenience criteria.

Finally, the tea shops serving bread along the streets, in Maiduguri as in most larger towns even in the far north, and which are seen to be frequented very largely by young men, testify to the spreading habit of having bread with tea for breakfast, also, and maybe particularly, outside the household. But these stalls are open in the evenings as well and thus give indication of the function of bread as an evening meal for people who have no family households, as many male urban migrants do not. In this function bread competes as a cheaper (but less nourishing) alternative to the fuller meals of starch and soup, which are also sold on the road-side in the evenings. It is favoured by the tendency for increasing separation of people from their households for longer periods of time, with a bias towards migrant young men who will not cook their own food.

The urban bias in these tendencies is clear. It is, as we have seen, clearly reflected in the level of consumption and the way bread has penetrated through the urban system. The Maiduguri survey records higher consumption figures than Simmons' village study, and the highest indications of all that we have considered are found in Samaru, the suburb of the city of Zaria adjacent to Ahmadu Bello University. Estimates made by the AERLS Committee on Wheat Production and Marketing in Nigeria reporting in 1979 (AERLS 1979: 79) also assume a level of per capita wheat consumption for the late 70s of 82 gm for the 25 per cent urban population (162 gm for Lagos) as against 4.1 gm for the rural population.

The addition of at least ten million urban inhabitants in Nigeria in the last 20 years is of course in itself a factor in the increased consumption of processed convenience foods in general and bread in particular.[7] But the urbanisation impact on the total demand for bread should not be exaggerated. The process of changing life-styles is under way throughout the economy, including the rural areas. Transition to wage labour is proceeding rapidly inside agriculture. Specialisation into non-agricultural activities is likewise a rapid process (Beckman 1985b and chapter 1 above).

Wage workers may have the highest bread consumption per capita in the towns as is suggested by a consumption survey made in the context of the National Accounts in 1974–5 (FGN 1981c: chapter 6). However, small producers and traders, certainly in the towns, but also in the rural areas are likely to account for very large numbers of bread consumers in this overwhelmingly rural society.

The observed urban bias in levels of consumption is of course not just a matter of 'life-styles' and patterns of demand. We must also take into account an urban-rural difference in the conditions of *supply* of both domestic and imported foods with effects on relative prices in these respective locations. If bread is an urban food in particular it is also because it is cheaper in the cities.

Bread is Cheap

We thus have to go beyond the convenience of bread in the context of changing work and family organisation, when we want to explain Nigeria's

fast-growing commitment to wheat. Of great importance is the rise of bread as a commodity which competes effectively with local staples in terms of price. In the course of the 1970s, bread has become an increasingly cheap source of calories as compared with such staples. Some of the main reasons have been outlined in chapter 1. The dynamics of the oil economy have caused prices to shift in favour of imports. The rate of domestic price inflation has considerably exceeded 'international' inflation (as affecting the price of imports). It is a development that has undercut the competitive strength of all domestic production, not just food. In addition, there are the particular problems relating to agrarian transformation and the ability of domestic producers to catch up with the tremendous growth in demand. The situation is compounded by pressures from the wheat exporting end, as will be discussed later in this chapter. At this point, let us merely indicate some evidence of this growing competitive strength of wheat in Nigerian markets.

The Federal Government directly regulates the wheat price by the imposition of a control price on the flour leaving the domestic flour mills. It requires the millers to sell their flour to registered customers and also influences the allocation that is made between bakers and traders. In 1981 a little more than half of the registered customers of the Northern Nigeria Flour Mills in Kano were bakers. The rest were traders who resell either to bakers or through the market hierarchy via wholesalers down to the petty traders in the market places.

In early 1980 a baker in Zaria with good enough connections to have access to wheat flour at control price would pay about 26 kobo per kg (N13 per 50 kg bag) at wholesale price (according to bakery interviews we made in March 1980; see further chapter 4). Judging by the quota for flour distribution applying in mid-1979, this price applied to some 40 per cent of the flour distributed in the Zaria area, by the authorised supply organisation, MDS (interview Ogenenghe 1981). The remainder, supplied via 'dealers' in the open market, would fetch a price of 32 kobo (N16 per bag), according to the same round of bakery interviews. Swings upwards would occur temporarily at times of disturbance in this supply, but the 'normal' price would keep around this level. This low price applied then to the *milled* commodity from the large flour mill in Kano, ground from wheat transported overland from the port in Lagos, where it had been shipped all the way from the Great Plains in North America.

It compares with an average price of 28 kobo per kg for millet and guinea corn alike for the same year, 1980. For maize the price was 32 kobo and for brown rice 87 kobo all unmilled in the wholesale stage in the Zaria market as recorded by the Institute of Agricultural Research at Ahmadu Bello University near Zaria (IAR 1981).

The relative position of wheat had improved continuously as the transformation in the oil economy has put increased pressures on domestic prices generally and the domestic food economy in particular. The aggregated national food price index (where 1975 = 100) had exactly doubled (to 200)

by 1980 (CBN 1983). The control price for imported wheat stayed unchanged from 1974 to mid-1980. The price per 50 kg bag at Kano was fixed at N12.71 (= 25.4 kobo per kg) all this time. As the aggregated food price index soared to 336 (over 1975 = 100) by 1983 (FOS 1984), the control price of wheat flour that year had only been allowed to increase by 41 per cent over the 1974-80 level, or to N17.92 in Kano (= 35.8 kobo per kg). At the bottom of this is the price of wheat at the US source, which increased by no more than 20 per cent from the mid-70s to the early 80s. From 150 US $ per tonne 'ex Gulf' in 1975 it rose to $177 in 1981, but was again down to $158 in 1983 or an index of only 105 (over 1975 = 100). Table 2.2 summarises these facts, by comparing indices.

Table 2.2
Comparative price developments

	1. Control price of wheat flour at flour mills [a]				*2. Price of wheat at US source* [b]	*3. Total food price, Nigeria* [c]
Year	*Lagos N/50 kg bag*	*Kano*	*Lagos Index 1975 = 100*	*Kano*	*Index 1975 = 100*	*Index 1975 = 100*
1975	12.05	12.71	100	100	100	100
1980	13.80	14.60	115	115	109	200
1981	15.60	16.92	129	133	118	250
1982	16.40	-	136	-	107	272
1983	16.95	17.92	141	141	105	336
1984	17.40	18.50	144	146	n.a.	n.a.

Notes: [a] end of respective years [b] 'Hard Winter Wheat No 2 FOB Gulf' [c] annual average

Sources: 1) Flour Mills of Nigeria and press 2) FAO *Production Yearbook* 1980: table 122 and FAO *Monthly Bulletin of Statistics* Vol 7, October 1984: table 25 3) CBN *Monthly Bulletin* (Spec. series) January 1984

Not that the control price is supreme. The rising domestic food prices have naturally put increased pressures on the section of wheat flour that is sold to bakers in the open market. The situation has been further aggravated as capacity expansion in flour milling has been held up by the current external payments problems. On the other hand, in the struggle over available wheat flour allocations, bakers are reported to have been able to increase their share of control price flour to 85 per cent, at least in some areas, leaving less to uncontrolled market forces, and guaranteeing an average price that still makes it available for mass consumption (press reports confirmed by Jutzi in interview 1984). The latter gave the figures 80 per cent for FMN Lagos and 70 per cent for NNFM in Kano.[8] (See further chapter 3.4).

It was to safeguard further the domestic price that the government in the 1984 budget actually went out of its way to single out wheat for exceptional relief from the import restrictions that have been imposed on so many other imported commodities in the recent foreign exchange crisis (Buhari 1984). This is in agreement with the general policy over the last decade and a half to keep duties low and import restrictions generally non-prohibitive to maintain prices low and supplies flowing.

Bringing the factor of relative prices into the discussion of urban bias in bread consumption we may first point to the fact that the difference in the development of food prices between urban and rural areas is marked. For 1982 we get the index (over 1975 = 100) of 328 for urban areas against only 265 for rural areas for all foods (CBN 1983: tables 11 and 12). And we know that the differences are usually larger still for staples in particular.

Imported wheat with its control price 'ex flour mill' will tend to have the opposite price tendency. Distributed from the few city-based flour mills from the top of the urban hierarchy and down, it will become successively more expensive towards rural and peripheral areas (as we shall show by example in chapter 3). A similar effect results from the orientation of the bakery industry upwards in the urban system, affecting the distribution of supplies (see chapter 4). The combined effect will be a double comparative attractiveness in the price of wheat and bread towards the higher urban levels – higher local and lower imported food prices.

This will again be enhanced by the seasonal stability in the control price of wheat flour contrasting with the variability in the prices of domestic staples, which is particularly great in the cities (FOS 1980: tables 2 and 3).

We may talk of a particular urban entrenchment of wheat. From an original base with high income groups in the towns (as indicated by early consumption surveys, see Kilby 1965: chapter 3), bread has increasingly come to function as a staple food for the urban masses. As the domestic food shortage gets worse, the imported foods become all the more crucial for maintaining that part of the population which has the least access to local food supplies. In that sense the development path currently followed in Nigeria – to which urbanisation is a concommittant and a condition – relies heavily on bread.

Westernisation and Taste Transfer?

The urban bias of bread consumption is firmly rooted in relative prices and relative access. Bread is an answer to real problems of food supply. This should be remembered when faced with superficial and moralistic arguments suggesting that the attraction of bread is largely a cultural phenomenon related to the process of 'westernisation' or de-nationalisation of indigenous cultures.

External influences on Nigerian consumption habits have of course not been lacking throughout history. Bread is known from pre-colonial times, through the example of colonialists and via international exchanges in more

recent years (see further chapter 5.1).

From other parts of the world we have evidence that central capitals, and notably US interests, have sought a variety of means to influence the consumption habits in peripheral cultures in order to prepare the way for their own products. The 'eat wheat' campaign in South Korea in the late 60s, led by private and public US interests in liaison, is a case in point (Wessel 1983: 173 referring to Murphy 1979). As we show below such forces have been operating also in Nigeria.

Seductive advertising may have played a role in effecting some measure of 'taste transfer' in the manner commonly applied to the introduction of multinational brand name products like fine toilet soaps and luxury breakfast cereals (cf. Langdon 1975 and Kaplinsky 1977 referring to Kenya). 'JOIN THE ENERGY FEAST – EAT BREAD' is the slogan used by the dominating millers in Nigeria. The display of healthy people and the reference to nutritiousness is meant to establish the superiority of this foreign product.[9]

In our understanding, however, cultural 'westernisation' factors cannot be said to represent the main force behind this development of demand. The relative price of bread in combination with its functional properties as a convenience food for urban and rural workers and non-producers of food all by themselves go a long way to account for the enormous increase in demand that has defied all notions of cultural resistance to new diets.

3. External Forces of Penetration

Wheat in the World Economy: A Large Surplus Controlled by Few Exporters

The speed at which the Nigerian people have taken to eating wheat bread must also be understood in the context of the dynamics of world wheat production and the development of the wheat market. The wave of wheat sweeping through Nigeria is an outflow of the inundation of the whole world by this crop in the last few decades. Let us summarise some of the main features of this process of expansion in production, consumption and trade at the global level before we go on to discuss the implications in terms of wheat penetration specifically into Nigeria. A useful survey based on FAO trade, production and consumption statistics made by Byerlee and Hesse de Polanco (1983) supplies us with processed data for the 60s and 70s. Some of these are shown in table 2.3, and can be supplemented with more recent FAO data.

Wheat is a major product in the global food market. Just below 100 million tonnes were traded annually in the early 1980s, a doubling from 50 million tonnes in the early 1960s. It compares with some eight million tonnes of rice (or 12 million if counted as unmilled equivalent). An exceptional production expansion (where the new high yielding varieties have made their contribution), coupled with declining consumption trends in major production regions in the industrialised countries account for this

large and rising traded wheat 'surplus'. This surplus has provided the basis for the very rapid expansion in Third World consumption of wheat, which is taking place also in regions with no previous emphasis on this crop in their diets.

Table 2.3
Wheat production, consumption, and trade by world regions

A. PRODUCTION

	1978–80 [a]		*1961–65 to 78–80*
	million tonnes	*% of world*	*% annual growth*
Developing countries:	150.9	34	4.6
Middle East/North Africa	34.4	8	3.0
South Asia	43.7	10	6.4
East Asia	56.7	13	5.6
Latin America	14.8	3	1.5
Other [b]	1.3	0.3	2.7
Developed economies:	288.6	66	2.9
Market economies	158.2	36	2.7
Eastern Europe and USSR	130.4	30	3.2
World total	*439.5*	*100*	*3.4*

Note: [a] Annual average
[b] Mainly Sub-Saharan Africa and South East Asia

B. CONSUMPTION 1975–77

	% of cereal calories from wheat [a]	*% average annual growth [b]*	
		1. as food	*2. total*
Developing countries:	26	1.5	4.6
Middle East/North Africa	71	1.3	4.0
South Asia	27	2.4	4.8
East Asia	23	3.5	5.3
Latin America	37	0.7	2.6
Other [c]	8	3.8	7.1
Developed economies:	71	-0.6	2.6
Market economies	66	-0.5	1.7
Eastern Europe and USSR	75	-0.9	3.2
World total	*36*	*0.5*	*3.4*

Notes: [a] Average 1975–77
[b] 1. Change in per capita food calories supplied from wheat 1961–65 to 1975–77
2. production plus net imports 1961–65 to 1977–79
[c] Mainly Sub-Saharan Africa and South East Asia

C. IMPORTS

	Volume[a]				*Annual growth*
	Million tonnes		*% of world*		*%*
	1961-65	*1977-79*	*1961-65*	*1977-79*	*1961-79*
Developing countries:	24.0	45.9	48.5	58.2	4.3
Middle East/North Africa	4.7	14.4	9.5	18.7	7.5
South Asia	6.3	3.7	12.7	4.7	3.5
East Asia	5.7	10.6	11.5	13.5	4.1
Latin America	5.0	9.8	10.0	12.4	4.5
Other[b]	2.3	7.4	4.6	9.4	7.8
Developed economies:	25.5	33.0	51.5	41.9	
Market economies	16.8	19.2	33.9	24.4	
Eastern Europe and USSR	8.7	13.7	17.6	17.4	
World total	*49.5*	*78.8*	*100.0*	*100.0*	

Note: [a] Annual Average
[b] Mainly Sub-Saharan Africa and South East Asia

Source: Tables A-C: FAO computer tapes on Production, Trade and Consumption as edited by Byerlee and Hesse de Polanco (1983)

Production increases of 4.6 per cent annually in the Third World over the 60s and 70s were all absorbed by the expanding demand within their broad regions of production (table 2.3A). This is not the case with expansion in the industrial countries which has also taken place, at the slower rate of 2.9 per cent per annum. At the level of development achieved here, the demand for staples, although very highly focused on wheat (71 per cent of cereals), shows a steady decrease when it comes to direct consumption as a food (table 2.3B). Even in its form as animal fodder for meat production, regional wheat demand does not absorb the expansion in supply. So although some internal trade between industrialised countries, notably from west to east, has been absorbing parts of this surplus (currently 40 per cent), a large and increasing proportion, currently 60 per cent, is disposed of in the Third World as of the early 80s. Imports to these areas increased by an average of 4.3 per cent per annum in the 60s and 70s, from 24 million tonnes at the beginning of the period to 58 million in 1982 (table 2.3C).

Availability of this large and rapidly increasing surplus is of course a factor contributing to a low price in wheat, where highly efficient production methods in the industrialised countries have already done their job. Thus the US price for the hard red winter wheat bought by Nigeria had in fact in 1980 not risen above that of the early 60s, if counted in real terms. It had also throughout this period remained relatively lower than the prices of rice and maize. (Byerlee et al show this in their figs. 1 and 2).

A factor which has certainly influenced the price development has been the extreme concentration of suppliers of wheat to only five large countries, four in the industrialised world plus Argentina. Together these account for

some 95 per cent of all traded wheat, greatly dominated by the USA with 45 per cent. The other large exporters are Canada with 18 per cent, the EEC with twelve per cent and Australia with a similar share. Argentina has some six per cent. To show this we use data from the International Wheat Council for 1982/3 in table 2.4.

Table 2.4
Exporters' shares in the world trade in wheat and flour. Five-year average 1978/79-82/83.

	'000 tonnes	*per cent*
Argentina	5,057	5.6
Australia	10,740	11.9
Canada[1]	16,545	18.4
EEC [2]	11,661	12.9
USA [3]	40,383	44.8
Others	5,743	6.4
World Total	*90,129*	*100.0*

Notes: [1] Including wheat exported to the EEC and subsequently re-exported by the latter as flour under onward processing arrangements (TPA)
[2] Excluding TPA
[3] Including TPA

Source: International Wheat Council, *Market Report* 24 February 1983, Table 1.2.

Extra-economic Pressures

The stiff competition between these few exporting countries has also in the last few years of unprecedented traded volumes resulted in very aggressive marketing practices, emphasised by the International Wheat Council (1983:1:1) in a survey of recent tendencies in international wheat trade. And there is more to it than the ordinary economic means of competition.

The large volumes of exported wheat involved for any one of these countries make the maintenance and expansion of this trade a crucial interest not only to the actual producer and trading groups concerned, although such interests have been influential enough. But the role as a major earner of foreign exchange has lent to wheat exports the dignity of an issue of national interest. State involvement and extra-economic pressures are therefore common, as is well documented for the United States in particular (Morgan 1979, Wessel 1983). The potential to use food control as a strategic weapon against importers has provided extra motivation. An example is the withdrawal from Nicaragua of US credit for wheat exports in 1981, only one in a row of similar cases.

The fact that, precisely by force of its abundant availability it has become a main staple food supplied for international hunger relief in times of famine, has facilitated its entry into new markets. Furthermore, aid terms have been

exploited for political purposes on a bilateral basis by the United States in its notorious PL 480 programme.

In fact, corporate developments within the whole sector and its transnationalisation and integration 'from ax to loaf' is playing havoc with national economies at both ends of the trade. (For an account of the US end see Wessels 1983). The dominance of five large, mostly family based, corporations is a showpiece of developments in the global food economy (Morgan 1979; Burbach and Flynn 1980: chapter 13).

To the pull of structurally and otherwise induced increase in demand and the competitive power of efficient production methods is thus added a large amount of pressure and manipulation applied by such powerful agents as the United States government and some of the largest transnational corporations stuffing more and more wheat into Third World consumers.

Patterns of Wheat Import to the Third World

Of the nearly 60 million tonnes of wheat that are sold to the Third World much goes to countries where wheat has for long supplied a major share of basic staples. Here the imports go to supplement a well established local production which has not been able to keep pace with expanding demands. This is the case in the Middle East and North Africa, where 71 per cent of cereal calories consumed come from wheat and local production yielded a considerable 35 million tonnes in 1982 (tables 2.3B and C). A rise in production of only three per cent per annum shows that cultivation under semi-arid rainfed conditions has not yielded the same increase as for example in India and China where production is to a much larger extent irrigated. (In comparison the latter regions record production increases of five to six per cent per annum.) The imports to these Arabic regions as a whole have therefore gone up by an awesome average of 7.5 per cent per annum through the 60s and 70s. Egypt alone absorbs currently some six million tonnes, and Morocco equals Nigeria with about 1.5 million tonnes.

Of the other Third World regions defined in table 2.3, others have well established although lower levels of wheat consumption (between 20 and 40 per cent of total cereal consumption) and considerable local wheat production, as a condition for their approximately four per cent per annum levels of increase in wheat imports. The exception is the very type of countries to which Nigeria belongs, the tropical areas of South East Asia and Sub-Saharan Africa. These have a negligible local wheat production, above all due to unsuitable production conditions for this temperate crop in a tropical climate. (This is to be further demonstrated in chapter 7.) The share of wheat in calorie consumption at eight per cent is accordingly marginal compared to all other regions. Their share of third world imports is however close to ten per cent, and their rate of increase at 7.8 per cent is the most rapid found in any of the regions in the categorisation of Byerlee et al.

As these authors note, within this last category it is particularly in the

oil exporting countries with their lower barriers to imports at large, that the most rapid increase in imports is taking place. Thus Nigeria is paralleled by Indonesia, with rates of increase of well over 10 per cent. But it is worthy of note that other countries in these regions also follow suit, in spite of the chronic crises of foreign exchange and indebtedness that have been ravaging them since the 70s. This can be taken as an indication that oil is not nearly the whole story.

Nigerian Imports Under US Domination

The Nigerian wheat trade is highly dominated by the USA. Kilby (1965: 8) tells us that this was not always so. In 1910 only 20 per cent of Nigerian flour imports came from the US and Canada, while the bulk came from Britain and Germany. By the mid-30s the lead position was however safely in the hands of US traders who in 1936 controlled 98 per cent of all wheat imports. They have since remained the main suppliers of the ever-rising imports to Nigeria. According to the latest published trade data (FOS 1979: table 4), 90 per cent came from this country in 1979, largely as hard winter wheat in unmilled form. The remainder came mainly from the EEC, notably France, and then in the form of flour from softer wheats for biscuits and pastry.

Nigeria is exposed to the battery of influences, apart from merely price, by which the United States has secured its dominant position as exporter of nearly half of the wheat on the world market (table 2.4). It is true that in Nigeria wheat imports have nearly always been on fully commercial terms. When in the 50s and 60s, great US subsidies were given to many Third World countries, notably through the PL 480 programme, Nigeria was not among the regular beneficiaries. The trade has expanded fast enough by other means. The main exceptions to Nigerian independence of aid were during the Biafran crisis, (56,000 tonnes were received in 1971 according to FAO *Food Aid Bulletin*) and as a result of the drought-induced shortages in the early 70s when consignments were also drawn from international relief programmes. The USA is a major donor also to these relief supplies – in 1980 of 60 per cent of all cereal food aid (Clay and Pryer 1982: 5, Wallerstein 1980).

Other support measures have been in the forefront, in line with changing US policies since the 70s, to dispose of its enormous and growing 'surplus' of wheat. Increasing national concern with wheat as an earner of foreign exchange for the United States, lending new urgency to commercial sales, is manifested in Nigeria by the presence of an office of the US Department of Agriculture (USDA) in Lagos. It keeps close watch over Nigerian development and regularly reports back home detailed information on market prospects for the future. It has established contact with people in power and watches out for opportunities to come in with supplies and to offer inducements that may increase Nigerian imports from the USA. This concerns agricultural produce in general where, however, wheat is the major commodity.

The following statement from a 1981 report from this office sets the scene:

> The most significant factor in the Nigerian agriculture scene, however, was the increased awareness of the United States that Nigeria offers tremendous growth potential for both agricultural trade and investment. The dollar value of US agricultural exports to Nigeria in 1980 increased by some 75 per cent, from $211 to some $350 million. Unmilled wheat exports from the US hit one million tons, corn exports increased by 500 per cent to 150,000 tons while rice and tallow exports increased steadily (USDA 1981a).

The official means envisaged to increase sales of wheat for this market include the credit programme GM 102 (CCC), particularly designed for wheat flour among a few other commodities. While initially this had not met with much response, new hopes for it were aroused in the tightening currency situation after mid-1981 (USDA 1981b).

It was further reported in 1980 that 'A Great Plains[10] Wheat team recently held a baking seminar in Nigeria' (USDA 1980). Attempts to arrange courses for bakers in cooperation with millers' and bakers' associations was another measure mentioned by the USDA Agricultural Counsellor Mr George J Pope (interview Pope 1981). Now these are the classical means of official support for US wheat penetration, reported from other parts of the world as well, and referred to just above in the South Korean case.

In general, support for direct investments in processing and related infrastructure are seen as a central means for encouraging US sales of raw materials. Thus we can also quote the USDA office saying that

> A US-Nigerian Agriculture Joint Consultative Committee (AJCC) has been established which will, hopefully, lead to establishment of joint ventures in the agro industry sector in the near future. This is very important to US agriculture as the major constraint to the rapid expansion of US agricultural commodity exports to Nigeria is the lack of a physical infrastructure, i.e., port facilities, feedmills, integrated poultry/piggery/livestock operations, flour mills, etc. The AJCC will provide an institutional framework which will facilitate private US investment in the Nigerian agrobusiness sector (USDA 1981a).

Penetration by Processing

Very high rates of domestic milling in an industry dominated by US owner interests already characterise the Nigerian wheat economy. Nigerian wheat imports have since the early 60s, when the first mill was established, consistently exceeded 90 per cent raw wheat in content and frequently up to 95 per cent (table 1.1). Exceptional years are for instance 1971, when the commercial supplies were supplemented with relief flour, also 1981, which we know as a year of large unsatisfied demand.[11] As a whole, proportions

of milled flour imported have gone up since the end of the 70s, indicating increasing pressure on milling capacity. The normally high rates of unmilled imports may be compared to those of Egypt, for example, where in recent years close to 30 per cent is imported as flour (FAO 1983). The industrial entrenchment factor is thus highly developed in the Nigerian case, to the benefit of the US wheat suppliers.

US-controlled milling is without doubt a highly powerful means by which wheat penetration occurs and stays entrenched in Nigeria. It was initiated through the early victory over French interests in the establishment of the first flour mill in Lagos in 1962–63, The Flour Mills of Nigeria (Kilby 1965: 19). Originally Greek-owned, later Americanised, this mill was built to receive the hard American grain. Its continued dominance in the Nigerian market has safeguarded the continued orientation to this type of wheat rather than to the softer European kind. The close connection of this enterprise with the US shipping line providing most of the wheat imports, points to the operation of the same corporate integration process of which many examples have been recorded in the rest of the world. (Wessel 1983, Morgan 1979). Quite recently Cargill's themselves, one of the 'big five' all over the line, have even entered the Nigerian milling scene through the take-over of Seaboard Allied, a large US-based milling corporation with interests in a flour mill in Port Harcourt. This US dominance is only lately being to some extent challenged.

In the bakery stage of processing, US penetration has been more recent, and then mainly by machinery sales, notably in the fully automated ITT-related bakeries in some southern cities. The role of US corporate capital in the process is again confirmed. The details of this penetration by industrial investment is the subject matter of the following three chapters.

3. The Flour Mills as Bridgeheads

1. Wheat Processing: Entrenchment at the Production Level

The imported wheat has to pass through flour mills and bakeries, which are tied together by the flour traders and linked to the consumers by the bread vendors. This and the following two chapters are concerned with the pattern of expansion of these different activities. Together they represent a tremendous force in the expansion of the wheat economy in competition with domestic and other imported foods. Once established they constitute strong interest groups in defence of their trade. Just at the *demand* for bread is favoured by the current economic changes, in equal measure the *production* of this already industrialised food commodity is favoured by changing conditions of production in the expanding oil economy: labour, capital, infrastructure and distribution systems are becoming available for specialised production on a larger scale. The tradition of food processing that had been well developed in the pre-oil era, is restricted in its development by its base in women's household production with its many constraints to expansion. This has left a decisive advantage to foreign products with already developed processing technologies. Social forces, with interests in continued capitalist expansion, in the variety of forms characteristic of West African development, have been ready to support the domestic and foreign entrepreneurs who have moved in as agents in expanding the production of this new staple commodity.

Thus milling with its large-scale technology and close links to the international wheat economy, and bakery with its more varied and flexible technology and closer integration with the local domestic economy – each in their way provide impetus to Nigeria's rapid march into the wheat trap.

2. Large-scale Milling in Decentralised Expansion

One Company in Early Dominance[12]

The site of the large Northern Nigeria Flour Mills in Kano gave very concrete physical evidence of the booming wheat flour business as of the early 1980s. The entrance was virtually under siege by people seeking registration for

consignments of flour, the only way to aquire it at the favourable control price (cf. chapter 2.2). The commerce of the successful registrants started right across the road from the mills, where the price of a bag of flour had already gone up several naira.

In late 1981 there was a hold-up in production for some time, and the huge lorries bringing grain from the coast and waiting to be unloaded stretched in an impressive train all around the streets of the neighbouring industrial area, giving evidence of the enormous quantities of wheat involved. On our visits, in 1980, '81 and '83 the place was a busy building site with continuous extensions being made to the factory. There could be no mistake about the expansiveness of this industry.

The Northern Nigeria Flour Mills (NNFM) was established in November of 1975 as the first large wheat mill in the north.[13] It had an initial capacity to grind 250 tonnes of wheat per day, producing 73 per cent flour, 7 per cent semolina ('semovita') and 20 per cent bran for animal feed. In 1978 this capacity was increased to 800 tonnes and again to 1,400 tonnes in 1981. A further 1,000 tonnes' capacity expansion was under way in 1983 to be completed by mid-1984. The percentage of semovita production had increased to some 15 per cent by 1983. The bran-content in the flour had then been raised somewhat to stretch the wheat input further. The sole orientation to wheat is to be slightly reduced by the addition of a plant for maize grinding with 200 tonnes' capacity.

The Kano mill is 60 per cent owned by Nigerian state and private interests. The remaining 40 per cent (which before the revised indigenisation decree of 1977 was 60 per cent) is held by the Flour Mills of Nigeria (FMN) with its headquarters in Lagos. The company's main mill is in Apapa, that is the port of Lagos. This is in turn the largest flour mill 'under one roof' in the world, according to their own statement. It was the first large wheat mill to be established in Nigeria, in 1962. It then had a capacity of 600 tonnes per day, of which only half was initially used. By the end of 1980 this had increased to a capacity of 2,400 tonnes, to which an extension of another 1,000 tonnes' capacity was to be completed by the end of 1983 but was delayed because of the crisis.

Flour Mills of Nigeria also has the management contract for a smaller state-owned mill at Calabar of 240 tonnes' capacity, the Niger Mills Co Ltd. Finally it has established and manages the new Maiduguri Mills of 400 tonnes' capacity on the Chad Basin Development Project which started production in mid-1983, although it holds only 16 per cent of the shares of this mill. FMN thus controls a very large share of the milling industry in Nigeria.

Up to 1981 the only other flour mills in Nigeria were two smaller ones, also in the South. One was Life Flour Mills in Sapele, then of 400 tonnes' capacity, established on a smaller scale (200 tonnes) in 1972. This is 40 per cent owned by US milling interests. The second one was the state-owned Port Harcourt Flour Mills, then of 600 tonnes' capacity. It, too, dates from 1972.

Decentralisation of Ownership and Location

The establishment in 1981 of Crown Flour Mills on Tin Can Island in Lagos (220 tonnes) started a new wave of smaller plant expansion involving private capital other than FMN, and with state rather than federal interests. By early 1983 others had followed in Kaduna and Ibadan. The one in Maiduguri, where FMN is participating, started production later in the year. All of the older mills had made extensions. And many more new ones were on their way up. Table 3.1 shows the existing and proposed mills as of early 1983, according to the compilations of Northern Nigeria Flour Mills. This table suggests a 70 per cent increase of total milling capacity by the end of 1984. But the list is not complete.

Table 3.1

Wheat Flour Mills in Nigeria: Current and proposed capacity as of 1983/84. (According to Northern Nigeria Flour Mills, Kano (NNFM) March 1983)

1. *Operating early 1983*			
Flour Mills of Nigeria (FMN)	Apapa, Lagos	2,400	tonnes/day
Northern Nigeria Flour Mills (NNFM)	Kano	1,400	
Niger Mills Co Ltd	Calabar	240	
Crown Flour Mills	Tin Can Island, Lagos	220	
Ideal Flour Mills	Kaduna	300	
Port Harcourt Flour Mills	Port Harcourt	600	
Life Flour Mills	Sapele	500	
Nig. Eagle Flour Mills	Ibadan	400	
Total operating capacity			*6,060*
(of which in FMN related establ.: 4,040)			
2. *Proposed for 1983-84*			
a) New mills			
Maiduguri Mills	Maiduguri	400	tonnes/day
West African Mills Ltd	Onitsha	400	
Enugu Flour Mills Ltd	Enugu	200	
Manilla Flour Mills	Owerri	520†	
Mix & Bake Flour Mills Ltd	Warri	300	
Rzak Flour Mills Ltd	Kano	300	
Gold Medal Products Ltd	Ewekoro	200	
Total proposed capacity in new mills			*1,920*
(of which in FMN related establ.: 400)			
b) Extended capacity in existing mills			
Flour Mills of Nigeria	Apapa, Lagos	1,000	
Northern Nigeria Flour Mills	Kano	1,000	
Niger Mills Co Ltd	Calabar	440	
Total proposed expanded capacity			*2,400*
(of which *all* in FMN related establ.)			
Total new capacity by 1984 according to NNFM			*4,320*
(of which in FMN related establ.: 2,800)			
3. *Total projected capacity by 1984*			*10,380*
(of which in FMN related establ.: 6,840)			

†capacity according to Ramera 1981

Slightly different figures are given by a survey in *Business Times* (BT), 8 November 1982, and are partly confirmed by a feasibility study for the proposed Tempo Flour Mill at Umunya (Rumera 1981). These indicate extensions to the Crown Mills of up to 700 tonnes (not mentioned by Tempo). Extensions to Life Flour Mills in Sapele of up to 800 tonnes are also reported in this survey and on other occasions (e.g., *BT* 22 July 1981). Tempo states 700 tonnes'. The proposed establishment of Tempo Mills of 360 tonnes' capacity is also reported to have been approved by the ministry. Together these *Business Times* figures indicate an addition to proposed capacity, according to FMN data, of 360 tonnes per day in new mills, and of 780 tonnes by extension to existing mills. While the data in table 3.1 point to a total expansion of some 70 per cent over 1983 by the end of 1984, the *Business Times* figures thus point to a 90 per cent increase in the pipe-line, although possibly with a somewhat longer time horizon. But the list is still not complete.

Other proposed mills mentioned in the *Business Times* survey are:

Fashoum Flour Mills Ind. Ltd	Ilesha
Ore Flour Mills Ltd	Ore
Uni-tech. Nigeria Ltd	Sapele

There are, finally, various indications at that point in time that several state governments planned to initiate new establishments in the industry. Benue State had such plans according to *New Nigerian* of 4 May 1982. The interviews with NNFM in Kano in 1983 indicated plans for a mill with state interests and EMN participation coming up in Jos as soon as finance could be organised, and (in 1981) that studies for a mill in Sokoto state relating to the wheat growing scheme had been made (interviews Jutzi, 1981, 1983). A contract for this mill had been signed in 1984. Similar plans for the Kano wheat project are mentioned in *New Nigerian* 28 July 1982 (see below). Mills in Ondo state were mentioned at the Federal Ministry of Industries at an interview in November 1981 (Njoku 1981).

The signals of an expanding demand for wheat bread have thus been registered by a wide range of investors. Whether all these proposed establishments will in fact materialise is another matter, as problems of foreign exchange had started to be a serious threat even to existing production as of mid-1983. Ideal Mills, Kaduna, was then running at only 80 per cent of its capacity; NNFM in Kano was down to 60 per cent and together with NFM, Apapa, had actually to close down for two weeks in May-June for lack of raw materials (interview Jutzi 1984). By mid-1984 total milling output was estimated to remain at the 6,000 tonnes per day recorded for early 1983. The expansion programmes for FMN and NNFM were achieved by only 75 per cent, largely due to the hold-up of machinery imports (BT 28 May 1984). If nothing else, these plans reveal the euphoria reigning in the wheat economy in the early 80s and the lack of realisation of the problems of supplying this non-indigenous crop in the long run.

Two features in this pattern of planned expansion can be noted apart from its sheer rapidity. There is a tendency for new types of local investors to take an interest in the milling industry, including state governments and groups of Nigerian private businessmen. This adds to the 'national' character of the industry and may cause further entrenchment at the political level. The dominant position of the interests related to the Flour Mills of Nigeria will decrease in a relative sense, in spite of the very considerable expansion initiated in the two main establishments in Apapa and Kano. The additions included in table 3.1 entail a remaining dominance of the FMN group by some two-thirds of all capacity. But as those suggested by other sources are all outside this group they indicate a tendency for a considerable longer-term decentralisation of power to other owners in numerous smaller mills.

The pattern of expansion also reveals decisive tendencies for regional decentralisation of the industry in an absolute sense, within the South and particularly towards the North, including also the extreme corners in the vicinity of the wheat growing projects. The capacity in the North would in the NNFM figures be doubled from the 1983 situation although the relative share would remain around one third of total milling capacity in the country. Although this expansion may have been held up for the time being, this tendency towards decentralisation and regional entrenchment is certainly indicative of a closer incorporation into the international wheat economy.

The emergence of so many smaller mills should however not conceal the notable feature of the Nigerian wheat milling industry that production takes place entirely outside the small-scale sector, with no establishments below the capacity of 200 tonnes per day. This is in contrast to the recent situation in the industrialised countries where till the early 70s smaller sizes were very common (Thoman 1974: 220). This is also in striking contrast to the situation in the milling of local grains in Nigeria, which is in fact, next to bakery, the dominant small-scale industry in the food processing sector. How do we understand the dynamics behind these patterns?

3. External Interests with State Backing

Transnational Milling Penetration

Unlike the former French West African colonies, where the tradition of consuming soft European wheat has given French millers an advantage, the former British colonies have had the pattern of consuming the hard winter wheats grown in the US (Morgan 1972: 234, Youngs 1979: 237). They are thereby open to the thrust of US-led wheat expansion in the global economy.

We have seen in chapter 2.3 how, in Nigeria, European wheat was the main type imported in the early years of bread production and how this situation has given way to a near total dominance of imports from the USA. There is no doubt that the involvement of US based interests is the first and still dominant company in the milling industry has been instrumental

in maintaining this orientation to US wheat.

According to Kilby a tentative agreement had been made with the French Flour Miller of Dakar for the establishment of the first wheat mill in Nigeria in the early 1960s. But this was 'extinguished' by the explosion of France's first atomic bomb in the Sahara. The concession was instead granted to a small Greek firm, the Southern Star Shipping Line, largely with American finance from the Export-Import Bank, the Chase Manhattan Bank and the machinery supplier, Allis-Chalmers (Kilby 1965: 19). Thus the Flour Mills of Nigeria was set up. The Southern Star later turned American under the name of Excelcior Shipping Co. and is a subsidiary of the US based West Wind Africa Shipping Co. It holds a 40 per cent ownership in the FMN group of companies, and was referred to as a 'sister company' by FMN management (interview Plytas 1980). The two companies operate under a technical service agreement 'concerning all aspects of operation ' (FMN 1979). This connection of milling with shipping fits well into the general pattern of the industry at the global level.

In the American drive to export wheat since the 1950s, supported by the PL 480 aid programme, with increased emphasis on commercial terms since the early 1970s, and currently in a situation of surplus and fierce competition, the role of the trading companies has been crucial. This has been so particularly by force of their diversification into the whole chain of activities ancillary to export trading. From early involvement in transportation, loading and storage at the domestic end, they have also increasingly moved into processing of the grain in the receiving countries, and particularly in those where importation is not preceded by local production of wheat. An increasing concentration in wheat milling, also visible in the structure of the sector in the United States has given advantages to large transnational corporations (UNCTC 1981: 33 ff). Those with shipping and trade connections have natural advantages in terms of control over supplies which is particularly important in wheat, as fluctuation in supply is notorious. As demand expansion in wheat milling has stagnated in the US the interest in developing this sector in the newly expanding third world markets has increased (same p. 35), and has been further supported by the milling machinery manufacturers. This type of process, which has gone on in the whole chain of food processing, has gained particular strength in the wheat sector, on account of its importance to US agricultural export economy (Burbach and Flynn 1980). For other concrete examples of this general process see Dinham and Hines 1983, and particularly for wheat, Morgan 1979.

As of 1980 Excelcior shipped 16 shiploads of grain a week to the Flour Mills of Nigeria (interview Plytas 1980), an amount which must have increased considerably with the later capacity expansion. This shipping connection has proved particularly valuable in the current competition for import licences in the tight foreign exchange situation. Delays in wheat supplies are more easily avoided since close cooperation with the shipping line makes it possible to have ships waiting on international waters ready

to be called in on short notice as licences eventually come through the bureaucracy (interview Jutzi 1983).

Up to the early 80s none of the five real giants among the grain merchants (cf. Morgan 1979) had any direct involvement in Nigeria. The Life Flour Mills at Sapele however involves one of the world's largest millers of wheat flour (the fourth largest in the US), the Seaboard Allied Milling Corporation (see *Business Times* 20 July 1981). Forty per cent of this mill is held by Seaboard Overseas Ltd, a subsidiary wholly owned by the above company. It is also present in milling in Sierra Leone and in Liberia but not so active in grain trading, according to Morgan (1979: 232). As Seaboard Allied was in turn swallowed by Cargill's in 1982 the giant corporations have in fact come to be represented in this country, too. (Wessel 1983: 108 referring to *Wall Street Journal* 9 May 1982.)

Life Flour Mills has also had good access to international credits, and the benefit of official support in its efforts at expansion. Its recent N13 million expansion includes an increased capacity in the mills plus extensions to port and storage capacity. This investment required, amongst other things, a N9 million loan guaranteed by the powerful Overseas Private Investment Company (OPIC) in the US. This was negotiated by a mission led by President Shagari himself (*Business Times* 20 July 1981). It has been characterised as 'the largest non-petroleum connected American investment in Nigeria' (*Financial Punch* 24 May 1982).

Apart from US trading and milling capital, external interests are abundantly represented by Lebanese capital. Thus the new Ideal Flour Mills in Kaduna has Lebanese capital, which is also involved in a mill in Cotonou in the Benin Republic. Lebanese capital also finances the Crown Flour Mills in Lagos, the Nigerian Eagle in Ibadan, and the proposed Tempo Mills in Umunya. For the latter, the Societé Industriel du Levant were proposed to act as technical partners. They also have mills in Togo and Ghana (Rumera 1981). Together with the original Greek involvement in FMN (in Apapa some of the management are still Greek) these investments represent the age-old Mediterranean presence in the global grains business, far pre-dating the American one.

Among machine manufacturers who have landed themselves good deals in the currently planned doubling of the milling capacity the Swiss company Bühler is conspicuous, a firm very active all around the world in milling construction (Morgan 1979: 232). We have encountered them in the Lebanese Ideal Flour Mill and in the latest FMN-related extensions.

There can be no doubt about the presence of an external force in the Nigerian wheat processing business, and it is in the milling stage that its strongest impact is found, setting its mark on the technology and scales of operation and pushing the rate of expansion ahead.

National Capital: Mainly State Investments

Nigerian private capital however is also found in the ownership of the flour mills. FMN, Apapa, has an insurance company and some private businessmen

holding shares. NNFM has Dantatta, the Kano industrialist, among its owners. Life Flour Mills in Sapele involves two large Nigerian companies and a number of private investors. The United Bank of Nigeria and the African Merchant Bank also helped finance its new investments recently (*Business Times* 20 July 1981). Particularly after the 1977 revised indigenisation decree, stipulating 60 per cent Nigerian ownership of all larger industries, local private participants have 'had to be dragged in', as one interviewed miller expressed it. The FMN Group has been particularly successful in this respect, having kept direct federal government participation in its main mill as low as twelve per cent.

But these modern flour mills are large industries requiring comparatively large capital investments. Even a smaller mill, like Ideal in Kaduna, entailed an investment of N11 million in 1982 (*Daily Times* 8 July 1982), while the book value of the large Flour Mills of Nigeria in Apapa was over N40 million in 1981 (FMN 1981). It has been natural for the state to step in to support private capital, first at the federal level in the manner typical of the industrial strategies of the early 1960s, later primarily at the state level.

Already in the early 1970s Calabar and Sapele had participation from their respective states of location (AERLS 1979: 26) and the Northern Nigeria Flour Mills was established with 17 per cent Kano State investment funds and ten per cent from the New Nigeria Investment Company Limited (a company jointly owned by the northern states) (interview Kiakides 1980). As the oil money began to flow into state coffers and the force of the demand for wheat flour became evident this sector drew increased attention from the various state investment companies and, as we have already seen, they are eager participants in the planned spate of new investments. The states have assumed the role of organising production with private participants, to get it going in agreement with the indigenisation decree, with a view in theory at least, to pulling out later in favour of the private capital, as in the case of the proposed mill in Jos. The strong pressure of demand has made this appear an urgent political task to ease food shortages. Of course there are also the usual rewards involved for bureaucrats and politicians in terms of kick-backs and commissions to encourage this development.

It has also been explicit federal policy in the early 80s to leave government participation to the state level, as was declared in a speech by the Federal Minister of Industries at the inauguration of the Crown Mill in 1981 (Chroma 1981). In this speech the recent investments in milling were officially praised as contributing to import substitution. They could further be made to agree with the policy of the Fourth Development Plan 1982–87 (FGN 1982a: Vol. 1, p. 140) to increase self-reliance by investments in agro-based industry, where flour mills are specifically mentioned as desirable. It would appear that they have rather contributed to the galloping increase in external food dependence by expanding the structures which have interests in continued wheat supplies and by entrenching these all the way into the state administrations.

While the minister deplored the patterns of consumption that demand

'foreign' bread and the mounting imports to which they give rise, his speech placed hope in domestic supplies in the order of a quarter of a million tonnes by 1985. He said the high costs for this would be motivated by the savings to be achieved in foreign exchange. As we shall see in the second part of our study this hope for import substitution was entirely illusory.

Entrenchment by Dispersed Location

From a different angle the expectation of future domestic wheat supplies is nurtured by the Federal Government, projecting and establishing flour mills on each of the three federal wheat-growing projects near Lake Chad, Bakolori, and Kano in the North. (See chapters 6-8 for a detailed discussion of these projects.) In the Lake Chad area the Maiduguri Flour Mills of 400 tonnes' daily capacity started production in mid-1983 as we have already noted. Shareholders are, apart from FMN, the Chad Basin Development Authority and Borno state, where it is situated. On the Bakolori scheme discussions with the Federal Ministry of Industries since 1978 and interest from the Sokoto State Government led to a feasibility study made by Messrs Impreglt. They recommended a plant of 37,000 tonnes' annual capacity (150-200 tonnes per day). The Authority of the irrigation scheme has been invited to contribute up to ten per cent in a ten million naira joint venture with Sokoto State and Nigerian Banks (SRBA 1982a: 3). Earlier reports mentioned plans for participation from the Flour Mills of Nigeria (MRT 1979a: sect. 2.05). As of 1983 they in turn referred to Life Mills in Sapele as the likely participant (interview Jutzi 1983). The large Kano Mill was partly intended to absorb the output from the Kano River irrigation project. Plans for another mill, projected specifically for the Kano scheme, fit well into the same pattern (*New Nigerian* 28 July 1982).

Among the arguments brought forward by the authorities in Maiduguri in favour of milling on the South Chad project were the advantages of having new mills take care of the softer types of wheat produced on these schemes. They could thus use adjusted techniques compared to those milling harder imported varieties. Assuming local supplies, as of course they do, another motive cited is to save on scarce transportation resources in supplying the northern markets from the projects. Finally the northern locations were argued to be in line with the general federal policies of regional decentralisation on industrial development. The latter argument was also used by the federal government to press Ideal Flour Mills to set up in Kaduna, rather than on the coast, again assuming a northern supply needing to be processed and distributed (Production Manager interview, 1983).

The resulting dispersed location pattern is certain to represent a further pressure on the commitment to grow wheat on the large irrigation schemes. Certainly it also supports the penetration and entrenchment of the pattern of *consuming* wheat, by helping to make wheatflour widely available and accessible. For comparison we may refer to the experience with macaroni. Within the FMN group it is only produced in the Apapa mill, whose entire

output of macaroni is consumed in the South; there is never enough to supply the North as well (interview Jutzi 1983). Thus in different ways a dispersed location pattern is undoubtedly an important factor in the entrenchment of wheat and the government is actively working for it.

The millers have also complied. As will be demonstrated in later chapters the yields from the wheat-growing schemes have so far been negligible. In full realisation of the illusory nature of such domestic supplies the millers have obligingly located themselves in the North, so far in Kano, Kaduna, and Maiduguri – although they would have much preferred a coastal location – all in order to keep the good will of the government and to be allowed to expand in the country (interviews Ideal Flour Mills 1983; FMN 1980; NNFM 1981, 1983). Of all the 'agents' in wheat processing that we interviewed for this study – millers, bakers, government officials at federal and state levels – the millers turned out to be the ones with the clearest awareness of the lack of potential for local production in Nigeria. This included the managements of Flour Mills of Nigeria and Northern Nigeria Flour Mills, as early as in 1980.

To show its goodwill the Kano mill has from time to time accepted symbolic quantities of local grain coming out of the irrigation projects, in spite of its different and above all very uneven quality. Apropos of recent approaches by the Ministry of Agriculture concerning its willingness to contribute to the supply of local raw materials, the management however made the comment to us that it would much rather try to grow something else that would contribute positively to the foreign exchange situation either by exports or by import substitution of some other commodity (interview Jutzi 1983). Such is the belief in the prospects of local wheat supplies.

Still the FMN group was going ahead with the investment in Maiduguri, even assuming the construction and management tasks, and expansion has continued in the Kano mill. Steeply rising transportation costs in the last few years may have changed the margins for such compliance with the government's decentralisation policies. In combination with increasing wage costs these rises may threaten the profitability of the Maiduguri mill as well as that of the expansion under way in Kano. In 1983 the costs of transporting a bag of wheat to Kano was as high as N2.50 while the compensation granted by the government in terms of higher control price, was only N0.97 per bag (interview Jutzi 1983).

Other State Support and Regulation

As the policies on location indicate, the role of the state as the second main force in milling expansion is reflected not only in its investment policy, but also in other forms of regulation and support. Related to its influence on location is its infrastructural support. Their viability and expansiveness have attracted support to the mills in their capacity as generators of general spin-off effects in their regional environment. There is, for instance, the case of Bendel State supplying roads and transport facilities for the Sapele mill

(*Business Times* 20 July 1981). Apart from investments in their own infrastructure such as roads, ports and electricity plants, the flour mills have also diversified into supplementary production, as is the case with FMN in Apapa. It supplies its own bags from the ancillary company, Bagco, which has expanded to become the largest of its kind in the world and also supplies other mills as well as agricultural needs (all according to FMN 1981). Diversification into non-related activities, such as cement imports in FMN's Burnham Depot in Apapa, and in the case of Life Flour Mills in Sapele into shrimp and feed grain production (in West African Shrimp Ltd and Top Feed Ltd) are other developments that are of course attractive to federal and state governments alike. They are seen as contributions to industrial and industrial milieu expansion, and found to be in consonance with their industrial policies in general. The wheat mills are thus welcomed as large expansive investments.

Tax relief in the form of 'pioneer' status is another general form of benefit that has been granted at least to the first established mills. For the Northern Nigeria Flour Mills in Kano, this support ceased only in 1980.

More specifically geared to the production of wheat flour is the lower import duty fixed on wheat grain as compared to that applied to milled flour (in the early 80s five per cent compared to 15 per cent on the finished flour). The result is clearly a strong support for domestic milling, and in practice for the entrenchment of wheat imports, as we shall argue below.

But one of the most effective government supports of all must be the control price policy that regulates the price of the flour as it leaves the flour mills, as we have seen in chapter 2.

At one level this policy may seem to limit the profits that accrue to the millers in an expanding market. At another level it is clear that it serves the millers' interest in the longer run, by guaranteeing the competitiveness of wheat in comparison to domestically produced staple foods. Their tolerance to the freeze on the price, at N12.05 per 50 kg bag in Lagos, from 1974 to 1980 also says something of the millers' profit margin in this period (cf. table 2.2.).

4. The Flour Dealers' Stake

Controlling the price set for a few millers is an easy task compared to the slim prospects of imposing effectively the same restriction on the thousands of traders who do the job of distributing the flour to bakers and households. Their potential to raise the price of flour particularly at times of acute shortage partly counteracts the effectiveness that the price control on the millers can have. They are the group who appropriate the windfall profits in the current situation of unsatisfied demand, and directly benefit from the control price regulation. The brisk trade and the prices of flour right opposite the large flour mill in Kano are ample illustration of the opportunities at this stage in the wheat economy.

We mentioned in chapter 2.2 that in 1981 a little more than half of the registered customers of the Northern Nigeria Flour Mills were bakers. The rest were traders who resell either to bakers or through the market hierarchy via wholesalers down to the petty traders in the market places who peddle the flour per 'modo' (local measures). Late that year,[14] when the control price in Kano was N16.92, one large wholesaler in Katsina in northern Kaduna state (one of nine similar firms, according to the owner), bought some 200 50 kg bags of flour per week from an 'agent' in Kano at N17.75 per bag. To this price a 'secret' N0.65 was added making it N18.40. After transport charges to Katsina of N0.60 the flour had cost him N19.00 as it reached his shop, on one of the streets running into the main market. He sold most of it to agents from the surrounding rural areas – Dankama, Batsari and Jibiya (see map 4.2) – at N 20 per bag, and at the same price to at least one larger baker in Katsina, all buying more than 20 bags a day. Smaller customers, dealers and small bakers buying up to five bags at a time had to pay N21, while those buying only one bag at a time paid N22. He knew that the small dealers across the street selling in smaller quantities out of a bag could get N24 per bag (interview Abbdi 1981).

Thus for every middleman moving the flour down the market hierarchy a margin is added to the transportation cost. For the small bakers in Jibiya, some 60 km north-west of Katsina, who use only two to four bags per day, N10 per bag had been added to the millers' price in Kano. They told us that they had to pay their local agents N27, out of which not even one naira would be for transportation. So to a much larger extent than was the case in a city like Zaria the difference in price of a bag of flour for a registered and a non-registered baker or dealer was considerable even in 'normal' times. Any hold-up in production of the flour would immediately result in prices going up still further in the sub-dealing stages. Thus earlier in the same year they had been up at N37 per bag at the level of our interviewed Katsina dealer. For the Jibiya bakers this implied a price of well over N40.

The tremendous pressure for registration at the flour mills is therefore not to be wondered at. In 1981 the NNFM in Kano had about 4,000 applications for new registration on file, and when in May of that year an attempt was made by the mill to revise the list of registrants the turn-out was such that police using tear-gas had to be called in to disperse the crowd (interview Jutzi 1981).

The systems of distribution differed somewhat between the millers. Those related to the FMN group had theirs administered through the Manufacturers' Delivery Services (MDS) a service organisation for distribution of a range of locally manufactured commodities, controlled by the United Africa Company and with depots in the major cities all over the country. (However, for reasons unclear to us their services had been temporarily dispensed with in the last few years.) Minimum consignments from the FMN mills were 100 bags per month, paving the way for the system of sub-dealing indicated above. In certain areas in the South the Master Bakers' Associations (see further chapter 4.1) were given a share for internal distribution among their members.

In the case of Life Flour Mills in Sapele, all the flour was disposed via four larger trading companies, thus leaving the greatest profits to them (according to interview FMN 1980).

The Ideal Flour Mills in Kaduna had taken the opportunity in the favourable market situation to impose a (refundable) deposit on their registered customers of N3,000 per monthly allocation of 100 bags for bakers and N10,000 for the traders, 'to make sure that applicants were serious'. This way the mills were able to increase their own share. This did not seem to diminish the demand for their product: we could observe the same pressure on their sales office as in Kano. (But one large baker in Kaduna actually mentioned that he had so far refused to buy their flour on such terms.)

In the struggle over allocations between bakers and traders, the latter have lately been the losers, as we saw in chapter 2. From about half the consignments from the Kano mills in 1981 they were down to some 30 per cent in 1984. At FMN in Lagos they had only 20 per cent that year (interview Jutzi 1984).

The continuous conflict between bakers and flour dealers, can be documented for the time of acute shortages in mid-1981. The Master Bakers' Association at that time came out very strongly in the press to accuse the dealers of worsening the scarcity and pushing up the prices (*Daily Sketch* 1 July 1981; *Daily Times* 1 August 1981). The dealers retorted by accusing the bakers of using flour allocated in their quota for taking part in the dealers' trade rather than baking it into bread (*Daily Times* 25 August 1981). The impression remains that great scope exists for appropriation at the flour distribution level. Although they do profit on the shortage in the short run, the dealers constitute a group with definite interests in the continuation and spread of the wheat business in Nigeria. So, of course, do the bakers. Apart from urging the government to look into the systems of flour allocation as a solution to the situation of dealers' profiteering, their other strong demand in the 1981 shortage was to urge the state governments to set up their own flour mills to ease the risk of shortage in the future. Such demands are just the arguments needed by the milling industry to continue their powerful expansion. Let us now move to look closer at the role of the bakers in this process.

4. The Bakeries: Regional Entrenchment

1. The Voice of Demand

The most publicly articulated voice of the expanding wheat demand in the country is that of the bakers of wheat bread through the Associations of Master Bakers. We find them angrily protesting at shortages and high prices of flour and pressurising the government. In 1980, for instance, the Anambra-Imo branch in the East resorted to a bakers' strike to underline their demand for action to bring down the prices. (*New Nigerian* 4 November 1980). In Kilby's account (1965: 17 ff), the association at an earlier stage (in 1961) managed to prevent the establishment of a bakery by a subsidiary of the United Africa Company in Port Harcourt, thereby setting the precedent that the industry should be reserved for Nigerians. When the first flour mill was established in 1962 they staged a campaign against the duties imposed on imported flour in their fear of poor quality in this local flour. As this quality has improved, their policy has instead been to press for more mills as a means to improve the access to flour, (*New Nigerian* 13 August 1981, *Daily Times* 1 August and 11 August 1981).

The national association, first established in 1951, claimed in 1981 to organise about half of all bakers in all but two of the 19 states (interview Adedoyin 1981). The total number of bakeries in Nigeria is sometimes estimated to reach about 4,000 employing some 35,000 people (Rumera 1981:1, *Business Times* 12 April 1982). If taken to include all separate production units, this is certain to be a gross underestimate (considering for instance the existence of at least 135 bakeries alone inside the one northern city of Kaduna, as shown below). Still, the dominance of a large number of small-scale units existing alongside some medium-sized and a few larger units is the characteristic feature of the bakery industry that differentiates it from the mainly large-scale flour milling industry.

2. Kaduna State: A Case Area

Our presentation of the bakery industry draws in particular on material from Kaduna State in the central part of the northern savanna. We cover

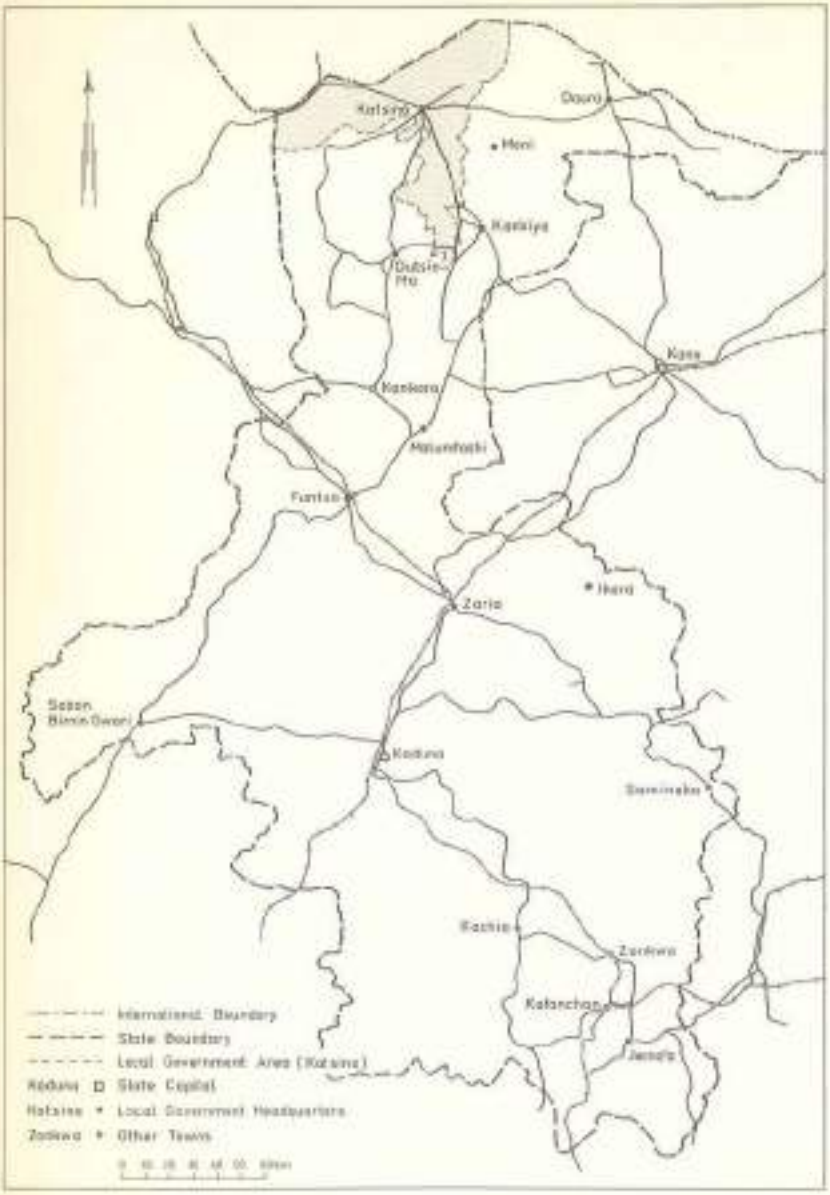
particularly the northernmost town of Katsina, and its hinterland and the larger cities in the central parts of the state, Zaria and Kaduna. This is done in order to probe the state of penetration that has by now been reached in the bakery industry, since its introduction in the coastal cities at the end of the last century. A number of bakery cases interviewed in 1980 and 1981 are presented in illustration of typical forms of organisation in their wide variation. We attempt to set this pattern in the national context and in an historical perspective. A discussion of forces and mechanisms of expansion follows in chapter 5. We begin by a few words on the general setting of Kaduna state, with reference to Kirk-Greene and Rimmer (1981) and Udo (1969 chapters 16 and 18).

The primary role of Kaduna State in the colonial export economy was to produce cotton and groundnuts for export, some tobacco for domestic use and local grain crops for local consumption. Since then the cotton has gone to feed domestic textile industries and vegetable oil mills and the groundnuts have largely been ousted by food crops. Maize is rapidly gaining ground, pushed by the World's Bank's Integrated Rural Development schemes.

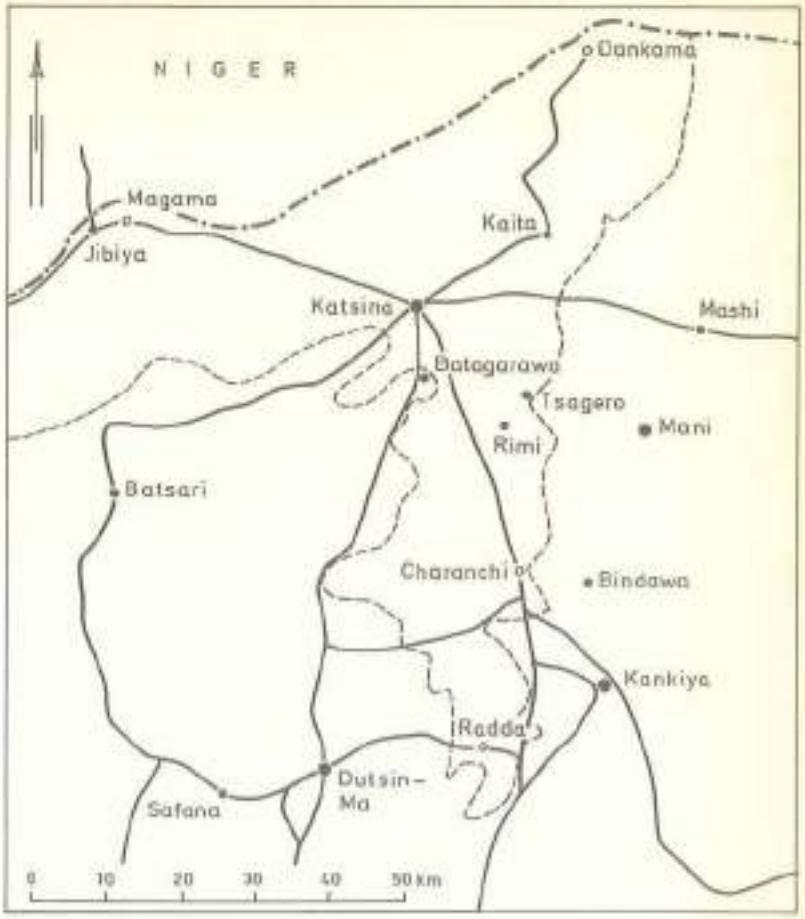
Kaduna is the state capital and up to 1967 the capital of the earlier Northern Region (see map 4.1). It is a colonial construction. Since independence it has developed into one of the largest industrial centres in the country, in the North second only to Kano. It houses a range of light industries, a Peugeot car assembly plant, an oil refinery and above all it is the centre of large scale textile industry in Nigeria. Its population might be close to one million.[15]

80 km north of Kaduna is Zaria, by contrast a very old city and capital of Zaria Emirate, dating back to the 14th century. The old city is surrounded by high mud-walls and contains a famous old mosque and the Emir's palace. The separate townships Tudun Wada and Sabon Gari contain the few larger industries, where the NTC tobacco company is the main functioning one at present. There is also a large school of administration and an army camp. Samaru, another township, houses the main campus of Ahmadu Bello University, one of the largest universities in Africa, including the Institute for Agricultural Research which plays its own role in the 'wheat trap'. The total population might be around a quarter of a million.

Far up in the north is Katsina on the border with Niger. It is an ancient 'port' in the trans-Saharan trade, together with Kano, Timbuctoo and Kukawa one of the main centres in the whole Sudan region in the era when this trade was flourishing. Having since lost commercial influence in favour of Kano it is now a regional market town and the administrative centre. It has recently become the site of a new steel rolling mill, has a dairy, one of the many non-operating vegetable oil-mills and a few smaller industries, including, as we shall see, a new modern bakery. A number of residential schools are located in its vicinity. The walled old city with its Emir's palace and mosque otherwise contains mainly one and two storey buildings, largely of the mud-walled type. Population estimates fall between one and two hundred thousand. The town is reached by road across the vast open



Map 4.1: Kaduna State Overview



Map 4.2: Katsina Local Government Area

savanna whose grass cover in the dry season gradually recedes as one moves north of the city.

Katsina is the capital of Katsina Local Government Area which is dominated by agriculture geared to rainfed grain cultivation. Map 4.2 gives an overview of this area, which was chosen for a closer survey of the state of the bakery industry in the periphery of the regional hierarchy of Nigeria.

3. Katsina: Peripheral Bakery Penetration

Mud-ovens and Local Machinery

Well hidden inside the residential compounds in Katsina town at least 25 bakery industries were operating in 1981. In the company of Alhaji Yuguda Musawa, supervisor of Health of the Local Government in Katsina, it was possible for us to visit seven of these for an interview in November of 1981. Since few of them advertise their existence by any signboard, his company was very necessary, as it was also for interpretation and social introduction. The 1981 records of the health office (Katsina Local Government 1981), in addition to the 25 town bakeries also listed another 17 bakeries in the villages surrounding Katsina, inside its Local Government area. Eight of these were also visited in connection with Alhaji Yuguda's inspection tours in the same month. His thorough knowledge of the registered bakeries, tapped at a series of interviews in 1980, 81 and 83, proved a valuable source of information on the structure and development of the Katsina bakery industry as a whole. A few cases will illustrate the nature of the activity.

Since 1978 Alhaji Sani Kankara (interview 1981) operates a small bakery with a dome-shaped mud-oven heated with fire-wood, a locally made 'dough-brake' to the kneading and nine men including a manager and skilled 'baker' to help him. He does not participate in the baking himself, as he is a revenue collector at Kano Station. The premises are housed inside a residential compound. A small room houses the mixing trough and the mangle-like dough-brake with its diesel engine. There is also space for the rows of bread-pans filled with dough put out to proof. The mud-oven is in the yard where stacks of wood for the fire are also stored. The oven is heated by a fire inside the dome, whose ashes are scraped out and replaced by the bread-pans to bake in the heat thus generated. The pans are put in and taken out by spades with long handles and lined up in the yard to cool, before being emptied on a plastic cover on the ground and put in plastic bags.

This bakery was set up on a loan from the state, administered via the Industrial Development Corporation. Alhaji Sani was one of five bakers in Katsina township to have been given such a loan (Husseini 1981). On our visit his volume of operation was based on three to four 50 kg bags of flour a day. He was also one of the few who had managed to obtain registration for direct supplies from the Northern Nigeria Flour Mills in Kano. He got 70 bags a month from them at control price N16.92 and bought the rest in the local market, where he had to pay N20-21. Originally he had sold some

of his bread to three of the schools in the area, but since the recent establishment of the large modern Gobarau bakery (see below) he had lost these contracts to them. He was therefore currently taking all his bread by public transport to weekly markets in surrounding villages on a fixed itinerary. Alhaji Sani established a second bakery in Katsina in late 1981.

This type of basic organisation with small variations is the one found in just over 20 small bakeries inside Katsina according to the Health Superintendent. The mud-oven is found in all of these and the local dough-brake in all but one or two hand-bakeries. Together they serve to define the scale and organisation of operations. Many, however, employed only six to seven men.

One baker in Katsina, Alhaji Namadi of Shukura Bread (interview 1981) had however expanded his operations to using three very large mud-ovens and three locally made dough-brakes. Thus he could process up to 20 bags of flour in a day with 17 employees. He sold his bread to 'agents' from his large rented compound and complained of not having access to flour at control price. Alhaji Namadi participated in the operations himself as the manager of his bakery. The son of a farmer from Mani, in a nearby local government area, he had learnt to bake with Alhaji Sule Ance, one of the other larger bakers in Katsina. He had been employed with him in 1963, had been sent to Kano for some time to learn 'machine bakery' and had advanced to be a manager before he left Sule Ance around 1970 to set up on his own. He had started with only one small oven and four men to help him.

Two other bakeries in Katsina were defined by the health officer as of similar larger size. One of these was that owned by Alhaji Sule Ance (interview, manager, 1981). He was the only one in the town to operate an imported dough-brake, in addition to which he also had a mixing machine, a slicer (the latter two out of use at the time of the interview) and a wrapper. But he still used the traditional mud-oven, of which he had three. His stated capacity was ten to eleven bags of flour per day, got from Kano, presumably from a trading firm. The owner was by now a big businessman with many other activities on the side. He originated from Charanchi, a village south of Katsina, where he had once had another bakery and where he still sold half his bread produced in Katsina. This was taken there by his own van. The rest was sold by agents inside Katsina town. He employed only ten persons, including a manager and a baker.

Bakery is not very new in Katsina. The health office list from ten years ago (Katsina Local Government 1973) contains some 20 registered bakers. One interviewed baker, Alhaji Musa, stated in 1981 that he had been working in a bakery in Katsina 25 years back and had set up on his own 18 years ago. Sule Ance's bakery was at the time of these interviews 15 years old and Alhaji Namadi's Shukura Bread about ten.

For the surrounding villages (see map 4.2) the 1973 list records altogether eleven bakeries within the present Katsina district area. Charanchi had five, Rimi two, and Jibiya and Magama between them had four. One in Magama had been there for 15 years, another for eight years. So peripheral village bakery

is not a new phenomenon either. In 1981 the village bakeries had increased to 17; locations that had been added then were Dankama and Kaita. All of these village bakeries were of the local dough-brake and mud-oven type, with two exceptions baking only up to five bags per day. The exceptions were two ten-bag bakeries in Radda and Charanchi and three others which had the capacity for this but did not use it at the time of interview.

The expansion continues in the town itself which added four such bakeries during 1982. It continues at an equal rate in the villages, where another four were added, including two new, smaller locations: Dadara and Magyan Waya.

Automatic Bakery Leaps into the Picture

Into this setting of rather small-scale bakery, gradually expanding, entered in 1979 the very modern Gobarau bakery (interviews Mashi 1980, 81, 83). It is fully automated in the stages of dividing and moulding the dough, with a continuous processing line, humidified proofing rooms, and electric (diesel) ovens with the racks of bread suspended and rotating for even heat exposure. Its real capacity is 60 bags of flour per day (technically 80 bags), i.e. as much as 20 of the three-bag bakers taken together, but it employs only seven workers per shift in the bakery itself or in 1981 24 persons altogether. It had then reached 40 bags production per day. Two thirds of its flour requirements, 800 bags per month, were obtained directly from Northern Nigeria Flour Mills. About 60 per cent of its output was delivered on contracts (via agents) to five Katsina schools and six of the eight schools in nearby districts. Two vans delivered the bread to them and to local agents. Gobarau is 51 per cent financed by Kaduna state funds (Kaduna Investment Company), the remainder by one of the schools in the area, Katsina College of Arts, Science and Technology (19 per cent), and by two local businessmen of whom one, Alhaji Hassan Mashi (20 per cent) is also the manager.

Alhaji Hassan is a former warehouse superintendent with the Northern Nigeria Flour Mills in Kano and a former employee with the MDS[35] which handle much of the flour distribution of this mill. He is also a local politician in his home area, Mani Local Government Area.

Machinery for this turn-key project comes from Sweden and was marketed through the Aticon machinery agency, which also has Swedish participation.

4. Zaria and Kaduna: Electric Bakery in Gradual Mechanisation

In the picture of thorough entrenchment of small-scale mud-oven bakery and recent appearance of modern automatic technology, there is a whole further category missing in Katsina but which is commonly found in southern cities and towns. This is sometimes termed 'electric' bakery. It represents an earlier form of modernisation by a more flexible form of technology, where the electric oven is the key element. We saw that Alhaji Sule Ance had substituted his local dough-brake for an imported one, and had introduced

both a mixer of the dough, a machine for slicing the finished bread and one for wrapping it. He had not yet aquired the machines available for dividing the dough and moulding it into shape, and he was still using his mud-ovens at the time of interview. Still the potential for gradual introduction of modern technology is indicated also in his case.

In the larger cities of Zaria and Kaduna further to the south electric bakery has long been a well established phenomenon. In Zaria we find the case of the Freedom Bread Bakery (interview 1980), established in 1958 and at the time of interview baking 24 bags in two shifts with 30 persons engaged. It used a mixer, one miller, i.e. imported dough-brake, and one local one, a divider and two electric ovens. Flour was obtained from a Zaria dealer. Sales were by two vans taking 90 per cent of the output to residential schools in the Zaria area and ten per cent to retailing agents.

Two other interviewed electric bakers, City Bread and Vita Bread (interviews 1980), had similar set-ups. They used 20-22 bags of flour and employed 40 and 30 persons respectively. They used a miller, a mixer and electric ovens. One of them also still used his old mud-oven as well. The one had all sales inside Zaria by one van, the other took all his bread to surrounding village markets by a van and a 'pick up'.

Another Zaria bakery, Agoro Vitamin Bread (interview 1980), was 30 years old and had seen better days, when it had consumed up to 20 bags of flour per day. It was now down to five to six bags and only eight employed and was running its large imported diesel oven on firewood. But an imported mixer, miller and divider were still working. The pattern of selling most of its bread to department stores was still kept. The management claimed that back in the 1950s this bakery had dominated the Zaria market and sold its bread up to Kaduna.

Only one of the above Zaria bakers, City Bread, got their flour from the MDS at control price. The rest had to buy from local trading firms. The health office list for Zaria for the end of 1979 (including eleven in Samaru) contained 86 bakeries. By the end of 1981 this had increased to 118, probably also by extended coverage (Zaria Local Government 1980 and 1981). Of these, seven were characterised as mechanised both years, i.e. with electric (or diesel) ovens all of which were situated outside the old city. Of the others, most were considered by the local health officers to be using at least a local dough-brake.

Five of the smaller bakeries interviewed, in 1980 and 81, also with health office assistance, showed an organisation very similar to that found in the smaller Katsina bakeries, except that all relied on *local* sales by agents in this larger city market.

From Zaria comes also Idris Morrow (interview 1983), a well-known personality in bakery in the North, chairman of the board of directors of Gobarau in Katsina and above all founder and private capital holder of the large Northern Bakeries in Kaduna, the largest electric bakery in the state. He comes from a leather-craft family in Sokoto. Sent to Britain to train as a printer in the 1950s he also took the opportunity to learn to bake there.

While employed by the Gaskyia (printing) Corporation in Zaria on his return, he started to bake for the expatriate market in Zaria, initially even using tins borrowed from his customers. Idris Morrow moved to Kaduna in the early 60s where he set up a small bakery, supplying bread for the department stores. His magnificent cake for the Independence celebrations in 1960 is claimed to have drawn the attention of the Sardauna of Sokoto, the Prime Minister of the then Northern Region. With the encouragement of the Sardauna and the support of US small-scale industry advisers he applied for state funds to finance a larger establishment. His application was approved in 1964, and the Northern Bakeries Limited was set up with 55 per cent NNDC/NNIL[17] capital, 23 per cent from his own family and the remaining 22 per cent from other private sources. Although started on a smaller scale in 1964, this establishment in the early 80s represents a large-scale extension of the electric type bakeries, using essentially the same machinery, several times multiplied: in 1980 four large electric ovens, four mixers and two large rollers (interview Dzege 1980; Baba 1981, 1983). In 1980 the bakery employed 130 persons, of whom 80 were in baking and wrapping, and consumed 30–40 bags of flour per day, largely supplied directly from the flour mills in Kano. 45–60 per cent of its output goes to schools, an equal amount to agents and retail through the shop on the factory premises (NNDC and Arewa Hotels 1982:4), which also contain a shop, a small restaurant and sleeping accomodation. By 1983 production had risen to the use of 70 bags per day. Of the output 80 per cent went to schools and institutions.

Since 1975 this bakery had been planning an expansion into more modern premises, as is laid down in a feasibility study revised in 1982 (NNDC and Arewa Hotels, 1982:5). This N1 million expansion is planned to take care of 125 bags of flour per day but with only 20 persons employed in direct production. The technology is characterised as semi-automatic and the machinery budgeted at N500,000.

While waiting for this bakery expansion to materialise Idris Morrow, who retired from the management function in 1972, had put capital into a small guest house in Kaduna, also as a form of diversification. Just as many other industries, Northern Bakeries also had plans to set up a new plant in Abuja, the new capital.

Like Zaria, Kaduna has a broad base of smaller bakeries, numbering 134 in the health office registers for the central city (Kawo district) as of January 1981 (Kaduna Local Government 1981). About ten of these are indicated by various sources as electric/mechanised (cf. NNDC and Arewa Hotels 1982:3), the rest as using mud-ovens. In addition to these there is also a recent larger modern bakery established in October 1982, in competition with Northern Bakeries and its extension. This is a N700,000 investment by Capital Foods Company Ltd, employing 42 staff and, like Gobarau, set up with a Swedish technical partner (*New Nigerian* 8 October 1982).

The products of bakeries at all the levels that we have discussed above are remarkably similar. The dominant type

> resembles the American or English bread (well risen, sweet in flavour, soft and moist in texture, relatively slow to stale, rectangular in shape, easily sliced and wrapped) rather than French or Italian bread (coarse and dry in texture, crisp in crust, of a fine yeastlike flavour, quick to stale, tubular in shape)

as Kilby has characterised it (Kilby 1965:37). It comes in two or three sizes, fairly standardised. Some of the larger modern bakeries have however tried to cut a profile by adding a wider variety of French style rolls and baguettes, or British type meat rolls. Of the interviewed bakers, Northern Bakeries had gone the furthest in this respect selling from its shop in Kaduna. They also produced Arab bread from special mud-ovens. Gobarau also had the skill and potential for a very wide variety. But the basic supply is remarkably constant which adds to the complementarity between the variously organised bakers in their provision for the expanding bread market.

5. More Bakeries in the South

The picture that emerges from the above material allows us to make a few generalisations on the structure and evolution of the bakery industry, in the first place in Kaduna State.

The Katsina case shows that penetration into the most peripheral regions of the federation and the rural villages in these areas is well advanced in the form of small-scale local dough-brake bakery. The *Directory of Business Establishments* for Kaduna State, 1978 (pp. 11–12), covering establishments with over five persons employed, although severely under-recording particularly the smaller firms, confirms that the same process of penetration to smaller towns is also taking place further south in the state. Thus places like Mulumfashi, Kachia, Zonkwa and Kafanchan are shown to have a few

Table 4.1
Bakeries in Katsina, Zaria and Kaduna – according to different sources

	Kaduna State Directory, 1978		*Federal Industrial Directory, 1980*	*Local Government health office lists 1981*	
	>10 empl	*<10 empl*		*electric oven or >10 empl*	*<10 empl (rest)*
Kaduna	1	4	4	10[a]	127
Zaria	9	45	1	7	111
Katsina (town)	4	4	1	5[b]	20

[a] This excludes Northern Bakeries
[b] This excludes Gobarau

smaller bakeries, as well as some with more than ten persons employed. The federal Industrial Directory for 1980 (FGN 1980: 32 ff.) covering those with over ten persons employed, also includes bakeries in Funtua and Daura, while still further locations appear in the lists of government loans. Gobarau has a sister bakery at Kafanchan.

The imperfect coverage of the available official statistics can be demonstrated on our more intensively studied cities in table 4.1. Still we have ground enough to refuse the persisting notion (see e.g. *Business Times* 12 April 1982) that the baking of wheat bread in the North barely reaches outside the largest cities. It is now all over the North, including the small villages in the peripheral areas. A third main feature to emphasise is the recent form of modernisation by fully automated production in peripheral towns such as Katsina and Kafanchan, skipping earlier common forms of more gradual technological development.

For the time perspective on bakery expansion in this northern state we have Kilby's figures from 1961 (table 4.2): they show at least one bakery with over ten employed in Kaduna and two in Zaria. In addition he refers to an indeterminate number of smaller ones in each of these places (Kilby 1965: 14). The *Kaduna State Directory of Business Establishments* for 1978 records among 54 bakeries in Zaria one from the 1940s, one from the 50s, ten from the 60s and the majority from the latter part of the 1970s. This shows that the expansion had started on a modest level also in the regional dimension in the early 60s. Of the smaller town bakeries two in Malumfashi and one in Katsina are recorded as having been started in the 60s, in addition to at least two others in Katsina that we interviewed, and even one in its outlying village Maguma.

The data situation does not allow us to confirm for the country as a whole the details of the patterns shown for Kaduna State. Coverage of the *Federal Directory of Industrial Establishments* for 1980 is even more incomplete than that for Kaduna State, as table 4.1 shows. From the *minimum* picture that it gives, we may however confirm some expected features.

Kilby has shown that the establishment and dispersed of bakeries, from their early introduction from abroad via the port cities, had progressed rather far in the southern regions already in the early 1960s (cf. chapter 5.1). Even allowing for his likely under-recording, his data from the East compared to those for the North illustrate this (table 4.2). Indications in the *Federal Directory* for 1980 on the date of establishment, (allowing of course for production stoppages) show by single survivors from the 20s, 30s and 40s the early entrance of the industry in Lagos and a few other cities.

Pressing the data a bit further we observe from surviving establishments that a few more entries from the 50s are followed by a sharp increase in numbers in the 1960s, the first decade of broader establishment, and the expected wave of establishment in the 70s. The result as of 1980 has been entered into Kilby's table for the earlier date to show the multiplication of bakeries for those towns covered. Indication of the further considerable spread into smaller towns is the fact that while in Rivers State Kilby includes

Table 4.2
Bakeries with over 10 persons employed in Eastern and Northern Regions[a] – recorded by Kilby, 1961 and *Federal Industrial Directory* 1980

	Kilby 1961[b]	*Federal Industrial Directory 1980*[c]
Eastern Region:		
Aba	3	24
Abakiliki	2	9
Calabar	1	10
Enugu	3	24
Ikot Ekpene	–	1
Onitsha	13	14
Owerri	2	7
Oron	1	1
Port Harcourt	3	12
Umuahia-Ibeku	3	17
Uyo	1	3
Northern Region:		
Ilorin	–	2
Jos	2	8
Kaduna	1	4
Kano	2	21
Zaria	2	2

Notes: [a] earlier regional delimitation. The Eastern Region referring to present day Rivers, Imo, Anambra and Cross River States. The Northern Region corresponds to the North as described in note 13.
Source: Kilby 1965: Table 5; 14.
FGN 1980: 32 ff.

only three bakeries with over ten employed for Port Harcourt, the 1980 directory quotes, apart from 30 for this city itself, another 38 bakeries that are spread over twelve smaller towns. It is reasonable to assume that this regional entrenchment has gone much further still in the South than in the North and entails a further penetration also of 'electric' technology, as some other bakery studies concerning Bukuru and Okene also indicate (Winful 1981, Badamasuiy 1980). Our main point here is however that it has by now gone very far also in the North.

But the South contains a further phenomenon with no parallel in the North. This is the Wonder Bakery recently set up in Lagos.

6. Ultramodern Bakery in Lagos: The Latest and the Largest

The case of Gobarau in Katsina suggests that the smooth, flexible,

complementary structure of small-scale mud-oven bakers, combined with variously sized electric bakers found in most cities and evolving in smaller towns as well, may be on its way to be superseded by the intrusion of the new level of highly automated technology introduced in larger packages. In Katsina it even outraced the electric oven and appeared very large compared to the smaller bakers.

Compared to the recent addition in this expansive trade, the Wonder Baking Company Nigeria Ltd in Lagos (interview Asuni 1981), Gobarau is made to look more like small-scale rural development. We are talking here of a N2.5 million investment in a continuous production line, handling initially 150 bags of flour in three shifts per day, with plans in 1981 for a further addition of a second line to produce twice this amount. The plant was built by the US-based multinational ITT Continental Baking, but is solely owned by a well-known businessman and one-time politician Chief M.K.O. Abiola. He is Chairman of International Telephone and Telegraph Corporation (ITT) Nigeria Ltd, and of the large Concord Group of companies. He was earlier also National Vice-Chairman of the ruling NPN party, with frustrated presidential aspirations (see e.g. *New Nigerian* 7 February 1983).

This bakery, in operation since 1980, employed 140 people in March 1981, about 60 of these directly in baking and 30 in slicing and packing divided over three shifts. It operates on the specific Wonder Bread recipe used in the large chain of continental bakeries in the US and in Britain under the brand name Mother's Pride. Part of the choice flour is specifically imported from the US, via a trading firm in Lagos, while the rest is supplied by Flour Mills of Nigeria, i.e. on control price arrangement. The machinery is the latest to this date, in fact a prototype for a new technology, mainly of US make. After mixing, the dough is not touched by human hands till the baked bread emerges from a slow journey through a long tunnel-oven. Eighty-one contracted distributors move the bread all over Lagos, and two trucks and six vans take it to the distribution points. In 1981 a second plant was projected for Abeokuta, the hometown of Abiola in Ogun State. There were plans for more 'in every state of Nigeria' later on.

This is entrepreneurship at a different level again and open to different dynamics compared to those that have carried the expansion of small mud-oven bakers, local electric bakers and state co-operating bakers using smaller automated technologies. At each of these levels, the entrenchment of wheat can rely on different social and political forces, reflecting a wide variety of technologies, social relations of production, and forms of state intervention. Let us move from the level of individual enterprises to such systematic features, focusing on the crucial role of technology.

5. The Bakeries: Technology and Expansion

The unfortunate success of bread in Nigeria cannot be reduced to the machinations of international wheat traders, foreign millers, and their domestic collaborators, including those politicians, with or without uniform, who have opened up the country for this trade. The success of bread is as much the success of thousands of indigenous entrepreneurs who operate the bakery business at all levels of society, skillfully making use of a wide range of technology and social organisation in exploiting the commercial opportunities created by the transformation of the Nigerian economy.

The bakery industry has participated successfully at all levels in the dynamic interplay between large-scale capitalist expansion and the gradual transformation of the household economy which is characteristic of Nigerian development. Early entrenchment in the small-scale sector by virtue of a suitable and developing technology: the introduction of flexible medium level technologies and of varying scales also in the latest turn-key technologies: these are conditions that have matched varied social forces which have taken hold of the production of bread and loaded this level in the wheat economy with a strong force of expansion. Simultaneously, these thousands of indigenous entrepreneurs with their employees, clients and patrons and their wider social networks constitute a powerful force entrenching the dependence on wheat.

This chapter places the growth of the bakery industry first of all in the context of the crisis of transition faced by the household-based food processing economy. The bakers compete successfully with women who cook food for the market. We outline the successive technological advances made in bakery, including the development of a simple domestic machine industry serving this sector. We indicate the cost of entry at each level of enterprise from the village mud-oven to the automated bakery, and the type of entrepreneurs operating at each level. A flexible technology made up of separate components which can be combined at various cost levels permits a continuous range of investment. It facilitates close adaptation to market sizes and levels of competition.

We point to the favoured position enjoyed by bakery in terms of public support schemes for small-scale industry. Ideologically, this is argued with reference to the beauty of 'rural industrialisation', 'appropriate technology',

and 'indigenous entrepreneurship' etc.

Finally we show how higher levels of technology in this industry can draw on monopolistic advantages based on preferential access to flour at the control price and to institutional markets. Such features seem to ensure success even when the advantages of superior technology fail to materialise. Still, the survival of the mud-oven bakers with their effective roots in a large and viable petty commodity sector seems hardly threatened by such monopolistic enclaves.

1. Small-scale Bakeries: Pioneers of Expansion

Specialised Bakery Versus Household Food Processing

The deep small-scale entrenchment sets the bakery industry apart from wheat milling and from all other import-based food processing industries as well But it also differentiates it from the processing of local foods which mainly takes place in the household or 'one-woman' sector. This has given to bakery a unique advantage in utilising the scope for expansion of food processing in the oil economy. Being intensely local, flexible and 'appropriate', bakery simultaneously spearheads a transformation at the national level which is import-dependent, inflexible and inappropriate.

The production and marketing of convenience foods are well established in the household economy, filling the task of meeting the substantial demands for snacks and pre-cooked courses in traditional diets. For the North, Simmons (1976b:53f) has shown in her studies of three Zaria villages, that nearly every woman (in her sample close to 90 per cent) spends part of her time in food processing for the market.

The products include a wide variety based on local grains, beans, groundnuts and milk, many of them for direct consumption, without further cooking being required. (As we saw in chapter 2.2, they also include a number of products based on wheat, other than bread.) The majority of these precooked foods are produced solely by women, mainly inside the households, but some of them also in the market places or on the road-side close to customers. As demand for processed foods has expanded few of these products have gone on to be produced in separate production units, involving more than one or two people and with the use of other than household technology. Of the convenience foods bread is the only one that is extensively found in what we may call 'specialised small-scale production', with the above characteristics. The closet exception is *gari*, a processed form of cassava, which, however, requires some quick preparation before consumption.

A number of constraints affect the ability of household and one-woman production to respond to the rapidly expanding demand. The means of production are made up of ordinary household utensils, capital inputs are tied to the women's access to household savings and the surplus from their operations, which at least in the Muslim North are limited (cf. Simmons

1976b:159). Structural changes related to the oil expansion may also affect labour supply when wage production and petty activities start to attract family members out of the household, including the women directly involved in food processing for the market. Their level of efficiency may no longer be competitive with that which has gradually developed in specialised small-scale bakery.

Conditions in specialised small-scale production close to the local household economy have been favoured by the structural changes in the economy. Labour is continously being 'freed' to work outside the households and will at the same time demand food, convenience food in particular. Capital generated in increasingly commercialised production becomes available for small-scale local investments; distribution and transport systems are improved. This process goes on also in the countryside, as commercialisation and differentiation of agriculture proceeds, and has reached an advanced stage in Nigeria (Beckman 1985b). At least in the North, men's production has been consistently favoured in this process, a reason why 'their' products will have had an advantage over those handled by women in being drawn into 'specialised' production. Gender is thus also an important factor in explaining the success of bread in its competition with other processed foods (see further Schildkrout 1979 and Benson and Duffield 1979).

Early Mechanisation for Small-scale Production

The existence of a continuously adjusting technology is another particular circumstance which has given bakery an advantage unavailable to local processed foods. Let us look at how this has come about historically, using Kilby's account (Kilby 1965:6 ff).

Bakery in Nigeria has its origins in the mid-19th century when West Africans repatriated from Brazil and settling in Lagos brought the skill into the country. On the basis of this traditional skill specialised bakeries began to be established after 1900 in Lagos and in other coastal towns, like Sapele and Calabar, and later spread inland as we have already seen. These early bakeries were entirely based on hand labour, and it was only in the early 1920s that the imported dough-brake, helping in the hard labour of kneading the dough, was introduced by one West Indian baker, Shackleford. He had been brought in to work in the colonial administration, but later turned to baking on the basis of another traditional skill introduced into eastern and coastal towns by West Indian ships' bakers from cargo vessels plying the coast. The cost of entry into such machine bakery was high and hand-bakery persisted side by side with it for some time.

In the post-war period bakery had another major breakthrough on the basis of structural changes which were enhanced by the skills and consumption habits brought home by returning soldiers. The flour import figures show a sudden expansion in the late 1940s (Kilby 1965:9), which of course also reflects the normalised possibilities for shipping the imports. This boom seems to have built up the motivation for the important invention of the locally

made dough-brake by one Ibadan-based baker, E.A. Idowu in 1954 (same: 88), which again radically changed the conditions for production in the industry (same:16). By bringing down the costs of entry into machine bakery by some 50 to 75 per cent, while competing reasonably well with the imported machines in efficiency, these new dough-brakes enhanced the further dispersal of the industry deep into the economy. They have virtually eliminated the hand-bakers.

In far-away Katsina, including its villages, only one or two are still to be found. We saw that the local dough-brake in combination with one or two small mud-ovens and six to seven workers is now the dominant unit of production in the town itself and the only one found in the surrounding villages. The Katsina case confirms that it is a technological combination which has been highly conducive to the absorption of local capital, labour, and skill in a process of gradual expansion even in competition with higher level technologies. We may look closer at our concrete cases for illustration.

Easy Establishment and Operation by Local Entrepreneurs

Capital requirements are comparatively low in small-scale bakery. The cost of establishing a small mud-oven in 1980 was about N3,000 according to interviewed bakers. This could be built by local craftsmen who were also available for continuous repairs. The local dough-brake with an imported diesel engine was then N2,000 and could be obtained and repaired from any of the nearby cities: Kano, Kaduna or Zaria. Minor repairs could also be done locally. Remaining equipment, baking pans and mixing trough, cost about N1,000. N10,000 would cover this plus one month's working capital, according to the estimates quoted in table 5.1, which are made by the Industrial Development Centre (see further below). This is the minimum entry cost. To add a delivery van requires another N6,000. Including costs for buildings, furniture and some extra equipment like scales, a hand divider, and certain fees, the initial investment costs rise to about N23,000. Of these the expense on buildings can be modified. Except in a few cases, no separate premises were used, but the equipment was housed inside the residential compound, sometimes even a rented one.

The skill of one trained baker was evidently sufficient requirement for operation. This skill is by now amply available in Katsina. Alhaji Musa set up his own bakery 18 years ago after having learnt the skill with a Yoruba baker in Katsina. A number of the other bakers mentioned having learnt their skill in other Katsina bakeries, including that of Alhaji Musa. Five in the health office list for 1981 were designated by the officer as of either Ibo or Yoruba origin (one and four, respectively). Eleven owners originate from over the border in the nearby Republic of Niger, but so do many people in Katsina. This contrasts with Kilby's time when, with only two exceptions, his enumerated bakers in the North were all southerners (Kilby 1965:14).

Table 5.1
Extracts from a pre-investment proposal for a small bakery in Kano State made by IDC, Zaria, January 1980

Capital investment

a.	Land (Right of occupancy) Site: customary tenure		₦	500.00
b.	Building site: Construction of bakery house consisting of an office, store, bakery/display room, oven etc.		₦	5.000.00
c.	Machinery and Tools:			
	1 Locally made dough-brake complete with gear box and Lister engine (diesel)	2.000.00		
	1 Hand divider	1.500.00		
	1 Scales	200.00		
	Baking tins, dough boxes etc.	1.000.00		
	4 Delivery bicycles	400.00		
		5.100.00		
	Installation and transportation 10%	510.00		
	Total		*₦*	*5.610.00*
d.	Office and store furniture and fixtures (office tables and chairs, bread shelves, working tables etc.)		₦	1.000.00
e.	Other fixed investment: delivery van		₦	6.000.00
	Total fixed investment		*₦*	*18.110.00*
f.	Preliminary costs (various fees, contingencies, 3% of fixed investment		₦	543.00
g.	Working capital for one month		₦	4.663.00
	Total investment:		*₦*	*23, 316.00*

Source: IDC 1980a

Apart from the baker, the remaining labour force would normally be completely unskilled labour employed on some form of wage basis. As we would expect in the Muslim North they are all men, like all other persons involved in the industry. In the case of Shukura and one interviewed smaller baker, accommodation was provided for the labourers, who had been recruited from surrounding villages. In another small bakery, out of ten boys engaged, two were relatives of the owner and two more were designated as learners, all with more 'informal' modes of remuneration.

In the latter bakery some four of the young men would need to 'go home to farm' in the rainy season, when operations would be closed down. Such elements of informal organisation and links with peasant agriculture indicate the remaining closeness to the household economy by which the industry is still surrounded. Conditions for flexible local labour supply are utilised. Thus requirements and matching supply of capital, skill and labour make bakeries feasible and appropriate investment objects for entrepreneurs

down to the local level. At this low level, owners are often also managers, but not necessarily so. In a number of cases the baker or another manager was found to be in charge, while the owner was a businessman with other occupations or sometimes owning more than one bakery. Of the larger bakeries only Shukura had the owner as the chief baker and manager. Other studies (Badamasuiy 1980: chapter 3) have found that where absentee ownership occurred the manager and the chief baker were close relatives or otherwise trusted friends of the owner. Given such informal relationships or otherwise close supervision, as Kilby shows in his analysis of comparative productivity of bakeries (Kilby 1965: chapter 7), there seems to be ample scope for local entrepreneurs with the required capital to set up production without personally taking part in it. In particular this has implications for the pattern of expansion.

Easy Expansion by Duplication

Expansion of bakery in Katsina was largely taking place by duplication of the basic mud-oven and local dough-brake unit in a different site. Four such new establishments had appeared inside Katsina during 1982 alone. Kinship relations among the existing number of bakers indicate the occurrence of a similar process earlier. Alhaji Musa thus had two more brothers in bakery, taught and set up in business by him. One of these in turn had two sons in the trade. Alhaji Namadi of Shukura Bread had set up bakeries for three 'brothers'. Alhaji Sani Kankara had just set up a second bakery at the time of interview in 1981.

An exception to this pattern is the main Shukura Bread establishment where, as we interpret it, the owner by his own participation in management, could control an internal expansion by adding more of the same equipment within his original establishment. Alhaji Sule Ance is the only case where expansion is by technological change, by moving in a range of imported machinery.

Regional Penetration by Location and Sales

The capacity for expansion by duplication with rather low costs of renewed 'entry' has obviously been conducive to expansion into the rural hinterland. Of the interviewed bakers in the outlying villages at least half explicitly indicated that they had learnt to bake in a Katsina establishment and later gone to set up elsewhere. Others had physically moved machinery, once set up in Katsina, to new locations, e.g. in Dagara. Some, again, were second bakeries of Katsina entrepreneurs, as Alhaji Musa's 15-year old one in Magama. This man had also helped set up another one in Jibiya, where also a former manager of his was just establishing himself at the time of interview.

The ground for these village bakeries has been prepared by the sales on the weekly village markets by bakers from Katsina and their agents. The markets for bread are thus well established and ready to be supplied by local bakeries. Competition between the village bakers drives them out to sell in their own hinterlands in turn. We find for instance in Rimi an older bakery

which has long ago captured the household market inside the village while the second, more recent one relies on the outlying hamlets reached by rounds on bicycle. A similar picture is seen in Magama. On the weekly market days, however, Katsina bakers' bread still dominates in places like Rimi and in Jibiya, which are close to Magama. Competition in Katsina will drive them there. The price difference in flour, mentioned earlier (chapter 3.4), will also make this trade highly worthwhile. Even small bakers in Katsina would pay only about N21 to N22 per bag at times of normal supplies in 1981, while the Rima and Jibiya ones had to pay N27, according to our interviews.

This competition from Katsina bakers will be a further factor behind the village bakers' extended peripheral sales. The total net effect is that bread is pushed further down the regional hierarchy in a process where central and peripheral bakers interact and where the small-scale production form is a crucial factor for dispersion and rural penetration in a classical manner (Santos 1979; Andræ 1981). The pioneering role of peripheral small-scale bakery is an important factor in opening up rural markets for larger bakers, e.g., of the Gobarau type, to move in at a later stage.

A strategic function in this penetration process is performed by the often separately operating bread vendors. At various levels of organisation they, too, constitute an important force of wheat entrenchment with interests in continuance of their lucrative trade.[18] These range from contractors supplying food for schools and institutions to 'agents' and traders selling on the market places, lorry parks and street corners, and further to bicycle-borne peddlers to the villages.

An Attractive Industry for State Support

The bakery industry has thus become a dynamic area of capitalist development close to the household economy. It is one of the sectors where the development of specialised small-scale production has gone comparatively far. Apart from grain milling it was the only food industry that was considered worthy of including among 38 sectors surveyed in the series of small-scale industry counts made from Ahmadu Bello University in the mid-seventies (for Kaduna State: Bhambri and Khawaja 1981). The establishment of bakeries has been encouraged by state governments who have given support through their Small-Scale Industry Credit schemes.

These are federal programmes administered by each of the states. They were set up under the Second Plan in the early 1970s, for

> the expansion and modernization of existing small-scale industries and also for the development of new small-scale enterprises of the mechanized type to manufacture relatively sophisticated consumer goods as well as simple producer goods. . . A special objective . . . is to encourage a new class of educated and technically qualified entrepreneurs to set up modern small scale enterprises (FGN, no date: a: 9–10).

In screening and supporting the projects the state governments have the support of the Industrial Development Centres (IDCs) 'which combine the features of an extension service centre, a training institute and a product development centre for small scale industry'. Their principal aim is 'to develop viable and modern small scale industries and also improve the existing small scale industries through the adoption of more efficient techniques of production and better organisation and management methods' (FGN, no date: b: 6-8). Initially three in number, the IDCs were in the late 70s intended to be extended to eventually cover individual states.

One of the original IDCs was established in Zaria with USAID support. A list of recipients of credits in Kaduna State between 1975 and 1979 compiled at the Centre shows that 21 loans had been given to bakeries, the largest number for any sector. The list of other food industries supported includes brown sugar, (18) and grain mills (17), as main competitors for credit. Poultry (7), animal feeds (1), *garri* processing (5) and 'animal and vegetable oil and fats' were other food industries given some support. Compared to non-food industries bakery also dominates by number of establishments supported, i.e. over large industries like block making (20), metal industries (18), motor repair (14) and tailoring (12). Allocations to bakeries are around two different levels, about two thirds keep around N10,000, thus covering the minimum equipment noted on page 63 above. About one third keep around N15,000 or commonly N16,000 (which means that a delivery van can also be added).

In Borno State where we interviewed the Secretary of the Small-Scale Credit Scheme (interview Abari 1981), bakery also got a major share of credit allocations, namely 71. This was paralleled only by cement block industries (73) and followed by grain mills (52) and poultry (19) according to a cumulative list of allocations with entries up to 1978 (Borno State 1981).

It is evident that bakery is perceived as a positive contribution to rural development. At a superficial level, the reasons seem appealing. Bakeries produce a basic food demanded by broad sections of the population; they are linked to another industry, milling, which is in turn 'agro-based'. They are further expansive and profitable (likely to repay their loans!) and the technological flexibility of the industry lends it to expansion by gradual addition of modern machinery. All these are criteria associated with successful development as was also eloquently argued by the IDC officer in Zaria (interview Adetayo 1981). The very success of the bakery business, was the only factor that was causing some hesitation at the Centre on the need for further support.

2. Larger Capital, Machinery Interests and Monopoly Advantages

Electric Bakery Fitting Larger Regional Capital

In the process of industrialisation after independence, the mechanisation of each of the stages in the bakery production chain, which had already started

in the 1950s, found a climate for accelerated expansion. Technology already existing abroad could be transferred to Nigeria by eager machinery agents in this as in other light consumer goods industries, including dairy, tomato paste and sugar industries in the food sector (UNCTC 1981).

A property facilitating this transfer in the case of bakery technology has been the extreme flexibility in combining the modern technological solutions with existing simpler ones. The new technology could thus base itself in the already existing small-scale bakery in a process of gradual expansion. Our cases from Zaria and Kaduna testify to this.

Vita Bread at the scale of 22 bags per day combined two Nigerian-made dough-brakes (plus one out of use) with two hand-dividers (which were not used either) with an imported mixer and an electric oven to supplement two mud-ovens. The imported equipment had been added to the local plant only one year before. In addition it also had one van and one pick-up for deliveries. City Bread had been operating since 1958 initially with mud-ovens, but had since 1974 added the full range of imported mixer, miller and electric oven.

Northern Bakeries in Kaduna is of course the one amongst our cases where the expansion of this type of technology has gone the furthest. Starting on a much smaller scale in 1964, it had now reached its current considerable capacity by duplicating several times the full range of the same type of imported machinery as found in smaller electric bakeries all within the same premises. The latest addition was in 1978. Apparently the limits to this method of expansion have been reached now that an entirely new 'semi-automatic' plant is being projected.

The cost of establishing an electric oven is not the kind of money that can be raised by any trained baker or small-scale bakery owner. According to one pre-investment study from 1979, used by the IDC as a prototype in evaluating applications for credit, a full range of modern machinery, in a single set of each, is estimated to cost N70,000, of which the oven alone is N39,000. Including other equipment of N33,000 and two vans, N12,000, a power generator worth N12,000 and buildings worth N40,000 the total for a (small) electric bakery would come to N145,000. This is to be compared to a small-scale bakery costing N10,000 to 23,000 (as specified above), i.e. a mere fraction (table 5.2; IDC 1979:34). While IDC credits will not reach very far towards the major investment of the electric oven, the IDC may help to liaise between individual entrepreneurs and the commercial banks. In the case of the larger Northern Bakeries, the private founder Idris Morrow teamed up with 55 per cent public capital, as we saw above.

Apart from access to capital, the ready access to repair services and spare parts for the more advanced machines must be a crucial condition for moving into this level of technology. This may likely explain the lack of this level in Katsina. The capacity to absorb such functions internally will have been one pre-requisite for the ability of Gobarau to make the jump across the savanna. Further south these conditions are more favourably provided.

Table 5.2
Extracts from a project feasibility report for a proposed electric bakery in Ogun state, 1979 used by IDC, Zaria

Capital investment:		
Land and building: Factory Site development		N 1.000.00
Building		39.000.00
		N *40.000.00*
Machinery and Plant:		
i.	Matador (oil fired) oven MVA 100/4 without Proofer	39.950.00
ii.	Morton Dough Brake 26" roller	12.000.00
iii.	Turbantia T 160 Mixer	8.650.00
iv.	Robertson 36 pieces Hand Divider with Stand and Small Pan	1.600.00
v.	Mono Gravity Bread Slicer	3.000.00
vi.	Mono Deluxe Sealer with Wrapping table attached	700.00
vii.	Mono Multi Moulder 12" model	4.200.00
		N *70.100.00*
Others:		
i.	Furniture, Fixtures and Fittings	5.000.00
ii.	Motor vehicles (2)	12.000.00
iii.	Office equipment	2.000.00
iv.	Power generating set	12.000.00
v.	Scale	200.00
vi.	Baking pans	2.000.00
		N 33.200.00
	Grand total	*N143.300.00*

Source: IDC 1979:34

Machine Merchants and Budding Local Manufacturers

The continuous nature of the technological expansion makes the agents who supply and repair the foreign machines strategic participants in the process. In Kaduna there is, for example Guthrie's Nigeria Limited, who have been in the country now for over 25 years and in 1981 were represented in seven states (interview Guthrie's 1981). They supply the machinery quoted in the pre-investment report referred to above with emphasis on the miller, mixer, moulder and oven. They also do repairs. There are also Nigerians in this business, like Ejire Halleluiah Trading Co Ltd in Zaria, who are also dealing in the imported brands.

It is only in the last few years that local technology has moved beyond the dough-brake. In the Industrial Trade Fair in Kaduna in 1983 there was the Enugu-based company, Luke and Jude (interview Luke and Jude 1983), advertising their new locally-made oven.

The price for this oven was only N20,000 compared to close to N40,000 for the imported ones. They had so far sold ten of these, since the beginning of operations six months earlier. They had plans to add the manufacturing of a mixer and a moulder later the same year. The representative mentioned another firm making bakery machinery also in Enugu, and was optimistic of the prospects in the industry in view of increasing import restrictions in the critical foreign exchange situation. He maintained that only a small proportion of the components were imported. The company was said to have a capital investment of N500,000 and to employ six people. It represents one further level of domestic entrenchment in the wheat economy.

Automatic Bakery: Transnational Technology for National and State Level Capital

In the industrialised countries development towards automation and increased scale has proceeded rapidly in the bakery industry in recent decades. From being a major example of a locally oriented 'residential' industry operating on a small scale for local markets to provide fresh bread every day, it has turned into a concentrated industry with a high level of automation serving large regions from a single firm (UNCTC 1981).

As this process is maturing in that part of the world machine- and processing-capital start to look for new markets in more peripheral areas. Integrated continuous-production-line bakeries delivered on a turn-key basis are keenly marketed by firms representing such interests, as is witnessed by their conspicuous presence at the Kaduna Industrial Trade Fairs in the 1979–83 period.

As we have seen in the context of wheat-milling, structural conditions in oil boom Nigeria have been ripe to absorb these types of investments and as in milling there has been capital ready to undertake them. The capital required has so far been drawn from domestic sources, involving states as well as private interests. In line with the tradition maintained since the early 60s (see chapter 4.1), foreign investments have been kept out of the bakery industry. The force of international capital is in the machinery business.

Wonder Bakeries and Gobarau Bakery represent two main types of entrepreneurship found at this level. Only few private Nigerian businessmen, like Chief Abiola with his base in the Concord Group of companies in Lagos, may be capable of putting up the N2.5 million required for the ultra-modern Wonder Bakeries in Lagos. His connection with ITT has provided an opportunity for this transnational giant to introduce the most advanced bakery technology in Nigeria, in the general investment bonanza of the oil boom years.

A large part of the investment capital accumulated in the oil boom is handled by the state at the federal and state levels. The turn-key bakeries have found great appeal with such state investors. Thus Gobarau in Katsina, like its parallel in Kafanchan, was found to fit very well into the state investment programme for medium-scale industry in Kaduna State. They

are considered as a contribution to the development of peripheral parts of the state by technological transfer and employment creation (sic!) (interview Dalhatu, 1980 and 1981). The Kaduna State Investment Company sees itself as a temporary agent in organising investment in conjunction with private and local government capital. Its long-term plan is eventually to hand over to such interests.

Although 'fully automatic', Gobarau represents smaller scale technology than ITT's, involving only a sixth of the investment costs, about N400,000 in 1979. It could be provided through a Nigerian based firm, Aticon. This was a partnership between two Swedish firms (a building contractor and a building machinery firm) and the Nigerian contractor Akin Taylor, where the latter held 45 per cent of the capital and the former had the management function. Aticon has not, like Guthrie's, particularly specialised in bakery machinery, but has mediated the contract to Gobarau, the first of its kind in Nigeria, with the Swedish machine company NPL International of Malmö. The management of Aticon had a very optimistic view of the market for these machines at the time of interview at their Lagos office in 1980. They were then negotiating to sell another six or seven similar plants elsewhere in the country. The foreign origin of the technology thus 'transferred' to the small savanna town of Katsina with its 20-odd flourishing small-scale bakeries was underlined by the fact that training had to be provided by a visiting Swedish baker before handing the plant over to the Gobarau management. In the case of Wonder Bakery, trainees were sent abroad, to the US and Germany.

Aborted Automation in Bida

'Integrated production lines' using smaller electric bakery-type machines are now also marketed by agents who had earlier been selling machinery piece by piece. This appeals to a new breed of entrepreneurs with little experience of bakery, but with capital to invest. To this category the completeness of the small integrated bakery may appear more manageable than the piece by piece technology. Alhaji Bugudu Bida is an example of this type of entrepreneur. He bought a complete integrated bakery of German make, mediated by Guthrie's, right from the stands of the Kaduna Industrial Trade Fair in 1979, and set it up in his hometown, Bida, in Niger State.

Alhaji Baguda, originally a trader in Bida, accumulated his capital in the 1970s as a transport owner and contractor in Kano, Kaduna and other parts of the country. He has now set up motels in Bida, Minna, Mokwa and Suleja (near the new capital). He has further built rental housing in Bida, where he also runs an agricultural project and a tractor hiring service. His large Bagudu Construction Company, BCC, has offices in one of the main streets in Kaduna and runs at least two aeroplanes. Our interview with this successful businessman was held in early 1980 in his large new 'upstairs' palace in Bida, which was watched by a large force of uniformed guards. It had rather the style of a royal audience.

Alhaji Bagudu characterised his bakery in Bida, which had then been

running for nine months, as a very good affair. It was directed by his son, Alhaji Waziri, and managed by a man from Benin City (interview Momudu, 1980), with a background in catering, with the aid of a skilled baker plus ten unskilled workers and a salesman. Its capacity was some 18 bags of flour per day of two shifts, and sales went to schools and retailing markets in Bida as well as to village markets as far out as 50 km from Bida. Two vans took care of delivery.

The role of the modern integrated technology in the success of the bakery is however doubtful. After these nine months of production it did not look much different from any of the older electric bakeries in the North. The proofing chamber was not operating, the system for loading the loaves into the oven was not used, the continuous production line was broken up into its separate elements thus requiring twice the labour force intended. Still it was running at two thirds of its capacity, and was making good profit. There were certainly other sources of success, the access to an all-Ghanian labour force for the unskilled work, whose status before the dramatic expulsion of 'aliens' in 1983 will have made for low wages. To the advantage of an assured market provided by the school contracts was added the benefit of a contract for 280 bags of control-price flour per month (at N13.50 with transport, compared to N15.00 trader price). This would have given him large enough advantages over all the local bakers who did not. Alhaji Bagudu had evidently made a good deal in setting up his bakery, in spite of not using the technological benefits of automation; he was planning to establish a number of similar industries in Minna, Mokwa and 'many other villages'.

Could it be that much of the scope for the introduction of advanced technology depends on the monopolistic advantages pertaining both at the supply and the market end to the large entrepreneurs in the industry?

Monopolistic Market Relations

In electric and automatic bakery in general, institutional contracts were found to form an important form for sales. Schools, army camps, hospitals, even industries, take care of a major part of the sales of, e.g. Gobarau and Northern Bakeries. As much as 90 per cent of those of Freedom Bread in Zaria went directly to schools. The owner of City Bread, however, said he could not afford the delay in payment that would often go with such contracts and therefore preferred open market sales. The availability of capital is obviously an advantage in favour of the larger bakeries. So is of course the larger size of their deliveries. But we can also reckon with a heavier weight when it comes to using contacts and pulling strings. The Gobarau manager in fact slipped the remark that the contracts with most of the residential schools in the Katsina area had been easy to secure, since many of the headmasters were his class mates. The smaller mud-oven bakers, often without much modern education, would have few class mates at this level.

State backing provides added possibilities to influence other state institutions to buy. Again in the case of Gobarau, the schools in the area

were actually exhorted to favour this new modern bakery, with reference to the need of the children for a certain ration of bread per day and to the hygenic quality of the bread from a modern bakery (Morrow 1979; interview Mashi 1980). Informal interviews with Katsina students of the Government College confirmed that bread was on the menu for breakfast six days a week in this school (interview Dan-Musa 1981) – indeed an effective way to establish future consumption patterns with the budding middle classes.

A finer texture and more hygenic conditions of production are arguments used by the modern bakers also in selling to department stores and hotels, where middle-class markets are already concentrated. In the open market the advantage of their bread may not be decisive. The feasibility report for the expansion of Northern Bakeries was very confident that this bakery would by its mere quality be able to capture a large part of the demand currently filled by small bakers' 'inferior quality bread'. (NNDC and Arewa Hotels 1982:4). The experience of Gobarau, which still in 1983 had not reached more than two thirds of its capacity, while small bakers had continued to expand in the town, does not support this hope. Middle-class markets, although continuously expanding, are nevertheless limited. And as we have noted before, the difference in the standard type of bread produced by large and smaller bakeries is really very small.

Preferential Access to Control Price Flour

Access to control price flour is another factor which is quite clearly biased in favour of the very large bakers, both the private and the state supported. It provides a considerable advantage in terms of cost and security of supply in competing with the smaller ones. All the larger bakers interviewed, Wonder Bakeries and Bagudu Bida of the private ones, Gobarau and Northern Bakeries with state support, have had this advantage. Among electric bakers, as among the smaller ones, there are *some* fortunate ones, e.g. in Zaria, the owner of City Bread. The only smaller baker interviewed with such registration also had an IDC loan, which may have helped him or just been a sign of good connections in several respects. Still in a town like Zaria, close to the large dealers in flour like Paterson Zochonis', the price difference was only one naira per bag as of early 1980. There, it is at times of shortage that the real difference to those without registration would arise.

Without going into a detailed analysis of the comparative advantages of the different technologies we may all the same conclude that it is not necessarily by greater efficiency in production that the more modern bakeries compete. Nor do we find that they are in any big way ousting the less modern ones out of the business. Just as the above monopolistic advantages are tied to mechanisms at the social level so are other factors with consequences in the opposite direction.

The small-scale producers compete by their flexible 'way of life' organisation, more adjusted to the labour-rich economy of poor consumers. As they frequently balance on the line of existence, their potential for fragmented and dispersed production and sales will be to their usual advantage when

it comes to survival (Santos 1978). The larger modern firms, on the other hand, are bound to suffer from some or all of the problems associated with such production in a Nigerian type environment, those tied up with difficult access to repair services, with lack of spare parts, inefficient management and often with corruption (cf. Kilby 1965). Coupled with the different cost-structure, the social context makes for very different conditions for realising the potential advantages of modern technologies (cf. Dinham and Hines 1983). The total take-over by large-scale bakery is in no way to be expected.

3. Conclusion

The entrenchment of wheat in the Nigerian economy can thus draw on an elaborate indigenous production and trading network provided by a bakery industry

> well adapted to different levels of capital, skill, and social organisation of production
>
> supplying partly the same and partly different markets
>
> the smaller preparing the way for the larger by working up the markets and in some cases accumulating the capital for further expansion, without as yet being overtaken in the process.

The very range of technology and social organisation, we maintain, has been a key to the dynamism of bakery expansion. As a result bakery has been drawn into capitalist development at all the interacting levels of production characteristic of West African development, and has been able to make use of the full force of this expansion, particularly in the period of the oil-boom in the 1970s.

Consistently, domestic production capital has been supported and urged on by foreign machinery interests, embodying and introducing the changing dynamics at the global level. Where domestic absorption of this technology has occurred, this has had decisive implications for the further entrenchment of the industry.

The support of the state at the various production levels has been motivated by the contribution made by this sector to industrialisation in rural as well as urban areas. It also fits the interests of the state to cater for the reproduction of wage workers and petty producers in urban as well as in rural areas in the ongoing process of capitalist transformation. Wheat bread has properties that makes it well suited in these functions, compared to local alternatives.

The constraints to expansion and profits in bakery is perceived as a *milling* problem by most of the actors in the industry. On account of their costly

and less certain supplies of flour it is the smaller and the medium-sized electric bakers without registration at the mills who articulate this opinion. Thereby they provide force and legitimacy to the expansion also in the flour milling sector.

The problem of imported wheat versus domestic agricultural supplies is not an important issue for the agents of bakery expansion. The smaller bakers articulate little perception of the plans for domestic wheat production, while the larger ones worry little over supplies at all, since they are the first to get what flour there is, at a good price. In 1981 the manager of Gobarau revealed plans to set up another similar bakery elsewhere in Kaduna State. In 1983, as 'austerity' had set in and threatened imports, it was the *machinery* imports that worried him and caused him to shelve these plans.

Government officials engaged in small-scale industry support are equally unaware of the problems of import dependence. When pressed on this point, they assume that imports are in fact being rapidly replaced by domestic production from the much celebrated irrigation schemes (e.g., interviews Adetayo 1980, Abari 1981). In Katsina, the Kaduna State representative in charge of the local credit scheme administration (interview, Husseini 1981), was even under the optimistic illusion that supplies from the wheat-growing schemes would very soon suffice also for export of wheat to neighbouring countries.

Politicians and administrators at the state level with no responsibility for import problems but with short-run interests in capitalist expansion and food provision at their state level, are similarly prepared to be convinced by the illusion of the potentials for growing local wheat to substitute the rapidly multiplying imports.

But the closing mechanism of the wheat trap lies, as we see it, precisely in the agricultural stage of the wheat economy, to which we now turn.

Part II: The Illusion of Import Substitution

6. Wheat Production in Nigeria: The Development of a Commitment

1. Introduction

The Illusion of Self-sufficiency

How has the Nigerian state responded to the rapid growth of bread consumption and wheat imports? A basic objective of the Fourth National Development Plan is 'the attainment of self-sufficiency in food in about five years' (FGN 1981a:26). What does this mean in respect of wheat and bread?

As far as we know, there is no authoritative policy pronouncement on wheat. One thing is apparent, though: the state is deeply committed to a policy of large-scale irrigated wheat production (AERLS 1979:10). To what lengths such a policy is to be pursued, however, is by no means clear. At the current rate of increases in consumption and imports any policy aiming at full substitution may appear totally illusory. How can Nigeria, which presently produces perhaps one per cent of the one-and-a-half million tonnes of wheat consumed, not only substitute that amount with local production, but also keep up with annual increases which have averaged well over ten per cent during the past decade? At what level is imported wheat to be substituted and at what cost, to the state as well as to consumers?

This chapter examines Nigeria's commitment to wheat growing, and outlines the wheat schemes in which the state has so massively invested. In subsequent chapters we discuss the difficulties faced by the programme, the costs of import substitution, and the implications for national and local food economies.

Official projections in the late 1970s suggest that half a million tonnes of local wheat could be produced by 1990. This equals one third of *present* consumption. The fraction would fall with the extent to which consumption and imports were allowed to continue to expand. These were the most optimistic estimates of areas to be brought under wheat and levels of yields (3 tonnes per ha). The committee of experts appointed by the Agricultural Extension and Research Liaison Service (AERLS) who reported in 1979 rejected these official estimates as unrealistic and suggested more modest projections of development rates and yields: half the official rate, and 2

tonnes per ha. On those premises, a quarter million tonnes could be produced by 1990, or some ten per cent of the demand expected by the committee already for the mid 1980s. (AERLS 1979:49ff, 79).

How realistic was this more modest projection? Not very, if we compare it with the actual performance of the wheat growing schemes. According to the committee's low-growth, low-yield alternative, production should have grown from 6,500 tonnes in 1977–78 to 85,000 tonnes in 1981–82. This has not happened. An FAO mission in 1983 estimated actual production at 15,000 tonnes (Palmer-Jones 1983). Even this seems to be on the high side (see our discussion of individual projects below).

It is therefore highly unlikely that domestic wheat production will come anywhere near even the most cautious targets suggested by the 1979 report. It should be emphasised that the AERLS committee is the only professional body which has so far looked seriously into the problems of Nigerian wheat policy.

Even to achieve a substitution rate of, say, five per cent by the end of the decade, Nigeria would have to freeze consumption. She would also have to make sure that the current rate of investment in the wheat programme is kept up. That this can be done is by no means self-evident as the projects are hit by the oil glut and the fiscal crisis of the Nigerian state. But these are not the only constraints. The projects face a wide range of political and technical problems epitomised by the armed resistance of the Bakolori peasants on the one hand, and the failure of Lake Chad to produce sufficient water, on the other. These and other calamities provide officials with excuses for not having reached targets. As we shall see, technical and political problems are closely intertwined and they are not accidental. They arise out of the logic of imposing a particular agricultural technology on this physical and social environment.

In the meantime, the local wheat establishment, administrators and technocrats, cultivate the illusion that self-sufficiency is technically feasible and politically necessary if the country is to liberate itself from dependence on other countries for its basic food requirements. Enthusiastic releases by the authorities immediately involved reinforce this illusion. The General Manager of the Kano based Hadejia-Jama'are River Basin Development Authority has been quoted as saying that his organisation alone would be able to supply 40 per cent of the grain needs of the nation (New Nigerian 28 May 1981). The three northern irrigation schemes will jointly produce 600,000 tonnes of wheat in the first stage, according to another press report, drawing on 'the research findings' of the National Accelerated Food Production Programme (*New Nigerian* 20 March 1981). The President of the Second Republic announced at one point that 'studies and investigations have confirmed' that the Hadejia-Jama'are basin alone had the potential of producing 'most if not all the grains required in this country' (*Financial Punch* 20 October 1982). Experts have encouraged such prospects. A leading wheat specialist claimed as late as 1979 that present plans would allow Nigeria to be 'largely self-sufficient in wheat' (Redden 1979:1). The experts

tell us that if the right varieties are used, the right practices applied, and the right incentives offered to farmers, Nigeria will become self-sufficient. Costs may be high but these have to be faced because it is 'economically and politically unwise' to rely on others (Olugbemi 1980: 14).

Narrow sectional professionalism and economic nationalism combine to provide ideological legitimacy for the big wheat push. Other actors, including the international traders in advanced irrigation technology and the consultants who serve as their scouts, are ready to cash in on these patriotic sentiments. So are the ministers, officials, and middlemen who collect kick-backs in the high-technology project business.

Primarily, it is not a desperate desire to be independent of US wheat which is the driving force behind this commitment. More fundamental are the international and national forces which push advanced capitalist solutions to the problems of 'development'. 'Self-sufficiency' provides good ideological cover for a process which pulls Nigerian agriculture into capitalist agrarian transformation on a world scale, wheat or no wheat (Beckman 1985b). The specific technological requirements of wheat import substitution, however, serve to reinforce this process and to heighten the contradictions involved.

The commitment is indeed a formidable one. The World Bank (1979:III: 7) has estimated that by early 1980s some one billion naira would have been sunk into the first stages of the wheat projects, Kano River Project Phase I, South Chad Irrigation Project Phases I and II, and Bakolori. These projects cover some 90,000 ha, half of which is expected to be under wheat. The AERLS Report (1979:5) speaks of current plans for the irrigated wheat zone which aim at developing some 345,000 ha by the early 1990s at a total cost of some N2.2 billion in 1977 prices. In view of the costs already accrued this figure should be considered a gross underestimate. Budget appropriations in 1981 for the capital costs of the three wheat growing authorities alone were N320 million (FGN 1981b:651). The figure may be compared with the N82 million budgeted on the same occasion for the 'integrated agricultural development projects', the other main thrust of Nigeria's agricultural development policy.

How did this formidable commitment to domestic wheat production come about? Let us begin by examining the history.

No Wheat Without Irrigation

Wheat has been grown for centuries as a dry season, irrigation crop in the river valleys – the *fadamas* – of the far north (Andrews 1968). The technology of irrigation has been labour demanding – heaving water from the river or from ponds – and has therefore been used for vegetables and special crops, never for production in large quantities. Wheat, as was mentioned in chapter 2, was an exclusive crop used to prepare cakes and other fine dishes for festive occasions, particularly among the aristocracy and the well-off. Temperatures generally are too high and rains too heavy and irregular to permit wheat cultivation in the rainy season. Attempts have

been made in the slightly cooler, hilly areas of the Jos and Mambilla plateaus but with very poor results (Tyagi and Olugbemi 1980). It is only in the far north that the dry harmattan winds from late October to February bring sufficiently low temperatures for wheat to survive. At that time there are no rains, so the crop depends entirely on irrigation.

The question of large-scale domestic wheat production is therefore tied to the question of revolutionising agricultural technology by introducing large-scale irrigation. The modern history of wheat production in Nigeria is inseparably linked to that of irrigation.

State commitment to irrigation preceded the commitment to the production of any particular crop, wheat or other. It has been a commitment to the exploitation of under-utilised water resources in an environment where range of crops, levels of productivity, and crop security are all severely constrained by the shortness of the rainy season, and the unreliability of rains. The irrigation position has an obvious logic to itself which has proven virtually irresistible once there is money to spend. The questions *how* to irrigate and *what to grow* have become secondary.

The need to grow more wheat has certainly been used to justify large-scale investments in irrigation. But more significantly, the growing of wheat has offered a solution to the problem of what to do with large irrigation schemes at a point when the commitment to having them is already there.

It is here that the special requirements of wheat in a tropical context become so strategic in providing legitimacy for large-scale, dry season irrigation. It is the only crop of major significance in the Nigerian food economy which cannot be grown in the rainy season! With guinea corn, maize, millet, cotton, tobacco etc., one would always have to calculate whether it is economically justifiable to invest in irrigation as they grow well as rainy season crops. With wheat one is relieved of such calculations, at least if one takes national objectives on self-sufficiency in food production to include that crop. Wheat offers ideological justification for large-scale irrigation schemes. If the blatant diseconomies of growing wheat are exposed the current irrigation strategies themselves are threatened.

2. International Reconnaissance

The Technical Bias

Colonial experiments with irrigation go back to the 1920s (Palmer-Jones 1981, 1982). An Irrigation Division was set up in the Northern Ministry of Agriculture in 1949 which initially concentrated on a number of small rice schemes in the Niger valley and 'village' schemes in Sokoto and the reconstruction of the Kwarre project. In the North rice is a wet season crop and irrigation was therefore directed towards supplementing rains. In the late 1950s it was decided to pay more attention to the far northern areas and to wheat production, still on a very modest scale. Four main areas were selected, Wurno in the Rima valley, near Sokoto, Hadejia, north-

east of Kano, and sites west and south of Lake Chad (Yobe and Gambaru). The schemes pumped water from rivers and small reservoirs. No major dams or canals were involved. By 1967–68, the area under wheat had reached some 2,000 ha (Andrews 1968).

The early schemes reveal many of the difficulties which were later to appear – grossly magnified – in the large-scale schemes of the 1970s and 80s. No attempt was made, however, to incorporate these social, economic, and technical experiences into the process of investigations and planning which preceded the multi-billion investments which were set rolling (Palmer-Jones 1981).

The need for major studies was already raised in an early World Bank report (1954). It was stressed in the 1962–68 National Development Plan. The plan mentioned the lack of irrigation as one of the crucial factors holding back agricultural production in Nigeria. The Nigerian government asked the FAO to undertake a comprehensive study and to 'draw up a scheme of priorities' (FGN 1962:15). The report produced by the FAO in 1966 stands out as a central document and it is frequently referred to by the planners of the 1970s.

The FAO mission was enthusiastic about irrigation, although sceptical about the development potential of some areas which were currently getting major attention by the state, especially the Chad Basin. The report emphasised the heavy capital investment involved and the need to 'indoctrinate the farmers'. Irrigation would require radical changes not only in technology but also in land tenure and social organisation and one could expect resistance from the farmers. There was therefore the need for gradual development and careful preparations (FAO 1966:33–4).

Yet, when listing the information needed for proper planning the FAO included only the physical aspects: soils, rainfall, ground water, dam sites etc. A similar bias marked the more detailed studies which were to be released in the wake of the FAO report.

The interest of the planners was not with possible obstacles but with technical possibilities. The studies undertaken during the 1960s which were crucial in preparing the way for large-scale irrigation were essentially land and water surveys carried out by engineers and soil scientists with only a sprinkling of economic and social considerations. These were people essentially concerned with identifying places where existing water resources could be tapped (dams) and where such dams (or natural reservoirs – Lake Chad) could be connected with areas technically suitable for irrigation. The economics was, as we shall see, either treated superficially or left to be handled by future feasibility studies.

In the early 1960s USAID experts were called in to identify possible extensions of the ongoing small-scale irrigation programme (Northern Nigeria, Ministry of Agriculture, 1962–65:19–21). From 1963, two large scale surveys were on the way, one of the Sokoto-Rima valley financed by the UNDP and carried out by the FAO, the other for the Lake Chad Basin, but primarily concerned with the Hadejia-Jama'are river basin, financed by USAID and

carried out by the Bureau of Reclamation of the US Department of the Interior. The reports of the investigations were completed and published in 1968 (USAID) and 1969 (FAO). They were supplemented by an investigation by the Commonwealth Development Corporation, a third prestigious agency, into the possibilities of large-scale wheat production in northern Nigeria (Jones 1969). Between the three of them they identified all the major schemes into which the Nigerian state has since poured billions and where wheat was to become the main dry-season crop.

For our understanding of the wheat trap it is therefore important to examine these reports and the use to which they were put.

Fraudulent Economics: the USAID Case for Irrigation

The USAID report did not discuss or recommend wheat. Nor did it recommend, however, any other specific use for the big irrigation schemes which it outlined. It managed the feat of providing economic justification for the schemes without going into the economics of production.

The report spoke of itself as a 'reconnaissance study' as distinct from a feasibility one. It was to find out if further investigations were worth considering. It was based on 'a minimum of field data and a maximum of judgment'. This is how the report puts it. Although the report took five years to produce, the field team which was made up of engineers and soil scientists had access to an agricultural economist only for three months. The economic evaluation which was finally prepared back home in Denver, Colorado, was therefore based on little substantive field information. The agricultural section of the report demonstrates an amazing ignorance even of basic cropping practices in the area (USAID 1968:50 ff). Their cropping recommendations were non-committal. All major crops grown in the north under rainy season conditions 'were assumed to represent the type of crops that would be expected to be grown on the projects' without asking even whether it would make much sense in growing them under dry-season conditions (USAID 1968:7).

This would perhaps have been alright if the report had limited itself to the technical identification of dam sites etc., leaving the economics of the schemes to the feasibility studies. But it did not. Despite the absence of economically relevant data, the mission did not hesitate to calculate cost-benefit ratios as well as internal rates of return for the various projects, using, they claimed, the 'standard procedures' of the USAID. If this is true, it is certainly very damaging to the credibility of those procedures. There is no account of 'cash flows' or of how 'benefits' have been arrived at. For the Kano River Project, which was said to have a nine per cent internal rate of return there is a one and a half page 'economic analysis' out of the 100-plus pages on that project. There is no attempt to estimate the value of existing production in the area. This is the more surprising as much of the benefits were expected to come from rice which, as a wet season crop, would obviously compete with existing production.

The manner in which existing agricultural economies are ignored fits

well with the underlying notion of a 'semi-subsistence' economy (USAID 1968:90), without 'opportunity costs' for land and labour because of the lull in farming activities during the dry season (Wallace 1979, 1981).

The water technocrats of the USAID mission with technical commitment to dams and irrigation construction and their fictitious, not to say fraudulent 'economics' provided Nigerian bureaucrats and politicians with 'professional' justification for the new policy of massive irrigation. Why hesitate to invest in projects which, according to leading international experts, would offer a nine per cent return?

More Fraudulent Economics: the FAO Case for Irrigation

Where the USAID study was hiding behind obscure ratios and rates, the FAO economists offered wonders. With irrigation the value of production 'can be increased fourteenfold', they claimed (Strong 1968:61). How could such a gold mine possibly be left unexploited? Let us follow the FAO economists on their way to these bright conclusions. Let us first note that here again we have an essentially technical study. The six-volume FAO report was labelled a soil and water resources study and this orientation was reflected in the composition of the research team. Nonetheless it considered itself competent to come up with recommendations on specific projects. Altogether it identified suitable locations for eight dams and some hundred thousand hectares for irrigation. The report of the economists was submitted separately.

It has been held to its credit that the FAO was cautious in its recommendations. It wanted a pilot scheme in the Bobo River at Yarkofoji, also near Talata Mafara, before the first major project at Bakolori was to be constructed. Yet, caution did not seem to arise merely out of hesitation over large scale irrigation. A main argument at least for the economists, was rather the lack of resources: 'for many years to come development on such a scale would be far beyond the financial and technical resources which could be mustered' (Strong 1968:1). It is therefore not surprising that the Nigerian government did not feel particularly constrained, once oil riches had begun to flow. The Bakolori scheme had also been endorsed as technically suitable by a joint FAO-World Bank mission visiting the area in 1967 (Strong 1968:11).

As in the case of the USAID report, economic justifications were only superficially integrated into what was essentially a work by engineers and scientists. The economics of the FAO experts has an apparent advantage over that of the USAID. Where the latter hides behind unspecified benefits and costs, the former permits us to follow calculations and the assumptions on which they were based. But the advantage is merely apparent. The FAO economists' report stands out as a piece of crude professional charlatanry.

How did they arrive at their fabulous figures where the annual value of pre-irrigation production in the area was estimated as one fourteenth of the value produced with irrigation? For the Bakolori project this is the ratio claimed for the *least* profitable cropping programme. For the most

profitable one the ratio becomes 1/40! (Strong 1968:36, 46f, app. 10) Post-irrigation crop values are based on government support prices and production costs are estimated on the basis of subsidies in existing government schemes. Just as the value of existing production is treated as virtually negligible, no value whatsoever is attributed to labour. This is presumably provided free with no opportunity cost in the dry season, or in the wet season, for that matter. Even wet season irrigation would radically increase labour requirements.

It is not clear to what extent Nigerian officials and policy makers bothered to scrutinise this fanciful mathematics; whether they were impressed or saw through the fraud. Some may have been genuinely duped, others may simply have been pleased with the outcome for their own purposes.

FAO's 'Very Strong Case' for Wheat

The economic calculations of the Strong Report were based on wheat as the major dry season crop. Earlier FAO reports had been more hesitant. The 1966 general study on agricultural development in Nigeria was clearly in favour of large scale irrigation. But it warned against devoting too many resources to wheat. Knowledge of local conditions for its production was too limited. The report even suggested that consumption should be discouraged, at least until these things were better known (FAO 1966:182).

These hesitations were abandoned in the subsequent detailed reports of the land and water surveyors. Not quite, though. The agronomist who was attached to the Sokoto study questioned the usefulness of growing wheat locally when it could be imported more cheaply. Still, he included it in his cropping programme, primarily with reference to the importance attributed to it by the Nigerian government. Reference was made to a government target of 24,000 tonnes which should ultimately be raised to 50,000 (Richardson 1968:2, 46).

The agronomy report provided in fact little positive support for wheat as such. The reasoning was rather one of excluding most other options for dry season cropping. Unlike the USAID report, which ignored the issue of whether local wet season crops were also suitable for dry season irrigation, the FAO agronomist noted that such crops would do better in the rainy season. He discarded certain vegetables and plantation crops, which in his view, either could be grown in sufficient quantities for local markets under traditional *fadama* cultivation, or would have to be grown on industrial plantations for more distant markets.

The only alternative to wheat, as he saw it, was fodder crops. This in turn would require major changes in the organisation of livestock production. The agronomy report ends by passing the buck to the economists. Wheat should be grown – unless the economists recommended otherwise (Richardson 1968:47).

The economists showed no hesitation. Where the agronomists had accepted wheat in the absence of useful alternatives, the economists treated it as a reason why irrigation ought to be developed on a large scale. This would

allow major savings of foreign exchange. The economists acknowledged that wheat irrigation would require much foreign exchange for imported materials and equipment, 'but this cost will only be a proportion (sic) of the value of total production' (Strong 1968:8). This flat statement was not based on any attempt to calculate the foreign exchange cost of growing wheat. As we shall show later there were certainly no such savings involved.

How did the FAO economists know that wheat would make sense economically? There is an interesting reference to a meeting with agronomists at the Institute of Agricultural Research in Zaria. Also present were Ministry of Agriculture officials with wheat growing experience as well as Richardson, the FAO agronomist. There was a consensus at the meeting, the report claims, that yields of over two tonnes per ha were attainable under farm conditions, *assuming* the application of known techniques, proven varieties, correct timing, appropriate amount and type of fertilisers etc.

This rather inconclusive consensus leads the FAO economists to conclude: 'all things considered (sic!) the case for developing a major wheat industry in Northern Nigeria on the criteria already stated is very strong' (Strong 1968: 18).

Strong indeed! There was no evidence of any discussion of production costs relevant for the large-scale, capital-intensive schemes involved or what it would mean (and cost) in that context to ensure the 'appropriate' conditions of production.

The Commonwealth Development Corporation: How to Make Wheat Plantations Profitable

The CDC is one of the large 'public development finance companies' of the western world. It finances, designs, and runs 'development projects' on a commercial basis, although with state backing and support. It was once the Colonial Development Corporation and it has worked closely with state agencies in the former colonies, particularly in agro-industries. It has a long record of involvement in Nigeria, most recently in the sugar industry (Andræ and Beckman 1982).

In the late 1960s it was commissioned to undertake a series of studies of the possibilities for large-scale production of commercial crops for import substitution or export, including sugar, cotton and wheat. The wheat report pays particular attention to the Lake Chad area which was considered particularly suitable for highly mechanised plantation agriculture as the population is sparse, at least compared with the densely populated valleys of Kano and Sokoto which had been investigated by the USAID and the FAO (Jones 1969:6). Unlike these organisations the CDC did not independently investigate land and water resources. It was directly concerned with crop production.

The CDC consultant did not argue the case for wheat. The case was taken as proven. He quoted at length from the Strong Report discussed above and concluded: 'That wheat can be grown reasonably well is already an established fact' (Jones 1969:1). The problem, as he saw it, was primarily

to make sure that the selection of sites was based on adequate investigations, particularly of soils.

There was also the economic problem: to make sure that wheat was remunerative enough for prospective growers. This was clearly vital if the CDC was going to commit finance and management to large scale plantations. The problem however was treated as one of pricing and protection. Producers should first of all be ensured a government support price which was high enough to make wheat more profitable than other comparable crops (rice). Secondly, custom duties on imported wheat should be fixed at a level which would ensure that the local crop could be sold at this support price.

This is another variety of crude 'feasibility' economics. By taking domestic wheat production for granted ('it is government policy . . .'), consultants were relieved of the obligation to discuss whether it makes sense or not to put government money into this crop. The CDC report did in fact make comparisons with one other crop, rice, finding that it would be more remunerative. But this was merely taken as an argument for raising the support price for wheat to compensate for this disadvantage (Jones 1969:29).

It should be held to the credit of the CDC report that it saw the advantage of high duties on imported wheat not just from the perspective of protecting local wheat but also as a means of restraining bread consumption and encouraging other local foods. However, this restraint was treated as temporary – until the time large-scale domestic wheat schemes had come into being.

3. The National Commitment Takes Form

Post-Civil War Policy on Large-Scale Irrigation

The combined expertise of the USAID, the FAO and the Commonwealth Development Corporation had assured the Nigerian government that there was a bright future for large-scale irrigation in the North, although it was not quite sure what should be grown, especially not in the dry season. This is where wheat offered a solution. The economic justification of irrigation was built on the ability to provide *two* cropping seasons. Wheat was the only major crop which would not do better in the rainy season. In fact it could not be grown in the rainy season at all. So by taking the government's commitment to grow wheat as 'given' the case for irrigation could be established with very little economics. This was the position of international expertise when Nigeria entered the post-Civil War era.

The Civil War ended in 1970. Political energies and rapidly growing financial resources were directed towards 'development'. The new (Second) National Development Plan contained a clear commitment to wheat and large-scale irrigation (FGN 1970:107). Pilot schemes were already on their way in the Kano river and South Chad areas (AERLS 1979:24). Feasibility studies were commissioned for the first stages in the implementation of the full schemes without waiting for these pilot schemes to mature. The pilot

projects did not have any impact on the decisions to go ahead in a big way. In Sokoto, the pilot stage, although included in the Development Plan, was dropped altogether.

Contracts for feasibility studies were awarded to a Dutch firm, NEDECO, in respect of the Kano River Project. A British firm, MacDonald, was given South Chad, and an Italian firm, Impresit, the Sokoto river project (Bakolori). The bulky reports of these studies provided the detailed documentary basis for awarding the design and construction contracts. The political decisions to go ahead with the projects, however, had already been taken before the studies were commissioned. This reinforces the conclusion that it was the reconnaissance studies of the 1960s with their narrow technical identification of projects and their reckless economics which provided the 'professional' basis for the big irrigation and wheat push. The feasibility studies were not primarily concerned with the question whether or not these projects were feasible, as one might be led to think. They dealt with the manner in which already proposed projects were to be implemented.

This is also why the pilot schemes were either eliminated or deprived of any useful role in the decision-making process. The cautious, stage by stage approach advocated by the first round of international consultants was abandoned.

The National Irrigation Lobby: Growing Wheat as a Patriotic Duty

The policy on irrigation and wheat drew support not only from foreign consultants but also from the budding national irrigation lobby. The irrigation policies of the 1950s and 1960s may not have made much impact in terms of total hectarage or output. They generated, however, domestic cadres committed to irrigation as a profession, both in the ministries of agriculture and in the universities. Their departmental world view had them believe that the more irrigation the better for the country. Wheat was a particular challenge as it could only be grown under the very advanced forms of irrigation of which they had read so much in the text books in the colleges of the western world, but which they had been given so little chance of practising in the socially and technologically backward context of Nigerian agriculture.

The reconnaissance studies of the 1960s and particularly the support of the FAO gave a big boost to the morale and the aspirations of ambitious irrigationists. As newcomers in the departmental battle for resources they had often been frustrated by poor response from Permanent Secretaries and other top people in the agricultural establishment. The latter had been recruited into these top positions at points in time when irrigation was still considered of limited significance. They had therefore their training and professional commitments in other fields.

This frustrating state of affairs was typically reflected in the 'National Policy for Agricultural Development in Nigeria 1972-1985' which was produced by the Federal Department of Agriculture. This 25-page document contained only one single paragraph on water resources (FGN 1972:20).

Much of it was instead devoted to the cash crop programmes (palm oil, groundnuts, cotton, rubber, etc.) inherited from the colonial economy. Most annoyingly – from the irrigationist perspective – the section on national food crop policy did not mention water at all, not even in the long list of 'constraints' which faced the expansion of food production!

With the backing of international expertise the domestic irrigation lobby greatly strengthened its position. A major triumph was the break-up of the Federal Ministry of Agriculture in 1975 and the creation of a separate Ministry of Water Resources lording over its own independent field organisation in eleven River Basin Development Authorities, the first of which had already been established in 1973. Under the Third National Development Plan 30 per cent of all investment in crop production was to go to irrigation. (FGN 1975). The revised and expanded version of the Third Plan raised the share of irrigation to almost half of federal expenditure on agriculture (FGN 1977).

The case of the increasingly successful irrigation lobby was first fully developed in the 'Report of the Study Group on Irrigation and Drainage' which was prepared for the National Agricultural Development Committee in 1971. The group was mainly made up of irrigation engineers from state governments and the universities. To them irrigation was the 'largest single factor for increasing production in Nigeria'. It was 'absolutely necessary' for high productivity and profitable agriculture anywhere in the country because of unreliable rainfall. For the arid and semi-arid regions of the northern states it was even more necessary if these areas were not to be 'condemned to subsistence agriculture for ever' (FGN 1971:5). The last statement seems perhaps a bit exaggerated in view of the fact that those areas had produced most of Nigeria's groundnuts and cotton in the past. Indeed, in the 1960s, northern Nigeria was the world's largest exporter of groundnuts!

The report takes a strong position on wheat. It rejected with patriotic fervour the suggestion by a team of US academics – the Michigan State University 'Consortium for the Study of Nigerian Rural Development' (cf. Johnson 1969) – that it would make more sense to use oil money to import wheat cheaply (from the USA, no doubt), rather than to grow it in Nigeria. The committee strongly disagreed with this view which it considered a 'dangerous tendency', inconsistent with national objectives (FGN 1971:2).

The committee proceeded to set bold targets for irrigation and crop production. Against the estimated output of 6,000 tonnes of wheat in 1970 it projected an increase to 150,000 tonnes in 1980 and 300,000 tonnes in 1985. It outlined production plans and stages of project implementation for the major irrigation areas, based on the projects identified by the reconnaissance surveys.

The Great Drought and the Oil Boom: Exceptional Conjunctures for Large-scale Irrigation

The victory of the irrigationists, as epitomised in the mid-70s by the new

federal Ministry of Water Resources and the River Basin Authorities, was greatly assisted by two major events in the regional and world economy at this particular time. The Great Sahelian Drought of 1972–74 provided ideological support for irrigation and the exceptional rise in oil revenue which followed on the 1973–74 'oil crisis' enhanced dramatically the capacity of the Nigerian state to undertake large-scale, capital and foreign exchange-demanding projects.

In 1972–74, the Sahel region of West Africa, from Senegal to Chad, was hit by natural disaster, the most severe drought of this century. It struck most visibly against the cattle-raising communities of the more arid lands but also agricultural communities further south were affected, including the northern parts of the present Sokoto, Kaduna, Kano and Borno states of Nigeria, areas through which flowed the rivers marked for dams and irrigation schemes by the water surveyors (Apeldoorn 1978, 1981). The impact of the drought in these areas may have been less dramatic than on the other side of the borders. Still, the Great Drought, and the wide international attention given to it, seemed to underscore the critical role of water resources in the agricultural economies of the north and the urgency of bold strategies for water control and irrigation.

The strategies chosen had very little relevance to the economic security of the drought-affected populations (AERLS 1979:31). The water which was going to be stored in the great new dams of these rivers was in fact to be made available to very limited areas, often at the expense of much larger populations further down the rivers who based their agriculture and grazing on natural flood plains which were now starved of water (Adams 1981, 1983; Stock 1977). As the rivers flowed north from the dam sites, the downstream communities were even more vulnerable to drought. We shall return to these issues when we discuss the relationship between wheat production and regional food policy. At this point, we merely need to stress the manner in which the Great Drought offered additional political support for massive investment in irrigation at this particular time.

The scope for big, expensive solutions to northern Nigeria's water problems was favourable. The Federal Government had more money than development projects. Federal revenue from oil which stood at less than N200 million in 1970, rose to N500 million in 1971, N1000 million in 1973 and then made a giant leap to almost N4 billion in 1974 and N6 billion in 1977 (Kirk-Greene and Rimmer 1981:121). A deficit of half a billion at the end of the Civil War was turned into an unspent surplus of almost two billion in 1974. The latter figure reflects of course the extent to which the Nigerian government was taken by surprise by the oil boom. It resulted in a spate of poorly planned and poorly coordinated expenditure. The irrigation sector had particular attraction in this situation. First of all, reconnaissance studies had already identified a series of possible investment objects, all of which, it was argued, made sense economically. The fact that they were highly capital- and foreign-exchange intensive was no disasvantage at this point. The state had more foreign exchange than it could spend. In fact, large-

scale irrigation seemed to offer a way in which state capital could move in a big way into the agricultural sector. Projects oriented towards rainfed smallholder production would seem to face more immediate bottlenecks as, for example, the need to train extension staff capable of handling a massive increase in inputs, credits, and technical services.

Large-scale irrigation allowed the state to use its 'surplus' funds to buy international expertise and advanced technology to produce an infrastructure which could then be placed at the disposal of the agricultural communities. It was an attractive argument.

State and International Capital: the Logic of Modernisation

Oil provided finance for an accelerated irrigation programme. National self-sufficiency, drought alleviation, regional development etc. provided political legitimacy. International experts contribute technical and economic justifications and a growing body of domestic irrigationists supported the process.

More fundamental sources of support, however, can be found in the strategies and logic of, on the one hand, international capital in its penetration of Third World agriculture, and the rising Nigerian ruling class, on the other. Both sets of forces operate through the Nigerian state (Beckman 1982, 1985a, 1985b). They combine to define the problems as well as the solutions. They are intimately linked. Consultants, experts, bureaucrats etc. serve these basic forces, more or less efficiently and honestly, seeking simultaneously to carve out their own niches and expand their own domains.

In the context of Bakolori, Okello Oculi (1982: 97) has argued forcefully the dominant role of a 'new agricultural colonialism', where foreign agribusiness firms push their export markets for the industrial inputs which go into agriculture. He emphasises the close links between international consultants and such firms and how project designs are made to maximise these export interests at the expense of local and national interests. Capital-intensive large-scale irrigation schemes serve ideally this purpose.

Palmer-Jones (1980, 1982), on the other hand, argues against such emphasis on external forces. Instead he stresses the competition within the Nigerian elite over the distribution of oil riches. He speaks of the substantial direct benefits going from irrigation to 'VIPs, government staff and locally powerful people – those who constitute and control the state' (1980:2). The 'main locus of personal gain' is in the allocation of contracts. The ruling elites have 'an obvious, personal, material and political interest in these types of developments' (1980:10–11, 1982:7).

Oculi's and Palmer-Jones' explanations are not mutually exclusive. External and domestic class interests reinforce each other. Oculi (1980) speaks elsewhere of the 'contract-intensive' strategies of development represented by such projects and the scope they offer for commissions, kickbacks, sub-contracts etc.

There is need, however, to go beyond elite competition and profiteering to explain the commitment of the Nigerian state to large-scale, technologically advanced irrigation schemes as a means of dealing with the nation's food

problems and import substitution in particular. It is a commitment, as we see it, to specific class strategies of modernisation where advanced production techniques consitute the basis for transforming backward agriculture. Agri-business firms from advanced capitalist countries are identified as the natural allies in this drive for modernisation. The schemes cannot be interpreted as any odd opening for kick-backs and the squandering of oil money. They are meant to produce, and the strategies which support them are not haphazard. They are the strategies of capital, state and private, local and international, seeking to impose its own solutions to agrarian development. They involve the harnessing of natural resources and the transformation of social relations of production, including the subordination or eviction of peasant producers.

Wheat import substitution reinforces such strategies. Alternative methods of advancing production by relying on existing technologies and social forms are ruled out in this case. Irrigation is necessary to grow wheat in significant quantities. But what are necessary conditions are not necessarily sufficient ones, as will be demonstrated in the next chapter which also illustrates more concretely the impact of international and domestic class forces. First, however, let us introduce the three main wheat projects.

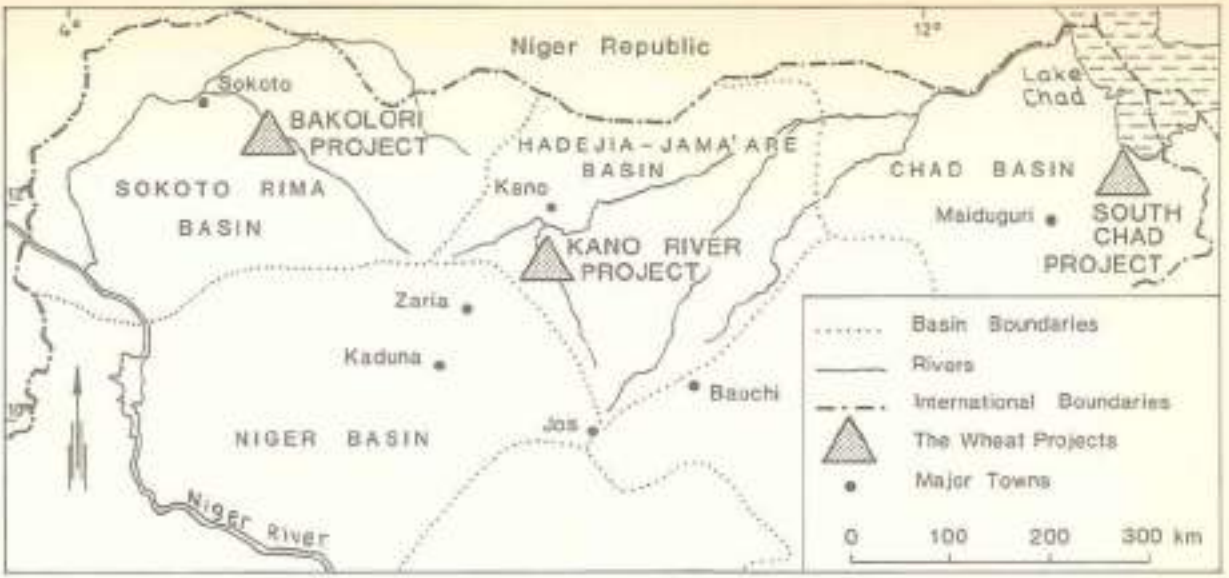
4. The Wheat Projects: Development and Performance

Three Projects and Their Setting

The feasibility studies of the early 1970s gave shape to the first set of projects already identified in the reconnaissance studies of the 1960s. There were three of them to start with, the first in Kano State, the 20,000 ha Kano River Project (Phase 1), with its headquarters at Kadawa, some 60 km south from Kano on the Zaria road, drawing water from the Tiga dam (see map 6.1). This project had already entered into production on a small scale in the early 70s and is considered the most suitable of the three for wheat production. But the wheat crop was probably not more than 5,000 tonnes in 1982. Less than one third of the area had as yet been prepared for irrigation.

The second project is Bakolori, with its headquarters at Talata Mafara, some 130 km south from Sokoto on the Gusau road. The area planned for irrigation is slightly bigger, 23,000 ha. It draws water from a huge dam on the Sokoto river. By 1982, a quarter of the area was claimed to be ready for irrigation while the actually irrigated area was much less. Less than 2,000 tonnes of wheat was produced in the 1981–82 season and a negligible amount in 1982–83. Project agriculturalists doubt that it makes sense to grow wheat but don't know what else to do in the dry season. As the Kano project, Bakolori is essentially a smallholder scheme, where land prepared for irrigation is handed back to the original owners without any land consolidation. Minor areas are directly cultivated by the project or leased to outside commercial interests.

The third project, the South Chad Irrigation Project (SCIP) is at the extreme east end of the North, with its headquarters at New Marte off the



Map 6.1: Wheat Projects and River Basins in Northern Nigeria
(Source: Adapted from World Bank 1979)

Maiduguri-Ndjamena road, some 100 km north-east of Maiduguri, the capital of Borno State. SCIP I, the first stage, is roughly of the same size as the other two: 22,000 ha. Unlike the others, water is not drawn from a dam but from Lake Chad itself through pumping. Some 1,200 tonnes of wheat were produced in the 1980-81 season. Shortage of water in the lake is the most immediate threat to this project and its extension. As with the other two, South Chad is a smallholder scheme, although in this case farmers are allotted standard-size holdings on a quasi-tenancy basis as the land has been taken over by the project. Population is sparse and there are plans to establish large-scale commercial holdings, state and private, as well.

This is as far as the new wheat production programme in Nigeria had advanced after one decade of implementation. What are the problems and prospects? Before we discuss the factors which have made progress slow and prospects dim let us outline the settings of the three projects, and their development and performance so far.

Kano River Project

Kano River Project lies in one of the most densely populated and intensely cultivated areas of West Africa. It is an area well known for its long tradition of permanent, as opposed to bush fallow cultivation. Manuring, mixed cropping and crop rotation have been applied in the struggle to maintain and improve productivity. The area has fed a large rural population as well as contributing to the feeding of one of the most important urban and commercial centres of West Africa, the city of Kano. In the colonial period, cultivation was further commercialised with the expansion of groundnut production for export. It is an area with close interaction between urban and rural economies, with a wide range of non-agricultural activities, crafts, trade, Koranic scholarship, and other services. Much of the population lives in large walled villages but the surrounding countryside is sprinkled with hamlets and individual compounds (Baba 1974, Wallace 1979, Dottridge 1980).

It is a gently undulating savanna landscape with very little bushland as most of it is kept open for cultivation and grazing. It is dotted with mighty baobab trees, mango groves and other economic trees. There are streaks of intensely cultivated gardens in the *fadamas* of the Kano River and its confluents, as well as in other minor depressions which retain natural mositure. Except in the *fadamas* and the low lands, soils are light, sandy and rather shallow. They do not hold water easily and they are easily disturbed and moved by heavy rains although slopes and erosion are moderate. Fields are heavily ridged to control erosion and preserve water. Even minor depressions get easily waterlogged as underlying laterites prevent drainage.

Traditional farming practices have adapted themselves closely to the variations in soils and drainage. A complex cropping pattern seeks to maximise advantages and minimise disadvantages in any given location. Intensely fragmented holdings reflect not only the logic of inheritance but also the variations in physical conditions. Cropping choices, mixes, and sequences

are also determined by the way rains develop in a particular season and, of course, by the needs and resources of different households.

The first rains often come in April but it is only by the second half of May that there is a sufficient heavy fall to allow planting. Rains then build up to a peak in late August and early September, tailing off sharply. They are rare by mid-October. This is when the dry season starts, lasting seven months (Kowal et al. 1972).

The dominant staples are guinea corn and millet. They are mostly intercropped with each other. Millet requires less rain to germinate and matures quicker. The early millet may be harvested in August. Guinea corn is only harvested by late November or early December. Maize has become popular in recent years. It has a shorter growth cycle (June-September) but requires much fertiliser and is more vulnerable to drought. It is primarily produced as a cash crop. Beans and groundnuts are important commercial crops on the sandy soils, often interplanted with grains. A wide range of vegetables, sugar cane, and some rice are grown on the low-lying, heavier soils of the *fadamas*, where residual moisture is often supplemented with traditional lift (*shaduf*) irrigation in the dry season.

This agrarian environment has in the past sustained a farming population of some 52,000 families, according to project estimates, which may correspond to an overall population of a quarter million or more. Density is estimated at 550 persons per square km. The average size of holdings, still according to somewhat obscure project estimates, is 0.8 ha. The distribution is said to be heavily skewed. Nearly 40 per cent, it is claimed, had holdings of less than 0.4 ha, while some seven per cent of the families owned over one third of total land (World Bank 1975). The empirical basis of these estimates may be dubious but the general picture is probably correct: a differentiated peasantry, numerically dominated by a stratum of very small producers who depend on other sources of income, including trading, crafts, transport, and seasonal labour in the city of Kano or other towns or on other people's farms, close by or in more distant commercial agricultural districts. And there is an upper layer who dominate in terms of commercial output as well as in the scope of non-agricultural activities, the size of trading operations, the ownership of stores, transport equipment, cattle and drought animals (Wallace 1979, Dottridge 1980).

The amount of cattle permanently in the area may not be great, some 9,000 according to project estimates, although the numbers passing through the area for temporary grazing are much larger. Grazing is important, not only to the cattle owners. It is also a source of manure and provides a market for crop residues.

The USAID report (1968) had suggested a dam at Tiga and the areas around Kadawa as the first to be developed. NEDECO the Dutch consultants had already presented a feasibility study to the Kano State government in 1970. Kano was ruled at this time by a dynamic and spendthrift military governor who liked big projects. The Tiga dam was to have a reservoir capacity of 20,000 million cu. m. capable of irrigating over 70,000 ha of land

(Kano State 1975). The dam was completed in 1975 and inaugurated with great pomp. It was not until 1978 that the main canal carrying water from the dam down to Kadawa was ready. In the meantime water was flushed from the dam into the river and pumped into the fields.

Some production had started already in 1971 on a pilot basis, drawing water from a smaller dam at Bagauda. The first pilot wheat was thus produced already in the early years of the decade and some experience was built up. The Institute of Agricultural Research at Zaria established its own experimental farm and a research station at Kadawa. By 1977 one quarter of the project area (5,000 out of 20,000 ha) was claimed to be developed for irrigation, that is, land had been levelled and the network of secondary and tertiary canals constructed. Only one quarter of this had been actually irrigated (Palmer-Jones 1977).

Five years later, in 1982, when we visited the project and had discussions with senior project staff, the area available for irrigation was still less than one third of the expected total. More seriously, less than half of this was actually cropped in the 1981–82 dry season, that is, only 13 per cent of what was planned. Two thirds of the cropped area was under wheat, the remainder mostly under tomatoes. Actual output is not clear but officials claimed average yields of 2–2.5 tonnes per ha, suggesting a total output of at the most 5,000 tonnes of wheat, but probably much less (interview Ismail 1982).

The modest achievement may be compared with official projections for the same year of 30,000 to 45,000 tonnes (depending on low or high yield estimates) as well as with the more cautious ones offered by the AERLS Wheat Committee: 17,000 to 25,000 tonnes (AERLS 1979:50–1). The performance contrasts dramatically with the frequent press releases by the sanguine General Manager of the Hadejia-Jama'are River Basin Authority. In one, he reportedly claimed that his Authority alone was capable of producing half the country's wheat requirements in the latter half of the decade (*New Nigerian* 22 February 1980).

The performance of the Kano River Project was all the more worrying as it was expected to represent the most 'successful' of the three wheat schemes. Unlike the other two it had experienced neither natural calamities (the drying up of Lake Chad), nor political disaster (peasant rebellion). It was located in the zone 'very suited to wheat' according to the 1979 AERLS Report. The project was dealing with a peasantry with a long experience of commercial agriculture, used to respond to the opportunities provided by new crops and new technologies. If this was the most successful one, how did the others do?

Bakolori Irrigation Project

The Bakolori peasantry has developed in a harsher physical environment than that of Kano. The area is further north, closer to the Sahel. The rainy season is shorter and more unreliable (Kowal et al. 1972). When rains come they are often violent and heavy storms contribute to erosion. The contour

of the landscape contributes to exposure. It contains more rifts, gullies and slopes where erosion prevents all cultivation. Soils are light and sandy except near the river. They vary greatly in depth. Many highlying areas are completely barren as they are unable to hold soils and water (Impresit 1974, vols C, E).

Population is therefore concentrated in the valleys and in depressions capable of retaining soil and moisture. Overall density is probably lower than in the Kano project area, but not if we look to the arable areas alone. Project estimates suggest that there were some 40,000 to 50,000 farm families in the 22,000 ha area designed for irrigation, that is, roughly the same as in Kano. But these are guesses, and not necessarily intelligent ones (MRT 1980).

In Kano, integration into a powerful urban-commercial context permitted poor peasants to survive and rich peasants to prosper by providing ready markets for agricultural produce and a range of non-agricultural activities. These opportunities are more restricted in the Bakolori area. The northern part of Sokoto state is a 'backward' area in terms of commercial developments during the colonial and post-colonial period, agriculturally as well as otherwise. The city of Sokoto, despite its political prominence as the capital of the Caliphate, never matched Kano as a commercial centre in the pre-colonial era. Under colonialism, Kano was given a big boost by the development of the railway and the groundnut and cotton trade. Northern Sokoto was economically more peripheral in the colonial export economy. In the post-colonial period, Kano developed into an industrial centre with a large and hungry wage-earning population. Sokoto remained a modest commercial and administrative town.

The Bakolori peasants certainly produced a commercial surplus before irrigation but on a smaller scale and for more restricted markets. Much of the surplus came from the parts near the river with the most fertile and best watered soils. These had a long tradition of producing grain and vegetables for the Sokoto market (interviews with farmers 1982 and 1983).

The shorter and more unreliable rainy season means that the more drought-tolerant early millet is the basic staple, although most farmers grow guinea corn as well. On the heavier soils near the river rice has been grown on a small scale. The limits of the market have held back the cultivation of perishable vegetables such as tomatoes, which were popular in the Kano River area even before irrigation.

Holdings may be as fragmented in Bakolori as in Kano River but the commercial differentiation of the peasantry may be less marked.[19] The number and size of rich peasants operating big holdings with hired labour is probably less. Similarly, it is less possible for marginal, poor peasants to survive by undertaking farm labour, petty trading, and other non-farming activities within the surrounding area. The visible signs of local wealth, concrete buildings and stores, motorbikes and lorries, are few, at least outside the 'project town', Talata Mafara, itself.

Long-distance labour migration is an integral part of the peasant

economies of northern Sokoto. Much is dry season migration, much tends to become permanent or semi-permanent as pressure on land grows and opportunities expand elsewhere. Sokoto people are often seen as seasonal labourers in towns further south, pushing carts, carrying heavy loads and water. They have also migrated in large numbers to the new frontiers of commercial agriculture as labourers or settlers. On the black cotton soils of Gombe, for example, in the south-eastern parts of Bauchi State, the Sokotawa are prominent among the settlers.[20]

The drought-threatened agrarian economy of Bakolori, with its short rainy season and its long-distance labour migration, may seem to offer a strong case for irrigation. The FAO study (1969) proposed a major dam at Bakolori as the first stage of this grand design for water development in the Sokoto-Rima basin. It was to be piloted by a small dam on the Bobo River, also in the Talata Mafara area. In 1972, as a feasibility study was commissioned, the pilot stage was jumped. The study was carried out by two Fiat subsidiaries, including Impresit who were also given the contract to construct the now greatly expanded scheme (Impresit 1973 and 1974). The N150 million contract included a 450 million cu. m. reservoir, expected to inundate some 8,000 ha and irrigate some three times that area. Major features were a 5 km-long dam with a maximum height of 50 metres, a 15 km supply canal, 45 km of concrete-lined main canals, and several hundreds of kilometres of secondary and tertiary canals. Originally most of the scheme was based on surface (gravity) irrigation but later over half of the area was turned over to sprinklers. The contractors had greatly underestimated the difficulties (technical and social) of the land levelling operations. The shift to sprinklers was also expected to speed up the development of the project, originally scheduled for completion in 1981 (Impresit 1973, MRT 1978a). A British firm of consulting engineers, MRT, was awarded a contract for supervising the construction of the scheme.

By mid-1983 most of the engineering work was completed. Three-quarters of the irrigation area had been handed over. Yet only a fraction had been actually brought under cultivation. Major problems on the agricultural side, including the reallocation of land to the orignal owners, had held up the scheme. In 1979–80 it had been paralysed by militant opposition from the farmers, blockading construction as well as irrigation works. The rebelling farmers included those whose farm lands had been inundated by the reservoir or expropriated for irrigation works, those who had been prevented from cultivating their farms for two or three consecutive seasons, as well as those who had had their crops destroyed by the contractors (Oculi 1982, Wallace 1980, Beckman 1984).

The first wheat crop was grown in the 1978–79 dry season. The 1979–80 crop was estimated at 240 tonnes, the 1981–82 one at 2000 tonnes (SRBDA 1981, BIP 1982). In 1982–83 the wheat crop, however, is unlikely to have exceeded 200 tonnes. Only 264 ha, a mere one-tenth of the cultivated area, and just one per cent of the total project area was under wheat. Out of this some 200 ha were farmed directly by the project with expatriate management.

When we visited the project in February 1983 this 'expertly' managed hectarage was a complete disaster. The farm manager despaired of even getting back as much grain at harvest-time as he had put in as seed from his miserable looking crop (interview Rogowski 24 February 1983). Although special circumstances explain the 1982–83 failure, the general performance in the first four seasons must be contrasted with the projections which sustain the illusion of import substitution. The AERLS Report of 1979 gave official projections for Bakolori of some 20,000 tonnes for 1982–83. Even the more 'realistic' projections proposed by the Wheat Committee itself, that is, a 50 per cent reduction in the rate of development, indicated an output of 6,500 tonnes in this year (AERLS 1979:51).

The illusion-mongering, however, continues unabated. The Sokoto-Rima River Basin Development Authority, in charge of the Bakolori project, claimed officially in 1982 that wheat output would have reached 32,500 tonnes by 1985, that is well over one hundred times its 1983 performance (SRBDA 1982a)!

South Chad Irrigation Project

The South Chad Irrigation Project (SCIP), under the Chad Basin Development Authority, may have been only marginally more successful than Bakolori but projections have been even more fanciful. According to AERLS, official figures suggest that SCIP already by 1981–82 would provide, at low assumptions, over half of a national wheat crop of some 120,000 tonnes. The more cautious projections of the AERLS committee itself put the SCIP wheat crop at 54,000 tonnes for that year (AERLS 1979:50–1). When we visited the project during wheat planting in 1981, however, project staff envisaged only minor improvement on the performance of the preceding season when some 1,200 tonnes were produced (interviews SCIP 1981). Surprisingly, this figure had been inflated ten times in the CBDA Budget Implementation Report (1981). A possible cause of the 'mistake' could be that an output of so many bags (100 kg) had been counted as so many tonnes.[21]

The Chad project is different from the other two, both in its environment and in basic design. Unlike the others which are based on artificial reservoirs in river valleys SCIP draws its water from Lake Chad. Most of the land has heavy clay soils, the sediments from a time when the lake was much larger. There are islands and ridges of sandy soils. This is where most of the settlements are located and where farmers do most of their wet season farming. The clay soils are too heavy to work with traditional methods but yield well from crops planted towards the end of the rainy season in fields which are 'bunded' (formed into shallow basins) to preserve soil moisture. Vast areas along the lake also permit intensive farming on residual moisture as the lake shrinks drastically every year from its top level around December. There is therefore much seasonal movement of farming operations over quite some distance, including temporary settlements on the lake side, also for fishing. The wide grass lands on the clay soils sustain a large cattle population both permanent and migrant. Population is less dense than in

the Sokoto and Kano valleys. Rains are even more unreliable. Cattle and residual moisture crops have permitted a considerable commercial surplus but much is absorbed in local food purchases. There is not much sign of commercial wealth from exchanges with the 'modern' sector (MacDonald 1973; CBDA 1978 b).

These wide clay plains with their sparse population have naturally attracted the irrigation planners. It seems to be an area where pumps and heavy land-breaking machinery should be able to revolutionise agriculture. Yet there has been no agreement on its suitability. The US Bureau of Reclamation (USAID 1968:15) thought that both soil chemistry and limitations of water supply would place problems in the way of large-scale irrigation. An FAO survey of the 'Conventional Basin', however, reported the same year that the potential was high (FAO 1971/CBDA 1976). A pilot scheme (SCIPP) was entrusted to the Commonwealth Development Corporation in 1970 and a feasibility study for a larger project was commissioned from Sir M. MacDonald & Partners, a member firm of the British MRT Group. The area to be studied was extended from 40,000 to 100,000 acres the following year. Later, it was further extended to 150,000 acres according to Palmer-Jones (1983). The Chad Basin Development Authority was established in 1973. MacDonalds reported the same year on a first stage, SCIP I, ultimately to cover 22,000 ha (CBDA 1982).

A special feature of the scheme was the cutting and dredging of an intake channel from the lake. It was originally planned to be some 25 km but had to be extended to 38 km as the lake failed to recover from the 1972-74 drought (MacDonald 1973; CBDA 1982). The surface area of the lake varies between 15,000 and 25,000 sq km; depending largely on the seasonal flow of the main tributary, the Chari, from Cameroon. The Lake is very shallow. The water flowing into the intake channel is lifted at the main pumping station into a 21 km main canal. It is then carried to another pumping station from which it can be released into the irrigation system.

A lot of energy is required for all this pumping. A dominant feature of the project landscape is the mighty 33 MW powerhouse with its nine generators and huge fuel depot. It is three times larger than the power station in the state capital of Maiduguri, according to proud staff (visit, October 1981).

When we visited the project in 1981, the intake channel, the main canal, and most of the irrigation lay-out were completed. Now they were waiting for the water. Partly (and temporarily) it was the problem of the main pumping station not being ready but, more seriously, the amount of water available from the lake was not even sufficient for the very modest area cultivated at this point. The scheme was designed on the basis of rice with supplementary irrigation in the rainy season and wheat in the dry season. The rice crop was largely spoiled due to lack of water and the prospects for a major expansion of the tiny wheat crop were slim. The extreme vulnerability of the whole system has been clearly exposed.

These are the first three wheat projects and their settings. Why have they performed so poorly and what are the likely prospects? Are the problems merely 'teething' ones, or are they fundamental and long-term? These are the questions addressed in the next chapter.

7. Problems of Wheat Production

1. Introduction

The illusion of import substitution sustains a massive waste of national resources on large-scale, technologically advanced, and costly irrigation schemes which have little to offer in terms of effective answers to Nigeria's food crisis and dependence on imports. Massive waste of public funds is not uncommon in recent Nigerian history. Some of it could be charged to the account of the oil boom: the difficulties of making good use of a sudden drastic increase in public revenue. It may have to be 'written off', just as the huge waste of the Great Cement Scandal, when the military government had to pay unknown millions to meet the claims of the fleet which waited outside the Lagos harbour for months without being able to unload its cargo (Turner 1976).

The illusion of domestic wheat production, however, cannot be written off. It continues to obstruct genuine solutions to the problems of the food deficit and the growing dependence on heavy food imports. In particular, we find that the policy of import substitution serves to entrench and reinforce the policy of massive wheat imports because of the illusion that it all (or at least a significant part) can be replaced by Nigerian-grown wheat in due course.

Nor do the schemes merely involve investments already sunk and which therefore can be written off. They represent large claims on current and future resources both for operational costs and for maintaining existing physical structures. Direct annual cost in 1983 may have been in the range of ten million naira per scheme (see next chapter), excluding federal subsidies of fertilisers and wheat price subsidies as well as such services as are charged to government and not to the projects as such. Such figures could rapidly rise. Only minor sections of the scheme have as yet been brought under actual cultivation. Managements complain bitterly that projects are held back by shortage of finance, insufficient machinery, spare parts, staff, vehicles, fuel, etc. Listen to the Hadejia-Jama'are General Manager pleading with a Senate Committee for higher grants: 'The country would be self-sufficient in food within the next five years, if enough funds were released.' (Reported in *New Nigerian* 18 August 1982). Current costs are

likely to rise and the need for maintenance is considerable.

This chapter is concerned with the problems facing domestic wheat production. Are these not just 'teething problems', which will be overcome once the projects are allowed to get into full swing? Decision-makers have underestimated the problems of getting production going, but so what? Does it not merely mean that Nigerians will have to be more patient, that the days of effective import substitution will come, although not as quickly as some had hoped? This, at least, seems to be the firm belief of the wheat growing establishment of Nigeria's most prestigious research institute in the area, the Institute of Agricultural Research in Zaria. The difficulties encountered so far, one learned professor argues, should not deflect from the goal of self-sufficiency but rather lead to greater exertions. (Professor L. B. Olugbemi, contribution to seminar discussions, Institute of Agricultural Research, A.B.U. Zaria, 1981).

Theoretically, it would be possible to extend the wheat growing area in the North to say half a million ha, that is, ten times the area presently prepared for wheat, or some hundred times the area actually cropped. Theoretically, it would similarly be possible, through the efficient management of water, machinery and chemicals, to double the present level of yields from one and a half tonnes to three tonnes per ha. Total output would then approximate the current rate of wheat imports, that is, some one and a half million tonnes. So why not keep trying?

This chapter examines the structural features, technical, social, and political, which prevent theoretical possibilities from being realised. There are first the obvious physical constraints of introducing a temperate crop in a tropical environment, the way this affects technical design, management, productivity, and costs. There is further the constraint posed by a peasantry which refuses to allow itself to be subordinated and controlled in line with the 'requirements' of capital and advanced technology. We concern ourselves with the properties of social and political organisation which have consequences for costs but also with the technical issues which define the problems confronting wheat production. We show how the special requirements of wheat exacerbate the problems of large-scale irrigation.

These are some of the obstacles facing state and capital in the implementation of the schemes. There are many more. The primary problem, however, is the failure of the state and its domestic and foreign partners to take due account of such physical and social constraints when making their plans. Why are they ignored? This brings us finally to the nature of these institutions and agents themselves and the social and political forces which determine their mode of operation.

2. Natural Constraints and Problems of Design

High Temperatures Make Wheat a Marginal Crop

Wheat traders and flour millers have no illusions about Nigerian wheat but

they see no harm in allowing the Nigerian authorities to maintain theirs. Such illusions help, as we have tried to show, rather than obstruct the increase in sales. The US Agricultural Attaché in Lagos notes that there is much talk but few results as far as Nigerian wheat is concerned (USDA 1980:6). 'Barring an extraordinary technological breakthrough, Nigeria will never be a significant wheat producer' (USDA 1981a:4). The reasons given are natural constraints: 'neither the climate nor soils (are) suitable' (USDA 1981b:3–4).

This is also the general view in international literature on wheat in the tropics. A recent survey of the development of wheat production in the third world notes that wheat production in sub-Saharan Africa and South-east Asia is insignificant largely because of the unsuitable production environment (Byerlee and Hesse de Polanco 1983:74).

USDA views contrast sharply with the opinions of the Zaria wheat experts. In their 1979 report they claimed that the whole of Kano State and the northern parts of Kaduna, Plateau and Borno States were all 'very suited to wheat'. In addition, much of Sokoto and Bauchi plus southern Borno and northern Gongola were considered suited (AERLS 1979:34–6). The judgement was based on temperature data alone which were taken as a 'useful crude indicator'.

It is difficult to see what justifies the bold pronouncement of the Zaria experts. One of them, in an authoritative summary of Nigerian research findings, shows a bleak and uncertain picture (Palmer 1979:17–20). Findings suggest that temperatures are too high not only in October and March but also, 'occasionally', during the growing season. Already from February onwards there is much loss in grain yields due to high temperatures. The report ends rather inconclusively that 'yields obtained in Nigeria presently are at least equal to those obtained under similar conditions elsewhere' (Palmer 1979:20). While this may provide professional satisfaction to Zaria wheat breeders it hardly suggests a case for large-scale wheat production. We are not told whether it makes sense to grow wheat in those other places.

Doubts were voiced by the AERLS report (1979:36) only in respect of Bakolori where the risk of high temperatures was said to reduce the probability of high yields. This had also been belatedly discovered by the foreign consultants. One expert called in by MRT noted in his main report that wheat was 'only marginally suited to this area'. This was embarassing as 'indeed, the viability of this scheme depends on the successful production of wheat' (Bullen 1978:100). This argument against wheat was again essentially based on critical temperatures. Detailed project reports confirm this picture. A monthly report from January 1980, for example, notes that 'mid-day temperatures in excess of 35°C were recorded . . . resulting in reduced tillering and smaller heads, giving further indication that this climate is only marginally suited for wheat' (MASDAR 1980:1).

If Bakolori was marginal, what about the other two? The South Chad area was 'very suitable', according to the AERLS. A UNDP report claimed that the Chad Basin was 'one of the few regions in tropical Africa where wheat can be grown' (UNDP 1974a:42). The Feasibility Study did not

bother to discuss whether or not wheat grows well. The argument for wheat as the main crop was arrived at by means of exclusion: it was the only significant dry season crop which could not be grown more economically elsewhere in Nigeria in the wet season! (MacDonald 1973:S.1). This was a justification. The decision to grow wheat had already been taken by the government.

But also in South Chad consultants had second thoughts, although only when all cost-benefit calculations had been submitted and contracts signed. A report on 'Agricultural Diversification' from 1978 reads as follows, and let us quote at some length:

> From the agronomic standpoint it is questionable whether wheat will ever be a worthwhile crop in the project area. The climate is only marginally suited to wheat production, and a very exact sowing period must be adopted. . . . Similar climatic zones, which have developed their own breeding programmes over many years, still struggle to achieve yields in excess of two tonnes per ha from large scale production. (CBDA 1978a:21)

Yet, consultants were in a fix. It was 'successful wheat production' which had provided much of the political justification of the projects in the first place. So we witness to our surprise that wheat appears in the report as a crop 'which can be recommended with reasonable confidence'. If such were reasonable levels of confidence it rather underscored the basic weakness of the scheme. It should be emphasised that this was a scheme which was supposed to produce 126,000 tonnes out of a national crop of 200,000 tonnes in 1984-85, according to the most cautious estimates offered by the AERLS (1979:51).

If both Bakolori and South Chad are 'marginal', what about Kano? Prospects seem better, again taking the temperature issue alone, although the general constraints suggested by Palmer apply here as well. Temperatures underscore the significance of a 'very exact sowing period'. Palmer-Jones (1977, 1980, 1982) in particular has stressed the disastrous effects of delays in planting. Temperatures thus become important in combination with other factors which explain the difficulties in achieving correct timing.

The question whether areas are more or less marginal for wheat growing is not if wheat can be grown but how well it grows and if constraints imposed by nature have consequences which significantly raise requirements for close and effective management and other scarce factors. When experts differ widely, classifying the same area as either very suitable or unsuitable, it is therefore largely a matter of how 'technically' or how 'economically' (or even socially and politically) suitability is defined. The positive classifications of the AERLS express primarily the perspective of 'agronomists'; the negative view of the US agricultural traders, on the other hand, that of business. Consultants make good use of the 'innocence' of the agronomists when they sell schemes to the politicians. If something is technically feasible

but founders because of inadequate management, wrong timing etc., who is to blame? Consultants and contractors or 'incompetent' and 'inefficient' indigenous staff and 'undisciplined' peasants?

High temperatures support the case against wheat in Nigeria. They cause a general reduction in yields (even under good management). The risk of occasional excessive temperatures is an additional one. They impose close time constraints on farming operations which place additional burden on management. Temperatures in combination with the need to avoid excessive levels of humidity impose in the Nigerian case the necessity of full-scale irrigation: the only time of the year when both are low enough to allow for wheat is when there are no rains. This unfortunate coincidence places wheat-growing in Nigeria at a disadvantage to areas which can draw on natural rainfall.

Shortage of Water Restricts the Area of Wheat Production: the Case of the Vanished Lake

Nigeria's wheat depends exclusively on irrigation. This raises a basic question about the availability and reliability of water supply. It is a question both of natural resources and the design and management of supply systems.

The disastrous experience of South Chad – the area supposed to provide over half of Nigeria's wheat – demonstrates most graphically the shaky physical basis of import substitution. The USAID report (1968:15) warned against large scale irrigation in this area partly because of 'the limitations of the water supply'. The British feasibility study (MacDonald 1973) used figures provided by a FAO water survey (1971) prepared for the Lake Chad Basin Commission suggesting water shortfalls in six out of 30 years. The policy decision to irrigate 100,000 acres south of Lake Chad, however, had already been taken. Why should consultants question such basic premises?

The very year the feasibility study was submitted the southern sector of the lake 'virtually dried up'. The same thing was repeated in 1975 (CBDA 1978a:7). Only in 1981-82 was a significant recovery reported (interview with the Chief Engineer, CBDA 1981). A UN study in 1980 took an ambiguous position. Would the lake ever be able to sustain large-scale irrigation? It would either stabilise at a lower level or disappear. The guess was that 'remaining river inflows will be sufficient to maintain a stable but smaller lake' (UNDP 1980 vol. I:30-1). The report warned, however, against extending SCIP during the next few decades. The impact of the present scheme on the lake should first be observed (same, vol. II:260). This qualified optimism was not supported by one expert who claimed that the withdrawals would greatly accelerate evaporation. The lake, according to him, could not be relied upon for large-scale irrigation (Prewitt 1978:I: 17-19).

To these rather formidable uncertainties are added the impact of planned developments on the River Chari which supplies most of the water in the lake (UNDP 1980). Reports of numerous Cameroonian schemes have caused Nigerian authorities to express grave concern. 'The giant multi-million naira

SCIP would be a complete waste' (*New Nigerian* 28 May 1981).

This press report may be overdramatised. There is no doubt however that water problems at South Chad are real. The project has not been able to operate as planned and the future is most uncertain. For the time being water may be sufficient for a small wheat crop. The rice crop is more immediately endangered due to lack of supplementary irrigation (interview Chief Engineer 1981). The economics of the scheme are based on intensive double cropping of rice and wheat. The failure of rice shifts the burden of costs on to a wheat crop which is considered already marginal due to temperature constraints.

Fictitious Water Calculations Reduce Costs and Inflate Benefits

The water problem is less conspicuous at Kano and Bakolori, but at least in the latter case, quite acute. It is not only the capacity of the reservoir but the delivery system which imposes constraints. This is partly related to the difficulties of designing irrigation systems with inadequate data. But we also find that blatantly unrealistic assumptions have been included in the design. They serve to inflate benefits and conceal real costs.

The Impresit feasibility study for Bakolori (1974) was based on the water survey carried out by the FAO which 'in the absence of field data' used standard formulae to calculate crop irrigation requirements, including hypothetical 'field efficiency' rates to cover water losses and 'occasional water mismanagement' (FAO 1969 vol. II:19).

Impresit greatly underestimated the water needed by the project. Such underestimation served a useful end. It allowed the dam (on paper) to have a big water surplus which could be used for a range of highly beneficial purposes, such as releases for downstream rice *fadamas*, urban water supply for Sokoto City, hydro-electric power, and a future extension to the project area to 30,000 ha. It all contributed significantly to raise the benefit side of the fictitious cost-benefit calculation.

By the early 1980s, this handsome water surplus had mysteriously vanished and turned into an expected deficit, if and when the whole project area, by now reduced to 23,000 ha, were to be brought under irrigation. Provision for downstream rice producers was the first thing to be dropped on the advice of the British consultants (MRT 1976:S.1, 5). Soon it turned out that provision for Sokoto City could only be temporary as the project would need all its water (interview with the Assistant Project Manager (Engineering), Arski, 1982). The surplus hydro-power planned for future agro-industries and the electrification of towns and villages in the area turned out to be further illusions. By 1982 a 7 MW diesel station had been established to supplement the 3 MW hydro station. Yet, there was a deficit of another 7 MW which had to be provided by more diesel power or from the national grid, all for the exclusive consumption of the project (same source). Despite all these substantial changes, water was still not sufficient to irrigate the planned project area, according to the Polish engineering manager.

Insufficient Water: Will Farmers Have to Work Throughout the Night?

Irrigation water is a scarce and expensive commodity. Whether irrigation is worthwhile or not depends on the unit price of water which in turn depends on the cost and capacity of the irrigation system. The economics of projects are based on hypothetical levels of 'efficiency' in the management of the system. If such assumptions are unfounded, equally hypothetical benefits dwindle. The assumption of 24-hour operations at Bakolori is a case in point.

The delivery system at Bakolori (canals, pumps, pipes etc) is dimensioned for all-night irrigation, that is, water will only be sufficient to go around and meet crop watering schedules if half the area is watered at night. A 12-hour schedule would make water available *in time* for only half the area. (For the logic and technicalities of this, see Bullen 1978:54.) A system operating 12 hours only would need a higher capacity delivery system which would make cost-benefit calculations less attractive.

Impresit conveniently avoided the question whether farmers could realistically be expected to work throughout the night. No objections were raised by the consultants who reviewed the design (MRT 1976). The blatant unrealism was only gradually recognised. It was noted that 'it is only areas where flood irrigation has been practised for many generations' that night irrigation could be expected (Bullen 1978: 127). It was thought that the general shift from surface to sprinkler irrigation would partly reduce the problem as the sprinklers could be left unattended for part of the night. But also the notion of moving sprinklers at night was unrealistic. 'Although not unheard of', it was still very difficult, according to the consultants (MRT 1979:sect 4.08).

The sprinkler system was installed, including its 500 km of buried pipes, 800 km of lateral pipes fitted with sprinklers, and 160 electric pumps (SRBDA 1979:7). Now an additional problem was discovered. The system could not be operated between ten in the morning and three in the afternoon during much of the wheat season because of very strong winds. The water just ended up in big puddles while other parts were left dry (MRT 1979). Effective irrigation on such days was therefore in practice reduced to mornings and late afternoons which fitted well into farmers' normal working hours but which further punctured prospects for wheat import substitution.

The net result is that Bakolori wheat crops have suffered from underwatering and low yields already on the limited acreage which has so far been brought under cultivation. More seriously, it is unlikely that the project will be able to provide sufficient water for more than part of the planned area, unless there are major additional investments in the distribution system, e.g. night reservoirs and more sprinklers. Already exorbitant costs would be further inflated.

The effective availability of water (in time, in sufficient quantities) is not only a problem of design but of management. In that respect all three projects face major difficulties to which we shall return below. Summing up at this point, we need to repeat that the question whether or not

sufficient water is available to feed a significant wheat crop is not only one of physical availability as such, but of costs. The unrealism of design needs to be exposed because it serves to underestimate, systematically and even deliberately, the real costs of irrigation. More realistic or cautious assumptions would expose fictitious benefits and spoil a lucrative market for transnational agri-business.

Are Nigerian Soils Suitable for Wheat? The Classification Racket

The visions of import substitution ignore major problems of soils and soil management. Those who design and sell projects play down these problems. One way is to manipulate soil classifications. The Project Manager of Impresit tells us that soils at Bakolori are 'very fertile' (interview Amadeo Paulo 1982). The feasibility study claimed that 98.9 per cent of the area is suitable (Impresit 1974 vol. C:11-13). Looking closer at their classification, however, we find that only six per cent had 'high' suitability, while 16 per cent had 'low' or 'restricted'. Most (78 per cent) is 'intermediate' but this class turns out to be an amalgam of sub-classes some of which indicate major difficulties.

Behind Impresit's 'suitable' 99 per cent hide problems for soil and water management which have surfaced as the project has moved into production. Most of the problems were already identified in the 1969 FAO Report but ignored in the feasibility study: high infiltration rates, difficulties in preserving soil fertility, erosion and waterlogging. As a result 'more than usually efficient irrigation practices' and 'considerable care in design' would be required. Selective small-scale developments rather than large-scale projects would be appropriate for these types of soils (FAO 1969 vol. 2:12-13: vol. IV:12).

So say the FAO soil scientists. The main FAO report was less cautious. It supported the vision of future large-scale developments but thought it wise to begin on a small scale (the abortive Bobo pilot scheme). Impresit, however, threw caution over board. The project area was drastically expanded and soils were consequently 'upgraded'. Extreme variations in soil conditions were concealed.

The most flagrant case is the 2,000 ha extension of the project in Jankarawa, north east of the dam, which, at great cost, including a separate pumping station, was prepared for sprinkler irrigation. It had been largely uncultivated before the project because of inferior soils. Much of the surface is rocky, top soils are thin and a multitude of rifts and gullies cause heavy erosion (MRT 1978 and 1979). The area is more suitable for military exercises than for farming, according to a frustrated farm manager who had failed miserably to grow wheat in the place (interview Rogowski 1983).

The more general problem, however, both at Kano and Bakolori is that soils are very light and sandy, often shallow, and therefore easily disturbed. The situation at Bakolori is worse. Greater slope and a more varied soil profile exacerbate problems of erosion and water management (interview Saleem 1982).

The heavy clay soils at Lake Chad pose entirely different problems. Here

projects struggle with extremely low infiltration rates, cracking, sealing, and waterlogging (MacDonald 1973, Annex vol. 1. Visits and interviews, 1981). The harvesters cannot enter fields before they are dry because the combines get stuck in the mud. The dry soils, on the other hand, are compact and difficult to break without heavy machinery. Serious constraints are imposed on cropping schedules and costs are raised. (On mechanisation, see below.)

Large-scale Irrigation Causes Great Damage to Soils

Wheat requires irrigation. Surface irrigation requires land levelling. This means cutting top soils and filling depressions in order to reduce slopes and create even surfaces. Land levelling at Kano has been less heavy than at Bakolori. Yet problems of top soil disturbance, decline in fertility and erosion are prevalent in both places. Yields are also held back by great variations in soil structure, exacerbated by land levelling, causing difficulties of water management.

Traditional farm management has developed great skills in adapting cropping patterns and farm practices to natural variations in slope and soil structure. The standardised technologies of large-scale irrigation have little flexibility in this respect.

Consultants at Bakolori complain that crops are now very uneven, not just from farm to farm, but within each farm 'which is a reflection of the amount of top soils moved during the construction period' (MASDAR January 1980). 'Soil structure has been severely broken down by the earth works, with alternating hard and soft areas.' It has led to a situation where 'isolated patches and strips of the surface are being wetted" (MASDAR December 1978).

Problems of low initial soil fertility are aggravated. 'Very poor soil fertility' remains the most serious limitation on yields. Soil analyses have shown an 'alarming low nutrient status'. Soil experts who have been asked to comment on these findings 'have been surprised that crops grow well at all' (MASDAR January 1980).

The destructive impact of land levelling was used at Bakolori as one argument for changing from surface to sprinkler irrigation. The desire to shift from a more labour- to a more equipment- (sales!) intensive system serves to expose the reckless design that had first been successfully sold to the Nigerian government (Impresit 1975, 1976, MRT 1976 App. B, 1978a, Bullen 1978). Much damage had already been done when the change took place. Referring to the experience of colleagues at the Kano project, the Impresit manager claimed that even quite moderate levelling had caused a serious decline in fertility because of shallow top soils (interview Amadeo Paulo 1982).

3. The Organisation of Production

Natural constraints set limits to large-scale irrigated wheat production. The project designers, for their own reasons, (including the wish to 'accomodate' their clients), underestimated or chose to ignore these constraints. As a result the projects face problems of low productivity and high costs. High temperatures, insufficient water, and poor soils make exceptional claims on skillful management as well as on adaptive research if poor yields and crop failures are to be avoided. Producitivity is constrained not only by nature but by social factors. The design itself implies a new organisation of production and presupposes the transformation or replacement of the existing one.

This is where the projects get caught in fundamental structural contradictions which obstruct the realisation of their theoretical – 'feasibility' – potential. It is also where they tend to play havoc with existing social relations of production without being able to impose a viable alternative. Project resources are wasted because of the absence of social relations appropriate to the technology imposed. Existing production is simultaneously disrupted by the new technology. It is a conflict which in part takes the form of an open class struggle, as in the case of peasant resistance at Bakolori. The efforts by state and capital to impose solutions and the responses of cooperation and non-cooperation which they meet are all part of class strategies for handling these contradictions. The new forms also generate contradictions internal to the new mode, as in the attempts to create pliant workers prepared to operate the new technology. The contradictions are also internal to management itself, for example, in the manner in which private and public strategies of accumulation clash. Let us highlight some of the points of conflict.

Problems of Double Cropping: Farmers Refuse to Give Up Guinea Corn

Double cropping has been the corner-stone of irrigation feasibility economics in the case of these Nigerian wheat schemes. High investment costs are justified by the yield of at least two crops on the same land in the same year, the dry season one being impossible without irrigation. The other, wet season one, is expected to be greatly improved because of supplementary irrigation. The failure to bring about such double cropping in practice destroys cost-benefit calculations and illustrates some of the contradictions involved.

We noted above that at both South Chad and Bakolori irrigated double cropping was affected by shortage of water, in the former case because of the unreliability of the lake, in the latter because the water surplus meant for supplementary irrigation was gradually eliminated as construction proceeded and designs were revised. We have no information on the Kano project in this respect apart from the fact that very little wet season irrigation has been provided so far (interview Ismail 1982). Farmers interviewed at Bakolori pleaded for irrigation water to improve on their traditional crops, especially at times of poor rains, but management has not been able to

accomodate them. Apart from design problems, management foresaw major difficulties with irrigation and field staff if supplementary irrigation was ever to be attempted on a large scale. Staff at all levels saw the wet season as a period when they were entitled to relax, go on leave, and attend to personal matters (interview Orode 1982).

As farmers receive no water from the projects in the wet season (except in some rice areas) many are reluctant to co-operate with project cropping schedules. Guinea corn is the major wet season crop in Kano and is also important at Bakolori. With wheat as the major dry season crop, the continued growing of guinea corn, however, is a threat to double cropping. Wheat must be planted in November and by that time guinea corn has not yet been harvested. Guinea corn should only be allowed, according to one consultancy report, if an alternative was found to wheat (MRT 1976:97).

Both at Kano and Bakolori, management has tried to make uncooperative farmers abandon guinea corn by withholding mechanised services and irrigation services from those who do not. This has apparently not been enough to secure full cooperation. The Kano General Manager has threatened that the Government in view of its heavy investment may find it necessary to outlaw this crop' (HJRBDA 1982:6). Alternatively, management considers, according to Palmer-Jones (1980:6), either expropriating the land of non-cooperating farmers, or taking over all land and handing it back on a tenancy basis with strict tenancy rules. This, however, involves major political problems, as is demonstrated most dramatically by the Bakolori case (Beckman 1984).

Farmers have been asked to grow maize instead of guinea corn in the wet season. But maize requires much fertliser and is vulnerable to rain failures. The market is also less reliable as compared to that of guinea corn, the main staple food of the region. It has become so for the obvious reason that is has developed over centuries in close interaction with the natural environment. Yields are low (below one tonne per ha) but guinea corn is carefully intercropped with early millet and beans in such a way as to preserve soil fertility and maximise total combined output.[22]

Farmers have other strong reasons for not giving up guinea corn in order to accomodate wheat: they do not find wheat sufficiently rewarding to justify such major sacrifice in crop and food security. This is related to the whole problem of project costing and price – what farmers are charged and the wheat price they receive. We return to that below. What needs emphasis at this point is the extent to which project cropping schedules fail to be implemented. As a result much of the land which has actually been prepared for irrigation is left uncultivated. The Kano 1982 report, for example, mentioned that only half of the prepared area was actually irrigated because of 'farmers' reluctance to pay for services and to adapt to a cropping pattern essential for the introduction of irrigated crops' (HJRBDA 1982:5).

Double Cropping at South Chad: the Mechanisation Hurdle

At South Chad the project has taken over all land and is in a position to impose its cropping decisions. When we visited the project in 1981 no double cropping, however, was taking place but for rather different reasons. Land planned for wheat was left fallow in the wet season, while that planned for rice was fallow in the dry season. This was double cropping of a sort, though on different land. This failure to live up to feasibility requirements was not due to the water shortage discussed earlier but was a problem of the timing of farm operations. Within a period of a few weeks there was the need to undertake both the harvesting of the rice and preparations for wheat. The rice harvesting machines could not enter the fields until well after the last rains because they got stuck in the mud. But the tractors preparing for wheat would have to begin work about the same time. Otherwise, wheat planting would be too late, and the crop would be exposed to high temperature risks towards the end of the harmattan season (interview Jir 1981).

The solution to this bottleneck problem has been to abandon double cropping in the same fields so that combines and tractors could work alongside each other. The only alternative as far as management could see, was a drastic increase in machines so that the time needed for the operations could be reduced. This would of course further inflate the already heavy mechanisation overheads carried by these low yielding and vulnerable crops. In the context of a continued financial squeeze a significant increase in machine purchases is also unlikely. At present much of the machine stock is idle because of lack of spare parts and maintenance. Even if water returns on a scale to supply the whole project area in both seasons it is therefore unlikely that full-scale double cropping is to materialise within a foreseeable future.

Mechanisation: the Illusory Economies of Scale

The objective of intensive double cropping was used as an argument for a high degree of mechanisation on all three projects, not only at South Chad where labour was considered scarce. The time for planting crops is so 'critically limited' according to a Kano report, that 'only mechanised means of cultivation and other cultural operations are positively feasible on such a large sized project' (HJRBDA 1980:4). Also at Bakolori, the 'intensity of cultivation' and the short time for preparing for a second crop (that is, primarily wheat) were used to justify full mechanisation. In addition 'the high rate of productivity required both from the soil and from the labour force can only be achieved by means of a large degree of mechanisation' (Impresit 1974 vol. A2:141).

At South Chad, the clay soils offered a particular case for heavy mechanisation (MacDonald 1973:24). All major operations in all three schemes from land preparations (planning, ploughing, harrowing, seed drilling, fertiliser application) to harvesting, threshing and bagging were planned to be carried out by project machinery. Farmers were only expected to attend to weeding and watering, the latter either by siphon from field canals or by moving sprinklers, normally once a week. On the Kano project, for

example, the 'insufficient number of combine harvesters' was said to necessitate the manual harvesting of part of the wheat crop in the 1981–82 season, according to one senior officer (interview Ismail 1982). 'Total mechanisation' of all crops was the objective (HJRBDA 1980:6).

Enthusiastic management (and commissions on purchases and preferential access may have added to such enthusiasm) has pushed for heavy mechanisation. It is clear, however, that this was also a central assumption of the original design. It was linked to notions of cropping intensity, and levels of efficiency and productivity which were critical to the cost-benefit exercise. A high degree of mechanisation could be justified in the world of feasibility economics because of the great productivity gains assumed. The latter were necessary to justify the heavy investment in reservoirs and irrigation structures.

Mechanisation was part of the package of large-scale irrigation technology pushed by consultants and international firms. Its place in a broader strategy of agri-business is apparent. Fiat has invested in a large tractor assembly plant in Kano. Links are also conspicuous at the level of the Nigerian ruling class as in the case of a leading businessman and member of the Sokoto aristocracy, the Sarkin Sudan of Wurno, Alhaji Shehu Malami, who was a director of Impresit and a shareowner in the Kano factory as well as being involved in other joint business ventures with Fiat and its Nigerian subsidiaries. Not surprisingly, management decided to 'standardise on Fiat tractors', according to an internal project report (MASDAR Feb. 1979. On the wider Fiat link, see also Oculi 1982).

The degree of mechanisation assumed has not been achieved and is unlikely to be so with increasing fiscal constraints. The level of productivity of the machinery presently employed is very low, as freely conceded by mechanical workshop staff at all three projects. This can partly be explained with general reference to poor or inexperienced management, poorly trained and supervised operators etc. These are problems internal to the introduction of new technology and new organisation of production. It could be argued that these are inevitable problems which in due course will be overcome. The predictability and scale of such problems, on the other hand, suggest that the massive introduction of new technology and new production forms is incompatible with genuine advances in productivity, at least if costs matter. And they do.

A more fundamental structural problem, however, is the contradiction between the social organisation implicit in a high level of mechanisation, on the one hand, and that of the peasant economy, on the other. The stationary combine harvesters which we have observed at both Kano and Bakolori offer a graphic illustration. They are fed manually by farmers who cut their wheat with sickles. Expensive, high-capacity combines perform the work of a simple stationary thresher. Staff in both projects have confirmed that this is a common procedure (interviews Saleem 1982, Abifarin 1980: see also MASDAR March 1979.)

Why this obvious waste of resources? The problem is that farmers'

plots are too small to be harvested by the combine, expecially if each farmer is to receive his own crop. The rational use of the combine presupposed large, reasonably uniform areas maturing at the same time. The economy of scale has been lost because of the failure to transform peasant agriculture in line with the requirements of technology (Bullen 1978:126). Projects deal with what one consultant called a 'spasmodic' cropping pattern (MASDAR March 1979). As a result the rate of land preparation per tractor, for example, is very low. A fleet of tractors, in theory sufficent to handle 6,000 ha, was only capable of preparing 1,200 ha (same October 1979).

These structural contradictions are exacerbated by the problem of finance. Farmers are expected to pay for tractor services. At one point, projects offered credit in order to be able to impose uniform farm operations. The recovery rate, however, was so low that this had to be abandoned. Cash payments are now required. Economies of scale are further undermined as tractors move long distances between scattered units who have fulfilled their payment obligations. In some cases, tractors are only made available when a 'sufficient number' of farmers in a particular block have paid up. Operations are easily delayed and reliability becomes uncertain even for farmers who pay in time. Palmer-Jones (1977, 1982) has identified such delays and uncertainties as a major cause of late planting and thus low yields, as well as, more generally, the luke-warm interest shown by farmers in wheat production.

It is apparent that the argument for a high level of mechanisation is closely linked to wheat as the strategic crop, with its special problems of water and crop management. Wheat demands 'extensive mechanisation and large units of land if it is to be grown economically', according to the principle agricultural consultants at Bakolori. A multitude of owners and small farm sizes were therefore a serious problem (MASDAR November 1979).

Mechanisation was intended to raise productivity by relieving the projects of dependence on peasant labour. It has been unable to achieve its promised economies of scale, however, because projects have not been able to do away with the constraints of peasant relations of production at the level of land tenure. This, as we have seen, is not the only reason. But it is a clash between design and reality which has affected the basic social and political premises of the irrigation strategy.

Land Tenure: Problems of Subordinating the Peasants

The failure to achieve a uniform cropping pattern and to impose economies of scale through mechanisation underscore basic problems of control: the failure to subordinate peasant production, or, what is the same thing, the success of peasant resistance. Project design and feasibility calculations presupposed that farmers would be effectively subjected to the economic rationality of large-scale irrigation technology. An identity was assumed between such rationality and long-term farmers' interests. Resistance was foreseen but it was assumed that the projects would be given adequate powers to deal with it. Such control was essential, according to the FAO Sokoto

study (1969 vol. IV:49), 'if heavy capital expenditure with interest is to be repaid'. Otherwise projects might even face a situation where farmers 'refuse to plant a second crop' (same: 46). The FAO therefore recommended that the land should be taken over. To start with, farmers should be hired as labourers. When sufficiently 'trained' they could be resettled as individual producers on the scheme (same: vol I:11, 13). MacDonald (1973:3) had similar ideas about farmers' apprenticeship for South Chad.

The FAO economist (Stroog 1968: 63ff) developed the argument further. The 'successful' Mwea scheme in Kenya, a resettlement scheme for former political detainees, was held up as a model. (On Mwea, see also Chambers and Moris 1973.) Management should have full control over cropping decisions as well as over marketing and the supply of inputs. Farmers should be selected on the basis of their 'working ability' and their 'calculated capacity to adopt the severe discipline of two crops per year irrigation farming'. A contract should be signed regulating the duties of the tenants, including a clause authorising eviction.

Only at South Chad did the state attempt to turn independent farmers into contractual tenants on such lines. Even there it only applied to SCIP Phase I, where land was fully taken over by the project and farmers resettled in standard-size units irrespective of the location of their original holdings. MacDonald proposed a detailed tenancy agreement, including 12 months' notice (1973:25 and Annex II:34f). The officer in charge of resettlement, however, doubted whether the project was actually capable of challenging farmers' full property rights in their new holdings (interview Lawan Mai Bukar 1981). A top official claimed that farmers could be removed if they 'were excessively lazy' (interview 1981). In the second phase of SCIP, land has not been fully expropriated as 'it will be given back to the original owners'. This certainly further undermines the ability of the project to enforce its 'contracts'.

At Kano and Bakolori land was not expropriated and has supposedly been handed back to the original owners after development. No contracts have so far been enforced. The inability to discipline non-cooperative farmers is a constant source of frustration to management. (interview Orode 1982; HJRBDA 1982:6. See also Wallace 1981:285 ff and Palmer-Jones 1977: 49ff, 1980:6.) At Bakolori the feasibility study and consultants reports have all assumed land consolidation as well as farmers' contracts. Impresit (1973: 16) spoke of uniform farms of five ha per family. Land consolidation, however, was only attempted in a small area and later abandoned in the face of opposition from farmers to the whole land reallocation exercise (MRT September 1979, January 1980; see also Bird 1980).

Consultants also insisted on the necessity of a signed agreement, including such clauses as the right of the project to enter farmers fields, if necessary, to 'plow in' unauthorised crops (Bullen 1978:85ff). If farmers fail to attend to their irrigation duties, the project should also be free to 'carry out the necessary works and charge the farmers'. As late as in 1979, the MRT spoke of the need to give urgent attention to the agreement, including the 'period

of lease', and the method for 'revoking of leases', thereby demonstrating that they saw farmers as tenants and the project as the landlord (1979 sect. 3.02). A much watered down 'Farmers' Agreement' was submitted to the federal government. It was still awaiting approval in February 1983, despite strong representations from project authorities. The political issues involved were too sensitive, according to a senior lands officer at the Sokoto headquarters (interview Nasir Umaru 1983).

The Failure of Repression: Peasant Rebellion at Bakolori

Why did not the projects take full control of land if this is what was considered essential for 'successful' large scale irrigation? Officials at all three projects speak of the high costs of compensation and more generally of the political risks involved in confronting the peasants over land (cf. Wallace 1981:87–8). The Bakolori events, culminating in the police massacre of April 1980, highlight this. (For an account, see Beckman 1984.)

Farmers had engaged in active resistance from the early stage of the project. The monthly reports of the consultants (MRT, MASDAR) offer a chronicle of farmers' obstruction and non-cooperation. A particular point of confrontation was the refusal to allow contractors to enter fields with standing crops. Farmers demanded full compensation not only for crops which were destroyed but also for crops forgone because they had not been allowed to plant. In large areas farmers were effectively prevented from growing anything at all for two to three seasons, with disastrous consequences for those affected. Farmers were also demanding compensation for the economic trees destroyed in preparing the irrigation lay-out. Some farmers refused to co-operate with either the land reallocation staff or the agricultural staff because of these unsettled issues. There was also the particularly serious case of those who had had their land and villages inundated by the reservoir. They refused to accept the inferior land allocated to them and demanded full cash compensation.

Militant actions to protect standing crops had been carried out successfully in the early years of the project. The authorities were repeatedly compelled to back down in the face of such resistance. When the contractors, with police escort, sought to force their way at the beginning of the 1979–80 dry season they were met with a new type of organised resistance which brought together the various strands of opposition in a common front. Gradually, actions built up to a total blockade of the project, including the establishment of road blocks manned by detachments of peasants armed with farm implements and hunting weapons. Project operations were forced to a standstill. By January 1980, the Federal Government dissolved the Board of the SRBDA in order to placate the farmers. A committee of enquiry was set up. There were allegations of massive misappropriation of compensation funds already allocated by the government.

The farmers refused to lift the blockade until their grievances were dealt with. The release of fresh compensation money to those who had been displaced by the reservoir could only temporarily diffuse the situation. A

wide range of other grievances were involved.

In the meantime, the government had mobilised riot police from different parts of the country. In April 1980, the Sokoto governor ordered the police to recapture the project from the farmers. After a preliminary encounter where one policeman was killed the police troops were allowed to invade the project area, sacking and burning villages, killing a large number of people. Police officials claim that 'only' 17 farmers were killed (*New Nigerian* 3 May 1980). Other reports speak of several hundred casualties (Usman 1982, *Sunday Triumph* 4 July 1982). No official investigation of the massacre has been allowed and attempts at private investigation have been obstructed.

The Bakolori massacre, although 'successful' in crushing open defiance, did little to facilitate the effective subordination of the peasantry. Politically it was a major liability to the state as well as to the international firms engaged in this particular type of 'rural development'. The plans to introduce tighter controls over land which had been actively pushed by the consultants up to the eve of the peasant rising had to be shelved. The need to placate the peasants as well as outraged public opinion also meant the shelving of attempts to raise charges for the water and mechanised services 'offered' to the farmers. The assumed financial basis of project operations was further undermined.

The Bakolori events demonstrate the dead end of violent confrontation with the peasantry which is implicit in the very technology and design by which 'profitable' irrigation was to be achieved.

Incentives: an Alternative to Coercion?

Farmers seem unlikely to be coerced into becoming good wheat producers. Based on his studies of the Kano River Project, Palmer-Jones (1977, 1980, 1981, 1982) argues convincingly that the reason why farmers are so uncooperative is that incentives are poor. Project services are too unreliable and the risks of crop failures too great to justify farmers' investment in wheat, especially as they face bottlenecks of labour and finance. He argues against those who believe that tighter project control over land and labour is the answer. Instead, services should be improved, allowing, for example, for a greater degree of farmers' participation. Monetary returns should be adequate (cf. also AERLS 1979:13).

The key incentive is of course the net price received by farmers, that is, the price net of project charges. Can the projects pay prices which are attractive enough to turn farmers into enthusiastic wheat growers?

Ultimately, this is a question of the level of subsidy at which the projects are going to be allowed to operate. It is obvious that Nigeria cannot be expected to grow wheat at costs which are competitive on world market terms. But how much more is Nigerian wheat to be permitted to cost?

8. The Price of Import Substitution

1. Introduction

Problems translate themselves into costs. How much does the policy of wheat import substitution cost Nigeria? How much *more* does it cost than importing the wheat? How much will domestic production have to be subsidised by the state?

Much of this chapter is an attempt to establish, step by step, the costs of constructing, maintaining, and operating the first three wheat schemes. For some aspects we have access to fairly solid figures on actual expenditure. For others, we depend on estimates of typical or probable costs. Throughout, we give project protagonists the benefit of the doubt by choosing lower estimates whenever ranges are wide and uncertain. If anything, our figures are unrealistically low. As support for the case against present wheat policy, however, they are high enough. The figures are a challenge to the experts, the project bureaucrats and the politicians who continue to claim that investments in wheat import substitution can be justified on one or more of the following grounds: (1) that the investments are profitable; (2) that they reduce Nigeria's dependence on imported foods; (3) that they save foreign exchange; (4) that they generate rural income and rural development.

The figures in this chapter lend no support for such claims. On the contrary, they suggest that Nigeria's wheat production policy represents a massive misdirection of national resources.

2. Project Costs

Costs of Construction and How to Forget About Them

There are no officially available figures from any of the three projects on how much has actually been spent on their construction. South Chad, Phase I, was supposed to cost N20.1 million, according to the feasibility study (MacDonald 1973:2). A World Bank estimate suggests N230 million in 1978 prices (World Bank 1979 vol. III, paper 6). N135 million is estimated for Kano River Project (I) by the same source. AERLS' figures (1979:71)

from about the same time are some 20 per cent higher. For Bakolori the World Bank says N330 million, still in 1978 prices. Impresit's 1974 contract was for N140 million. Final costs were calculated at N174 million by the consultants one year before completion, that is, in 1974 prices (MRT 1982). It corresponds to N505 million in 1982 prices if we use the conversion factor of 2.9 applied by the project management in that year (interview Arski 1982), which assumes an average annual rate of price inflation of some 15 per cent.

Using this figure for Bakolori and a 15 per cent per annum write-up of the World Bank 1978 figures for South Chad and Kano we arrive at a total investment cost for the first three wheat projects of some N1.2 billion in 1982 prices. This is equivalent to a development cost per ha of N12,000 for Kano, 18,000 for South Chad, and 20,000 for Bakolori. The figures do not include the overhead costs involved in planning and administration at the pre-production stage, much of which ought to be 'capitalised' and added to the investment costs. The Bakolori project alone has consumed annual federal grants in the order of N8 million before any substantial production had commenced (interview Chief Accountant, BIP 1983). The headquarter costs of the River Basin Authorities should also be partly capitalised. We return to these when we discuss general overheads below.

The above figures make no allowance for the very substantial capital costs implied in the time lag between investments and production.

The investments were undertaken on the assumption that costs would be paid out of charges on future production. The feasibility studies demonstrated how this was to be possible: charges would be absorbed by the tremendous increase in the value of output. Cost-benefit calculations and the internal rates of return demonstrated that these were profitable investments. Farmers' income would increase several times even with all capital charges paid. The original FAO proposals for Bakolori even allowed for a five per cent interest payment on capital (FAO 1969 vol. 1:50). At South Chad, MacDonald (1973:S.2) offered 8.7 per cent!

If we assume an 'average' development cost per ha of N15,000, and a very liberal repayment period of 50 years we get an annual capital charge of N300 per ha, that is, if we do not include overheads, time lags, and interests.

The illusion of capital recovery, however, was short-lived, once it had served its purpose of justifying investments. The World Bank noted in its sector review (1979) that there was no 'cost recovery policy'. Farmers were not even made to pay for current costs. Cost recovery studies had been commissioned from Ibadan-based consultants (PRC 1982). In Sokoto, a headquarter economist had been assigned the task of working out a cost recovery strategy for Bakolori when we met him in July 1982. Seven months later this exercise had been abandoned. The problem was instead how to find out how much farmers could be made to pay out of current costs (interview Ezenwa 1982). The principal foreign consultants were sending out fresh signals. MRT, which in 1976 had submitted beautiful cash flow

tables demonstrating the high returns on capital, declared in 1980 that farmers could no longer be expected to pay capital charges as 'returns to agriculture are generally very low' (MRT 1980a:S.4). The 11.8 per cent return on capital offered by Impresit had vanished. 'Reality', the report conceded, 'had turned out to be different'. Even to cover current costs the project would have to run a deficit of three to five million naira annually (MRT 1980b:1).

Such 'second thoughts' were voiced also at the other two projects. Increasingly, consultants and managements alike, were beginning to treat capital investments as 'social' or 'infrastructural' which did not require justification in economic terms. At South Chad, for example, consultants argued that there was no longer a need for a full economic analysis because 'capital had already been committed' (CBDA 1978a:2). These sentiments were also reflected in the position of the AERLS Wheat Committee (1979: 70). 'Having decided for strategic reasons to embark on irrigation development the capital costs of irrigation development do not have much bearing on the policy options for securing efficient use of irrigation facilities.' The wheat experts were taking cover behind poorly specified 'strategic reasons' as if these were unaffected by the actual costs of developing irrigation.

Cost of Maintenance: Additions to a Giant Subsidy

These were the capital costs in a very restricted sense, based on conservative estimates, a generous repayment period, and no interest payments. Installations wear and need to be maintained and replaced. Pumps, generators and sprinklers, for example, have a limited life span, which also shortens drastically in the harsh conditions of the tropics, where heat, humidity, strong winds, heavy rains, penetrating dust as well as poor maintenance all take their toll. Canals erode, break and clog up. They require re-excavation and re-lining. Land that has been levelled does not stay put. It is moved by water and wind and fresh land levelling must be undertaken. The drainage system must be adjusted. Costs increase, of course, when staff and farmers are inexperienced and poorly motivated. Delicate parts, sprinklers, for example, are easily damaged. Poor maintenance causes high replacement costs.

International consultants use standard rates to calculate such annual maintenance and replacement costs. In order not to scare off clients these rates assume 'good management and operational practices'. Otherwise the high rates of return envisaged would vanish. At Kano, consultants suggested annual costs equivalent to between 2.5 and 4.5 per cent of investment costs for various components of the irrigation system (AERLS 1979:56). The experience from Bakolori indicates higher figures (MRT 1978a, App. VIII).

If a modest 3 per cent is used we arrive at annual maintenance costs of N450 per ha when calculated on a N15,000 investment cost. A three per cent charge would require average annual expenditure of N7 million at Kano, N12 million at South Chad, and N15 million at Bakolori (1982 prices).

Thus even before considering the cost of operating the schemes, allowance has to be made for a capital and maintenance cost of at least N750 per ha (= 300 + 450). Who is to pay for this? The feasibility people, of course, assumed that it would be carried by the producers. For all practical purposes, however, it has been added to the giant subsidy to irrigated farming paid by the government. Maintaining irrigation schemes has become a 'public service' on which no direct return is expected. This becomes apparent when we examine the failure of the schemes to cover their current operational costs.

Current Water Operations: the Subsidy Grows

Operational costs include the salaries and wages, allowances, social benefits, transportation etc., of all those who operate the dams, the pumps, the sluices, and other equipment which make the water flow. Fuel is a major item, particularly of course at South Chad, with water pumped from the lake, but also in the sprinkler areas of Bakolori. These are items which all relate to current water management, as distinct from extension, and mechanisation services.

What are these costs per ha of wheat? This is of course extremely difficult to find out as it would depend on actual efficiency and capacity utilisation. It becomes particularly difficult to estimate at a point when only a part of the project areas has as yet been brought under irrigated cultivation. We depend here mostly on estimates of 'normal' costs suggested by project officials. 'Normal' in this sense means the amount which could be attributed to each unit of land assuming a reasonable efficiency in the utilisation of staff and other current resources. Put differently, it is the amount which farmers could be expected to pay if water charges were to cover the full cost of the services received.

At South Chad in 1981–82 farmers paid N37.50 per ha which, according to project calculations, was less than one fifth of actual costs (interviews Issa and Ahmed 1981). At Kano in 1975–76 water charges were N24.70 or less than one third of assumed costs (IAR 1978). At Bakolori in 1982 they were N25. One senior official believed that actual costs would be in the range of N200 to N300 per ha (interview Saleem 1982). There is a possibility of some double counting here as officials did not distinguish very clearly between operation and maintenance costs.

It is clear, however, that farmers in all the projects were expected to pay only a minor part of current water costs. The increase in charges envisaged by the management would not radically alter the picture of another substantial subsidy being added at this level. We take N100 to represent current water costs per ha after farmers' payments have been deducted. It is a figure which can be assumed to be well below actual costs for a foreseeable future.

Mechanisation: the Intensification of General Subsidies

Large-scale irrigation as designed for Nigeria and the wheat programme in particular assumes a high degree of mechanisation. We noticed above

that mechanisation faces major difficulties which sabotage economies of scale. Costs have rocketed. It is clear, however, that 'normal' costs as well are subsidised. At South Chad, farmers were charged full costs (N117 per ha in 1981), according to the officials (interviews Issa and Ahmed 1981). This figure was said to be based on the time it would 'normally' take to undertake a particular mechanised operation. It is therefore not actual costs in the sense of total project expenditure on mechanisation as divided by the hectarage actually under cultivation.

At Kano farmers were charged some N75 per ha in 1982. Headquarter officials believed this to equal some 20 per cent of 'actual costs' (interview Ismail 1982; cf. also HJRBDA 1981:7). At Bakolori charges were lower and costs higher (SRBDA 1981:8). The engineer in charge claimed that farmers were made to pay 'at the most ten or perhaps 15 per cent' of actual costs (interview Zutshi 1982). He listed factors which raised the latter to very high levels. Tractors, for example, would have to be fully depreciated in three or at the most five years.

These figures do not permit proper comparisons and firm conclusions. We take N100 to represent project mechanisation cost per ha of wheat, net of farmers' payments. Again, this is a figure that is unlikely to exceed actual costs even if and when current 'teething problems' have been overcome.

Mechanised services at highly subsidised prices are often offered by government Tractor Hiring Units also outside the projects. It could therefore be argued that this cost should not be included in the wheat subsidy. There is a wide difference, however, in the intensity and concentration of these services inside and outside the projects. Outside, not one farmer in 10,000 has access to government T.H.U.s. The project wheat farms, on the other hand, are all supposed to be fully mechanised.

Extension Services Are Free

The same distinction applies to the extension services, another big item in the wheat subsidy. Following general Ministry of Agriculture practices these are provided free. The intensity of extension staff, however, differs radically inside and outside the projects. On the Kano project, for example, one unit of 2,500 ha is supposed to be served by one Senior Agricultural Superintendent, two Agricultural Superintendents, five Agricultural Assistants, and twenty Agricultural Overseers (HJRBDA 1982:7). Outside the projects there is not even one extension staff for that size of area. The cost of such establishment can be estimated at some N40 per ha in 1982, if typical grade levels, overtime, housing allowance, transport etc. are assumed.

Fertiliser Subsidies at Green Revolution Rates

This is another case of a general subsidy that becomes greatly intensified in the project context. Government distribution of subsidised fertilisers was stepped up in the late 70s and early 80s as a key element in the 'green

revolution' programme. The rate of subsidy was 85 per cent according to World Bank estimates (1979). By 1982, the most common types were sold at N1.80 per bag of 50 kg. Most of it was imported and c.i.f. costs plus inland transport were over N12 per bag. The figure would rise if full government handling and storage costs were included. These are difficult to estimate. The subsidy per bag, however, can safely be assumed to be at least N10.

How much fertiliser is used by the wheat farmers? We only know the recommended project rates. Kano staff claim they follow IAR recommendations of some 300 kg per ha (interview Abifarin 1980). Rates at South Chad are closer to 400 kg per ha and are directly applied by project staff (interviews Issa and Ahmed 1981). Original Impresit recommendations for Bakolori (1974 vol. A2) were also in this range. They have been stepped up since. In 1978, the chief agricultural consultant (Bullen) recommended 500 kg. It was increased to 650 kg in 1979 (MASDAR Feb.). One year later a report spoke of 823 kg (!) as the desired rate of application (MRT 1980b). The need to make farmers apply sufficient fertilisers was repeatedly stressed:

> Without fertilisers their crops will fail to yield reasonably, which would discourage farmers, who might then believe that it was the new system of farming, rather than poor fertility which was the cause of their failure (MASDAR Jan. 1980).

Yes, indeed! For the purpose of this theoretical exercise, we take N60 to represent a 'typical' fertiliser subsidy per ha of wheat, using the lowest recommended rate.

The Excess Overhead Costs

The small size of the area under effective cultivation makes estimates of costs per ha difficult. At present, a limited area is made to carry enormous 'overheads'. Yet, the persistence of such excessive overheads is a critical addition to the overall wheat subsidy. Let us examine the case of Bakolori where accounts of expenditure are available for 1982 (BIP 1983b). Table 8.1 gives a rough breakdown as consolidated by us.

Expenditure on the dam and hydropower station was carried directly by the river basin authority headquarters (SRBDA). They are not included in these accounts. Equally excluded here are other Sokoto headquarter costs which should be treated as general overheads for the Bakolori project. These are not known by us and may in fact add another major element to the wheat subsidy, as a visit to the sprawling office complex in Sokoto might suggest. We add here another N1 million to the N9 million specified in table 8.1 to allow for these different missing items. N8.3m or 92 per cent of the N9 million spent directly by the project was covered by a grant from headquarters. Another N0.3 million was a transfer from the previous year. A revenue account of N390,000 listed sales of fertilisers, seeds, building materials, and some crops as the main items. The net revenue from these sales

Table 8.1
Bakolori Irrigation Project: Trial Balance for Main Accounts as at 31st December 1982: Expenditure

Salaries and wages[1]	N1,980,240
Staff allowances (overtime gratuities etc.)[1]	1,314,302
Staff quarters (mostly maintenance)	737,985
Offices (construction, maintenance, equipment)	161,683
Electrification of quarters and offices	751,879
Motor vehicles (purchases, maintenance)	596,349
Plant and machinery (incl. implements and tools) (purchase and maintenance)	2,954,668
Fuel and lubricants	273,686
Maintenance of canal	73,348
Other items (incl. livestock, forestry, fisheries)	175,007
Total excl. dam, hydropower station, and HQ overheads	*N9,019,147*

[1] Excl. livestock, forestry and fisheries when specified.

is likely to be insignificant.

Some 5,000 ha were irrigated in the 1981–82 season and much less in 1982–83. If the 81–82 figure is used, it suggests a total net annual project expenditure equivalent to N2,000 per ha. Some of the expenditure on plant, machinery, housing and vehicles should of course be depreciated over several years. On the other hand, no depreciation costs are included for items purchased in previous years. It is probable that some costs will go down as the area under cultivation/expands. Moreover, the maintenance of irrigation structures which is likely to become a major item as projects grow older was quite insignificant in the 1982 accounts.

Even if we were to assume that the irrigated area could be doubled to 10,000 ha without any increase in project expenditure (a very unlikely event) we would still have to think of annual project costs in the order of N1,000 per ha.

It is evident that the projects have general overhead costs which have not been accounted for above. Some of these could be considered quite normal overheads for management, project administration, and headquarter 'services'. Some could be explained as start-up costs or by the failure to 'synchronise' different aspects of the projects. Staff has been hired, and equipment purchased, for example, as if a much larger area was ready for cultivation.

Some of the 'excess' costs must be charged to the inefficient utilisation of staff and machinery caused by the contradictions between project technology and the organisation of the peasant economy. But excessive overheads also reflect the employment of large numbers of staff with allowances, housing, offices, vehicles etc., who are only marginally relevant to the productive exercise as such.

Bakolori is not necessarily representative of the two other projects. There is nothing to suggest, however, that either Kano or South Chad have been more successful in containing excessive current overheads.

We include a modest N250 per ha of wheat as representing such general overhead costs that have not been covered by our estimates in previous sections. It follows from the argument above that this figure assumes a high rate of increase in the cultivated area and a low rate of increase in actual project expenditure. The assumption may be unrealistically optimistic. But this does not affect our argument. Also on the basis of such 'conservative' estimate, it should be apparent that the case against domestic wheat production is formidable.

Total Annual Project Costs: a Summary

Let us summarise the picture of project costs as they emerge from the estimates given above. Figures in table 8.2 are theoretical magnitudes. Possible ranges and variations between the projects as discussed above are omitted. Low or moderate figures are used.

Table 8.2
Wheat project costs per ha: a provisional summary (1982 prices)

(1)	Construction: N15,000/ha; 50 years repayment; no interest	300
(2)	Maintenance: 3% of N15,000/ha	450
(3)	Operational costs: water delivery	100
(4)	Mechanised services	100
(5)	Extension service: field organisation	40
(6)	Fertiliser subsidy: 6 x 50 kg x N10	60
(7)	General overheads (not accounted for above)	250
	Total	*1,300*

Note: Items 3 and 4 are net of charges to the farmers.

The first two items (construction and maintenance) assume that the whole of the project areas are made to carry one irrigated crop per annum. As long as this is not realised (and it is not), capital costs per ha will be higher still. To the extent, on the other hand, that irrigated double cropping is achieved (that is, two fully irrigated crops on the same land), annual capital costs per crop will decrease. We discussed in the last chapter why full, irrigated double cropping faces major problems, especially because of water shortage and restrictive design. Whatever achievements are actually made in this direction would have to be balanced against all crop years lost as a result of the failure to put all areas under *one* irrigated crop. In this perspective our estimates must be seen as 'optimistic' ones. They assume a high rate of increase in irrigated crop areas. This is also true for current water costs, mechanisation services and general overheads. For the extension and fertiliser subsidies a standard application rate makes the estimates neutral to such shifts in the

rate of actual development. The theoretical and uncertain nature of these estimates should not allow us to forget that *overall* actual project costs are likely to be much higher.

Farmers' Costs and the Producer Prices

So far we have analysed *project* costs, that is, the cost of providing irrigation water, mechanisation, extension services and other inputs to the wheat farmers. We have arrived at staggering figures of N1,000 per ha or higher (1982 prices), depending on whether we include the cost of construction or not. Our figures depend also on assumptions about the ability of the projects to slash present high overheads and achieve greater efficiency in the utilisation of staff and equipment. The N1,000 figure is an optimistic one in this respect.

These are project costs. They are net of charges made to the farmers. The latter, however, have other costs as well as claims to returns on land and labour which are also part of the total costs of local wheat production.

Wheat is bought from the farmers by the projects themselves at a price determined by the government. This is the official producer price. It can be taken to represent farmers' costs, including their net return. In 1982, the producer price for wheat was N280 per tonne. Farmers complained strongly that this price level was inadequate. Already in 1979, the Bakolori management proposed N350 in order to 'maintain farmers' interest in the crop' (MASDAR 1979). Also the IAR wheat experts have proposed major increases (Olugbemi 1980).

It is possible that a producer price capable of ensuring farmers' co-operation would have to be raised well above the present level. For the time being, however, the official producer price (N280 per tonne) represents the combination of farmers' costs and profits. In our calculations of total costs, it should be added to project costs.

3. The Cost of Imported Wheat: a Comparison

We are now approaching the point where we can suggest figures for the cost of domestic wheat and compare with import prices. We assume an output of two tonnes per ha, which is above current averages, but well within the reach of present management. Project costs would then be some N500 per tonne, to which farmers' costs of N280 should be added. With a further addition of N20 to cover handling and marketing we arrive at a rough (minimum) figure of N800, as being the amount of public money which has been spent on one tonne of local wheat at the point when it arrives at the factory gate of one of the northern flour mills. Another N80 would have to be added if the wheat is to be transported to the southern mills (cf. World Bank estimates of such transport costs, 1979: Paper 6.29). This is if we assume that the cost of constructing the irrigation schemes has been written off. If included, another N150 per tonne should be added,

according to our 50-year repayment, no-interest model.

We thus take N800 and N950 as our estimates of the cost of one tonne of Nigerian wheat in the North, exclusive and inclusive of construction costs. The equivalent figures for the South are N880 and N1030 respectively, all in 1982 prices.

How does this compare with the price of imported wheat? Average monthly export prices of US wheat in 1982 ranged between 150 and 170 US dollars per tonne, according to the Market Report of the International Wheat Council (24 February 1983:1:15). This is slightly below the Council's five-year average for major exporters for the 1978–1983 period which stood at $169.80. We take $170 to represent a typical f.o.b. price. To it should be added some $20 to $30 in order to get the c.i.f. price in Lagos, including port handling charges (same:8:1 and App. tab.3; cf. also World Bank 1979: Paper 6:29).

$200 is thus what the flour millers in Apapa (Lagos) could be expected to pay for one tonne of imported North American wheat. At the official exchange rate, which averaged around $1.5 to the naira during 1982, it amounts to N133. We find therefore that *the factory gate cost of domestic wheat at Nigeria's leading flour mill can be estimated at some six to eight times the cost of imported wheat*!

The enormous gap can be reduced a little (but not much) by using a shadow exchange rate of one dollar to the naira, which seems to be standard World Bank and IMF procedure, to take account of the overvaluation of the naira. In this case, it means that the Apapa price of imported wheat is taken at N200 or around one-fifth of domestic costs. At the northern mills, the ratio would be lower as internal transport costs would be added to the imported wheat and deducted from the domestic one. But the bulk of the milling capacity (some two thirds), as well as the bulk of final markets are in the South, which means that the higher ratio applies.

Can the situation be expected to shift significantly in favour of Nigerian wheat? Not very likely. There is much underutilised capacity in the major wheat producing areas of the world. Any sustained upward shift in demand is likely to result in more of this capacity being brought into production.

Some argue (e.g. at IAR in Zaira) that a major reason for the big gap between domestic and imported costs is the overvaluation of the naira. Although we have already used standard measures to adjust for this, it could be maintained that a more drastic devaluation could tilt the balance in favour of Nigerian wheat. If for example, we were to assume a one naira to half-a-dollar exchange rate, the cost of imported wheat would double. But even so, a gap remains. More importantly, as will be seen below, domestic wheat production has a high foreign exchange content. It means that much of the devaluation effect will be lost.

What can the flour millers be expected to pay for Nigerian wheat? In practice, it has not been much of a problem as yet, as domestic production has been so insignificant. The Kano mill has insisted on paying the equivalent of the factory gate price of imported wheat. As this has been below the

price offered to the farmers by the Grains Borad, the latter has made direct losses. In 1980, for example a small consignment was bought by the Board from Bakolori at N200 and sold to the Kano mill at N160 according to the Project Manager (interview 1980).

If this practice were to be continued, the rate of subsidy would equal the full difference between the factory gate prices of local and imported wheat, that is, some 500 per cent in the South and some 300 in the North. If millers were made to pay a higher price, the subsidy would be reduced as higher costs are passed on to the consumers. It would not of course, reduce the cost to the national economy of wheat import substitution. That cost continues to be the full difference between local production costs and the price of imports.

How big is this cost? If we assume that wheat consumption in Nigeria is frozen at the level of 1982 imports, that is some 1.5 m tonnes, and that two thirds of output is milled in the South, we arrive at a total cost of full import substitution of N1.2 billion naira.[23] This is the cost, over and above the cost of importing the same amount of wheat, that Nigeria would have to pay in any one year if the country were to be self-sufficient in wheat.

These staggering figures are theoretical, of course, and unlikely ever to materialise. The senselessness of such giant waste of national resources will be apparent to any government, long before such import substitution has been allowed to reach even half-way towards the goal of self-sufficiency. These figures, however, spell out the inherent logic of the present policy, under the banner of which already vast amounts have been wasted. They also help us to quantify the awesome dimensions of the wheat trap: the subsidy of domestic wheat implied in this policy is equivalent, for example, to one tenth of total government revenue in 1980 (FGN 1981a:xlvii), and more than that in subsequent years as oil revenue has declined.

4. Any Other Benefits?

The full extent of the economic catastrophe implied in the policy of wheat import substitution may not have been known. Some of it could even be explained by difficulties which may not necessarily have been possible to foresee by project planners. Much, however, as we have tried to demonstrate in this study, follows logically from the illusions which were encouraged by the planners, including the conjuring tricks of the feasibility economists.

The second generation consultants, coming in to advise on the implementation of projects and policies, which had already been decided, acknowledged the dubious economics of the programme. They took cover as we have seen, behind 'laid down policies', thereby relieving themselves of the need to justify the schemes in economic terms. Attention was also drawn to other benefits which seemed to offer justification despite the vanished returns on capital. Emphasis shifted to savings of foreign exchange and the contribution to rural development and rural incomes, which the

projects were expected to bring about.

The Illusion of Foreign Exchange Savings

> However, it is thought that returns to capital will not be the major criteria considered when the decision of implementation is taken. Other factors such as savings of foreign exchange, particularly on wheat, is a major consideration in agricultural development policy (MacDonald 1973:S.7).

> Governments must determine whether they can and are willing to import wheat despite the ensuing outflow of foreign exchange, or whether they prefer instead to develop domestic production which would allow them to reserve foreign exchange for importing manufactured goods (UNDP 1974b:62).

Our argument in this section is that no such foreign exchange savings can be expected. On the contrary, the data point to very major foreign exchange losses as a result of the wheat import substitution policy. This should be contrasted to the impressive rates of return on foreign exchange invested in the schemes, which consultants offered. MacDonald, for example, envisaged a rate of 22.5 per cent (1973:59). Impresit, in its turn, claimed a net foreign exchange saving, 'conservatively appraised', of N11.5 million per annum (1973:summary). Releases from project managements have continued to support such extravagant expectations. (For Bakolori, see for example, SRBDA 1979:5; for Kano, see *New Nigerian* 10 August 1984.)

No detailed estimates of actual foreign exchange costs will be attempted here. For the purpose of our argument, however, we shall merely demonstrate in rough outline how these costs can be expected to exceed the foreign exchange outlay on imported wheat.

The feasibility studies contain estimates of the foreign exchange component in constructing the schemes. There is reason to expect their estimates to be on the low side. Consultants know that foreign exchange is something which normally worries governments. On the other hand, construction companies are anxious to import freely what they need and to hire expertise and skilled workers from outside. This is partly because of their fears of being bogged down with 'inappropriate' local inputs of staff and material, which make management more complicated. 'Vertical integration' between foreign construction companies and foreign suppliers of inputs and staff, means simultaneously that it is profitable to buy from outside. We can therefore expect the actual foreign exchange costs of the projects to be higher than envisaged by the feasibility studies. That this is also the case can be documented in detail from our three wheat projects.

For South Chad, MacDonald (1973:2) estimated the foreign exchange content to be 45 per cent of capital costs. Much higher figures were suggested for Bakolori by Impresit (1974 vol. A1:50), which can be seen for main

components from the following breakdown:

Dam, supply canal, irrigation and land reclamation	56%
Project facilities (housing etc)	45%
Agricultural and maintenance equipment	95%
Design, supervision, and administration	75%

Cement, a major cost item, was assumed to be provided locally. In practice, almost all was imported. The shift to sprinklers similarly raised foreign exchange costs above original estimates. At South Chad, the extension of the intake canal was a similar major addition.

The Zaria Wheat Committee believed that the foreign exchange element in the capital cost of all three projects was around 50 per cent or 60 per cent for the sprinkler areas (AERLS 1979:58). For our own estimates, we shall use the lower figure, although it is clear from the details that higher figures could be justified.

Could maintenance be expected to be less foreign exchange demanding? It includes fresh land levelling, the relining of canals, and other repairs on basic irrigation structures which require advanced equipment and machinery. Pumps, generators, sprinklers have high replacement costs, most of it in foreign exchange.

Current operations are also machine intensive, as a result of the manner in which projects have been designed. Major farming operations are mechanised. Although tractors and other farm machinery are increasingly assembled in Nigeria, this does not significantly reduce foreign exchange costs.

A major item is fuel, both for moving water and for machines and vehicles. This, too, is provided locally but may still be treated as a foreign exchange cost in the present context. The vast quantities of petroleum consumed by the projects are withheld from being exported currently or in the future. If the purpose of wheat import substitution is to save foreign exchange, such a diversion of exports into local use must be included on the debit side.

The 'success' of the projects depends, as we have seen, on high levels of fertilisers being applied. In this case the foreign exchange content is likely to be 75 per cent or higher (cf. AERLS 1979:58).

Our last major item, general overheads, may be more difficult to examine in foreign exchange terms. The present extensive use of foreign personnel could be expected to be reduced. The facilities used by Nigerian and foreign staff alike, however, have a large foreign exchange content, including 'modern' housing, household and office machinery, private and official vehicles etc.

The average foreign exchange content of these items may be 50 per cent or higher, ranging from peaks over 75 per cent for machinery and fertilisers, at the one end, to low levels like farmers' labour costs, at the other. We have no intention of venturing a specific estimate in this respect. For the purpose of our argument it is sufficient to point out that whether a closer scrutiny of the facts suggest 50, 75, or even 25 per cent, we still find that the foreign

exchange cost of producing local wheat exceeds the cost of importing it.

If the cost of domestic wheat is four times that of the imported one, even a mere 25 per cent foreign content in local production eliminates any foreign exchange saving.[24] The foreign exchange content, however, is likely to be higher than that. There is therefore cause to expect significant losses. If it is 50 per cent, for example, the net annual foreign exchange loss would be in the order of a quarter of a billion US dollars. This is again, in the theoretical case of full import substitution at the 1982 level of consumption and 1982 price.[25] Without exchange rate adjustments (devaluation) the foreign exchange loss would be even greater.

Wheat and Rural Development

The basic objectives of wheat production are 'national': the promotion of food self-sufficiency at the national level and the saving of foreign exchange. The documents preparing the way for the wheat schemes, however, also stress the role of irrigation for the development of local incomes and employment, including protection against drought (cf. AERLS 1979:30).

> The immediate need to boost food production together with the social need to produce employment and development opportunities in an area which has been neglected in the past, will also be major considerations (MacDonald 1973:S.7).

It is an appealing argument to those who canvas regional interests. Large federal investments in irrigation secure big chunks of the national cake for the peripheral northern areas.

The reconnaissance and feasibility economists promised formidable increases in farmers' income. We argued in chapter 6 that the increase partly arose from gross underestimations of levels of income and economic activity before the establishment of projects. In chapter 7, we argued that farmers' incomes from irrigation were in fact so uncertain as to cause much of the project lands to lie idle in the dry season, despite the fact that they had been prepared for irrigation. The Agricultural Manager at Bakolori thought this reluctance to be only natural: 'Why should the farmers put in their money where they are not sure of proper services?' (interview Orode 1983).

Against this background of non-cooperation, including also the presumably most 'successful' Kano project, there is a hollow ring to the persistant claims of enormous increases in farmers' income in project propaganda. A glossy leaflet from Kano, for example, wants us to believe that farmers 'have already had their annual income increased ten-fold' (HJRBDA n.d.). The Kano General Manager is repeatedly quoted in the press, making similar extraordinary claims (cf. *New Nigerian* 22 February 1980). It was also his message when trying to convince a senate committee to support large new grants to his river basin authority (*New Nigerian* 16 February 1983).

As a picture of what actually happens to 'average' farmers' income these statements are obvious exaggerations. But the farmers who actually partici-

pate in the irrigation programme do so, of course, because they expect to benefit. It is clear that some farmers have been doing very well. On the other hand, participation does not automatically yield benefits, as shown, for example, in the case of Kano farmers surveyed by Palmer-Jones (1977). And, we repeat, the large element of non-participation indicates low expectations in this respect.

Our main argument in this context is to stress firstly that whatever increases in farmers' incomes are achieved are the product of massive state subsidies. Secondly, even if most of the irrigation farmers can be made to cooperate and benefit their total numbers are very small in terms of the overall size of Nigeria's rural population. That is, even if quite considerable increases in income were achieved, it would be a highly limited achievement, obtained at a cost which effectively precludes it from being generalised as a strategy for rural development.

Farmers' net income is only a small fraction of a giant subsidy. There is nothing unreasonable, of course, about oil money being used to subsidise services to agricultural producers. But when the cost of such services per producer exceeds by several times not only the market value of his produce but also the income he receives, it does not make sense from the perspective of either national economy or rural development.

This being said, it is still of interest to know how the people directly affected by the wheat schemes have fared. Are local benefits as grandiose and unproblematic as the project advocates want us to believe? Why, after all, did the Bakolori farmers rise up in arms against the project and risk their lives? Were they just led astray by unscrupulous politicians, as the government claims, or were their grievances genuine?

There is no doubt that many farmers have already benefited and will continue to benefit from the irrigation schemes. Serious doubts must be raised, however, about the overall balance of benefits to the affected communities, and these are not only the ones within the irrigated areas, but also those displaced by the reservoirs, and affected by the reduction in water, downstream from the dams. Structural features of social organisation also cause the incidence of benefits and costs to vary greatly within the irrigation communities themselves. Wallace has discussed this in some depth for the Kano River Project (1979, 1980, 1981). Let us recall some main points adding evidence from our own material.

Losses of Land and Production

Irrigation schemes are supposed to raise the productivity of land. But they also destroy fertile land. Most conspicuously this is done through the inundation of large areas upstream from the dam. In the case of Bakolori, for example, the reservoir has submerged an area of some 8,000 ha, much of it highly fertile, extending some 19 km upstream. Forty-three villages with a population of at least 13,000 were affected, according to project estimates (SRBDA 1982c). These people have been resettled, most of them in two large villages, New Maradun and Gidan Dan Kano, without access to arable

land. They have been deprived of their basic source of living. Their grievances contributed importantly to the Bakolori rebellion. The settlements when we visited them in 1982 and 1983 were partly ghost towns, with much of their population scattered in all directions in search of alternative sources of income. Roughly the same number of farmers were displaced by the Tiga dam on the Kano River, according to Wallace (1979:46ff).

Farmers within the irrigation areas have also lost land, as a result of permanent works, canals, access roads, service areas, pumping stations etc. Officially, such losses were supposed to amount to some five per cent of the land. At Bakolori, however, an internal project report states that they are in the order of 20 per cent, or some 4,500 ha (MRT 1978b:4).

These are permanent losses. But temporary losses as well as the land reallocation exercise itself have had serious impact on output and income. In Bakolori, farmers were prevented from cultivating land in the project area for three consecutive wet seasons because of construction, land preparations, and delays in reallocation. The latter exercise has been and continues to be subject to much controversy. Original land registers compiled by the project were highly inadequate. The scope for arbitrariness, injustices, and corruption has been considerable. The Survey Engineer complained that his office was constantly beleaguered by farmers claiming that they had not been given any land back at all, or much too little (interview Dziubak 1983).

The combined impact of these losses of land and crops has had a disruptive impact on the farming community as a whole. Many have left, but new people have also moved in, buying land or making clandestine deals with project staff.

In the South Chad area, population density is less, and no farmers were displaced as a result of the reservoir, which in this case is the lake itself. Although there has certainly been disruption of the farming economy, those to suffer most are those who depend on cattle, both within and outside the area. Cattle are central to the regional economy, but feasibility economists did not consider the integration of livestock in the irrigation schemes to be sufficiently attractive financially (MacDonald 1973:39; see also CBDA 1978a:100ff and UNDP 1980 vol. 1:3ff).

The South Chad case is the most serious one in this respect, but the cattle economy was similarly ignored in the other two projects (cf. Wallace 1981:5 and Bullen 1978:90). The disruption of a broader, regional livestock economy underscores the need to look beyond the population of the project areas as such when examining the impact on production and incomes. The case of the downstream farmers is another case in point.

The Impact on Downstream Agriculture

Before the first rains come, even large rivers like Sokoto, Rima, Kano and Hadejia, virtually dry up. As the rains set in, water accumulates and flushes down the river beds, overflowing and inundating large tracts of land, including natural depressions capable of retaining water and soil moisture for long periods. This annual flooding is crucial to the pattern of cultivation in some of the most fertile and densely populated areas of the basins. Some parts

are turned into swamps suitable for rice, as in Lower Rima and mid-Hadejia. In other parts, overflowing rivers allow for intensive cultivation with water from ponds and wells at quite some distance from the river beds.

This pattern is dramatically altered when large dams and reservoirs are established in the upper reaches of the rivers. While the dams allow for a permanent all-year water flow, floods, as well as the overall volume of water going downstream, are greatly reduced. The implications for downstream agriculture may well be of a magnitude which fundamentally upsets the narrow cost-benefit calculations of the feasibility economists. In the case of Kano-Hadejia, the downstream effects have been discussed by Stock (1978); for Sokoto-Rima by Adams (1981, 1983).

In the case of Bakolori, planners sought to accommodate downstream interests by allowing for surplus reservoir capacity which was to be reserved for releases to downstream users (FAO 1969 vol. 1:10, 40ff; Impresit 1974 vol. A1:21f, 56f). The latter, it was argued, would in this manner be protected from irregular and untimely natural floods. The assumed downstream benefits were based on no investigations whatsoever into the actual system of agriculture in the affected areas. Furthermore, as we pointed out in chapter 7, the water surplus for such releases was gradually eliminated from project calculations. It has also been pointed out that the dam design itself does not allow for the type of short, big flushes, which could simulate natural floods.

Whether or not releases could be made, it is inevitable that the dams and reservoirs lead to a drastic decline in flooding with far-reaching implications for producers who depend on it. Adams speaks of major losses in production as a result of a shift to less water demanding crops being necessitated and because of the reduction in the area for higher value crops.

Our sources do not allow any attempt to estimate the size of downstream losses in income and production. In the Sokoto Valley, Adams' survey suggests that the areas negatively affected are certainly much larger than the net gains of irrigated land in the project areas (Adams 1981:14). Palmer-Jones (1983), on the other hand, argues that downstream losses may be compensated for by benefits from controlled flooding. A more regular, all-year flow may bring some new opportunities, especially to farmers with land very close to the river beds. A more reliable supply of water for household purposes during the dry season is, of course, also a gain.

The Balance: Rural Incomes and Food Security

Whatever weight is attributed to the downstream factor, it is clear that net gains in crops and incomes from irrigation must be offset against major losses, both within and outside the project areas. The feasibility economists either ignored such losses entirely or assumed that they would be easily outweighed by dramatic increases in productivity and income from irrigation. As we have seen, the rosy expectations resulted from a combination of gross underestimation of pre-project production, the ignoring of off-project effects, and fanciful calculations of project benefits.

Closer studies may be able to establish the overall net gains and losses in terms of total output and farmers' incomes. Even if the balance were to be positive, it would necessarily be an aggregation of losses and gains which are highly unequally distributed. How do we 'balance', for example, in terms of rural welfare and development, the losses of those displaced by the reservoir against the gains made by successful irrigation farmers? Or how do we balance the gains of the latter against the losses of cattle rearers and downstream communities?

As a strategy for 'rural development' such discrimination between and within different communities has little to commend itself. The unquestionable gains of *some* project farmers must therefore be seen in the light of the losses of so many others, inside and outside the project. But we must also ask, of course, at what price to the national economy such net gains are obtained. How many naira does the Nigerian government spend for any one additional naira earned by a 'successful' irrigation farmer?

Much of this chapter has been preoccupied with establishing the dimensions of the massive subsidies involved. Only marginally can this giant outlay be treated as a subsidy of *farmers'* incomes. The great bulk is absorbed by payments for technology, equipment, and services which contribute little to the growth of either production or farmers' incomes.

We argued in chapter 6 that the great Sahelian drought provided decision-makers with additional arguments in support of investments in irrigation in the far North, the areas most directly affected by the drought. Could not these investments be justified by the need to provide *regional crop security* for such exposed farming communities? From their point of view, it is hardly an argument that investment in rainfed agriculture in areas where rainfall is more reliable yields better returns in terms of the *national* food economy.

While this may be a good general argument for investing in irrigation and water control in drought-prone areas it is hardly a case for the wheat schemes as actually designed. The schemes are not only irrelevant but positively harmful to the food security of the far northern communities. This is partly as a result of the orientation of the schemes towards the production of commercial crops of little relevance to the food deficits of the regions themselves. The attempt to outlaw the basic staple food of the area (guinea corn) in order to make room for wheat is only the most extreme case in point.

More generally, the whole design of the system ties farmers to external markets through the necessity of buying inputs and services from the project, with or without credit. This in turn leads to obligations to sell produce to project buyers, state marketing organisations, and processing establishments. The conflict between local food needs and the commercialisation of production is well-known all over the world, and does not need further elaboration here (see, for example, Moore Lappé and Collins 1977). Of special interest in this case, however, is the particular logic of commercialisation characteristic of such high-technology irrigation projects. The size of the investment forces management to give priority to maximising commercial surplus.

The project areas are likely to become deficit areas also in normal years in terms of local food crops. The manner in which project services discriminate against such crops makes adequate responses to drought situations more difficult. The projects also affect, as we have seen, the food economy of the wider regions in which they are located, including the livestock economy and the downstream communities. The Zaria Wheat Committee points out that droughts would exacerbate the conflict over water resources between projects and downstream users (AERLS 1979:33).

The conflict between irrigation schemes and food security in the wider regional economy is raised, interestingly by a UNDP (1980) report on agricultural development in the Lake Chad Basin. Unlike the project and consultancy reports criticised in this study, this one recognises the food deficit which *already exists* in the basin, and which is likely to grow with population growth, urbanisation, and other non-agricultural developments *within* the region. The report emphasises that only a minority of the farmers would benefit from irrigation: 'Without substantial projects in rainfed farming (and in animal husbandry etc) a majority of the rural people would hardly benefit from the development effort' (UNDP 1980 vol. 1:5). The report speaks of the need to build up regional food reserves as well as to provide finance (from outside) for importing food into the region at times of poor rainfall. The report does not challenge current irrigation strategies, but shows how these are likely to aggravate rather than alleviate regional food problems (same:25ff).

5. In Whose Interest?

The production of wheat in Nigeria makes no sense from either a national or a local perspective. It is a massive waste of resources, unlikely to achieve either a significant rate of import substitution or foreign exchange savings. Nor has it much to offer in terms of 'average' net benefits to the rural communities which are directly or indirectly affected by the wheat projects.

As we shall discuss in the concluding chapter, the implications for food production, rural incomes, and the national economy are even more serious as the illusion of import substitution obstructs alternative strategies for tackling the reliance on cheap imported food. It obstructs a genuine development of domestic food production and rural incomes.

We conclude this part of the study by asking why it is that the policy of import substitution has been allowed to absorb all these resources, despite the blatant national and local diseconomies involved.

A common way of explaining bad policy is to refer to the quality of the policy-making process and the policy makers themselves. From such a perspective, Nigerian wheat policy could be explained as a result of bad planning, insufficient preparations, miscalculations, lack of relevant expertise, misinformation about local conditions etc. The explanations could be formulated more or less charitably, stressing either incompetence and recklessness

or – with greater 'understanding' for the problems of 'new nations' – the difficulties facing inexperienced administrators.

We are not satisfied with explanations in such terms. This is not because they are necessarily wrong, but because they are not sufficient. We are more concerned with factors which motivate people to go ahead in a particular direction, despite limited experience, information, and competence. What is it that makes decision-makers in firms and governments decide that such limited information etc., is sufficient for their purposes? Why is it that information which is supportive of a particular solution manages to make itself available, while that which is not fails to do so?

It is quite possible that individual decisions, as for example, to build a dam, may be motivated by the personal vanity of a military governor. Yet our concern is less with the logic of the individual decision-maker than with the social rationality which makes such decisions possible and which gives them a particular social form and content.

In discussing the commitment to irrigation in chapter 6, we referred to explanations which emphasise the penetration of foreign agri-business on the one hand (Oculi), and the aspirations of domestic elites, on the other (Palmer-Jones). Our material lends ample support for both, including evidence of the manner in which foreign firms and Nigerian bureaucrats and politicians collaborate in the exchange of favours and support.

The systematic underestimation of costs and problems, on the one hand, and the overestimation of benefits, on the other, have served the marketing strategies of those who trade in projects and the related hard- and software. But these are not simple hit-and-run strategies where a mere blending of the right amount of bribes and fraudulent feasibility economics will play the trick. In the case of Impresit, we saw how its involvement in irrigation is only one element in a range of mutually supportive investments in Nigeria by the Fiat group of companies including a tractor assembly plant. It is a long-term strategy where Fiat has an interest in surviving and expanding in one of the potentially most important markets in the Third World.

The manner in which projects are designed and marketed does not primarily reflect reckless, short-term salesmanship. It involves also basic assumptions about appropriate solutions to 'problems of national development' which are inherent in the structure and mode of operation of advanced capitalist firms. It does not mean that all firms have the same strategies or are equally competent in looking after their own long-term interests.

The projects reflect simultaneously the aspirations of an emerging ruling class whose understanding of development differs little from that of the firms. The distortions brought about by corruption in the relations between external and internal actors may have serious consequences, but do not in themselves explain the general orientation of the projects.

The projects are supposed to work. They are not mere dumping grounds for expensive technology. If they do not produce, a wide range of interests, foreign and domestic, are threatened. We interviewed the manager of INC (Il Nuovo Castoro) in Rome, the Fiat subsidiary responsible for the design

of Bakolori. He claimed that they had pleaded with the Sokoto-Rima authorities to allow them to take over the management of part of the project in order to demonstrate that it could be operated economically and efficiently (interview DiPaolo 1982). As a proof of their faith in the inherent profitability of the scheme, they have offered to do so without charging a management fee.

The Bakolori project is only the first major Fiat project in Nigerian agriculture. A number of others are in the pipe-line. It must therefore be made to work or, at least, it must be made abundantly clear that the fault is not with design or construction but with the government which fails to provide adequate management.

The primary obstacle to the solutions offered by foreign agri-business are the social relations of production which exist in the areas where they establish their projects. The solutions demand economies of scale and effective control over the labour of the primary producers, whether workers or tenant-farmers. The solutions are fully compatible with the notions of modernisation held by the domestic ruling class. The latter as well, see the backwardness of peasant production as the principal obstacle to progress in agriculture.

Both international capital and the domestic state have over-estimated their capacity to enforce the rationality of advanced technology in a peasant context, although one should not minimise the extent of their 'success', including the eviction of large populations from the reservoir areas and the monopolising of the water resources of entire river basins. No mean achievement!

The irrelevance of the projects to rural welfare is not an accidental consequence of 'lack of planning' or 'lack of information', for example, on land tenure or downstream conditions. The primary logic of the projects is to replace existing social organisation in order to achieve a 'more efficient' way of producing and extracting an agricultural surplus, to meet needs outside the areas.

The obstacles confronting this strategy of surplus extraction are not limited to the peasantry. The very organisations which are set up to manage and implement the schemes are riddled with difficulties. They reflect the nature of society at this stage, including the poor self-control of the bureaucracy and its inability to enforce its rules, not just on peasants, but on itself, including its own managers and the workers who operate and service the tractors, pumps, sluices, and other installations and equipment.

The difficulties of management and control, which account for much of the poor performance, are again not accidental. They are built into the strategies for social transformation which the projects represent. They are part and parcel of an ongoing struggle where the agents of advanced technology seek to ensure the preconditions for its expanded reproduction in new territories.

The international firms have their own models for handling these difficulties: models of commercial estate management which are presumed

in the design and cost-benefit calculations of the schemes. The state managers of irrigation schemes have their own varieties of these models. Both assume the effective subordination of workers and peasants to the requirements of capital and advanced technology.

It is an ongoing struggle where the position presently is an unproductive, wasteful stalemate. State and capital, foreign and domestic, will very likely continue in their efforts to impose their own solutions. More land, for example, will be taken over and given out to private companies, local or foreign. Farmers, officials, and workers will all attempt to make the most out of existing installations and resources, including bringing as much land as possible under irrigated cultivation. Most important is the ongoing process of transformation with roots in the peasantry itself, including the accelerated commercialisation of land and labour, which may bring about social relations more in tune with the logic of the projects.

What future has wheat in these schemes? It continues to provide justification for the massive investment in irrigation. Its presence in the schemes also offers continued support for the myth of wheat import substitution. As such, it cannot be readily abandoned, and there are powerful interests, including the international wheat traders, the flour millers, and all the domestic commercial, bureaucratic, and political actors (not forgetting the academic) who have a stake in the survival of this myth. The establishment of flour mills near the projects serve to entrench wheat production on the schemes. With the mills just around the corner it becomes more difficult to shift to a less uneconomic pattern of cropping and water utilisation.

Wheat stands in the way of a more rational and economic way of making use of existing project resources, including, for example, a greater emphasis on supplementary, wet-season irrigation, with more room for crops which are at home in this environment. It is important that the myth of import substitution is exposed also in order to facilitate such a shift.

9. The Nigerian Wheat Trap: Conclusions

Introduction

Nigeria is trapped between the growing dependence on North American wheat on the one hand, and the illusory policy of import substitution on the other. Our study has sought to establish the anatomy of the trap and the reasons why the effort to solve the problem by growing wheat in Nigeria is self-defeating. We have been concerned with identifying the factors which have served to entrench wheat. We have argued that they contribute to the underdevelopment of the Nigerian economy and agriculture in particular.

This concluding chapter summarises the factors which reinforce dependence and make disengagement more difficult. It discusses how the process of entrenchment can be understood in terms of general theories of underdevelopment in the Third World, especially theories which suggest that external dependence obstructs the development of domestic production.

It is easy to identify policy measures which would bring an end to wheat imports. But what are the political preconditions for such policies? If food imports are so entrenched within the institutions of the ruling class, who is going to take the necessary steps to restrict them? We emphasise in this chapter the role of the working class in defending continued food imports. We discuss the preconditions for working class support for a policy of disengagement.

We conclude by discussing alternatives to bread, both in terms of direct substitutes, and, more generally, in terms of the prospects for domestic food production and self-sufficiency. We end on a reminder that the problems of food go beyond the problems of imports and import substitution which have been the focus of this study.

First, however, let us summarise the argument as it has been developed so far, starting where we ended, that is, in the failure of wheat import substitution.

The Wheat Trap: a Summary of the Argument

1. Imported wheat cannot be substituted on any significant scale by wheat

grown in Nigeria. Domestic wheat faces major natural and social constraints which reinforce each other. For wheat to grow well over wide areas, a number of technical and social preconditions must be met. The problems of establishing and maintaining these are staggering and so are the financial and social costs involved.

2. Even if the technical and social constraints which are now restricting the area under wheat could be removed, the cost of wheat import substitution is likely to be excessive. For the foreseeable future the price of Nigerian-grown wheat can be expected to be several times that of imported wheat. No foreign exchange savings are likely. The foreign exchange content of domestic wheat exceeds the price of imported wheat.

3. The policy of wheat import substitution provides justification for heavy public investment in irrigation schemes which are basically irrelevant to the problems of food deficits in the Nigerian economy. They constitute a massive misdirection of resources which could be used more productively elsewhere in the economy (including support of rainfed agriculture).

4. The illusion of wheat substitution has also provided justification for the continuation of large wheat imports, which have been treated as temporary, waiting to be replaced by domestic wheat. Other strategies to deal with the rising wheat imports have been ignored. Flour millers and bakers have been allowed to establish themselves without restrictions on the fictitious assumption that they will ultimately process domestic wheat. In practice, they entrench the dependence of the economy on imported food.

5. The continued massive importation of wheat, encouraged by the illusion of wheat import substitution, undercuts the market for domestic food producers. It obstructs domestic solutions to the food deficits which have followed in the wake of the transition to a petroleum economy. The competitive strength of wheat is first of all related to its cheapness. A high rate of domestic, oil-induced inflation has further widened the price differential between local and imported food.

6. Domestic food production is also undercut by the development of new consumption patterns related to the restructuring of the economy: urbanisation, labour migration, changing family structure etc. Bread is well adapted to the accompanying rise in the demand for fast, pre-cooked, portable food. Its availability reinforces the shift in demand and pre-empts the potential markets for local food processing based on domestic staples.

7. Over 90 per cent of the wheat imported into Nigeria comes from the USA. Wheat has become an important foreign exchange earner for that country. It is also a foreign policy tool of much political potential. A high level of concentrated transnational corporate power in this trade is therefore also actively supported by the US government.

8. The importation of wheat is accompanied by the rapid diffusion of advanced processing technology, in milling as well as baking. It greatly enhances the competitive force of wheat in an economy where domestic food processing is highly labour intensive and closely tied to the household economy.

9. Wheat flour milling, by drawing on standardised bulk supplies from the world market, maximises economies of scale. This is in sharp contrast to the fragmented pattern of supplies on which the domestic food market depends. The economies of scale lie in the bulk transport and trading system (cheap shipping, in particular) as well as in the processing technology itself. As a result, the cost of bringing domestic crops to final consumers in a processed form are higher than bringing them all the way from North America.

10. The economies of scale in flour milling, using the most advanced technology available in the world market, feed into a highly flexible, lower-level technology in the bakery industry. A wide range of enterprises, from simple mud-oven bakers to fully automatic, electric bakeries, coexist and compete in the same market.

11. Mud-oven bakers spearhead the bread business in remote rural areas and open up new territories for more advanced producers with their basis in the towns. As electric bakers flood already established markets producers at all levels are pushed out in search for new ones, ensuring that increasingly inaccessible communities are exposed to the new consumption pattern.

12. As they struggle among themselves to protect and expand their markets into the hinterland, the bakers pull the millers along with them. The bakers form strong pressure groups for the establishment of local mills in the hope of improving their access to wheat flour.

13. The present (1983–85) economic crisis has brought to a halt the rapid diffusion of regionally based flour mills. Some of the already established ones have faced difficulties in ensuring adequate supply of imported wheat. The spread of smaller regional mills, however, is evidence of the consolidation of the nation-wide penetration of the imported wheat economy. Bread is no longer the food of the major cities and the South alone.

14. The establishment of new flour mills and the expansion of old ones have also been legitimised by the policy of industrialisation. Local processing of imported wheat is seen as a progressive step as compared with the continuing importation of already processed flour. The presence of the mills, however, makes it more difficult to scale down imports. Dependence on imported food is built into the industrial structure of the economy.

15. The spread of flour mills into the hinterland draws support from regional planners and industrial lobbies. The need to decentralise industrial development is in line with progressive ideas of national development. The centralisation of economic command brought about by the new military regime may possibly constrain the further diffusion of mills.

16. The location of wheat mills close to the irrigation schemes makes it more difficult to shift the production schedules of these schemes away from wheat. The mills serve to legitimise the continued commitment of scarce irrigation resources to the wheat growing schemes. The latter, in their turn, help to justify the diffusion of wheat imports into the populous north-eastern and north-western states. The mills serve as bridgeheads for the international wheat traders with the active support of the state, including finance.

17. At a lower level, state finance is involved in assisting in the diffusion of bakeries, which has become a favoured field for government-sponsored, small-scale industrialisation schemes. It is in line with official ideas about industrial development 'from below', and the need to tap flourishing entrepreneurship and generate employment at this level. State institutions also invest directly in this profitable business, buying technically more advanced units from foreign firms on a turn-key basis.
18. The state bakers are particularly well placed to capture the special markets which have been established in state institutions, schools, universities, and military establishments. Schools are powerful channels for the diffusion of the new consumption pattern. Direct state involvement in these captive markets provides additional support.

Why Nigeria Has Been Trapped

Why is it that a growing proportion of Nigeria's population depends on food which has to be imported from the advanced capitalist countries, and the USA in particular? Why is it that Nigeria's policy of import substitution only serves to further entrench this dependence?

Explanations have been offered at two levels. Firstly, there are the causes of the general food shortage itself, arising from the expansion of the petroleum based economy on the one hand, and the constraints facing domestic food production on the other. There has been a dramatic shift in economic activity away from agriculture. Changes in social organisation and consumption patterns give rise to specific shortages.

The second set of causes concerns the factors which push Nigeria into seeking world market solutions to the problems of such shortages, and, in particular, serve to entrench the dependence on imported food. In this chapter we discuss primarily the forces of entrenchment ('the logic of underdevelopment'). Let us first summarise briefly the more obvious causes of food dependence: the food shortage.

The rapid growth of food imports after 1970 may be taken as evidence of food shortage. It is not necessarily that. New patterns of demand, following in the wake of rapid, oil-induced growth of towns and wage employment, favour imported food like wheat and rice without necessarily being evidence of food shortage. Cheap imports may similarly shift demand away from domestic food without the latter being in short supply. New consumption patterns and cheap imports, as we argued in chapter 2, thus have an independent role in explaining the rise of food dependence. The sharp rise in domestic food prices, over and above prices in general, however, suggests real shortages, rather than a mere shift towards new sources of supply. The manner in which real deficits can be expected to interact with such structural shifts, on the other hand, should caution us against using the figures for food imports as measures for the shortfall in domestic food production.

That real food shortages developed should, of course, surprise nobody.

The 1970s witnessed, as we have outlined, a rapid growth in the non-agricultural population, triggered off primarily by the spending of oil money by the state. Labour was pulled out of agriculture and a declining number of producers were left to feed a greatly inflated number of non-producers. How shall we understand their 'failure' to do so? Is it evidence of the backwardness of the peasant economy? Is such backwardness the ultimate reason why Nigeria has been caught in the wheat trap?

Not at all. The food shortage cannot be taken as evidence of the failure of a backward, stagnant peasant economy to respond to new markets. On the contrary, as we shall discuss further below, there is much evidence of an active response. The gap, as we see it, arises partly from the excessive rate by which the non-agricultural population has been allowed to expand, largely due to the rather reckless manner in which the state has pumped oil money into the economy. But we also stress the changing structure of demand itself, and the openings and competitive advantages which have been created for new types of imported food and bread in particular.

Food imports help to structure demand in the direction of commodities which cannot be supplied by domestic agriculture. They obstruct the development of local products and processing techniques which could be better adapted to the new structure of demand. They slow down the process of commercial transformation and technological change and they deprive domestic food producers of incomes which would not only improve levels of earnings in the rural economy but expand the market for domestic industry in general.

Myths of domestic agrarian stagnation (backward peasantries, the 'lights of the cities' etc.) help to justify the continuation of these massive food imports, presumably as a stop-gap measure, while waiting for the fanciful and expensive development schemes pushed by state and international capital to 'revolutionise' Nigerian agriculture.

The Logic of Underdevelopment

The case of wheat in Nigeria is a case of underdevelopment. We use the term in the sense of radical underdevelopment theory (A.G. Frank, Samir Amin etc.) to mean a process where the development of production in Third World countries is obstructed by their mode of integration (in a subordinate position) in the world capitalist system. Underdevelopment in this sense is not an original state of backwardness which all societies have experienced but something which emerges ('the development of underdevelopment') as a result of colonialism and other forms of imperialist domination (Brewer 1980).

This position has in recent years come under attack from some Marxists. The critics claim that it fails to explain the development of production and the advancement of productive forces, which actually take place. The nature of the relationship between imperialism (foreign economic and political

domination) and underdevelopment has been questioned. Is it true that subordinated integration in the world economy holds back the development of production? Or is it more correct to claim the opposite: that imperialism promotes the development of production in the Third World, including the expansion of internal markets, and the transformation of social relations of production (Warren 1980)?

We agree with much of the Marxist critique. There is a tendency, however, to throw out the baby with the bathwater. It is a failure to recognise that capitalism, in the course of its expansion into new territories, generates contradictions which obstruct domestic production (Beckman 1980, 1981, 1982, 1983). This is obvious in much of the colonial experience. In the Nigerian case, for example, it can be shown how domestic manufacturing was held back by colonial monopolies, despite the rapid growth of a domestic market (Kilby 1969). But also in the post-colonial situation, externally-oriented solutions hold back national development.

The relation between these two sets of contradictory impulses (expansion-stagnation) is central to the theory of imperialism, of which underdevelopment theory is one contemporary manifestation. The wheat trap highlights some of the issues involved.

At one level, the wheat trap offers evidence of expansion. There is the exceptional growth of the milling and baking industries in the wake of oil exports and wheat imports. The flour mills represent highly standardised and internationally controlled technology. Yet this growth cannot be reduced to a question of advanced, foreign enclaves. The 'forward linkages' are strong. The mills are linked to a flexible, adaptive, and partly indigenous technology in the bakery sector. It demonstrates how externally induced industrial growth succeeds in mobilising local resources and entrepreneurship.

At another and more fundamental level, however, the wheat trap demonstrates the link between such externally induced forces and the obstruction of domestic agriculture. It is thus a contradictory process. Flour mills and bakeries are tied to a commodity which cannot be effectively produced domestically. But the absence of a 'backward linkage' to domestic agriculture is not enough to support the underdevelopment thesis. Historically, food imports can be shown to have played a useful role in the development of countries which are presently industrially advanced. Labour was released from low-productive agriculture and made available for industry. Cheap imports held down the cost of labour and thus promoted the expansion of industry.

Such experiences may still be relevant for some Third World countries engaged in successful export-industrialisation. For most, however, they are not. The capacity of modern industry to absorb 'surplus' rural population is very limited. In most countries, including Nigeria, industrial production is primarily for domestic markets and is certainly not able to pay for food imports. The feeding of the domestic working class, including the control of wages, therefore depends primarily on the development of domestic

agriculture. The low productivity and limited purchasing power of the mass of rural producers are simultaneosuly major constraints on the expansion of domestic markets for manufactured goods. It is in that context that the entrenchment of food imports at an increasingly massive level contributes to underdevelopment: a process which makes genuine advances in industry as well as agriculture more difficult.

The Entrenchment of Food Dependence

The critical question to answer is why food imports are entrenched, despite their 'dysfunctional' role in the development of the national economy. Underdevelopment theory suggests that we should look for answers in the manner in which a society is integrated into the world economy at the level of production, class formation, and the state. Explanations can be offered both in terms of the interests of those who make the decisions and in terms of the logic of the system in which they operate. Those who make money from importing, processing, and distributing wheat and wheat products are close to those who control the allocation of public funds, and regulate imports and investments. They are certainly much closer than those who make a living from producing, processing and distributing domestic food crops. But it is also a question of the resources and the technologies, which can be mobilised behind particular 'solutions' to the food problem. The food importers, on their side, can draw on a world market and on transnational business organisations ready to supply large quantities of food at short notice. They co-operate closely with those who, equally swiftly, supply advanced processing technology designed for such imported crops.

Over the past decade, this system has been able to inject millions of tonnes of wheat into the Nigerian economy through the decisions of a small number of firms and individuals. Many of the decisions have, in fact, as we have shown, been taken by the management of one single firm, the Flour Mills of Nigeria, which dominates the Nigerian wheat market. Its role as a subsidiary of a US-based shipping and wheat trading company underscores the transnational ties which shape such solutions to the food problem.

In contrast, the domestic system for supplying food involves hundreds of thousands of individual producers, traders, and transporters. The flow of produce faces numerous bottlenecks at all levels, including new requirements for storage and processing necessitated by a rapid shift in the structure of demand.

The control over superior technology and organisation at all stages of the process, from farms to final consumers, places wheat traders, millers and bakers in a superior position vis-à-vis the local food trade. Much of it is a question of logistics, the capacity to handle bulk with speed. As a result, those who are in the wheat business are in a position to capture expanding markets long before local producers and traders have had a chance to respond. In the meantime, demand itself is restructured in the direction of

the standardised commodities of a vertically integrated, transnational food industry. Market access for genuine domestic substitutes is obstructed.

At the bottom lies the uneven development of productive forces on the world scale that gives US wheat its original 'comparative advantage'. But the crucial factor is the organisation which makes this wheat available in the Nigerian market place on such superior terms.

Still, this does not explain why billions of naira are spent on importing foreign grains rather than buying food from local producers. If there were no food imports Nigerians would no doubt feed themselves. Prices would certainly be higher, but high prices can be expected to pull more local produce into the market. Nor do such comparative advantages explain why hundreds of millions are invested in establishment of a processing capacity exclusively linked to imported grains rather than to local produce, and why so much is poured into large-scale irrigation schemes with only marginal relevance for the mobilisation of Nigeria's food production potential.

The advantages of bread, its convenience, social attraction, relative availability and price can only be understood in the context of a social organisation which gives priority to imported solutions, despite their counterproductive consequences for the national economy. It is not primarily a question of superior systems of production and marketing, but of the social forces controlling them. The nature of that control explains why the resources are mobilised behind wheat rather than behind domestic food crops.

The controlling forces are made up of firms, businessmen, public institutions, bureaucrats and politicians who make money out of wheat, either directly or through the class to which they belong. The Nigerian ruling class is connected to the wheat business in a multitude of roles, as share owners, managers, importers, commission agents, distributors etc. But it is not just a case of direct individual or corporate interests and profits. There is also a ruling class model of development which favours technologically advanced, corporate solutions. Such solutions provide the structures within which the ruling class reproduces itself and expands its own frontiers.

Conversely, the direct gains which may accrue to this class from efforts to raise the productivity of peasant agriculture are not very tangible. Alternative, ruling class models for agricultural advance (large-scale, 'modern' farms) are bound, simultaneously, to have only a marginal impact on overall output in such a peasant dominated environment.

There is nothing surprising about ruling classes promoting their own interests and their own models of development. Nor is it surprising that these pursuits bring them into conflict with subordinate classes. What needs explanation is rather why ruling class interests come to be defined in such a narrow manner as to bring them into conflict with the long-term transformation of production. One expects the Nigerian ruling class to have a self-interest in the accelerated commercial transformation of peasant agriculture for a number of reasons, including the need to hold down wage-costs, expand domestic markets, save foreign exchange, constrain the 'rural-urban drift' etc. Similarly, foreign capital, in a general and abstract sense –

should also have an interest in such transformation for much the same reasons. The World Bank strategy of 'integrated rural development', so actively pursued in Nigeria, may in fact be taken to represent such broader, longer-term objectives of the Nigerian state as well as of international capital (Beckman 1985b).

The wheat trap demonstrates the ambigious character of the Nigerian state, being simultaneously committed to long-term strategies of capitalist transformation and to short-term solutions to immediate problems which obstruct such strategies. Powerful foreign economic interests push Nigeria deeper into the trap. But they can enlist the full cooperation of the Nigerian state and a wide range of domestic social forces. The dependent, neo-colonial or comprador features of the Nigerian state and ruling class are exposed, to use concepts particularly associated with underdevelopment theory. The wheat trap reveals the extent to which the Nigerian bourgeoisie, inside and outside the state apparatus, continues to serve as an intermediary for foreign interests in ensuring their access to Nigerian markets (Beckman 1985a).

The success of the wheat interests in influencing public policy reflects simultaneously the weakness of the agrarian basis of the Nigerian state. There are no organised agrarian political forces capable of claiming state protection against the advances of the transnational food industry. Although petroleum has greatly enhanced the economic basis of the state, the bourgeoisie continues to expand primarily through a complex pattern of partnership with foreign firms, where the main contribution of the Nigerian, junior partners is to facilitate access to markets and contracts. The wheat business is a case in point.

From this perspective of class and state power, the wheat trap demonstrates not so much the comparative advantage of American wheat, as the extent to which transatlantic wheat interests with their primary base in the US and their special access to the Nigerian ruling class have succeeeded in structuring Nigerian food policy at the expense of national production.

Stopping the Wheat Imports

The massive importation of wheat contributes actively to the underdevelopment of Nigerian agriculture. The imports must be stopped if Nigerian farmers, traders, and food-processing industries are to be allowed to respond productively to the changing pattern of demand. This again is one important precondition for an increase in rural incomes, which is an objective in its own right, but also important for the expansion of the domestic market for manufactured goods.

of the domestic market for manufactured goods.

In the Nigerian context, whatever import substitution is achieved by growing wheat locally is likely to be marginal, at least at the present (or higher) levels of consumption. A policy for stopping wheat is therefore first of all a question of tariffs and licensing. A combination of import

duties and licences could remove the competitive advantages of wheat products in the Nigerian food economy. As imports go down and prices go up, bread would be pushed back into its original role as a luxury food, something to be enjoyed perhaps on special occasions, but not relied upon as a significant part of the overall diet.

In such a context, some limited domestic wheat production could perhaps be justified, on similar grounds as the local production of raw materials for breweries and tobacco factories. But not necessarily. It would depend on the alternative productive uses to which the present wheat schemes could be put, as well as the foreign exchange costs of domestic wheat. Such factors may suggest that importing wheat, at this greatly reduced level, may make more sense than domestic production, from the point of view of the rational utilisation of national resources.

The Zaria Wheat Committee envisaged a combination of support prices for domestic wheat and import duties to protect local production (AERLS 1979:88ff). The expressed intention was that consumers, ultimately, would be made to pay the full cost of domestic wheat and that the latter would be protected at a price level which would allow for this. In view of our survey of production costs in chapter 8, it should be realised that such a policy, if put to actual practice, would effectively price out wheat products from the every-day diet of most of the present consumers. It would thus be less of an import substitution policy than a policy for eliminating wheat as a mass consumers' item.

Was this the intention of the Wheat Committee? We doubt it. Individual members of the Committee may have seen it in this way, but the possibility of a drastic reduction in consumption is not spelt out. There is rather an uncritical acceptance of the government's assumed wheat policy and of the massive investment programme for wheat growing schemes.

Whatever degree of import substitution is eventually considered, the present public commitment would have to be urgently reviewed. It would have to be done within the framework of an overall review of irrigation policy. Present investments in this sector can be seriously questioned on many more grounds than those related to wheat import substitution alone.

An embargo on the establishment of new flour mills would, of course, be an early measure in any policy to constrain or stop wheat. The recent spate of contracts and plans for new mills makes the need to consider such an embargo particularly urgent, although the current foreign exchange squeeze may have blocked implementation. Installed wheat-milling capacity could be phased out in step with the planned reduction in consumption. For this purpose, the Federal Government may have to ensure full government ownership control in those mills where this is not the case already. The mills could perhaps be assisted in adjusting their capacity to handle domestic crops, especially maize. The recent rapid increase in commercial maize production should allow, for instance, for a shift in industrial milling from wheat-based to maize-based semolina.

The existing milling capacity cannot in itself be the yard-stick for the

level at which wheat imports should be allowed to continue. This would be to concede victory to the wheat-importing interests, for which the mills have served as bridgeheads. The cost of not fully utilising already installed capacity, must as in the case of the wheat growing schemes, be weighed against the cost of continued imports, including the detrimental impact on domestic agriculture. From the latter point of view, there is a far greater reason to worry about the numerous groundnut, palm produce, and cotton processing mills which have been left idle because of the lack of local raw materials. In comparison to that problem, the under-utilisation of processing capacity based almost entirely on imported grain seems to be a minor one.

The further importation of bakery equipment could be stopped. But as restrictions on the import and milling of wheat start to bite, such an embargo would no longer be necessary. Replacements and fresh investments could be allowed at a level commensurate to the reduction in consumption. There might be a strong case, though, for protecting local, labour-intensive bakery technology against further importation of more automated technology, also at such reduced levels of consumption.

Present policies of public, financial, and technical support for the bakery sector should of course be discontinued, not to speak of further direct state investments of the Kaduna State Investment Company type.

It goes without saying that the public or commercial propagation of bread and other wheat-based products should be discouraged. The present massive advertising campaign pursued by the flour millers ('Join the Energy Feast – Eat Bread!') could perhaps be disarmed and turned into its opposite by pasting fresh texts across the existing posters reading 'STOP FOOD IMPERIALISM' or some similarly stirring slogan, capable of highlighting the issues at stake. Schools and public institutions, instead of offering bread and semovita, should propagate consumption habits which are compatible with national self-sufficiency.

Now, who is going to do all this? How far is such a radical shift of policy compatible with our understanding of the balance of social forces which have brought about the entrenchment of wheat in the first place?

The Prospects of Disengagement

Underdevelopment theory, of the varieties discussed here, suggests that only a radical disengagement from the world market can remove the factors which cause underdevelopment and create the conditions for self-centred national development. In the case of wheat, the arguments for breaking with the world market seem strong enough.

But who is to bring about the breach? Here we touch on the weak spots of underdevelopment theory, where it has opened itself to justified criticism for 'voluntarism', that is, for not identifying the social forces which can be expected to sustain a radically different policy. From where will the organised challenge come, capable of confronting and overcoming those

entrenched domestic and foreign interests which constitute the political basis of the wheat trap?

Much depends on one's understanding of the depth and ramifications of the entrenchment. How central is the wheat syndrome to the present Nigerian state? How critical is the role played by wheat in maintaining and reproducing existing power structures? We have argued elsewhere against attempts to use a simple neo-colonial or comprador model to explain the orientation of the Nigerian state (Beckman 1982, 1985a). In that context, we emphasised the common concern of sections of the Nigerian ruling class and international capital to transform Nigerian society on capitalist lines, including the technical and commercial transformation of peasant agriculture. The present policy of massive food imports is incompatible with such strategies, also from a ruling class perspective.

It does not mean that changes will come lightly. There is an obvious conflict between long-term strategies of capitalist development, on the one hand, and short-term, 'comprador' interests, on the other. It may well be true that the wheat interests are by now so effectively entrenched at the level of politics and the state that only major political changes can oust them from that position. But the balance of forces within the ruling class is difficult to assess.

The proclivity of 'comprador' tendencies to play havoc with national production plans in recent years is well illustrated with the case of rice imports, an issue closely related to that of wheat. Here we have witnessed how the Nigerian government has repeatedly undercut its own policy of achieving self-reliance in rice production, by indulging in occasional import sprees, including a scramble for licenses and distributorships among various sectional interests.

But the case of rice demonstrates also that the issue of whether or not to import grains in large quantities is not simply a conflict between short-term and long-term ruling class strategies of accumulation. Trade union organisations featured prominently among the rice distributors. At one level, this may be taken as evidence of the manner in which trade union bureaucracies themselves are integrated into the network of clientele relations which provide underpinnings of the Nigerian state. At a more fundamental level it reflects the dependence of the working class on imported food.

Food Imports and the Workers

Workers' interest in the continued importation of cheap food is as central to the wheat trap as the comprador syndrome within the ruling class. To workers as well as to other sections of the non-agricultural population bread has become a valuable, reasonably cheap and reliable part of the diet. In terms of numbers, the self-employed, the craftsmen, the petty-traders etc. constitute a larger group than the wage earners. In the present context, we

speak of workers partly as a short-hand in order not to have to keep on enumerating these other groups, some of which stand in a floating relationship to the wage earners.

But there are also substantive reasons for focusing on the wage-earning workers. More than traders and craftsmen, they are vulnerable to price increases. They cannot as easily compensate themselves by raising their own prices. But there is also the workers' higher level of organisation as a result of their place in production. The two factors taken together (vulnerability, level of organisation) enhance the political role of the workers and unions in the context of food policy. Only a minor portion of the workers are organised in trade unions. Yet the latter also articulate the grievances of non-unionised workers on such issues as food prices. They are about the only non-ruling class organisations which have a significant influence on the affairs of the Nigerian state.

The real income of the wage earners has become dependent on access to imported food. It is therefore natural that they should react strongly against attempts to tamper with the free flow of such imports. If deprived of their daily bread, workers are likely to take to the streets in protest, just as they do elsewhere. Witness for example the food riots in North African towns in late 1983 and early 1984. Radical political organisations and unions can be expected to support such efforts to protect real incomes. They are unlikely to be impressed by ruling class appeals to their sense of 'national responsibility' in support of reduced food imports, at least not as long as it is apparent that the ruling class is unrestrained in importing what its own members consider necessitites of life, including air conditioners, private cars, videos, and three-piece suites. Working class organisations could be expected to expose the hypocrisy of ruling class 'nationalism' in this respect.

The commercial wheat interests, foreign and domestic, can therefore count on working-class support in defending continued wheat imports, as well as protecting the myth of potential Nigerian wheat production that provides national, ideological cover for the imports. The direct involvement of unions in the rice racket indicates the scope for institutionalising popular support for a comprador line. The broadly-based bakery industry, with its mass of small entrepreneurs, proprietors and distributors, ensures additional mass political leverage for the wheat interests. We saw how Master Bakers' Associations played an active role in mobilising opinion in support of the establishment of new flour mills, closer to bakers and consumers alike.

Political Preconditons for Disengagement

Authoritarian governments may be able to ignore popular opposition to a policy of radically cutting wheat imports. They may also be increasingly motivated to do so, as they find their own financial basis threatened by stagnant or declining export earnings on the one hand, and the rising costs of maintaining an export-financed public sector on the other. Symbolic

cuts in luxury imports (compare the ban on champagne and lace during the previous military regime!) combined with the propagation of self-reliance might help to defuse, ideologically, workers' resistance to cuts in food imports.

Still, what are the long-term basis for such a change? What could prevent a conjuncturally motivated policy of self-reliance from being abandoned, once oil sales pick up? Does not the experience with the 'Presidential Task Force' for rice suggest that the commitment to self-reliance is unreliable, especially when the temporary easing of financial constraints again open up popular solutions to the food problem, that is, for fresh imports?

Questions must be asked about the type of political arrangement which could make a policy of self-reliance more reliable and long-term. We also need to enquire into the propsects and preconditions for such an arraagement of social forces to emerge. Its orientation, we suggest, would have to be national as well as democratic; national, by grouping together those social and political forces which have a direct stake in an alternative, long-term development of the national food economy; democratic, by being able to draw on popular support, at least so as to neutralise the political consequences of the rise in food prices and the fall of real wages, which are likely to follow in the wake of cuts in food imports in the short term.

The conflict between the policy of wheat and the policy of self-reliance has, as we have seen, national as well as class dimensions. The dimensions cut across each other. On the side of wheat we find an array of ruling class forces, foreign and domestic, but also workers and other popular strata to whom bread is important. On the side of self-reliance, we find domestic food producers of all classes, from the emerging agrarian bourgeoisie – state and private – to small peasants. We find nationally oriented politicians, administrators, and scientists, committed to self-reliance and opposing the compradors and their foreign allies. But we may also find that foreign interests may engage themselves on that side, including firms and organisations which make money from financing and supplying more 'self-reliant' strategies.

The World Bank and the FAO may also be found in support of 'self-reliance' of a sort; that is, strategies aiming at expanded domestic food production, although probably dependent on foreign inputs, seeds, chemicals, machinery and management.

Little will happen, we believe, in terms of a sustained shift towards a policy of food self-reliance as long as it is possible for the wheat interests to mobilise workers and their organisations on their side. The critical point to examine is therefore the conditions under which the working class may be prepared to tolerate a decline in real income in support of a policy of self-reliance. It seems to us that, for this to be achieved, workers must be convinced not only that this – theoretically – is in their own long-term interests, but that the political-institutional arrangements are such as to make such a theoretical possibility also plausible. It has much to do with their overall confidence in the state. Why should workers trust the promises of rulers whose development policies' are seen as a reckless scramble for

contracts, licences, and commissions among corrupt bureaucrats, politicians and businessmen, who stuff their foreign bank accounts with their illegitimate wealth, and enjoy their exclusive foreign tastes behind the iron gates of their well-protected mansions? Why should workers not be expected to protect what they already have?

The concessions must therefore be political. Workers must be convinced that those who manage the affairs of the country do so with some amount of consideration for workers' interests. It may relate to concrete issues such as the management of imports and public expenditure. It may also concern workers' political rights and representation. There is no point in speculating further what kind of policies may make workers support a strategy of food self-reliance. The important thing to stress, however, is that a policy of stopping wheat imports cannot be pursued in isolation from the wider economic and political aspirations of the classes which now depend for their subsistance on imported food.

The workers must be given a significant role within an alliance of national political forces if the comprador nexus is to be broken; the nexus which ties Nigeria to US food imperialism, that causes the underdevelopment of Nigerian agriculture, and that obstructs the growth of domestic markets for industry.

Alternatives to Wheat: In Search of Bread Substitutes

We have discussed the problem of how to stop the wheat imports and the need to discontinue the present illusory policy of import substitution. What is to take the place of wheat? What is the alternative to bread in the Nigerian food economy?

Part of the answer has already been suggested. If domestic food producers are protected against cheap food imports they can be expected to fill the gap because there are vast potentials for the accelerated commercialisation of domestic food production. It is a process already on the way. We shall return to it below. First, however, we wish to discuss the prospects of finding bread substitutes in a more direct sense. This is a problem which has been given much attention by food technologists. It relates to the wider problem of why bread is so attractive and fits so well into ongoing processes of social transformation, the growth of towns and wage employment, changing family structure, and other factors which were discussed in chapter 2. These are factors which relate to the quality of bread as a processed food and to the technology and social organisation of food processing.

It is not just the superiority of US agriculture and the international trading network at its disposal that matters in giving to bread its competitive power vis-à-vis domestic food. This power is also determined by the superior processing technology linked to wheat and by the social organisation capable of reproducing and expanding such technology throughout the Nigerian society. These are qualities that make bread a fast, reasonably clean, easily dis-

tributed, and easily consumed food.

It is therefore natural to ask how the processing technologies can be developed also for domestically grown crops which can make locally-based food items equally fast, clean, and available.

The most organised efforts in Nigeria have been directed at substituting as large a proportion as possible of the wheat in a loaf of bread with local crops, while still keeping the shape, texture, taste, and colour as similar as possible to those of ordinary wheat bread. The greatest problem with local crops from this point of view is their low gluten content, which means that dough made from them will not rise like that made from wheat. But an in-mix of up to 25–30 per cent has been found to be possible, while allowing the product to behave reasonably similarly to bread. Anything from cassava, maize, sorghum or millet has been found to work as in-mixing flours. Research on these lines was initiated by the FAO in the mid 60s (*Europe Outremer* 1983). In Nigeria the Federal Institute for Industrial Research (FIIRO 1974), has reported on such experiments. It exhorts the government to propagate the in-mix of 20–25 per cent cassava starch and 5 per cent soya bean flour as being particularly successful in resembling the 100 per cent wheat bread. Cassava bread has since been found displayed at the 'made in Nigeria' trade fairs.

A Canadian experimental mill in Maiduguri has also attempted through a demonstration bakery to propagate the in-mix of sorghum. On our visit there in 1981 the project had however been abandoned and the bakery left with minimized production of pure wheat bread.

Other West African countries have also tried this way to substitution. In Senegal, there has been, since 1979, a law which compels bakers to use 15 per cent flour made of millet. It has been disregarded in practice because of difficulties in getting adequate quantities of ground millet (Doucet 1983, *Europe Outremer* 1983).

A cut in the supply of cheap wheat imports, e.g. by raising the prices, might raise the attractiveness of the mixed varieties. Legislation like that in Senegal might also be made to enforce such efforts. But the fact remains that one would be left with the requirement to supply up to 70 per cent of the inputs by wheat all the same. There is also the risk that such policies would serve to provide continued legitimacy for a product which would remain basically imported.

A more relevant approach to import substitution must be the development of local food processing technologies so that they can perform the labour-saving functions that are so essential in making bread attractive. These are located both at the stage of the basic processing of the raw crop and in the final preparation of the food.

If we look at staple grain processing, so far it is the first stage that has experienced the highest level of technological development, to facilitate the tedious dehulling and milling of millet and sorghum.[26] A pilot project in Maiduguri, the same as the experimental mix-in bakery referred to above and involving the International Development Research Centre in Canada,[27]

has been followed by a similar one in Kaduna, on the basis of whose experience a larger mill of 3 tonnes per day capacity was started in 1983. This latter mill is part of a major federal grains production and milling programme under the auspices of the National Grains Production Company. It envisages the establishment of mechanised farms of some 4,000 ha in every northern state, with large-scale modern milling facilities attached (interviews NGPC 1983 Imoyin-Omene and Onyeziligbo). The Kaduna mill was in 1983 the only one operating on this programme. It was supplied from several states, mainly Niger (Mokwa), and processed mainly maize, and only marginally sorghum and cow-peas (interview Zubeira 1983).

A few private mills have also been established, e.g. in Kano, and the Danish United Milling Systems has been negotiating with NGPC to establish one in Sokoto State as well as one in Ondo (Hoft and Overgaard and UMS 1983). The UMS count on relying on cooperative and open market grain supplies. Their product is to be fermented meal that requires only brief preparation with boiling water, for fast consumption (interview Nilson 1983).

Middle-class shops already carry some industrially processed and packed flour from beans, maize, and some root crops, but these items are rarely seen in this form in the general market place. They are considered too expensive. Middle class consumers are prepared to pay the difference in order to get a presumably more hygenic and standardised product and to avoid the hustle and haggling of the market.

The rate of development in such large-scale milling of the local staple grains for food is so far very limited especially in comparison with the tremendous expansion seen in the developing feed milling industry for animal production. Problems of organising local raw material supplies on competitive terms are enormous when it comes to this scale, (as we have also discussed elsewhere, Andrae 1983). Most investments so far have been in rice milling.

In the meantime, however, the immediate scope for expansion seems to lie elsewhere, in the development of milling and processing at the lower level of organisation which fits the highly fragmented structure of agricultural production and trade. The small plate and hammer mills that are already found in most villages and towns, usually operating on a customer service basis, are as we have mentioned in previous chapters the main functioning food processing industry in this country apart from the wheat bakeries. Removing any obstacles that stand in the way of their efficient operation, including their need for credit and access to tools, energy, and other inputs seems to us a particularly important way of supporting a drive for local food expansion which already possesses great force.

This first stage of processing thus has the potential to develop local staples to a stage where very little labour is required to make foods ready for consumption. Their prospect for competing with wheat-based 'semovitu' and macaroni should be there, particularly if relative prices can be made attractive. But this prospect is limited to foods in household-based production, and possibly to some commercial street sales for those who do not cook,

like the large groups of male migrants.

To achieve the same convenience of a portable, instant, and long-keeping food that attaches to bread, would require development of the *final* processing stages for domestic foods. No invention comparable to the local dough-brake, so instrumental to the low-level penetration of bread bakery to every nook and corner of Nigeria, has so far come forth to overcome the constraints of household and very small-scale production of local fast foods. Prices more favourable to local staples and to the disadvantage of the wheat would no doubt encourage local entrepreneurs to come up with some similar way to raise the productivity and distribution potentials of products based on such staples. It is at this level that the major breakthrough must come, we believe.

Prospects for Food Self-sufficiency

Developments in processing, closely linked as they are to problems of storage and marketing, may help domestic food producers to reconquer markets lost to wheat. But the significance of fast food in the Nigerian economy should not be exaggerated. The rapid diffusion of bread must primarily be explained by its relative cheapness and availability. If deprived of bread, consumers will have to accept less fast, less convenient, less neat, less 'modern' types of products. There is no point in making the cut in wheat imports dependent on the development of new forms of domestic processing capable of replicating the special qualities of bread. Once competition from imported food has been constrained the market will tell how much consumers will be prepared to pay extra for such qualities. In this way they will provide domestic investors with the relevant signals as to what emphasis to place on the fast food business.

The question remains: will domestic food producers be able to deliver a sufficient commercial surplus to feed the greatly inflated non-agricultural population which has emerged from the oil economy? It depends on what we mean by feeding. If we mean adequate volumes and types of food to ensure adequate diets at prices which are within the reach of all these people, the answer is no. Just as now, large sections of the population will not have sufficient money to pay for an adequate regular diet. The cut in food imports will increase the pressures on these groups. New openings in commercial food production may absorb some, who may be induced to go back to farm, on their own or for others, rather than to continue to starve in the towns. These are difficult options faced by large populations all over the Third World, not primarily because of major changes in the availability of food, but because of the ups and downs in the availability of work and money in the non-agricultural sectors.

The question of food adequacy is primarily a question of the adequacy of work and income. This point has been made so well by others that there is no need to go further into it here. There should be no illusion that some-

how, by banning food imports, mass hunger and starvation in Nigeria can be eliminated. We are not addressing ourselves to the problem of food self-sufficiency in this more funadmental sense. Our argument is more limited: domestic food production has 'failed' to meet existing commercial requirements because of a combination of an excessive, oil-induced growth in demand and the manner in which massive imports have been allowed to absorb much of this new demand, constraining the commercial transformation of domestic agriculture. With tight restrictions on imports, that constraint will be removed. The process of commercialisation will accelerate, pushing commercial food production to a level more in line with commercial demand.

The basic assumption underlying this position is, of course, that there exists a capacity to expand commercial output, and quite fast, for that matter. Food imports constitute one constraint. But what about others, those that are internal to the domestic production system itself? What about all those constraints which are so frequently mentioned either to justify or explain the food imports in the first place? Are we not repeatedly told that Africa is unable to feed herself because of a number of weighty reasons: ecological constraints (erosion, soil depletion, insufficient rainfall); inadequate social organisation (fragmented holdings, insecurity of tenure, labour shortage); technological backwardness (primitive tools, low levels of mechanisation, low-yielding planting material, lack of fertilisers etc.); financial problems (lack of credits, insufficient public investment); problems of markets (prices, transport, feeder roads, storage); only to mention some of the more commonly listed obstacles. In addition, the World Bank, and other guardians of sound commercial practices, have pointed to the negative impact of excessive state intervention in markets: state marketing, price controls, distorted exchange relations between town and country, etc.

This is not the place to go into a discussion of all these problems. They are real. They may vary in intensity from one country to another. They are certainly present in Nigeria as well. Our objection, however, is to the manner in which the presence of such constraints have been combined with observations about food shortages (high prices, high imports) into a false conclusion of agricultural stagnation. It is a dangerous conclusion because it leads to false strategies out of the impasse.

Our own studies of Nigerian agriculture (Beckman 1985b) suggest, on the contrary, a dynamic situation where food production is commercialised and extended into new areas, diffusing new crops and improved technology, and transforming social relations of production towards forms which are more efficient in extracting commercial surpluses.

The massive exodus from agriculture into other types of employment caused by the circulation of oil money has certainly brought about stagnation of a sort in overall food production. Simultaneously, it has provided a strong push to the commercialisation of food production, with far-reaching implications for social organisation and technology. This is not the first time that West African agricultural producers have demonstrated their

readiness to respond to sudden market openings. West African agriculture has undergone a series of commercial revolutions of which the shift to food production for domestic markets is only the latest (Hopkins 1973). The stagnation in overall output has thus gone hand in hand with a dramatic shift towards commercial food production among those who have remained on the land.

High food prices have stimulated private investments at all levels; holdings have been consolidated and expanded, more labour has been hired, on terms which demonstrate how pre-capitalist forms of labour relations are transformed in step with expanded market opportunities. The state (and the World Bank) have had a hand in this by stepping up the diffusion of chemical fertilisers, new seeds, mechanised services, and technical advice. Our studies suggest that these elements of state intervention primarily tend to reinforce ongoing processes and influence their social character, including for example the strengthening of the internal differentiation within the farming communities.

There are numerous agents, as we have seen, outside these communities, who are busy cashing in on this process, including international companies selling inputs, assembly plants, and projects. Food traders expand their enterprises and reinvest in production. A new brand of commercial farmer is entering business with the backing of the state and domestic and international finance capital. But at the base of it all lies the accelerated transformation of the peasant communities themselves, preparing the way for new forms of ownership and control of land and labour which facilitate commercial production.

We have little doubt about the potential of the social forces now at work for taking advantage of any vacuum created by the withdrawal from the market of the wheat merchants and their domestic agents. It does not mean to say that we believe that such potential will be automatically realised. But neither does it mean that we believe that it can only be achived as a result of major 'development efforts' by the state and international agencies such as the World Bank. On the contrary, the momentum of this commercial expansion lies essentially in the interaction between the internal dynamics of the peasant economy and a growing domestic food market.

In Nigeria and elsewhere, the major threat to the realisation of this potential comes from the failure to make such goods available which the farmers want and on terms which are attractive enough to warrant the increased effort on their side. The threat of failure in this respect is closely bound up with the vicissitudes of the export economy, where periods of high export earnings lead to the entrenchment of large public service sectors and low productive manufacturing which tend to absorb much of the import capacity during the lean years, cutting farmers' access to inputs as well as 'incentive goods'. Prosperous Ghana was caught in this terrible trap. Prosperous Nigeria may follow suit.

This is also the context in which we can see the threat of such agricultural strategies as represented by the irrigation schemes discussed in this study.

Here as well, the state risks becoming bogged down in large unproductive commitments which restrict its capacity to provide incentives to the mass of commercially oriented private producers. Also the essentially smallholder-oriented support schemes, so energetically pushed by the World Bank, risk becoming costly unproductive bureaucratic structures, once the flow of oil money and international credit is disrupted. These Agricultural Development Projects may become just so many empty shells with little to distribute of value to the producers but drawing heavy costs in feeding and maintaining staff, offices, and vehicles.

Potentially, the prospects for food self-sufficiency in Nigeria are bright, but only as long as it is fully realised where the potential lies, and that ambitious and costly public investments in this field are likely to be more part of the problem than part of the solution.

Whose food? Whose Income? A Concluding Note

We repeat: what we have said so far has little to do with the more fundamental food problem, that is, the problem of how all Nigerians should be ensured sufficient food. The question of national self-sufficiency, in the restricted sense discussed here, can be solved, we believe, by relying on the vast scope for commercial transformation and surplus production which exists within the parameters of already established social and political structures. The wider food problem, on the other hand, can only be solved as a result of long and intense struggles of social forces at the level of production as well as of the state. In fact, there is reason to believe that the accelerated commercialisation of the peasant economy that is necessary in order to bring about national self-sufficiency will simultaneously act as a powerful force pushing more people into the risk zone of hunger and undernourishment.

Commercialisation increases the competition for resources in the peasant economy. Some are better placed than others for taking advantage of the situation. The expansion by some restricts the resources available to others, or pushes the cost of resources out of their reach. This has happened elsewhere. It can be observed currently in the areas of intensified commercial expansion in Nigeria. Intervention by the state and international capital intensifies the process of differentiation, exploitation, and marginalisation which follows in the steps of commercial expansion. Methods vary from the brutal land grabbing of Bakolori to the more subtle interventions of the World Bank schemes. But brutality is not the preserve of the state. It permeates the relations over land and labour within the farming communities themselves.

The future we foresee is one with more rather than less people starving or being undernourished. To the non-agricultural groups who will suffer from the cuts in cheap food imports, we would thus have to add a growing number of people who are likely to suffer as a result of the intensified com-

mercialisation of food production.

How can such a gloomy perspective be justified politically? What are the alternatives? It is easy to identify some which are a good deal more unattractive: the prospects of intensified food dependence and rural stagnation; a self-suffocating, import-fed public economy, trapped in its own inability to create an alternative to the shaky productive base provided by dwindling oil resources.

Are there no alternatives which take their points of departure in the rights of all people to secure food and other essentials for themselves and their dependents? Cannot the state be mobilised on the side of the weak and vulnerable, on the side of those who are most likely to suffer from the curtailing of food imports and accelerated commercialisation?

Such a state does not exist in Nigeria and it will only emerge, we believe, as a result of the protracted struggles of social and political forces representing the interests of the oppressed. Such forces are as yet weak. They cannot be expected to sustain, for example, a policy of rural development which supports the interests of the poor farmers against the big ones. Well-meaning state intervention in this direction is unlikely to achieve much at this stage. In fact, it may well serve to obstruct the development of productive forces, as represented by the commercially oriented farmers, without being able to put anything in their place.

The hope, as we see it, lies in the growth of the national democratic forces which may emerge as a result of the broadening of the economic basis of the national economy, including the consolidation and expansion of production for domestic markets both in agriculture and industry. The accelerated commercialisation of the peasant economy is not only the most realistic way to feed the mass of non-agricultural producers. It is also the prerequisite for the expansion of domestic mass markets for manufacturers and other local producers of goods and services. The viability of industrial development in a country like Nigeria hinges on the simultaneous development of such mass markets and the ability of domestic food producers to feed an industrial labour force. The present industrial crisis in Nigeria demonstrates the extreme vulnerability of an industry which depends on foreign exchange not only for raw materials, spare parts and other inputs, but for the feeding of its workers (Andrae and Beckman 1984). For industry in Nigeria to survive it must ensure the reproduction of its labour force by supporting the continued commercialisation of the peasant economy.

And this applies to the workers as well. The present crisis demonstrates that the welfare and survival of the workers are tied to the expansion of domestic food production. While they may struggle to protect food imports, they must clearly see the limits to such a strategy at a point where the import capacity of the economy collapses, not just because of the shortfall in oil exports but because of the overload of competing claims to which these export earnings are exposed.

Notes

1. On the guesswork involved in Nigerian population estimates, see Afolayan in Oguntoyinbo 1978 and Kirk-Greene and Rimmer 1981.

2. For an introduction to the Nigerian political economy, see Williams in Williams 1976.

3. These are official figures drawn from Federal Office of Statistics and Central Bank publications as summarised and revised in 'Nigeria's Principal Economic and Financial Indicators 1979–1980' (CBN 1982). See also Rimmer in Kirk-Greene and Rimmer (1981).

4. For a general introduction to 'Agricultural Policies in Nigeria 1900–78', see Forrest 1981.

5. For price data, see Central Bank of Nigeria, *Annual Reports*, and for the most recent period, the *Monthly Reports*. A summary of recent developments of the consumer price index is found in *Business Times* 28/5/84. See also chapter 2.2.

6. The official estimate is 2.5 per cent per annum, but private estimates suggest growth rates of 2.8 to 3.0 per cent similar to the West African average according to Angaye (1983). See also note 1.

7. Ozo and Ikhuoria (1983) get an addition in 1980 of 7.4 million to the 1963 census figure of 10.6 million population in towns over 20,000 inhabitants. They are applying a figure for the degree of urbanisation at that level of 23.2 per cent for 1980, that was estimated for 1972 by Adegbola (1981). Certainly a conservative estimate.

8. For abbreviations see Bibliography.

9. In reality no higher nutrition value can be shown for wheat in comparison with guinea corn and millet, (Simmons 1976a, Table 1.1 referring to FAO figures, see, e.g. FAO 1984b; see also Aykroyd and Doughty 1970:62.)

10. Great Plains has since merged with Western Wheat Associates to form US Wheat Associates. According to their own pamphlet they represent the overseas market development arm of the US wheat producers operating from 14 offices around the world (US Wheat Associates, no date).

11. The very high figure, 36 per cent, for 1978 is questionable, but may be associated with policies of the outgoing military government to satisfy the demand for food in its final year.

12. The following is based on information received in interviews with the managements of the Flour Mills of Nigeria (FMN) in Lagos and Northern Nigeria Flour Mills (NNFM) in Kano, at both mills in March 1980 and October-November 1981, with follow-up interviews at NNFM in March 1983 and June 1984.

13. By the North we shall refer to the following ten northern states of the Federal Republic of Nigeria: Sokoto, Kaduna, Kano, Borno, Kwara, Niger, Plateau, Bauchi, Gongola, and Benue. The remaining nine states will thus be referred to as the South. See Reference Map.

14. See further chapter 4, where the bakery industry in Katsina is studied in detail.

15. The official estimate for 1979 was only 229,000 (FOS 1981: table 2.3). The figures given here for the cities of Kaduna State are rather informed guesses for the mid-1980s. (cf. also notes 1 and 2).

16. MDS = Manufacturers' Delivery Services (Nig.) Limited: On its role in flour distribution see chapter 3.4 above.

17. NNDC/NNIL = New Nigerian Development Company/New Nigerian Investment Ltd, investment bodies with participation of the Northern States.

18. Their importance is emphasised also by Kilby (1965:chapter VI) For a comparable experience of the role of informal traders in regional capitalist expansion in general see Missen and Logan (1977).

19. Socio-economic information from the Bakolori area is inferior to that of the Kano River Project area. An extensive land survey undertaken by the Project gives the size of plots but has no information on holdings and ownership (Bird 1980). We rely mainly on discussions with staff and farmers which will be documented more fully elsewhere (Beckman, research in progress on the Bakolori project).

20. The farmers from Sokoto province appear as one of the major group of immigrants in the agricultural expansion zones of Gombe, according to interviews with farmers and staff in the Gombe World Bank project area (Beckman, research in progress).

21. The CBDA Budget Implementation Progress Report, Sept. 1981, claims that 10,242 tonnes of wheat were produced in the 1980/81 season. Documents at the SCIP headquarters at New Marte, however, show that 2,580 acres had been cropped with wheat and that the average yield per acre was 4.58 bags of 100 kg. Interview with the Principal Assistant Registrar of Cooperatives, CBDA, M.Adel Issa, Oct. 1981, the person in charge of recording the crop.

22. For farmers' cropping strategies, see research in progress by Brian D'Silva and others in the Department of Agricultural Economics and Rural Sociology, Institute for Agricultural Research, Zaria.

23. In the North: local production costs (incl. transport to mill): N950, less the cost of imported wheat, N280 = 670 naira. 670 x 500,000 (= 1/3 of 1.5 m tonnes) = N335 m. In the South: 1,030 less 200 = 830 x 1.0 m (that is 2/3 of 1.5 m tonnes) = N830 m. North plus South: N1.7 billion.

24. With a factory gate cost in the North of N950 per tonne, the foreign exchange cost per tonne would be equivalent to N238, N475, and N713 at rates of 25, 50 and 75 per cent respectively. In the South, with a factory gate cost of N1,030 per tonne, the corresponding figures would be N258, N515, and N773 at the respective rates.

25. That is, 50 per cent of full import substitution cost, less the cost of importing that quantity of wheat.

26. Traditional practices in Nigeria are outlined in a comparative international perspective in an IDRC publication reporting from a seminar in Nairobi 1978 on 'Sorghum and Millet: Food Production and Use' (Vogel and Graham 1978).

27. The technical problems are discussed in Paul Eastman, 'An end to pounding' (1980).

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DS *Daily Sketch*. Ibadan.
DT *Daily Times*. Lagos.
FP *Financial Punch*. Weekly. Lagos.
FT *Financial Times*. Daily. London.
NN *New Nigeria*. Daily. Kaduna.
ST *Sunday Triumph*. Weekly. Kano.
WA *West Africa*. Weekly. London and Lagos.

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