

Report No. 2181-UNI

# Nigeria Agricultural Sector Review

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Volume I: Main Report

June 29, 1979

West Africa Projects Department  
Agriculture Division 1

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### CURRENCY EQUIVALENTS

Currency Unit	=	Naira (N)
US\$1	=	N 0.65
N 1	=	US\$1.54
N 1	=	Kobo 100

### WEIGHTS AND MEASURES

Unless otherwise stated, all weights and measures used in this report are metric.

1 metric (m) ton	=	0.98 long ton
1 long ton	=	1.016 m ton
1 long ton	=	2,240 lb
1 hectare (ha)	=	2.47 acres (ac)
1 acre (ac)	=	0.405 ha
1 kilometer (km)	=	0.62 mile

### FISCAL YEAR

April 1 - March 31

### ABBREVIATIONS

ADC	-	Agricultural Development Corporation
ADP	-	Agricultural Development Project
AGREP	-	World Bank's Agricultural Rural Department
ASC	-	Agro Service Center
FedExCo	-	Federal Executive Council
FMAWR	-	Federal Ministry of Agriculture and Water Resources
FMED	-	Federal Ministry of Economic Development
FMG	-	Federal Military Government of Nigeria
IAR	-	Institute of Agricultural Research
IITA	-	International Institute of Tropical Agriculture
LBA	-	Licensed Buying Agent
LGC	-	Local Government Council
MANR	-	State Ministry of Agriculture and Natural Resources
NACB	-	The Nigerian Agricultural and Cooperative Bank
NAFPP	-	National Accelerated Food Production Project
NSTDA	-	National Science and Technology Development Agency
OFN	-	Operation Feed the Nation
RBDA	-	River Basin Development Authorities
TCPP	-	Technical Committee on Producer Prices
THU	-	Tractor Hire Unit

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## PREFACE

This report was prepared by an agricultural sector review mission led by Paul S. Zuckerman, which visited Nigeria in March/April 1978. Mission members were Ridwan Ali (deputy mission leader and agricultural economist), W. David (economist), David G. Davies (manpower economist), Rolf Gusten (irrigation economist), Hendrik Koppen (general economist), M.W. L. Pease (agriculturalist), Owaise Saadat (agricultural economist). Consultants were T. Bredero (agronomist), Peter S. Calkin (marketing specialist), B. Goodier (irrigation engineer), Michael N. Harrison (agriculturalist), K. Kanungo (agricultural economist) and G. Yates (livestock specialist). Background papers on forestry and on credit were prepared respectively by Jacob H. de Vries (economist) and R. Reader (consultant agricultural economist) during separate missions. The mission followed the earlier work of the agricultural sector survey mission of 1971 1/ which focused primarily on export crop promotion, and the Bank's 1973 mission that reviewed problems and prospects of food production in the context of the overall economic position and prospects for Nigeria. 2/

Since 1973, Nigeria's economy has undergone some radical changes. Nigeria is now a significant importer of agricultural products and exports of traditional crops have declined dramatically. During this period the Bank has gained considerable experience in the Nigerian agricultural sector, having made loans for sixteen agricultural projects, and is in a better position to evaluate present trends and suggest alternative courses of action.

The Federal Government is now preparing the next five-year development plan to be implemented by the new civilian government during the period 1980-1985 and, at the same time, has requested the World Bank Group to expand its lending program. The mission, therefore, concentrated on identifying a development strategy for Nigeria's agricultural sector and assessed some of the steps that could be taken to make full use of the presently untapped productivity reserve that experience over the last five years has shown exists with the smallholder sector. This is the subject of the main volume of the report. The analysis on which these proposals are based is to be found in the supporting papers reviewing different aspects of the sector, contained in Volumes II and III.

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1/ Agricultural Sector Survey, Nigeria. Volumes I, II, III, January 1973.

2/ Current Economic Position and Prospects of Nigeria. Volumes I, II, III, August 1974. Report No. 416a-UNI.





## CHAPTER I

### THE UNREALIZED POTENTIAL

#### Introduction

1. An analysis of available technology in Nigeria shows that, if properly applied, production in the agricultural sector can be increased by probably 3% to 4% per year, compared with present estimates of less than 1%. A net increase of 3% per annum represents a net gain of nearly 500,000 tonnes of cereal equivalent per annum. There is, therefore, a very considerable productivity reserve which Nigeria has yet to tap. Three ways exist to increase agricultural production in Nigeria, which are inter-dependent; they are: intensification of production systems and increasing output by using improved technologies; increasing farmer incentives through improved crop prices and assured market outlets; and increasing the area under cultivation. Using as a basis the two previous reports by Bank missions <sup>1/</sup> and the work and opinion of other observers of Nigeria's agricultural sector, we discuss below the potential of increasing production through these three means. Our observations are heavily tempered with qualitative judgments as the data base -- as in other countries at a similar stage of development -- is not entirely reliable. However, following the Bank's first loan to Nigeria for cocoa production in 1971, the Bank has now accumulated considerable experience and to date the Bank Group has committed very nearly US\$400 million for agricultural development in Nigeria, involving projects with gross investment needs of more than US\$1 billion.

#### Increasing Agricultural Productivity

2. Nigeria has a large and real potential for increasing production by raising yields per hectare. Present yields are, in many cases, far below those obtained in research trials and, in some cases, the yields obtained in neighboring West African countries. Considerable progress has been made in developing new varieties, fertilizer recommendations and other agronomic practices adapted to local Nigerian conditions. While many important problems remain to be solved in developing a technological base for raising crop yields uniformly throughout Nigeria, much can be done to ensure that improved practices that are available are translated into actual production increases. This depends on the rate that these techniques are adopted by farmers. While this is partly a function of profitability and applicability, it also depends on the efficiency of the extension services, the adequacy of, and timeliness of farm supplies, and the general level of physical infrastructure.

3. Technically there is no reason why average cotton yields in Nigeria are two thirds to one half average cotton yields in Mali. Similarly, conditions in Nigeria are only marginally less attractive for rubber production than those in Malaysia, yet average Nigerian yields are less than half Malaysian yields.

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<sup>1/</sup> Op. cit.

NAFPP 1/ trial results for 1977 in Imo State showed that improved maize and cassava varieties outyielded local varieties two to three times. The use of improved farm supplies is constrained by the lack of their availability. Where the constraints are overcome the productivity reserve can be exploited fully. Fertilizer consumption in the Funtua, Gusau and Gombe Agricultural Development Projects (ADPs) in the north increased from about 1,000 tons to nearly 50,000 between 1974 and 1977 and as a result the value of production increased by about N 17 million following an expenditure on fertilizer (at an unsubsidized price) of only about N 2 million. While it is impossible to quantify the exact potential that exists for increasing production through the adoption of available improved technologies and practices, these examples indicate that a tremendous gap exists that should be properly exploited. Below we give some indication of the potential of the principal crops grown in Nigeria. 2/

4. Sorghum. Improved varieties of sorghum have been issued by the Institute of Agricultural Research (IAR) yielding over 50% more than traditional varieties and demonstrating a much greater potential response to fertilizer. The traditional varieties tend to lodge when fertilizer is applied to them. Existing yields of traditional varieties are estimated at about 650 kg/ha; with seed dressing and fertilizer application, yields of the improved varieties -- with acceptable color and taste -- should be of the order of 1,200 kg/ha - twice as high.

5. Millet. Locally improved varieties of millet may consistently outyield traditional varieties. Fertilizer response, however, is limited by the tall weak stalks of the traditional varieties. Recent work in Senegal indicates that short varieties with a high harvest index and a high yield should soon be forthcoming, and IAR's new association with ICRISAT 3/ should greatly strengthen Nigeria's research capability on millet.

6. Groundnuts. A long series of agronomic trials and a number of selection and breeding programs by IAR have resulted in a package of recommended practices for groundnut production -- incorporating timely planting, fertilizer application, improved seeds, better spacing and improved weed control -- that regularly show a doubling (600-1200 kg/ha) of kernel yields over traditional practices.

7. Maize. The recent re-orientation of objectives in the maize breeding program in Nigeria with improved yields as the top priority, is now producing good results. In national variety trials improved varieties outyielded traditional lines by 50%-100% with good response to fertilizer. Results of the NAFPP on-farm tests show that with recommended husbandry practices improved varieties outyield traditional varieties by a factor of two to

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1/ National Accelerated Food Production Project.

2/ Fully detailed technical recommendations can be found in the reports of the Nigerian research institutes and in the World Bank project appraisal reports.

3/ International Crop Research Institute for the Semi-Arid Tropics, India.

six. In addition it has recently been shown that in the Guinea Savannah zone maize yields are less at risk to a poor rainfall season than sorghum yields. Without fertilizer sorghum yields about 600 kg/ha while maize tassals but produces no grain. With fertilizer, sorghum yields rise up to 4,000 kg/ha with good management and maize up to 6,000 kg/ha. It is, therefore, expected that where fertilizer is available maize will, to an increasing extent, replace sorghum. Evidence from the Funtua and Gombe ADPs supports this. In the latter project the area under improved maize cultivation increased from virtually nothing to 30,000 hectares in 1978 alone.

8. Cowpeas. Yields of traditional varieties of cowpeas under present husbandry practices are extremely low, less than 200 kg/ha. Improved practices including sole cropping, the use of upright varieties, phosphatic fertilizer and insecticidal spraying can regularly result in five-fold yield increases. Insects are the principle constraint to increasing cowpea yields and good progress has been made in breeding for insect resistance. Varieties resistant to preflowering insects are now available and in five years time varieties resistant to post flowering insects should be available. In addition the means exist to eliminate losses of cowpeas in storage, which presently amount to 20% of production.

9. Rice. There is no improved variety of upland rice that consistently outyields OS6 - the improved variety that is already cultivated extensively. OS6 performs better than the new so-called improved varieties being more drought-resistant and having a better root system. <sup>1/</sup> However, possibilities do exist for increasing yields under improved water control systems as a wet season crop on irrigated bottomlands. With a reasonable amount of water control the technology is available to increase average yields to 3 m tons/ha in the south and to about 4 m tons/ha in the far north. Present yields are in the range of about 1.2 - 1.3 m tons/ha. Total rice production from existing small-scale irrigation schemes could thus double or increase by about 850,000 m tons. It is quite possible to achieve cropping intensities of 130 percent which would allow another 200,000 ha to be double cropped with food crops. Furthermore development eventually could bring the total area under small-scale irrigation eventually up to 2 million ha from the present 700,000 to 800,000 ha. In view of the rapid increase in fadama cultivation achieved in the last 20 years (some 600,000 ha) a further 500,000 ha of improved bottom land by 1990 does not seem unrealistic. This could produce an additional 1.5 million m tons of paddy, plus 150,000 m tons of maize, under improved techniques.

10. Cassava. The principal constraint to increasing cassava yields has been the loss caused by the mosaic virus and bacterial blight disease. Varieties are now available that are highly resistant to both diseases, have good compact roots making for easy harvest, have higher potential yields, and are palatable. Results of fertilizer response trials are a little conflicting but all indications are that improved cassava varieties are now available that yield two or three times the present average yield (6-7 m ton/ha) of traditional varieties.

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<sup>1/</sup> OS6 has come to be regarded as a local variety but was in fact introduced less than 20 years ago and is one of the great success stories of Nigeria's Research and Extension Services.

11. Yams. Research is currently being directed towards a range of objectives including yield improvement, disease resistance, storage qualities, and growth habits to reduce the need for staking. Propagation from vine cuttings and yam seed has been achieved and offers the prospect of breeding new varieties. A rapid multiplication technique will greatly reduce the heavy demands and expense of planting material (currently 20-30% of output). A number of years are likely to elapse however before new technology for yam production results in considerable yield improvement. Significant yield responses to fertilizer have been demonstrated, particularly in soils of low fertility. Under more fertile conditions, competition for light is usually the limiting factor, and proper staking enables the vines to spread for maximum sunlight and can lead to yield increases of up to 100 percent.

12. Cocoa. Present average annual yields of smallholder cocoa are estimated at 450-500 kg/ha but with wide variations between holdings. Experimental plantings of modern hybrid progenies have produced over 2,200 kg/ha per year and under commercial management could reasonably be expected to yield in the order of 1,200-1,500 kg/ha. Smallholders would be unlikely to achieve such yields but a range of 750-1,000 kg/ha and an average 850 kg/ha at full maturity should be possible; about twice the level of traditional varieties.

13. Oil Palm. The use of improved material would, under average management, be expected to more than double annual yields of fresh fruit bunches, increasing them from about 4.5 mt/ha to about 10.0 mt/ha as the palms reach full maturity. The fruit of selected palms should contain 18-21% oil and 4-5% kernels compared with approximately 10% oil and 5% kernels in the fruit of traditional oil palm groves.

14. Rubber. Smallholder rubber yields are estimated at 300-350 kg/ha/year but reliable data are not available. Through use of high yielding planting material and modern tapping systems, the annual yield at peak production could be increased to about 1,250 kg/ha and the average annual yields over a 24-year productive life of a planting, increased to about 1,000 kg/ha, three times existing levels.

15. In addition to the prospects for individual crops there are three specific inter-related aspects of crop husbandry that are receiving attention at this time which would appear to have very considerable potential for increasing production; they are intercropping, minimum tillage and weed control. Previous research has concentrated on recommendations for crops in sole stands. Recent research has shown that farmers have good reasons for growing crops together as a multiple crop. For example, in areas of Imo and Anambra States maize and cassava are normally grown together. Maize is harvested first, and the subsequent yield of cassava is no less when it is planted with maize than when it is planted alone. The advantage of this system is that land preparation is only necessary once, weeding costs are reduced since maize stalks provide mulch for the cassava, and the soil is protected as it is not left bare between crops. In 1975 there were over a thousand NAFPP on-farm tests of cassava and maize intercropping in Imo and Anambra States with the following results:

	<u>Traditional Practices</u>	<u>Improved Practices</u>
1975 maize yield, kg/ha	362	2,442
1976 cassava yield, kg/ha	4,800	14,230
Gross returns, cassava and maize, N	239	886
Incremental cost, N	-	279
Incremental return, N	-	657
Incremental profit	-	368

Cassava yields were increased by a factor of three, maize yields by a factor of six and the incremental profit from the improved practices was greater than the gross returns from the traditional practices. Separate IITA <sup>1/</sup> trials have shown that maize stover increased cassava yields from 10.8 to 16.4 tons/ha, reduced soil temperature, and reduced water run-off and soil losses. The accuracy of some of these tests can be questioned, but whether productivity increases are two or four times, the story is the same: there is a very considerable untapped productivity potential.

16. Weeding has long been recognized as the single major bottleneck to expansion of cultivated area as farmers commonly plant as much as their estimated weeding capacity allows. Recently there have been some significant improvements in the use and application of herbicides. IITA have found an effective herbicide mixture that damages neither cassava nor maize in the above intercrop and gives good weed control for the both crops. The herbicide is applied by the ultra low volume (ULV) sprayers which have been used with success for chemical application in the north. The sprayers have the singular advantage of significantly reducing both the amounts of water and chemical applied.

17. A more sophisticated use of herbicides is effected when practising minimum tillage techniques. These techniques have been used in many countries and are extensively applied in the United States using conventional applicators which require large quantities of water as a base for the herbicide. The principle of minimum tillage is to leave the soil in an undisturbed state and by increasing surface mulch protect the soil from the erosive effects of raindrop action. In Nigeria the increase in population and the subsequent reduction in available land puts increased pressure on the bush fallow system (where land is cropped for two to three years and then left for a long period to restore itself under regrowth of natural vegetation). Reduced fallow periods are accelerating soil erosion and nutrient loss, and yields and soil fertility continue to decline. Herbicides have been tested at IITA, and the recommended types and rates are satisfactory. Indications are that once initial technical and managerial problems have been overcome, yields and acreage can increase farmers' gross incomes sufficiently to make adoption of minimum tillage economically attractive.

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<sup>1/</sup> International Institute of Tropical Agriculture, Ibadan.

18. In sum, while we cannot quantify exactly the increased production that might be forthcoming from an extensive adoption of the improved existing technology, it is quite clear that there is a very significant gap between present yields and what is possible when using new technologies and practices.

#### Increasing Farmers' Incentives through Regional Specialization

19. Nigeria is divided into three major ecological zones (see Map: Ecological Zones and Research Stations), each of which has a comparative advantage in different crops. Yams, cassava, cocoyams and kola nuts are grown widely in the south and sorghum, millet and cowpeas in the north. Maize and rice are also major foodcrops. Cash crops, historically for export, include groundnuts and cotton in the north, and cocoa, oil palm and rubber in the south. Although there is regional specialization in cash crop cultivation, virtually every farm family grows at least some of its own subsistence needs. Overall production, however, could increase if farmers in areas of the ecological zones concentrated primarily on the crops best suited for each zone.

20. Over time the different zones have tended to specialize in growing crops particularly suited to their conditions, but there are indications that this trend is reversing. Until recently the forest zone was an area where farmers specialized in tree crop production and relied on the market to purchase foodstuffs -- up to 60 percent of needs reported in some studies -- from the savannah regions. However, one of the effects of the civil war was to concentrate people in their areas of origin and to disrupt the marketing of foodstuffs. It is possible that this had led to a move away from regional specialization, with farmers in the forest zone becoming more concerned to feed the local population than to produce traditional non-edible export crops, such as cocoa and rubber. This situation is compounded by the poor state of rural infrastructure, with the result that the system for ensuring that foodstuffs move from food-surplus areas into rural food-deficit areas functions badly. Consequently, tree-crop farmers are less willing to rely on the market to satisfy their food needs and are beginning to grow more of their subsistence requirements, taking up valuable tree crop land. Furthermore, the growing urbanization of the south and greatly increased urban incomes have led to a higher demand for foodstuffs, and with high transport costs from the middle belt and north, producing food for the market is becoming more attractive to the farmer in the tree crop zone of the south. This trend away from regional specialization augurs poorly for exploiting natural comparative advantages, and in areas of high rainfall the removal of the forest canopy to plant annual food crops leads to serious soil degradation such as is now evident in parts of Imo and Anambra States.

21. This situation can be alleviated by increasing producer prices for traditional export crops so that they compete more effectively with food crops for the farmers' scarce resources in the tree crop zone, and by improving the marketing systems between areas that have a technical comparative advantage in foodcrop production and the forest areas. For example, the producer price for rubber is apparently not sufficient to induce farmers in the principle rubber producing areas of Nigeria -- the southern part of Bendel State -- to tap their trees in preference to cultivating cassava, yam and maize. Other areas of Bendel State, particularly those to the northeast, are as well or

better suited to the cultivation of foodcrops, but cannot support rubber production because of low rainfall. Consequently the production of a valuable export crop is foregone while the potential of the northeastern area of the state remains undeveloped. A better balanced price structure could help the rational exploitation of the comparative advantage of different ecological zones in Nigeria and together with other ancilliary measures could result in a significant increase in overall production. The scope for altering the present price structure is discussed later in para. 79.

#### Area Extension

22. Only about 40% of potential arable land is actually under cultivation, according to the best estimates. This indicates that there should be some potential for expanding area to increase production but one should bear in mind that under the present bush fallow system, for every hectare in production there has to be two or three hectares in fallow to allow the soil fertility to regenerate under natural conditions. Undoubtedly, there are some areas which have agricultural potential, that have not yet been settled but it is unlikely, given the mobility of labor in Nigeria, that this constitutes a significant amount. While there has been no systematic recording of fallow periods it is evident from conversations with farmers that fallow periods are falling dramatically and in some areas of the east and around major urban centers there is now continuous cropping with no fallow period. The livestock situation also gives an indication of present land use problems and an estimate of the carrying capacity of the land in relation to the present herd indicates that stocking rates should be halved if the quality of grazing lands is not to be irrevocably damaged. <sup>1/</sup> Though these figures are estimates, information from individual states bears this out. For example in Borno State there is thought to be one animal unit per 3.2 hectares, which, under present agricultural conditions and systems, is at least three times the optimum stocking rate.

23. The so-called 'middle-belt' of Nigeria has been an area long referred to by the FAO <sup>2/</sup> and by the World Bank in its second report <sup>3/</sup> as being an area with little population and much agricultural potential. On reflection it would seem that this is not the case and such projects as the Lafia and Ayangba ADPs -- located in the 'middle belt' -- clearly show that the land is already well settled and under relatively intense cultivation. Consequently we do not believe that this is an area where under traditional farming systems much expansion of cultivation is possible. In the east, population densities are very high, in the order of 415 persons/km in Imo State, and fallow periods have fallen so drastically that in parts of Anambra and Imo States soil degradation has become such a major problem that government has found it necessary to engage consultants to resolve the problem. In Bendel State and

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<sup>1/</sup> See Paper 7: The Livestock Sub-Sector, Section E.

<sup>2/</sup> FAO indicative World Plan for Agricultural Development to 1975 and 1985, Provisional Regional Study No. 3. Africa South of the Sahara. Vol. II.

<sup>3/</sup> Current Economic Position and Prospects of Nigeria. Op Cit.

the former Western Region, population density is less than that in the east but more than the north, and it is doubtful whether any surplus land exists except perhaps in some of the savannah areas where a few commercial grain production operations have been attempted. In sum, it is doubtful that, under the present farming conditions where bush fallow systems prevail, there is much potential for expanding crop area except in some remote locations where a heavy investment in such infrastructure as access roads, water supplies, and in some cases costly land clearing would be a precondition for entry. Statistics on land use are most unreliable in a country the size of Nigeria but farm land use is possibly as follows:

Table 1. Pattern of Land Use - Nigeria 1962

	<u>million ha</u>	<u>percent</u>
Total Area	92	100
Area not used for agriculture	8	9
Area used for agriculture	84	91
Forests	26	29
Permanent pastures	26	28
Arable land and land under permanent tree crops	32	34
Area farmed	16	17

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Source: FAO, Indicative World Plan, op. cit.

Undoubtedly the work undertaken by the land resources division of the United Kingdom Overseas Development Ministry under contract with Federal Ministry of Agriculture and Water Resources (FMAWR) should shed some light on the situation.

24. However, the general assessment must be that unless there are radical changes in farming systems, and in particular the adoption of systems that permit significant reductions in fallow periods, there is currently little room for increasing production through expansion of the area cultivated. Some increase could be achieved through land clearing schemes, though these schemes often create more problems than they solve; the failure at Mokwa in the fifties and recently at Agenbode being lessons that should not be forgotten. <sup>1/</sup> Finally the recently announced changes in land tenure practices under the 1978 Land Use Decree may lead to more farmers being willing to invest in long term land improvement measures because of assured occupancy, and this could have some impact on production.

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<sup>1/</sup> See Paper 9: Large Scale Farming and Mechanization. Section C.



## Conclusion

25. The real potential for increasing production during the next few years lies in exploiting the productive potential of age-old Nigerian cropping systems through the widespread adoption of those improved technologies that can easily be infused into these systems. Simultaneously, more advanced systems including minimum tillage should be tested out on pilot programs in order to develop more intensive systems that can compensate for the disappearing bush fallow. Such advanced systems, if successful, require significant and additional investments in more highly trained technical manpower and more sophisticated and reliable farmer support services. While the results of research trials must be discounted when applied under true farming conditions, such tremendous increases have been shown without doubt to be possible, that an annual increase in production in the order of 3-4 percent per annum should be sustainable.

CHAPTER II

CURRENT PERSPECTIVE

The General Economy

26. The economic events in Nigeria during the 1970s have been dominated by developments in the oil sector. Oil revenues assumed a substantial share in the federal government budget in the early 1970s and with the quadrupling of the price of oil in 1973/74, earnings from oil eclipsed all others. Within a year the oil revenues tripled, rising to ₦ 4.2 billion (US\$6.6 billion) in 1974/75, representing 55% of the non-oil GDP or 80% of total current revenues. These financial developments had far reaching consequences for the balance of payments and the public sector's role in the economy as well as for the growth and structure of the economy.

27. Nigeria's financial situation, which showed signs of having problems as early as 1975, continued to worsen well into 1978. Oil exports plummeted to 1.5 m.b.d. in the first quarter, mainly because Nigeria continued to maintain a relatively high price in the face of intense competition from newer sources of oil, e.g., North Sea. At the same time, despite attempts to curb expenditures through fiscal and monetary policies claims on budgetary resources continued to be high, imports soared and foreign exchange reserves declined. To surmount these difficulties, the Government, early in the year, introduced a number of additional measures. These included a lowering of the official price of oil to a competitive level, a very austere budget, imposition of import restrictions and a less dominant role for the public sector; with the private sector expected to contribute half of total investment, compared to only a third in the current Plan. While import restrictions have been slow in yielding results largely because of purchases abroad made in anticipation of these measures, the other two sets of policies have proved quite effective. The oil output revived quickly and reached 2 m.b.d. in the third quarter of 1978; and rose further to 2.2 m.b.d. in the last quarter mainly because of the oil workers' strike in Iran and large purchases by the oil companies in anticipation of the OPEC price hike in December 1978. In the 1978/79 federal government budget, current expenditures were reduced by 5% and capital expenditures by 7%. In fact, the reduction in capital expenditures is expected to be much more drastic since the ministries are effectively not allowed to spend more than 70% of budgeted amounts. In order to provide budgetary and balance of payment support, the government also successfully raised two large Euro-currency loans amounting to US\$1.75 billion.

28. Trade. Agricultural imports have boomed--importation of food and live animals rose from US\$97 million to nearly US\$800 million from 1970 to 1976--while total exports (including petroleum) increased from US\$1,350 million to US\$10,122 million in the same period. Between 1974 and 1975 alone, the value of agricultural commodity imports rose by 129 percent

reflecting both the sharp rise in domestic expenditure and the higher rate of international inflation (see Table 2). Between 1974 and 1976, food imports were equivalent to 10 percent of total imports and their value in absolute terms increased by 70 percent in 1977 alone. During the same period, there has been a marked decline in the volume of traditional agricultural exports crops with only cocoa, palm kernels and rubber somewhat holding their ground (Table 3). (Details are at End Tables 1-3).

Table 2

Imports and Exports of Agricultural Commodities

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u> <sup>1/</sup>
	-----US\$ million-----						
Total Food Imports	135	145	200	260	561	796	1,160
Proportion of Total Imports (%)	8	10	11	10	10	10	N/A
Total Agricultural Exports	406	290	558	432	432	544	N/A
% Cocoa Products	55	57	44	55	77	69	N/A

<sup>1/</sup> Provisional.

Source: Federal Office of Statistics.

A most striking turnaround has been the trade in edible fats with the country shifting from an exporter to an importer. In 1974, Nigeria earned US\$49 million (net) by exporting edible fats. Two years later, exports had fallen and imports had risen to such an extent that the country spent US\$33 million (net) on edible fat imports.

Table 3

Exports of Agricultural Commodities

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
	-----'000 tons-----						
Cocoa Beans	271	228	211	180	192	228	N/A
Palm Kernels	242	212	137	186	172	272	N/A
Rubber	51	41	49	61	61	44	N/A
Cotton Seed	98	62	9	11	-	-	N/A
Raw Cotton	22	1	8	-	-	-	N/A
Palm Oil	20	2	-	-	31	3	N/A
Groundnuts	114	104	129	30	-	1.6	N/A

N/A - not available

The Agricultural Sector

29. Production. Approximately 75% of Nigeria's estimated population of 85 million (1979) is dependent on agriculture which accounts for about 25% of GDP, 5% of total export earnings, and 60% of non-oil exports. Agricultural production is almost entirely in the hands of smallholders whose levels of technology and productive efficiency are low. Their per capita income is estimated at an average US\$100 per annum. Nigeria once was a major exporter of agricultural products, such as cocoa, groundnuts, cotton and palm oil, but today, the volume of agricultural exports has greatly diminished as the rapidly expanding population has consumed the surplus exportable edible products such as palm oil and groundnuts, and little investment has been **made in replacing** aged and low yielding tree crops.

30. While the economy grew as a whole by about 7% to 8% per annum in the first half of this decade with a temporary decline in 1978 as a result of the poor performance of the oil sector, all indications are that production from the agricultural sector has grown probably less than 1% per annum on average during the seventies. The statistics are not very reliable but it would appear that only rice production has grown at a rate comparable with population growth, now estimated to be expanding at least 3% per annum viz:

Table 4

Production Trends of Principal Crops

Production Growth Rates

% per annum  
1962 - 1975

Maize	0.13
Sorghum	-0.84
Millet	1.20
Rice	4.56
Cotton	1.03
Groundnuts	-0.04
Cocoa	.97
Oil Palm	1.90
Rubber	1.40
Yam	0.04
Cassava	0.60
Cowpea	1.07

Source: Paper 4. Demand and Supply Trends and Projections

31. Consumption. Diets vary considerably between the northern states -- where millet and sorghum predominate -- and the southern states, which depend mainly upon cassava, yams and cocoyams. Maize is eaten in all areas. Cattle provide the main source of meat in the moslem north, while the south

relies more heavily on goats, sheep, pork, poultry and fish. Mission's estimates of present consumption (see Paper 4: Demand and Supply Trends and Projections) indicate that average nutritional levels in Nigeria are comparable with levels in other major African and South Asian countries, at an average 1,880 Kcals/day and 48 grams of protein, though this is considerably below FAO/WHO requirements of approximately 2,240 Kcal/day and 67 grams/day.

Table 5

Consumption Levels in Various Countries

	<u>Kcal/day</u>	<u>Protein grams/day</u>
Nigeria /a	1,880	48
Ghana	2,290	46
Kenya	2,080	59
Tanzania	1,950	46
(Bangladesh)	2,020	44)

/a Mission estimate. Paper 4. Demand and Supply Trends and Projections

Source: Monthly Bulletin of Agricultural Economics and Statistics, 1976.

Government Programs

32. The government's program to exploit the latent productivity gap should be evident from its budget. A breakdown of allocated expenditure on agriculture in the Third Five Year Development Plan and in the 1977/78 estimates, given in Table 6, reveals the tremendous importance given to formal irrigation schemes operated by the River Basin Development Authorities, as well as to direct government production schemes, viz:

Table 6

Government Expenditure on Agriculture by Major Expenditure Category  
(N million)

	Federal	1977/78 Estimates (Recurrent & Capital)			3rd Plan 1975-1980 (Capital only)	
		States	Total	%	Total	%
Extension service and input supply /a	34.0	89.1	123.1	(16.0)	305.6	(10.0)
Fertilizer purchases	-	43.0	43.0	( 5.6)	313.3	(10.2)
Mechanization	.9	33.7	34.6	( 4.5)	71.5	( 2.3)
Direct production schemes	11.1	47.2	58.3	( 7.6)	432.6	(14.1)
Seed multiplication	2.8	18.9	21.7	( 2.8)	62.9	( 2.1)
Credit	16.0	11.2	27.2	( 3.5)	194.9	( 6.4)
Irrigation	182.4	45.2	227.6	(30.0)	701.5	(22.9)
Training	1.2	15.9	17.1	( 2.2)	47.3	( 1.5)
Marketing and Storage	15.4	15.5	30.9	( 4.0)	73.1	( 2.4)
Miscellaneous	5.1	13.7	18.8	( 2.4)	132.8	( 4.3)
TOTAL CROPS:	268.9	333.4	602.3	( 78.7)	2,335.5	(76.4)
Livestock	20.3	77.4	97.7	(12.7)	487.7	(15.9)
Forestry	7.6	35.1	42.7	( 5.5)	135.7	( 4.4)
Fisheries	8.5	15.2	23.7	( 3.1)	99.4	( 3.3)
TOTAL AGRICULTURE:	305.3	461.1	766.4	(100)	3,058.3	(100)
Less Federal grants to States			12.6			
Total (net):			<u>753.8</u>			

/a Includes special programs - Operation Feed the Nation (OFN), National Accelerated Food Production Project (NAFPP), Agro Service Center Programs (ASC) and Agricultural Development Projects (ADP).

Data on actual expenditure is scarce, and the mission obtained data for only three states which revealed tremendous variation between the states. In 1976/77 actual expenditure as a proportion of budgeted expenditure on agriculture was in Oyo State 46%, Kaduna State 84% and Plateau State 76%. In the absence of more reliable and up-to-date information one can only assume that the pattern of allocations reflects the pattern of expenditures. In 1977/78 30% was allocated to major irrigation schemes, compared to only 15% for extension, input supply services and special programs for servicing smaller farmers. Training was allocated 2%, compared to 8% allocated for production schemes with government agencies directly responsible for management, and

compared to the 4.5% allocated to mechanization schemes, particularly the government's subsidized tractor hire service. Such allocations are out of step with government's stated objectives of social and economic equality because the vast majority of the farming population is untouched by these programs. This pattern of expenditure may reflect in part the management and manpower constraints being felt throughout the economy, and particularly in the agricultural sector. Irrigation and direct production schemes often lend themselves to either turn-key operations or capital intensive methods of development that can be carried out by large contractors and which, during the early stages of execution, give a false sense of saving on scarce domestic management and technical resources. Government has also, however, instituted several programs designed to capture the productive potential of the smallholder, which are proving to have very considerable impact. These are discussed in Chapter III.

### The Future

33. Food Needs. The mission's estimates are that by 1985 Nigeria's gross demand for foodstuffs will be 22.6 million tonnes of cereal equivalent, 6.6 million tonnes greater than estimated production. By 1990 this deficit will have increased to 10.6 million tonnes of cereal equivalent or 40% of demand.

Table 7

Projected Supply and Demand for Foodstuffs (Gross)  
(millions of tonnes of cereal equivalent)

	<u>Demand</u>	<u>Domestic Supply</u>	<u>Deficit</u>
1975	15.3	14.6	0.7
1985	22.6	15.9	6.6
1990	27.4	16.8	10.6

These projections assume a 3% growth rate of population and a real income growth rate of 2% per annum. Some 15% of the demand is required to compensate for seed requirements, animal feed and wastage. For this deficit to be filled by domestic production aggregate domestic production should grow at an annual compounded growth rate of 4% as compared to the current rate of less than 1%. (For other assumptions see Paper 4: Demand and Supply Trends and Projections.)

34. Recently two other estimates were made of Nigeria's likely future food deficit, one by the International Food Policy Research Institute (IFPRI) and the other by the World Bank's Agricultural and Rural Development Department (AGREP). As can be seen from Table 8 the mission's estimates of Nigeria's future food need are not strictly comparable with the other two estimates. The total net food deficit in cereal equivalent for Nigeria in 1990 as projected by IFPRI is around 18.5 million tonnes compared to 16.5 million tonnes estimated by AGREP and a comparatively lower figure of 10.6 million tonnes estimated by the mission. Some of the major reasons

for varying estimates are inherent in the basic assumptions used by the three studies. For example as against the missions's estimate of long-run per capita income growth rate of 2%, IFPRI assumes an income growth rate of 6.3% and AGREP a low of 2% and a high of 4%. Details are in Paper 4, para. 26. Despite these differences in assumptions and results, one common conclusion of all three estimates is that if nothing changes and the present trend in production continues, the result will be a massive food deficit for a country that until this decade was self-sufficient in food production. The implications of this are difficult to determine exactly and require a detailed knowledge of the overall economy and the linkages between the different sectors.

Table 8

Comparative Demand Supply Projections for Nigeria  
1975-1990

'000 in tonnes cereal equivalent

<u>Source</u>	<u>Assumption</u>			<u>Supply</u>			<u>Required Annual Compounded Production Growth Rate</u> -per annum-	
	<u>Produc- tion Growth Rate</u> -----per annum-----	<u>Popu- lation</u>	<u>Per Capita Income</u>	<u>in base year 1975</u>	<u>Total Demand (1990)</u>	<u>Total Supply (1990)</u>		<u>Deficit</u>
IFPRI /a	0.5	3.03	6.3	17,898	36,414	19,304	18,516	4.8
AGREP /b	0.5	3.03	4.0	16,400	41,900	18,000	22,800	6.4
AGREP	0.5	3.03	2.0	16,400	34,600	18,100	16,500	5.1
Mission estimates	0.45	3.00	2.0	15,721	27,402	16,810	10,592	3.8

/a IFPRI. Food Needs of Developing Countries: Projection of Production and Consumption in 1990. Research Report No. 3, 1977.

/b IBRD. AGREP Divison Working Paper No. 13 Towards Greater Food Security for Nigeria, 1978.

35. It seems likely, however, that if present agricultural production trends continue this could have a considerable effect on three major areas with implications for the overall economy:

- the balance of payments situation;
- domestic inflation; and
- GDP growth;

36. Balance of Payments. The projected 1990 food deficit of 10.6 million tonnes of cereal will have to be imported unless domestic supply is brought in line with demand as prices increase as food becomes short. Imports of this quantity would cost in the order of US\$2 billion or N1.3 billion per annum in 1978 prices. This would be equivalent to one quarter of the total



1976 import bill and almost twice the amount now allocated to the agricultural sector. Unless the appropriate policies and programs are implemented, it is unlikely that exports of the traditional agricultural commodities such as cocoa, rubber, and palm kernels which are presently declining, would grow in proportion to the food import requirements. It is also unlikely that exports of groundnuts and oil palm will be regenerated because their domestic demand will continue to expand; in fact, imports of vegetable oil are likely to continue. Exports of primary commodities are not expected, therefore, to contribute more than 5 percent of total value of exports and may be less than 1 percent if, as expected, real prices of cocoa fall.

37. Inflation. Food prices are the single most important contributor to the aggregate consumer price index - a reflection of the fact that in Nigeria food expenditure accounts for nearly 50% of total household expenditure. Between 1970 and 1977, the overall consumer price index (1960 base) rose by approximately 400 percentage points. Food prices rose by 500% while other prices rose by only just over 200%. The inflationary consequence of soaring food prices in developing countries such as Nigeria are far more serious than for developed countries because of the relatively high proportion of incomes spent on food, and efforts to stem food price rises could have a major impact on government's ability to reduce present inflation levels which have averaged 26% for the last three years and show little sign of decline.

38. GDP Growth. The agricultural sector contributes about 25% of GDP (see End Table 6). This is less than the oil sector which contributes about 30% of GDP, but considerably more than the construction, manufacturing and general government sectors which contribute less than 10 percentage points each at the present time. Consequently growth of GDP is sensitive to changes in growth of the agricultural sector and slow growth in agriculture is likely to significantly slow down overall economic growth. In addition since the agricultural sector is linked to other elements of the economy, particularly the informal and distribution sectors, the extent of growth in the agricultural sector will affect growth in these sectors, and have a direct impact on the pace of rural-urban migration.

### Conclusion

39. Unless action is taken to exploit the existing productive potential of the agricultural sector, as described in Chapter I, a continuation of present trends will have serious implications for the overall economy. The available choices to avert this situation and some of the steps that need to be taken if the performance of the agricultural sector is to improve are discussed in the next Chapter.

### CHAPTER III

#### THE REALISATION OF PRODUCTION

##### Introduction

40. The realisation of production increases leading to self sufficiency in food and the export of industrial crops will depend on Nigeria first deciding on an appropriate strategy for tapping the productivity reserve of its agricultural sector, and secondly, on the successful implementation of that strategy.

##### Choice of Strategy

41. The development of the crop, forestry and livestock potential in Nigeria requires further consideration by government in order to establish a workable and effective strategy that will meet the objective of sustained agricultural growth with equity. In considering an appropriate strategy, the costs of the different choices, the technical constraints and the likely impact of the projected output on overall aggregate production and the distribution of benefits should be reviewed and analyzed.

##### Crop Development

42. The choice in further exploiting the productivity potential of both annual and perennial crop production is between stimulating the traditional mainly smallholder 1/ sector, and the development of large-scale modern capital-intensive enterprises. A secondary decision is whether to develop crops under rainfed or irrigated conditions.

43. Production from smallholders, on our best estimates, makes up about 90%-95% of Nigerian agricultural production. Present schemes to develop 4,000 hectare mechanized farms 2/ in each state, and the expansion of government tractor hire units with tractor utilization of about 500 hours/tractor year can only scratch the surface of the crop production potential. Given government's manpower and managerial constraints it may seem easier in the short

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1/ In this context a smallholder is a family holding 2 to 3 ha but would include farmers up to 50 ha, who generally follow traditional farming systems.

2/ It should be noted that the expansion of large scale mechanization schemes would require highly sophisticated support systems to ensure adequate output and financial viability. Historical experience elsewhere in Africa, for instance in Ghana, Zambia and Tanzania, has been discouraging.

run to contract out to commercial concerns the development of such mechanized farms but until the challenge of realising the productivity potential of the smallholder is squarely faced there will be no visible change in current prospects. Our estimates are that there are some 16 million ha under foodcrop cultivation and that total planned acreage of large scale mechanized food production schemes - of the order of 500,000 ha -- will be less than 3% of the cultivated area, assuming successful implementation of all schemes. In addition, if one assumes that all serviceable four-wheeled tractors in 1977 were used exclusively for land cultivation these would only have the potential to cover around 300,000 ha or about 1.3% of the total area cultivated. The mechanization program is therefore relatively insignificant from a production point of view and should be reexamined in the light of the significant costs both in terms of funds -- development costs can be four times higher than under hand cultivation -- and scarce manpower resources that it absorbs. There would appear to be no alternative but to concentrate on the smallholder sector.

44. Most smallholders operate under upland conditions. Best estimates are that some 800,000 hectares or 5% of the land under cultivation is cultivated under small scale traditional (fadama) water control methods; consequently, while there remains considerable potential for expanding this area and for increasing yields, investment per ha to realise this is higher than in rainfed development, by as much as a factor of ten times. Furthermore, government has embarked on a series of ambitious large scale modern irrigation schemes which, if completed, would cover 66,000 hectares. In addition projects are being prepared that would yield a total of 165,000 ha by 1983 and 215,000 ha by 1988. Again this potential area is only a very marginal component of the overall production capability. Furthermore such schemes require relatively heavy investment per family and per hectare, and like the intensive mechanization schemes (para 43) require significantly superior support systems. Consequently their economic returns are lower than returns from developing rainfed smallholder production (See Table 9). In summary, the commitment to large scale irrigation schemes should be re-examined in the light of the impact of the program on overall production. Considerable scarce resources have been allocated to these government-run large-scale irrigation projects -- in the order of N770 million -- while at the same time the managing agents, the RBDAs, have drained the state ministries of their most competent technical staff who are no longer available to work on other more productive programs. Furthermore, in view of the serious technical problems which the on-going large scale irrigation projects are facing, largely because of insufficient preparation, it would be imprudent to expand these schemes until effective monitoring and evaluation of the existing projects has been established and the lessons of the first years absorbed. 1/

#### Forestry

45. Wood is being removed from the forest at a rate in excess of its natural increment. In 1977,<sup>3</sup> total consumption of industrial roundwood equivalent was 3.1 million m<sup>3</sup> and was converted mainly into lumber and plywood. Nigeria's presently utilized forest reserves can produce only 1.6

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1/ Details are in Paper 6: The Irrigation Sub-Sector paras. 18-23.

Table 9: Internal Rates of Return for a Range of Investment Alternatives 1/

<u>Scheme</u>	<u>Area/Zone</u>	<u>Range of ROR</u>	<u>Dev. Cost/ Farm Family 7/ N</u>	<u>Dev. Cost/ Hectare 7/ N</u>
<u>Irrigation 2/</u>				
Small scale swamp bottom land development	Southern Forest	10%-15%	3000	2000
Small scale fadama	Middle Belt	15%-25%	3000	2000
Mechanized intensive rice cultivation	Southern Forest	-5%-0%	N/A	7800
South Chad Irrigation Project	Sahel	0%	42000	10500
Kano River Project (Phase I) without sunk costs until 1978	Sudan	2%-3%	6300	5200
with sunk costs up to 1978		4%-5%	8100	6700
Sugar Estates	Middle Belt	0%-5%		25000 6/
<u>Mechanized Farms 3/</u>				
Private farm	Northern Guinea	.25%	45000	450
<u>Integrated Agricultural 4/ Development Projects</u>				
Gusau ADP	Sudan	35%	200	100
Funtua ADP	Northern Guinea	62%	200	100
Lafia ADP	Southern Guinea	23%	300	300
Ayangba ADP	Derived Savannah	46%	100	200
<u>Tree Crop Projects 4/</u>				
Smallholder Cocoa Project	Lowland Rain Forest	45%	1600	1600
Smallholder Oil Palm Project (Imo) 8/	Lowland Rain Forest	25%	6200	3100
Oil Palm Plantation with Outgrowers (Rivers State) 8/	Lowland Rain Forest	16%	9700	3400
Smallholder Rubber Project	Lowland Rain Forest	10% 5/	7300	3600

1/ See End Tables 11 to 19 for details. Development costs for irrigation, mechanized farms and ADPs include only infrastructural costs and not on farm costs, whereas for all tree crop projects they include all costs required to establish and maintain tree crops to bearing, including the cost of all farm labor. Costs are in 1978 terms, expressed in economic not financial terms, i.e. adjusting for the shadow wage rate and for the shadow rate of exchange (SCF .65 see para. 79). All costs are taken from IBRD appraisal reports, updated to 1978 using the following rates which are a composite of domestic (2/3) and international (1/3) inflation rates:  
1972/73 - 18.7% 1973/74 - 14.9% 1974/75 - 32.6% 1975/76 - 9.2% 1976/77 - 23.9% 1977/78 - 20.0%

2/ Details in Paper 6. Irrigation Sub-Sector

3/ Source: Paper 9. Large Scale Farming and Mechanization

4/ Source: updated IBRD Appraisal Reports

5/ Includes intercrop

6/ Includes price of full turn-key operation.

7/ Rounded to nearest hundred

8/ Includes oil mill costs.

million m<sup>3</sup> on a sustained yields basis, 1/ and only 0.3 million m<sup>3</sup> is produced outside the forest reserves. This fact, combined with the probability that Nigeria's implied consumption of industrial roundwood will increase rapidly, means that Nigeria will have to establish industrial plantations or import increasing quantities of roundwood in some form.

46. The rate at which high forest will have to be converted into plantations will depend mainly on the degree to which Nigeria decides to depend on imports for future requirements of wood-based products. A goal of self-sufficiency by 1995 would involve the planting of just over 500,000 ha (33,000 ha/annum) of fast growing species (assuming an annual increment of 20 m<sup>3</sup> per hectare on plantations and 1.5 m<sup>3</sup> per ha in the natural forest). Details are in Paper 8: The Forestry Sub-Sector paras 10-45. Further research is required on the most cost-effective measures to take.

47. Stumpage rates need to be revised nationally. Stumpage rates should be equal to the excess profits generated because of the restricted supply of wood with due recognition given to the difference in logging costs between natural forests<sub>3</sub> and plantations. Present stumpage rates range from N 2.00 to N 4.00 per m<sup>3</sup> for most high forest species and responsibility for measuring the harvested product is held by the concessionaire rather than government. These rates and methods of collection should clearly be revised. The costs of growing most of the traditional species on plantations would far exceed those of growing the fast growing Gmelina<sup>2</sup> due to their longer gestation period, and a suggested rate of N 20 per m<sup>2</sup> seems rather modest, especially if it is considered that logs on the free market in Nigeria sell for N 50 to N 60 per m<sup>2</sup>.

#### Livestock

48. Livestock is an important but relatively minor sector in the Nigerian economy, accounting for only 5% of the gross value of agricultural production, and the relevant strategy for this sub-sector has to be based on two factors. First, there is a serious overgrazing problem in those regions where cattle are currently being produced (see para. 22) and a reduction in herd size is called for or an increase in land productivity. Second, there appears to be an insufficient domestic supply of feed supplement to meet the increasing needs of the livestock sector; and either domestic production of feed must be increased or vast quantities will have to be imported. This choice needs to be made in the context of the comparative advantages of the sector. Thus to the extent that food and feed products compete for the use of land and other farm resources, the expansion of feed production may decrease the import of feed but could result in the need to import more food. Consideration should also be given to the advantages of importing feed for conversion into livestock products in Nigeria vis-a-vis importing livestock products. Clearly if the latter alternative is cheaper, it should be preferred to the former.

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1/ At least 20 percent of Nigeria's forest reserves, mainly in the southwest of the country, are still untouched due to geographical location and lack of infrastructure.

49. Within the limits of the data available (see Paper 7: The Live-stock Sub-Sector for details) it appears that expansion of domestic beef **production on a commercial** basis should be approached with caution on the basis of a case by case analysis of economic and financial viability. It would appear that at this stage the soundest approach to livestock development should be based upon the integration of livestock within a general agricultural development program, improving health control, extension services, input delivery systems for supplementary feeds and drugs, and improved access to water and credit. Major efforts will be needed in finding a proper solution regarding the Fulani livestock owner; and the national farm service institutions will need to be very flexible in their relations with these people who own the majority of Nigeria's cattle population. Milk production in Nigeria, under present agricultural technology, has only limited potential and milk supplies can be more inexpensively imported than domestically produced. Little is known about sheep, goat, poultry and pig production under traditional practices and research is needed to design appropriate systems of **production**. In the short run there is potential in improving veterinary services to combat chick-mortality in poultry and internal parasites in pigs.

#### Rainfed Smallholder Development Program

50. We have argued that there is a considerable productivity reserve in Nigeria which lies untapped in the traditional smallholder rainfed sector. Farmers' response to state and federal schemes where there have been improved services offered to farmers -- albeit on a limited scale -- clearly indicates the feasibility of realizing this reserve.

51. The four principal programs of this type that have been initiated already are: Operation Feed the Nation (OFN); National Accelerated Food Production Project (NAFPP); Agro Service Centers Program (ASC); and Area-Based Integrated Agricultural Development Projects (ADP). The four programs have begun to have a considerable impact, though, in the third plan period (1975-80) they were allocated only 4 percent of the agricultural budget: OFN - N 7 million; NAFPP - N 13.3 million; ASC - N-20.0 million; and ADP N-71.3 million. Though it is still too early to measure their impact, it seems certain that they have begun to exploit the productivity reserve of the smallholder.

52. OFN. Operation Feed the Nation (OFN) is essentially a publicity drive to make Nigerians and particularly the urban communities aware of the national need to increase domestic food production. The program supports a major advertising campaign, provides a small amount of funds for training students during vacations and, in addition, has a large program for production of day-old chicks, and has school, army, prison and backyard garden programs. The OFN secretariat also shares responsibility for the procurement and distribution of subsidised fertilizer in conjunction with the fertilizer unit of the Federal Ministry of Agriculture & Water Resources (FMAWR). OFN's most significant achievement is that it has made farming respectable again, after its relegation to a back seat during the early '70s. In addition imports of fertilizer have increased significantly and much has been done to advertise its value. However OFN will remain a public relations organization, having neither the staff nor the authority to become a fully fledged development agency.

53. NAFPP. The National Accelerated Food Production Project (NAFPP) links the work of the national crop research centers to an extensive variety trial program on farmers' fields. In order to focus attention on essentials the NAFPP's activities cover only the principal food crops in Nigeria namely, maize, rice, millet, sorghum, cassava and wheat. A series of nationwide seminars on the concepts of NAFPP have been held and a major contract given to the International Institute of Tropical Agriculture (IITA) to undertake adaptive research and planning for the NAFPP. Subject matter specialists have been hired to advise on training programs, input distribution systems and the like. Emanating directly from their recommendations is the program to establish a number of agro service centers, discussed in para. 54. The variety trial program is carried out at the state level through specially allocated federal funds and is supported by an input distribution system for complementary inputs such as fertilizer and insecticides. In addition, a monitoring system for evaluating the performance of different varieties is being established to ensure feedback to the national research centers. It was originally proposed that the NAFPP would be established in eight states and at a later date, once its success had been consolidated, manpower trained, and inefficiencies in the system ironed out, be extended in successive phases to cover the remaining eleven states. However, due to pressure from states that were not scheduled to receive the NAFPP until later phases, the project has already been extended to the whole federation and is consequently suffering in its third year from major managerial and manpower problems. While sound in concept the logistical problems of implementing NAFPP nationwide have been underestimated to the extent that the whole program has been put in jeopardy. Recognizing the implementation problem some states, such as Kaduna, plan to attack the problem in a concerted manner through an integrated agricultural development project (ADP). However the NAFPP has clearly demonstrated that crop yields at the farm level can be improved dramatically (see para. 15). This is a major achievement and a pointer of things that could come if the concept is properly consolidated through the ADP approach.

54. ASC. The Agro Service Centers (ASCs) are directly linked to, and are a part of the NAFPP. They are intended to function as self-financing input distribution and crop marketing centers from which farmers can obtain improved inputs such as seeds, fertilizer and insecticide and to which they can sell their crop produce. Conceptually the ASC program has, in its design, been highly influenced by the US farm cooperative supply system. The system if properly planned and managed is suitable for Nigeria's needs. A program to build an agro service center in each local government headquarters in the federation is underway at a cost of about US\$160,000 each, but given the unreliability of local contractors and the lack of control exercised by state ministries of agriculture on these contractors, coupled with the present shortages of local funds, the program is faltering. In addition a considerable amount of conceptual work and changes in pricing policy need to be instituted to ensure that the centers can run as self-financing units. As with the NAFPP, the few centers that are completed are suffering from managerial and manpower constraints in the absence of a competitive hiring policy and purposeful training program. The success of the ASC program is constrained by the lack of complementary infrastructure. For instance, the dearth of all-weather feeder roads is such that only a small proportion

of the farming population has reasonable access to the centers. In summary, the ASC concept is sound but to make a cost-effective impact on production, it must be implemented according to realistic planning, under efficient supervision and management and, most importantly, established within a system involving a variety of essential complementary services including extension, credit, access roads, etc.

55. ADP. The series of integrated agricultural development projects (ADPs) which were initiated in 1975 at Gusau (Sokoto State), Funtua (Kaduna State) and Gombe (Bauchi State) are designed to bring the combined concepts of the OFN, NAFPP and ASC programs to a defined rural population and overcome, on a systematic basis, the managerial and manpower constraints besetting the NAFPP and ASC program. To that end considerable emphasis has been given to establishing effective organizational structures, management capability and to training manpower. The ADPs concentrate on providing inputs such as fertilizers, pesticides and farm machinery; extension and training in the use of improved farming methods; credit facilities to enable farmers to purchase inputs; and marketing arrangements to help farmers to obtain the best price for their produce. Seed multiplication centers and variety trial programs have been established; training programs for extension officers and training of farmers through radio, in-house training, and film services have been initiated; credit is provided directly to groups and individuals; and farm service centers -- smaller and less expensive versions of the ASCs -- have been constructed and road access developed to enable supplies to be brought in and produce to be evacuated so that each farmer is within 5-10 kilometers of the nearest farm service center. In addition a major program to evaluate the progress of the ADPs has been established which is proving to be a major aid to implementing present, and planning the development of future ADPs. Government has begun the ADP program cautiously in order not to over-extend managerial and manpower supplies. After the first three which were begun in 1975, the Lafia (Plateau State) and Ayangba (Benue State) ADPs were begun in 1978. In addition Bida (Niger State) and Ilorin (Kwara State) are scheduled to begin in 1979 and Oyo North and Ekiti Akoko (Ondo State) are expected to begin in 1980. At present, government hopes to expand the ADP concept to all appropriate states in the federation, intensively where increased crop production can justify the expenditure, while in other areas on an extensive basis. Perhaps one of the most important aspects of the ADP programs is its close linkage to the newly reformed Local Government Council system and its dependency on the latter for local decision making and shared policy and development planning at a local level. This aspect is to be intensified in future programs.

56. While the analysis of the first three years of the Gusau, Funtua, and Gombe ADPs has not been completed, there are a number of indications that these projects have helped smallholders realise much of their potential and increase their production through the use of improved practices and technology - technology that has been developed over a number of years and which was, hypothetically, available to farmers before the projects were initiated. Experience shows that when a farmer is aware of these new possibilities and can find a source of farm supplies and can be assured of a reasonable market, he readily exploits the situation. For example



fertilizer consumption in the first three years of the projects increased from about 1,000 tons product to nearly 50,000 tons product. At Gusau chemical fertilizer coverage has increased from 5% of project area farmers to 64% by the third season, with similar results in the other two projects. Again at Gusau, sales of ox plough equipment have been so impressive that the area under oxen cultivation has increased nearly 100%, from some 60,000 ha to about 120,000 ha. The uptake of improved maize seeds at Funtua and Gombe was reported to be phenomenal in 1978. At Gombe the project made available 700 tons of dressed seeds which were immediately bought by farmers who planted an estimated 35,000 ha of improved maize, compared to virtually none the year before. More information should be forthcoming as analysis of the first three years data proceeds, but a field visit is enough to satisfy the observer that significant changes are taking place.

### Recommendations

#### Introduction

57. In the light of Nigeria's potential, experience and constraints, an equitable policy of effective agricultural development should involve principally a major effort to plan and implement a series of integrated agricultural development projects to cover, in time, the entire federation. It would seem desirable that livestock development, including the improvement of traditional cattle production be integrated, where appropriate, within that approach. Likewise, integrated agricultural development projects could incorporate financially and economically justified small irrigation schemes, which, except for water management, require services such as extension, credit, input supply, etc., to a similar degree as rainfed agriculture. In those areas where reforestation constitutes the best use of land, financially and economically justified forestry plantations should be developed to meet, in combination with imports, the domestic needs for forestry products. A program involving the above features is analyzed in Chapter IV. However, to implement such a program effectively decisions are needed in the following areas:

- Agricultural Institutions, particularly in Policy Formulation and Analysis, Planning, Monitoring and Evaluation
- Infrastructural development, specifically feeder roads and marketing systems
- Agricultural Research
- Pricing and Trade Policy
- Training and Manpower Policies, and
- Agricultural Credit.

58. Strengthening federal, state and local government authority organizations to support the ADP/NAFPP approach is of first importance. It is necessary to rationalize planning, evaluation, policy analysis and formulation capabilities, particularly within the federal government structure where three or four separate ministries have overlapping functions with the result that there is a lack of coordination in policy formulation and strain in the use of scarce manpower and financial resources. At the state level it is necessary to re-orient the ministries' functions to provide sound technical and farm management advice while delegating functions best handled by commercial concerns to the private sector. Until this has been achieved it will be difficult to ensure that the ADP program is carried out efficiently and where problems occur -- as undoubtedly they will -- that these are identified and speedily corrected. It will also make it more difficult to plan and implement the major investment program that is required to develop rural infrastructure, particularly feeder roads, market development and market intelligence systems. Additionally a stronger coordinating body with lines of communication to activities and problems at the field level would be better able to ensure that national research efforts are directed at priority areas. In particular there is a need to strengthen the link between the national agricultural research programs and the testing of varieties at the farm level through adaptive research. A strengthened policy analysis group is needed to examine Nigerian trade and pricing policies with a view to improving the exploitation of Nigerian comparative advantages and increasing production through this means (see para. 20). The supply of trained manpower needs to be carefully assessed and appropriate manpower policies instituted and training capacity increased where necessary. Finally, while the credit needs of small farmers can be administered through the ADPs, the whole question of agricultural credit and the mechanisms for its supply needs to be examined from an institutional point of view.

#### Agricultural Institutions

59. Federal Level. At present, the principal institutions responsible for administering agriculture are the recently reorganized Federal Ministry of Agriculture and Water Resources (FMAWR); River Basin Development Authorities (RBDA); State Ministries of Agriculture and Natural Resources (MANR); Local Government Councils (LGC); Commodity Boards; Agriculture Development Corporations (ADC); the National Science and Technology Development Agency (NSTDA); and Research Institutes. All institutions are interrelated. FMAWR is responsible for proposing state grants to the Federal Executive Council (FedExCo); coordinating plans; instituting and executing agricultural projects, either alone or in conjunction with state governments and/or their agencies; and coordinating activities of RBDAs, which are responsible for water resource, agriculture and fisheries development in the river basin areas. MANRs are responsible for planning and executing projects at state level and are meant to be assisted by LGCs which have responsibility for part of these functions in their respective areas. Commodity Boards have exclusive responsibility for exports of the particular commodity which they handle; however, they share the domestic market with other commercial enterprises. Research institutes, whose activities are also organized along commodity lines nationally, are coordinated by NSTDA, a semi-autonomous agency reporting directly to the

Commissioner of Science and Technology. The ADCs are wholly owned state government agencies, responsible for developing large scale plantation agriculture on a commercial basis and for other ventures of a commercial nature. In agricultural planning, the Federal Ministry of Economic Development (FMED) plays a central role in coordinating state and federal programs primarily through its responsibility for preparation and monitoring of the Five Year Development Plan. The Plan is used as the principal method for controlling federal and state expenditure once block allocations have been made. As part of the preparation for the Plan, state ministries have their programs vetted and approved by FMED's Central Planning Office. A further mechanism for Plan coordination is the Inter-Ministerial Planning Committee on which FMAWR and the Federal Ministry of Finance are represented. At present, the little plan discipline that exists is exercised mainly through the power of FMED and Finance to withhold loans and grants from those state ministries, that, in the process of project implementation, deviate from prescribed procedures. FMAWR has no direct control over state agricultural programs.

60. The tremendous expansion of government spending combined with the recent creation of new states, new organizations and the revamping of existing organizations has, not surprisingly, led to some confusion. While some of the problems of coordination will undoubtedly sort themselves out in due course, the immediate strengthening of certain links in the structure would have a major impact on the time it will take for the system to settle in and be able to support the ADP program. This is particularly so in the areas of planning, monitoring, evaluation and policy formulation to enable the institutions involved in the agricultural sector to play a guiding and coordinating role. Additionally the functions and responsibilities of various organizations overlap at the present time and need to be better defined to avoid duplication, confusion, and wastage of the limited supply of funds and manpower.

61. A detailed analysis of the functions of the Federal Ministry of Agriculture and Water Resources (FMAWR) can be found in Paper 2: The Institutional Framework, paras. 19-25. In summary it would be desirable that the recently merged FMAWR should emphasize:

- (a) planning, coordinating, and evaluation of agricultural programs, including irrigation schemes under a revamped Planning Department. This unit would have a policy analysis and formulation function;
- (b) overseeing the collection, analysis, interpretation of market information and of other data critical to planning;
- (c) administering a team of high level specialists in a Technical Department, who would advise and support state personnel. The federal specialists would principally be located at the four zonal offices. Associated with these activities should be the coordination and monitoring of the RBDAs and of the NSTDA agricultural research network and the monitoring of federal projects; and

(d) manpower development and training.

62. State Level. Most of the state agricultural ministries should reassess their functions and structure in order to increase their effectiveness and make better use of their existing staff. <sup>1/</sup> Over the years the functions of ministry staff have changed as the ministries have taken on more and more responsibility for activities they were not set up to carry out. Thus most staff time is used to administer poorly organized fertilizer distribution systems, costly and inefficient mechanized tractor hire services, and operate vast produce inspection systems etc. The all-important staff role of providing sound technical and farm management advice to farmers has taken a back seat. Ideally, as the LGCs take over the function of low level extension, the state agricultural ministries should give priority to:

- (a) planning (including monitoring, evaluation, project preparation) and finance and budgetary control;
- (b) manpower training with emphasis on staff and farmer training;
- (c) coordination of agricultural investment projects undertaken by the states and/or parastatal agencies;
- (d) provision of specialist technical advice to LGCs and special projects; and
- (e) in exceptional circumstances provide those last resort services that the private sector will not provide.

63. Policy Analysis and Formulation. A restructuring of federal and state institutions responsible for development of the agricultural sector should give particular attention to strengthening the functions of policy analysis and formulation, planning, and monitoring and evaluation. A good example of the spin-off from improving this capabilities is the information generated by the monitoring and evaluation of the first three ADPs at Funtua, Gusau and Gombe (see para. 56). As a result we can feel sufficiently confident of the productivity reserve in the smallholder sector, to recommend implementation of a major ADP program. Without this information and any systematic record of project activities, the lessons of the first ADPs would have gone unheeded. A strengthened policy analysis and formulation capability should direct its attention to appropriate pricing policies (dealt separately in paras. 47 and 78-84) and to the effectiveness of various government programs, namely:

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<sup>1/</sup> Details are in Paper 2: The Institutional Framework, paras 28-23.

- subsidized mechanized cultivation programs,
- distribution systems for farm inputs,
- large scale government supported farms, and
- land improvement measures.

64. Subsidized Mechanized Cultivation Programs. We do not believe that government's policy of providing subsidized mechanized cultivation services to farmers through its Tractor Hire Units has achieved its objective of increasing areas under cultivation or of reducing labor bottlenecks on any appreciable scale. Furthermore, it has been a costly service - see Paper 9: Large-Scale Farming and Mechanization paras 13-20. In the longer run they undermine private THUs that charge full costs and are more efficient and, if allowed to expand, could in time service many more farmers than government run THUs will ever be able to cover, because of their inherent inefficiency.

65. Distribution Systems. If fertilizer and other farm requirements are to be made available to farmers in sufficient quantities to allow them to fully exploit existing technologies, a change in the present system of distribution of improved inputs will have to be made. Effective distribution systems, operated by the private sector, already exist for such commodities as bread, tobacco, beer, tinned milk and petroleum products. Nigerian farmers could well consume 600,000 tons product of fertilizer by 1984 compared to present estimated consumption levels of around 100,000 tons product - see End Table 23. To increase availability requires a new outlook on operating a distribution system. At the present time the system is managed by extension officers who have no commercial training and who receive no rewards for selling fertilizer. A complete transformation is required, whereby an element of competition is introduced and sophisticated marketing techniques are used in the distribution and selling of both fertilizer and probably other farm inputs. Since we do not believe that state ministry of agriculture personnel are trained in these concepts or are oriented to a commercial way of life, and given the already strained government manpower situation, we recommend that the private sector, through retailers and cooperatives, be encouraged to operate the distribution and selling of fertilizer. In addition the availability of improved seed and planting material should be increased by supporting seed growers' associations, commercial nurseries and fostering linkages with foundation seed sources. Commercial farmers are interested in producing improved seeds and planting materials if given sufficient incentive. This incentive is missing under the current haphazard policy of subsidizing seeds. Only 5% of the farmers now use improved seed, while improved seed varieties are suitable for some 50% of the land under crops.

66. Distribution of fertilizer by non-governmental means can be made while maintaining a subsidized farmgate price. One way this could be done would be by establishing state depots at which the price of fertilizer at the storegate is constant throughout the federation. This would mean that government would have to organize distribution of fertilizer down to this level or ensure that there is an effective and reliable subsidy reimbursement scheme to private concerns. From the state store to the farm, distribution charges will vary and farmers must be expected to pay this cost plus an appropriate profit margin for suppliers. A system could also be set up to

allow cooperatives or a private trading company to operate on a lease basis the ASCs and farm service centers of the ADPs through a management contract that would ensure that an inventory of various items was always held at pre-specified price levels, while at the same time allowing the agents to use the facilities to sell any commodities for which they could find a market.

67. Large Scale Government Farms. There is a doubtful optimism about the role which large scale government farms can play in reducing the country's food shortage. These farms are a heavy financial strain on budgetary resources with over ₦ 200 million (invested or planned) in large scale farms <sup>1/</sup>, and they take up a disproportionate amount of the very meagre pool of existing managerial staff. Details on the costs of government run schemes and the economics of mechanization are in Paper 9: Large Scale Farming and Mechanization. On the other hand, a corps of entrepreneurs and farmers is emerging in Nigeria seeking opportunities in production schemes. These farmers have an important role to play in the rural community in that generally they are risk takers, willing to experiment with new techniques and farming schemes. Further, they are prepared to specialize in the production of improved certified seeds which they can produce at lower cost and with more reliability than government farms. An example of the potential of commercialized production was seen at Gombe during 1978 when one farmer, when offered an attractive price, produced 3 tons/ha of seed maize over 80 ha - sufficient for 12,000 ha of improved maize to be planted in 1979.

68. Land Improvement Measures. At present government does little to support or encourage the larger farmer, except through subsidized sales of machinery. No grant or subsidy scheme is in operation to offset and encourage investments in land improvement measures, and purchased inputs such as improved seeds and specialized herbicides are barely available. In place of a policy of direct intervention government should turn its attention to supporting this cadre of farmers and build on and exploit their latent capacity. A start has been made in the Funtua and Gombe ADPs where the farm management technicians offer advice to individuals wishing to farm on a large scale (20-100 ha), preparing farm plans, surveying land, preparing budgets and acting as an intermediary with commercial banks. Such a program could be expanded to other parts of the federation, perhaps through a special line of credit at the Nigerian Agricultural and Cooperative Bank.

#### Infrastructural Development

69. In the past the basic traditional marketing structure worked well and allowed farmers to respond to new or increasing production opportunities. This situation has changed radically over the past five years. The extent to which the system has fallen short of requirements can be judged from the relative performances of the Urban Food Price Index and the index for all items including food. Over the period 1970 to 1977 the former rose from 164.4 to 573.0 and the latter from 137.9 to 261.5. Given the proven ability of Nigeria to produce sufficient foodstuffs for its needs, marketing deficiencies must have fuelled price increases in the order of 10% annually since 1970 and 30% annually since 1974.

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<sup>1/</sup> It is possible that part of the investment costs will be met by private (foreign) capital.

70. Roads. Development of rural infrastructure has received little attention during the current development plan period (1975-1980). With the rapid improvement of inter-state highways an increasing proportion of the transport fleet is unsuitable, but not unusable, for earth and lightly surfaced roads. A large proportion of the vehicle fleet is now made up of trucks with an axle-weight suitable for inter-state highways but not for feeder roads where they cause extensive damage. Degradation of both roads and vehicles has thus accelerated and costs have increased. By the same token, short-haul work has become progressively less attractive as average vehicle size has increased and, in relative terms, many farmers are less well served than previously, despite the major investment in trunk roads.

71. The unit cost of moving crops from the producers' village to the first stage in the marketing system are almost inevitably higher--even though the distances involved are not great--than the costs in transporting them to their final point of consumption or export. Some information on costs of the first stage in the process for cotton are available from the Gombe ADP evaluation unit, where donkeys are the most commonly used means of moving cotton. Their data shows that moving cotton by motor vehicle -- possible only where feeder roads have been developed -- is less than any other means and a third cheaper than donkey transport, viz:

Table 10: Cost of Moving Cotton from Farm to Market - Gombe Area  
N/tonne/km

Donkey	N 5.07
Motor Vehicle	N 3.23
Foot	N 5.67
Hand cart	N 4.00

Source: Paper 3: Farmer Services and Rural Infrastructure. para. 41.

Concomitant to the economic benefit of the ADP feeder road programs there has been a tremendous psychological boost to their farming communities in the ADP areas who begin to feel that farming is receiving the attention due to it. In addition there has been a considerable development in communications within these rural areas which will pave the way for further changes.

72. Lack of a feeder road inventory by type and condition makes quantification of actual needs impossible, but an indication of the extent of the need for more roads can be gained from specific area studies. A rule of thumb approach is that in an agricultural smallholder environment the minimum feeder and access road requirement is of the order of 110-130 meters/km<sup>2</sup>. Obviously the actual requirement will depend on the proportion of arable land, area cropped, topography, population density, as well as proximity of farm lands to major highways. An analysis of the road system in various ADPs (see End Table 20) shows a road density less than half the desirable minimum which, in most cases, will only put farmers in the most densely populated areas within five kilometers of a motorable road. While the areas are not fully representative of the country as a whole, particularly as there is no data for the south east, they do provide an indicator as to the size of a necessary feeder road construction and maintenance program.

Applying the average additional requirements of  $61 \text{ m/km}^2$  surface area and  $367 \text{ m/km}^2$  cultivated area to national figures puts minimum feeder road needs between 56,000 and 64,000 km. This would result in an annual maintenance requirement (including estimated existing roads) of around 115,000 kms.

73. Storage. Storage is not a constraint on production in the north, although in the future it may be so for the larger specialist grain producer. In the south, storage characteristics of roots and tubers tend to limit supply, as does inadequate processing capacity. Present output could result in more food supply and larger farm earnings if advantage is taken of the availability of larger processing capacity, such as those being developed by the National Root Crop Production Company.

74. Markets. Increased investment in rural markets, particularly in major assembly areas where traders should be encouraged to become more permanent through the provision of storage, communication facilities and generally improved working conditions, would indirectly encourage the smallholder to produce for the market. Market facilities in the rural areas are customarily very rudimentary and usually only comprise a series of covered stalls; durable construction materials such as concrete are seldom used, floor areas are generally compacted earth, while running water and sewerage facilities are non-existent.

75. A continuation of the significant rural-urban shift would have a considerable impact on the amount of food that will have to be moved into the urban centers and on the types of food demanded. Consequently there is a need for improvement in urban marketing systems. The mission estimates that by 1990 there will be 23 million people living in Nigeria's 31 major urban centers and of these 15 million or 13% of the total population will have a significantly different and relatively 'modern' dietary pattern. Over the past few years, demand for convenience food, such as instant yam flour, bread, imported rice, etc., has grown very much faster than demand for traditional foodstuffs as a result of the large build up of urban centers and urban family incomes. On the basis of urban income elasticities of demand and projected urban growth rates (see End Tables 4 and 5) 20% of total consumption requirements or 5.5 million tons of cereal equivalent will be required by the urban population. In tonnage of actual produce this is roughly 10 million metric tons, an increase by a factor of five over that present urban populations' consumption. In effect the marketing systems that serve the major urban centers will have to carry five times more produce in 1990 than they did in 1975 if demand levels are to be satisfied. Implications of this are that unless marketing systems are improved, urban poverty will become more acute and, since the easiest means of filling this demand will be to rely on imports as most of the urban centers are closer to the coast than the major grain producing areas in the north of the country, the productive potential in the country will be neglected.

76. Market Intelligence. Lack of information is frequently given as a reason for poor market performance. Without standard grades, weights and measures accurate information is impossible. In the present situation price data collected by federal and state representatives in the same market can vary not only in absolute terms but also in the direction of change. The



information problem is not only confined to prices, but covers the whole spectrum from planning intentions, planted area and seasonal expectations through to harvested quantities and disposals. Making real progress in market development will be impossible until timely and reliable data are made widely available. The creation of a credible information service will do far more for farmers and the agricultural sector as a whole than any system of support prices or government involvement in the actual marketing process, since it will increase the farmer's confidence in the market mechanism, reduce his chances of being taken advantage of, and thereby increase his willingness to produce a marketable surplus. For example Gombe ADP runs a radio program that keeps farmers aware of the opening and closing of cotton markets and reduces the risk that the farmer will arrive at the market with his cotton, which takes time and costs money to transport, only to find the market apparently closed and an LBA only willing to offer him a reduction on the official producer price to 'avoid' him having to make a second trip. It is therefore recommended that a market information service should be established, probably by the Nigerian Grains Board, with emphasis on a small number of the more critical crops.

#### Agricultural Research

77. Whatever the degree to which the productivity reserve remains unexploited there remains much work to be done in adapting technologies available elsewhere to Nigerian conditions and finding new and improved technologies that will continue the expansion in production that should be forthcoming from a wholesale approach to the ADP program. For example, the Funtua ADP used the recommendations of IAR on cotton planting. In the project's second season rainfall was so poor that IAR's recommendations were inappropriate and had they been followed would have misled farmers into making an expensive investment in spraying for which there was no possibility of a respectable return. To make the national crop research centers more responsive to problems at farm level it is critical that a formal link be established between the national crop research centers and variety trial work at the farmer level. At the present time Nigeria's research program is allocated the equivalent of 10% of the national budget for agriculture and employs one third of all professional agricultural staff, yet results are meagre. The NAFPP represents a major start at re-orienting the national institutes' research programs to make them responsive to adoption problems at the farm level. The national research institutes have a number of sub-stations which are in general poorly staffed and poorly maintained. A network of variety trial programs is carried out at the state level under insufficient supervision. The mechanics of the feedback system involving analysis and interpretation of these field trials functions poorly, and means to improve the effectiveness of the link between the variety trial program and the national institutes to ensure that they become more responsive to farmers' problems is critical to the development of a pipeline of technology appropriate for stimulating crop production. It is recommended that initially at least, an agricultural technology development station be established in each of the four major ecological zones of Nigeria to act as a formal link between the state trial programs and the national institutes, as has been foreseen in the third phase of the NAFPP. Within these stations staff of the different crop-specific institutes would work together under a single director to test technical packages acceptable in the farming conditions of their respective zone. A system to evaluate farmers' adoption

practices is being established through the ADPs and this information should be used at the development stations to structure and test recommendations to fit with prevailing cropping systems. At the same time the management and technical competency of state ministry staff should be enhanced to ensure that the variety trial program is properly carried out and results reported in a timely fashion.

Pricing Policies

78. A revision of subsidy policies is needed (a) to encourage an economic pattern of production by reflecting better the economic value of a crop to the country in its producer price, which in turn should be based on a better exploitation of comparative advantages, and (b) to increase the availability of improved inputs, such as fertilizer, which are constrained by the limited budget funds available to pay for subsidies and the lack of any margin to cover distribution charges and profit margins of suppliers.

79. Prices for crops that have an effective producer price, namely cocoa, rubber, oil palm, groundnuts and cotton should be adjusted to better reflect their estimated economic value. The possible extent to which prices could be increased without subsidizing the producer, in economic terms, is given below 1/ 2/:

	<u>Seed Cotton</u>	<u>Palm Kernels</u>	<u>Rubber</u>	<u>Cocoa</u>	<u>Groundnuts</u>
	-----N/tonne-----				
Producer Price	330	150	365	1,030	275
Economic Value	446	127	700	2,058	527
Percentage Change	+35%	-15%	+92%	+100%	+92%

In the case of rubber, cocoa, and groundnuts the difference between the 1978 producer price and economic value is glaring.

80. Input Prices. There are two reasons for changing the present subsidy structure for fertilizer and other inputs. The first is that the subsidy distorts the relationship between private and social prices. The financial price of improved seeds, fertilizer, tractor hire units and land clearing services, and interest rates, are such that the cost of the input to the

1/ There are strong indications that the Naira is overvalued and so it is necessary to express the cost of subsidies in economic terms to assess the economic cost of the various subsidy programs as opposed to the financial cost. To do this it is necessary to make a judgement on the longer term value of domestic currency in border prices. Derivation of this value is difficult in Nigeria because of lack of data and the dualistic nature of the economy. The mission adopted a standard conversion factor of 0.65 (reflecting an overvaluation of the naira in US\$ terms by 54%) to convert the value of items expressed in domestic prices into border prices, as the current best estimate of the long term situation.

2/ See Paper 1: Financing of the Agricultural Sector for details. Calculation of the economic value is based upon the 1978 world market value.

farmer does not reflect the true economic value of the input to the economy. This can lead to an uneconomic allocation of resources at the farm level; the common practice of applying fertilizer to traditional varieties of millet and sorghum being an example, since neither are sufficiently responsive to fertilizer to give an economic return. Furthermore subsidization of machinery costs makes labor appear relatively more expensive than it is, which encourages farmers to use capital intensive methods of production, even though farm machinery is commonly used only very inefficiently.

81. In view of the desirability to expand the economic use of fertilizer (see para. 65) the most important effect of the subsidy on fertilizer is that, because of its drain on the budget, it restricts fertilizer supplies: the subsidy already amounts to almost 5% of total federal and state expenditure on agriculture. If fertilizer use increases as projected in End Table 23 the cost of the subsidy program would increase to N 100 million by 1985 and to N 200 by 1990, which represents 24% of the total present transfer of resources to the agricultural sector through budget allocations and subsidy schemes (see End Table 21 for details of the cost of subsidy schemes) and is probably not supportable nor justified.

82. An important area of policy analysis that should be undertaken by federal government is the review of input price subsidies to reflect the economic value of inputs better, particularly of long term investments in land improvement schemes such as fencing, gully control measures, water, farm storage, etc. The introduction of grants for such items should be considered to encourage farming systems that enhance the value of that land rather than the present subsidy system that effectively encourages 'mining' of the land and leads to ecological problems such as soil erosion. Judicious use of input subsidies can have a major impact on the form of development that Nigeria will experience over the next decade, since the larger farmer, who is concerned primarily with the short term, will not find it worth his while to make those improvements in his land that are necessary to maintain production in the longer run. To subsidize up to 50% the capital cost of tractors which, if misused, can cause serious soil erosion problems appears less desirable than to subsidize the cost of fencing which is needed to protect gulleys and will over time lead to the development of a water shed management system which will protect the productive capacity of the land.

83. The need for producer prices for crops for which a government agency is not the only buyer should also be carefully assessed. This, however, begs a fundamental question about the role of the commodity boards. A redefinition of the role of the commodity boards is required that recognizes the limitations and futility of their getting involved in day-to-day activities which cannot anyway influence the market. There is an urgent need to develop a long term pricing policy, reflecting the relative importance of each group of crops in national development strategies. The absence of a marketing plan for the boards means that there is no overall structure within which the responsibilities and activities of individual Boards can be structured. There is no development rationale for the boards and no clear differentiation between administrative and stabilization functions. As a result, boards operate in a vacuum and their pricing policies are inappropriate, the most glaring of which is the operation of a producer price for traditional staple food crops that have always been handled efficiently by the private sector.

### Trade Policy

84. Unrestricted imports of wheat, rice, feed maize, and frozen meat at an overvalued exchanged rate have undercut domestically produced commodities and discouraged domestic producers. For instance, at the prevailing rate of exchange, local costs of paddy production are estimated to be about N 300/ton of paddy with family labor fully costed, while the farmgate price of imported rice is about N 200/ton (see End Table 9). Furthermore imports of frozen meat have been subsidized at 40%, at a cost of over N 35 million in 1977. The government has recently introduced a licensing system and increased tariffs to stem the flow of agricultural commodity imports. It is too early to tell whether quantitative restrictions can be effectively administered to restore the competitive position of domestic producers. However, unless the government sees fit to revise the exchange rate in the context of its overall monetary policy, these can be no alternative to import restrictions of some sort.

### Manpower Policies and Training

85. Action is needed to establish manpower development policies to help improve the capability of the government staff required to support the ADP program (see Paper 5: Agricultural Manpower 1975-1990: Issues and Prospects). Improved training facilities are required and better work incentives. Each ministry of agriculture and the commodity boards use of different categories of staff should be reviewed. With better organization far better use could be made of existing staff. For example when the Ayangba ADP was starting up forty redundant produce inspection officers were found in the project area who were quickly transformed into trade assistants to sell fertilizer and increased sales from 200 tons the year previous to the project to 4,000 tons in the first year. At the present time, extension staff are thinly spread over the federation, in a ratio of 1:2,800 farmers. Where other services are available, such as input delivery systems, a ratio of 1:500 farmers is probably desirable.

### Credit Mechanisms and Flow of Funds

86. Credit may be an important ingredient in encouraging and assisting farmers to adopt new technologies. However, until such time as Nigerian farmers are encouraged to invest in more capital-intensive measures, with particular regard to investments in the land, the scope for specialized term lending will remain somewhat limited. Furthermore, it would be clearly impossible for any banking institution to reach the majority of small farmers individually. Some form of on-lending agency is essential to shift farmers from small individual units into groups offering economies of scale. Past experience has shown that a uniform system of grass roots organization cannot be prescribed: in some areas a formal cooperative structure may prove viable; elsewhere, this may involve private intermediaries such as contractors who could offer the added service of transporting the farm inputs to the farmer; alternatively a loose affiliation of farmers who bulk their input requirements in response to bulk incentives may prove most suitable.

87. From a development standpoint, there are a number of implications. Every opportunity should be taken to provide real incentives to farmers to

group together and bulk their requirements; this could take the form of attractive discounts on inputs ordered in bulk, or stipulated minimum volumes before credit terms will be entertained. In the past, government policy has tended to offer all services at the same terms, down to the very smallest farmer, thus removing the very incentives on which viable group formation must be founded.

88. NACB. The Nigerian Agricultural and Cooperative Bank was incorporated in 1972 to enhance the level and quality of agricultural production through the liberalization of credit to farmers. As a commercial institution, however, it deals with a special class of client, including state governments or state institutions, who can on-lend to farmers against a state government guarantee of repayment, and individual farmers providing they have adequate security to cover the full value of the loan. However, the effectiveness of NACB has been hampered by its lack of funds, the interest rate policy, and its own conservative approach to the adequacy of security it requires on its loans. Government policy on interest rates on loans of NACB is that loans for farm production should be made at 5% and those for marketing at 7%. These rates are well below commercial rates, and very considerably below the cost of credit in the informal sector, and the estimated opportunity cost of capital of approximately 10%. Interest rates for lending by NACB and by other governmental agencies should be revised, at least in line with commercial bank rates and subsequent on-lending rates should be structured so as to ensure a spread sufficient to cover administrative costs.

89. The commercial banks, by virtue of their structure and branch network, are better equipped for personal contact with small scale borrowers than NACB. The commercial banks also have the very special and important role of promoting banking habits and encouraging rural savings. They are actively seeking investment opportunities in the agricultural sector and funding is not believed to be a constraint. Consequently there is little relevance in providing further financial incentives to the commercial banks, such as re-financing arrangements for agricultural loans when the real constraints lie at the farm level and will only be relieved by providing better and more wide-spread development services to farmers.

### Conclusion

90. Early attention to the above will increase the possibilities of the ADP program taking off and the productivity potential being realized which should transform the agricultural sector into a booming sector growing at 3%-4% a year. Tentative details of such a program and some of the necessary steps to support the program are discussed in Chapter IV. One major operational constraint remains, however, which is the reliability and flow of government funds. If a satisfactory development strategy is to be achieved significant changes will be required by federal and state authorities in their respective responses to the provision of funds in a timely and adequate manner. With increasing pressure on government budgets a far closer scrutiny

by finance officials is required of the allocation of budgetary funds. Currently ministry of agriculture budgets have to carry investment costs never originally intended. Thus feeder road development costs should normally be allocated from the budgets of the ministries of works or local government; farm credit should be funded through the national and commercial credit agencies; the cost of input distribution should be covered by the commercial private sector and ultimately the consumer; tractor servicing should be undertaken by private garages and not government workshops. Government authorities must appreciate that the timeliness and dependency of funding is essential - particularly in farming communities where the weather waits for no one - if satisfactory and sustained programs are to be properly developed. A more appropriate allocation of funds should lead to a more efficient use of the available manpower. Much of the able and talented Nigerian manpower is located in the private sector, which is currently excluded from agriculture. If more non-government funding sources and agencies were utilized, the pressure on government manpower would be considerably reduced.

CHAPTER IV

THE ACTION PROGRAM

91. This chapter outlines a program for the period 1978-88 through which Nigeria could realize the latent production possibilities of the smallholder community and achieve a rate of agricultural growth of the order of 3 to 4 percent. This program would involve the execution of a major regional agricultural development program, complemented by national and crop specific programs, supported by technical assistance in key areas. The general features of the program are listed below.

I. REGIONAL AGRICULTURAL DEVELOPMENT PROJECTS

The purpose of these projects would be to directly increase annual crop and livestock production and create a base for long term agricultural development, modelled on the ADP approach, in the zones north of the forest belt. Additionally, government should expand the ADP approach to support programs to service farmers growing both tree and food crops in the tree crop areas on a zonal basis. Such schemes should incorporate improvements in: rural infrastructure, particularly feeder roads; market structures and improvements in the local marketing system; low cost water control systems; in some instances health; training facilities and man-power development programs; assistance in strengthening and reorganizing existing institutions, including Local Government Councils; and in small scale processing plants.

II. NATIONAL AND CROP SPECIFIC PROGRAMS TO SUPPORT

- (a) strengthening of the adaptive research program to reflect farmers' requirements (para. 77);
- (b) improvements in the marketing of foodstuffs through the development of storage and processing facilities, market structures, and marketing intelligence and information systems (paras. 73-76);
- (c) strengthening of the farm input distribution system by improving the management of the ASC programs within each state, including the involvement of the commercial sector (para. 66);
- (d) national credit programs through federal, state and commercial finance institutions to service the long term credit needs of the ADPs (particularly of tree crop farmers) and special nationwide schemes to service a limited number of specialized commercial farmers (para. 86-89);

- (e) forestry development programs covering a number of states with the objective of establishing a forestry industry capable of meeting the requirements of pulp, sawntimber, and fuel (paras 45-47);
- (f) estate production of palm oil, cashew, and possibly rubber as a medium to encouraging smallholder production. In areas of low population density and high productivity, financing of commercial plantation schemes linked to outgrowers would be appropriate;
- (g) irrigation - a cautious approach is perceived in the arid areas of the far north, where some level of irrigation may prove to be a necessity for improving farm incomes.

### III. TECHNICAL ASSISTANCE

The government should seek technical assistance, primarily at federal level, in the areas of training, planning, policy formulation, and processing and analysis of data critical to the planning function.



Regional Agricultural Development Projects

92. Timing. It should be possible, bearing in mind the limitations of finance, to initiate ADP programs in all states, bar Lagos, during the next decade, thereby bringing the impact of the NAFPP and Agro Service Center Program within reach of virtually all farmers in the Federation. The actual phasing would depend on many factors, including the speed and quality of project preparation, the problems identified during preparation, the enthusiasm of the federal and state governments, their willingness to allocate budgeted funds to the support of ADPs, and the availability of technical assistance and foreign exchange.

93. Costs. A very rough approximation of the costs of such a program is detailed in End Table 22, based on experience at Gusau and Funtua ADPs. At no time would total annual costs (exclusive of fertilizer costs but including existing state operating expenditures in agriculture that would be included in the program) require more than 50% of that presently allocated to the agricultural sector. External financing of the foreign exchange component of such a program 1/ would reduce government's immediate contribution. However, this would be partly offset if government continued the present fertilizer subsidy rates. An even rougher approximation of the possible expansion of fertilizer use under such a program is shown at End Table 23. These figures are not based on a detailed analysis and may be out by a factor of one half to three. The estimates, however, serve the purpose of demonstrating the order of magnitude of future subsidy bills. At today's prices the fertilizer subsidy bill may well run as high as N 200 million/year by 1990 if present subsidy rates are maintained. This is 25% of the total transfer of resources to the agricultural sector through budget allocations and subsidy schemes. However, even at this high rate of subsidy the cost of the new strategy to the government, if a one third contribution is made by external sources to project costs and incremental fertilizer, would probably not exceed N 360 million (1978 prices) in a peak year (see Table 11). This is only 45% of the present budgeted transfer of resources to the agricultural sector.

Table 11. Cost of New Strategy Program to Government  
(millions: 1978 prices)

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Government													
Cost (N)	33	27	70	161	213	261	300	292	317	362	351	342	322
External													
Source (N)	16	12	29	71	91	108	117	105	107	117	101	86	68
(US\$)	25	18	45	109	140	167	181	161	165	180	156	133	104

1/ Assumed to be one third of gross cost, or about 40% of net incremental costs.

The proposed program would provide the basic infrastructure and the means to exploit the productivity reserve of 90% of Nigeria's farming population. A crude ratio of fertilizer use to cereal equivalent output of 1 ton product to 3 tons of grain indicates that such a program could, simply through the increased use of fertilizer, produce an additional 4-5 million tons of cereal equivalent which represents between one third to nearly one half of the predicted food gap.

#### National and Crop Specific Programs

94. Research. The development and adaptation of appropriate technology needs strengthening (para 77). Research is a time consuming and unpredictable activity. Consequently, there is a considerable lag between investment in research and the availability of new and appropriate technologies. The national program could be strengthened through implementation of Phase III of NAFPP beginning with the establishment of four zonal agricultural technology development stations at which the work of the national institutes would be integrated into acceptable packages of improvements for farmers in each ecological zone. The national research effort as an integral part and key component of the strategy proposed in this report and for this reason it is vital that necessary support to the national network is made available as soon as possible.

95. Marketing. Nigeria once provided a classic example of the effectiveness and benefits of a sound marketing strategy in which farmers had full confidence. Lately, this has broken down because a rigid and now in part unsuitable system has been maintained during a period of considerable change. Improvements all through the marketing system are required (paras 73-76). There now exists considerable scope to improve processing of tubers: this is being undertaken through ADPs. Larger processing plants for palm oil, and marketing and processing arrangements for cotton could prove opportune for external financing as would large scale storage facilities. Underlying the whole marketing structure is a need for carefully thought through policy formulation and the development of a market intelligence and information system. Government should seek assistance in this area with a view to arranging the provision of technical support to the Grains Board for development of a market intelligence system, and to the Technical Committee on Producer Prices (TCPP). The TCPP, made up of representatives of Federal Ministries and the Central Bank, advises the Price Fixing Authority on all matters dealing with the commodity boards. At the present time, technical input to TCPP is provided by the Research Committee of the Central Bank: this could benefit from strengthening in trained manpower and analytical techniques, particularly those that relate farmers' costs of production to producer prices. Government should explore the possibility of developing wholesale markets in major urban centers linked to surplus production hinterlands. The implications of present urban growth rates for food distribution systems (para. 75) need to be carefully studied.

96. Oil Palm, Rubber and Cashew Estates. Where appropriate, government should finance the expansion of ongoing oil palm estates, the rehabilitation of rubber and other oil palm estates and the development of new estates

in areas of low population density. Efficiently managed estates have a role to play in stimulating improvements in the quality of production and in providing cost effective processing plants, and other support services that can serve outgrowers and smallholders in adjacent areas. In addition cashew plantations are of considerable benefit to badly eroded soils.

97. Forestry. Since the natural increment of the indigenous forest is very low and will never meet the annual wood demand, increased wood production will have to come from plantation development using fast growing species. Projects should be supported that directly increase wood production, including sawlogs in the forest zones, and fuelwood and building poles in the savannah regions (paras 45-47). In addition, the feasibility of shelterbelt programs in the north should be carefully assessed.

98. Irrigation. The government should approach cautiously any further involvement in the financing of new large scale formal irrigation systems, particularly those outside the arid northern zones, in contrast to the development of low cost water control schemes that should be included in appropriate ADPs. There has been a massive investment in the capital structure of a number of large scale formal irrigation schemes and unless appropriate action is taken, these investments could prove to be disappointing - indeed in some cases, productive land will be permanently put out of production.

99. Credit. The performance of the Nigerian Agricultural and Cooperative Bank should be strengthened, both financially and technically, to enable it to realize its potential as a major development agency. This, however, will be dependent on a revision of the present interest rate structures. In addition means should be supported to assist commercial farms -- either individuals or groups -- with term credit to stimulate long term land improvement practices (para 68).

100. Livestock. In the future it is probably desirable that government's support to the sector should emphasize livestock development actions in the context of ADPs and a national credit project (paras. 48-49).

#### Technical Assistance

101. Planning and Policy Formulation. Data sources and planning skills are elementary in Nigeria, and little systematic policy analysis and formulation is undertaken. Serious consideration should be given to improving Nigeria's skills in these areas. Monitoring, evaluation and planning capabilities are being built up at the state level through ADPs but much more needs to be done at the federal level. The need for improved services in the restructured Federal Ministry of Agriculture and Water Resources is critical for proper coordination with Federal Ministries of Finance, Economic Development, the Cabinet Office, the Central Bank, and FedExCo; as well as between the federal and state organizations responsible for the administration of the agricultural sector. It would now be appropriate for the government to seek assistance to improve the system and the data base for planning. A start

has been made in the setting up of a division of the Federal Department of Rural Development in Kaduna, which is for the first time providing timely empirical evidence on which informed policy decisions can be made.

102. Training. Lower level staff training can be handled at the individual ADP level. However, there is a need for specialized middle and senior management staff training which has to be centrally located. This is the purpose of the Agricultural and Rural Management Training Institute (ARMTI) to be funded through a World Bank Group loan. At a future date, it may be necessary to expand the operations of ARMTI to a second campus. In addition, the need for agricultural trade centers; agricultural education courses in agricultural colleges and universities and faculties of agriculture; and training institutions to fill manpower gaps in animal husbandry, agricultural education, irrigation engineering and a number of vocations, in particular, farm machinery and vehicle maintenance and repair, should be carefully considered.

103. Feasibility Studies. Implementation of the proposed ADP strategy and associated projects will require considerable preparation before investment decisions can be taken. Considerable attention should be given to building up the capacity of indigenous local consulting firms, in partnership with experienced international firms or as sub-contractors and later as principal contractors. The first tranche of technical assistance for this purpose has been included in the Ilorin Agricultural Development Project financed by the World Bank.

#### Conclusion

104. The program discussed in this chapter to exploit the productivity reserve of the traditional smallholder sector is, from a technical and financial view point, well within Nigeria's capability to implement. To carry it through would require a firm commitment by government to reassess its spending priorities and conceivably cut out the periphery activities to which it presently allocates an inappropriate amount of time, finance and scarce management skills, and to concentrate on the essentials of the program. Implementation of this program would bring substantial benefits both to the economy as a whole and to the rural population in particular. Nigeria has a tremendous opportunity now to use its oil wealth to bring about a transformation of its agricultural sector and release the potential within it. It will be a slow process but one that cannot be short circuited and can only be put aside at great cost. Where requested, the Bank Group should assist in this bold venture, subject, of course, to conditions prevailing at the time.

NIGERIA  
AGRICULTURAL SECTOR REVIEW

BALANCE OF PAYMENTS

(N Million)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
<u>Current Account</u>							
Exports: Oil	517	981	1186	2006	5671	4766	5918
Non-Oil	374	364	251	364	435	350	425
Imports: Oil	52	51	45	41	52	118	91
Non-Oil	666	1009	914	1162	1614	3511	4950
<u>Trade Balance</u>	<u>173</u>	<u>285</u>	<u>478</u>	<u>1167</u>	<u>4440</u>	<u>1487</u>	<u>1302</u>
Net Non-factor service Payments: Oil	-81	-114	-140	-210	-253	-259	-242
Non-Oil	-75	-77	-102	-297	-941	-934	-998
Net factor Payments Received: Oil	-220	-320	-390	-415	-308	-321	-318
Non-Oil	-112	-110	-155	-156	-67	149	+128
(Interest on external reserves)	(-)	(-)	(10)	(16)	(98)	(295)	(241)
Net Transfers	45	2	-14	-35	-62	-79	-92
<u>Balance on Current Account</u>	<u>-270</u>	<u>-334</u>	<u>-323</u>	<u>53</u>	<u>2809</u>	<u>43</u>	<u>-220</u>
<u>Capital Account</u>							
Direct Investment: Oil	89	109	196	116	186	210	158
Non-Oil	94	129	102	71	-4	80	92
Other Private	82	130	-64	7	63	65	0
Net Official: Oil	-	-	-	-51	-50	-86	-200
Non-Oil	4	31	36	3	54	-180	-34
Allocation of SDR	12	10	10	-	-	-	-
Changes in Reserves (- = addition)	<u>-59</u>	<u>-128</u>	<u>-39</u>	<u>-174</u>	<u>-3102</u>	<u>-110</u>	<u>+235</u>
Errors and Omissions	47	55	4	-23	46	-22	-31

1/ Provisional

Source: 1970-1974, Central Bank of Nigeria; 1975-1976, Mission Estimates based on provisional data from the Central Bank.

END TABLE 1

NIGERIA

AGRICULTURAL SECTOR REVIEW

QUANTITY, VALUE AND AVERAGE UNIT VALUE OF MAJOR EXPORTS

COMMODITY	Unit of Quantity	Quantity in ('000)						Value in (N Million)						Average Unit Value					
		1971	1972	1973	1974	1975	1976 <sup>1/</sup>	1971	1972	1973	1974	1975	1976 <sup>1/</sup>	1971	1972	1973	1974	1975	1976 <sup>1/</sup>
Groundnuts	m/ton	136	106	199	30	-	1.6	24.2	19.1	45.5	6.8	-	.2	177.9	180.2	228.6	226.7	-	123.0
Groundnut Oil	"	43	40	111	24	-	-	12.8	10.9	23.6	11.4	-	.2	297.7	272.5	212.6	485.1	-	-
Groundnut Cake	"	100	99	135	31	6.7	28.7	6.8	5.9	18.0	4.8	.6	3.4	68.0	59.6	133.3	154.8	89.6	118.5
Cocoa Beans	"	271	228	211	180	191.6	228.0	143.2	101.1	112.4	159.0	181.0	218.9	528.4	443.4	532.7	883.3	944.7	960.1
Cocoa Butter	"	8	10	11	11	9.2	5.9	8.2	10.1	15.0	21.0	20.4	14.5	1,025.0	1,010.0	1,363.6	2,282.6	1,217.4	2,457.6
Other Cocoa Products	"	9	8	16	13	10.0	5.7	2.2	2.1	5.6	5.9	4.5	4.9	244.4	262.5	350.0	453.8	450.0	859.7
Petroleum Crude Oil	"	71,699	85,860	94,302	96,437	81,696.5	97,721.1	953.0	1,176.2	1,893.5	5,365.7	4,563.1	6,281.1	13.3	13.7	20.1	55.6	55.9	64.3
Palm Kernels	"	242	212	137	185	171.6	272.0	26.0	15.7	18.9	43.7	18.5	27.2	107.3	74.1	138.0	235.5	107.9	100.0
Palm Kernel Oil	"	26	34	40	39	21.1	13.4	6.2	5.5	7.7	21.6	1.8	1.8	238.4	161.8	192.5	568.4	350.7	238.8
Palm Kernel Cake or Meal	"	30	24	22	30	20.6	27.6	1.0	1.1	1.3	2.4	1.8	1.8	53.4	45.8	59.1	80.0	87.4	65.2
Palm Oil	"	20	2	-	-	31.3	3.3	3.4	0.2	-	-	3.9	0.5	170.0	100.0	-	-	124.6	151.2
Rubber	"	51	41	49	61	61.0	44.3	12.4	7.4	19.4	33.2	15.2	14.3	243.1	180.5	395.9	562.7	249.2	322.8
Raw Cotton	"	22	1	8	-	-	-	11.0	0.6	4.7	-	-	-	500.0	600.0	587.5	-	-	-
Cotton Seed	"	98	62	9	11	-	-	6.2	2.7	0.7	0.9	-	-	63.3	43.5	77.8	81.8	-	-
Tin Metal	"	8	7	5	6	4.7	3.4	24.8	19.1	15.5	26.4	20.4	15.5	3,100.0	2,728.6	3,100.0	5,280.0	4,340.4	4,558.8
Hides and Skins	"	4	4	5	5	2.9	2.1	4.8	6.8	12.5	10.6	6.8	6.8	1,200.0	1,700.0	2,500.0	2,100.6	2,344.8	3,238.1
Coffee	"	4	4	2	-	1.1	7.3	2.0	2.1	1.3	0.1	1.1	5.4	500.0	525.0	650.0	-	100.0	739.7
Timber and Plywood	cu/m	223	232	370	305	105.5	28.7	7.0	8.1	14.3	14.0	4.8	1.4	31.4	34.9	38.6	45.9	45.5	48.8
Total Major Exports								1,255.8	1,394.7	2,209.9	5,727.5	4,849.5	6,639.2						
Other Commodities								25.0	27.1	58.5	56.4	70.7	103.3						
Total Domestic Exports								1,280.8	1,421.8	2,268.4	5,783.9	4,920.2	6,742.5						

<sup>1/</sup> Provisional.

Source: Federal Office of Statistics.

NIGERIA

AGRICULTURAL SECTOR REVIEW

COMPOSITION OF IMPORTS BY COMMODITY SECTIONS

(N Million)

Commodity Sections (S.I.T.C.)	1971	1972	1973	1974	1975	1976 <sup>1/</sup>
0. Food and Live Animals	87.9	95.1	126.3	154.8	297.9	439.4
1. Beverages and Tobacco	4.4	4.4	5.2	9.1	48	63.2
2. Crude Materials, Inedible (excluding fuels)	20.6	20.7	27.0	63.7	73.7	78.6
3. Mineral Fuels, Lubricants and Related Materials	9.0	9.8	13.5	55.4	100.2	174.9
4. Oil and Fats	0.7	1.1	1.4	3.6	8.9	224.7
5. Chemicals	122.0	102.6	133.4	191.0	333.2	396.4
6. Manufactured Goods Classified Chiefly by Materials	319.4	267.9	323.9	523.3	1008.0	1132.8
7. Machinery and Transport Equipment	428.8	398.5	491.4	611.8	1561.9	2442.7
8. Miscellaneous Manufactured Articles	70.8	83.1	94.2	114.0	278.2	371.6
9. Miscellaneous Transactions	15.4	6.9	8.6	10.6	11.5	15.4
<b>Total: All Sections</b>	<b>1078.9</b>	<b>990.1</b>	<b>1224.8</b>	<b>1737.3</b>	<b>3721.5</b>	<b>5139.7</b>

<sup>1/</sup> Provisional

Source: Federal Office of Statistics

NIGERIA

AGRICULTURAL SECTOR REVIEW

Population of Nigeria - 1963-1990 1/

	<u>1963 Census</u>		<u>1970</u>		<u>Projections</u>		<u>1990</u>	
		<u>%</u>		<u>%</u>	<u>1975</u>	<u>%</u>		<u>%</u>
Nigeria	55.67		66.17		75.60		117.78	
North	29.81	53.5	35.43	53.5	40.48	53.5	63.07	53.5
South	25.86	46.5	30.74	46.5	35.12	46.5	54.71	46.5

Note: 1/ 2.5% Growth Rate 1963 - 1970  
2.7% Growth Rate 1970 - 1975  
3 % Growth Rate 1975 - 1990

END TABLE 4



NIGERIA

AGRICULTURAL SECTOR REVIEW

POPULATION PROJECTIONS FOR MAJOR TOWNS  
1963, 1970, 1975, 1990

Towns	% of Town Population Truly Urban	1963 Census Total Population	1963 Census Urban Population	Major Urban 1970	Major Urban 1975	Major Urban 1990
<u>Big Towns</u> <sup>1/</sup>						
Lagos (inc. Mushin)	100	811,222	811,222	1,141,470	1,677,196	5,320,351
Port Harcourt	100	179,563	179,563	252,663	371,295	1,177,652
Warri <sup>4/</sup>	100	-	-	-	100,000	317,217
Calabar <sup>4/</sup>	100	-	-	-	100,000	317,217
Kaduna	75	149,910	112,433	158,204	232,454	737,384
Kano	75	295,432	221,574	311,777	458,103	1,453,181
<u>Medium Towns</u> <sup>2/</sup>						
Owerri	50	-	-	-	70,000	167,759
Ibadan	50	313,690	313,690	412,794	552,413	1,453,891
Enugu	50	138,690	69,229	91,101	121,914	292,174
Benin	50	100,694	50,547	66,253	88,662	210,484
Zaria	50	166,170	83,085	109,334	146,314	350,650
Jos <sup>4/</sup>	50	-	-	-	110,000	263,622
Akure <sup>4/</sup>	50	-	-	-	50,000	119,828
Yola <sup>4/</sup>	50	-	-	-	50,000	119,828
Bauchi <sup>4/</sup>	50	-	-	-	30,000	71,897
Minna <sup>4/</sup>	50	-	-	-	30,000	71,897
Ilorin	50	208,546	104,273	173,216	183,626	440,070
Maiduguri	50	139,965	69,983	93,093	123,241	295,354
Abeokuta	50	187,292	93,646	123,232	169,912	407,204
Sokoto <sup>4/</sup>	50	-	-	-	60,000	143,793
Makurdi <sup>4/</sup>	50	-	-	-	50,000	119,828
<u>Small Towns</u> <sup>3/</sup>						
Onitsha	35	163,032	163,032	75,088	91,356	164,527
Aba	35	131,003	45,851	60,337	73,409	132,205
Ogbomosho <sup>5/</sup>	35	319,881	-	-	80,000	144,075
Oshogbo <sup>5/</sup>	35	208,966	-	-	80,000	144,075
Owo <sup>5/</sup>	35	158,583	-	-	50,000	90,047
Ado Ekiti <sup>5/</sup>	35	157,519	-	-	80,000	144,075
Ife	35	130,050	45,518	59,899	72,876	131,245
Oyo	35	112,349	39,322	51,745	62,956	113,380
Ore <sup>4/</sup>	35	-	-	-	50,000	90,047
Ilesha	35	-	-	-	50,000	90,047
Iseyin	35	-	-	-	50,000	90,047
TOTAL		4,386,013	2,296,997	3,143,206	5,515,677	15,057,051

1/ For big towns used growth rate of 5% for 1963-1970; 8% for 1970-75; 8% for 1975-1990.

2/ For medium towns used growth rate of 4% for 1963-1970; 6% for 1970-75; 6% for 1975-1990.

3/ For small towns used growth rate of 4% for 1963-1970; 4% for 1970-75; 4% for 1975-1990.

4/ Population based on mission estimates; 1963 Census unreliable due to extraordinary growth because of creation of state capitals and oil towns.

5/ 1963 projections for western state minor urban census deflated by mission estimates.

NIGERIA

AGRICULTURAL SECTOR REVIEW

GROSS DOMESTIC PRODUCT BY TYPE OF ACTIVITY  
AT CURRENT PRICES

(N Million)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Agriculture	2576	3034	3093	3123	3531	3854	4271
Petroleum	490	94	1144	1899	5671	4921	6054
Other mining & quarrying	45	63	76	90	110	110	80
Manufacturing	378	416	511	591	655	1161	1501
Construction	270	412	520	646	970	1477	1682
Electricity & Water	37	41	48	52	59	66	83
Transport & Communication	149	188	238	268	360	504	616
General Government	343	377	339	463	766	1234	1496
Health & Education	194	227	239	256	400	580	865
Other services	799	950	979	1065	1425	1819	2263
<u>Gross Domestic Product at Factor Cost</u>	<u>5681</u>	<u>6651</u>	<u>7188</u>	<u>8453</u>	<u>13947</u>	<u>15718</u>	<u>18911</u>
Indirect taxes less subsidies	400	500	480	460	520	813	843
<u>Gross Domestic Product at Market Prices</u>	<u>5281</u>	<u>7151</u>	<u>7668</u>	<u>8913</u>	<u>14467</u>	<u>16532</u>	<u>19754</u>
Growth rate of GDP at factor cost		25.9%	8.1%	17.6%	65.0%	12.7%	20.3%
Growth rate of non-oil GDP		19.1%	5.9%	8.4%	26.3%	30.5%	19.1%

Sources: 1970-1973, Federal Office of Statistics  
1974-1976, Mission Estimates

NIGERIA

AGRICULTURAL SECTOR REVIEW

STATE APPROPRIATIONS FOR AGRICULTURE 1977/78 (1976/77)

(N millions)

	-----1977/78-----				Total (76/77) (3)	(3) as % of Total Exp.	
	<u>Recurrent</u> (1)	<u>Capital</u> (2)	<u>Per</u> <u>Capita</u> (N)	<u>Total</u> (3)		77/78	(76/77)
Anambra	5.5	11.4	4.0	16.9	(11.2)	5.5	(5.4)
Bauchi	4.5	12.1	5.2	16.6	(12.4)	8.5	(14.5)
Bendel	8.3	13.6	6.2	21.9	(25.3)	4.7	(17.0)
Benue	6.6*	17.7*	5.5	24.3*	(21.3)*		(9.9)*
Borno	7.0	28.6	8.2	35.6	(21.3)*	8.8	(9.0)*
Cross River	6.9	23.1	5.8	30.0	(27.8)	10.6	(11.2)
Gongola	7.3	17.6	5.7	24.9	(18.1)	10.2	(8.8)
Imo	6.1	22.8	6.1	28.9	(21.5)	6.9	(6.9)
Kaduna	6.8	30.8	6.3	37.6	(30.7)	10.2	(12.9)
Kano	7.6	26.7	4.1	34.3	(37.6)	7.5	(9.3)
Kwara	6.3	13.1	5.8	19.4	(25.6)	5.4	(9.3)
Lagos	7.7	8.4	7.7	16.1	(19.0)		(8.8)
Niger	4.5	9.8	7.8	14.3	(21.3)*	7.2	(16.5)*
Ogun	5.2	15.0	9.0	20.2	(15.0)	7.7	(8.3)
Ondo	5.0	19.4	6.2	24.4	(24.8)	7.6	(11.7)
Oyo	8.2	28.1	4.9	36.3	(30.2)	8.6	(11.8)
Plateau	6.8	19.9	9.1	26.7	(18.3)	8.4	(11.9)
Rivers	6.2	5.4	6.4	11.6	(8.7)	4.8	(4.0)
Sokoto	<u>8.5</u>	<u>12.7</u>	<u>3.2</u>	<u>21.2</u>	<u>(15.5)</u>	<u>7.3</u>	<u>(9.6)</u>
All States:	125.0	336.2	5.7	461.2	(405.6)	7.4	(9.9)

\*Estimated

NIGERIA

AGRICULTURAL SECTOR REVIEW

Subsidy (tax) on Cocoa, Cotton, Palmkernels, Rubber and Groundnuts

(N per metric ton)

	<u>Financial</u> (N1 = \$1.54)		<u>Economic</u> (N \$1.00)	
<u>Cocoa</u>				
Producer Price	1030		1030	
Marketing & Transport	<u>150</u> <sup>1/</sup>	1180	<u>150</u>	1180
Export unit value		<u>1380</u>		<u>2208</u>
Subsidy (-)/tax ( )		200		1028
<u>Cotton</u>				
Producer Price	330		330	
Marketing, processing and transport	<u>188</u>	518	<u>188</u>	518
Export Parity Price:seed	30		59	
Import Substitution price: lint	379	<u>409</u>	575	<u>634</u>
Subsidy (-)/tax ( )		-109		116
<u>Palmkernels</u>				
Producer price	150		150	
Marketing & Transport	<u>150</u>	300	<u>150</u>	300
Export Unit Value		<u>180</u>		<u>277</u>
Subsidy (-)/tax ( )		-120		- 23
<u>Rubber</u>				
Producer price	365		385	
Marketing, processing and transport	<u>195</u>	560	<u>142</u>	507
Export unit value		<u>543</u>		<u>842</u>
Subsidy (-)/tax ( )		- 17		335
<u>Groundnuts</u>				
Producer price	275		275	
Marketing, processing and transport	<u>69</u>		<u>69</u>	
Export parity <sup>2/</sup>		344		344
Subsidy (-)/tax (f)		<u>405</u>		<u>596</u>
		61		252

<sup>1/</sup> Cocoa: marketing and transport cost are an estimate. There are no recent data on export unit value but 1977 exports should at least have earned \$1.00 per lb.

<sup>2/</sup> Import Substitute: based on groundnuts CIF Europe (US \$496/nut, plus US\$50 shipping etc. & N50 transport to Zaria.

Source: The data on cotton, palmkernels and rubber is from Paper 1.

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AGRICULTURAL SECTOR REVIEW

Rice Price Structure Basis Imports from USA

	<u>per tonne</u>
Price FOB USA \$ <u>1</u> /	524
Freight Insurnace	<u>70</u>
	594
= N	368
Duty 10%	37
Port charges/handling	15
Landed cost	420
Road transport to North	50
Ibadan/Enugu	15
Coast	-
Wholesale price	
before distribution	
North	470
Ibadan Enugu	435
Coast	420
Road transport from	
production areas	
North to North	10
Middlebelt to South <u>2</u> /	20
Milling costs <u>3</u> /	45
Ex mill price	
North	415
Middle belt <u>2</u> /	363
Paddy equivalent (60%) <u>4</u> /	
North	249
Middle belt	218
Primary Marketing	
North	30
Middle belt	28
Equivalent Farm	
gate price paddy <u>5</u> /	
North	219
Middle belt	<u>190</u>

- 
- Notes 1/ From Federal Office of Statistics.  
2/ Transport costs deducted from mean of Ibadan/Enugu and Coast prices.  
3/ Based on rates charged in Anambra/Imo Rice Project but excluding parboiling.  
4/ This may be high.  
5/ In fact paddy prices have not fallen below N240, and in most areas are around N 290 - N 320. The difference represents increased margins on imported rice.

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AGRICULTURAL SECTOR REVIEW

Grains Marketing at Non Isolated Rural Market 1/

No. 2/	Participant	Av. Quantity per deal		Distance Travelled (Each Way) Km	Total Deals by Category	Effort to get one ton to Market				
		G. Corn	Millet			Mandays	Travel (Roundtrip)		Km	
		Kg			G. Corn	Millet	G. Corn	Millet	G. Corn	Millet
					Tonnes					
31 (26,5)	Producers 3/	120	76	15 km	3.12	0.38	8.33	13.16	250	395
44 (41,8)	Local Assemblers 3/	174	87	24	7.13	0.70	5.75	11.43	276	549
22	Village Retailers 4/	457 5/	163 5/	8	10.05	3.59	2.19	6.13		
32	Rural Assemblers	871	326	-	27.87	10.43	1.15	3.07		

↓

Transport to Zaria

↓

Wholesalers or Wholesalers Commission Agents

↓

Retailers

Market Size: 8-10,000 people

Market Frequency: once weekly

grain supply Area: 40% within 8 km radius  
20% between 8 and 24 km radius

20% between 24 and 38 km radius  
15% between 38 and 48 km radius  
5% more than 48 km radius

Source of basic data : The Marketing and Storage of Food Grains in Northern Nigeria, H.M. Hays Jr. Samaru Miscellaneous Paper 50, 1975.

- 1/ Sundu Market - 48 km from Zaria
- 2/ Figures in brackets represent number of sellers of each grain type.
- 3/ Total market supply is split about equally between producers and local assemblers.
- 4/ Essentially brokers between sellers (producers, local assemblers) and buyers (local consumers, rural assemblers.)
- 5/ Sold to rural assemblers. An additional 98 kg G. Corn and 44 kg millet sold to local consumers.

NIGERIA

AGRICULTURAL SECTOR REVIEW

Large Scale (100 hectares) Commercial Mechanized Farm <sup>1/</sup>  
Economic Rate of Return  
(1978 Constant N'000)

Years	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994-2003
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-25
<b>Investment Costs</b>																	
<b>Infrastructure</b>																	
Fencing	3000	3000															
Buildings <sup>2/</sup>	3000	3000															
Farm Road <sup>2/</sup>	1000	1000															
Borehole <sup>2/</sup>	20000	-															
Soil Conservation <sup>3/</sup>	500	500															
<b>Sub total</b>	<b>27500</b>	<b>7500</b>															
<b>Machinery <sup>10/</sup></b>																	
Tractor	14000																
Plough	2500																
Disc harrow	2000																
Ridger	2000																
Planter	1800																
Cultivator	1800																
Trailer	2300																
<b>Sub total</b>	<b>26400</b>					<b>26400</b>					<b>26400</b>						<b>26400</b>
<b>Operating Costs</b>																	
Maintenance of soil conservation <sup>3/</sup>		200															
Tractor Licence and Insurance	1800	1800															
Fuel <sup>4/</sup>	660	660															
Oil/Grease <sup>5/</sup>	132	132															
Repairs and Replacement <sup>6/</sup>	1400	1400															
Drivers salary	1200	1200															
Farm Manager	5000	5000															
<b>Wages</b>	<b>10400</b>	<b>10400</b>															
Seeds	851	851															
Pesticide	3079	3079															
Herbicide/Fungicides <sup>8/</sup>	2645	2645															
<b>Sub total</b>	<b>27167</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>
<b>TOTAL COSTS <sup>11/</sup></b>	<b>81067</b>	<b>34867</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>53767</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>53767</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>27367</b>	<b>53767</b>	<b>27367</b>
<b>Benefits <sup>9/</sup></b>																	
Cotton	8778	12768	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632	13632
Maize	4256	6384	7518	7518	7518	7518	7812	7518	7812	7812	7812	7812	7812	7812	7812	7812	7812
Sorghum	7584	9101	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562	9562
Groundnuts	8018	9622	9622	9622	9622	9622	8413	8413	8413	8413	8413	8413	8413	8413	9413	9413	9413
Cowpeas	4680	4680	4680	4680	4680	4680	4680	4680	4680	4680	4680	4580	4680	4680	4680	4680	4680
<b>TOTAL BENEFITS</b>	<b>33316</b>	<b>42555</b>	<b>45014</b>	<b>45014</b>	<b>45014</b>	<b>45014</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>	<b>44099</b>
<b>NET ECONOMIC BENEFITS</b>	<b>(47751)</b>	<b>7688</b>	<b>17647</b>	<b>17647</b>	<b>17647</b>	<b>17647</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>	<b>(9608)</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>	<b>16732</b>

Rate of Return 26 percent

Sensitivity		
Costs	Benefits	
k	- 15	10 percent
k	- 25	5 percent
-5	k	20 percent
-10	k	15 percent
	k	8 percent

<sup>1/</sup> The model is for a 100 hectare privately owned and operated farm mechanization consists of a medium powered 65 HP tractor with accompanying implements. Mechanical operations confined to primary cultivation, planting, and fertilizing. Economic life of agricultural machinery assumed to be 5 years with no residual value.

<sup>2/</sup> 2km of farm road @ N1000 per Km.

<sup>3/</sup> N10 per hectare for initial conservation works, with N2 per hectare per annum for maintenance.

<sup>4/</sup> Fuel consumption @ 11.0 liter per hour, tractor operator for 1000 hours per annum. Cost of fuel is N0.06 per liter per (excluding excise duties).

<sup>5/</sup> Equals 20 per cent of fuel costs.

<sup>6/</sup> Repairs equal 75 per cent of capital cost of equipment, i.e. 15 percent per annum.

<sup>7/</sup> Labor costed at opportunity cost of N2.0 per manday.

<sup>8/</sup> Includes cost of spraying.

<sup>9/</sup> Benefits calculated from forecasted world market prices (IBRD forecasts April 1978) reduced to farmgate prices. Area: Cotton 22ha, Groundnuts 19ha; Sorghum 32ha, Maize 14ha; and Cowpeas 13ha.

Reference prices for output relate to forecasts for 1978, 1980-85 and 1990.

After 1980 yields per ha are: Cotton 1.5 m/ton/ha; maize 3.0 m/ton/ha, sorghum 1.8 m/ton/ha, groundnuts 1.2 m/ton/ha; cowpeas 1.0 m/ton/ha.

<sup>10/</sup> For machinery costs, see Paper 9, Table 4.

<sup>11/</sup> Development cost FE component assumed at 50%.

NIGERIA  
AGRICULTURAL SECTOR REVIEW

GUSAU AGRICULTURAL DEVELOPMENT PROJECT

Economic Costs and Returns  
(N'000)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11 - 25
<b>Incremental Costs</b>											
<b>Farm Inputs:</b>											
Fertilizer	114	484	800	1,347	2,131	2,131	2,131	2,131	2,131	2,131	2,131
Other seasonal	51	134	306	473	761	761	761	761	761	761	761
Equipment	39	118	322	420	661	149	149	149	149	149	149
Vehicles, plant and equipment <sup>1/</sup>	674	370	168	162	72	35	122	31	35	122	69
Houses, building, labor and materials <sup>2/</sup>	1,484	1,158	434	56	56	(334)	-	-	-	-	-
Salaries	596	808	948	925	814	638	542	499	475	475	475
Vehicle running operation <sup>3/</sup>	136	273	279	279	212	69	69	69	69	69	69
General services	299	228	244	263	231	214	214	214	214	214	214
Contingencies at 5%	170	179	175	196	247	200	200	193	192	196	194
<b>Total</b>	<b>3,563</b>	<b>3,752</b>	<b>3,676</b>	<b>4,121</b>	<b>5,185</b>	<b>3,863</b>	<b>4,188</b>	<b>4,047</b>	<b>4,026</b>	<b>4,117</b>	<b>4,062</b>
Less taxes <sup>4/</sup>	268	223	152	115	87	40	60	51	50	55	52
<b>Costs adjusted for taxes</b>	<b>3,295</b>	<b>3,529</b>	<b>3,524</b>	<b>4,006</b>	<b>5,098</b>	<b>3,823</b>	<b>4,128</b>	<b>3,996</b>	<b>3,976</b>	<b>4,062</b>	<b>4,010</b>
Add net labor costs <sup>5/</sup>	103	313	743	1,340	2,335	2,050	2,064	2,108	2,197	2,344	2,344
<b>Total</b>	<b>3,398</b>	<b>3,842</b>	<b>4,267</b>	<b>5,346</b>	<b>7,433</b>	<b>5,873</b>	<b>6,192</b>	<b>6,104</b>	<b>6,173</b>	<b>6,406</b>	<b>6,354</b>
Add foreign exchange adjustment <sup>6/</sup>	304	330	357	447	608	469	500	474	474	494	494
<b>Total Economic Costs</b>	<b><u>3,702</u></b>	<b><u>4,172</u></b>	<b><u>4,624</u></b>	<b><u>5,793</u></b>	<b><u>8,041</u></b>	<b><u>6,342</u></b>	<b><u>6,692</u></b>	<b><u>6,578</u></b>	<b><u>6,647</u></b>	<b><u>6,900</u></b>	<b><u>6,848</u></b>
<b>Incremental Benefits <sup>7/</sup></b>											
Farm produce	362	1,483	3,113	5,306	10,955	10,955	10,955	10,955	10,955	10,955	10,955
Seed farm production	34	50	68	68	68	68	68	68	68	68	68
<b>Total Economic Benefits</b>	<b><u>396</u></b>	<b><u>1,533</u></b>	<b><u>3,181</u></b>	<b><u>5,374</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>	<b><u>11,023</u></b>
<b>Net Economic Benefits</b>	<b>(3,002)</b>	<b>(2,309)</b>	<b>(1,086)</b>	<b>28</b>	<b>3,590</b>	<b>5,150</b>	<b>4,831</b>	<b>4,919</b>	<b>4,850</b>	<b>4,617</b>	<b>4,669</b>

Economic Rate of Return: 35%

- <sup>1/</sup> Does not include replacement for road maintenance equipment - see general services - excludes water and soil conservation costs.  
<sup>2/</sup> Residual value of staff housing no longer required in year 6 - also excludes material costs for water and soil conservation development.  
<sup>3/</sup> Excludes water and soil conservation costs.  
<sup>4/</sup> Excluding farm inputs and their relevant contingencies. Identifiable taxes on remainder approximately equals in Year 1 8.0%; Year 2 7.5%; Year 3 7.0%; Year 4 6.5% and thereafter 6.0%.  
<sup>5/</sup> Labor shadow priced at N0.84 per man-day, i.e. present shadow price of N2.0 expressed in 1974 terms by using domestic inflation index.  
<sup>6/</sup> Shadow foreign exchange N1 = US\$1.0 (as against actual N1.0 = US\$1.54).  
<sup>7/</sup> Basis forecasted world market prices (IBRD forecasts April 1978) expressed in 1974 terms by using international inflation index.



NIGERIA

AGRICULTURAL SECTOR REVIEW

FUNTUA AGRICULTURAL DEVELOPMENT PROJECT

Economic Costs and Returns  
(N'000)

Incremental Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11 - 25
Farm Inputs:											
Fertilizer	341	850	1,966	3,229	4,227	4,227	4,227	4,227	4,227	4,227	4,227
Other Seasonal	128	418	922	1,384	1,678	1,678	1,678	1,678	1,678	1,678	1,678
Equipment	93	267	614	869	1,109	201	201	201	201	201	201
Vehicles, plant and equipment <sup>1/</sup>	763	383	341	194	105	39	141	67	96	96	96
Housing, building, labor and materials <sup>2/</sup>	1,687	1,413	1,238	130	108	(378)	(159)	(31)	(23)	-	-
Salaries	691	983	1,261	1,286	1,090	957	844	769	720	720	720
Vehicle running operations <sup>3/</sup>	178	297	312	312	312	188	80	80	80	80	80
General Services	305	264	309	352	338	267	254	251	250	250	250
Contingencies at 5%	209	244	347	388	448	377	371	363	362	362	362
<b>Total</b> <sup>4/</sup>	<b>4,395</b>	<b>5,119</b>	<b>7,310</b>	<b>8,144</b>	<b>9,415</b>	<b>7,556</b>	<b>7,637</b>	<b>7,605</b>	<b>7,591</b>	<b>7,614</b>	<b>7,614</b>
Less taxes <sup>4/</sup>	304	263	254	155	123	91	83	74	72	72	72
Costs adjusted for taxes	4,091	4,856	7,056	7,989	9,292	7,465	7,554	7,531	7,519	7,542	7,542
Add net labor cost <sup>5/</sup>	334	216	1,325	2,743	3,623	3,051	3,022	2,963	2,875	2,757	2,757
<b>Total</b>	<b>4,425</b>	<b>5,072</b>	<b>8,381</b>	<b>10,732</b>	<b>12,915</b>	<b>10,516</b>	<b>10,576</b>	<b>10,494</b>	<b>10,394</b>	<b>10,299</b>	<b>10,299</b>
Add foreign exchange adjustment <sup>6/</sup>	495	617	1,013	1,300	1,581	1,288	1,296	1,280	1,285	1,285	1,285
<b>Total Economic Costs</b>	<b>4,920</b>	<b>5,689</b>	<b>9,394</b>	<b>12,032</b>	<b>14,496</b>	<b>11,804</b>	<b>11,871</b>	<b>11,774</b>	<b>11,679</b>	<b>11,584</b>	<b>11,584</b>
<b>Incremental Benefits</b>											
Farm produce <sup>1/</sup>	1,096	3,133	8,374	25,849	18,969	18,969	18,969	18,969	18,969	18,969	18,969
Seed farm production	124	124	124	124	124	124	124	124	124	124	124
<b>Total Economic Benefits</b>	<b>1,220</b>	<b>3,257</b>	<b>8,498</b>	<b>25,973</b>	<b>19,093</b>	<b>19,093</b>	<b>19,093</b>	<b>19,093</b>	<b>19,093</b>	<b>19,093</b>	<b>19,093</b>
Net Economic Benefits	(3,700)	(2,432)	(896)	13,941	4,597	7,289	7,222	7,319	7,414	7,509	7,509

Economic Rate of Return: 62%

- <sup>1/</sup> Does not include replacement for road maintenance equipment excludes water and soil conservation costs.  
<sup>2/</sup> Excludes water and soil conservation costs, includes residual value of vacated staff houses from years 6-9.  
<sup>3/</sup> Excludes water and soil conservation costs.  
<sup>4/</sup> Excludes farm inputs and other relevant contingencies. Identifiable taxes on remainder approximately equals in Year 1, 8.0%; Year 2, 7.5%; Year 3, 7.0%; Year 4, 6.5%, and thereafter 6.0%.  
<sup>5/</sup> Labor shadow priced at N0.84 per md. Present shadow price of labor N2.0 expressed in 1974 terms.  
<sup>6/</sup> Shadow foreign exchange N1 = US\$1.0 (as against actual N1 = US\$1.54).  
<sup>7/</sup> Basis 1978 world market prices expressed in 1974 terms using international inflation index.

July 7, 1978

NIGERIA  
 AGRICULTURAL SECTOR REVIEW  
 PLATEAU STATE  
 LAFIA AGRICULTURAL DEVELOPMENT PROJECT

Economic Costs and Benefits  
 (N'000)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10 to Year 19	Year 20	
<u>Economic Costs</u>													
Crop Development	532.0	463.7	385.2	442.3	463.7	440.2	6/	440.0	440.0	440.0	440.0	220.0	220.0
Farm Advisory Service	514.9	585.0	451.4	486.0	400.0	344.0	6/	340.0	340.0	340.0	340.0	170.0	170.0
Livestock Development	318.5	696.6	675.7	828.4	435.8	424.2	7/	225.0	225.0	225.0	225.0	225.0	225.0
Forestry Development	-	318.0	300.9	330.8	366.7	373.9	8/	17.0	17.0	17.0	24.7	24.7	24.7
Fisheries Development	-	57.8	53.1	60.1	41.3	37.3	9/	3.0	3.0	3.0	3.0	3.0	3.0
Roads and Water Development	554.6	1,634.8	788.9	781.8	833.6	661.4	10/	-	-	-	-	-	-
Management and Administration	581.1	1,229.7	547.0	507.4	488.4	370.4	6/	370.0	370.0	370.0	370.0	185.0	185.0
Seed Multiplication	187.9	220.2	121.9	154.7	142.3	138.3		130.0	130.0	130.0	130.0	130.0	130.0
Research	-	139.0	59.4	64.4	69.6	64.4		-	-	-	-	-	-
Training	117.9	410.1	219.8	205.8	305.2	154.4	11/	150.0	100.0	75.0	50.0	-	-
Evaluation	476.7	232.0	217.0	245.0	214.6	182.6	11/	180.0	180.0	180.0	180.0	-	-
Commercial Services	441.2	1,704.7	981.2	876.3	793.0	703.0	12/	-	-	-	-	-	-
Other Overheads	4.7	104.6	208.9	243.5	259.4	262.7	13/	260.0	260.0	260.0	260.0	260.0	260.0
Sub-total	3,729.5	7,796.2	5,010.4	5,226.4	4,813.6	4,156.8		2,115.0	2,065.0	2,040.0	2,022.7	1,217.7	1,217.7
Physical Contingencies (project only)	187.6	412.1	278.6	292.8	274.9	246.1		-	-	-	-	-	-
Herd Entrees Valuations <sup>1/</sup>	3,179.3	771.7	759.6	877.6	826.9	1,160.0		-	-	-	-	-	-
APMEPU Evaluation <sup>2/</sup>	-	367.1	260.9	298.8	361.5	283.3		-	-	-	-	-	-
Less Taxes <sup>3/</sup>	(267.8)	(499.4)	(250.9)	(232.6)	(201.6)	(186.2)		(84.6)	(82.6)	(81.6)	(80.9)	(48.7)	(48.7)
Less Today's expenses <sup>4/</sup>	(200.0)	(200.0)	(200.0)	(200.0)	(200.0)	(200.0)		(200.0)	(200.0)	(200.0)	(200.0)	(200.0)	(200.0)
TOTAL COSTS	6,628.6	8,647.7	5,858.6	6,263.0	5,875.3	5,460.0		1,830.4	1,782.4	1,758.4	1,741.8	969.0	969.0
<u>Benefits</u>													
Crop Development <sup>8/</sup>	-	5,262.0	5,922.0	5,935.0	6,627.0	9,149.0		9,149.0	9,149.0	9,149.0	9,149.0	9,149.0	9,149.0
TOTAL BENEFITS	-	5,262.0	5,922.0	5,935.0	6,627.0	9,149.0		9,149.0	9,149.0	9,149.0	9,149.0	9,149.0	9,149.0
Net Economic Benefits	(6,628.6)	(3,385.7)	(63.4)	(328.0)	752.0	3,689.0		7,318.6	7,366.6	7,390.6	7,407.2	8,180.0	8,180.0

Economic Rate of Return: 23%

- <sup>1/</sup> Valuation of existing herd and further entrees in grazing reserves: in Year 0 value of existing herd; Year 1 to 5 value of entrees.  
<sup>2/</sup> 25% of APMEPU costs charged to this project.  
<sup>3/</sup> Estimated at 5% of vehicles, 10% of other equipment, 10% of buildings and houses, and 20% of vehicle operating costs; after Year 5 estimated as percentage of total as calculated in Year 5.  
<sup>4/</sup> Present salaries amount to about N155,000; add 30% for other expenses, this gives rounded N200,000.  
<sup>5/</sup> Economic margins as calculated in farm budgets multiplied by estimated cropping patters, rather than incremental costs on costs side and incremental benefits on benefits side.  
<sup>6/</sup> At 100% until Year 9, and 50% thereafter.  
<sup>7/</sup> Costs of grazing reserves.  
<sup>8/</sup> Costs related to pole/fuel wood plantations, including average stumpage costs and maintenance from Year 9 estimated at N3.4/ha.  
<sup>9/</sup> Maintenance of banded lagoons (about N700/lagoon/annum).  
<sup>10/</sup> No maintenance costed as these costs are assumed to at least equal offsetting road benefits also not taken into account.  
<sup>11/</sup> Gradually reduced to zero in Year 10.  
<sup>12/</sup> Not continued, as a margin which should cover commercial costs has been included in farmgate prices for inputs.  
<sup>13/</sup> Mainly maintenance costs of assets created by the project.

NIGERIA

AGRICULTURAL SECTOR REVIEW

Benue State

Ayangba Agricultural Development Project

Economic Costs and Benefits  
(N'000)

	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10- Year 19</u>	<u>Year 20</u>
<u>Economic Costs</u>												
* Crop Development	839.9	698.2	616.4	793.6	995.9	1,042.1 <sup>9/</sup>	1,000.0	1,000.0	1,000.0	1,000.0	500.0	500.0
* Farm Advisory Service	659.2	701.8	621.0	665.3	545.2	469.3 <sup>9/</sup>	470.0	470.0	470.0	470.0	235.0	235.0
Livestock Development	165.2	599.8	185.3	146.6	182.3	196.3 <sup>10/</sup>	-	-	-	-	-	-
Forestry Development	-	377.1	164.2	213.0	238.0	205.1 <sup>11/</sup>	9.0	9.0	9.0	12.6	12.6	12.6
Fisheries Development	-	296.6	291.2	269.1	330.4	212.2 <sup>12/</sup>	10.5	10.5	10.5	10.5	10.5	10.5
* Roads and Water Development	575.6	1,624.3	800.4	810.3	804.7	672.3 <sup>13/</sup>	-	-	-	-	-	-
* Management and Administration	581.1	1,272.7	590.0	504.4	488.4	370.4 <sup>9/</sup>	370.0	370.0	370.0	370.0	185.0	185.0
* Seed Multiplication	200.6	256.4	156.5	204.8	183.2	167.2	165.0	165.0	165.0	165.0	165.0	165.0
Research	-	199.6	62.4	67.4	83.4	67.4	-	-	-	-	-	-
* Training	117.9	462.3	268.4	235.1	334.6	198.3 <sup>14/</sup>	200.0	150.0	100.0	50.0	-	-
Evaluation	527.6	249.3	249.3	281.3	246.3	214.3 <sup>14/</sup>	210.0	210.0	210.0	210.0	-	-
* Commercial Services	446.1	1,966.4	1,455.9	1,215.4	1,127.3	1,056.5 <sup>15/</sup>	-	-	-	-	-	-
* Other Overheads	3.7	106.7	238.7	275.7	290.3	297.0 <sup>16/</sup>	300.0	300.0	300.0	300.0	300.0	300.0
Subtotal	4,116.9	8,810.2	5,699.7	5,715.0	5,850.0	5,168.4	2,734.5	2,684.5	2,634.5	2,588.1	1,408.1	1,408.1
Physical Contingencies	207.3	465.0	315.8	325.6	342.6	316.8	-	-	-	-	-	-
APMEPU Evaluation <sup>2/</sup>	-	367.1	260.9	298.8	361.5	283.3	-	-	-	-	-	-
less Taxes <sup>3/</sup>	(284.4)	(593.9)	(288.9)	(253.6)	(243.9)	(217.1)	(109.4)	(107.4)	(105.4)	(103.5)	(56.3)	(56.3) <sup>1</sup>
* less Today's Expenses <sup>4/</sup>	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)	(520.0)
TOTAL COSTS	<u>3,519.8</u>	<u>8,528.4</u>	<u>5,467.5</u>	<u>5,565.8</u>	<u>5,790.2</u>	<u>5,031.4</u>	<u>2,105.1</u>	<u>2,057.1</u>	<u>2,009.1</u>	<u>1,964.6</u>	<u>831.8</u>	<u>831.8</u>
<u>Benefits</u>												
Livestock <sup>5/</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Fisheries <sup>6/</sup>	-	-	-	39.0	117.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0
Forestry <sup>7/</sup>	-	-	-	-	-	-	-	-	-	175.0	175.0	175.0
Crops <sup>8/</sup>	-	5,983.0	5,589.0	6,542.0	795.9	12,015.0	12,015.0	12,015.0	12,015.0	12,015.0	12,015.0	12,015.0
TOTAL BENEFITS	-	<u>5,983.0</u>	<u>5,589.0</u>	<u>6,581.0</u>	<u>8,076.0</u>	<u>12,210.0</u>	<u>12,210.0</u>	<u>12,210.0</u>	<u>12,210.0</u>	<u>12,385.0</u>	<u>12,385.0</u>	<u>12,385.0</u>
Net Economic Benefits	(3,519.8)	(2,645.4)	121.5	1,015.2	2,285.8	7,178.6	10,104.9	10,152.9	10,200.9	10,420.4	11,553.2	11,553.2

Economic Rate of Return: 46%

<sup>1/</sup> A = Annex; S = Supplement of Appraisal Report 1370-UNI, May 31, 1977.

<sup>2/</sup> See Supplement 15; 25% of APMEPU costs charged to this project.

<sup>3/</sup> Estimated at 5% of vehicles, 10% of other equipment, 10% of houses and buildings, and 20% of vehicle operating costs; after Year 5 estimated at percentage of total as calculated in Year 5.

<sup>4/</sup> See Annex 1; present salaries amount to N399,000; add 30% for other costs.

<sup>5/</sup> No livestock development benefits taken into account, as component is very small and it is very difficult to relate benefits to improved veterinary services.

<sup>6/</sup> N13,000 per bunded lagoon (N14,000, less an estimated 300 man-days and allowance for some other fishermen costs).

<sup>7/</sup> Although theoretically not correct, stumpage benefits of an eight-year cutting cycle have been averaged from Year 9 to 20.

<sup>8/</sup> Economic margins as calculated in farm budgets multiplied by estimated cropping patterns, rather than commercial costs on cost side and incremental benefits on benefits side. For calculation of economic benefits, labor priced at N2.2 per man-day (as against N1.0 at appraisal) and prices revised to reflect current forecasts expressed in 1977 terms.

<sup>9/</sup> At 100% until Year 9 and 50% thereafter.

<sup>10/</sup> Not further costed.

<sup>11/</sup> Costs related to pole/fuelwood plantations, including average stumpage costs and maintenance from Year 9 estimated at N3,4/ha.

<sup>12/</sup> Maintenance costs of bunded lagoons (about N700/lagoon/annum).

<sup>13/</sup> No maintenance costed, as these are assumed to at least equal selling of road benefits not taken into account.

<sup>14/</sup> Gradually reduced until zero in Year 10.

<sup>15/</sup> Not continued, as a margin vehicle which should cover commercial costs has been included in farmgate prices of inputs.

<sup>16/</sup> Mainly maintenance of assets created by the project.

NIGERIA

AGRICULTURAL SECTOR REVIEW

Second Cocoa Project <sup>1/</sup>  
Oyo, Ondo and Ogun States

Economic Costs and Benefits  
(N'000)

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 2003/04
<b>A. On Farm Costs</b>														
<b>Replanting of which:</b>														
Labor <sup>2/</sup>	92.2	374.1	972.7	979.4	559.7	406.2	344.8	272.3	360.0	493.4	529.2	535.1	535.1	535.1
Local Costs	11.8	68.9	178.1	296.8	130.7	158.3	221.1	317.1	370.1	447.4	559.1	604.9	604.9	604.9
Foreign Exchange Costs <sup>3/</sup>	-	60.0	172.0	462.0	344.0	447.0	593.0	880.0	1,001.0	1,186.0	1,491.0	1,607.0	1,607.0	1,607.0
<b>New Planting of which:</b>														
Labor <sup>2/</sup>	92.4	203.5	620.6	2,256.3	103.9	96.4	111.6	145.1	202.4	218.5	221.8	224.4	224.4	224.4
Local Costs	19.2	41.5	131.1	61.0	64.7	88.8	130.2	152.0	181.8	231.6	256.0	269.7	269.7	269.7
Foreign Exchange Costs <sup>3/</sup>	26.0	61.0	195.0	141.0	184.0	272.0	362.0	411.0	481.0	616.0	678.0	710.0	710.0	710.0
<b>Staff and Overhead of which:</b>														
Local Costs <sup>1/</sup>	341.0	626.6	1,218.1	875.4	684.4	528.8	298.9	280.6	231.7	207.7	170.8	170.8	170.8	170.8
Foreign Exchange Costs <sup>3/</sup>	393.0	369.0	511.0	244.0	190.0	141.0	93.0	69.0	64.0	40.0	40.0	40.0	40.0	40.0
<b>Total Costs of which:</b>														
Labor <sup>2/</sup>	184.6	577.6	1,593.3	1,235.7	663.6	502.2	456.4	417.4	562.4	711.9	751.0	759.5	759.5	759.5
Local Costs	372.0	737.0	1,527.3	1,223.2	879.8	775.9	650.2	749.7	783.6	886.7	985.9	1,045.4	1,045.4	1,045.4
Foreign Exchange Costs <sup>3/</sup>	409.0	490.0	878.0	847.0	718.0	860.0	1,048.0	1,360.0	1,546.0	1,842.0	2,209.0	2,357.0	2,357.0	2,357.0
<b>B. Benefits</b>														
<b>Cocoa Production <sup>4/</sup></b>														
New Planting	-	-	-	70.0	265.0	903.0	3,039.0	4,832.0	6,888.0	8,370.0	9,505.0	9,505.0	9,505.0	9,505.0
Replanting	-	-	-	163.0	701.0	2,245.0	7,528.0	11,833.0	16,220.0	18,629.0	20,343.0	20,343.0	20,343.0	20,343.0
<b>Total Benefits</b>	-	-	-	<u>233.0</u>	<u>966.0</u>	<u>3,148.0</u>	<u>10,567.0</u>	<u>16,665.0</u>	<u>13,108.0</u>	<u>26,999.0</u>	<u>29,848.0</u>	<u>29,848.0</u>	<u>29,848.0</u>	<u>29,848.0</u>
<b>Net Economic Benefits</b>	<u>(965.60)</u>	<u>(1,804.60)</u>	<u>(3,998.60)</u>	<u>(3,072.90)</u>	<u>(1,284.40)</u>	<u>1,009.90</u>	<u>8,412.40</u>	<u>14,137.90</u>	<u>10,216.00</u>	<u>23,558.40</u>	<u>25,902.10</u>	<u>25,686.10</u>	<u>25,686.10</u>	<u>25,686.10</u>

Economic Rate of Return: 45%

<sup>1/</sup> Basic data IBRD Appraisal Report, "Second Cocoa Project," Nigeria 282a- UNI.

<sup>2/</sup> All labor costs shadow priced at N1.0 per man-day. Present shadow wage rate N2.5 expressed in 1975 terms.

<sup>3/</sup> A shadow exchange rate of N1.0 = US\$1 used (against official rate N1.0 = US\$1.54).

<sup>4/</sup> Cocoa output prices derived from forecasted 1978 prices (IBRD commodity price forecasts April 1978) expressed in 1974 terms.

1974/75 - 1980 price - N746; N1,384 from there onwards.

NIGERIA  
 AGRICULTURAL SECTOR REVIEW  
 SMALLHOLDER OIL PALM PROJECT  
 IMO/ANAMBRA STATES

Economic Costs and Benefits  
 (N'000)

A. COSTS	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993-2004
<u>Smallholder Field Establishment</u>	96.7	415.0	636.2	818.6	1,099.1	998.8	504.4	382.1	200.1	-	-	-	-	-	-	-	-	-	-
Labor	30.0	217.4	349.0	425.8	560.8	538.1	212.9	136.5	58.5	-	-	-	-	-	-	-	-	-	-
Local Costs	38.2	103.1	135.8	171.6	216.2	152.4	66.5	55.1	31.3	-	-	-	-	-	-	-	-	-	-
Foreign Exchange Costs	28.5	94.5	151.4	221.2	322.1	308.3	225.0	190.5	110.3	-	-	-	-	-	-	-	-	-	-
<u>Smallholder Field Management</u>	-	-	-	-	-	104.9	265.6	408.7	595.9	787.5	762.2	731.7	737.3	738.0	734.0	725.0	715.2	712.0	712.0
Labor	-	-	-	-	-	34.1	88.6	146.3	223.1	304.3	320.6	331.7	337.3	338.0	334.0	325.0	315.2	312.0	312.0
Local Costs	-	-	-	-	-	15.7	39.1	57.2	83.6	108.6	100.3	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
Foreign Exchange Costs	-	-	-	-	-	55.1	137.9	205.2	289.2	374.6	341.3	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
<u>Smallholder Management Unit</u>	381.0	551.2	473.4	461.2	541.7	465.3	327.2	313.4	287.7	279.0	279.0	279.0	279.0	279.0	279.0	279.0	279.0	279.0	279.0
Local Costs	160.2	249.5	114.7	104.9	129.9	70.8	53.2	44.0	38.0	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6
Foreign Exchange Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Hill Investment and Fruit Collection</u>	-	-	-	-	620.1	718.8	242.9	636.6	802.2	799.3	306.7	349.9	333.3	399.6	374.4	374.4	374.4	374.4	374.4
Local Costs	-	-	-	-	492.0	575.7	176.0	290.4	351.7	361.7	191.1	254.3	208.6	318.1	259.3	259.3	259.3	259.3	259.3
Foreign Exchange Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Monitoring and Evaluation</u>	91.4	95.0	95.1	86.9	79.6	72.3	76.8	50.4	50.4	-	-	-	-	-	-	-	-	-	-
<u>Total Costs</u>	765.8	1,376.2	1,385.4	1,545.2	3,110.5	3,156.9	1,728.4	2,233.9	2,442.3	2,272.1	1,583.6	1,659.5	1,602.8	1,779.3	1,691.3	1,682.3	1,672.5	1,669.3	1,669.3
of which - labor costs	31.5	228.3	366.5	447.1	888.8	600.8	316.6	269.9	295.7	304.3	320.6	331.7	337.3	338.0	334.0	325.0	315.2	312.0	312.0
local costs	504.4	753.9	706.5	725.6	1,502.9	1,470.6	763.5	1,153.0	1,300.5	1,186.9	686.0	720.9	704.3	770.6	745.4	745.4	745.4	745.4	745.4
foreign exchange costs	229.9	394.0	312.4	372.5	1,018.8	1,085.5	648.3	784.0	846.1	780.9	577.0	606.9	561.2	670.7	611.9	611.9	611.9	611.9	611.9
<u>Adjusted Costs</u>																			
Labor <sup>1/</sup>	38.0	274.0	440.0	536.0	707.0	721.0	380.0	356.0	355.0	365.0	385.0	398.0	405.0	406.0	401.0	390.0	378.0	374.0	374.0
Foreign Exchange Costs <sup>2/</sup>	349.0	598.0	475.0	566.0	1,549.0	1,650.0	985.0	1,192.0	1,286.0	1,187.0	877.0	923.0	853.0	1,020.0	930.0	930.0	930.0	930.0	930.0
Local Costs	504.0	754.0	707.0	726.0	1,503.0	1,471.0	764.0	1,153.0	1,301.0	1,187.0	686.0	721.0	704.0	771.0	745.0	745.0	745.0	745.0	745.0
<u>Total Economic Costs</u>	891.0	1,626.0	1,622.0	1,828.0	3,759.0	3,842.0	2,129.0	2,701.0	2,942.0	2,739.0	1,948.0	2,042.0	1,962.0	2,197.0	2,076.0	2,065.0	2,053.0	2,049.0	2,049.0
B. BENEFITS <sup>3/</sup>																			
Palm Oil	-	-	-	-	-	44.7	648.4	1,345.6	2,436.3	3,894.7	5,221.5	6,310.9	7,219.6	7,691.8	7,870.7	7,870.7	7,870.7	7,870.7	7,870.7
Kernels	-	-	-	-	-	6.0	90.3	193.2	349.2	549.6	720.0	845.2	934.3	963.2	963.2	963.2	963.2	963.2	963.2
<u>Total Benefits</u>	-	-	-	-	-	59.2	759.7	1,538.8	2,785.5	4,444.3	5,941.5	7,156.1	8,153.9	8,655.0	8,333.9	8,333.9	8,333.9	8,333.9	8,333.9
<u>Net Economic Benefit</u>	(891.0)	(1,626.0)	(1,622.0)	(1,828.0)	(3759.0)	(3,488.0)	(840.0)	(15.0)	1,921.0	5,018.0	8,422.0	10,527.0	12,266.0	12,905.0	13,607.0	13,348.0	13,360.0	13,364.0	13,364.0

Economic Rate of Return: 25%

1/ All labor costs shadow priced at N1.0 per man-day, i.e., present shadow wage rate of N2.5 per man-day, expressed in 1975 terms.

2/ A shadow exchange rate of N1.0 = US\$1.0 used (as against the official rate of N1.0 = US\$1.34).

3/ Basis forecasted world market prices 1980-1990 expressed in constant 1975 terms.



NIGERIA  
AGRICULTURAL SECTOR REVIEW

Smallholder Rubber Project  
Mid-Western State

Economic Costs and Benefits  
(N'000)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 - 2006
<b>A. Costs</b>																			
Field Establishment and Maintenance of Immature Rubber	469.2	933.4	1,385.1	1,951.8	2,591.1	1,680.3	1,478.2	1,511.7	1,271.2	984.8	568.9	-	-	-	-	-	-	-	-
Mature Rubber Maintenance and Latex Collection <sup>1/</sup>	-	-	-	-	-	-	-	225.4	633.5	1,186.5	1,885.8	2,731.4	2,934.4	2,926.0	2,926.6	2,926.6	2,926.6	2,926.6	2,926.6
Intercrops	-	267.5	583.0	807.4	1,032.0	1,256.5	544.8	-	-	-	-	-	-	-	-	-	-	-	-
Tree Crop Unit <sup>2/</sup>	693.3	602.7	500.4	631.1	674.7	519.1	536.9	507.8	591.4	625.2	605.1	557.1	512.5	459.1	424.7	424.7	382.3	339.7	297.3
Training	172.1	121.5	128.7	141.9	144.4	9.0	21.1	33.6	42.5	65.5	76.3	17.8	-	-	-	-	-	-	-
Group Collection Centers	-	75.0	56.0	121.0	24.0	-	100.0	150.0	200.0	250.0	180.0	-	-	-	-	-	-	-	-
Research and Training School <sup>3/</sup>	557.5	346.5	223.5	171.0	150.0	150.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitoring and Evaluation Unit <sup>4/</sup>	125.0	125.1	114.4	104.7	95.1	101.1	66.3	66.3	63.3	63.3	63.3	-	-	-	-	-	-	-	-
<b>TOTAL COSTS</b> <sup>5/</sup>	<b>2,118.0</b>	<b>2,595.3</b>	<b>3,140.6</b>	<b>4,125.3</b>	<b>4,246.9</b>	<b>3,901.8</b>	<b>2,884.7</b>	<b>2,619.5</b>	<b>2,962.0</b>	<b>3,334.0</b>	<b>3,548.4</b>	<b>3,306.3</b>	<b>3,446.9</b>	<b>3,385.1</b>	<b>3,350.7</b>	<b>3,350.7</b>	<b>3,308.3</b>	<b>3,265.7</b>	<b>3,223.3</b>
Of which: Labor Costs	248.0	647.6	1,078.6	1,479.3	1,894.1	1,458.5	850.0	581.9	828.3	1,220.8	1,731.5	2,239.4	2,454.4	2,446.0	2,446.0	2,446.0	2,446.0	2,446.0	2,446.0
Local Costs	1,194.0	1,314.6	1,362.0	1,665.7	1,923.1	1,320.6	903.3	921.4	957.1	1,025.3	997.6	715.5	654.3	605.0	574.0	574.0	537.5	500.9	464.4
Foreign Exchange Costs	676.0	633.1	700.0	980.3	1,124.7	1,114.7	1,131.4	1,116.2	1,156.6	1,087.9	819.3	351.4	338.2	334.1	330.7	330.7	324.8	318.8	312.9
<b>Adjusted Prices</b>																			
Labor Costs <sup>6/</sup>	602.0	1,571.0	2,620.0	3,592.0	4,600.0	3,543.0	2,064.0	1,413.0	2,011.0	2,965.0	4,206.0	5,438.0	5,960.0	5,940.0	5,940.0	5,940.0	5,940.0	5,940.0	5,940.0
Local Costs	1,194.0	1,315.0	1,362.0	1,665.0	1,923.0	1,329.0	903.0	921.0	957.0	1,025.0	998.0	716.0	654.0	605.0	574.0	-	-	-	-
Foreign Exchange Costs <sup>7/</sup>	1,099.0	1,029.0	1,138.0	1,594.0	1,836.0	1,812.0	1,839.0	1,815.0	1,880.0	1,769.0	1,332.0	572.0	550.0	544.0	537.0	527.0	518.0	509.0	497.0
<b>TOTAL ECONOMIC COSTS</b>																			
<b>B. Benefits</b>																			
Rubber <sup>8/</sup>	-	-	-	-	-	-	-	505.0	1,624.0	3,539.0	6,336.0	10,022.0	12,707.0	14,667.0	15,722.0	15,916.0	15,916.0	15,916.0	15,916.0
Intercrops	-	360.0	950.0	1,555.0	2,050.0	2,545.0	1,780.0	660.0	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL BENEFITS</b>	<b>-</b>	<b>360.0</b>	<b>950.0</b>	<b>1,555.0</b>	<b>2,050.0</b>	<b>2,545.0</b>	<b>1,780.0</b>	<b>1,165.0</b>	<b>1,624.0</b>	<b>3,539.0</b>	<b>6,336.0</b>	<b>10,022.0</b>	<b>12,707.0</b>	<b>14,667.0</b>	<b>15,722.0</b>	<b>15,916.0</b>	<b>15,916.0</b>	<b>15,916.0</b>	<b>15,916.0</b>
Net Economic Benefits	(2,895.0)	(3,555.0)	(4,170.0)	(5,296.0)	(6,309.0)	(4,139.0)	(3,026.0)	(2,984.0)	(3,224.0)	(2,220.0)	(200.0)	3,296.0	5,543.0	7,578.0	8,671.0	9,449.0	9,458.0	9,467.0	9,479.0

Economic Rate of Return: 10%

1/ Rubber tapped for 24 years; costs of maintenance phased in and out in accordance with planting program.

2/ After full production in 1991, FCU overheads phased down to reflect the lesser need for intensive supervision; phased down from 1991 with 10% annually until level is 30%. No overheads charged when plantings are phased out of production.

3/ Fully charged even though this project covers less than 10% of rubber area, and this component will benefit the whole industry.

4/ 25% of Monitoring and Evaluation Unit charged during program period. Costs are in report 497-UNI, Nucleus Estate/Smallholder Oil Palm, Mid-Western State, Annex 5, Table 17.

5/ Includes 5% physical contingencies during program period.

6/ Shadow price of labor N1.7 per man-day, 1978 costs expressed in 1974 terms.

7/ Shadow foreign exchange rate N1 = US\$1.

8/ Rubber farmgate price N647 per m/tons.

NIGERIA

AGRICULTURAL SECTOR REVIEW

Road System in ADPs

<u>Project Area, State</u>	<u>Ayangba Benue</u>	<u>Bida Niger</u>	<u>Ilorin Kwara</u>	<u>Lafia Plateau</u>	<u>N. Oyo Oyo</u>	<u>Mean</u>
Area ('000 km <sup>2</sup> )	13.2	16.5	11.8	9.4	12.0	12.6
Cropped Area ('000 km <sup>2</sup> )	3.0	2.1	3.0	1.5	1.6	2.2
Farm families ('000)	150	80	20	58	67	95
<u>All season Roads 1/ Pre Project</u>						
m/km <sup>2</sup>	63	38	73	64	29	53
m/cropped km <sup>2</sup>	276	300	288	402	219	297
<u>Post Project</u>						
m/km <sup>2</sup>	135	76	119	109	132	114
m/cropped km <sup>2</sup>	592	592	467	680	987	664



NIGERIAAGRICULTURAL SECTOR REVIEWProjected Subsidy Payments 1985(N million - 1977 prices)

	<u>1978</u>	<u>1985</u>
<u>Input Subsidies</u>		
Fertilizer	34	100
Seed & Seedlings	2	4
Tractor Hire Service	3	3
Livestock Feed	6	6
Irrigation - O & M	1	15
- Capital amortization	-	165
Land Development	9	9
Credit	<u>13</u>	<u>13</u>
	68	315
 <u>Price Subsidies</u>		
Palm Kernels	31	31
Cotton	25	25
Rubber	1	1
Stumpage Fees	<u>35</u>	<u>35</u>
	92	92
 TOTAL	 160	 407

## AGRICULTURAL SECTOR SURVEY

Anticipated Cost And Flow of Expenditures To Implement Proposed 1/  
New Strategy

(N millions 1978 prices)

Project	Total Cost	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Funtua		8	6	-	-	-	-	-	-	-	-	-	-	-
Gusau		6	4	-	-	-	-	-	-	-	-	-	-	-
Combe		6	4	-	-	-	-	-	-	-	-	-	-	-
Ayangba	39 (36) 2/	13	6	6	6	5	-	-	-	-	-	-	-	-
Lafia	34 (31)	12	5	5	5	4	-	-	-	-	-	-	-	-
Bida	28 (26)	-	2	9	8	4	3	-	-	-	-	-	-	-
Ilorin	24 (21)	-	2	8	7	3	2	-	-	-	-	-	-	-
Kaduna State Phase I	145 (128)	-	-	20	36	28	24	20	-	-	-	-	-	-
Oyo North	48 (46)	-	-	7	14	11	9	5	-	-	-	-	-	-
Cocoa III	200	-	-	20	60	60	40	20	-	-	-	-	-	-
Ekiti Akoko	48 (46)	-	-	7	14	11	9	5	-	-	-	-	-	-
Ogun	48 (46)	-	-	-	7	14	11	9	5	-	-	-	-	-
Kano State	149 (128)	-	-	-	20	36	28	24	20	-	-	-	-	-
Bauchi State	101 (96)	-	-	-	15	27	21	18	15	-	-	-	-	-
Sardauna	33 (32)	-	-	-	7	9	7	5	4	-	-	-	-	-
Gusau II	36 (32)	-	-	-	5	9	7	6	5	-	-	-	-	-
Imo TC & MP 3/	46	-	-	-	-	7	14	11	9	5	-	-	-	-
Borno State	102 (96)	-	-	-	-	15	27	21	18	15	-	-	-	-
Ondo TC & MP	46	-	-	-	-	7	14	11	9	5	-	-	-	-
Abakaliki	48 (46)	-	-	-	-	7	14	11	9	5	-	-	-	-
Bendel North	48 (46)	-	-	-	-	7	14	11	9	5	-	-	-	-
Imo	48 (46)	-	-	-	-	7	14	11	9	5	-	-	-	-
Benue State	141 (128)	-	-	-	-	-	20	36	28	24	20	-	-	-
Cross River	98 (96)	-	-	-	-	-	15	27	21	18	15	-	-	-
Plateau State	106 (96)	-	-	-	-	-	15	27	21	18	15	-	-	-
Bendel TC & MP	46	-	-	-	-	7	14	11	9	5	-	-	-	-
Rivers State TC & MP	46	-	-	-	-	-	7	14	11	9	5	-	-	-
Kwara State	137 (128)	-	-	-	-	-	-	20	36	28	24	20	-	-
Niger State	106 (96)	-	-	-	-	-	-	15	27	21	18	15	-	-
Oyo State	105 (96)	-	-	-	-	-	-	-	15	27	21	18	15	-
Kaduna State II	172 (64)	-	-	-	-	-	-	-	10	18	14	12	10	-
Congola State	140 (128)	-	-	-	-	-	-	-	-	20	36	28	24	20
Ondo State	105 (96)	-	-	-	-	-	-	-	-	15	27	21	18	15
Ogun State	103 (96)	-	-	-	-	-	-	-	-	15	27	21	18	15
Sokoto State	107 (96)	-	-	-	-	-	-	-	-	15	27	21	18	15
Kano State II	72 (64)	-	-	-	-	-	-	-	-	10	18	14	12	10
Bauchi State II	50 (46)	-	-	-	-	-	-	-	-	7	14	11	9	5
Anambra State	137 (128)	-	-	-	-	-	-	-	-	-	20	36	28	24
Bendel State	54 (46)	-	-	-	-	-	-	-	-	-	7	14	11	9
Imo State	50 (46)	-	-	-	-	-	-	-	-	-	7	14	11	9
Borno State II	36 (32)	-	-	-	-	-	-	-	-	-	5	9	7	6
Benue State II	50 (46)	-	-	-	-	-	-	-	-	-	7	14	11	9
Cross River State II	98 (96)	-	-	-	-	-	-	-	-	-	-	15	27	21
Plateau State II	40 (32)	-	-	-	-	-	-	-	-	-	-	5	6	7
Kwara State II	54 (46)	-	-	-	-	-	-	-	-	-	-	-	7	14
Niger State II	40 (32)	-	-	-	-	-	-	-	-	-	-	-	5	9
Gongola State II	40 (32)	-	-	-	-	-	-	-	-	-	-	-	-	5
Oyo State II	40 (32)	-	-	-	-	-	-	-	-	-	-	-	-	5
Kaduna State III	40 (32)	-	-	-	-	-	-	-	-	-	-	-	-	5
TOTAL Cost (excl. fertilizer)		45	29	82	204	264	308	337	297	300	334	286	243	185
TOTAL IMMEDIATE COST TO GOV. (incl. cost of fertilizer subsidized at 85%) 4/		33	27	70	161	213	261	300	292	317	362	351	342	322
EXTERNAL SOURCE 4/ (N m) (US\$ m)		16	12	29	71	91	108	117	105	107	117	101	86	68
		25	18	45	109	140	167	181	161	165	180	156	133	104

1/ Phasing and identity of projects highly tentative.

2/ Figure in parenthesis are costs net of incremental fertilizer cost. Expenditures by year are net of fertilizer costs.

3/ TC &amp; MP is a Tree Crop and Marketing Project.

4/ Assumes external financing of one third of costs incl. cost of incremental fertilizer.

AGRICULTURAL SECTOR REVIEW

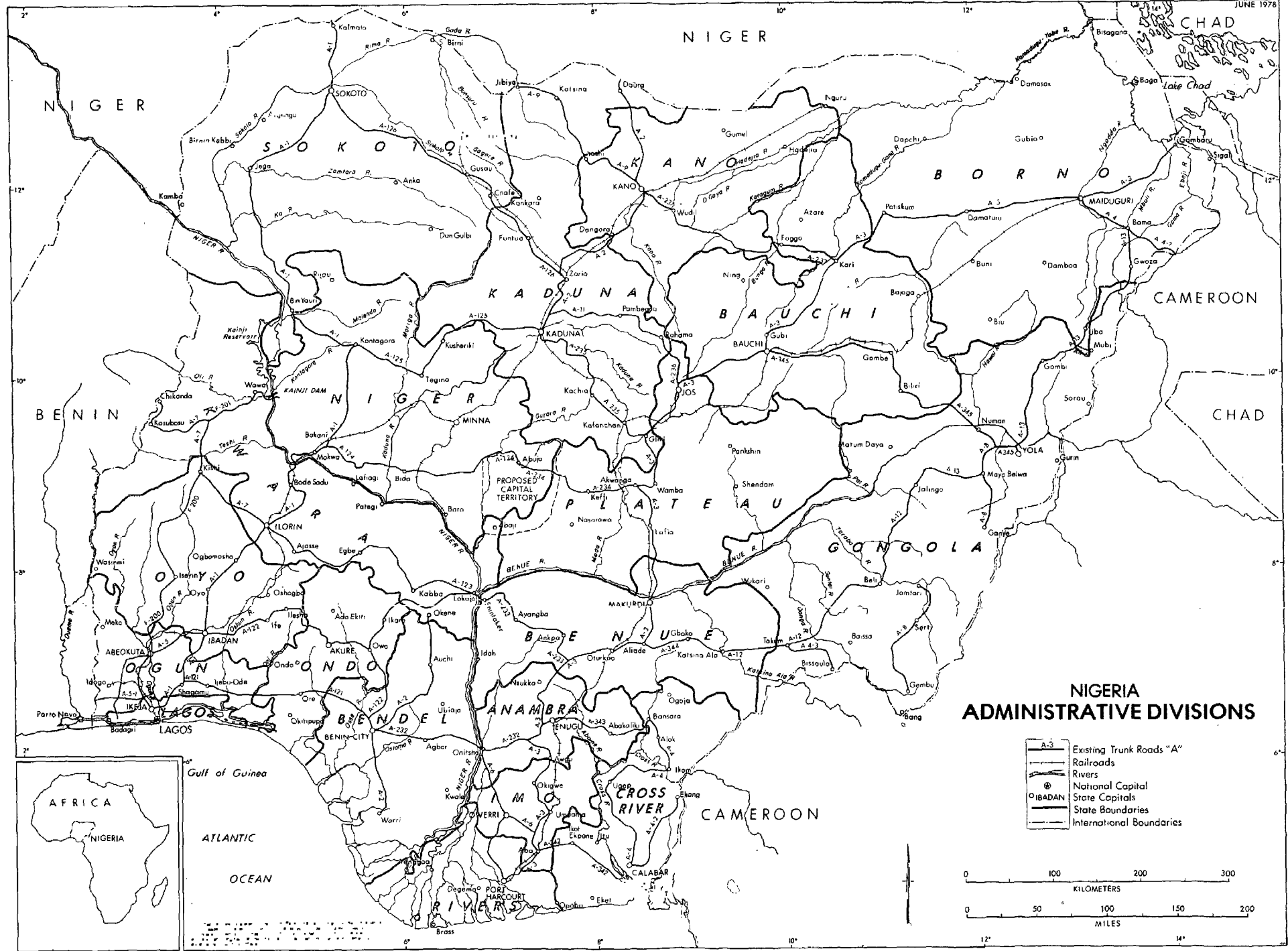
POSSIBLE FERTILIZER REQUIREMENTS AND SUBSIDY COST 1/

IN ADPs (1978-1990)

Project	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
	-'000 tons product												
Funtua	10	25	-	-	-	-	-	-	-	-	-	-	-
Gusau	10	15	17	-	-	-	-	-	-	-	-	-	-
Gombe	10	20	25	-	-	-	-	-	-	-	-	-	-
Ayangba	1	7	12	15	20	-	-	-	-	-	-	-	-
Lafia	1	4	8	12	15	-	-	-	-	-	-	-	-
Bida	-	-	4	10	15	20	-	-	-	-	-	-	-
Ilorin	-	-	4	8	12	15	-	-	-	-	-	-	-
Kaduna State	-	-	50	70	90	110	130	140	150	160	170	180	190
Oyo North	-	-	1	4	8	12	15	-	-	-	-	-	-
Ekiti Akoko	-	-	1	4	8	12	15	-	-	-	-	-	-
Sardauna	-	-	-	1	3	4	5	6	-	-	-	-	-
Ogun	-	-	-	1	4	8	12	15	-	-	-	-	-
Kano State	-	-	-	30	50	80	100	130	140	150	160	170	180
Bauchi State	-	-	-	35	40	45	50	55	60	65	70	75	80
Gusau II	-	-	-	20	25	30	35	40	-	-	-	-	-
Borno State	-	-	-	-	15	25	30	35	40	45	50	55	60
Abakaliki	-	-	-	-	1	4	8	12	15	-	-	-	-
Bendel North	-	-	-	-	1	4	8	12	15	-	-	-	-
Imo	-	-	-	-	-	2	4	6	8	10	-	-	-
Benue State	-	-	-	-	-	40	60	80	90	100	110	120	130
Cross River	-	-	-	-	-	2	4	8	12	15	18	20	22
Plateau State	-	-	-	-	-	40	50	60	70	80	90	100	110
Kwara State	-	-	-	-	-	-	30	40	50	60	70	80	90
Niger State	-	-	-	-	-	-	40	50	60	70	80	90	100
Oyo State	-	-	-	-	-	-	-	25	35	45	55	60	70
Ondo State	-	-	-	-	-	-	-	25	35	45	55	60	70
Gongola State	-	-	-	-	-	-	-	40	50	60	70	80	90
Ogun State	-	-	-	-	-	-	-	25	35	45	55	60	70
Sokoto State	-	-	-	-	-	-	-	70	80	90	100	110	120
Anambra State	-	-	-	-	-	-	-	-	30	40	50	60	70
Bendel State	-	-	-	-	-	-	-	-	25	35	45	55	60
Imo State	-	-	-	-	-	-	-	-	15	20	25	30	35
TOTAL Tons '000	32	71	122	210	309	453	592	739	915	1,085	1,223	1,365	1,507
Value (N million) 2/	5	12	20	33	50	72	94	118	146	174	196	218	241
Annual Subsidy	N million (1978 prices)												
at 85%	4	10	17	28	40	61	80	100	124	145	166	185	205
at 50%	3	6	10	17	25	36	47	59	73	87	98	109	121
at 10%	1	1	2	3	5	7	9	12	15	17	19	22	24

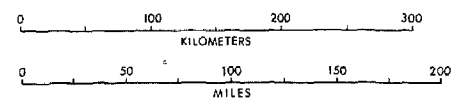
1/ Phasing and identity of projects highly tentative.  
 2/ Based on average farmgate price of N160/ton.





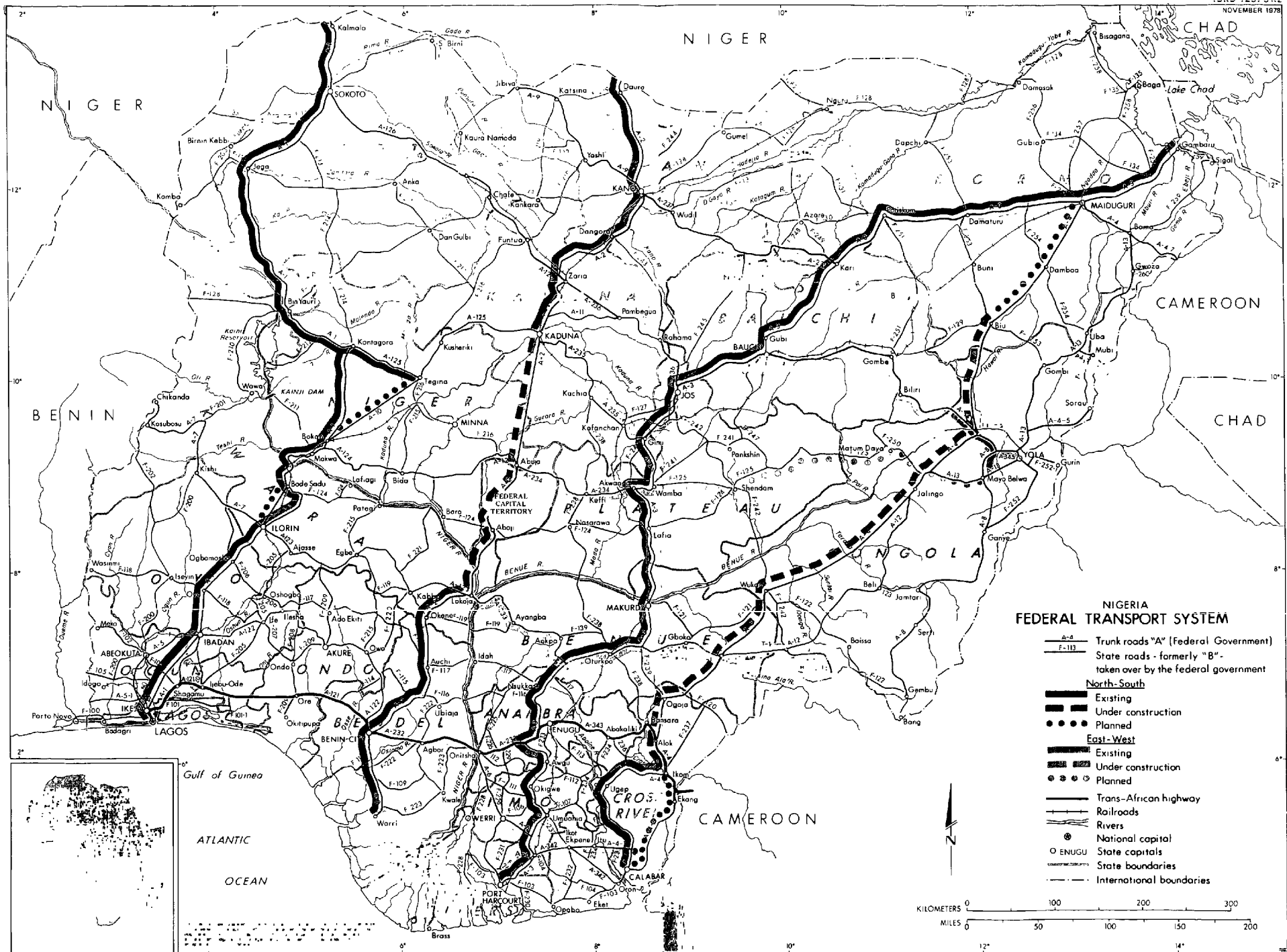
### NIGERIA ADMINISTRATIVE DIVISIONS

- Existing Trunk Roads "A"
- Railroads
- Rivers
- National Capital
- State Capitals
- State Boundaries
- International Boundaries



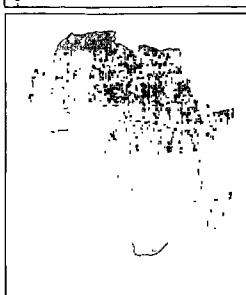
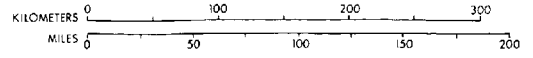
Gulf of Guinea  
ATLANTIC  
OCEAN





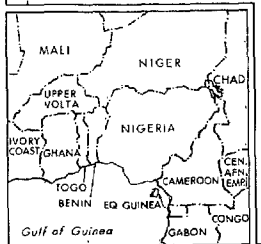
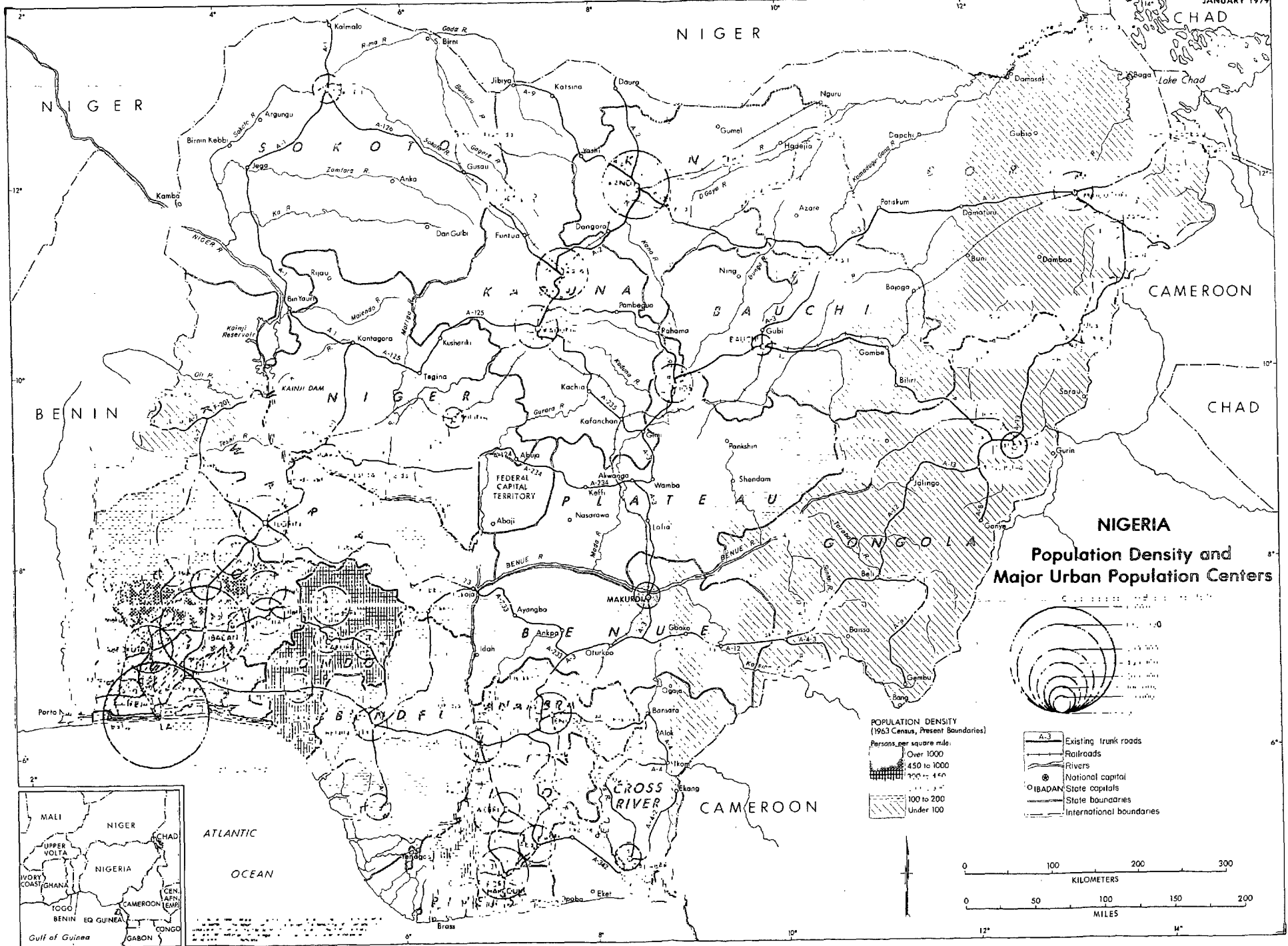
**NIGERIA  
FEDERAL TRANSPORT SYSTEM**

- A-0** Trunk roads "A" (Federal Government)
- F-113** State roads - formerly "B" - taken over by the federal government
- North-South**
- Existing** (thick solid line)
- Under construction** (dashed line)
- Planned** (dotted line)
- East-West**
- Existing** (thick solid line)
- Under construction** (dashed line)
- Planned** (dotted line)
- Trans-African highway** (line with cross-ticks)
- Railroads** (line with cross-ticks)
- Rivers** (wavy line)
- National capital** (circle with a dot)
- State capitals** (circle with a dot)
- State boundaries** (dashed line)
- International boundaries** (dash-dot line)

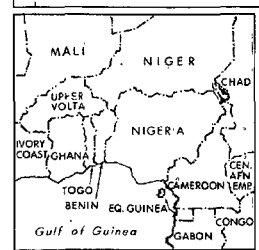
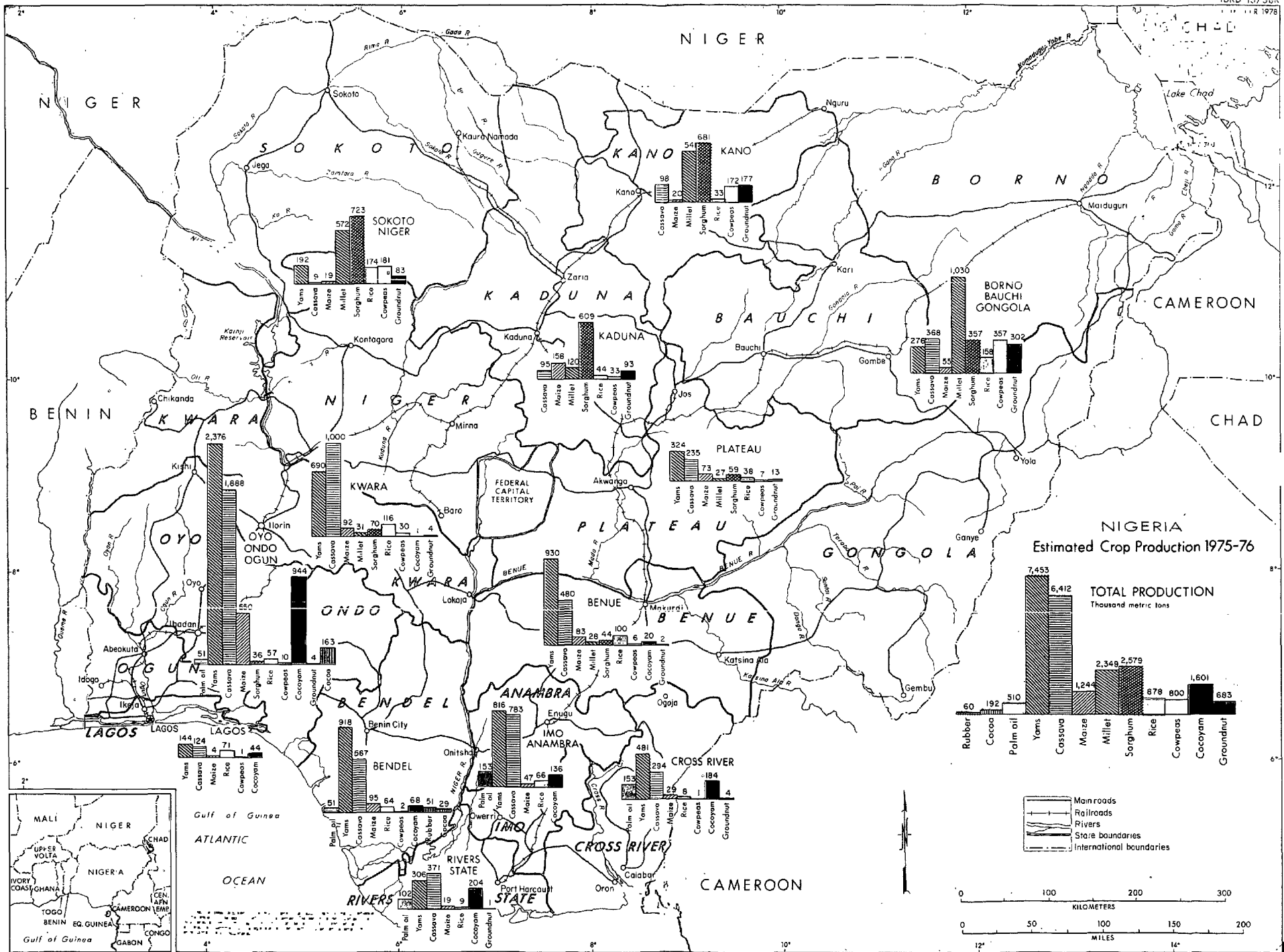














# NIGERIA IBRD Assisted Agricultural Projects Existing and Under Appraisal

- Agricultural Development:**
  - EXISTING
    - Lafia (Loan 1454 - UNI)
    - Ayangba (Loan 1455 - UNI)
    - Funtua (Loan 1092 - UNI)
    - Gusau (Loan 1099 - UNI)
    - Gombe (Loan 1164 - UNI)
    - Bida (Loan 1667 - UNI)
    - Ilorin (Loan 1668 - UNI)
  - APPRAISED
    - Ekiti Akoko (Ondo)
    - Oyo North
    - Kaduna State
- Training Project:**
  - APPRAISED
    - Agricultural and Rural Management Training Institute
- Tree Crop Projects:**
  - EXISTING
    - Cocoa I (Loan 764 - UNI)
    - Cocoa II (Loan 1045 - UNI)
    - Ondo Oil Palm (Loan 1192 - UNI)
    - Bendel Oil Palm (Loan 1183 - UNI)
    - Imo Oil Palm (Loan 1191 - UNI)
    - Rivers State Oil Palm (Loan 1525 - UNI)
  - APPRAISED
    - Cocoa III (Probably same area as Cocoa I & II)
- Irrigation Project:**
  - EXISTING
    - Rice (Loan 1103 - UNI)
- Livestock Development Project:**  
(Loan 1091 - UNI)
  - EXISTING
    - National Livestock Production Co Ranches
    - Western Livestock Co. Ranches
    - North-Eastern Co Ranches
    - Animal / Pasture Investigation Centers
    - Grazing Reserves - Fulani Group Ranches

