



Central Bank of Nigeria

CONTEMPORARY ECONOMIC POLICY ISSUES

In

N I G E R I A

EDITED BY: O. J. NNANNA
S. O. ALADE
F. O. ODOKO



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Agricultural Development: Issues of Sustainability

Introduction

Nigeria's agricultural development policy over the years has been informed by the belief that the development of agriculture is a *sine qua non* for the overall growth and development of the economy. This understanding constituted the basis of all efforts made in the planning and design of programmes and projects to ensure growth in the sector. The main thrust of agricultural development efforts, therefore, has been to enhance and sustain the capacity of the sector to play this assigned role, with particular emphasis on the attainment of a sustainable level in the production of basic food commodities, especially those in which the country has comparative advantage. It also involved developing the capability to increase the production of agricultural raw materials to meet the growing needs of an expanding industrial sector, as well as the production and processing of exportable cash crops to boost the nation's non-oil foreign exchange earning capacity.

Despite these laudable efforts, Nigeria's agricultural sector is still characterized by low yields, attributable to the use of crude implements, a low level of inputs and limited areas under cultivation, among others. This situation raises many issues with regard to the ability of the sector to perform its assigned role, especially against the backdrop of an average annual population growth rate of 2.8 per cent, and an average annual growth in agricultural production of 2.96 per cent in the 1990s. The process of transformation from a predominantly subsistence agriculture to a highly mechanized farming to enhance agricultural production as well as ensure its sustainability, has been undermined by the disincentives induced by the macroeconomic environment.

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This chapter reviews Nigeria's agricultural development in the context of the sustainability of the sector. In order to achieve this objective, the remainder of the chapter is divided into seven sections. Following this introduction is section 2 which examines the concept of sustainability and offers a framework for analyzing the sector. Section 3 reviews the initiatives made, so far, to engender sustainable agriculture, while the analysis of selected indicators of agricultural growth is the subject of section 4. The constraints on the successful implementation of existing agricultural policies are reviewed in section 5, while section 6 highlights the prospects for the sector, in the short- to medium-term. Section 7 concludes the chapter.

A CONCEPTUAL FRAMEWORK FOR SUSTAINABILITY IN AGRICULTURE

The Concept of Sustainability

Writers on the concept of agricultural sustainability differ significantly, depending on the perception of the authors. According to Jodha (1990), sustainability is the ability of the agricultural system to maintain a well-defined level of performance over time, and if required, to enhance that output without damaging the essential ecological integrity of the system. Sustainability in agricultural development could also be defined as the ability of an agricultural system to keep production and distribution going continuously without failing (Idachaba, 1987). To arrive at such a state, most modern economies have gone through various phases of agricultural development, ranging from traditional production to farming system development (Bawden and Parham, 1991). Each phase normally involves a fundamental shift in the thinking of farmers and farming systems, as well as the desired goals and objectives.

Flora, (1992) has added three new dimensions that could impinge on the sustainability of the agricultural sector as follows: ecological, socio-economic and ethical. The ecological dimension focuses on the natural environment, its processes and resources, while the socio-economic dimension addresses issues of human welfare. The ethical aspect, however, focuses on value systems and ethics and, by implication, on human behavioural patterns. It is argued that the presence of these three ingredients is critical for the sustainability of any form of agricultural production. Swant (1995) has added a fourth dimension social acceptability which implies that a community should adopt a particular method of farming that is justifiable and acceptable in that community.

In the agricultural sector, emphasis on sustainability must also incorporate measures to reduce environmental degradation, the elimination of chemical residues in foods, farmers' welfare, and the quality of life. The paradigm of sustainable development subscribes to the policy reform of structural adjustment and also focuses on the widespread degradation of the agricultural resource base in Africa. It encourages the participatory mobilization of rural people, and the need to support non-governmental organizations to reduce transaction costs in rural areas (Delgado, 1997).

Despite the varying concepts of agricultural sustainability, there is a general consensus that agricultural production must keep pace with demand without doing significant damage to the environment, while ensuring an adequate return to labour and a reasonable cost to consumers. It is clear, therefore, that agricultural sustainability is a dynamic rather than static concept and the need to respond promptly and adequately to changing environmental demands must always be factored in.

Framework for Assessing Sustainable Agriculture

Measuring agricultural sustainability cannot be done directly, due to several reasons. Firstly, sustainability is a dynamic process involving measures of improved performance and efficiency over time which, in most cases, a static analytical tool will not be able to capture. Secondly, its accurate measurement must capture the impact of both exogenous and endogenous factors on the entire system. The use of econometric and statistical techniques, for example, to measure the sustainability of an agricultural system and the presentation of results as trends or correlation coefficients, may fail to capture the true performance of agricultural institutions and other units of assessment. Alternatively, the economic evaluation of the net present value and cost-benefit analysis of all the components of an agricultural system could be used to determine the sustainability of a project in respect of present and future outcomes.

Some authors (Greeff, 1988; Dixon, 1993) suggest a partial dynamic approach for measuring sustainability in different agricultural systems, using various parameters. Greeff's method involves assessing the performance and direction of the processes that control the functions of a given farming system at a specific location and at a specific point in time. He developed critical criteria for each indicator and a threshold value in each case, concluding that sustainability was *an inclusive process requiring an understanding of the key inter-linking components for successful evaluation.*

Following the conclusion drawn by Greff, the sustainability of agricultural processes in Nigeria could be assessed using the variant/trend analytic technique. Trends in input utilization, capital requirements and production, as well as the assessment of critical initiatives of supporting agencies could be used to measure agricultural

sustainability in Nigeria, so long as it is appreciated that the results could be affected by some very critical factors, including the following:

- Changing perceptions of the role of government in agriculture, especially government's intervention and the levels of taxation of agricultural produce to generate revenue, etc;
- a largely unstreamlined technology of production and an inadequate supply of spare parts for the numerous types of technology available in the country as potential inputs to the agricultural sector;
- an essentially unchanged rural social structure, due to absence of requisite infrastructural facilities, resulting in continued pressure on land and the perpetuation of unsustainable agricultural practices;
- the menace of an ecological threat that has become more daunting as a result of unsustainable agricultural practices;
- drought and food shortages which are largely the result of inadequate water supply; and
- inadequate human resources, which have led to shortage of farm labour at critical times in the farming calendar.

The interactions of these factors and their dynamics over time are also very important for agricultural sustainability in Nigeria.

Review of Nigeria's Agricultural Initiatives

A review of Nigeria's efforts aimed at achieving agricultural sustainability, during the 1980s reveals gaps and weaknesses that need to be bridged and strengthened. Most of the challenges can be traced to misalignment of macroeconomic policies which have constrained the flow of investment into the public and private sectors of the economy. For example, agricultural development initiatives in the 1990s were conceived and operated within the context of a deregulated economy, as specified in the strategies of the Structural Adjustment Programme (SAP). The initiatives comprised three types, namely: financial reform, pricing and marketing reform; and institutional reform. The thrust of each type of reform is now described.

Financial Reform

In the 1990s, Nigeria's financial policies were designed to ensure the stability of the financial system and thereby guarantee the flow of credit to all the economic sectors, including agriculture. During the period, interest rates were deregulated and credit controls and allocative policies were abolished and replaced by indirect monetary control techniques. One implication of this policy was that the agricultural sector had to compete for funds with the other sectors. Some micro-finance institutions were also established in the 1990s to increase access to credit. For instance, the community banks took off, with the active support of the federal government.

In order to enhance the flow of credit from the banking sector to the agricultural sector, the share capital of the Agricultural Credit Guarantee Scheme Fund, which had been established in 1977 to guarantee 75 per cent of any default in bank loans granted to the agricultural sector, was increased from the initial N100 million to N1.0

billion and N3.0 billion in 1999 and 2001 respectively. This was also followed by an upward review of credit limits. For instance, the limits for guaranteed non-collateralized loans to individuals rose from N5,000 to N20,000, while collateralized loans to individuals increased from N100,000 in 1977 to N1.0 million in 2001. The limits of loans to cooperative societies and corporate bodies were similarly increased to N10 million, from N1 and N5 million in 1977 and 1999 respectively.

The Nigerian Agricultural Insurance Company was established in 1987 to insure agricultural crops so that farmers would be protected against losses arising from natural or man-made hazards beyond their control. The scope of the operation of the company was increased in the 1990s to incorporate livestock and fisheries. The restructuring of the Nigerian Agricultural and Cooperative Bank, which had been established in 1973 with a share capital of N2.0 million, has resulted in its being merged with the Peoples Bank of Nigeria and the Family Economic Advancement Programme (FEAP) to constitute the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). The new bank was given a new lease of life with a capital subvention of N10 billion. The merger and the subsequent substantial increase in its subvention were attributed to the need to better position the institution to effectively meet the increasing demand for agricultural credit.

Although these reforms have redressed, to a considerable extent, the abuses inherent in credit rationing, the issue of inadequate accessibility to credit by farmers has persisted. The interest rate charged remained high and constrained demand for credit by farmers whose returns have remained low. Similarly, the realignment of the naira exchange rate, which resulted in the depreciation of the naira, has increased the prices of imported agricultural inputs, such as fertilizers, agro-chemicals, tractors, and vaccines, among others.

Pricing and Marketing Reforms

The issue of the pricing of agricultural inputs and output remained highly contentious throughout the 1990s. Following the introduction of the Structural Adjustment Programme (SAP), market-based pricing of agricultural export commodities was introduced and the commodity boards, which had, until then, been saddled with the responsibility of marketing agricultural produce and fixing their prices, were abolished. Similarly, subsidies on inputs, such as fertilizers, chemicals and agricultural equipment, were reduced.

These policy initiatives produced mixed results. For instance, following the reduction of fertilizer subsidy, its utilization reduced significantly, particularly for grain production, since adequate arrangements for the private sector takeover and enhancement of the domestic production capacity were not accorded due priority. The National Fertilizer Company of Nigeria (NAFCON), the major fertilizer manufacturing plant in the country as well as other fertilizer blending plants were either shut down or reduced to producing at very low capacity. However, the dissolution of the commodity boards in 1986 resulted in substantial increases in the output of cash crops and significantly increased earnings for the farmers. But, the marketing of agricultural produce ran into a hitch, as there was no institutional arrangement to fill the vacuum left by the marketing boards. Consequently, most of the exported crops, especially cocoa, failed to meet international standards and were sold at a discount at the world market. This void in marketing exposed most individual farmers to the vagaries of the international market.

In 1997, subsidies on fertilizer were removed completely, but re-introduced in 1999. The initiative to set up a commodity exchange market in Nigeria had been mooted and accepted by the federal

government in 1996. However, due to bureaucratic bottlenecks, the plan is yet to become fully operational.

Institutional Reforms

Restructuring of Agricultural Development Projects (ADPs) and River Basin Development Authorities (RBDAs)

The World Bank-assisted Agricultural Development Projects (ADPs) and the River Basin Development Authorities (RBDAs) were among the institutional support agencies established to promote the sustainable development of Nigeria's agricultural sector. The ADPs, which started by operating three pilot projects in 1975, had increased to ten by 1985, and further increased to 31 by 1993. Their activities were all-embracing, covering four integrated components of agriculture, including adaptive research, agricultural extension, input supply and rural infrastructure development. By contrast, the number of RBDAs was reduced from 18 to 11 during the period and their functions restricted to water resource management and development.

In accordance with the new focus, all the RBDAs were expected to dispose of all their non-water assets and withdraw from all activities involving direct production. Also, during the period, a unified extension services system was adopted to ensure the orderly development of a sustainable agricultural sector, with particular emphasis on the smooth transfer of research findings from research institutes to Nigerian farmers. The ADPs and the Agricultural Project Monitoring and Evaluation Units (APMEU) were restructured to form the unified extension services to Nigerian farmers. The rapid expansion of the ADPs to all states of the federation was designed to ensure effective extension services to the farmers in rural areas, and enhance the distribution of agricultural inputs and infrastructure development.

Unfortunately, the expanded mandate of the ADPs overstretched their resources as the level of required funding could not be sustained to support their activities. The federal and state governments failed to meet their financial obligations to the ADPs, precipitating the non-release of the World Bank's counterpart funding. As might be expected in the circumstances, the lag between research findings and their adoption by Nigerian farmers has increased rather than decreased.

Establishment of Universities of Agriculture

In the continuing effort to build capacity to boost agricultural production, the federal government has established three universities of agriculture in Abeokuta, Umuahia and Makurdi respectively to offer degree programmes in all disciplines of agriculture. This initiative is government's holistic approach to solving the perennial problem of inadequate human resources at all levels of the agricultural sector.

Research Institutes

In order to improve the funding of Nigerian agricultural research institutes, government obtained a World Bank loan for specified research activities involving all agricultural research institutes in the country. However, the level of funding of research in the institutes and the universities of agriculture could not be sustained, largely on account of their ever increasing number and personnel. Besides duplicating their functions, the institutes have continued to be dependent on subventions from the Federal Government for virtually all their operations. All in all, the impact of the reforms on the sector are yet to be felt as most of the institutes remain grossly under-funded, while the perennial problem of inadequate human resources in the sector still persists.

Establishment of the Nigeria Export-Import Bank and the Nigerian Export Promotion Council

In a continuing effort to enhance export promotion activities, the government established the Nigerian Export Promotion Council (NEPC) in 1986 and the Nigerian Export-Import Bank (NEXIM) in 1991. They were established essentially to provide incentives for export, provide funds for trade and project finance; and render export advisory services. However, the sustainability of the institutions has been jeopardized due to a combination of factors, including: low level of loans recovery, resulting from severe devaluations of the domestic currency and the implementation of institutionalized export incentives, all of which have combined to discourage potential exporters.

Rural Development Programme

It has been estimated that over 60.0 per cent of Nigeria's population live in the rural areas, with the majority of them being involved in agricultural activities. In an attempt to improve the quality of life of the rural people and thereby stem the tide of rapid rural-urban population drift as well as facilitate the promotion of sustained and orderly development of rural Nigeria, the Federal Government excised the responsibilities of rural development from the Ministry of Agriculture and transferred them to the Federal Ministry of Water Resources. The government also established the National Agricultural Land Development Authority (NALDA) in 1991 to ensure the availability of arable land, as well as reduce the burden of land preparation for agricultural activity. NALDA has the mandate to execute a national agricultural land development programme designed to moderate the chronic problem of low utilization of abundant farmland. However, the performance of NALDA has been constrained by the high cost of agricultural equipment maintenance and their incessant breakdowns,

as well as the lack of spare parts, all of which have impacted negatively on farm operations and agricultural productivity.

Analysis of Selected Indicators of Agricultural Growth

In this section, trends in inputs utilization, capital requirements and the production gap, are used as parameters to gauge the growth and sustainability of agriculture in Nigeria.

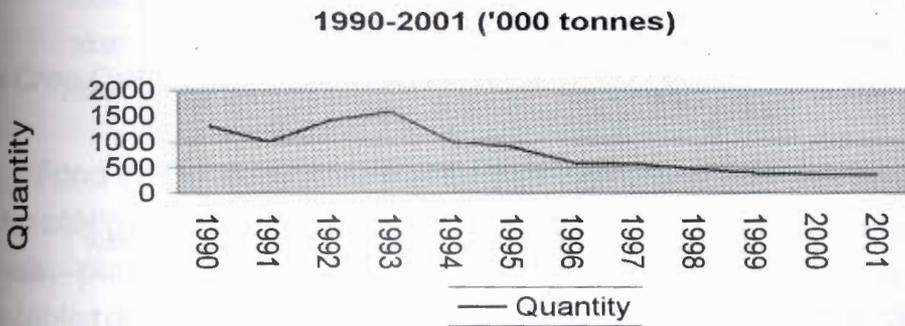
Trends in Input Utilization

Three approaches are normally adopted to achieve self-sufficiency in food production. The first is the intensive use of improved inputs, such as fertilizers, seeds, and agrochemicals to control pests, diseases and weed. In Nigeria and elsewhere, improved farm cultural practices have been adopted in the past to complement the use of such improved inputs. The expansion of the total land area under cultivation is another approach, while the third approach is a combination of the first two.

The expansion of land under cultivation involves enhancing the productive capacity of marginal lands through the use of irrigation facilities and deforestation. Quite often, this approach is very expensive. Consequently, the intensification of inputs is normally preferable as a means for boosting agricultural production.

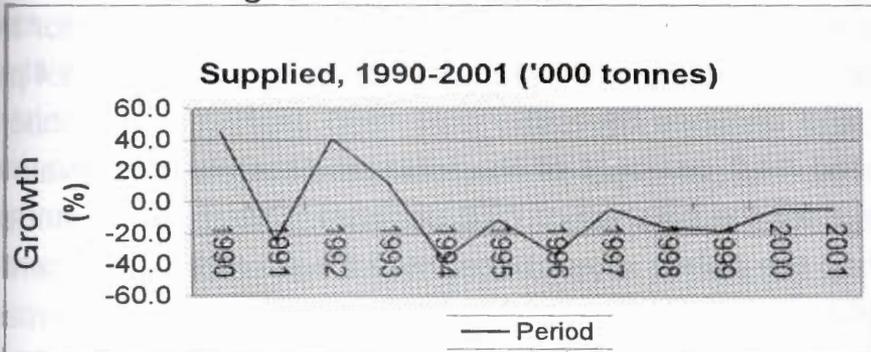
In Nigeria, massive resources have been channelled into the procurement and distribution of farm inputs. The trend in fertilizer consumption is presented in Fig. 6.1(a). The observed upward trend in fertilizer consumption in the early 1980s continued into the 1990s and peaked in 1993, with total consumption reaching 1,590 thousand metric tonnes. Thereafter, fertilizer consumption declined consistently from

1,010 thousand tonnes in 1994 to the lowest level of 357.8 thousand tonnes in 2001. The sharp increase in fertilizer utilization in the early 1990s was sustained by subsidy, which was sometimes as high as 75 per cent of the total cost per bag, but the level of subsidy gradually fell to between 50 and 25 per cent, as reflected in the sharp decline in fertilizer use from 80 kg/ha to 23 kg/ha in 1996 and 2000 respectively, compared with the minimum of 200kg/ha internationally recommended standard. Also, during this period, domestic production of fertilizer was severely handicapped as the main fertilizer companies and the bulk blending plants were either producing at low capacity or not producing at all.



Source: Federal Ministry of Agriculture and Natural Resources

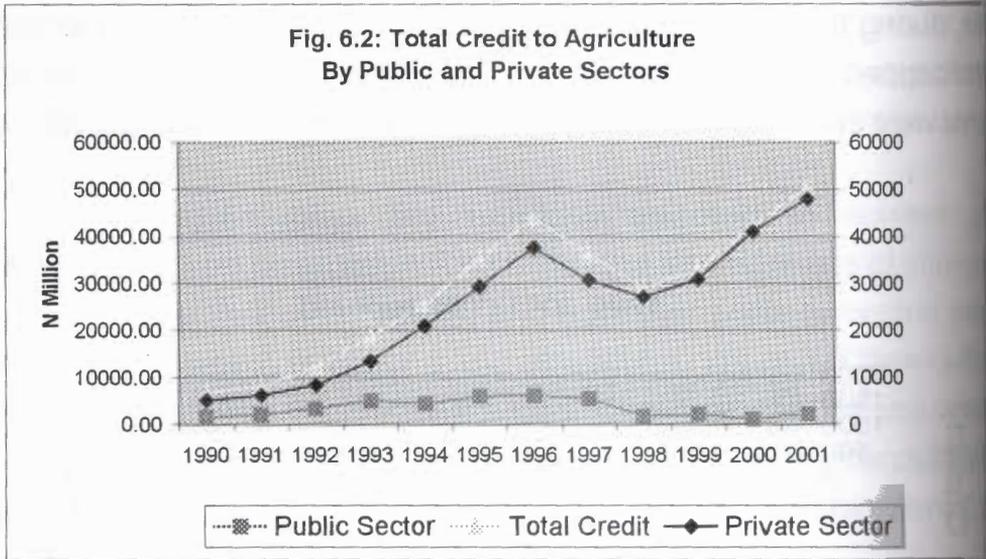
Fig. 6.1b Growth Rate fertilisers



Source:

Trends in Agricultural Financing

Fig. 6.2 shows the flow of credit to agriculture from the private and public sectors. Generally, total credit to the agricultural sector showed an increasing trend from 1990 to 2001. Total credit, which stood at N722.9 million in 1980, had increased



to N6,932.4 million by 1990 and to N50,493.59 million by 2001.

Source: CBN Statistical Bulletin

However, the annual growth rate of credit to the sector trended downwards. It rose from 21.9 per cent in 1990 to a peak of 54.4 per cent in 1993 and declined thereafter until 1998. In 1990, the public sector contributed 24.0 per cent of the total credit while the private sector accounted for the balance of 76.0 per cent. This trend continued until 1993 when the public sector accounted for about 28.0 per cent of the total credit. Thereafter, the composition of total credit was reversed, with the share of the public sector declining to 18.0, 14.0, 7.0 and 3.0 per cent in 1994, 1996, 1999 and 2000 respectively. *The declining trend was*

traceable largely to the non-mobilization of savings by the specialized credit institutions, coupled with the reduction in government subventions. Similarly, capital budgetary allocations to the sector, which stood at 11.5 per cent of total capital expenditure in 1989, had declined to 6.7 per cent by 1990. The downward trend continued to 2001 (Table 6.1).

The Agricultural Production Gap

In the 1990s, policy measures were initiated and strategies designed to propel agricultural development, targeting year 2000 and beyond. A discussion of the output targets set and a detailed analysis of the level of achievement, so far, is presented below.

The Crop Output Gap

Food crops constitute the largest component of the crops sub-sector of Nigeria's agricultural sector. They are categorized broadly into cereals, pulses, roots, tubers and plantain, oil seeds and nuts, vegetables and fruits, sugar and beverages. The target date for self-sufficiency or, at least, self-reliance in respect of most food crops was set at 1992. It was expected that the target output set for various food crops would provide each Nigerian with at least 2,100 calories and 60 grammes of protein per day. To achieve the stated policy targets, commodities such as legumes, tubers, and fruits were expected to record annual growth rates of about 5 per cent or more. Also, millet, sorghum, cassava and leafy vegetables were expected to record output growth rates of 6 to 8 per cent, while maize, rice, wheat, soyabean, and sugarcane output, were expected to grow by over 10 per cent annually.

Analysis of Nigeria's food crop production shows that of the seven food crops for which comparative data are available, only four exceeded

stipulated targets, while three recorded a negative variance between actual and projected output during the period 1990 and 2001. (Table 6.4). From the foregoing, it is clear that there was a shortfall in food crop production between 1990 and 1999, which implies that the self-reliance target was largely unmet during the period. Also, the estimated nutritional intake of Nigerians stood at 2,000.5 kilo calories per caput per day in 1995, compared to the 2,100 kilo calories projected for 1992, and the 2,450 kilo calories minimum requirement per day recommended by the Food and Agricultural Organisation (FAO.)

Further analysis shows that staples exhibited a moderate growth in output as the production index of staples grew consistently from 1990 to 2001, recording an average growth of 5.8 per cent during the period (Table 6.3). This was slightly above the minimum growth target of 5.0 per cent set for the various food crops in the policy document, but much below the upper target of 10.0 per cent. All the staples exhibited consistent growth in output except cassava whose output fell in 1999, but grew from 2000 (Table 6.4).

The Livestock Output Gap

For the purpose of planning for self-sufficiency in livestock production, output in the sector was categorized into short term, and long term. Livestock, whose sufficiency level could be conveniently attained within five years, were classified as short term while those that would require at least 15 years were categorized as long term. Thus, the target years for the two classes of livestock products were set at 1992 and 2002 respectively.

The demand and supply projections for the livestock sub-sector in the policy document were limited to five livestock products, namely, beef, poultry products, goat meat, mutton and pork. As table 6.5 shows

for the five livestock products categorized under short-term (poultry meat, goat meat, mutton, pork, and beef), there were substantial negative variances between actual and projected output levels.

The agricultural production index shows that livestock output recorded a growth rate of 2.2 per cent between 1990 and 2001, a much lower figure than the expected growth rate of 19.05 per cent stipulated in the policy document for the various livestock species. At the current level of production, the protein intake of Nigerians will continue to remain much below the stipulated minimum requirement.

The Fisheries Output Gap

The target set for fish supply from domestic sources was 958,397 tonnes, with a growth rate of 7.05 per cent annually. Table 6.6 which gives the estimated demand and supply figures for fishery resources from 1990 to 2001, show substantial negative gaps between projected demand and supply. The available data show that even though the level of fish supply has been on the increase between 1990 and 2000, it has consistently been much lower than the demand for fish, hence the deficit recorded over the years. The deficit, which stood at 848.16 thousand tonnes in 1990, fluctuated upwards and peaked at 1,191.4 thousand tonnes in 1995 before declining to 403.0 thousand tonnes in 2000. However, this growth rate, which stands at 2.0 per cent per annum, is too low to compensate for the substantial negative variance between actual and projected outputs thereby negating the objective of self-sufficiency in fish production. The anticipated growth rate of this sub-sector has not been achieved, suggesting that the current production practices may not be capable of achieving the desired production targets.

Constraints to the Sustainability of Agriculture

It is evident from the previous sections of this chapter that self-

sufficiency in agricultural production in Nigeria has been constrained by a number of factors, some of which are discussed below.

Technologies of Production

Generally, appropriate technologies induce increases in the production of food staples by shifting outwards the production function, reducing costs and increasing returns to producers, while consumers, ultimately, benefit through lower and stable food prices. However, most of the relevant technologies in agricultural production have not yet become a significant factor in this sector. Technological innovation in Nigeria is still rudimentary and characterized by low agricultural production.

Processing technologies, which have to do with on-farm storage, pest control, and reduction of post-harvest losses, are also rudimentary in Nigeria. The result is that agricultural produce which cannot be stored is often wasted or sold cheaply. It is estimated that over 30 per cent of harvest is lost due to inadequate processing technologies. These deficiencies manifest in the form of a lopsided availability of agricultural output, especially staples, throughout the calendar year. During the harvest months, there is usually abundant supply, often resulting in considerable wastage, while the non-harvest period is characterized by scarcity and high prices. If most of the agricultural harvest could be adequately processed and stored, this seasonal variation in the supply and prices of agricultural products would be significantly minimized.

The Infrastructure Constraint

Basic rural infrastructure, such as transportation, electricity, all

Reason motorable roads, water, marketing and irrigation facilities, are needed to support agriculture. The provision of most of them is, however, capital-intensive. It has been observed that capital expenditure on agriculture, as a ratio of total government budget, has been low. The ratio, which was consistently below 6.0 per cent for most of the 1990s, was grossly below the Food and Agriculture Organization recommended level of 25 per cent of the annual budget for developing countries. Consequently, the resources regularly allocated to the agricultural sector have neither been inadequate not to meet the developmental requirements of the sector nor make adequate provisions for its infrastructure support facilities. These and other mounting challenges have continued to ensure low agricultural output, fluctuations in prices of commodities, and enormous wastage, especially during the harvest months.

Environmental Constraint

The basic natural resources of soil, climate, and vegetation provide the needed environment for sustainable agricultural development. The soils are relatively poor and fragile in some parts of the country. In addition, poor husbandry practices, excessive and intensive rainfall, and other unfavourable climatic conditions combine to reduce the quality of otherwise productive soils.

Due to poor vegetation cover, parts of the savannah region of Nigeria is susceptible to desertification, while humid and warm tropical rain forest conditions encourage the prevalence of crop pests and diseases. The cultural practice of bush burning and over-grazing may contribute to soil degradation, if not properly managed. The frequently reported cases of oil spillage in the Niger Delta area also affect the aquatic environment. Furthermore, gas flaring has had a negative impact on soil temperature, thereby reducing the vital bioactivities

necessary for enhancing soil fertility.

The Management Constraint

The agricultural sector, like other sectors of the national economy, has had its fair share of poor resource management. Insufficient and/or inefficient human resources have continued to frustrate the attainment of sustainable agricultural development and demands urgent and serious attention. The challenge manifests itself in various forms, such as an ineffective budgeting and control mechanism, and the inefficient execution of agricultural projects. The opportunities for a high rate of capital formation and technological advancement in the sector will continue to be a mirage until the management constraints are tackled, head on.

Agricultural Marketing and Pricing Constraints

It is recognized worldwide that an effective marketing system can be an incentive for increased production which could, in turn, result in the reduction of the prices of agricultural products to the consumer. The abolition of the commodity boards in the late 1980s created a vacuum which is yet to be effectively filled in the marketing arrangements for agricultural produce. The absence of appropriate marketing institutions has resulted in the sale of Nigerian agricultural export commodities at a discount in the international market, due largely to their poor quality, and thus further discouraging increases in production. Similarly, there are no safeguards for the marketing of food crops as farmers are left to contend with seasonal fluctuations in prices, thus making it difficult or impossible to project income from the sale of food crops.

Credit Constraints

The lack of adequate provision of agricultural credit from the banking

System constitutes a constraint to sustainable agricultural development in Nigeria. Credit from the banking system is regarded as a major factor in agricultural development since it is cheaper than borrowing from the formal sector. It also facilitates the adoption of new techniques and the acquisition of improved seeds, fertilizers, herbicides/pesticides, etc. The problem of credit availability has to do with the general reluctance of financial institutions to provide as much financial assistance as farmers would require and in time to meet their activity schedules. The reluctance has often been attributed to a number of factors, including the inherent risk in agricultural activities, the difficulty of projecting returns on investment, and the inability of many farmers to provide the required collateral to the banks.

The Land Use Constraint

The value of output must exceed the value of inputs in a sustainable land use system in which there is a symbiotic relationship between the socio-economic and biophysical environment. Despite Nigeria's large expanse of land and a long-standing Land Use Decree, Nigeria's farming system cannot sustain the growing population because of its concentration in small holdings which are not economically viable.

SPECTS AND STRATEGIES FOR SUSTAINABLE AGRICULTURAL GROWTH IN NIGERIA

The Prospects

Despite the severe constraints on agricultural productivity in Nigeria, the prospects for increased agricultural production are good and would seem to depend on the following underlying factors:

The Land Resource

The country is blessed with abundant land resource for the production of cash and food crops, livestock and forestry products. For instance, out of 71.12 million hectares of cultivable land available, only 34.0 million hectares or 47.8 per cent is currently being utilized for agricultural activities. This implies that with appropriate technologies, output could be substantially increased through intensive cultivation of available land.

The Market Size

The markets for Nigeria's agricultural produce can readily target the large population of the *ECOWAS sub-region*, in addition to a local population of over 100 million. However, to access these markets, there is the need to make agricultural products competitive, through better packaging and ensuring high product quality.

Marketing Arrangements

The elimination of the implicit taxation of agricultural commodities through the abolition of commodity boards has provided the added impetus needed by farmers to obtain appropriate prices for their products. The establishment of a Commodity Exchange Market, a private sector-led agency, would not only ensure price stability and steady incomes to farmers, but provide the much-needed regulatory framework for ensuring an acceptable quality for every agricultural commodity.

Institutional Reforms

Recent reforms of some agricultural institutions, such as the

Agricultural Development Projects (ADPs), the River Basin and Rural Development Authorities (RBDAs), the Agricultural Credit Guarantee Scheme (ACGS) and the Nigerian Agriculture, Cooperative and Rural Development Bank (NACRB) should continue to impact positively on growth in the sector. The upward review of the capital base of the NACRB and the ACGS would enhance the ability of the bank to carry out its mandate of credit delivery, while the ACGS would be better able to provide the required guarantees for agricultural loans.

Import Restrictions

The measures taken to discourage the importation of a number of food items, such as livestock products, maize, wheat and vegetable oils in order to enhance local production, have provided an additional incentive for investment flows into the sub-sector. The potential of raising livestock production in Nigeria is high. Similarly, of the abundant fishery resources in Nigerian waters, estimated at over 300,000 tonnes, less than two thirds is currently being exploited while the country continues to rely on importation to supplement domestic production.

Strategies for Sustainable Agricultural Growth

Turning the vast potentials enumerated above into reality is contingent upon the adoption of effective strategies. Some of the elements of effective strategies for sustaining agricultural production and improving the lot of Nigerian farmers are outlined below.

Reforms in Inputs Supply

Nigerian farmers have long complained about inadequate and

late delivery of essential farm inputs, such as fertilizers, chemicals for pest control, etc. In the past, about 50 per cent of the Federal Government's expenditure on agriculture had typically been devoted to the procurement of fertilizers, with frequently reported bottlenecks in their distribution. As a result, Government has decided to privatize the procurement and distribution of fertilizers. To attain sustainability in agriculture, it is essential that domestic production of farm inputs, especially fertilizers, be efficient. In this regard, the reactivation of NAFCON should be expedited and privatized on completion to ensure uninterrupted production to feed other blending plants scattered all over the country. This would reduce the current dependence on imports and ensure price stability.

Social-economic Infrastructure

There is need for an improved level of maintenance of existing infrastructure and the provision or extension of additional ones, such as rural feeder roads and electricity. The deplorable state of some existing infrastructure and the complete absence of such facilities in rural areas, have severely constrained agricultural production and storage. Consequently, the provision of access roads in rural areas and continued maintenance of existing ones would enhance agricultural output and minimize the cost of evacuating agricultural produce. In order to minimize post-harvest losses, the private sector should be given appropriate incentives to build suitable storage facilities for grains.

Issues of Marketing, Pricing and Quality Control

A policy of sustainable development of agricultural institutions to enable them contribute to competitive marketing, pricing and quality control of agricultural produce should be accorded high priority. The abolition of commodity marketing boards appears to have left a serious

vacuum as no agency has assumed responsibility for the quality control of agricultural products, or minimizing the seasonal swings in prices. Thus, in addition to further strengthening the existing produce inspection mechanism, the proposed Commodity Exchange Market should be fully operational to facilitate competitive marketing of agricultural commodities and the stabilization of product prices as well.

Improving the Efficiency of Agricultural Loans

The existing anomalies in lending for investment in agricultural production should be rectified, while more private sector investment in the sector should be encouraged. A perennial anomaly relates to credit supply: farmers have generally complained that loans were often disbursed late (sometimes after the planting season), with actual disbursements falling far short of loan approvals. Many lending banks have responded by pointing out that credit is sometimes curtailed or delayed because of rising incidents of default in loan repayments. Additionally, improper monitoring of agricultural projects by lending banks tends to contribute to default in loan repayments and the ultimate failure of projects. Moreover, banks should be encouraged to lend more to self-help groups, where group pressure can be exerted, than to individuals in order to ensure a higher rate of loan repayments. This approach also engenders lower transaction costs for all parties and a better spread of loans to all agricultural activities.

The Role of Government

Government has a continuing important role to play in agricultural development by maintaining consistency in policy formulation and providing the enabling environment for the private sector, grass-root organizations, and cooperative/self-help groups to effectively engage in agricultural production. Specifically, government should sustain its drive

to achieve a stable macroeconomic environment which manifests largely in price stability. On the social front, government should ensure security of life and property to attract domestic and foreign investment to the sector. Also, the rural electrification programme should be intensified and the construction of functional strategic grains reserves should be provided in areas where they are required. In addition, necessary reviews of the existing legislation toward respect to improved access to farmland should be undertaken periodically.

Better Access to Modern Farming Practices

One major area which deserves serious attention is the continuing application of inefficient traditional practices and inappropriate technologies to farming in Nigeria. The adoption of modern farming and husbandry practices, such as the planting of improved seeds/seedlings; the application of agricultural chemicals for pest and disease control; and the use of tractors to reduce drudgery and enhance yields, are generally recognized as essential to tackling the challenge of low agricultural productivity. In this regard, farmers should be assisted in sourcing improved technologies capable of increasing output, at reasonable costs.

Increased Support for Agricultural Research

There is the need to further strengthen agricultural research activities at all levels. The system has been partly reformed through the preparation and implementation of a National Agricultural Research Plan. There is, however, a need for increased and stable funding of planned activities, their proper coordination, the strengthening of linkages among research centres, between national universities and international/regional research centres, as well as the adequate training

of research and technical support staff in specialized skills.

Environmental Issues in Agriculture

The rural/agricultural environment should be increasingly protected through appropriate management of land, water and forestry resources and reduction of pollutants. A comprehensive programme of soil and moisture conservation, through the intensification of such practices as contour farming and alley cropping, should be encouraged. These measures call for the adoption of suitable afforestation, grassing, flood and landslide control programmes.

Human Resource Development in Agriculture

Greater attention needs to be given to a comprehensive human resources development in the sector. The curricula of tertiary educational institutions (universities, and schools of agriculture) should be more focused on practice. Agricultural officers should be provided with opportunities to update their skills and keep abreast with current developments in their fields. These measures need to be taken in full appreciation that, in the absence of skilled and dedicated personnel, other efforts to promote sustainable agriculture in Nigeria would hardly yield the expected results.

Strengthening the Existing Agricultural Data Bank

The existing Agricultural Data Bank will need to be properly funded on a sustainable basis, in line with current trends in the application of information technology in specific human activity. The volume of data generated in the field of agriculture is large, re-inforcing the need for additional and improved resources for data processing. This would ensure the high quality, reliability and timeliness of agricultural data, which would enhance agricultural planning and policy

coordination.

Increased Funding of the Agricultural Sector

The realization that the agricultural sector requires support services which are better delivered through formal institutions, led to the establishment of a number of parastatals, some of which have been cited in the earlier sections. However, like most public sector outlets in Nigeria, the inefficiency of these institutions has continued to pose a serious constraint to sustainable growth in the sector. A common complaint of the agencies has been the issue of their multiplicity in number and duplication of their functions resulting in gross underfunding. Therefore, the functions of the agencies should be streamlined to ensure adequate funding for their core functions, while their number should be rationalized.

Establishing an Integrated Water Resources Management System

Water is central to productivity in agriculture. In order to provide adequate water to such key sectors as agriculture, industry and energy in national economic development efforts, a systematic approach should be designed to manage the nation's water resources to achieve identifiable social, economic and environmental goals.

In this regard, the current achievement of the River Basin Development Authorities in the provision of dams and irrigation facilities for agricultural development, should be sustained through improved funding. This would enable the River Basin Authorities to undertake long-term, agricultural investments in the drought-prone areas of the country. It would also assist in improving data collection and the processing and installation of early warning systems in various ecological zones of the country.

Summary and Conclusion

The chapter set out to assess the issue of sustainability of the agricultural sector. It has highlighted some conceptual and analytical problems of measuring sustainability in the sector. The agricultural initiatives pursued between 1990 and 2001 were reviewed and their outcomes analysed. The result of the analysis suggests that there have been significant gaps between projected and actual production in respect of the crops, livestock and fishery sub-sectors, leading to the conclusion that the agricultural production strategies of the 1990s did not achieve their desired objectives.

The chapter has also identified specific constraints to increased agricultural production, including: lack of adequate infrastructure, environmental constraints, an inadequate level of farm management expertise, and a number of socio-economic constraints. Others are institutional constraints, inadequate access to agricultural credit, appropriate agricultural education and ineffective extension services, and an unsustainable land use system. Despite these challenges, the chapter concludes that the prospects in the sector are good and enormous. Nigeria's attainment of the ultimate goal of increased agricultural productivity to meet increasing demand of the industrial and export sectors, as well as have enough for domestic consumption would, however, depend on a full commitment to the provision of an enabling environment, the provision and maintenance of adequate infrastructure and funding, the streamlining of agricultural research activities, and taking appropriate steps to reduce environmental degradation.

In conclusion, the potential for increased agricultural production exists in Nigeria, but the agricultural sector is yet to attain its full potential in the production of basic agricultural commodities for industrial and

human consumption, especially those in which the country has comparative advantage.

Table 6.1: Budgetary Allocation to Agriculture (N' Billion)

Year	Agric. GDP (N million)	Total Capital Expenditure (N million)	Total Capital Expenditure Agric.	Capital Expenditure Agric. (% of Total)	FAO Stipulation (%)
1990	35.8	24.05	1.60	6.65	25.00
1991	36.5	28.34	1.22	4.30	25.00
1992	37.3	39.76	0.94	2.37	25.00
1993	37.8	54.50	1.82	3.35	25.00
1994	38.6	70.92	2.18	3.07	25.00
1995	40	121.14	2.41	1.99	25.00
1996	41.7	158.68	3.89	2.45	25.00
1997	43.5	269.65	6.25	2.32	25.00
1998	45.25	309.00	4.33	1.40	25.00
1999	47.6	498.00	8.88	1.78	25.00
2000	48.99	239.5	6.91	2.89	25.00
2001	51.47	438.70	5.76	1.31	25.00

Source: CBN Annual Report and Federal Office of Statistics

Table 6.2 Output of Major Stapled Foods ('000 Tonnes)

Year/ Staples	Maize	Millet	Sorghum	Rice	Wheat	Acha	Beans	Cassava	Potato	Yams	Coco- Yams	Plantain	Vegetable
1990	5,768	5,136	4,185	2,500	554	39	1,354	19,043	54	13,624	731	1,215	1,761
1991	5,810	4,109	5,367	3,226	455	43	1,352	26,004	66	16,956	826	1,339	2,025
1992	5,840	4,501	5,909	3,260	515	47	1,411	29,148	73	19,781	940	1,417	2,243
1993	6,290	4,602	6,051	3,065	33	50	1,576	30,128	80	21,633	1,066	1,623	2,494
1994	6,902	4,757	6,197	2,427	35	55	1,545	31,005	90	23,153	1,128	1,665	2,843
1995	6,931	5,563	6,997	3,203	44	58	1,751	31,404	95	22,818	1,182	1,632	2,608
1996	6,217	5,803	7,514	3,122	47	64	1,847	32,950	99	23,928	1,295	1,688	3,506
1997	6,285	5,997	7,954	3,230	49	67	1,957	33,510	101	24,713	1,380	1,758	3,816
1998	6,435	6,328	8,401	3,486	51	70	2,054	34,092	105	25,102	1,450	1,809	4,018
1999	6,515	6,423	8,504	3,522	53	73	2,100	26,007	109	26,007	1,491	1,841	4,151
2000	5,491	9,743	8,824	3,841	55	75	2,261	36,750	118	26,421	1,592	1,995	4,480
2001	6,592	7,088	9,508	3,989	57	81	2,409	37,949	128	27,589	1,702	2,163	4,788

Source: CBN Statistical Bulletin, Various Issues

Table 6.3: Index of Agricultural Production by Type of Activity, 1990-2001**(1984=100)**

Year	Aggregate	Crops	Staples	Other Crops	Live-stock	Fishery	Forestry
1990	167.5	180.0	189.4	144.9	157.1	77.4	117.1
1991	178.9	194.5	205.9	151.6	160.7	84.3	119.5
1992	200.0	233.3	254.2	154.6	159.3	84.3	122.2
1993	203.7	241.1	266.3	146.1	161.6	62.9	124.7
1994	209.7	249.4	276.8	146.0	164.1	67.0	128.0
1995	215.1	255.4	285.2	143.7	171.0	77.6	128.0
1996	227.3	269.6	298.1	164.4	176.0	89.4	131.4
1997	235.2	278.7	307.3	166.5	180.4	99.5	132.7
1998	242.4	288.0	316.1	182.4	181.3	105.7	133.5
1999	250.4	298.2	327.5	188.0	185.6	108.8	136.3
2000	258.2	308.0	337.3	194.2	190.7	112.9*	138.4
2001	267.7	318.8	349.0	200.8	195.8	117.4	140.9

Sources: (1) Statistical Bulletin, CBN
(2) CBN Annual Report, Various Issues

Table 6.4: Variance Between Projected and Actual Output of Food Crops ('000 Tonnes)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Maize												
Actual	5768	5810	5840	6290	6902	6931	6217	6285	6435	6515	6491	6592
Projected	4556	4791	5038	5298	5571	5858	6160	6462	6779	7112	7460	7825
Variance	1212	1019	802	992	1331	1073	50	(1772)	(344)	(597)	(969)	(1233)
Millet												
Actual	5136	4109	4501	4602	4757	5563	5803	5997	6328	6423	9743	7088
Projected	2638	2715	2793	2874	2957	3218	3311	3381	3453	3572	3707	3847
Variance	2498	1394	1708	1728	1800	2345	2492	2616	2875	2851	6035	3241
Sorghum												
Actual	4135	5367	5909	6051	6197	6997	7514	7954	8401	8504	8824	9508
Projected	3166	3320	3481	3650	3828	4014	4209	4377	4552	4733	4936	5148
Variance	969	2047	2428	2461	2369	2983	3305	3577	3849	3771	3887	4359
Rice												
Actual	2500	3226	3260	3065	2427	3203	3122	3230	3486	3522	3841	3989
Projected	462	485	509	534	560	588	617	262	668	695	1285	2377
Variance	2038	2741	2751	2531	1867	2615	2505	2588	2818	2822	2556	1612
Wheat												
Actual	554	455	515	33	35	44	47	49	51	53	55	57
Projected	279	292	306	320	335	351	368	382	397	412	429	447
Variance	275	163	209	(287)	(300)	(307)	(321)	(333)	(346)	(359)	(374)	(390)
Cassava												
Actual	19,943	26,004	29,148	30,128	31,005	31,404	32,950	33,510	34,092	26,007	36,750	37,949
Projected	17,305	18,145	19,026	19,950	20,919	21,935	23,000	23,918	24,874	25,867	27,005	28,193
Variance	1,735	7,839	10,122	10,198	10,086	9,469	9,950	9,592	9,218	140	9,745	9,756
Yams												
Actual	13,624	16,956	19,781	21,633	67	22,818	23,928	24,713	25,102	26,007	26,421	27,589
Projected	21,162	21,982	22,834	23,719	23,153	25,593	26,912	27,742	28,597	29,479	31,129	32,872
Variance	(7538)	(5026)	(3053)	(2086)	(1485)	(2775)	(2984)	(3029)	(3485)	(3472)	(4708)	(5,283)

SOURCE: National Agricultural Research Strategy Plan

Table 6.5: Livestock Production ('000 Tonnes)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	D01
Poultry Projected	60	63	70	75	78	85	88	95	101	109	116	
Production	57	53	56	67	63	73	74	76	77	82	88	D4
Actual production	-3	-10	-14	8	-15	-12	-14	-19	-24	-27	-28	
Variance	58	60	65	67	68	70	72	77	82	87	93	
Goat Projected Prod.	179	182	185	67	63	73	74	76	77	82	92	D3
Actual	121	122	120	0	-5	3	2	-1	-5	-5	-1	
Variance	50	53	37	59	60	61	62	66	70	75	80	
Mutton Projected Prod.	84	85	87	88	85	94	96	101	102	107	113	D9
Actual	34	32	30	29	25	33	34	65	52	32	53	
Variance	189	194	201	205	207	208	209	228	247	269	298	
Beef Projected Prod.	279	279	281	283	183	192	197	200	202	208	215	D8
Actual	90	85	80	78	-24	-16	-12	-28	-45	-61	-83	
Variance	120	122	123	124	125	128	132	141	150	160	171	
Pork Projected Prod.	125	137	149	162	25	31	39	43	45	47	50	D6
Actual	5	15	26	42	-120	-97	-93	-98	-105	-113	-121	
Variance												

Source: Federal Ministry of Agric, Livestock Division

Table 6.6: Demand and Supply Projections for Fishery Products**('000 Tonnes)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Demand	1163.16	1225.97	1292.17	1360.30	1432.00	1507.40	958.00	1008.50	1061.60	1117.50	1087.00	N/A
Supply	315.00	343.00	343.00	356.00	273.00	316.00	272.00	405.00	430.00	443.00	1490.00	474.00
Deficit	(848.16)	(882.97)	(949.17)	(667.30)	(1159.00)	(1191.40)	(686.00)	(603.50)	(631.60)	(674.50)	(403.00)	

Source: CBN Annual Reports (Various Issues)

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