

6-1993

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Recommended Citation

Ojo, M. O.; Balogun, E. D. & Evbuomwan, G. O. (1993). Sustaining Agricultural Production in a Deregulated Economy. *CBN Economic and Financial Review*. 31(2), 71-86.

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SUSTAINING AGRICULTURAL PRODUCTION IN A DEREGULATED ECONOMY

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This paper reviews the policy framework for Nigerian agriculture and gauges its impact prior to and since the commencement of economic deregulation. It investigates the prospects, analyses the constraints and outlines a feasible strategy for sustaining agricultural growth in a deregulated enabling environment. The paper notes that in the period, 1970 to 1982, the deterioration in agricultural performance in Nigeria was the result not only of external shocks and environmental and/or edaphic factors, but of distorted policy pursuits which created disincentives for farming. However, following attempts to deregulate the economy with the adoption of the Structural Adjustment Programme in 1986 and the consequent effort to get price incentives right for agriculture, there was some improvement in agricultural performance. It is noted that agricultural sector growth has recently been hampered by increased costs arising mainly from general deregulation. An investigation of the resource base and prospects shows that agriculture can contribute more to growth than in recent years. But success will require engendering a conducive enabling environment and incentives, availability of technology and inputs as well as infrastructure. This calls for an action plan which gives the private and informal sectors bigger roles in the execution of development programmes. In addition, the public sector would need to refocus current policies and priorities with more vigorous implementation of known successful approaches based on factor endowments for stimulating growth.

INTRODUCTION

Sustaining agricultural production is a prerequisite for improving living standards in Nigeria. The ability of the agricultural sector to fulfil this role has varied widely over the past two decades and appeared to be correlated to the nature of the enabling environment which existed. In the 1970s and up to the mid-1980s, when macroeconomic management was characterised by controls and allocative policies, the sector was characterised by low growth rates and weak commodity markets. In 1986, the process of economic deregulation in Nigeria commenced with the adoption of the Structural Adjustment Programme (SAP) and sectorial policy reforms. The emerging enabling environment has since played a dominant role in attempting to get agricultural incentives right in Nigeria. However, it is not yet certain whether the extent of deregulation so far and the preliminary outcome has elicited the desired response. Yet, there is the urgent need to sustain agricultural growth beyond the current rates if the challenges confronting it are to be overcome. The pertinent questions to ask therefore are: how can we stimulate agrarian growth in a changing enabling environment which emphasises less of government intervention and more of market factors? What scope exists for stimulating growth through private sector initiatives given the policy pursuit of liberalised pricing, trade, exchange rates and interest rate deregulation? What roles exist for government intervention and incentives for stimulating agriculture within the short to medium term?

This paper reviews the agricultural policy and incentive framework prior to and since the commencement of SAP and the implications for the performance of agriculture in Nigeria. It assesses the major sources of growth and discusses the major constraints especially those which emanate from attempts to improve the enabling environment and finally proposes a policy agenda for improvement within the short to medium term.

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I. THE POLICY FRAMEWORK FOR AGRICULTURE AND ITS IMPACT

The aim of this section is to review macroeconomic and sectorial policies within the time frame of economic regulation (1970 to 1986) and the period when the Structural Adjustment Programme was commenced in Nigeria. In particular, it will discuss regulated and deregulated economic policy pursuits especially pricing, trade, interest and exchange rates, in addition to fiscal, monetary and institutional reforms and the extent of disincentives and incentives emanating there from and the implications for agricultural production in Nigeria.

The 1970 to 1982 Period.

By the mid-1970s, Nigeria's agriculture had started to experience some problems. Agricultural exports began to decline and food shortages started to emerge. This turn of events was an immediate follow-up to the civil disturbances in the country (1966 - 1970). Some other factors were also at work, such as the increasing rate of population growth and urbanisation, drought, unfavourable external environment and inadequate funding for agricultural development. In response, government became more actively involved in agriculture through various innovative agricultural policies, programmes and institutions. Emboldened by considerably increased revenue from petroleum, the Federal Government assumed heavier responsibilities for agricultural development. There was widespread intervention of government in agricultural production, input supply and marketing, in addition to adopting credit control and other allocative policies in favour of agriculture.

Although resources were pumped into agriculture on a massive scale, the impact on agricultural production was not quite commensurate with the efforts. Between 1970 and 1982, agricultural production stagnated at less than 1 per cent annual growth rate, at a time when the population growth rate was 2.5 - 3.0 per cent per annum. There was a sharp decline in export crop production, while food production increased only marginally. Thus, domestic food supply had to be augmented with large imports. The food import bill rose from a mere N113.88 million annually in 1970 - 74 to N1,964.8 million in 1981. Even with this, per capita calorific food supply declined from the surpluses of the 1960s to a deficit of 38.0 per cent in 1982. Similarly, agriculture's contribution to GDP declined from 60 per cent annually in the 1960s to between 30 to 40 per cent annually in 1970 - 82 while the advent of the oil boom reduced the share of agriculture in total exports to a mere 2 per cent (Table 1). Previously the world leading producer and exporter of palm-oil, Nigeria became a net importer of vegetable oils by 1976. Equally, Nigeria's cocoa output which peaked in 1970/71 at 309,000 tonnes declined sharply to a mere 110,000 tonnes in 1982. The sharp down turn in the agricultural terms of trade was most disturbing. The ratio of agricultural exports to imports which was 670 per cent annually in 1960 - 69 dropped sharply to 176 per cent in 1970 - 71, and deteriorated further to a low of 0.92 and 0.09 per cent in 1980 and 1981 respectively (Table 1). These figures suggest that by the late 1980s, agricultural exports could only support less than 20 per cent of food imports. Nigeria that was a net exporter of food during the early years of the oil boom era, became a net importer in the late 1970s.

The performance of agriculture during this time was undermined mainly by disincentives created by the macroeconomic environment. Among these were:-

- (i) the over valuation of the naira exchange rate and the sharp increases in foreign exchange earnings which resulted from rising oil revenues, consequently aided

TABLE 1.
BASIC INDICATORS OF AGRICULTURAL PERFORMANCE IN NIGERIA, 1970 - 92

	1970-74	1975-79	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
GROSS DOMESTIC PRODUCT (1984 Fact. Cost)															
Total (N' Billion)	58.2	73.7	73.2	70.4	70.2	66.4	63	68.9	71.1	70.7	77.8	83.5	90.4	94.5	98.4
Agriculture (N' Billion)	19.3	22.3	22.5	24.4	25.1	25.0	23.8	27.8	30.4	29.3	32.3	33.9	35.3	36.9	37.9
Agriculture as % of total	33.2	30.2	30.8	34.7	35.8	37.7	37.8	40.3	42.7	41.5	41.5	40.6	39	39	38.5
Growth in Total (%)	8.8	2.3	4.1	-3.8	-0.3	-5.4	-5.1	9.4	3.2	-0.6	10.0	7.3	8.3	4.5	4.1
Growth in Agric (%)	8.8	2.3	4.1	12.7	2.9	-0.4	-4.9	16.6	9.3	-3.4	10.0	5.0	4.0	4.5	2.8
AGRIC PRODUCTION INDICES (1984-100)															
Crops	122.02	98.66	92	93.6	95.7	90.5	100	106.8	111.2	123.4	151.7	169	178.8	192	203.4
Livestock	74.6	79.5	75.1	88.4	96.1	91.9	100	104.2	108.1	103.9	110.4	117.8	121.3	119.4	120.2
Fisheries	117.64	137.28	153.4	132.7	136.8	146.9	100	77.4	69.5	66.8	85.7	89.2	77.4	81.1	64.4
Forestry	85.98	99.6	106.5	106.5	105.7	99	100	103	106.1	106.3	109.1	112.6	117.1	119.5	122.2
Aggregate	111.02	96.9	92.5	95.2	98.3	93.9	100	104.6	108.3	116.1	138.5	152.5	159.8	169.2	176.8
FOOD CONSUMPTION															
Per Caput Calorie Intake	1896	1761	1762	1500	1600	1750	1790	1863	1924	2146	2039	2146	2200	2200	2200
Deficit/surplus (%)	-21.6	-27.2	-27.2	-38.0	-33.9	-27.7	-26.0	-23.0	-20.5	-11.3	-15.7	-11.3	-9.1	-9.1	-9.1
LABOUR FORCE															
Total Population (Million)	60.1	66.8	71.2	72.7	74.2	75.8	77.4	79	80.7	82.3	84	85.8	86.7	88.5	91.3
Active population as % of total	51	50	50	50	50	49	49	49	49	49	49	49	51	49	50
Agric as % active	70.5	69	68	62	62	60	58	55	53	55	56	57	57	57	57
EXPORTS															
Total (N' Million)	2237.2	7242.3	19186.7	11023.5	8206.4	7502.5	9088	11720.8	8920.5	30360.6	31192.8	57971.2	109886.1	121533.7	205613.1
Agricultural	200.8	357	339.3	178.4	177.6	259	208	193.6	407.4	2032.1	2532.6	2255.9	2248.13	2941.76	2895.9
Agricultural as % of total	9	4.9	2.4	1.6	2.2	3.5	2.3	1.7	4.6	6.7	8.1	3.9	2.0	2.4	1.4
IMPORTS															
Total (N' Million)	1157.4	6334.2	9095.6	12719.8	10770.5	8903.7	7178.3	7062.6	5983.6	17861.7	21445.7	30860.2	45717.9	89488.2	143151.2
Agricultural	113.88	742.28	1564.6	1964.8	1810.1	1415.4	955.4	1003.7	941.3	1731.2	1844.3	2252.8	4080.9	8680.4	13742.7
Agric as % of total	9.8	11.7	17.2	15.4	16.8	15.9	13.3	14.2	15.7	9.7	8.6	7.3	8.9	9.7	9.6
TERMS OF TRADE															
Total	1.93	1.34	1.56	0.87	0.76	0.84	1.27	1.66	1.49	1.70	1.45	1.88	2.40	1.36	1.44
Agricultural	1.76	0.48	0.22	0.09	0.10	0.18	0.22	0.19	0.43	1.17	1.37	1.00	0.55	0.34	0.21

SOURCE: Derived from data compiled from FOS and CBN.

large food imports. This was the beginning of the stiff competition to domestic production. Low demand for traditional food crops such as local rice, yams and beans caused by cheap imports of alternative foods such as long-grain rice, wheat and maize discouraged farmers from expanding output despite the huge subsidy on domestic production. In the case of export crops, the growing over-valuation of the naira put exports at a disadvantage. This was accentuated by the implicit taxation of farmers by the commodity boards through their price fixing activity which paid farmers producer prices which were far less than the world market prices. Although government provide input subsidies, it was not sufficient to compensate for the implicit taxation, imposed by the price fixing activity of the Boards, and as such, a large number of farmers abandoned export crops production. Related to this was the adoption of import licensing and foreign exchange allocation procedures which favoured merchants to the detriment of farmers;

- (ii) the enhanced profitability of investments in the services and construction industries. With the oil boom, the government embarked on a lot of capital projects which included the rehabilitation of areas devastated by the civil war and the construction of Abuja, the new Federal Capital. The emergence of these service sectors diverted investments in terms of capital and able hands from agriculture to these sectors;
- (iii) rising wages in the public sector also drained labour from the rural areas, whereas peasant farming is predominantly labour intensive;
- (iv) the promotion of and protection of domestic industry through tariff concessions which made it more lucrative and resulted in rural urban migration with a corresponding down grading of the overall profitability of agriculture; and
- (v) the fact that, during this period, only lip-service was paid to the fundamental problems which plagued farming such as low productivity, unfavourable climatic and edaphic factors and technological constraints.

The Era of Deepening Economic Crisis, 1982 - 86

Nigeria's foreign exchange reserves and earnings had declined to dangerous levels by 1982 as a result of the collapse of oil prices and mounting debt problems. The dwindling oil revenues compelled the government to enact an Economic Stabilisation Act in 1982 mainly to control the capital and recurrent expenditures of government. This included control of expenditure on agriculture and foreign exchange utilisation which restricted the imports of agricultural products and inputs. It was also realised that the absolute dependence on oil for foreign exchange was dangerous, and that oil exports would need to be supplemented with non-oil exports, especially agricultural products which enjoyed a comparative advantage in the world markets.

There was therefore an improvement in incentives for agriculture, which in turn culminated in a marginal improvement in the performance of the sector. Although producers were hard hit in 1983 by drought, harvests were good in 1984 and 1985. Total agricultural output expanded at 3.5 per cent annually during the period. In particular, food crop production, especially cereals expanded by 15 per cent in 1985 compared to 1982. However, non-cereal and export crops stagnated. Due to the foreign exchange shortfall, food and feed imports were placed under restriction and started declining after 1982. In fact, outright bans were imposed on some food imports, such as rice and maize in 1985, and wheat in 1986. Frozen chicken and vegetable oil

imports were also banned. Imports of sugar and fish which had grown phenomenally during the oil boom were cut by 50 per cent between 1981 and 1984. The resultant effect was that, while domestic grain supply improved, per capita food consumption was estimated to be below standard requirement particularly with regard to protein intake. In particular, the boom of the late 1970s in modern poultry appeared to have slowed down considerably due to the shortfall in supply of feeds following the ban on maize import. This was accentuated by lack of foreign exchange for the importation of modern poultry equipment and medicaments. Equally, fish output began to decline due to the non-availability of fishing inputs (which were mostly imported).

The world commodity prices were depressed in real terms, while prices of domestic commodities were highly volatile during this period. In fact, the higher rates of increase were witnessed in the aggregate food prices compared with those of other consumer goods, reflecting mainly the variations in output caused by bad weather, and the impact of conflicting and inconsistent government policies. Typical examples were the inconsistent banning and un-banning of rice imports during this period and the conflicting effect of the banning of the import of frozen chicken and maize, all of which had a depressing effect on output.

The Period of Structural Adjustment Programme (SAP) 1986 to Date

In the early 1980s, it became more apparent that the agricultural sector could no longer perform its traditional role of meeting domestic food requirements, raw materials for industry, and of earning enough foreign exchange through exports due to various economic, social and political problems. In realisation of this, the Federal Government, in the 1986 budget, proposed a programme of economic recovery to combat the various distortions in the economy. For instance, the Directorate for Foods, Roads and Rural Infrastructure (DFRRI) was created while the River basins Development Authorities were restructured and directed to concentrate on the supply of water for irrigation rather than going into direct agricultural production. By the second half of 1986, the economic recovery programme was revised into a more comprehensive Structural Adjustment Programme (SAP).

Among the major objectives of SAP were to: restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector and on imports, and to lessen the dominance of unproductive investments in the public sector, improve the sectors efficiency and intensify the growth potential of the private sector. The main strategies of the SAP included the adoption of a realistic exchange rate policy coupled with liberalisation of the external trade and payments system and the adoption of appropriate pricing policies in all sectors with greater reliance on market forces and reduction in complex administrative controls. Thus, the Second Tier Foreign Exchange Market (SFEM) was launched in September 1986 and later the Foreign Exchange Market (FEM) whereby the naira exchange rate was competitively determined. Interest rates were also freely determined from 1987.

With respect to specific agricultural sector policies, the core of the measures under SAP included institutional reforms, as well as improved pricing policy and specific production schemes for local staples. Prominent among the institutional reforms were the abolition of the commodity boards and the privatisation of many agricultural enterprises formerly run by the public sector. In addition, the government came up with an agricultural policy for Nigeria in 1988, while preparing a sectorial perspective plan

TABLE 2
MACROECONOMIC POLICY INSTRUMENTS AND PRICE INDICATORS

	1970-74	1975-79	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Aggregate Producer Prices (GDP Deflators)															
Agriculture	44.1	105	44.76	55.51	63.43	75.36	100	95.75	91.83	133.42	179.48	205.99	239.05	260.3	308.2
Manufactures	29.1	122	30	30	30	80	100	90	80	104.8	93.6	105.5	145.7	174.5	265.2
Index of bias in Protection	1.52	0.86	1.49	1.85	2.11	0.94	1.00	1.06	1.15	1.27	1.92	1.95	1.64	1.49	1.16
Ratio of Producer to Export Prices															
Cocoa	0.84	0.56	0.89	1.01	1.08	0.85	0.74	0.7	0.69	0.98	0.94	1.41	1.19	1.37	1.32
Palm Kernel	0.52	0.72	0.96	1.03	1.3	0.96	1.01	1.52	1.57	1.14	0.89	0.97	1.31	1.04	1.09
Rubber (Dry lump)	0	1.64	0.5	0.66	0.81	0.87	0.84	1.05	0.62	0.26	0.28	0.28	0.2	0.19	0.22
Cotton	1.44	0.67	0.23	0.34	0.43	0.39	0.42	0.6	0.46	0.15	0.53	0.22	0.18	0.25	0.21
Groundnut	0.15	0.49	0.9	0.71	1.15	0.86	0.86	2.12	1.22	1.01	0.85	1.14	0.56	0.8	0.66
Consumer Price Index (1985-100)															
Composite	13.1	29.8	42.3	51.2	51.1	67.9	94.7	100	105.4	116.1	181.2	272.7	292.8	330.9	478.4
Rural		32.3	44.1	53.2	57.3	68.8	97.1	100	110.1	117.8	176.5	270.2	291.9	343.9	514.3
Urban		32	42.1	56.8	54.8	67.8	94.4	100	104.7	115.9	182.2	273.3	293.4	325.3	471.4
Inflation Rate (%)	10.5	19.9	9.9	20.9	7.7	23.2	39.6	5.5	5.4	10.2	38.3	40.9	7.5	13	44.6
Interest rates and Agric Credit															
Agricultural Lending Rates to the bankg Sys.Agric Credit (N/M)	7	6	7.5	7.5	7.5	10.5	7.5	10.5	10	12.5	16.5	26.8	26.8	20.2	29.8
Exchange Rates			589.1	719.0	956.7	1133.9	1232.6	1312.6	2445.1	3362.6	4360.7	5194.0	5278.8	6742.2	8193.3
Official (N/\$)	0.6707	0.5469	0.6052	0.6052	0.6733	0.7506	0.7672	0.8924	1.7323	3.9691	4.5367	7.3651	8.0378	9.865	21.848
Dep/Appreciation Rate (%)	2.2	2.5	3.26	0	-10.08	-10.32	-2.17	-14.03	-48.48	-56.36	-12.5	-38.38	-8.39	-18.57	-54.9
Government Expenditures															
Total (N/Billion)	2.03	11.04	23.7	21.2	15.4	11.5	11.7	12.7	16.8	22	27.8	41	61.1	67.5	107.7
Agricultural (%)	1.84	1.59	0.91	4.98	4.21	6.11	2.79	1.16	2.46	2.34	2.68	4.59	3.04	2.11	2.05

SOURCE: Derived from data compiled by the FOS and CBN.

up to the year 2005. The policy blueprint adequately reflected the new government philosophy of minimum administrative control of economic activities, wide scope for free market forces in the economy, more roles for the private sector, and more emphasis on economic self-sufficiency and self-reliance in Nigeria. In short, emphasis shifted to policies on agricultural pricing, trade, investment, production, extension and technology transfer, credit, insurance, as well as other policy instruments that would encourage the private sector to embrace all the sub-sectors of agriculture and bring them to full potential in the near future.

The performance of agriculture since the commencement of SAP has been quite impressive. Average growth rate of agricultural production was estimated at 6.4 per cent annually in 1988 -92. Except for fishery output which declined, crops, livestock and forestry production recorded remarkable improvements. Domestic food supply also improved. Total per capita food consumption increased to 2,200 calories per day thereby reducing the total calorie deficit to about 9.1 per cent. Also, considerable improvements were recorded in agricultural exports. Apart from the fact that the share of traditional export crops, such as cocoa, palm kernel and rubber in the total volume of agricultural exports rose from 71.5 per cent in the pre-SAP period to 84.1 per cent, new commodities including food staples entered the export basket. Substantial expansion has been witnessed in the value of total agricultural exports. Earnings realised from agricultural exports rose from a mere N193.6 million in 1985 to N2,722.6 million annually in 1988-92 (Table 1). The increase in the value of exports was traceable mainly to the improvements in both export trade and pricing incentives since the commencement of SAP. In particular, export prices in naira terms rose sharply following exchange rate depreciation and with trade liberalisation and abolition of commodity boards, these prices were virtually passed on to the farmers.

With these changes, the profitability of some key agricultural enterprises improved considerably. For cocoa, palm kernel and rubber, farmers resuscitated abandoned farms as their incomes were enhanced. Also, due to the ban placed on some food items, the competitiveness of grains, vegetable oils and oil seeds, and dairy enterprises also improved. However, poultry and fishery production became less profitable due to the astronomical rise in production costs, which was so mainly as a result of the high foreign input content of production. Exchange rate depreciation has also caused the prices of imported inputs such as fertilisers, chemicals, machinery and other inputs to rise very sharply, so that the improved incentives actually depended on the nature of enterprises. For small scale farmers who depend less on imports for their farm inputs, profit levels improved. For large-scale modern farms, production was halted in many of them. For a labour intensive farm sector, output expansion was attributed to hectareage increases by new entrants under the self-employment schemes.

II RESOURCE BASE FOR SUSTAINABLE AGRICULTURAL GROWTH

Experience has shown that economic regulation which placed much hope on rapid state-led industrialisation as a source of primary growth could not sustain the achievements initially observed. In contrast, despite its neglect, agriculture and the informal sectors have provided a source of livelihood to the nation, and offers the best immediate opportunity for raising incomes. Indeed, it is to agriculture that Nigeria should look for the primary foundation for growth in the coming years. A good prospect for sustainable agricultural production growth exists in Nigeria within the medium term. This is based on a critical look at the available land resources, likely

productivity increases that could come from technological change such as yield improvements, better cultural practices and small scale irrigation; greater security of land and market opportunities. This can be categorised into supply and demand sources of growth.

The Supply Side Sources of Growth

Elements of sustainable growth in supply side sources are:

(i) an increase in cultivated area, and labour input as more people go into farming following population growth; (ii) increase in yield as a result of the adoption of better cultural practices the use of modern farm inputs, fertiliser and improved varieties of seeds; (iii) production increases which may result from the adoption of small scale irrigation schemes; (iv) livestock growth which may result from the adoption of better techniques and animal husbandry which integrates livestock into farming; (v) fisheries growth which could result from fuller exploitation of inland fisheries especially artisanal fishing and agriculture; (vi) recovery in forestry production which could arise from the intensification of current re-forestation and conservation efforts. Specific sub-sectorial reviews of potential agricultural growth are undertaken below:-

(a) Growth in Crops

Three main sources of potential growth are feasible for crop production in Nigeria, viz; increase in hectareage cultivated as a result of expansion in cultivable land and increases in labour utilisation arising mainly from upgrading of rural areas and population growth; yield improvements which may result from accelerated adoption of new technology; and finally increased availability of irrigation water. The potential contributions of these sources to growth vary widely depending on the vegetational zones of the country and the nature of crops grown in the areas.

In the southern zone, the prospect for raising agricultural production by bringing more area under cultivation (without reducing the average fallow period) is limited. However, considerable scope exists for adopting a strategy of crop intensification and the improvement in the rural-urban relative wage since the commencement of SAP is expected to boost rural labour supply especially so with the reverse movement of rural-urban. However, the scope for substituting capital for labour is limited due to rising costs of procurement and maintenance. Yield improvements hold the key to growth in this zone. This is dependent on the accelerated adoption of new technology which is available for most of the crops grown in this region. The emphasis should be on the use of improved seed varieties and the adoption of an intercropping system of some tree crops with roots and tubers which has the capacity for protecting the rural environment. Because of the prevalence of serious leaching (from heavy rainfall) and the development of acidity, the soils in this zone are comparatively poorer than in the northern zones. The prospect for growth lies in the use of fertilisers to maintain soil fertility, and the introduction of improved systems of agro-forestry (such as alley cropping) integrated with livestock and launching of major soil conservation programmes. The key crops with high potential for growth in this zone are: cassava, yams, maize, swamp rice. and tree crops such as cocoa, rubber, palm produce and coffee.

In the middle belt zone, the greatest potential for growth will come mainly from hectareage expansion and the availability of irrigation water. This is because this zone has the most available arable land with the least density of population and the most favourable man to arable land ratio in Nigeria. Parts of this zone (the lower part is a derived forest zone, while the upper part is Guinea savannah) are capable of growing

a variety of crops such as yam, millet, sorghum, cowpeas, cotton, groundnut, maize, rice and soybeans. There is considerable potential to enhance output growth through the adoption of a good mixed cropping system. As against the current situation where only about 400,000 ha are actually under irrigation, the potential exists to expand the existing small-scale informal irrigation schemes through the establishment of small-scale fadama irrigation schemes. This could raise the irrigational potential of the zone to about 850,000 ha. Adoption of yield improvements could bring about additional growth.

In the northern zone, limited potentials exist through hectareage expansion, and yield improvements. The main constraint to agricultural production is inadequate and irregular rainfall, poor soils with low nitrogen, phosphorous and organic content and the increase in striga, a parasitic weed. Also, research has had little impact on the cropping systems in the zone as yields remain low. Agronomic evidence shows that crops such as millet, sorghum, cowpeas, cotton, groundnuts, maize, rice, wheat and vegetables are usually grown in this zone which is characterised by a growing season which lasts between 65 and 105 days with annual rainfall less than 500mm. Accelerated adoption of the limited available technology, coupled with the use of fertilisers and an expansion of the irrigational potentials by at least three times the current level holds the key to growth. At least, the potential exists through small-scale informal and Fadama irrigation schemes to increase the irrigational potential of the zone from its present level of 300,000 ha to about 1,000,000 ha.

(b) Potentials for Livestock Growth

The potential exists for raising livestock production in Nigeria very significantly. This is based on the assumption that ruminant output (cattle, sheep and goats) could increase significantly provided adequate extension messages urge small scale livestock farmers to adopt new farming systems which combine crops with livestock based enterprises. Indeed, farm incomes can be raised substantially through livestock activities because of the direct gains in production of meat and milk and because of the indirect benefits of organic manure, savings in labour and increase in cultivated area. Furthermore, opportunity exists for improving the breed of cattle and achieving complementarity between livestock and new crops technology that could raise the production of meat and milk. But this would be significantly offset by the stagnation in poultry and piggery production as the prospect for improvements in their husbandry is slim. Rising cost of production, shortage of feeds and medicaments for poultry production are the key problems which need to be overcome urgently.

(c) Fisheries Potential

The potential of fishery resources in Nigerian waters for marine and inland fisheries is estimated to be about 300,000 tonnes. Currently, less than two-thirds of this potential is being exploited while the nation relies on imports to augment domestic consumption. The marine fisheries would contribute little to growth in the immediate future since their potential has been largely exploited. Some potential exists for artisanal marine fishery if the constraints imposed by lack of fishing equipments are removed. The major source of medium-term growth in production is going to come from inland fisheries covering rivers, lakes and reservoirs; and fish farming or aquaculture in which small holders would play a major role. This would require not only improvements in processing technologies, but urgent supply of production inputs such

as outboard engines, spare parts, other fishing gear and repair facilities. It would also require improved access to credit for small-holder fishermen in addition to the current price incentives.

(d) Growth in Forestry

Growth in forestry sub-sector would come mainly from planned development of agro-forestry resources. Its role in sustaining growth through soil conservation, development and protection of forest reserves, and afforestation schemes would need to be stepped up.

The Demand Side Sources of Growth

Considerable prospects for agricultural growth exist from the perspective of the demand for major crops for both consumption and industrial use. Although there are no hard figures on food consumption, rising population figures, income and price elasticities for food suggest that the production possibilities of the major food crops identified above are consistent with anticipated demand. Also, the prospects of international prices for Nigeria's cash crops, the agro-industrial raw material requirements, and the prospect of inter-regional food trade in the ECOWAS are important indicators of the demand induced sources of growth in agriculture that is sustainable.

(a) Human Consumption of Food Crops

The projection of demand for the major food crops thus depend on a number of items such as : income elasticity of demand, income growth, population growth and composition, prices and price elasticity. While population growth rate put at 2.2 per cent per annum suggests that food demand would need to grow more than that in order to be sustainable, falling real incomes, and mounting inflationary pressures in Nigeria are among the key factors which tend to dampen demand. Notwithstanding this, per capita food intake is adjudged to be below requirement and the supply possibilities identified above appear to be consistent with current demand for food.

(b) Industrial and Other Uses of Food Crops

Industrial uses of food crops such as maize, sorghum, soybeans and palm oil are an important source of demand. Further, many food crops are often processed further for human consumption. This processing provides forward linkages for agricultural growth, which have become stronger in Nigeria. Given the current profile of industrial demand, there will be supply shortages in millet, sorghum, maize and wheat as their industrial demand has risen mainly as substitutes for imported malt and feed supplements. There could be excess supplies of yams and cassava. However, the demand situation could improve tremendously with reduction in export trade restraints and with movements in relative prices.

(c) Demand for Tree Crops and Cotton

Nigeria has a comparative advantage in the production of cotton and tree crops such as cocoa and rubber either for domestic use or export. For cocoa, at current costs of production, considerable potential exists for output expansion which could easily be absorbed by the world market. As for cotton, Nigeria currently produces about 30 per cent of her requirements. The present production of rubber is estimated to be about 60,000 tonnes which is far short of the installed capacity of the processing sector. These

figures suggest that demand induced sources of growth are feasible for these crops. In conclusion, it can be said that both domestic and world demand for Nigeria's agricultural products provides an opportunity for growth.

III MAJOR CONSTRAINTS ON GROWTH

Nigerian agriculture has a high potential, but actualising it will depend on incentives, availability of technology and inputs as well as infrastructure. Available data point to the fact that SAP has substantially addressed the problem of price distortions, but that new problems have been created by the effects of the changes in the macro-economic policies introduced by SAP. These include scarcity and high cost of basic farm inputs and consequently a slower rate of adoption of technological innovations. Although the SAP has addressed the problem of inadequate infrastructure, the problem of inefficient marketing and storage facilities is still with us. Above all, the perennial problems of environmental hazards, including drought, desertification, soil erosion, disease and pest infestations still plague the Nigerian agriculture. Thus the constraints to agricultural growth could be grouped into macroeconomic/sectorial policies and natural/technological problems. These problems will now be examined as a basis for the formulation of a policy strategy for sustaining agricultural growth in Nigeria.

Problems Associated with the Implementation of Macroeconomic/ Sectoral Policies Owing Largely to Problems of Implementation.

SAP has not been able to achieve the much desired stability upon which growth and development depends. This is manifested in sharp increases in production costs resulting from low and unstable exchange rate and high lending interest rates. Since most of our markets are imperfect and the operators are not always rational in their behaviour, the attempt to derive appropriate relative prices have tended to produce wide price fluctuations which have been a source of instability.

Available information has revealed astronomical increases in the cost of most agricultural inputs since the economy was deregulated. The most critical cases are in respect of hoes and cutlasses, agrochemicals (herbicides and pesticides), tractors, ploughs, and other farm equipments, and fertilisers the price of which, in spite of continuing government subsidy has increased by over 300 per cent. In the livestock sub-sector, the most affected inputs include building materials, livestock equipments, drugs and vaccines and livestock feeds. The prices of various inputs in the fishing industry such as outboard engines, canoe/boats, nets, floats and lead have also increased phenomenally since SAP. The increases in input prices are attributed to three principal underlying factors, namely, the sharp depreciation in the naira exchange rate and shortage of foreign exchange (especially in respect of imported inputs), high interest rates which increased the cost of working capital obtained from banks and the gradual withdrawal of subsidies on such inputs/ products such as fertilisers and petroleum products. The high cost of these basic farm inputs has substantially reduced the profitability of most agricultural activities leading to marked reduction in the size of farming families and enterprises. For instance, high prices of fertilisers have led to reduction in farm size and in yield because many farmers have not been able to procure the quantity needed for the desired farm sizes. The general scarcity and the sharp increases in prices of drugs and vaccines encouraged the sale

of fake and adulterated drugs, which have posed grave dangers to livestock while expansion of poultry business has become difficult following unaffordable costs of feeds. The decline in fish output has also been traced to escalated prices of inputs which are highly import dependent.

Low Rate of Technological Adoption

The reduction and outright elimination of subsidies on all agricultural machinery like tractors, harvesters, planters and harrows following deregulation has reduced the pace of adaptation of technological innovations in agricultural activities. This has compelled continued application of traditional technologies. Even the tractor hiring units run by State Governments are now of little relevance as tractors are either obsolete or in a state of disrepair. Whatever may be the technical disadvantage of ploughs and tractors such as the familiar criticism of soil degradation, the use of these technologies has the advantage of minimising the drudgery which characterises farming activities in most developing countries and thus enhancing productivity.

Problems Associated with marketing of Agricultural Produce.

The abolition of the commodity boards even though most welcomed created a vacuum in agricultural produce marketing arrangements. The most critical one was that of produce quality control, especially for produce for export. For instance, an absence of quality control caused the prices being offered for Nigerian cocoa in the world market immediately after the deregulation to drop markedly. Another worrisome aspect of the marketing problem is inadequate transportation, processing and storage facilities. The gradual withdrawal of subsidy on fuel and the sharp depreciation of the naira exchange rate have caused prices of fuel and motor spare-parts to soar thus raising transportation costs. Also, the development of silos and warehouses has been seriously stalled as a result of inadequate revenue allocation to the sector, while agricultural processing industries have had to contend with rising operating costs, especially in respect of utilities, machines and tools as well as their maintenance. High cost of credit has not helped matters while access to NERFUND, NEXIM and SME credit schemes has been limited by inability of farming enterprises to meet the required conditions.

Problems of Environmental Hazards

The problems of drought/desertification as well as soil erosion have remained very serious for Nigerian agriculture. These are usually manifested in sharp declines in rainfall, loss of vegetation, soil degradation and deforestation. While some of these changes are often caused by natural forces, they could also be caused by the direct result of human action such as over-grazing, over cultivation, bush burning and deforestation associated with increased population and poor conservation practices. Attempts to solve the problems have been through nation-wide tree-planting campaigns in the past and encouraging people to switch to the use of fuel-efficient facilities like stove and gas cookers. Unfortunately, since deregulation, the prices of stoves and gas cookers have risen sharply thereby making them out of the reach of most rural dwellers. Furthermore, the afforestation programme has been slowed down due to inadequate funding by government, increase in cost of planting materials, inadequate water and manpower to implement the afforestation programme while proper conservation practices have not been imbibed by the masses.

IV. A POLICY AGENDA FOR SUSTAINABLE AGRICULTURAL GROWTH

The analysis so far shows that the key to progress in Nigeria lies in a sustainable growth of agricultural production. Aggregate growth in output is feasible under economic deregulation. Deregulation and structural adjustment policies are important first steps to stimulating and sustaining agricultural growth in Nigeria, but greater care should be taken to mitigate their adverse socio-economic impact. In order for agriculture to contribute significantly to growth, employment and foreign exchange earnings in an era of economic deregulation, there is a need for an action plan which gives the private and informal sectors bigger roles in the execution of development programmes. This must be complemented by deliberate and concerted efforts by the government to provide desired incentives and channel increased public expenditures towards improved services, infrastructure and protection of the environment. This calls for refocusing current policies and priorities coupled with a more vigorous implementation of known successful approaches based on factor endowments for stimulating growth.

Some of the elements of an effective strategy for sustaining agricultural production in a deregulation economy are outlined as follows:-

- (i) fostering an enabling environment that gives a bigger role to the private sector, including co-operative and grassroot organisations. This calls for stabilisation of exchange rates, trade policies and the evolution of a commodity pricing system which, while reflecting supply and demand conditions, can induce reasonable profit margins and stimulate growth. Incentives such as access to land refinancing facility and improved access to institutional credit should be consciously encouraged;
- (ii) strengthening of sectoral policy analysis and implementation capacity. In particular, there is the need to establish a clear focal point for policy work in agriculture. This will entail reconciling planning with implementation and carrying out frequent policy analysis on issues such as fertiliser policy, land policy, pricing and marketing policy;
- (iii) reforms in the input supply system. In this regard, ADPs and farmers' cooperatives should serve as wholesalers while private initiatives should be allowed in retailing farm inputs. In particular, fertiliser procurement and distribution which already gulps about 50 per cent of total Federal Government's agricultural expenditure should be reviewed to further reduce the level of subsidy. There is an urgent need to expand substantially the domestic supply of fertilizer so as to achieve the desirable growth in consumption and yields;
- (iv) strengthening of primary commodity markets through improvement in transportation, marketing and storage infrastructure, as widespread inter-regional and inter seasonal variations in prices tend to hamper adequate planning of farming operations and output expansion plans. For selected food crops, we may consider a price support scheme as part of a buffer stock or strategic reserves system which should be managed by the private sector. For export crops, the government should promote the establishment of commodity exchanges and refrain from undue intervention in trade. The government should also plan for private sector management of existing storage schemes in order to reduce costs;

- (v) improvement in agricultural extension services. The ADP system appears to be a positive force to reckon with in extension service in Nigeria, as evidenced in their performance in many states. They however, require adequate funding, universal adoption of training and visit approach and increased participation of women in extension services. The emphasis should be to provide farmers with regular, systematic and up-to-date advice on resource management and on the cropping, livestock and fishery practices best suited to each area;
- (vi) promotion of widespread adoption of small scale irrigation schemes. Credit incentives should be tied to purchase and installation of water pumps for irrigation, in addition to the provision of technical support and extension service. However, large scale irrigation schemes which already have high sunk costs may be given priority provided they have high rates of return;
- (vii) protection of rural environment through appropriate management of land, water, and forest resources. In particular, a comprehensive programme of soil and moisture conservation through contour farming, alley cropping and appropriate rotations and vegetative covers would need to be embarked upon. This calls for increases in public funding for afforestation and erosion control schemes, streamlining of the incentives for exploitation of forest resources and ensuring that the activities of the newly created Land Development Authority is consistent with our overall agricultural production goals;
- (viii) greater integration of the crop and livestock subsectors. This should be supported with improved animal health services and adequate recovery schemes, improved delivery of inputs using private commercial channels, increased adaptive research in livestock breeding, and the development of a co-operative system for marketing, credit and inputs;
- (ix) to keep pace with the growing demand for fish, resource management, monitoring and surveillance of capture fisheries deserve support. Incentives for more active private involvement in aquaculture operations, supported by substantial extension work, will be required, The adequate supply of fishing inputs and fingerlings holds the key to success in this sub-sector;
- (x) strengthening of rural financial markets especially those which confer easy access to farmers and provide scope for reducing the transaction costs associated with credit procurement;
- (ix) strengthening the management of agricultural research at the national level, linked to streamlined national extension services. There is an urgent need to rehabilitate the research system through a preparation of a national research plan, increased and stable funding, proper co-ordination and guidance of research efforts, strengthening the linkages between research institutes with national universities and international/regional research centres as well as adequate training of both research scientists and technical support staff in specialised skills; and
- (xii) resuscitation and strengthening of the farm management system in Nigeria. A project started some years back had the potential of successfully nurturing a modernisation process in the agricultural sector and indeed elevating part of the small-scale segment into commercialization. But the project was not pursued to its logical conclusion. The establishment of farm management units at both Federal and State levels is the right way to start and the involvement of the University system will be an added advantage.

CONCLUSION

In conclusion, it should be observed that the key to sustaining agricultural production in a deregulated economy is to make the agricultural sector more productive through stronger policies and institutions, and most importantly, by developing the farmers to make farming a business in whatever scale of enterprise is their choice. The policies adopted should be implemented as a package, as the observed piecemeal approach to agricultural development in the country cannot push the sector far in the process of transformation. Policymakers must exhibit continuous dynamism in the face of the changing economic environment. This is particularly so in a process of deregulation which is bound to create new problems requiring fresh solutions. International experience for our Policymakers will be desirable at this time when deregulation has become an important element of world-wide development strategy. To go back to controls and unsustainable subsidies in a deregulating world economy will be retrogressive for our agricultural sector which, in spite of its varying fortunes, remains the bedrock of the Nigerian economy.

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