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# Food and Population: Priorities in Decision Making

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# Achieving food and population balance in Nigeria: priorities in decision making

S.M. Essang

## Introduction

The objective of this paper is to consider the Nigerian government's policy measures for achieving a balance between population and food supply in the 1970s and beyond. It will be argued that (i) Nigeria faces a considerable and growing food deficit which should be eliminated or reduced to a minimum before it reaches crisis proportions, (ii) the present food situation is largely a result of the fact that, though food–population imbalance has been evident since the 1960s, policy makers did not give top priority to food production until a few years ago, (iii) there is a tendency for Nigerian decision makers to view the food situation exclusively in terms of increased output of agricultural products and to ignore the obvious influence of demographic patterns, (iv) though no empirical evidence exists in support of the appropriateness of the strategy, major emphasis is being placed on the role of governmental institutions/organisations as well as large scale private farms and that (v) there is increasing pressure on agricultural scientists in both the universities and the research institutes to orient their research and other functions to the achievement of the national objective of increased food production.

## Evidence of food–population imbalance in Nigeria

The first piece of evidence of food–population imbalance is provided by the data in Table 1 which shows the growth (in indices) of population [1] and food in Nigeria for the period 1960–1974. According to the data in Table 1, the growth rate of food supply has lagged behind that of Nigeria's population since 1963. While the population growth index increased at an annual compound rate of 5.2 per cent between 1960 and 1974, that of food production registered a growth rate of only 2.5 per cent during the same period.

Another piece of evidence is presented in Tables 2 and 3 which compare the growth of consumers and food price indices. In Table 2, the food price index increased more than the general consumer price index for most of the period. In Table 3, it is easily seen that though both the consumer and the food price indices were increasing at very high rates, the rates registered by the food price indices were higher in all the five towns. This situation reflects, to a large extent, the imbalance between the supply of and the demand for food during the period under

Table 1  
Indices of growth of population and food supply in Nigeria,  
1960–1974

| <i>Year</i> | <i>Indices (1960 = 100)</i> |             |
|-------------|-----------------------------|-------------|
|             | <i>Population</i>           | <i>Food</i> |
| 1960        | 100                         | 100         |
| 1961        | 101                         | 110         |
| 1962        | 104                         | 114         |
| 1963        | 159                         | 124         |
| 1964        | 163                         | 121         |
| 1965        | 167                         | 122         |
| 1966        | 171                         | 109         |
| 1967        | 173                         | 110         |
| 1968        | 180                         | 113         |
| 1969        | 184                         | 127         |
| 1970        | 189                         | 130         |
| 1971        | 193                         | 133         |
| 1972        | 205                         | 137         |
| 1973        | 206                         | 140         |
| 1974        | 211                         | 143         |

Sources: (i) Federal Digest of Statistics, 1960, 1965, 1970 and 1975.  
(ii) Agricultural Development in Nigeria, 1973–1985, FMANR, Lagos, 1974.

consideration. The third and most glaring evidence of food–population imbalance is given in Table 4 in which estimated food deficits and surpluses are presented for the years 1970, 1975, 1980 and 1985. From the information in Table 4, it is clear that Nigeria faces deficits in the supply of all the major food crop items except rice. While rural–urban migration, labour shortage in the rural areas and land tenure problems have been variously blamed for the situation, it is the view of knowledgeable observers of the Nigerian economic scene that government attitude lies at the heart of the current food shortage.

### **Government policy and food – population imbalance**

Government policy is central to the existing food–population imbalance in two respects. First, there is the attitude which, until 1970, conceived of agricultural development exclusively in terms of the promotion of export crops. Second, there is the belief in government circles that it is possible to solve the food problem by

Table 2  
Consumer and food price indices in Nigeria, 1960–1974

| <i>Year</i> | <i>Price indices (1960 = 100)</i> |             |
|-------------|-----------------------------------|-------------|
|             | <i>Consumer</i>                   | <i>Food</i> |
| 1960        | 100                               | 100         |
| 1961        | 106                               | 109         |
| 1962        | 112                               | 118         |
| 1963        | 108                               | 106         |
| 1964        | 110                               | 106         |
| 1965        | 114                               | 110         |
| 1966        | 125                               | 133         |
| 1967        | 120                               | 119         |
| 1968        | 120                               | 112         |
| 1969        | 132                               | 133         |
| 1970        | 150                               | 164         |
| 1971        | 175                               | 211         |
| 1972        | 180                               | 217         |
| 1973        | 191                               | 225         |
| 1974        | 215                               | 259         |

Source: (i) Federal Digest of Statistics, 1960–1975.  
(ii) Annual Abstract of Statistics, 1960–1975.

Table 3  
Growth rates of consumer and food price indices in  
selected Nigerian towns, 1966–1972

| <i>Town</i>   | <i>Annual growth rate of price index (%)</i> |             |
|---------------|--|-------------|
|               | <i>Consumer</i>                              | <i>Food</i> |
| Lagos         | 6.5  | 6.8         |
| Ibadan        | 4.9  | 7.6         |
| Benin         | 6.7  | 7.6         |
| Port-Harcourt | 5.3  | 7.0         |
| Enugu         | 5.3  | 5.4         |

Source: Computed from Federal Digest of Statistics, 1968, 1970 and 1973.

Table 4\*  
Nigeria: Estimated food deficits and surpluses ('000 tons)

| <i>Commodity</i> | <i>1970</i> | <i>1975</i> | <i>1980</i> | <i>1985</i> |
|------------------|-------------|-------------|-------------|-------------|
| 1. Maize         | - 23.916    | - 200.836   | - 407.784   | - 833.889   |
| 2. Millet        | - 87.950    | - 705.818   | -1503.521   | -2946.225   |
| 3. Sorghum       | - 143.040   | -1142.503   | -2435.849   | -4753.344   |
| 4. Rice          | + 6.287     | + 67.546    | + 311.680   | + 820.160   |
| 5. Wheat         | - 3.759     | - 38.544    | - 52.778    | - 101.329   |
| 6. Yams          | - 157.234   | -1271.209   | -2784.377   | -5621.761   |
| 7. Potatoes      | - 2.917     | - 21.639    | - 51.815    | - 104.915   |
| 8. Cassava       | - 162.743   | -1316.065   | -2882.757   | -5820.729   |
| 9. Cocoyam       | - 16.138    | - 130.509   | - 285.859   | - 577.237   |
| 10. Plantain     | - 29.684    | - 222.174   | - 483.174   | - 973.537   |
| 11. Cowpeas      | - 0.454     | - 4.133     | + 65.032    | + 145.180   |
| 12. Groundnuts   | - 6.934     | - 55.450    | - 117.722   | - 230.730   |
| 13. Soyabeans    | - 0.389     | + 3.607     | + 13.217    | + 28.687    |
| 14. Melon seed   | - 1.167     | - 9.542     | - 20.218    | - 41.699    |
| 15. Vegetables   | - 33.572    | - 297.084   | - 561.829   | -1168.408   |
| 16. Fruits       | - 4.666     | - 42.000    | - 77.548    | - 161.675   |
| 17. Palm oil     | - 33.148    | - 265.376   | - 561.654   | -1092.898   |
| 18. Poultry      | - 2.009     | - 19.986    | - 32.472    | - 67.621    |
| 19. Beef         | - 12.574    | - 111.350   | - 225.117   | - 461.155   |
| 20. Fish         | - 46.146    | - 407.908   | - 836.224   | -1702.000   |
| 21. Eggs         | - 3.759     | - 36.365    | - 62.844    | - 131.451   |
| 22. Milk         | - 26.314    | - 235.848   | - 472.028   | - 959.091   |

Source: S.O. Olayide, 'The Food Problem: Tractable Or the Mere Chase of a Mirage?' (mimeo), University of Ibadan, 1975.

concentrating only on measures that increase output in utter disregard for the role of the population variable.

That Nigerian agricultural policies were until 1970 exclusively export-oriented is now frankly acknowledged by policy makers themselves. For while the government set up several commodity research institutes and introduced an array of regulatory measures for the benefit of the export crop producer, practically nothing was done to boost food crop production. Among the reasons for the emphasis on export crops were the need for capital and foreign exchange, the lack of popular awareness that a food problem existed, the remarkable stability of food prices in

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\* For details on the techniques of estimation, see Olayide, S.O. *et al.*, 'Quantitative Analysis of Food Requirements Supplies and Demands in Nigeria, 1968-1985, Federal Department of Agricultural, Lagos, 1972.

the 1950s and the early 1960s and the belief that the peasant producer could be counted upon to supply adequate food given the existence of 'abundant' land in the country. Whatever the explanations for government attitude, the results were lack of infrastructural investment in the food crop subsector and the tendency for farmers to concentrate on the more remunerative investments in export crop production.

Like most Third World countries, Nigeria is faced with a demographic situation characterised by a high growth rate which averages between 2.5 and 3.0 per cent per annum. In addition, the country is experiencing an explosive growth of urban population. According to a recent estimate, the population of the twenty largest urban centres increased at the rate of 8.3 per cent per annum between 1953 and 1973 [2]. Yet policy makers and their advisers pay scant attention to population as a variable affecting the food situation in Nigeria. One reason for ignoring the population variable is the fact that population is a very sensitive and explosive issue in Nigeria. Another reason is the fact that proposals for regulating population growth are very unpopular with influential Nigerians who view the problem mainly in terms of electoral and revenue considerations [3]. Moreover, it is believed that under peasant conditions characterised by labour intensive farming operations, rapid population growth could have a positive effect on farm output through increase in family hands. Finally, those who do not question the validity of the theory of demographic transition stress economic development as the key to the solution of whatever problem is posed by rapid population growth.

There can, however, be no doubt that rapid population growth aggravates the present imbalance between food supply and demand especially when this is coupled with growing *per capita* income. Apart from the demand effect, the current demographic pattern has several implications for food supply. It is associated with a rapidly declining land/man ratio. For example, a recent publication [4] indicates that for Nigeria as a whole, the land/man ratio declined from 1.86 hectares *per capita* in 1961 to 1.48 hectares in 1970. Within the same period, the size of arable land *per capita* fell from 1.39 to 1.10 hectares. For some states, the decline was even more dramatic as Table 5 illustrates.

The implication of this decline in land/man ratio is the inevitability of diminishing returns and the need to invest heavily in yield increasing innovations. Second, Nigerian population is very unevenly distributed, a situation which leads to the coexistence of areas with very high population densities with those characterised by low densities. The result is a sharp variation in land/man ratios among the states in the federation. This variation in land/man ratios has important implications for the strategy of food production. Among these is the need to relate farm size and the degree of labour intensity to the prevailing demographic and land situation within each state instead of relying on approaches dictated by such *a priori* considerations as economies of scale. Where the ratios are high as in Benue Plateau state (1.70), Kwara (1.90) and North Western (2.54), large scale farming could be an appropriate strategy for increasing food production. But where the ratios are very low as in the South East, East Central and Kano states



Table 5  
 Changing arable land/man ratios, selected states in Nigeria, 1961 and 1970

| <i>States</i>       | <i>Land/man ratios<br/>(hectares per capita)</i> |             | <i>% decline</i> |
|---------------------|--|-------------|------------------|
|                     | <i>1961</i>                                      | <i>1970</i> |                  |
| East Central state  | 0.25   | 0.19        | 24               |
| Lagos state         | 0.82   | 0.64        | 22               |
| Kano state          | 0.59   | 0.46        | 22               |
| Rivers state        | 0.93   | 0.73        | 22               |
| South Eastern state | 2.78   | 0.62        | 78               |
| Western state       | 0.63   | 0.49        | 22               |
| Nigeria             | 1.39   | 1.10        | 21               |

Source: Computed from *Agricultural Development in Nigeria, 1973–85*, Federal Ministry of Agriculture and Natural Resources, 1974, p. 13.

(Table 5) appropriate strategy would appear to be small scale production units based on the intensive use of high yielding varieties of seeds and chemical fertilisers. The disparity in land availability among the states also suggests the need to discourage any attempt at state self sufficiency in food production. Rather, policy measures should aim at maximum food production in land abundant states such as Kwara, and North West where this could be done relatively cheaply. Finally, the fact that both land and population are unevenly distributed underlines the vital importance of measures aimed at fostering rural labour mobility throughout the country and end the present embarrassing coexistence of areas with overcrowded and over cropped land within the same region.

### **Current strategies for achieving food–population balance**

#### *Emphasis on government institutions and organisations*

In the view of Nigerian policy makers and their advisers, the establishment of government or quasi-government food production organisations is a crucial element in the strategy for increasing food production. Accordingly, in the Third Development Plan, 1975–1980, government food production schemes will absorb ₦114.2 million or forty-five per cent of a total capital expenditure of ₦252 million allocated in the plan for food crop production [5]. In the southern states, government food projects are to account for ₦67.35 million out of a capital expenditure estimate of ₦131.38 million on food crops.

As usual, a number of arguments have been advanced in support of direct government involvement in food production. Among these are the need to

supplement inadequate private efforts and promote a fuller utilisation of land and labour resources by establishing government food plantations in the land abundant parts of the country where there is considerable underutilisation of land. Direct government involvement in food production is also defended on the grounds that it is a strategy for large scale introduction of modern technology into food production. While a critical evaluation of the arguments presented above will not be undertaken in this paper, it should be noted that these arguments in no way imply that government direct entrepreneurship is the least costly approach to the solution of the food problem. On the contrary, this strategy is associated with a highly unproductive use of resources and entails a high opportunity cost to the Nigerian economy in many ways.

First, experience shows that the execution of government agricultural projects often ties down a very high proportion of administrative and technical manpower in the management of these projects. Consequently, only a small proportion of such manpower can be released to work on private smallholders' agricultural projects although the latter account for virtually all the food produced in the country. Second, government agricultural projects have very unenviable records because of political interference, a high incidence of corrupt and fraudulent practices and bureaucratic inertia. Third, using the data in the Third Development Plan document, it has been shown that the current emphasis on direct government involvement in food production will entail considerable foregone earnings. A calculation performed on the data shows that if the governments of the Rivers, South East, East Central and Western States were to devote all their capital estimates for food production to smallholder food projects, output of food would increase by ₦50 million at 1973 wholesale prices over and above what is likely to be achieved under the current strategy which biases allocation of the capital estimates heavily in favour of governmental projects [6].

### *Predilection for large scale farming*

Apart from emphasising the role of governmental institutions, policy makers also display considerable predilection for large scale farming as a solution to the current food problem. It is believed that large scale farming holds the key to increased food production at lower production cost. The faith placed on large scale farming can be explained, though not justified, by a number of considerations. First is the widely held view that large farming facilitates the introduction of radically new production methods and organisational arrangements in the food producing subsector and thus could speed up the transformation of agriculture. Second is the desire to take advantage of economies of scale which are believed to arise from the use of indivisible inputs such as tractors, specialised managerial/supervisory staff and the integration of production and marketing. It is widely assumed that these economies will not only be appreciable but will necessarily be passed on to consumers by way of reduced product prices. Further, it is claimed that unlike the peasant smallholder system, large scale farms have considerable labour absorptive

potential because of their much higher productivity and the tendency to employ labour all the year round at wages comparable to those prevailing in urban industries. Also, policy makers believe that a large scale agricultural production unit will facilitate mechanisation and, by eliminating the drudgery associated with manual operations, should make food production attractive to school leavers and thus stem the tide of rural—urban migration.

For all these reasons, emphasis is placed on large scale food farms especially in the discussions which preceded the launching of the Third National Plan, 1975—1980. At present, six of the twelve [7] states have large scale food farms while arrangements have already been concluded to involve foreign capitalists in large food farming projects.

Yet this emphasis on large scale farming as a strategy for dealing with current food deficits is misplaced for a number of reasons. First, it is based on an erroneous view which regards farm size as the crucial determinant of productivity and innovation in agriculture. That small farmers can be highly productive and innovative is shown by the experience of Japan, Taiwan and Korea. On the other hand, experience of large farms in some Latin American countries does not support the view that innovations and high labour productivity are the sole prerogatives of large farms. In Nigeria, the export crop sector has experienced dramatic productivity increases based on new high yielding varieties and the application of chemicals, even though the smallholder remains the backbone of the export economy. It is indeed surprising that policy makers fail to realise that the determinants of productivity and innovation in agriculture are appropriate price policy and massive capital investment in rural education, research, infrastructural facilities and credit. Second, the economies of scale argument in support of large food farming is based more on a faulty analogy with industrial production than on hard empirical evidence. A number of economists have advanced theoretical reasons why such economies are of limited significance in agricultural production [8]. It is, therefore, not surprising that empirical evidence hardly supports the economies of scale hypothesis. Third, even if economies of scale were to exist in food farming, there is no reason for believing that they would be reflected in lower product prices, given the tendency of large corporate firms to keep prices rigid by administrative action. Fourth, the adoption of innovation argument is hardly convincing. For one thing, the green revolution experience has shown that yield increasing technologies are not only very divisible but are also neutral to the scale of farming operations. In other words, as long as credit, water and adequate supporting services are available, the size of farm unit poses no insuperable barrier to the use of modern inputs. Finally, even if all the arguments in support of large scale food farming were both theoretically sound and empirically valid, they would hardly constitute a sufficient case for a food production strategy based on large farms. The issue of farm size transcends the question of economic efficiency, however defined. It involves the question of income distribution and the distribution of political power.

## *Food production programmes*

In addition to the strategy of direct government entrepreneurship in food production and the encouragement of large scale farming, the attention of the policy makers and the Nigerian public is at present sharply focused on two programmes of an emergency nature. These related programmes are the National Accelerated Food Production Programme and Operation 'Feed the Nation'. The former, which is an attempt to apply the 'green revolution' agricultural strategy to food production in Nigeria, seeks to combine research, extension, the production and distribution of high yielding new seed varieties, heavy application of fertiliser and the provision of storage and marketing facilities. It differs from previous government efforts in several respects. It is the first national and co-ordinated effort to solve the food problem in the country. Also, unlike previous attempts, the current programme attaches considerable importance to research aimed at testing and adapting new crop varieties to different local conditions. The programme encourages production by each state of those food crops which are ecologically suited to it and can, therefore, be produced at least cost.

At the time of writing, the programme is still in the first phase of testing and establishing the adaptability of new varieties to local conditions. It is the view of this writer, however, that though the motive behind the programme is laudable and the financial resources for successful implementation readily available, the National Accelerated Food Production Programme has a limited chance of ushering in a green revolution in Nigeria, for many reasons.

First, is the very inadequate infrastructural investments in the food producing villages. Second, is the fact that, unlike the situation in India, Pakistan, the Philippines and Mexico where the green revolution was preceded by massive investments in research and the training of food crop scientists, investments in these areas have not been appreciable in Nigeria, notwithstanding the presence of IITA (International Institute of Tropical Agriculture). Nor is there a nationwide organisational and institutional framework to facilitate the rapid distribution of the new biological, chemical and mechanical technologies. On the contrary, the programme rests on the initiative and efforts of the Ministry of Agriculture and is, therefore, likely to suffer the fate of government directed agricultural projects [9]. Moreover, the institutional and cultural obstacles inherent in the Nigerian system of land rights are still evident and will continue to constrain food production.

The other programme, Operation 'Feed the Nation' is clearly an imitation of a similar programme which enabled Ghana to dramatically increase food production and cut down food imports. It seeks to involve every institution and person in food production and related activities and, therefore, could be regarded as the implementation phase of the National Accelerated Food Production Programme. In view of the fact that the programme was launched only recently, evaluative comments would seem very premature at the time of writing. Nevertheless, there can be no doubt that this is a classic example of episodic economic measures characteristic of the development process in the less developed countries. Moreover, the

programme must be regarded as an acknowledgement by Nigerian policy makers of the failure of government directed large scale food projects which were a prominent feature of the 1970–1974 development plan. Further, in view of the fact that the launching of the programme was not preceded by detailed and careful planning of the input as well as the administrative and logistical framework, there is a strong probability that its implementation will involve considerable waste of resources.

### *The role of scientists and research institutions*

Although past government policies did not place as much emphasis on the training of food crop scientists as on that of those working on export crops, existing food crop experts and related institutions are playing a significant role in the war against food shortage. In IITA scientists have embarked on a variety of research and have come up with high yielding seed varieties, disease and insect pest resistant cow-peas with a yield potential quadrupling that of the traditional variety and the production of yams from seeds which will in due course replace the present vegetative propagation method associated with a 25 per cent seed rate. In the universities, technical research activities oriented to food production include analysis of soil properties, fertiliser trials, the designing of suitable diets for maximum livestock growth and research on the biology, ecology and integrated control of major pests affecting food crops. Complementary economic research efforts are directed towards the identification of managerial practices essential to realising the yield potential of the new seed varieties, estimation of the production elasticities with respect to major inputs, designing the least cost feed mixes for livestock and analysis of marketing problems of food producers. In addition, many members of the academic staff of Nigerian universities are actively involved as consultants in the conception and planning of a number of food production and other related programmes. Such is the demand for the services of university academic staff by government agencies that the university authorities will sooner rather than later face up to the problem of deciding the optimal allocation of efforts between teaching/research which determines the professional advancement of their staff and food production-oriented extracurricula activities.

### **Notes**

- [1] For the purpose of this paper, the population data from which the indices were derived were obtained from (i) official records (1960–1963), (ii) projection of the 1963 census data at the rate of 2.5 per cent per annum (1963–1970) and (iii) projection of the 1963 census data at the rate of 3.0 per cent per annum (1971–1974). For the basis of the projections see 10, 11 and 12.
- [2] S.O. Olayide, 'Policy for Dealing with Urban Sprawl in Nigeria', (mimeo), 1974.

- [3] The share of Federal revenues which accrue to the states in Nigeria is based in part on population. For the politics of Nigerian Population see R.K. Udoh, 'Population and Politics in Nigeria' in *The Population of Tropical Africa*, Cadwell and Okonjo (eds), London, 1968.
- [4] *Agricultural Development in Nigeria 1973–1985*, Federal Ministry of Agriculture and Natural Resources, 1974.
- [5] Third National Development Plan, 1975–1980, Ministry of Information, Lagos, 1975.
- [6] S.M. Essang, 'Pattern of Estimated Agricultural Expenditures in the 1975–80 Nigerian Plan: Some Implications', Forthcoming paper.
- [7] Since February 1976, seven additional states have been created, bringing the number to nineteen.
- [8] J.M. Brewster, 'The Machine Process in Agriculture and Industry', *Journal of Farm Economics*, vol. 32, February 1950.  
A.M. Ekhusro, 'Returns to Scale in Indian Agriculture', *Indian Journal of Agric. Economics*, vol. 19, 1964.
- [9] Already, the reasons given for the delay in moving from research/testing to the production phase are unavailability of new inputs and untimely arrival of the inputs which is a result of lack of forward planning and bureaucratic bottlenecks. See (i) NAFPP, Annual Progress Report for 1975/76, Western State, 1975 and (ii) NAFPP, Annual Progress Report, 3rd April, 1975, page 1.
- [10] Cadwell and Okonjo, op. cit.
- [11] A. Igun, 'Nigerian Population Projection 1969–1985' (Personal communication).
- [12] S.O. Olayide, D. Olatunbosun, Idusogie and D. Abiagum, 'Quantitative Analysis of Food Requirements, Supplies and Demands in Nigeria 1968–1985'.