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A REVIEW OF THE FEDERAL GOVERNMENT FERTILIZER SUBSIDY SCHEME IN NIGERIA

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This paper reviews the fertilizer subsidy scheme in Nigeria. Using descriptive statistics and econometric methods, the study shows that farmers' access to fertilizer has improved since the commencement of the subsidy scheme in 1976 and the direct involvement of the Federal Government in the procurement and distribution of the input. This also coincided with the period when remarkable improvements were recorded in the yield of virtually all the major crops, especially staples. The econometric analysis confirms that a positive correlation exists between fertilizer supply/consumption and output, while the level of subsidy on the input influences its consumption (utilization) and tends to be positively correlated with the value of agricultural output (agricultural GDP). This notwithstanding, some key issues militate against the efficacy of the subsidy scheme. Among them are: inadequate and untimely supply of the input to farmers, rising cost of imports and the apparent inability of the Federal and State governments' budgets to sustain these costs and the level of subsidies; high cost and weak base for domestic production and the near absolute lack of private sector initiative in the procurement and distribution of the input. In order to overcome these problems, it is proposed that efforts should be made to rely more on domestic supply and improve the efficiency of the distribution system. While recognising the need to cut-back on the level of subsidy due to budgetary constraints, it is noted that its out-right elimination may act as a major disincentive to fertilizer utilization by farmers. It is advocated that farmers' access to the input should be improved through the provision of credit.

As far back as the early sixties, low crop yields had been identified as one of the problems of the poor agricultural performance in Nigeria. Whereas one of the most effective means of achieving increased agricultural productivity is through the use of modern farm inputs like fertilizers, improved high yielding crop varieties, herbicides, pesticides, irrigation facilities, etc. unfortunately, the First (1962–1968) and Second (1970–1974) National Development Plans did not contain an adequate framework of programmes for effective delivery and utilization of these modern farm inputs. The Third National Development Plan (1975–1980) was however, modified to contain a list of Federal and State Government programmes for the supply and distribution of modern farm inputs such as fertilizer, improved seeds, pesticides and

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allied chemicals, farm mechanization, extension services and farm credit. Because of the importance of fertilizer amongst other farm inputs, it has occupied a prominent place in national agricultural policy. Thus, the policy on fertilizer was streamlined in 1976 when the Fertilizer Procurement and Distribution Unit in the Federal Ministry of Agriculture was established to handle centrally, the procurement of fertilizer, port clearance and transportation to state headquarters. In addition, the Federal Government introduced a price subsidy element to motivate mass adoption of fertilizer use by farmers. This was intended to spread the benefit of subsidy to the entire farming population and also to accelerate the national drive towards self-sufficiency in food production and raw materials for agro-based industries.

From 1976 to date, therefore, the Federal Government has subsidized the fertilizer price paid by farmers all over the country to the tune of at least 50 per cent on the average. However, the issue of farm input subsidy had generated a lot of debate and raised a number of questions including the high cost of the scheme. It has been argued by some that the subsidy expenditure is wasteful or non-cost-effective. While the subsidy level has been gradually reduced since 1980, the Federal Government in 1989 proposed to withdraw from fertilizer procurement and distribution with effect from the 1990/91 cropping season, and hand over these activities to the private sector.

The main objective of this paper is to review the fertilizer subsidy scheme in Nigeria, with the sole aim of ascertaining if the specific objectives of the scheme had been attained. The study will cover the period 1971 to 1990. The rest of the paper is divided into five parts. Part I presents a historical review of fertilizer procurement, distribution and pricing policy (1971–1990); Part II presents a theoretical framework for evaluating the fertilizer subsidy scheme; Part III presents the results of the analysis. Part IV discusses problems and challenges of the Fertilizer Subsidy Scheme, while the final part presents the concluding remarks and policy recommendations.

I. A HISTORICAL REVIEW OF FERTILIZER PROCUREMENT, DISTRIBUTION AND PRICING POLICY (1971–1990)

This section reviews the specific objectives of the Federal Government Fertilizer Subsidy Scheme as well as the strategies adopted for its implementation. In particular, it reviews the evolution of the centralized procurement, distribution and pricing policy, and the major outcome as captured by the trend in supply.

Fertilizer Procurement, Distribution and Pricing Policy

Prior to 1976, although there was no national policy intervention in fertilizer procurement, distribution and pricing, state governments controlled and dominated the trade. Each state made separate arrangements for the procurement and distribution of the fertilizer needed by their farmers. The respective state Ministries of Agriculture were solely responsible for the planning, organisation, and the operation of fertilizer marketing and distribution to farmers. The presence of the Federal Government was

felt only in the allocation of capital grants to states for agricultural development, part of which was spent on fertilizer. This decentralized system of fertilizer procurement and distribution was plagued by some inefficiencies. Among them were the low demand for fertilizer by farmers due to its high selling price, untimely delivery which resulted from poor road infrastructure and transportation problems, and the high cost of procurement, which could not be accommodated by most state government budgets. These problems compelled the Federal Government to centralize and finance fertilizer procurement and distribution system beginning from 1976 to date.

The specific objectives of the Federal Government were to:

(i) reduce the cost of fertilizers so as to motivate nationwide application of fertilizer;

(ii) ensure that farmers earn a reasonable margin of profit by lowering the cost of production;

(iii) encourage new entry into farming and the production of essential food commodities with a view to attaining self-sufficiency.

In order to effectively implement the subsidy scheme on a national basis, the Fertilizer Procurement and Distribution Department (FPDD) was set up in the Federal Ministry of Agriculture in 1976. The function of the Department entailed the management of large procurement, transportation, storage, warehousing and the subsidy programme, following the listed steps:

— Call circulars sent to states and the various agricultural projects to indicate their fertilizer requirements for the incoming cropping season.

— The requirements discussed and quantities for each type of fertilizers determined and approval requested for from the Federal Executive Council.

— Tenders offered for the supply of the desired quantities through imports and local production.

— Contracts awarded and Letters of Credit opened through the Central Bank of Nigeria to the suppliers' bankers.

All the five operative ports in the country were used for berthing fertilizer ships. However, most of the fertilizer imported entered through the Lagos Ports (Tin Can Island and Apapa), while the other ports were Port-Harcourt, Warri and Calabar. In the schedule of delivery, fertilizer used as primary application arrived earlier than those used as secondary dressing. In its distribution, the rainfall pattern is used, bringing distribution priority to the southern states, since rains are received in the southern states earlier in the year.

The system of distribution of fertilizers to state depots are road transportation, the Central Water Transportation Company, National Freight Company and the Nigerian Railways are also involved. However, most of the haulage is invariably done by road transportation system.

A uniform fertilizer sales price is applied throughout the country with variation based on types. For example, the high nutrient fertilizer cost more than the low nutrient.

In summary, therefore, the main objective for setting up the centralized system of fertilizer procurement and distribution was to ensure that farmers receive fertilizers on time, and through the subsidy scheme motivate nationwide application of fertilizers. Other benefits derived therefrom were the discounts derived from large purchases in the world market and the easing of the financial burden on the state governments.

The objectives of the Federal Government in evolving the fertilizer subsidy scheme in 1976 would be judged quite laudable in view of the fact that adequate fertilizer usage is one of the fastest means of increasing agricultural output, and the fact that accessibility and timely availability of an input backed by credit to purchase it or a subsidy to make it cheap induces its adoption.

Fertilizer Supply

Fertilizer supply in Nigeria is from two major sources; importation and domestic production. Up to 1987, domestic fertilizer production was limited to a single superphosphate plant in Kaduna which was producing less than five per cent of the country's total fertilizer supply. From 1988, fertilizer supply from domestic sources became significant when the National Fertilizer Company of Nigeria (NAFCON); a urea-ammonia-NPK (i.e. Nitrogen Phosphorus and Potassium Compound Fertilizer) complex commenced production. From 1988 to date, it has been supplying between 30–35 per cent of total quantity of fertilizers distributed to farmers annually. In 1989, a fertilizer blending plant called the Fertilizer and Chemical Company was established in Kaduna. It produces compound fertilizers such as NPK 20:10:10 + 1Z + 2S, and accounted for 10 per cent of total fertilizer supplies in the 1990 cropping season. Two smaller fertilizer blending plants also came on stream in 1990, and both supplied about 6 per cent of total fertilizer requirements during the year. Thus imported fertilizer which constituted over 90 per cent of total fertilizer supply in the country up to 1987 has since 1990 been reduced to 40 per cent. This trend is likely to continue since the Government strategy on fertilizer supply is to ensure maximum capacity utilisation in and the expansion of existing plants and to encourage the establishment of new plants, which will depend on the use of local raw materials for fertilizer production in addition to fostering the use of organic fertilizer by farmers (*Agricultural Policy for Nigeria*, Fed. Min. of Agric. 1988).

Available data showed that fertilizer supply has increased tremendously since 1976. From an average of 82.2 thousand metric tonnes in the five years preceding 1976 (i.e. between 1971 and 1975), annual fertilizer supply increased by 249 per cent to an average of 287.0 thousand metric tonnes between 1976 and 1980, and averaged 831.7 thousand metric tonnes between 1986 and 1990 (see Table 1).

II. A THEORETICAL FRAMEWORK FOR EVALUATING THE FERTILIZER SUBSIDY SCHEME

In order to provide an appropriate framework for this study, a review of the literature is carried out. This discussion is followed by the specification of the methodology adopted for the study.

Literature Review

In its broadest application as found in the encyclopaedia of social sciences, the term subsidy refers to a great variety of grants, loans and allowances, including financial assistance by one authority to another, within the state and by one state to another. It also comprises government financial assistance which is based on a specific sum of unit of an article produced, imported or exported. In its narrower meaning, which is the sense in which it is used in this paper, it refers to the financial aid and/or incentive given, without equivalent recompense, by the Nigerian government to promote the use of fertilizer (an important farm input) in the agricultural sector for the benefit of the country at large.

Farm input subsidy is a policy instrument for attaining specific policy objectives. Such objectives could include overall economic growth through accelerated agricultural growth, evolution of a more equitable and just society, enhanced nutritional status of the populace or balanced regional economic growth and development.

There are, however, criticisms of input subsidy programmes. The World Bank (1986) argues that input subsidy is not desirable on the grounds that it involves large cost to the budget, and often do not benefit the desired people. This view has often been used to buttress the argument for outright elimination of subsidies. On the other hand, many development economists consider farm input subsidy as desirable.

Idachaba (1981) noted that farm input subsidies are expected to play at least six roles. First is to stimulate the desired resource allocation pattern; for example the stimulation of widespread application of an input like fertilizer among small scale farmers. Second is income redistribution. Third is as a tool for cushioning farmers against inflation in production costs. Fourth is to make up when social benefits of input use exceed private benefits. Fifth is as a tool for compensating distortions and lastly as an incentive for new management entry and farm investments.

Idachaba went further to state that the formulation and implementation of farm input subsidy policies, especially in developing agriculture, is subject to many draw-backs. First is a dependency mentality whereby the subsidies are then regarded as an obligation or a right. Second is the tendency for subsidies to shield marginal inefficient farmers thus bringing about mal-allocation of resources. Third is that it discourages private sector participation and lastly that farm input subsidies tend to be too expensive. Edit Whethem (1972) on the other hand reiterated that governments wishing to increase the output of agricultural products may either operate by raising

producer prices for the products or by lowering the costs of inputs. She tends to favour the latter course since, in some circumstances, it gives a greater result for the same expenditure. This she illustrated by the fact that given the uncertainty of crop production farmers may not generally buy such inputs as fertilizer, crop sprayers or improved seeds unless the expected increase in profit has been shown to be highly probable and also large in relation both to the extra costs and to their nominal income.

Yair Aharoni (1977) in his own submission for the need for government intervention in agriculture in less developed countries argues that: given the highly protective agricultural policies of the developed countries, government of less developed countries must help their farmers, secondly that agricultural production is highly susceptible to the vicissitudes of weather conditions and thirdly that since the farmers in less developed countries lack an articulate voice in political affairs, rural areas may get less than their share in government budgets without an explicit policy of help.

However, Yair Aharoni pointed out the disadvantages of the dependency syndrome that could result from government aid, and warned that people should be helped to help themselves so as not to loose their initiatives. He also cautioned that subsidies to one economic sector could raise demands for similar subsidies from other sectors to restore equity. He illustrated this with a situation whereby a private business feels justified in increasing profits, but cries out for government help to cover losses.

In the light of the foregoing it has become imperative to review government input subsidy programmes from time to time in order to determine if the stated objective of the input programmes are being achieved and thus be in a position to decide when to do away with subsidy or what subsidy level should be operated at any given time.

Method of Analysis

As a preliminary estimate of the effectiveness of the subsidy programme, it is hypothesized that fertilizer supply and or consumption is positively influenced by the level of subsidy. Furthermore, it is argued that a positive relationship exists between fertilizer use and the annual yield of major agricultural crops and or total output.

Thus, this study used descriptive statistics to evaluate and estimate the annual level of fertilizer subsidy and its budgetary costs. Also, descriptive statistics which compared average annual yield and output of the major crops based on pre- and since the introduction of the centralized procurement, distribution and pricing system were analysed. Furthermore, a stepwise regression analysis was carried out in the attempt to establish empirically the extent to which fertilizer use and fertilizer subsidy influence crop production in Nigeria. The relationships were specified as follows:

$$Q = f(FS) \quad \ldots (1)$$
$$Q = f(SUB) \quad \ldots (2)$$
$$Q = f(FS,SUB) \quad \ldots (3)$$
$$Q = f(FS,SUB, R, W) \quad \ldots (4)$$

Where,

Q = Annual Crop Output (Staples).
FS = Quantity of Fertilizer Distributed annually.
SUB = Annual Cost of Fertilizer Subsidy.
R = Average annual rainfall in Nigeria.
W = Average annual farm wage rate.

These equations were specified in linear and log-linear forms. Also various permutations of the last equation were tried using three variables at a time in the attempt to get the best equation. The inferences that can be drawn from the method of analysis is that if the dependent variable respond to the set of explanatory variables included in the model, we can conclude that agricultural (crops) output can be influenced by fertilizer use, rainfall and labour wage rate. However, if the parameter estimates obtained are inelastic and insignificant, we can conclude that fertilizer supply, subsidy, rainfall and labour wage rate are ineffective in stimulating agricultural output.

Data Sources, Measurement and Limitations of the Study

Basically, available data on the study are secondary data obtained from the Fertilizer Procurement and Distribution Division of the Federal Ministry of Agriculture, considering their strategic role in the execution of the programme. Crop production and yield data were obtained from the Federal Office of Statistics. Information were also extracted from some of the references sited in the text and the bi-annual survey returns of the Research Department, Central Bank of Nigeria.

In an effort to refine and ensure that the data used were as close as possible to reality, the various officers involved in their compilation were interviewed directly, while clarifications were sought on doubtful data. However, where needed data were not readily available, they were estimated. Thus the major limitations of this study are those which characterise the use of secondary data and problem of either over or under estimation where estimates were used, particularly in the case of the fertilizer subsidy cost.

Also, this study is mindful of the fact that the four variables included in the model are not the only variables which influence the level of agricultural output. Secondly, the selected crops, may not necessarily be those that consume all the fertilizer distributed to farmers. Thirdly, that fertilizers were distributed does not automatically imply that they were all consumed. Fourthly, if the fertilizers were not

properly applied, they will not yield the desired result and so on.

In spite of these limitations, the results obtained will definitely generate some policy issues which is the main purpose of the study.

III. IMPACT OF THE SUBSIDY SCHEME ON FERTILIZER USE AND AGRICULTURAL PRODUCTION

Trend in Fertilizer Subsidy and Price Paid by Farmers

Between 1976 and 1979, the Federal Government subsidized fertilizers to the tune of 75 per cent (that is 75 per cent of the total cost of importation, landing and transportation to state warehouses), while the farmer was charged the balance of 25 per cent. The states bore the cost of internal distribution within their domain. By 1980, the Federal Government subsidy was reduced to 50 per cent while the 25 per cent balance was passed on to the states in addition to the internal distribution cost. In 1985, the subsidy level was further reduced to 38 per cent and by another 10 per cent in 1986 to 28 per cent. But this time the farmers bore the cost of the reduced subsidy. The subsidy level for 1987 was not stated and, in actual fact, a careful examination revealed that the level of fertilizer subsidy since 1986 have become very high due to the naira exchange rate depreciation which had caused the procurement prices of fertilizers to soar in local currency, and at a time when the old retail price of fertilizer paid by farmers was retained. Indeed, the procurement price of fertilizer jumped from an average of ₦139.97 per metric tonne in 1985 to ₦638.64 in 1986. It averaged ₦725.26 in 1988 and was as high as ₦2,241.00 in 1990, a result of the continuous depreciation of the naira exchange rate.

The uniformity in fertilizer sales price throughout the country reflected the subsidy objective. However, depending on the grades, marginal variations existed at any point in time. For instance, the prices of the high nutrient fertilizers, such as various compounds of NPK, Di-ammonium phosphate and urea, were slightly higher than those of the low nutrient ones such as ammonium sulphate, super phosphate and muriate of potash. Between 1976 and 1979 the high nutrient ones sold for ₦2.00 per 50 kg bag, while the low nutrient ones sold for ₦1.50. In 1984 it rose by 200 per cent to ₦6.00 and ₦5.00, respectively. From 1986 to 1988 the 50 kg bag of high and low nutrient fertilizers sold for ₦10.00 and ₦8.50, respectively. By 1990, the prices had risen to ₦20.00 and ₦17.00, respectively, an increase of 100 per cent over the 1988 price level (see Table 2). Netting out the price farmers paid for fertilizers of 50 kg bag between 1986 and 1990, which averaged ₦13.86, brought the estimated subsidy level during this period to about 80 per cent.

Budgetary Cost of Fertilizer Subsidy

Aside from the implicit and secondary costs associated with the procurement and distribution of fertilizer by the Federal Government, both the capital budgetary

expenditures on procurement and distribution and on the subsidy scheme are very high.

Estimates arrived at in this study indicate that the cost of fertilizer subsidy to the Federal Government ranged from ₦23.2 million in 1976 to about ₦2 billion in 1990 (see Tables 3 and 4). A comparison of subsidy cost to total agricultural capital allocation and total Federal Government Capital Expenditure revealed that on the average the fertilizer subsidy represent 56.4 and 4.2 per cent of agricultural capital allocation and total Federal Government capital expenditure respectively within the last fifteen years under review (see Table5).

Impact of the Subsidy Scheme on Fertilizer Use

The main objective of the Federal Government fertilizer subsidy scheme is to increase agricultural output. However, growth in agricultural output through the application of fertilizer depends on the extent of fertilizer use, responsiveness of yields to fertilizer applications and the profitability of fertilizer use to farmers. Micro-level studies carried out in the various Agricultural Development Project (ADP) areas (Imo and Oyo North ADP in 1987, for instance) indicated that the use of fertilizer has brought about substantial increases in yield and, consequently, output. The study by Falusi (1987), also revealed that the use of fertilizer on wheat, rice, cowpea, cassava and yam is profitable to farmers. In this study, in which a macro-level approach is taken, the impact of the fertilizer subsidy scheme will be evaluated by examining the trend in yield of major crops, agricultural output and the contribution of agriculture to the Gross Domestic Product (GDP).

Trend in Yield Per Hectare of Major Crops

The discussion on the trend in yield per hectare of major crops will be based on the premise that up to 81 per cent of the fertilizer supplied were used on foodcrops, mostly grains, while the non-food commercial crops consumed 19 per cent of fertilizer supplied (Director, FPDD 1984).

Estimated average yield per hectare of the 13 major crops monitored by the Federal Office of Statistics on an annual basis have been on the increase since the commencement of the subsidy scheme in 1976. On the average, yield per hectare grew by between 14 per cent for groundnut to as high as 239 per cent for melon in 1976–85 (the first ten years the scheme was in place), when compared to the preceding period, 1966–75 (see Table 6). These crops still maintained an upward trend in yield in 1986–89 as indicated by an additional growth rate of between 5 per cent for guinea corn and as high as 34 per cent for cassava and rice. Although fertilizer is not the only input that can bring about increase in yield, it is said to constitute more than 80 per cent of farm input used in Nigeria in terms of quantity and value (Okorie, 1984).

Trend in Agricultural Output and in Contribution of Agriculture to the Gross Domestic Product

In the fifteen year period under review (1976–1990) agricultural output in Nigeria has trended upward, particularly the output of staple food crops. While the growth rate of all crops averaged 3.6 per cent annually during the period, staple food crops recorded an average annual growth rate of 4.2 per cent. In the same vein, the contribution of agriculture to the Gross Domestic Product (GDP), improved during the period under review, from the negative annual growth rate of 7.1 per cent recorded between the 1976–1980 period to a positive annual growth rate of 8.1 per cent in the 1981–1985 period.

The positive trend in the output of crops is an indication that the objective of the fertilizer subsidy scheme is being met. Further analysis revealed that the output of staples has been increasing faster than other crops, and accounted for about 71.3 per cent of total crops output between 1976 and 1990. Also, an evaluation of the contributions of agriculture (crops) to the Gross Domestic Product indicated that on the average it accounted for 72.9 per cent of the agricultural sector GDP while it constituted 32.3 per cent of non-oil GDP and 26.9 per cent of total GDP in the period considered (see Table 7). These are clear indications that the fertilizer subsidy scheme was a relevant agricultural development policy instrument in Nigeria.

Results of the Regression Analysis

The regression results of the effect of fertilizer supply and subsidy on agricultural output (crops) is presented in Table 8, while the regression results of the effect of rainfall, labour wage rate and fertilizer supply and subsidy on agricultural output is presented in Table 9. In all the cases, step-wise linear and log-linear equations were estimated for the dependent variable—agricultural output (crops).

Of all the equations estimated, equation 2.3 is most preferred as all the parameter estimates were significant at the 10 per cent level of significance while that of wage rate was significant at the 5 per cent level. Moreover, both the adjusted R^2 and F-statistics indicated that it is the equation of best fit. The elected equation is:

Q	=	9.9536 + 6.4691E – 03R + 1.5399W – 4.9076E – 03SUB			
		(2.12)	(2.06)	(5.13)	(–1.67)
elasticity	=	0.5	0.2	0.8	0.1
n	=	15, F(4,11) = 28.94			
Adjusted R^2	=	0.8569			
R^2	=	0.8875			
D.W.	=	1.03			

Several interpretations and references could be drawn from the signs and magnitude of the parameter estimates of the above equation. First, contrary to expectation, the result of the linear regression model showed that fertilizer subsidy

had a negative effect on crops output, while in the log-linear function, it carried a positive sign but was insignificant and inelastic (see equation 2.6 in Table 9). Several reasons could be adduced for this negative and insignificant relationship. It could be due purely to econometric problems of poor data, inadequate model specification or insufficient number of years considered, and so on. It could also be an indication that not all the Federal Government fertilizer subsidy do get to the target group, that is, the small scale or peasant farmers who produce the bulk of the food crops consumed in this country today, and so on. Second, true to *a priori* expectation, rainfall and labour wage rate had positive influences on crops output and were significant at the five per cent level. This is attested to by the fact that agriculture in Nigeria is mainly rain-fed and highly labour intensive.

However, the results of the linear regression analysis carried out, which estimated crops output with fertilizer supply and subsidy as the only explanatory variables, gave some useful information (see Table 8, equation 1.3). The overall fit measured by F-statistic is statistically significant at the five per cent level. The coefficient of fertilizer subsidy is significant at the five per cent level too. The adjusted R^2 was 0.59 which means that fertilizer supply and subsidy accounts for about 60 per cent of the variation in crops output, which is quite reasonable considering the fact that fertilizer is not the only crop production input. Also the signs of both explanatory variables were positive. Conclusively, therefore, the positive sign of the explanatory variables and the fact that the fertilizer subsidy co-efficient was very significant indicate that the *a priori* expectations of the Federal Government in instituting the fertilizer subsidy scheme could be said to have been largely fulfilled.

IV. PROBLEMS AND CHALLENGES OF THE FERTILIZER SUBSIDY SCHEME IN NIGERIA

Although this study established that the objective of the Federal Government in evolving the fertilizer subsidy scheme was partially achieved as fertilizer became comparatively more available to the Nigerian farmer, and yield per hectare and output of major crops, particularly the staples, also recorded some increases, higher yields than are presently attained are feasible (International Institute for Tropical Agriculture (IITA) research reports). Indeed, the fertilizer use studies carried out by the Federal Ministry of Agriculture in 1989 revealed that usage in Nigeria is very low compared with the requirements of most crops.

Average fertilizer application per hectare was said to be less than 39 kg/ha compared to the world average of 68 kg/ha and about 80 kg/ha in Kenya (FAO report). This sub-optimal level of fertilizer application has been traced to a number of problems in the fertilizer procurement and distribution process as revealed by previous studies (Evbuomwan, 1989). Among the key issues and challenges is the inadequate and untimely supply of fertilizer as a result of the following problems:

The first is poor and untimely release of funds. Most of the time budget approval

are delayed, and the system whereby funds are released piecemeal on a quarterly basis does not favour the fertilizer sector because it makes it impossible for enough funds to be available to open letters of credit for all the fertilizer to be imported at once.

The second is the delay in the processing of the necessary papers for fertilizer importation by the various agencies involved; these are the Federal Ministry of Finance, the Central Bank of Nigeria, the Customs and Excise Department and the Nigerian Ports Authority.

Third is the fact that the quantity of fertilizer imported by the Federal Government was tied to either or all of the following factors: the level of Federal Government subsidy, the import price of fertilizer and the Federal Government expected revenue. It was observed that in the years that the Federal Government revenue was high, large quantities of fertilizer were imported and vice-versa. Also in the years that Federal Government subsidy level was low and import price of fertilizer low, higher quantities of fertilizer was imported. This was the case in 1982 and 1983 when lower quantities of fertilizer were imported due to budgetary constraints. This prompted the Federal Government to negotiate a World Bank loan to finance the importation of fertilizer beginning from the 1984/1985 planting season to date. It also prompted the Federal Government to reduce fertilizer subsidy further in 1985.

Fourth, poor transportation and handling arrangements, due to inadequate infrastructural facilities and services like rural feeder roads and transport services. For instance, most contract transporters prefer to move fertilizer to only the well-connected areas in order to save cost. This caused delays in fertilizer delivery to distribution depots and farmers and sometimes never in the inaccessible areas.

Fifth is the challenge posed by the weak prospect for privatisation and/or commercialisation. Prompted by the serious mis-management of the fertilizer procurement and distribution programme, the Federal Government decided to terminate its involvement in fertilizer procurement and distribution with effect from the 1990/91 cropping season and hand these activities completely over to the private sector. Consequently, the Federal Government set in motion the machinery for the privatisation of the fertilizer procurement and distribution programme and at the same time embarked on serious re-organisation of the FPDD. As a result, innovations were introduced into the distribution system in 1989 and 1990 cropping seasons which brought about some improvement in the fertilizer procurement and distribution machinery. Farmers all over the country actually lend credence to this, particularly, during the 1990 cropping season (Central Bank of Nigeria Bi-annual Survey 1990). However, the privatisation process is yet to be completed, and the problem that readily comes to mind if the privatisation programme takes off is how the subsidy scheme will be implemented considering the economic and political implications of the removal of fertilizer subsidy.

Finally, elimination of subsidy may generate user disincentives. Probably the

preparation for its take off is responsible for the hike in fertilizer prices by about 100 per cent annually since 1989 with the 1991 price already fixed at ₦40 per bag of 50 kg. Already, many farmers can ill-afford it at current prices, and any further reduction in the subsidy may discourage small scale farmers from its usage. The situation would certainly be worse if total commercialisation privatisation is embarked upon without any supplementary subsidy and or price support schemes, especially when evidence shows that sharp increases of between 400 and 800 per cent have been witnessed in the prices of other farm inputs, particularly the imported ones like pesticides, herbicides, agricultural machinery and equipments as a result of the continued depreciation of the naira exchange rate.

IV. CONCLUSION

For a predominantly small scale agriculture, the use of yield improving, scale-neutral and extensive technologies such as fertilizer and high yield varieties of seeds hold the key to progress. This is why perhaps the promotion of fertilizer use among farmers in Nigeria may continue to be a step in the right direction. However, due to the rising budgetary costs of procurement and distribution, and the implications for the efficacy of the subsidy scheme there is the need to overhaul it. This is necessary since little prospect exist for bearing these financial burdens by both the state and the Federal Government due to budgetary constraints. Unfortunately, it seems that the promise of privatisation does not appear to be a feasible alternative because of the relative non-viability of fertilizer marketing in the absence of a subsidy scheme. This notwithstanding, the fear that both supply and consumption of fertilizer may drop substantially in the absence of subsidy may become a reality, a situation which may not augur well for agricultural progress.

In consideration of this conclusion, there is the need to address the problems and constraints to progress. Key policy initiatives would be needed in the following areas:

(a) It is pertinent to improve/increase production capacity of the local fertilizer plants in order to increase supplies at reduced cost.

(b) A credit scheme, whereby fertilizers can be supplied to farmers at the onset of the planting season and payment made at harvest time, should be evolved to ensure that all farmers are able to participate in the fertilizer scheme. Most peasant farmers do not have the liquid cash with which to purchase fertilizers at the onset of the planting season for very obvious reasons. Such a credit scheme will have a multiplier effect on the macro-economic activities of the country.

(c) The ADPs can serve as institutions to combine both the credit and marketing schemes to encourage participation and effective utilisation, considering that the Federal Government has encouraged purchase of excess grain output.

(d) Although the Directorate for Food, Roads and Rural Infrastructure (DFRRI) programme has opened up the rural areas, other infrastructural facilities such as haulage vehicles, warehouses and more retail outlets in the agricultural zones must be provided.

(e) Research is the bone of development hence, more funds should be made available for all agricultural research work in the responsive programmes and effective/extensive complementary extension activities.

(f) There is need for constant agricultural profitability studies in order to ensure that farm input prices are fixed at realistic levels, particularly those of basic inputs like fertilizers.

TABLE 1: QUANTITY OF FERTILIZER DISTRIBUTED IN NIGERIA DURING THE PERIOD 1966–1988
('000 TONNES)

Year	Quantity
1966	30.51
1967	65.84
1968	39.19
1969	43.21
1970	28.11
1971	39.17
1972	76.08
1973	60.96
1974	83.96
1975	150.96
1976	226.60
1977	185.92
1978	188.00
1979	388.40
1980	446.21
1981	1,044.40
1982	639.84
1983	518.55
1984	763.00
1985	1,163.03
1986	574.62
1987	621.99
1988	987.47
1989	912.00
1990*	1,062.44

Sources: 1. International Fertilizer Development Committee (IFDC) *Technical Bulletin*, T–18, June 1981 for 1966–1976 figures.

2. Fertilizer Procurement and Distribution Department (FPDD) of the Federal Ministry of Agriculture, Lagos for 1977–1990 figures.

* Estimate

TABLE 2: OFFICIAL FERTILIZERS PRICE PAID BY FARMERS ₦/BAG OF 50 KG

Type of Fertilizer	1976–79	1980–83	1984–85		1986–88	1989	1990
Ammonium Sulphate (AS)	1.50	1.80	5.00	7.00	8.50	10.00	17.00
Calcium Ammonium Nitrate (CAN)	"	"	"	"	8.50	10.00	17.00
Single Super Phosphate (SSP)	"	"	"	"	"	"	"
UREA	2.00	2.25	6.00	9.00	10.00	15.00	20.00
Boronated Super-phosphate (BSP)	1.50	1.80	5.00	7.00	8.50	10.00	17.00
NPK 15–15–15	2.00	2.25	6.00	9.00	10.00	15.00	20.00
NPK 20–20–0	"	"	*	*	10.00	15.00	20.00
NPK 26–12–0	"	"	*	*	*	*	*
NPK 12–12–17+2 MgO	"	11	6.00	9.00	10.00	15.00	20.00
Muriate of Potash (MOP)	1.50	1.80	5.00	*	8.50	10.00	17.00
Calcium Magnesium Sulphate (CMS)	2.00	2.25	*	*	*	*	*
Diammonium Phosphate (DAP)	*	*	6.00	*	10.00	15.00	20.00
NPK 20–0–20	*	*	*	9.00	10.00	15.00	20.00
Average Price	1.75	2.02	5.50	8.00	9.25	12.50	18.50

Source: Federal Ministry of Agriculture and Agricultural Development Project Returns.

* Not imported in that year.

TABLE 3: ESTIMATED TOTAL COST OF FERTILIZER PROCUREMENT AND DISTRIBUTION TO THE FEDERAL GOVERNMENT (1976–1985)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Average Procurement and Distribution Cost (₦/T)	136.67	136.67	136.67	136.67	158.97	93.37	212 .98	212.65	111.81	139.97
Total Quantity of Fertilizer Distributed ('000 Tonnes)	226.60	185.92	188.00	388.40	446.21	1,044.40	639.84	518.55	763.00	1,163.03
Estimated Total Cost (₦M)	30.969	25.410	25.694	53.083	70.934	97.516	136.273	110.270	85.311	162.789
Federal Government Subsidy Level (%)	75	75	75	75	50	50	50	50	50	38
Estimated Total Cost of Subsidy to the Federal Government (₦M)	23.227	19.057	19.270	39.812	35.467	48.758	68.136	55.135	42.655	61.860

Source: Computed from data obtained from the Federal Fertilizer Procurement and Distribution Department, Federal Ministry of Agriculture, Lagos.

TABLE 4: ESTIMATED COST OF THE FERTILIZER SUBSIDY SCHEME TO THE FEDERAL GOVERNMENT (1986–1990)

	1986	1987	1988	1989	1990
Ave. Proc. and Dist. Cost. (₦/T)	638.64	896.11	890.26	1,047	2,241
Quantity of Fert. Distributed ('000T)	574.62	621.99	987.47	912.00	1,062.44
Estimated Total cost of Fert. Proc. & Dist. (₦M)	366.975	557.371	879.105	954.864	2,380.928
Average Price Paid by Farmers (₦/T)	185.00	185.00	185.00	250.00	370.00
Estimated Subsidy Level (Per Cent)	71	79	79	76	84
Estimated Cost of Subsidy (₦M)	260.552	440.323	694.493	725.697	1,999.979

Source: Same as Table 3.

TABLE 5: BUDGETARY COST OF SUBSIDY AS A PERCENTAGE OF AGRICULTURE AND TOTAL FEDERAL GOVERNMENT CAPITAL EXPENDITURE (₦'000)

Year	Estimated Cost of Fertilizer Subsidy (1)	Agric. Capital Expenditure (2)	Total Federal Capital Expenditure (3)	(1) as a percentage of (2)	(1) as a percentage of (3)
1976	23.727	129.2	4,219.5	18.0	0.6
1977	19.057	113.7	5,442.3	16.8	0.4
1978	19.270	125.0	5,197.0	15.4	0.4
1979	39.812	98.3	4,837.4	40.5	0.8
1980	35.467	467.3	8,395.5	7.6	0.4
1981	48.758	400.4	5,696.9	12.2	0.9
1982	68.136	278.9	7,950.2	24.4	0.9
1983	55.135	291.1	5,868.6	18.9	0.9
1984	42.655	160.9	3,812.2	26.5	1.1
1985	61.860	149.8	1,707.4	41.3	3.6
1986	260.552	320.8	8,473.9	81.2	3.1
1987	440.323	672.7	16,458.0	65.5	2.7
1988	694.493	907.5	6,179.7	76.5	11.2
1989	725.697	1,415.0	9,797.0	51.3	7.4
1990	1,999.979	2,515.1	13,452.1	79.5	14.9
Average	302.295	536.4	7,165.8	56.4	4.2

Source: Computed from Tables 3 and 4 and from data obtained from the Research Department, Central Bank of Nigeria, Lagos.

TABLE 6: ESTIMATED AVERAGE YIELD PER HECTARE OF MAJOR CROPS IN NIGERIA (1966–1989) (KG/HA)

Crop	1966–75 (1)	1976–85 (2)	1986–89 (3)	Percentage Change B/W (1)&(2)	Percentage Change B/W (2)&(3)
Millet	633	861	760	36	–12
Guinea Corn	687	975	1,027	42	5
Groundnut	676	768	928	14	21
Beans	215	374	541	74	45
Yams	8,964	10,855	12,128	21	12
Cotton	671	974	1,050	45	8
Maize	898	1,322	1,325	47	0.2
Cassava (old)	9,559	9,361	12,506	–2	34
Rice	1,387	1,864	2,491	34	34
Melon	302	1,024	1,287	239	26
Benniseed	434	933	—	115	—
Cocoyam	5,445	4,497	6,028	–17	34
Soyabeans	319	867	—	172	—

Source: Computed from data from the Federal Office of Statistics, Lagos.

TABLE 7: TREND IN AGRICULTURAL OUTPUT AND CONTRIBUTION OF AGRICULTURE TO THE GROSS DOMESTIC PRODUCT, (1976–1990)

	Agricultural Production (in '000 Tonnes)				Contribution to GDP (in billion Naira)					(1) as a percentage of (2)	(3) as a percentage of (4)	(3) as a percentage of (5)	(3) as a percentage of (6)
	Staples (1)	Growth Rate (%)	All Crops (2)	Growth Rate (%)	Agriculture (3)	Growth Rate (%)	Agric.[1] Sector (4)	Non-Oil GDP (5)	Total GDP (6)				
1976–1980	16,638	–4.8	24,424	–2.1	15.75	–7.1	23.23	55.48	71.98	68.1	67.8	28.4	21.9
1981–1985	17,528	9.9	25,521	6.6	18.34	8.1	25.23	58.37	67.78	68.7	72.7	31.4	27.1
1986–1990	27,363	5.8	36,337	5.1	24.77	5.5	32 .23	68.49	78.77	75.3	76.9	36.2	31.5
Average 1976–1990	20,510	4.2	28,761	3.6	19.62	3.6	26.90	60.78	72 .84	71.3	72.9	32.3	26.9

[1] Agric. sector includes livestock, forestry, fishery in addition to agriculture (crops).

Source: Computed from data obtained from the Federal Office of Statistics and CBN.

TABLE 8: REGRESSION RESULTS OF THE INFLUENCE OF FERTILIZER SUPPLY AND FERTILIZER SUBSIDY ON CROPS OUTPUT

	C	FC	SUB	Adjusted R Squared	R Squared	D.W. Statistic	F
1.1. Q	21.949 (7.20)	10.513 (2.49)		0.2707	0.3228	0.6190	6.196
1.2 Q	26.050 (22.10)		8.9686E03 (4.52)	0.5811	0.6110	0.8219	20.42
1.3 Q	23.650 (10.16)	4.3346 (1.19)	7.6168E–03 (3.37)	0.5940	0.6520	0.8923	11.24
		LNFS	LNSUB	0.2277	0.2829	0.4299	5.128
1.4 LNQ	3.4425 (52.96)	1.7610E–01 (2.26)					
1.5 LNQ	2.7867 (32.74)		1.2066E–01 (6.81)	0.7640	0.7809	0.9824	46.33
1.6 LNQ	2.7309 (19.63)	–3.0407E–02 (–0.52)	1.2894E–01 (5.31)	0.7499	0.7857	1.0982	21.99

TABLE 9: REGRESSION RESULTS OF THE INFLUENCE OF FERTILIZER SUPPLY AND SUBSIDY, RAINFALL, AND LABOUR WAGE RATE ON CROPS OUTPUT

	C	R	W	FS	SUB	Adjusted R Squared	R Squared	D.W. Statistics	F
2.1 Q	10.112 (2.00)	6.4082E–03 (1.93)	1.5613 (4.39)	–3.3906E–01 (–0.13)	–4.9896E–03 (–1.59)	0.8428	0.8877	1.0627	19.77
2.2 Q	13.389 (2.71)	5.2921E–03 (1.53)	1.0577 (6.10)	5.1686E–01 (0.19)		0.8210	0.8593	0.8228	22.40
2.3 Q	9.9536 (2.12)	6.4691E–03 (2.06)	1.5399 (5.13)		–4.9076E–03 (–1.67)	0.8569	0.8875	1.0295	28.94
		LNR	LNW	LNFS	LNSUB	0.7881	0.8486	0.9575	14.02
2.4 LNQ	5.4682E–01 (0.49)	3.0178E–01 (1.91)	1.9860E–01 (1.02)	–4.0549E–02 (–0.60)	5.2603E–02 (0.73)				
2.5 LNQ	3.6002E–01 (0.34)	3.2541E–01 (2.15)	3.3259E–01 (5.60)	–5.7356E–02 (–0.93)		0.7972	0.8406	1.0521	19.34
2.6 LNQ	5.2779E–01 (0.48)	3.1474E–01 (2.07)	1.3485E–01 (0.85)		6.7542E–02 (1.02)	0.8004	0.8432	0.8175	19.71

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