

THE FOOD SECURITY PROBLEM OF AFRICA: SOME MULTI- DIMENSIONAL ISSUES AND GENDER - AWARE POLICY THRUSTS *

TOMILAYO O. ADEKANYE (tomiadekanye@yahoo.co.uk www. Abatom.com)

**** , AKINOLA BABALOLA** AND ROTIMI OTILOLAIYE*****

ABSTRACT

This paper focuses attention on Africa's food security problem. This is multi- dimensional. Important issues in these include quantitative and qualitative inadequacies in production and consumption, health concerns especially the HIV/AIDS pandemic and the malaria scourge, the deplorable state of infrastructures and, anti- people and very often irresponsible governance. Gender inequity is a particularly important aspect of this. Case studies are reviewed for Nigeria on the basis of recent empirical surveys to provide some local illustrations.

About a billion people are food insecure worldwide. Africa has about a third of this. Africa's food security problem has been in existence for quite some time. It has almost become intractable. Yet it really does not have to be so. What is needed now and in the post-global economic crisis Africa is more people - focused, more people friendly governance, and, innovative policies. Increased yield and output for the basic staples, better attention to post harvest activities, value addition to agricultural output, nutritional improvement and gender equity are important factors in ensuring greater food security for Africa. Honest attempt at poverty alleviation is an unavoidable part of this.

*Paper prepared for presentation at the 20th Annual Conference of the International Association for Feminist Economics (IAFFE), Hangzhou, China, June24- 26, 2011

**Tomilayo Adekanye and Akin Babalola are Professor and Lecturer, respectively, in the Department of Agriculture and Technology, Babcock University, Ilishan- Remo, Ogun State, South Western Nigeria, while Rotimi Otitolaiye is a Senior Lecturer and Head of the Department of Agricultural Economics and Extension, Kogi State University, in the North Central part of the country. We wish to acknowledge the research assistance of Afodu Osagie, a graduate assistant in the Department of Agriculture, Babcock University, for this paper

THE FOOD SECURITY PROBLEM OF AFRICA: SOME MULTI-DIMENSIONAL ISSUES AND GENDER - AWARE POLICY CONSIDERATIONS

INTRODUCTION

The objective of this paper is to analyze the nature of the food problem in Africa, with a view towards indicating appropriate policy thrusts for more effective strategies. A consideration of the nature and dimensions of the problem is first undertaken. Some historical perspectives are given on the food problem. Highlights on recent and current situation and happenings are indicated. Causes of the food problem are discussed. Gender aspects of these are examined.

It is important to note that Africa is a huge continent, with considerable differences, consisting, for instance, of some 53 countries, having different colonial history etc. Nonetheless, there are sufficient similarities between the different regions of the continent. This facilitates reasonable and reliable generalizations, to give a fairly accurate overall picture of the food situation and attendant problems. Beside this, to give some micro-level and local perspectives, results of some empirical surveys in Nigeria are reviewed. Policy considerations are discussed on the basis of the general reviews for Africa and the Nigerian data.

THE NATURE AND DIMENSIONS OF THE PROBLEM

The different components of Africa's food security problem are discussed in this section. Aspects of this, for much of Africa, include both on the side of demand and supply for food, quantitative and qualitative inadequacies, high prices, and market-related problems, as well as high population growth rates. Market related infrastructural problems include poor facilities for storage, processing and other handling procedures. Actually, it is in the nature of food insecurity that many of these factors are interrelated and interwoven. Thus, for instance, low yield of the basic staples leads to low output, except of course, if there is an increase in land use. The low output is associated with low nutritional intakes. Marketing inadequacies for storage, processing, packaging, transportation and other handling activities impact negatively on supply and prices. This then leads to limited access and nutritional insufficiencies. A distinction needs to be made here between food sufficiency and security. The latter depicts, for instance, the situation of a country which is able to meet its needs essentially from its domestic sources alone. As against this, food security is really a situation of availability and accessibility to food at all times. Important variables here are incomes, prices, food production and output, sufficiency, time, and of course, population size and even imports (see Adekanye, 2004).

On the basis of the specifications given above, the nature and dimensions of the food security problem of Africa can be depicted as indicated below. These are:

- High population growth rate of 2.5-3% per annum
- An insufficiency food supply situation, in terms of inadequate output, deriving especially from low yield.
- Technological problems
- Inability to increase local supply sufficiently through import
- A low nutritional status
- High prices
- Poor market -related infrastructures
- Little value addition to food after harvest
- Low incomes
- Inequity in accessibility, food consumption and utilization, including gender unfairness.

As indicated earlier, these factors are inter-twined, forming virtually a vicious circle or a trap from which much of Africa has found it difficult to escape. They are discussed in greater detail in subsequent sections of this paper.

SOME HISTORICAL PERSPECTIVES

The food security problem of Africa is by no means new or recent in origin. It has been in existence for considerably long time, spanning decades. For instance, more than forty years ago, food was described by Arthur Lewis (1967) as the stagnant sector of the Nigerian economy, compared with export crops, which he referred to as the engine of growth. Further, the Third General Conference of the Association for the Advancement of Agricultural Sciences in Africa, which took place in Cotonou, Benin Republic, was on the theme, *Food Crisis and Agricultural Production in Africa*, (Adekanye 1983). Besides, available indications are that scientists, research and other institutions, (some of whom were based here in Africa), were in all those years working on issues relating to finding solutions to Africa's food problem. (See Adekanye 1976, 1977a, 1977b, and 1983 for instance.)

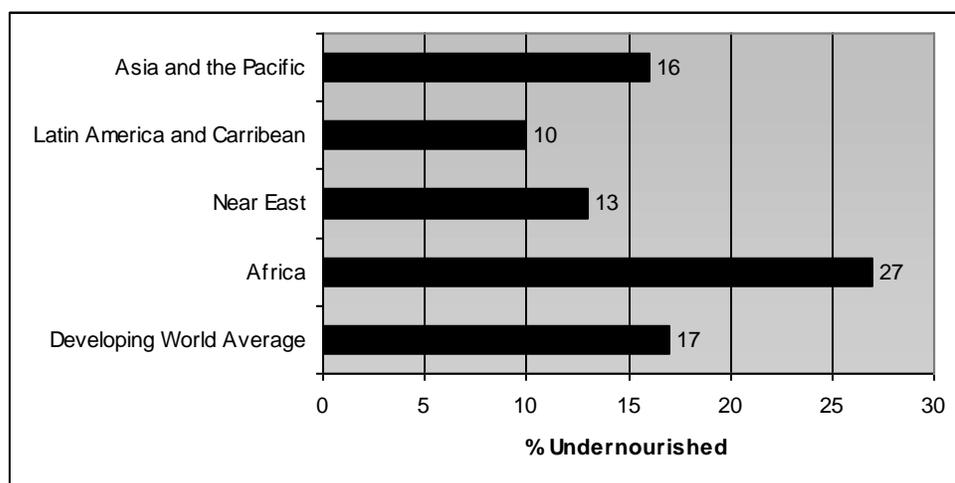
With particular reference to government policies and programmes, in 1976 /1977, for instance, both Ghana and Nigeria launched food development programmes – Operation Feed Yourself (OFY) and Operation Feed the Nation (OFN), respectively. Other food development programmes instituted to stimulate agricultural and rural transformation in Nigeria from the 1970s include the River Basin Development Authorities (RBDAS), the Green Revolution Programme and the three Agriculture Universities set up in the 1980's. In recent years, State and Federal Governments of Nigeria tinkered with variants of these and other programmes in the agricultural components of the New Partnership for African Development (NEPAD), and the National Economic Empowerment Development Strategy (NEEDS).

Several international organizations, especially the Food and Agriculture Organization of the United Nations (FAO) and Economic Commission for Africa (ECA), have done some good work in calling global attention to Africa's food crisis. This goes back in particular to the 1970's and the organizations' African Food Availability Project, Joint ECA/FAO Agriculture Division, Addis Ababa, (Adekanye, 1977a). The World Bank does not appear to have fared as well in this, at least from the African perspective. This, in particular, is because the World Bank and the IMF have been linked with the Structural Adjustment Programme in Africa in the 1980's and the ensuing pauperization on the continent. The FAO called attention to Africa's food security problem in its World Food Summits, starting with that of 1995 in Rome and the organization's call for the need to half the number of the world's poor by 2015. But the food security problem of Nigeria and much of Africa still remains and has gradually become a global embarrassment.

MORE RECENT SITUATION

Compared with other regions of the world, Africa has had the worse nutritional status. Figure 1 indicates, for instance, that more than a quarter of the total population was under nourished according to the FAO in 2004, at 27 %, at a much higher level than the average of 17% for the whole of the developing world.

Figure. 1: Proportion of the Population Undernourished



Source: FAO *State of Food Insecurity in the World, 2004*

Table 1 and figure 2 below give the regional pattern of food insecurity in Africa, on the basis of under-nutrition in the different areas of the continent. On the basis of nutritional inadequacies, Central Africa seems worse off, of the five regions, with some 55 % of its people undernourished as at 2000/02. This was actually because of a 19% increase in the proportion of the undernourished over the 1990/2 -2000/2 decade. At the beginning of that decade, Southern Africa was the worst, with 48% of the people undernourished. But there was significant improvement, with the proportion of the undernourished falling by a sixth to 40% in Southern

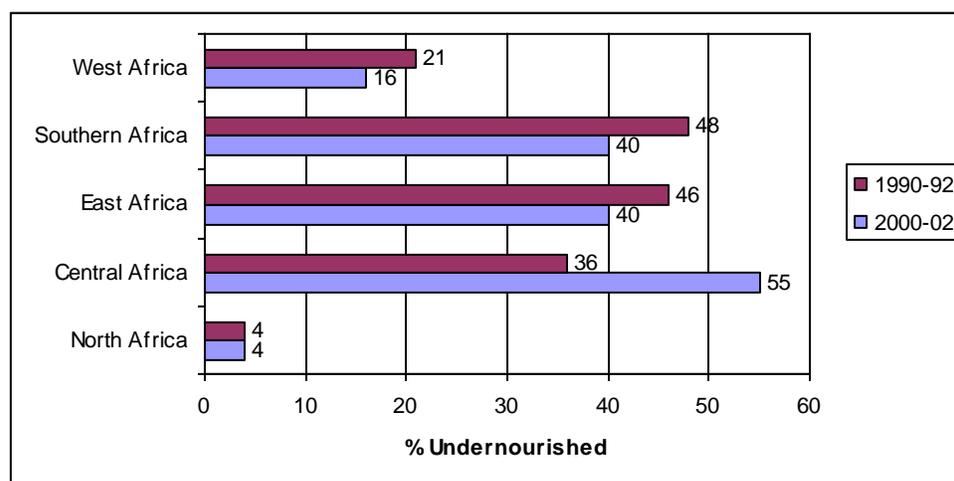
Africa by the end of the decade. East Africa also had significant improvement during the period, with the proportion of undernourished falling by 6% to 40%. North Africa remained the best of the regions, although it did not have any improvement over the decade under consideration, with 4% of the people remaining undernourished.

Table1: Number of Persons and Percent of Population of the African Sub-Regions Under-Nourished, 1990/92 and 2000 /02

African Sub-Regions	Number Persons Under-Nourished (millions)		Percent Population Under-Nourished		Percent Change in 10 Years
	1990/92	2000/02	1990/92	2000/02	
North	5.4	6.1	4	4	0
Central	22.7	45.2	36	55	+ 19
East	76.4	86.2	46	40	- 6
Southern	34.1	35.7	48	40	- 8
West	37.2	36.4	21	16	- 5
Africa	175.8	209.6	29	27	- 2

Source: FAO *State of Food Insecurity in the World, 2004*.

Figure 2: Percent of the Population of African Sub-Regions Under-Nourished, 1990/92 and 2000/02



Source: FAO *State of Food Insecurity in the World, 2004*

Some other aspects of Africa's food situation are depicted below in Boxes 1-4, figure 3, and tables 2 and 3. Success stories have generally been few and far in between. Cassava and rice have emerged as the shining examples of what can be done to increase food yield and output. There are the HIV/AIDS pandemic and the continuing malaria scourge on the continent. These have had negative impact on labour supply in agriculture.

Box 1: A Decade of Evolution in Africa's Food Security Situation

Over the ten year period of 1990-92 to 2000-02, AU Commission analysis of available information shows:

- A slight decrease in the percentage of the population estimated to be under-nourished (29 to 27 percent);
- An increase in the number of persons "hungry" from 176 to 210 million due to population increasing more rapidly than the percentages of hunger reduction;
- Quite striking differences in reducing hunger across the sub-regions with the North already at low rates and the Southern sub-region having made the most significant progress;
- Country and sub-regional performance in hunger-reduction has been strongly affected by conflict situations, with conflict causing substantially more disruption than natural disasters; and
- Sixty-three percent of Africa's people live in countries where the percentage of the population suffering from under-nutrition has declined from 36 to 29 percent.

Source: FAO, 2004

Box 2: How HIV/AIDS affects the three dimensions of food security

- **Availability of food:** reduction in rural labour can selectively reduce production within households, local communities, districts, and countries. In addition, production is also decreased when reduced incomes and increased medical expenses reduce the household's ability to acquire improved agricultural inputs, and through the loss of adult agricultural production knowledge;
- **Access to food:** illness, loss of strength, and loss of employment all contribute to reduced incomes and result in reduced access to food;
- **Utilization of food:** physiologically the body becomes less efficient in the processing or utilization of food when affected by AIDS or some of the opportunistic illnesses that are associated with the progression of the disease.

Source: FAO 2004

Box 3 Agricultural and food Security Success Story: Improved Cassava Productivity

Cassava is a staple food for 200 million Africans, second only to maize in calorie contribution across the continent. Nigeria has recently replaced Brazil as the world's leading cassava producer. This has been possible due to pan-African collaboration among international, regional, and national research and extension programs which have led a series of high-yielding (average yield increase of 40 %), disease-resistant Tropical Manioc Selection (TMS) varieties. The new varieties have been complemented by private sector-led development of simple mechanical processing technologies that have greatly reduced processing labour. The productivity gains of the new biological and processing technologies have resulted in returns to land for farmers that are up to 20 times greater than those achieved with traditional varieties and manual processing. In an equally important contribution to food security, these sustained production gains have led to falling consumer prices for processed cassava, especially evident in Nigeria and Ghana. Critical research contributions have been coordinated by the International Institute for Tropical Agriculture (IITA) in Nigeria and long-term funding by IFAD over the past decade was essential in accelerating the dissemination and adoption of the new technology across West Africa.

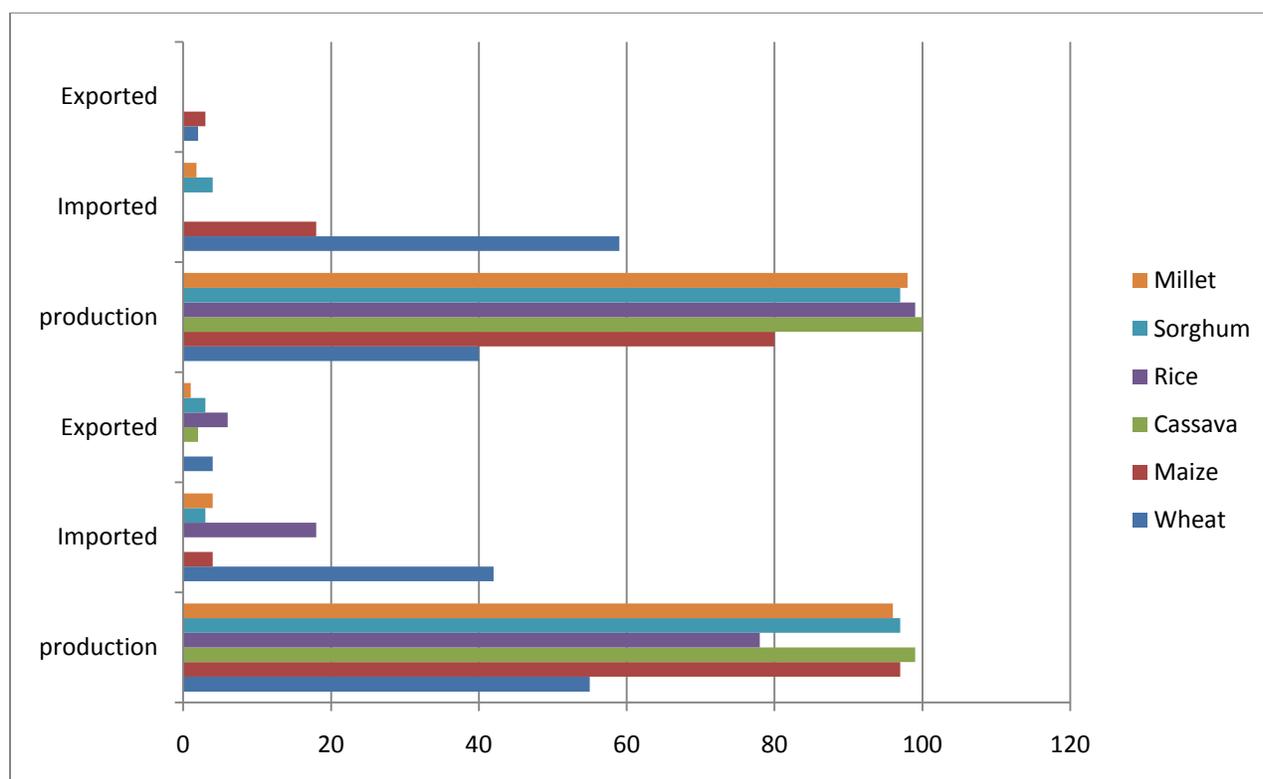
Benefiting small farmers as well as poor urban consumers, *Africa's cassava transformation has proven to be its most important poverty fighter to date*. Extending this success to additional African countries is the objective of the NEPAD/CAADP Pan Africa Cassava Initiative.

Source: IFPRI and NEPAD Secretariat, 2009

Box 4 Agricultural and Food Security Success Story: NERICA Rice

After years of breeding work by scientists from WARDA (the West African Rice Development Agency in Cote d'Ivoire), assisted by IRRI (the International Rice Research Institute in the Philippines), a very important breakthrough was made in crossing a very hardy old African rice variety (*oryza glaberrima*) with more frail, but higher yielding, Asian rice (*oryza sativa*). The resulting new varieties, referred to under the name of "NERICA" (New Rice for Africa) rice, combine the best features of both "parents": resistance to drought and pests; higher yields, even with little irrigation or fertilizer; and more protein content than other types of rice. About 10 varieties of NERICA rice are being used by farmers, mostly in West African uplands or rain-fed production areas. Even without fertilizer Nerica varieties can yield 1.5 to 2.5 tons of rice per hectare, compared with an average of 1 ton or less for traditional varieties. With even modest doses of fertilizer, yields increase to 3.5 tons per hectare. In addition NERICA has characteristics which make it very popular with women farmers since variety characteristics result in freeing up substantial amounts of the labour required by traditional varieties.

Source: WARDA, 2009

Figure 3: Africa's Main Staple Foods**Table 2: Global and Regional Per Capita Food Consumption (kcal per capita per day)**

Region	1964 - 1966	1974 - 1976	1984 - 1986	1997 - 1999	2015	2030
World	2358	2435	2655	2803	2940	3050
Developing countries	2054	2152	2450	2681	2850	2980
Near East and North Africa	2290	2591	2953	3006	3090	3170
Sub-Saharan Africa ^a	2058	2079	2057	2195	2360	2540
Latin America and the Caribbean	2393	2546	2689	2824	2980	3140
East Asia	1957	2105	2559	2921	3060	3190
South Asia	2017	1986	2205	2403	2700	2900
Industrialized countries	2947	3065	3206	3380	3440	3500
Transition countries	3222	3385	3379	2906	3060	3180

^a Excludes South Africa.

Source: FAO Global and Regional Food Consumption Patterns and Trends. Available at www.fao.org/docrep/005/ac911e05.htm

Table 3: Trends in the Dietary Supply of Fat

Region	Supply of fat (g per capita per day)				
	1967 - 1969	1977 - 1979	1987 - 1989	1997 - 1999	Change between 1967 - 1969 and 1997 - 1999
World	53	57	67	73	20
North Africa	44	58	65	64	20
Sub-Saharan Africa ^a	41	43	41	45	4
North America	117	125	138	143	26
Latin America and the Caribbean	54	65	73	79	25
China	24	27	48	79	55
East and South-East Asia	28	32	44	52	24
South Asia	29	32	39	45	16
European Community	117	128	143	148	31
Eastern Europe	90	111	116	104	14
Near East	51	62	73	70	19
Oceania	102	102	113	113	11

^a Excludes South Africa

Source: FAO Global and Regional Food Consumption Patterns and Trends. Available at www.fao.org/docrep/005/ac911e05.htm

CURRENT SITUATION

The departure point for this section of this paper, really, is the news relayed in the international media during the week of Monday October 18th, 2010, that a Project “Food Ball- Against - Hunger” was launched. This project is based on the concern that currently close to a billion people worldwide is food insecure. Further, the international media about the middle of February 2011, started to raise considerable concern about increasing world food prices, particularly on the basis of the data released by the FAO and the World Bank. It has been indicated, for instance, that world food prices have surged to a new height. For instance, World Bank chief Robert Zoellick said that global food prices have reached "dangerous levels" and warned that their impact could complicate fragile political and social conditions. The World Bank has also indicated that food prices – mainly for wheat, maize, sugars and edible oils – have pushed 44 million more people in developing countries into extreme poverty since June 2010. (Kihara, 2011) (See FAO food price index in appendix 1). With particular reference to Africa, available

indications are that care needs to be taken to prevent further deterioration in the food supply and demand situation as a result of the spiraling food prices. Some Nigerian case studies are discussed below to give empirical content to the discussion.

NIGERIAN EMPIRICAL SURVEYS

These are empirical studies conducted in three separate regions of Nigeria- Ogun and Lagos States in the South West, and Kogi State in the North Central area of the country, (See Adeyemi, 2010, Jones, 2010 and Mohammed, 2010)*. They are production, marketing and consumption studies, respectively. A total of 155 farmers, 125 traders and 71 households were surveyed in 2009 in the three studies, respectively. Appropriate data collection and analytical procedures were used for the studies. Aspects of the studies relevant to this paper are discussed below.

FARMERS IN OGUN STATE, SOUTH WEST NIGERIA**

Size of Farms: Some 96% of the respondents had a farm size of less than one hectare (ha.). About 4% of them cropped only one ha. Less than 1% of the farmers had more than one ha of land. This indicates that the majority of the farmers were small scale and subsistent farmers.

Monthly Farm Income: For some 56% of the farmers, monthly farm income was less than ₦10, 000 while 43% of them fell within the income range of ₦10, 000- ₦20, 000 per month. Only 2% of the farmers studied earned more than ₦20, 000, respectively. This shows that farm income in the study area was generally low. The farming system practiced on the small holdings was still essentially traditional. Their farm problems include low yield and output, post harvest losses and limited market outlet.

Total Income: Approximately 15% of the farmers studied had a total income of less than ₦10, 000 per month, from all farm and non- farm sources while 75% earned between ₦10,000 and ₦20,000. Only 11% had more than ₦20,000 per month from all income sources. There is therefore little or no difference between their total income from all sources and farm income. There was, therefore, a problem of low farm income in the study area.

Farm Credit: Some 5% of the farmers said they had no need for credit. Some 59% of them needed credit to expand their farm business and 36% wanted to use credit to fund their regular activities. This indicates that the farmers are willing to increase their scale of production. Thus, the possibility of commercialization is high. However, only 17% of the respondents had access while 83% did not, or, had not benefited from credit sources, see table 4.

Table 4: Credit Beneficiaries and Non – Beneficiaries

Group	Frequency	Percent	Cumulative percent
Beneficiaries	26	17	17
Non- beneficiaries	129	83	100
Total	155	100	

Source: Field Survey, 2009

* We gratefully acknowledge the work of these three former students of ours for the Nigerian empirical studies reviewed in this section.

** All references to the Naira (N) are to the Nigerian currency. As at February 2011, one USA dollar exchanged for N153.

Table 5 shows that 7% of the respondents were not able to source for funds because of fear of inability to repay. Some 72 % of them lacked collateral while 5% believed they did not need credit. This shows that the majority of the farmers had limitations in sourcing for funds especially because of lack of collateral. Some 69% of the farmers utilized the loan given to expand existing farm business and 31 % used the loans for regular practices. There appears to be little or no problem of loan diversion in the study area.

Table 5: Limited Access to Credit Sources

Limitations	Frequency	Percent	Cumulative percent
Fear of inability to repay	11	7.10	7.10
Lack of collateral	111	71.61	78.71
Do not need credit	7	4.52	83.23
None	26	16.77	100
Total	155	100	

Source: Adeyemi 2010

Table 6: Sources and Utilization of Credit

Source	Available	% (n=155)	Utilized	%
Government agency(OSAMCA)	121	78.1	13	10.74
Micro Finance Banks	46	29.67	0	0
Co-operatives	121	78.1	11	9.09
Nigeria Agric Co-op Banks(NACRDB)	44	28.38	1	2.27
Community Banks	0	0	0	0
Commercial Banks	1	0.6	0	0
Non-government Organization	0	0	0	0
Informal	59	38.06	1	1.69

Source: Adeyemi 2010

Table 6 shows the various credit sources and utilization. Some 78% of the respondents said that Ogun State Agricultural and Multi-purpose Credit Agency (OSAMCA) was available to them but only 11% used it. Micro-Finance Banks were available to 30% of them but none accessed them. About 78% of the respondents said that the Co-operative societies were available to them but only 15% utilized them. Some 23% of the respondents said the Federal Government owned Nigerian Agricultural Co-operative and Rural Development Bank was accessible but only 2% utilized it. OSAMCA was the most readily and accessible source of credit probably because it is a State Government agency that gives loans at concessional rates.

Regression Model: The factors that determine farmers' access to credit were analyzed using Probit Regression Model. The coefficients of education, household size, other sources of income, gross margins, awareness of credit source, possession of collateral and fear of failure to repay

were positive, indicating a direct relationship between these variables and access to credit. This indicates that a change in these explanatory variables would increase the probability of farmers accessing credit. Farming experience, farm size, co-operative membership and extension education had negative coefficients indicating an inverse relationship between them and access to credit. The t-values for education, farming experience, other sources of income, awareness of credit source, co-operative membership, and possession of collateral were significant ($P \leq 0.01$), indicating that the variables had significant relationship with access to credit.

The coefficient of determination R^2 value of 0.68334 shows that about 68% of the variation in access to credit was accounted for by the variations in the explanatory variables fitted to the equation. The coefficient of education with positive significance implies that those with high education level had a higher probability of access to credit. Thus, most respondents were unable to access credit because of their low level of education. The respondents were generally not able to access credit because they lacked collateral. Farm size, household size, gross margin, extension education and fear of failure to repay were not significant, (table7).

The factors that influence farmers' loan size were captured using the Ordinary Least Square (OLS) regression. Four functional forms (linear, exponential, semi-log and double-log) were fitted. The semi-log function gave the best fit to the data. The coefficient of age, education level, farm experience, gross margin, co-operative membership, extension education and sources of credit were positive, implying that they had a direct relationship with amount of loan size. Those of household size, farm size, previous loan, distance and possession of collateral were negative, implying an inverse relationship with amount of loan size. The t-values for household size, farm experience, gross margin, co-operative membership, and distance from credit source were significant indicating that they had a significant relationship with loan size.

Table 7: Maximum Likelihood Estimate of Determinants of Farmers Access to Credit

Variable	Coefficient	Standard error	T- value
Constant	-.4923***	.20584590	-2.392
EDUL	.2173E-01***	.45247845E-02	4.802
FEXP	-.1067E-01***	.30665993E-02	-3.479
FMSZ	-.3082E-01	.51130029E-01	-.603
HHSZ	.2785E-03	.60095002E-02	.046
OTHINC	.1385***	.57039050E-01	2.428
GM	.4549E-05	.49326604E-05	.922
ACS	.5240***	.16784792	3.122
COOP	-.1613***	.53772169E-01	-2.999
COL	.9731***	.59291956E-01	16.413
EXT	-.3936E-01	.42539080E-01	-.925
FFR	.9199E-01	.72076495E-01	1.276

*** Significant at 1% adjusted R^2 .68334 F-Statistics 31.21

Source: Adeyemi 2010

EDUL = Educational level of respondents (years); FMEXP = Farming experience (years); FMSZ = Farm size (Ha); HHSZ = Household size; OTHINC = other sources of income; GM = Gross margin (₦); ACS = Awareness of credit source; COOP = Co-operative membership; COL = Possession of collateral; EXT = Extension education; FFR = Fear of failure to repay

Table 8: Factors Influencing Farmers Loan Size

Variable	Coefficient	Standard error	T- value
Constant	-327612.6**	157230.97	-2.084
Age	7492.61	25622.978	.292
Household size	-38452.43***	9757.3380	-3.941
Education	3.95	7.1218909	.555
Farm experience	24909.04*	12725.209	1.957
Farm size	-407.75	8051.9260	-.051
Gross margin	46920.13***	14311.478	3.278
Co-operative membership	22822.75*	12676.738	1.800
Extension education	151.94	7342.5802	.021
Amount of previous loan	-5.81	7.5285521	-.772
Credit source	7995.25	6914.6619	1.156
Type of collateral	-3904.3	10132.497	-.385
Distance	-20662.38***	7540.5064	-2.740

*** Significant at 1% ** significant at 5% * significant at 10%

F- Statistics 3.31 ** adjusted R² .54520

Source: Adeyemi 2010

The F-value was also significant at 5% indicating that the collective contribution of the explanatory variables to the variation in the dependent variable is significant. The adjusted R² value of 0.5452 shows that about 54.5% of the variation in loan size was accounted for by the variations in the explanatory variables fitted to the equation. The gross margin variable with a positive significance implies that high-income earners received larger amounts of loan than low-income earners, as they probably had better negotiating power and ability to pay back. The coefficient of farm experience has a positive significance implying that the higher the level of farming experience the larger the amount of loan received, confirming that lending houses are usually more comfortable with farmers with experience and an asset base. The coefficient of co-operative membership has a positive significance, implying that being a member of a co-operative can increase farmers' loan size. The coefficient of household size has a negative significance, implying that a large household size would reduce farmers' loan size. Farmers with large households may not be able to pay back loans easily. (See table 8)

The coefficient of distance has a negative significance implying that the farther the farmer's residence from credit agency the lower the loan size. Most of the farmers lived far from credit institutions. Administrative costs for obtaining loans would be high. Thus, the farmers tended to restrict themselves to small loans they can repay. Age, farm size, education, extension education, previous loan, source of credit, and collateral type were not significant.

RICE MARKETING IN KOGI STATE, NORTHERN WEST NIGERIA

Gender Composition: Approximately 78% of the rice sellers studied were women while only 22% of them were men. This confirms findings from previous studies that women feature prominently in food stuff marketing especially in rural markets in Nigeria where men constitute less than 5% of the traders, (Adekanye 1988).

Types of Rice Sold: Approximately 40% of the traders sold both imported and local types of rice. This implies that the sellers try to meet consumer demand for one or both types of rice and make profit from either case.

Costs, Revenues and Margins: Table 9 shows that Gross margin equals N9, 791, 870, implying that local rice marketing in the study area was profitable. Table 10 also shows a positive gross margin of ₦17, 219, 970, implying that imported rice marketing in the study area was profitable too.

Table 9: Cost Incurred and Gross Returns in Local Rice Marketing

Marketing Function	Cost (₦)
Transportation	3,241,680
Market space used (Stall, open space and store)	754,200
Cost of buying	44,301,900
Total Variable Cost (TVC)	48,297,780

Total revenue from sales = N58,089,650; Gross Margin= TR-TVC
 $= 58,089,650 - 48,297,780$
 $= \underline{\underline{₦9,791,870}}$

Source: Mohammed 2010

Table 10: Cost Incurred and Gross Returns in Marketing Importing Rice

Marketing Function	Cost (₦)
Cost of buying	112,000,000
Market space used (Stall, open space and store)	754,200
Transportation	3,241,680
Total Variable Cost (TVC)	115,995,880

Total revenue from sales = 133, 215, 850; Gross Margin= TR-TVC
 $= ₦133, 215, 850 - ₦115, 995, 880$
 $= \underline{\underline{₦17, 219, 970}}$

Source: Mohammed 2010

Market Infrastructural Problems: There were considerable market infrastructural problems. For instance, a high proportion of the traders generally exhibited their produce in open spaces rather than in stalls or stores with lockup facilities.

HOUSEHOLD FOOD EXPENDITURES IN LAGOS, SOUTH WEST NIGERIA

Socio-Economic Characteristics of Households: Approximately 24% all respondents' household income head earned below N20,000; 43% earned N20,000 - N50,000, while 34% earned more than N50,000. The mean income of the respondents was N37,000 monthly. This result implies that majority of the household heads were in the middle income group since they earned well above the minimum Nigerian government wage. Further, 39% of the respondents fell between the ages of 36 and 45; 21% between the ages of 46 to 55; 7% were more than 50 years old. Only 3% were below 25 years.

Some 83% of the respondents had tertiary education; 16% had secondary education and only 1% had no formal education. This shows there is high literacy level in this area which is usual for most urban communities. This accounts for the relatively high income. About 70% of the respondents were Yoruba, 16% were Ibo and 3% were Hausa and the rest do not belong to any of the main groups. It is to be noted that Lagos, the study area is a Yoruba State. A greater percentage of the sampled households had 1-4 persons per household which constitute 63% of the total compared with 35% of households with 5-8 persons.

Table 11: Distribution of Respondents by Expenditure on Food

Expenditure on food (N)	No of respondents	Percentage distribution
Below 10,000	6	8
10,000 – 20,000	19	27
Above 20,000 – 30,000	14	20
Above 30,000	32	45
Total	71	100

Source: Jones 2010

Table 11 shows that 45% of the respondents spent than N30,000 while 20% of them spent N20,000 -N30,000 and 27% spent N10,000- N20,000 on food monthly. The average expenditure on food by these respondents is N25,000 monthly. A comparison of the average income and that of food expenditure indicates that most of these respondents spend about 67% of their income on food.

Regression Result: The relationship between household food expenditure and its determinants was estimated using regression analysis. Food expenditure was the dependent variable, while age of household head, his/ her level of education, sex and tribe as well as household size, household income and household composition were the independent ones. The data were subjected to four

functional forms. The lead equation was the double log form. The result of the double log regression analysis is presented in Table 12.

Table 12: Regression result for household food expenditure

Variable	Coefficients		T-Value
	B	Std error	
Constant	7.435*	2.826	2.631
Household income	0.285**	0.233	1.220
Age of household head	-0.789	0.774	-1.020
Marital status	0.337	0.395	0.852
Formal education	-0.586	0.920	-0.637
Sex of household head	0.237	0.281	0.843
Tribe	0.874**	0.211	4.140
Household size	0.279**	0.399	0.70
Household composition	0.832*	0.363	2.291

Adjusted R²: 0.550 F value: 4.528**

* Significant at 5% **Significant at 1%

Source: Jones 2010

The adjusted R square for the equation is 0.55, which shows that the independent variables account for 55% of the variations in the household expenditure on food items. This test shows that F – ratio is statistically significant at 1% level of significance.

Interpretation of Results

- Household income parameter is significant with a positive sign ($P < 0.01$). The income elasticity for food expenditure is 0.3. A one percent change or increase in income leads to a 0.3% increase in household food expenditure.
- The coefficient of tribe of household head is significant with a positive sign ($P < 0.01$). A one percent change in tribe will lead to a 0.9% increase in household food expenditure. Most non Yoruba indigenes will have preference for their native foods and most of these foods are not cultivated in Lagos. Therefore, costs of purchase are higher due to cost of transportation.
- The coefficient of household size is significant with a positive sign ($P < 0.01$). A one percent increase in household size leads to a 0.3% increase in household food expenditure. This agrees with a prior expectation that as a household increases in size, there are more mouths to feed hence, an increase in food expenditure.
- Household composition coefficient (number of infants and pregnant women) is significant with a positive sign ($P < 0.05$). A one percent increase in household

composition leads to a 0.9 percent increase in household food expenditure. This could be because the feeding of this group is of utmost importance and their food is relatively expensive.

- The coefficients of age of household head, sex of household head, marital status and level of formal education are not significant to food expenditure.

IMPLICATIONS OF THE CASE STUDIES

The findings of the three Nigerian case studies reviewed above have indicated aspects of the Africa's food security problem. These include the following:

- Small scale operation in the farm sector
- The use and prevalence of traditional technologies
- Limited access to input sources
- Inadequate market related infrastructures (e.g. storage)
- Low incomes in agriculture
- Probability of food-related inflation. Food expenditures constitute a high proportion (coming up to over 60%) of household income.

GENDER CONSIDERATIONS

Gender considerations are a major issue in African food security problem and for devising appropriate policing strategies for solving it. Relevant aspects of this, summarized from the literature, are as follows:

- Women's involvement and predominance in African agriculture is established in previous research and in the literature. (See for instance Adekanye, 2004). Of particular relevance here are several works by the ECA, the FAO and the International Labour Organization (ILO).
- An estimated 60-80% of the labour input in the production, processing and the trade in food is provided by the women.
- African agriculture has therefore been referred to as a region of female farming excellence (Boserup, 1970)
- Of course there are regional and locational differences
- Of particular importance here is the effect of religion. Where women are in full seclusion for religious and social-cultural reasons for instance, their involvement in the production and trade in agricultural produce is often limited because their movement outside the family compound is restricted.
- Even then, they often make considerable contributions to overall labour input and food output from their activities in processing within the confines of the family compounds.
- Yet women's control of agricultural output is relatively lower than men's.

- Their incomes in food and agriculture are lower than men's, by at least a third.
- This is in part due to relatively more limited access to input sources, for women more than men.
- These include access to credit sources, for instance and even the more traditional ones such as land as well as the complementary factor inputs of agrochemicals such as fertilizers.
- There are traditionally what can be called women's crops and those of men, such as cassava and yam, respectively in the Ibo area of South Eastern Nigeria, for instance. However, very often when development programmes are instituted, the so called women's crops are taken over by men. This has happened in several West African countries with rice and cassava.
- Extension services have been problematic in several African countries, especially from gender perspectives. Men are often the first contact and very often the only ones. Extension agents are very often men. Where women are literary invisible and out of site of male strangers, due to religion reasons, for instance, they simply cannot be reached by men development agents.
- There is also the issue of patriarchy in many areas of Africa. Women take their place behind men in many African communities in their socio-economic activities. Women do not inherit land in many of these communities, including the Yoruba society of South Western Nigeria, for instance. When women need land in Yoruba land, for instance, they get it through their husbands or other male relatives.

APPROPRIATE POLICY STRATEGIES

Appropriate policy strategies for effecting food security for Africa are taken up below, on the basis of discussion and the findings of the Nigerian studies in previous sections of their paper. For this purpose the global crisis and its affects are first considered. Then, specifications for food development n Africa are provided. Some gender components of these are given.

THE GLOBAL ECONOMIC AND FINANCIAL CRISIS

The global financial and economic crisis is well on its way and we, hopefully, can start talking of life after it. With particular reference to Africa, the following are relevant here:

- Africa initially did not feel the full impact of the financial crisis
- When it hit Africa, it was with a lag.
- In common parlance, it has been said that what happened was that when the USA and Europe sneezed, Africa caught the cold.

This was especially because of reduced demand for African exports from the Western world, reduced remittances into Africa and fall in world commodity prices including petroleum. There was considerable dislocation for the major economic sectors and activities including, textiles, tourism and the food economy (Adekanye, 2009a 2009b and 2010).

POLICY SPECIFICATIONS

The major policy specifications for effecting food development in Africa include the following:

- i. **Food yield and production:** It is absolutely essential that considerable effort be made to increase the yield for basic staples in Africa. The success stories of cassava and rice were mentioned earlier. This indicates that it is indeed possible to succeed, if better and more effort is made to increase yield and output for the staples in Africa.
- ii. **Access to inputs:** more effort needs to be made to improve access to production resources, especially the complementary ones like credit, fertilizers and other agrochemicals. This is necessary to complement and amplify the issue raised above
- iii. **Irrigation and water supply:** Many parts of Africa still rely essentially on rain fed agriculture. This needs to be supplemented with better access to water to increase food yield and output. The disadvantages of poorly planned and managed irrigation schemes including such problems as salinity of the land, for instance, need to be tackled, however.
- iv. **Technology:** Technology development is absolutely essentially for all levels of the agricultural process, from production through marketing until the product is in the hands of the ultimate consumer. The dependence on the hoe and cutlass system in Nigeria agriculture, for instance, is unacceptable.
- v. **Consumer Education and Nutritional Development:** This is essential to ensure greater qualitative improvement in food consumption.
- vi. **Marketing Infrastructures:** The Nigerian rice care study indicates, for instance, that produce is often displayed and sold on open spaces, for instance. This and other market-related infrastructures are unacceptably underdeveloped and need to be upgraded and modernized.
- vii. **Value Addition:** In relation to marketing infrastructure, it is to be noted that very little effort has been made to add value to most food produced and marketed. The situation where, for instance, Nigeria is a leading world producer of cocoa but in which much of it is exported in the raw form is unacceptable. This is because most cocoa based manufactured products are imported back into Nigeria. This is the care for most food and agricultural commodities in Africa.
- viii. **Governance:** The problems of corruption, ineffective governance and dictatorships in Africa are too well known to bear much repetition have. It is also illustrative to note that the wave of disruption and disturbance in North Africa started with food riots. Irresponsible governments of Africa have to know that it can no longer be business as usual. The situation, in which Nigeria continues to devote less than 6% of its budget to agriculture, is unacceptable. The critical issue here is that the nature of agriculture is such that more money needs to be spent, and greater investment needs to be made into it to generate further increases in yield and output.
- ix. **Gender Equity:** More attention needs to be paid to effect greater gender equity in food and agriculture. Some effort is being made, for instance, to introduce gender

budgeting into government work but this has hardly scratched the surface of the problem.

- x. **Poverty Alleviation:** Structural Adjustment in Africa had led to pauperization and feminization of poverty in the 1980s. The case has hardly improved over the last two decades. Honest attempt is needed to solve the poverty problem. This is in view of the fact that many African countries, including Nigeria, are falling behind in achieving the millennium development goals (MDGs)

SUMMARY AND CONCLUSION

This paper has focused on the food security problem of Africa. A review of some historical, recent and current situation was undertaken. Some Nigerian case studies were reviewed to give local and micro-level content to the paper. Gender issues were considered. Policies issues were raised.

It is in the nature of food and agriculture that development can only be generated through honest attempt at removing existing problems in production, processing, and trade, right from production until the commodities reach the consumer. Several factors have contributed to food underdevelopment in Africa. These include the use of outmoded equipment and technologies in production and post harvest activities. Further, in spite of the predominance of women in food and agriculture in Africa, there is gender inequity, heavily skewed against women. A gender focus is necessary to generate necessary food output. Otherwise simple economic considerations indicate that a situation in which half of available resources (in this case the labor of men and women) is used, total output will be less than what it should be.

REFERENCES

1. Adekanye, T O, "Gender and the Global Crisis: the case of Oil-rich Nigeria", Invited Paper prepared for presentation at the Third World Network Africa, Africa-wide Dialogue on Gender, Africa and the Global Financial and Economic Crisis, Accra, Ghana, 14th – 16th October, 2009.
2. Adekanye, T. O., Babalola D. A. and Otilolaiye J. O. "The Global Economic Crisis and the Conditions of Women in Africa" paper presented at the International Association For Feminist Economics (IAFFE) Summer Conference, Buenos Aires, Argentina, July 2010
3. Adekanye, T. O., " African Woman in Agriculture, Some Consideration for Sustainable Development", Invited paper prepared for presentation at the international food and Agriculture Exhibition, Federal Ministry of Agriculture and All Formers Association of Nigeria (ALFAN), Abuja 2007
4. Adekanye, T. O., *African Women in Agriculture*, CEGGAD Publications, Ibadan 2004.
5. Adekanye, T. O., *Readings in Agricultural Marketing*, Longman, 1988
6. Adekanye, T.O. Report for ECA/FAO Joint Agriculture Division for Part of the **Preliminary Work on West African Food Availability Project**, Addis Ababa, Ethiopia, 29 pages.

7. Adekanye, T.O., “Food Waste in Nigeria”, **Sub-Regional Consultation on Increasing Food Availability Through Waste Reduction and Improving Marketing System in West Africa**, Addis Ababa: ECA, 1977 a.
8. Adekanye, T.O., “Implications of Fruits and Vegetables Marketing for Operation Feed the Nation (OFN) and Nigeria’s Agricultural Development Policy”, Inaugural **Conference of the Horticultural Society of Nigeria**, Nigerian Horticultural Research Institute, Ibadan, 21 pages, 1977 b.
9. Adekanye, T.O., “The Food Availability Problem of West Africa” in **Food Crisis and Agricultural Production in Africa**, Proceedings of the Third General Conference of the Association for the Advancement of Agricultural Sciences in Africa, 1978 Vol. V, pp.113-136, 1983.
10. Adekanye, T.O., “The Role of Women in Marketing Local Farm Products, Fish and Livestock Products”, **Papers for the FAO Expert Consultation**, Accra, Ghana, 21 pages, 1976.
11. Adeyemi, A. M., Determinants of access to credit among farming households in Ogun state, An unpublished project submitted to the department of agriculture and industrial technology, Babcock University, Ilishan – Remo Ogun State, Nigeria in partial fulfillment of the requirement for the award of a degree of B.Agric (Agricultural Economics), April, 2010
12. Boserup, E. *Women’s Role in Economic Development*, St. Martin Press, New York, 1970
13. FAO Global and Regional Food Consumption Patterns and Trends. Available at www.fao.org/docrep/005/ac911e05.htm
14. FAO State of food insecurity in the World, Rome, 1995
15. FAO, **World Food Summit World Plan of Action**, Rome, 1995
16. IFPRI (2009). Agricultural and food security success story: improved cassava productivity. Available at www.ifpri.com
17. Jones, A. Household Food Expenditure in Lagos, Nigeria, , An unpublished project submitted to the department of agriculture and industrial technology, Babcock University, Ilishan – Remo Ogun State, Nigeria in partial fulfillment of the requirement for the award of a degree of B.Agric (Agricultural Economics), April, 2010
18. Kihara, L “ Fund flows hamper Asia inflation fight – World Bank ” Manila Bulletin February 19, 2011
19. Lewis, W. A. *Reflections on Nigeria’s Economic Growth*, O.E.C.D. Paris, 1967
20. Mohammed I. A. Rice Marketing in Anyingba Area of Kogi State, Nigeria. Unpublished B.Sc. Degree (Agricultural Economics), Kogi State University, Nigeria
21. West African Rice Research Association (WARDA) Agricultural and Food Security Success Story: NERICA Rice 2009. Available at www.warda.org/warda/guide-rice.asp

Appendix 1: FAO Food Price Index, Release date: 03/02/2011

The FAO Food Price Index (FFPI) rose for the seventh consecutive month, averaging 231 points in January 2011, up 3.4 percent from December 2010 and the highest (in both real and nominal terms) since the index has been backtracked in 1990. Prices of all the commodity groups monitored registered strong gains in January compared to December, except for meat, which remained unchanged. Changes in the composition of the meat price index have resulted in adjustments to the historical values of the FFPI. One implication of this revision is that the

December value of the FFPI, which previously was the highest on record, is now the highest since July 2008.

The **FAO Cereal Price Index** averaged 245 points in January, up 3 percent from December and the highest since July 2008, but still 11 percent below its peak in April 2008. The increase in January mostly reflected continuing increases in international prices of wheat and maize, amid tightening supplies, while rice prices fell slightly, as the timing coincides with the harvesting of main crops in major exporting countries.

The **FAO Oils/Fats Price Index** rose by 5.6 percent to 278 points, nearing the June 2008 record level, reflecting an increasingly tight supply and demand balance across the oilseeds complex.

The **FAO Dairy Price Index** averaged 221 points in January, up 6.2 percent from December, but still 17 percent below its peak in November 2007. A firm global demand for dairy products, against the backdrop of a (normal) seasonal decline of production in the southern hemisphere, continued to underpin dairy prices.

The **FAO Sugar Price Index** averaged 420 points in January, up 5.4 percent from December. International sugar prices remain high, driven by tight global supplies.

By contrast, the **FAO Meat Price Index** were steady at around 166 points, as falling prices in Europe, caused by a fall in consumer confidence following a feed contamination, was compensated by a slight increase in export prices from Brazil and the United States.