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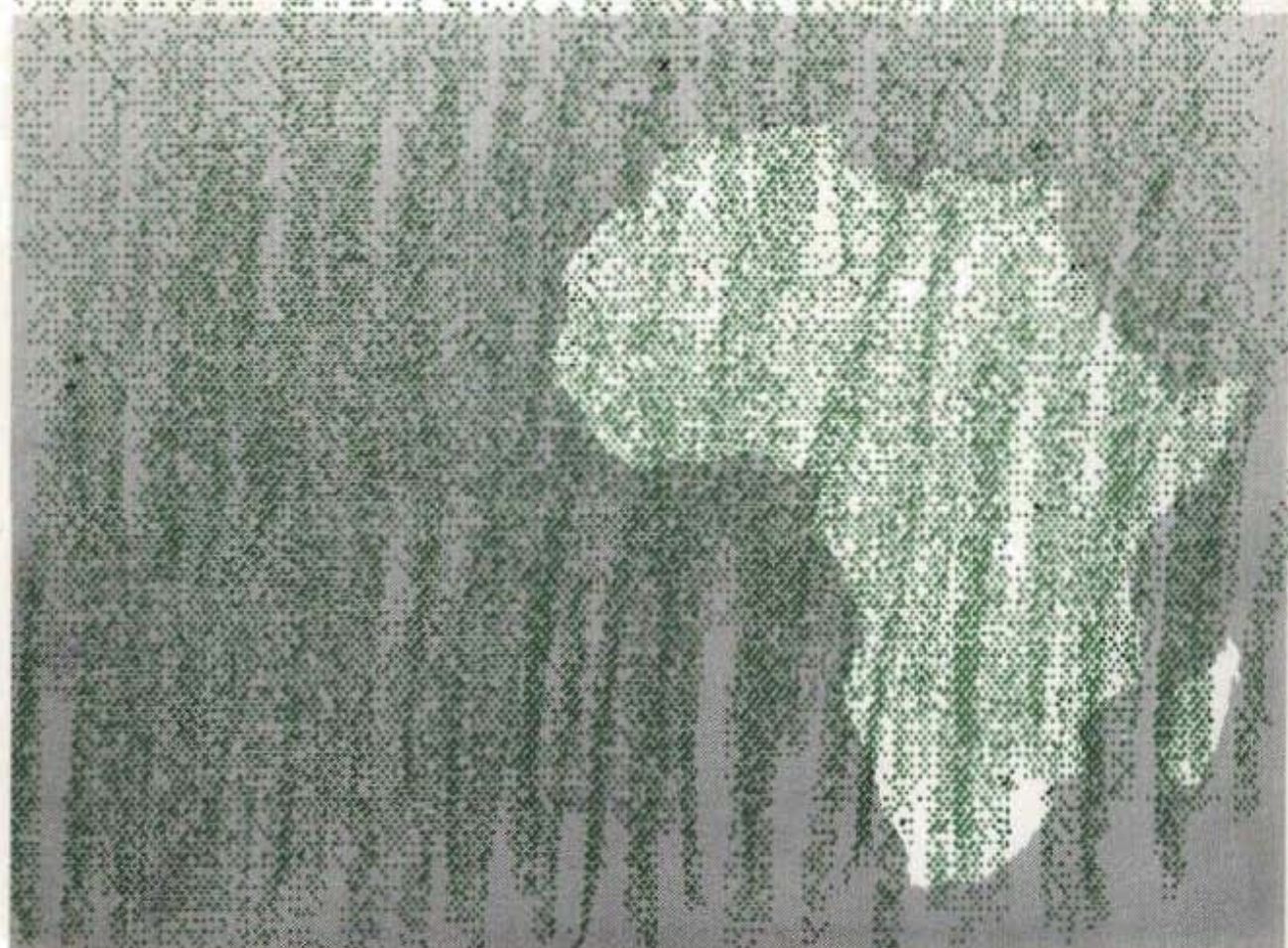
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Food and Agriculture in Africa

ECA/FAO Agriculture Division
Staff Papers No. 1



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DISCLAIMER

The opinion, figures and estimates set forth in this paper are the responsibility of the author and should not necessarily be considered as reflecting the views or carrying the endorsement of FAO and/or ECA.

Foreword

The adoption of the Lagos Plan of Action (LPA) and the Final Act of Lagos (FAL) by African Heads of State and Government in April 1980 marked the formal collective recognition by African leaders of the important role which their countries must play in achieving self-reliant and self-sustained development in the continent. However, the various efforts by African Governments to bring about fundamental socio-economic structural changes since the adoption of the LPA and the FAL have been thwarted by a number of adverse factors, resulting in a situation of continuing economic crisis in the continent.

As far as the food and agriculture sector is concerned, the most distressing manifestations of the crisis have included a persistent inability of domestic food supplies to keep pace with domestic needs and increased incidence of famine, hunger and malnutrition. A host of adverse external factors such as the collapse in the prices of primary commodities, mounting external indebtedness and decreasing net flows of public and private resources have also contributed to and exacerbated the situation. *

A number of important initiatives have been undertaken by many African countries in order to address these problems. The most recent of these include programmes such as Africa's Priority Programme for Economic Recovery, 1986-1990 (APPER); the United Nations Programme of Action for African Economic Recovery and Development, 1986-1990 (UN-PAAERD) as well as a host of stabilization and/or structural adjustment programmes (SAPs) made and/or designed by international financial and development institutions. The African Alternative Framework to Structural Adjustment Programmes for Socio-economic Recovery and Transformation (AAF-SAP) adopted by African Governments in July 1989 is decidedly the most comprehensive attempt to lay a firm foundation for recovery and long-term development on a sustained basis. All of these initiatives have in common an explicit recognition of the preeminent place of the agricultural sector in promoting overall economic growth and development in Africa.

The Economic Commission for Africa (ECA), through its Joint Division with the Food and Agriculture Organization, has been instrumental over the years in studying and analysing ways in which African countries can effectively tap the vast capacities of their agricultural sectors in order to achieve food self-

sufficiency at the national, subregional and regional levels. To this end, the Joint ECA/FAO Agriculture Division (JEFAD) has carried out studies, organized workshops, and implemented training programmes aimed at strengthening the capabilities of member countries and intergovernmental organizations for more efficient food and agricultural sector planning, policy analysis and programming; provided assistance to governments and intergovernmental organizations in stimulating increased agricultural production and productivity, especially food commodities, export crops, livestock, fisheries, and forestry; and offered advisory services directed at improving the structures, systems and institutions serving small farmers in the areas of food production, food losses, food security, research and technology, manpower and rural development.

Only a small proportion of the results of these activities have been published and widely disseminated. Consequently, the wealth of information collected and the wide range of findings and recommendations contained in the studies and reports hardly ever reach policymakers in Africa and the scientific community who stand to benefit most from them. Hence, the primary reason for the publication of a series of staff papers under the title "Food and Agriculture in Africa: ECA/FAO Agriculture Division Staff Papers."

The aim of the staff papers is to provide an opportunity for reflection on topical issues in agricultural development in Africa, critically assess thinking on agricultural development in Africa, and inform both policy-makers and academics alike of major trends and of options in agricultural development in Africa.

I very much hope that this maiden issue of the staff papers series will be found useful to its primary audience and that it will lead to dialogue between them and my colleagues who contribute to the series. In the same spirit, we can also look forward to subsequent issues.



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The Fate of Smallholders and Other Rural Poor in Africa during the Structural Adjustment Transition¹

by Prof. S.C. Nana-Sinkam²

Abstract

Without the IMF and/or the World Bank, adjustment is a must, as in its absence a "hard landing" scenario is likely, with considerable but unpredictable dislocation and disruption to the whole economy. Consequently, the objective of adjustment with socio-economic structural transformation is to provide a "soft landing" and avoid a dramatic crisis or collapse of the economy. Hence, there is no doubt that adjustment is a "must" and is therefore preferable to crisis. The fundamental questions are: adjustment for what?; adjustment for whom and; adjustment how? There is also no doubt that adjustment is not costless. Here, the question is: who is going to pay the price and, specifically, what is the impact on the poor segment of the population?

The article states that, in Africa, smallholder agriculture is the main source of employment for the majority of the rural population and the bulk of the staple food is produced by this segment of the population. Any policy strategy which affects the productivity of smallholders is likely to reflect on the welfare of both urban and rural poor. The paper, therefore, attempts to analyze the impact of stabilization and/or structural adjustment programmes on the poor in general, and the rural poor in particular with emphasis on smallholders. The first section deals with the place of smallholders in African agriculture and attempts to elucidate who they are. The second section considers the extent of rural poverty in Africa; the third section deals with the impact of those programmes on the poor, and smallholders especially. The fourth section deals with a theoretical framework for the assessment of the impact of macro-economic adjustment measures embodied in stabilization and/or structural adjustment programmes, on the poor. The fifth section, which serves as a set of conclusions and suggestions for further policies considerations, presents a description of measures to safeguard the interests of the poor during adjustment transition. The author is of the strong view that, stabilization and/or structural adjustment with socio-economic transformation should from its inception, embody elements or measures to

eliminate, if not reduce to the bearable minimum, the impacts of the programmes on the poor; in other words, adjustment should entail a transformation of the economic and social structure, the democratization of developmental decision-making process, the allow self sustained economic growth with equity based on self-reliance principle. The annex gives the theoretical framework for measuring the impact of macro-economic stabilization and/or structural adjustment policies on the poor.

Background

During the 1970s and the early part of the 1980s many African countries, particularly sub-Saharan African countries, experienced various social and economic setbacks. Growth rates in GDP stagnated and, in some cases, declined to below zero. Agricultural production continued to deteriorate. According to the World Bank, two-thirds of 45 sub-Saharan African countries and 15 highly indebted middle-income countries suffered negative per capita growth rates in both GDP and private consumption during the first half of 1980s. For the low-income countries GDP growth rate declined from 2.5 per cent in the 1970s to almost zero in 1983 and has continued to decline in the second half of 1980s. With the Gulf crisis and the sharp increase in oil price, the situation may worsen during the first half of the 1990s (considering the time lag factor).

The long-term production decline in the food and agriculture sector was exacerbated by the devastating drought of 1983 and 1984. On the average, per caput food production declined by about 2 per cent per annum during 1980-1984 compared to 1 per cent during the 1970s. Although a remarkable recovery was evident in 1985, 1988 and 1989, primarily due to improved rainfall conditions, African agriculture still remains precarious.

Meanwhile, demand for food continued to escalate with rapidly increasing populations forcing many African States to resort to massive food imports and food aid to meet the shortfall in food production.

Therefore, cereal imports rose steeply from 11 million tons in 1975/76 to 23.4 million tons in 1980/81 and 31 million tons in 1983/84. ECA estimates the figure to reach 55 million tons by the year 2008. With imports increasing at such a high rate while earnings from exports diminished owing to the combined influence of a declining volume of exports and the collapse of the international commodity prices, which limited their capacity to finance commercial imports, African countries had to rely increasingly on food aid.

According to FAO (see table 1), agricultural imports as a proportion of agricultural exports increased, whereas the share of agricultural exports in total exports dwindled between 1980 and 1985 compared to 1975 to 1980. At the same time, imbalances in the total trade accounts accumulated as total imports were 16 per cent higher than total exports in 1981-1985 compared to in 1975-1980³ and 18 per cent in 1985-1990.

In spite of the increasing amount of food aid and commercial imports the dietary situation of most African countries continued to deteriorate. For instance, in 1986, 13 countries had a per capita dietary energy supply which was below or near the critical minimum requirement.⁴ Between 1969-1971 and 1981-1983, 15 countries experienced declining calorie intake, some of them drastically, and it remained static in 15 countries. Between 1979-1981 and 1984, 25 countries had declining calorie intakes. The average self-sufficiency ratio declined substantially between 1979 and 1989 for many African countries (see table 3).

Some economists have suggested that the food deficit of Africa could be covered by imports. It is clear that such a policy underlies the concept of "agro-exports" to finance imports. Apart from the deplorable economist's view of such an option, it underestimates the importance of extra-economic factors (embargo, artificial scarcity, etc.) and of the multiplicity of decision centres in international economic relations. It also neglects the fundamental difference between the costs of imports in financial terms and their costs in development terms for African countries in search of economic and social development with transformation, compounded by the continent's debilitating debt crisis.

The extraversion characteristic of African economies which are, for the most part, agriculture-based and their now almost total progressive marginalization in international economic relations, plead strongly in favour of a style of development different from the one being followed at present, and for a strategy of food self-sufficiency based on local production.

The African agro-export is strongly affected by the international economic crisis - African agricultural export prices have declined by 34 per cent between 1980 and 1985 and have continued to decline during the second half of the 1980s. In principle, because Africa is in an economic crisis, this figure should not sound alarming since it is less than the 45 per cent decline in the prices of cereals exported by developed countries during the same period. However, this difference does not reflect any improvement in the purchasing power of African countries which have to use the proceeds of their exports to import other essential goods (including food products), the prices of which are not declining, in order to build their economies and to reimburse their external debts. The temporary difficulties related to the crisis could become an impasse for many African countries for economic and political reasons. Synthetic rubber and fibres have reduced the imports of natural rubber and cotton (jute) from African countries. The agricultural and land reforms in Western countries have reintroduced colza and sunflower which have weakened the role of peanuts. Beet, artificial sugar and isoglucose from maize have also reduced African exports of sugar cane. Despite the increases in the cultivated areas of coffee and cocoa as a result of the tremendous improvement in yield justified by the excellent international environment of the 1960s and the 1970s, the international crisis of the late 1970s and 1980s and the evolution of biotechnology, taste and consumption modes have nullified these efforts. Finally, the production of palm oil has followed the geographic evolution of industries using that produce: the USA and Malaysia have dominated Africa in production. Indonesia produces more coffee than Côte d'Ivoire and Uganda.⁵

Under the above conditions of oversupply and restricted and diversified demand, it is easy to understand the reasons for the crawling of international mechanisms regulating the market of primary commodities and the reason why STABEX cannot help the affected economies.

Therefore, macro-economic adjustment packages based only on agro-export policies are very difficult to defend in the African context.

Furthermore, the economic problems of developed nations experienced during the early part of the 1980s no doubt adversely affected the export income and capital flows of African countries. The worsening debt burden further contributed to the economic and social crisis of African countries, particularly of those countries south of the Sahara.

Table 1: African trade indicators: Average annual ratios, 1975-1990 (in percentage)

	1975-80	1981-85	1985-90
Agricultural imports/agricultural exports	92.7	152.6	161.4
Agricultural imports/total exports	17.7	22.7	25.2
Food imports/total exports	14.1	18.9	22.5
Food imports/agricultural imports	79.7	83.0	83.5
Agricultural exports/total exports, of which:	19.6	14.9	15.2
agricultural exports ⁶	75.1	65.2	63.1
Total imports/total exports	97.9	113.2	115.3

Source: FAO: Structural adjustment, food production and rural poverty, paper presented at the International Conference on the Human Dimension of Africa's Economic Recovery and Development, Khartoum, the Sudan, March 1988 and author's estimates for 1990.

As conditions continued to deteriorate, unemployment increased, health, education and other services deteriorated, malnutrition and famine became a common features of most countries. Real wages deteriorated as inflation pushed prices higher and higher. Moreover, government policies discriminated against agriculture and contributed to its stagnation (see table 4). As shown in the table, in most African countries the agricultural share of total government expenditure has been less than 10 per cent. In many cases it shows a declining trend.

Contrary to official pronouncements, many African Governments have maintained policies which are "anti-agriculture" and consequently "anti-poor". Low producer prices combined with other unfavourable policies have depressed agricultural production and perpetuated rural poverty resulting in mass migration of the rural labour force to cities. Countries that undertook stabilization and/or structural adjustment without structural transformation faced an unsustainable and persisting gap between aggregate demand and aggregate supply at both macro and micro levels (table 5 shows the countries which undertook structural adjustment programmes from mid-1979 to mid-1984).⁷

Let us underscore that with or without the IMF and/or the World Bank, adjustment is a must, as in its absence a "hard landing" scenario is likely, with considerable but unpredictable dislocation and disruption to the whole economy. Consequently, the objective of adjustment with transformation is to provide a "soft landing" and avoid a dramatic crisis or collapse of the economy. There is no doubt that adjustment is a "must" and is therefore preferable to crisis. There is also no doubt that adjustment is not costless. The question is: who is going to pay the

price and, specifically, what is the impact on the poor segment of the population?

In Africa, small-holder agriculture is the main source of employment for the majority of the rural population and the bulk of the staple food is produced by this segment of the population. Any policy strategy which affects the productivity of smallholders is likely to reflect on the welfare of both urban and rural poor (see section II). This paper, therefore, attempts to analyse the impact of conventional stabilization and/or structural adjustment programmes on the poor in general, and the rural poor in particular with emphasis on smallholders. The first section deals with the place of smallholders in African agriculture and attempts to elucidate who they are. The second section considers the extent of rural poverty in Africa; the third section deals with the impact of those programmes on the poor, and smallholders especially. The fourth section deals briefly with a theoretical framework for the measurement of the impact of macro-economic adjustment measures embodied in stabilization and/or structural adjustment programmes, on the poor. The fifth section, which serves as a set of conclusions and suggestions for further policies considerations, presents a brief description of measures to safeguard the interests of the poor during adjustment transition. However, we are of the strong view that, stabilization and/or structural adjustment should from its inception, have embodied elements to eliminate, if not reduce to the bearable minimum, the impacts of the programmes on the poor; in other words, adjustment should entail a transformation of the economic and social structure, the democratization of developmental decision-making process, to allow sustained economic growth with equity. The annex gives the theoretical framework for measuring the impact of macro-economic stabilization and/or structural adjustment policies on the poor.

1. The Role of Smallholders in African Agriculture

The fact that smallholders predominate African agriculture is well-known. But what is not really clear is the demarcation between smallholders or small farmers and the so-called commercial farmers. In conventional literature, the terms traditional farmers, peasant farmers, subsistence farmers or family plots are used to describe this sector of the farm population. Attempts have also been made to use land area cultivated and income as measure to distinguish small farmers from other types of farmers. But these vary from place to place and from country to country. While it can be argued that most African farmers are not oriented towards surplus production, the snag with the concept of subsistence production is that it connotes absence of exchange or market relations, which is hardly the case for any producer in Africa nowadays, except perhaps for some tribes living in isolated areas. The issue, however, is whether or not what is exchanged by the majority of African producers in the market represents surplus or a mechanism for converting one form of subsistence goods for another. Market relations notwithstanding, it might not be so unreasonable to think of the majority of African pastoralists and agricultural producers as still being faced with the basic problem of subsistence.

The idea of family plots takes us close to the problem except for two major considerations. First, when it comes to Africa, "family" is an ambiguous term. It does not tell us anything in particular about the actual composition of units of production in agriculture and about the process of social reproduction within and among them. Second, "family plots" is also ambiguous in a situation where "communal" land tenure is supposed to be the rule. However, its virtue is that it does not take us away from the idea that land in Africa is an object of individual appropriation or exploitation. Unlike large-scale producers/estate or commercial farms, small-scale producers in Africa refer to aggregates which are kin-based but could best be referred to, from the economic and social point of view, as households insofar as they have a common budget and are solely responsible for allocation of resources and labour as well as production.

No systematic studies are available on the composition of households in Africa and yet it is apparent that they are the basic unit of production in agriculture.

In some cases, this has been attributed to male labour migration leaving women and children behind to deal with the agricultural production. But given the

fact that, in sub-Saharan Africa, women were and still are largely responsible for subsistence production, it is difficult to sustain the supposition that decline in production for subsistence is attributable simply to male migration. Even the manner in which female labour is deployed may also be a very important consideration. Under modern conditions and with rising new needs, there is evidence that agricultural incomes at the lower end of the scale can no longer guarantee a livelihood for the producers. Labour migration, mainly by males, is one signal. Then the question is: how do those who are left behind, meaning mainly women make ends meet?

It is not only that they are becoming predominantly female, at least in arable agriculture, but that increasingly there are more demands on their time and labour which go far beyond what used to be their role in subsistence agriculture. The women are responsible for both household activities and field work. This has very serious implications regarding the division of labour within the rural economy in Africa. It might be that, in the absence of a significant proportion of male labour, female labour is overstretched and that the same level of labour inputs into agriculture cannot be maintained. Secondly, if agricultural labour inputs are declining as a result, then agricultural productivity will naturally fall. If, in the meantime, men had abandoned agriculture in favour of wage employment because of falling returns from labour, then the problem of subsistence agriculture cannot be but dismal. Worse still, the wages of migrant workers are not high enough to compensate for the decline in incomes from agriculture. Therefore, the households of subsistence producers in Africa are faced with a crisis of self-reproduction, whether this is viewed from the point of view of female agricultural producers or that of their migrant husbands or sons.

Although precise definition of smallholder (small farmer) is not possible, certain features commonly describe small farmers. These features include (a) dependence on family labour for most farm work; (b) subsistence-dominated production motives; (c) limited access to resources such as land, water, credit, etc.; (d) landlessness or small-size holding; (e) limited access to government support services; (f) often inhabit isolated and marginal areas; (g) limited access to improved farm inputs and technology. Furthermore, as a result of their isolation and scattered nature of settlements, small farmers and pastoralists are largely outside the monetized sector.

Generally, for the purpose of this paper it could be safely assumed that at least two-thirds of the farm population in Africa would fall under the category of small-holder farmers with whose welfare we are concerned. When we speak about small-holder

production in Africa it should be those households, the basic unit of production, which we have uppermost in our minds. Their failure to maintain a certain level of production and welfare should be seen as the sources of rural poverty and agricultural decline.

In Africa, particularly sub-Saharan Africa, small farmers make a considerable contribution to food production. Globally, the contribution of this subsector to food production exceeds 80 per cent. Most of the rural population is also employed by this sector. Furthermore, future expansion of employment in the rural area will depend on the rate of expansion of the productivity of this subsector.

For instance, in Zambia, about 87 per cent of the farm population is classified as small farmer (primarily subsistence) producing 60 per cent of agricultural production in value terms. It is also estimated that 50 per cent of the maize marketed and 90 per cent of the cotton were produced by small farmers.⁸ Similarly, in Nigeria, small farmers contributed around 97 per cent of food supply in 1980 which is expected to continue in future.⁹ In Malawi, 70 per cent of the population covering about half of the cultivated land area are smallholders producing 80 per cent of the agricultural production. Smallholders cultivating less than 2 ha account for 96 per cent of the food production in Ethiopia.

In Kenya, since independence, small-holder farming has been contributing increasing quantities of export commodities. Small farmers now contribute a considerable proportion of the supply of dairy products and export crops such as pyrethrum, tea and coffee. Small-scale farmers contribute approximately 56 per cent of the total marketed agricultural output. In Sierra Leone, a largely subsistence agriculture is said to provide livelihood for about 75 per cent of the population.

The above examples, though limited, vividly demonstrate the contribution of smallholders to African agriculture. In fact, the key to the future development of African agriculture is the development of this sector. There is latent potential here which can make a lot of difference if properly exploited.

II Incidence of Rural Poverty in Africa

Poverty is generally understood to mean deprivation of basic needs, i.e., the inability by a certain category of the population to obtain the minimum requirements in terms of nutrition, shelter, health and education. The World Conference on

Agrarian Reform and Rural Development describes poverty as follows:

*"In its absolute sense, poverty is a condition where the deprivation is so severe that the basic needs of life can scarcely be met at the minimum level necessary for survival. But beyond the requirements of survival, consideration of social justice and social aspirations condition the minimum standard which is judged acceptable at each state of the economy."*¹⁰

FAO considers absolute rural poverty to be a world-wide concern. The State of Food and Agriculture, 1982 describes it as follows:

*"Absolute rural poverty is a major constituent of world-wide poverty not only because the rural poor dominate numerically among the world's poor but also because the incidence of poverty is disproportionately high among the rural population. Moreover, while rural poverty shares many of the features of poverty in non-rural environments and, indeed, to a significant degree reflects levels of poverty there, both the severity and the particular characteristics of rural poverty require the formulation of policy strategies aimed specifically at its alleviation."*¹¹

According to FAO, absolute rural poverty must result from:

- (a) Insufficient production by the individual, in the majority of cases because of an inadequate access to land to meet his minimum needs directly;
- (b) Inability to obtain these minimum needs through exchange for his own production, labour or assets;
- (c) Inadequacy of public and private transfers of goods and services to meet minimum needs when production and exchange fail.

An ILO study in selected African countries states that:

*"Poverty, underemployment, low productivity, low net farm incomes, and wide and growing disparity between rural and urban incomes are still noticeable characteristics of the rural economies of the African countries"*¹²

The case studies further indicated that the process of development has tended to exacerbate the inequality both between urban and rural areas, and within the rural economy, between the large-scale

agricultural sector and the small-scale traditional subsector. The ILO study further states that:

"The paradox in these countries is that although the rural sector contains the vast proportion of the national wealth (agricultural and mineral), yet the majority of the poor and most disadvantaged segment of the population live in rural areas".

One aspect of poverty which has been a major concern of the international community has been "food insecurity" defined as the lack of access to food by all people at all times for an active and healthy life. Food security has two major elements: the availability of food and the capacity to purchase.

The World Bank sees food insecurity as chronic (a situation of continuously inadequate diet through the inability to acquire food) and transitory (due to a temporary decline in a household's food supply resulting from instability in food prices, food production or household income).¹³

Among the internal causes of food deficit in Africa, there is often mention of high population growth rates (3-4 per cent) compared to a slow growth of agriculture, especially food, the persistence of drought and its detrimental effects on agriculture and the expansion of agro-exports compared to food production. There is no doubt that the cumulative effects of those factors has a negative impact on the food situation in the African countries concerned; however, the causality link must be accurately established taking into account the policy factor. What policy has the country set up to balance population growth and food production? Why is it that export crops are exaggeratedly favoured against food crops? What has been the impact of drought and desertification on parameters measurable by the State? Is the food crisis in Africa not the consequence of the type of development process adopted by countries?

The association of export and food crops could have been the ideal solution even from the point of view of pedology, provided such association does not impoverish the soil. Unfortunately such a technique was rejected by policy-makers because it reduced the yields of export crops.

A combination of the following factors have often been mentioned as major contributors to rural poverty and deprivation in Africa:

- (a) lack of access to productive resource;
- (b) outdated and primitive farming techniques;

- (c) poor soils and adverse ecological conditions;
- (d) neglect of the small-farm subsector by governments;
- (e) political instability and civil strife;
- (f) low producer prices;
- (g) unfavourable international economic environment; and
- (h) inappropriate policies.

Information on rural poverty in Africa is not only scarce but also rarely sufficiently desegregated to determine precisely the extent and incidence of rural poverty. This problem notwithstanding, the limited studies consulted show considerable discrepancy between rural and urban income and conditions of life. Furthermore, it is important to note that the rural poor are economically and socially heterogeneous. Within each poverty group there are the very poor or destitute who require special attention in developing programmes. A study by DSE of incidence of poverty in 60 developing countries indicated that Africa had the highest number of countries - 15 out of 20 - with a poverty incidence of 50 per cent or more.¹⁴

In addition to the generally high level of poverty, there exists considerable inequality of income between rural and urban areas and within rural areas as well. The DSE study also confirmed that within rural areas, there was considerable inequality of income based on regional differences, occupation, sex, race and age group as well as educational achievement, religious affiliation and accessibility to services or markets.¹⁵

Indirect evidences such as asset holding also indicate the existence of substantial inequalities in income distribution. Table 2 adapted from the ILO report shows estimates of Gini coefficients for land distribution in various countries. This data shows the considerable inequalities in land distribution.¹⁶

According to the ILO report, the distribution of livestock is even more skewed. In Botswana, for example, where cattle constitutes the backbone of the rural economy, it was estimated in 1974 about 5 per cent of the rural households own nearly 50 per cent of the national herd, while 90 per cent of the households owned a mere 20 per cent.¹⁷ A similar concentration of cattle and camel ownership was also evident in Somalia as shown by a survey of two districts.

Table 2: Land distribution

Country	Year	Coverage	Gini coefficient
Botswana	1968-69	Traditional holdings	0.50
Côte d'Ivoire	1973-75	Traditional sector	0.42
Kenya	1969	Registered smallholdings	0.55
	1960	African holdings (sample survey)	0.50
Malawi	1968-69	Smallholdings	0.41
Mozambique	1970	Traditional sector	0.42
	1970	Modern sector	0.81
	1970	Total	0.71
Nigeria	1963-64	Sample survey (North farm crops only)	0.43
	1963-64	Sample survey (Eastern farm/tree crops)	0.56
		Sample survey (Western including mid-West: farm and tree crops)	0.40
Somalia	1968	Sample survey (5 districts)	0.55
Zambia	1970-71	Commercial sector	0.76
Ghana	1970	All holdings	0.64

Note: The term "smallholders" is used in many African countries to refer to small- and medium-scale peasant farmers to differentiate them from plantations and large private farms.

Gini coefficients for distribution of land holdings based on data from the 1960 and 1970 census of agriculture in the respective countries as reported in FAO: Report on the 1970 World Census of Agriculture country bulletin (Rome, 1975).

Source: ILO, Agrarian policies and rural poverty in Africa, edited by D. Ghai and S. Radwan, Geneva, 1983, p.11.

In 1987, in Malawi, a country in which food production has managed to keep up with population growth, 95 per cent of its population which is mainly in the rural areas received K149 per caput per annum which accounts for only 58.7 per cent of the total income, while the remaining 5 per cent appropriated the remaining 43.3 per cent.

In Kenya, despite a high rate of commercialization of agriculture, available evidence shows extreme inequalities between commercial and small-scale farmers. A study by House and Killick shows that many of the benefits of post-independence growth have accrued to a small but powerful elite.

According to the study, in 1969 the poorest 40 per cent of the population in Kenya received 10 per cent of the total income, while the richest 10 per cent received 56 per cent and the top 5 per cent appropriated 44 per cent of the total income. In another work quoted in the ILO study,¹⁸ Crawford and Thorbeck revealed that the modern sector recipients, comprising 17 per cent of the population, appropriated 48 per cent of the total national income, while 80 per cent of the population in traditional agriculture received only 47 per cent. An analysis of the poverty datum line by the same authors indicated that nearly 40 per cent of small-holder households fell below the required threshold.

In Liberia, a wide disparity between urban and rural incomes has been noticed. According to the ILO study,¹⁹ over 60 per cent of the population live in rural areas, with an average per capita income of \$70. A little over 30 per cent of the population live in urban areas and are estimated to have an average per capita income of \$700 while the national average is about \$210. The managerial and professional group numbering about 15,000 workers command about 60 per cent of the national income. A Gini coefficient of 0.63 was estimated for this distribution.

The Sierra Leone economy is characterized by great polarities. According to the report, the usual inequality between the rural and urban population is compounded by the additional inequality that arises from the existence of the diamond mining enclave. Rural income is considerably lower than urban income. The per capita income in rural areas is estimated at Le 135 per annum (1985-1986 estimates), compared to a non-rural or urban average of Le 476 implying an urban to rural ratio of 3.5:1. The top 6 per cent of the population receives some 34 per cent of the national income. In general, it was indicated that the neglect of agriculture has perpetuated the low-income syndrome in agriculture, particularly the small-scale subsector.²⁰ The 1990 civil war must have compounded the situation.

Although the United Republic of Tanzania has been striving to achieve an egalitarian system of development, inequality in income distribution is still considered to be a major problem. The income gap between wage earners and farmers particularly small-scale farmers is said to be wide.²¹ The ILO report indicates that between 1969 and 1973-1975 the gap between the smallholder and wage earners widened from 2.45 to 2.94, and then fell dramatically to reach 1.56 in 1978 and 1.39 in 1980 and, according to our estimates, 1.49 in 1988. This significant reduction in farmer-wage earner income differential was attributed to the increase in the price of food crops and the freeze in wages between 1975 and 1979 and the accelerated deterioration of the general economic conditions between 1980 and 1987.

The ILO case study concludes that:

In spite of the central role of the rural sector, basically the agricultural sector in the economic and social development of the case study countries, and in spite of policy pronouncements (actual financial commitment has remained relatively low) in recognition of this primacy, and to some extent the initiation of programmes in the rural areas, it appears that the key problems, i.e., low productivity, un/under-employment, low incomes and poverty

*still persist. Among the various approaches that have been tried, including agricultural package programmes, irrigation projects, land settlement schemes, the integrated rural development approach seems to be fashionable everywhere. ... Such programmes/projects have been beset by a number of difficulties and constraints.*²²

The problems and constraints indicated were:

- (a) Lack of sufficient knowledge and understanding of the specific nature and scope of the peculiar problems of the rural population and rural areas (imposition from above);
- (b) Absence of an adequate foundation for introducing a new system or approach that will cut across traditional, social and economic boundaries (basic supporting infrastructure - credit, extension, efficient storage and transportation, marketing and distribution are not dealt with properly);
- (c) Inadequacies in planning, implementation and evaluation of integrated rural development programmes, at both the national and sectoral levels.

Although reliable data is unavailable, the prevalence of rural poverty and the inequality between rural and urban areas is shown by such measures as malnutrition, child mortality, nutrition related diseases, illiteracy rate. Recent evidence indicates that in Africa, particularly in sub-Saharan Africa there is a reversal of some health, education and nutrition indicators. In some countries, morbidity and infant mortality are increasing and such services as immunizations are declining indicating deterioration in the welfare of the population, particularly the rural population.

For instance, according to FAO's WCARRD follow-up study of Ethiopia, 10 per cent of the population (about 4.5 million) is estimated to suffer extreme undernourishment and 2.8 per cent suffer severe protein deficiency.²³ The problem is considered more serious among children where it is estimated that of the children aged one to three, 2 per cent suffer from kwashiorkor, 4 per cent from marasmus and 60 per cent were underweight; in 11 of the 14 Administrative Regions of the country calorie intake averaged 67.14 per cent of the requirement. But the protein intake was found to be well above FAO/WHO standards. Anthropometric measurements taken in the 11 Administrative Regions showed that rural children fare much worse compared to their counterparts in the urban centres.²⁴

A similar study in Somalia²⁴ concluded that, given the "basic needs" indicators the rural people in Somalia lack most of the basic necessities for a decent level of living. The report further indicated that there is an almost complete lack of health facilities; medicines for humans and livestock are virtually non-existent; only a small fraction of the population has access to safe drinking water; sanitation is rudimentary; housing is primitive and primary schools are so sparse that even children of the settled rural population cannot make use of them. The study also indicated that as a result of under-nutrition and disease, infant mortality is about 180 per 1,000 in the rural areas.

III. Stabilization and/or Structural Adjustment and the Rural Poor Including Smallholders

A. Macro-economic, stabilization and/or structural adjustment policies: Why?

The essence of the macro-economic dilemma in African countries is the mismatch between aggregate supply and aggregate demand. If there is more demand than supply, inflation sets in, and the balance of payments registers deficits. We are of those who believe that deficits per se are not necessarily bad. They become so only when their level gets above sustainable borrowing limits and when their structure reflects more consumption than productive investments. The objective of a stabilization and/or structural adjustment package is to reduce aggregate demand (expenditure reduction) which will reduce demand for both tradable and non-tradable goods and bring about a lower balance-of-payments deficit as well as a lower rate of inflation. In addition to the still predominant demand-oriented adjustment measures, there are now more and more medium-term supply-oriented measures such as: (a) the elimination of waste or of gross inefficiency (measures related to parastatal enterprises); (b) the improvement of allocative efficiency through the removal of controls and regulations which discriminate among industries or, in other words, the removal of trade distortions which create a differential between the world and domestic price of goods. Unfortunately those models still lack structural transformation²⁵ measures and those related to stabilization programmes more specifically do not have growth equation.

There is a general consensus on the long-term benefit of structural adjustment programmes. But what is controversial, and less understood, is the short-term cost to certain social groups and consequent political implications of such moves. The fact that certain groups are adversely affected by a stabilization

and/or structural adjustment programme is well understood and acknowledged. Those who benefit from existing inappropriate policies which created the unsustainable economic situation in the first place are certain to be adversely affected. In fact, this is the *raison d'être* of stabilization and/or structural adjustment programmes. What is of serious concern is the implication for the poor (both urban and rural) who are supposed to benefit from such programmes as food and input subsidies, social programmes in the field of health and education etc. For instance, removal of food production subsidies, increasing food prices beyond reasonable level, reducing wages and salaries and sometimes reduction of employment in the public sector, tightening credit and money supply, etc., will bring considerable hardship to the poor, both rural and urban.

At present, it is still only an assumption that the nutritional status and the food security of the poor segment of the population have deteriorated as a result of the stabilization and/or structural adjustment policies since systematic analysis of the macro and micro policies' impact on the rural sector has yet to be made. However, the assumption must prove right for even in terms of macro analysis, the effects of massive and repetitive devaluation, internal credit contraction, reduction of food production subsidies, subsidies for food imports, reduction of government budget deficit, trade liberalization (generally in favor of the rich segment) cannot (in the short run, at least) be in favour of the rural sector in African countries, due to the characteristics of the economic structure of those countries.

It is now widely recognized that means have to be found to monitor and alleviate the detrimental consequences of stabilization and/or structural adjustment policies on the poor segment of the population while searching for a structural adjustment programme with transformation which can be tailored to the specificities of each country and contain an element of growth with equity. Stabilization and then adjustment with growth, no! Stabilization *pari passu* with growth and equity or structural adjustment with transformation with growth and equity, yes! But such model which combines stabilization, growth with equity and structural transformation still has to be built!

B. Objectives of stabilization and/or structural adjustment programmes

The objective of conventional stabilization and/or structural adjustment programme is to restore a sustainable balance of payments and promote economic efficiency through the reduction or elimination of distortions in product and factor markets. The primary focus is on adjusting the levels

of macro-economic variables and usually emphasizes movements in aggregate demand in the context of measures to remove supply constraints and, in the longer run, help the poorer stratum of the population.

Conventional stabilization and/or structural adjustment programmes usually encompass the following major components (measures):

- (a) Measures to liberalize and reform external trade so as to improve foreign exchange earning capacity and reduce foreign exchange expenditures on imports;
- (b) Measures to restrain government expenditure (on wages and salaries, goods and services, transfer payments and subsidies, capital expenditure and net lendings, expenditures on administration, etc.);
- (c) Measures to increase revenue performance (tax reforms);
- (d) Measures to improve domestic productivity; and
- (e) Measures to improve the efficiency of public enterprises or replace them by private enterprises.

Policy instruments suggested to the authorities to achieve the above objectives include:

- (a) Currency devaluation;
- (b) Increase or decrease of taxes;
- (c) Increase or decrease in import quotas or tariffs or replacement of quotas with import tariffs;
- (d) Removal or reduction of input and/or consumer subsidies;
- (e) Firmer control on money supply (limitation of credit expansion, reduction of the rate of growth of liquidity, interest rate reforms, increased credit availability to the private sector, mobilization of domestic savings);
- (f) Reduction in the role of public enterprises in marketing and other services which can be assumed by the private sector;
- (g) Reduction, freezing and/or set regulation of wages and salaries;
- (h) Increase in producer prices (mainly for export products).

**Designing a stabilization and/or structural adjustment programme involves difficult choices on macro-economic, sectoral and micro-*

*economic policies. It involves a formidable and no easy task of reforming institutions to ensure that government implements and sustains the policies. Each country needs to emphasize different sets of policies according to its internal and external imbalances, its administrative and institutional capabilities, and its political realities and social conditions.*²⁶

Economic, social and political realities and resources vary from country to country and adjustment programmes must reflect these realities. It should also be noted that the outcome of any single country's economic adjustment programme will depend on a multitude of exogenous factors on which the country may have no control including retaliatory actions by other countries.

Stabilization and/or structural adjustment programmes do not come without a cost. As to who will pay the cost will depend on the type of programme the country chooses to adopt and the type of measures included in the package. A well-conceived and designed structural adjustment programme with transformation is likely to induce a more rapid recovery and minimize the cost society has to pay in order to restore external balance and achieve sustainable economic growth with social justice. The central issue here is the implication for small-holder agriculture and the rural poor.

C. Costs of macro-economic adjustment policies

According to the World Bank, a typical adjustment programme has three types of cost:

- *1. *The effort to restore macro-economic balances usually, though not inevitably, depresses output, employment and consumption. To the extent that the poor bear the brunt of these short-run declines, social costs typical of a recession exist;*
- 2. *The changes in the structure of incentives stimulate the reallocation of resources between sectors and activities. Business men and employees in previously favored activities are likely to suffer substantial declines in income and wealth while those in stimulated activities should benefit;*
- 3. *Some transitional costs also arise because productive resources do not move effortlessly and instantaneously among ultimate uses in response to changes in relative prices.*²⁷

D. Impact of some stabilization and/or structural adjustment measures in the rural poor and smallholders

1. EXCHANGE RATE DEVALUATION AND LIBERALIZATION OF TRADE

Devaluation and trade liberalization are the two most sensitive and controversial issues of structural adjustment and/or stabilization programmes. The objective of devaluation and trade liberalization are to restore external balance of payment and to promote efficient resource allocation. Over-valued exchange rates induce increased food imports at the expense of domestic production and exports are depressed because of low producer prices.

The immediate effect of devaluation is, therefore, to increase prices in domestic currency terms of traded goods and consequently direct domestic resources to import substitution and export promotion. With devaluation real wages of workers in the non-tradable sectors would decline relative to those workers in the tradable sectors. In addition, resources used more intensively in the expanding sector would gain, while those used more intensively in the contracting sector would lose. In the transition, unemployment is likely to occur because skill requirements of the expanding sectors may not be the same as those in the contracting industries. Restoring employment would require retraining programmes of those in the shrinking sectors.

Although the focus of stabilization and/or structural adjustment programmes (SA and/or SB) is on resource allocation, they can have, over time, profound implications for income distributions in response to the necessary changes in relative factor rewards associated with the movement towards external balance. The reason for this is, of course, that the release of such resources can usually come only from reduced factor rewards to labour and capital employed in the production of non-traded goods.

The question at hand is what would this do to income and employment in the rural areas. Most food crops fall under the heading of non-tradables. By definition those employed in the production of non-tradables must suffer losses. Therefore, devaluation encourages a resource shift from food production to export crops, thus undermining food production and reducing employment. Smallholders and women who are predominantly engaged in food production will suffer and food production will be reduced contrary to the wish of many African Governments who rightly put a premium on achieving food self-sufficiency at the regional level.

Furthermore, devaluation will increase the local currency value of agricultural inputs such as fertilizer, water, fuel, pesticides, transportation, farm implements, etc. Notwithstanding the fact that large

farmers are using most of the imported inputs, devaluation may affect adversely the welfare of the smallholder and the rural poor in particular by discouraging the widespread dissemination and use of these inputs which is the objective of government intervention. This is also likely to hinder the achievement of food self-sufficiency and erode any gain from devaluation.

An issue of further concern with the reallocation of resources towards export crop promotion is the question of reduced control by women over household income. As is well known, in traditional African agriculture women control food production and marketing, while men are generally responsible for export crop production and their disposal. Thus, export promotion may undermine the interests of women at least in the short run. The long-term benefit of export promotion may also go to commercial farmers as they are in a better position to meet quality standards for exports.

Stabilization and/or structural adjustment programmes also involve raising producer prices to induce farmers to produce and market more food and agricultural products. The options available are raising administered prices sufficiently high (usually to the level of the parallel market) and/or devaluing the local currency. But this assumes that prices are sufficiently flexible to allow changes in the domestic currency value of foreign exchange to work their way to the producer. Unfortunately this is not always true. Because of rigidities in prices and institutions, the full impact of the devaluation may not be reflected in the producer prices.

Furthermore, whether devaluation will increase production or not will depend on the nature of the response of producers to these changes. In the short run the response to increased prices as a consequence of devaluation may not be significant as there is a time lag between the change in policy and the time it takes to shift resources from those industries that benefit from previous policies to those that are favoured by the new policies. Thus, in the short run, the adjustment may result in high prices but minimal response in supply.

Another critical issue concerning the impact of devaluation is whether the promotion of exports will materialize in the light of the various international agreements which limit or control exports (quotas) and the growing protectionist policies of developed countries.

To summarize, devaluation may affect smallholders favorably or unfavourably. This will depend on:

- (a) The labour intensity of production in the tradables and non-tradables sectors;
- (b) The importance of marketed as opposed to non-marketed products in the consumption basket of the poor; and
- (c) The lags in relocating workers and materials.

Finally, whether devaluation will achieve its objective will depend on the degree of trade liberalization the government is willing to undertake. Trade liberalization involves the dismantling of artificial restrictions on international trade such as quotas, taxes, subsidies, etc. Or it may involve replacing quotas with tariffs and removal of other barriers to trade.

However, trade liberalization as a measure itself may, in the short run, conflict with stabilization objectives as there is lag in the movement of resources from protected sectors to other sectors. In this case, there will be a short-run deterioration in trade balance and unemployment as import demand increases faster than production of export commodities.²⁸

2. SUBSIDIES AND TRANSFER PAYMENTS

Eliminating and/or reducing subsidies for food production inputs are part and parcel of stabilization and/or structural adjustment measures. However, subsidies and transfer payments once implemented are difficult to remove and often become political issues. During the initial period there may be reasonable justification for subsidizing an economic activity such as import-substitution production, food consumption, social services such as health and education considered to be necessary to achieve social justice and in the strategic interest of the country. The problem is that subsidies once implemented become a permanent feature even where they are not needed any more. Any attempt to contain subsidies is then viewed as an adjustment policy that is regressive and not in the interest of the poor.

Thus, subsidies remain a source of distortion and of economic imbalance. They contribute considerably to government financial deficits and inflationary finance. Worse still, subsidies benefit more those that are not intended to benefit from them. Most of the benefit is usually captured by groups that are influential and organized. The rural poor who have no such power rarely benefit from subsidy. An outdated subsidy entails a high financial burden to the government and contributes greatly to the existing distortions and inflation.

For these reasons, subsidies become targets of structural adjustment programmes. The reduction and/or elimination of subsidies would reduce government financial deficits and by the reduction or elimination of distortions resource allocation and economic efficiency may be improved.

Removal of food subsidies will obviously result in higher food prices with serious dietary implications, particularly to the rural poor who purchase part of their food requirement. Since the urban masses have political power, governments are reluctant to seriously tackle the urban food and other subsidies.

However, because of the logistic problems and cost of supplying (administrative cost) subsidized food to the rural poor, they do not participate significantly in food subsidy schemes. Thus, the removal of food subsidies will have very limited adverse impact on the rural poor. If ever a loss in the welfare of the rural people is encountered as a result of stabilization and/or structural adjustment programmes, a mechanism to compensate them should be incorporated in the design of the stabilization and/or structural adjustment programme.

Secondly, social services such as health and education are generally provided free or at a highly subsidized cost. However, in rural areas of many African countries, these social services are rarely available. There would, therefore, be only limited loss, if any, to the rural poor by removing subsidies to health and education although the urban poor will suffer. To be of benefit to the rural poor, stabilization and/or structural adjustment programmes could consider charging economic prices, for example, for health service in the urban areas and the use of the revenue for expanding health facilities in rural areas and in the suburban areas where the urban poor are concentrated. It is also possible to charge the full cost for curative medicine and expand primary health care facilities for the poor.

Another area of contention is input subsidies. The most common form of subsidizing inputs is through the importation of duty free machinery, fuel, food and implements. In many countries, fertilizer and pesticides use is also subsidized significantly and irrigation water is often provided free of charge.

In many African countries, input subsidy has unfortunately only two major motives:

- (a) To give incentives to farmers to produce more by reducing costs;
- (b) To maintain lower consumer prices.

It is also utilized often as a promotional device to spread the use of improved technology among small farmers hitherto unaccustomed to its use. Eliminating subsidies may, therefore, impede the diffusion of the new technology among small farmers. Despite the difficulty of controlling the leakage of subsidized inputs to unwanted groups, attempts should be made to target the distribution of these inputs to the smallholder.

Subsidizing input is itself criticized for its role in promoting inefficient use. A good example of this is the wasteful use of irrigation water where excessive application of water results in water logging and a salinity problem. In this case, there is no incentive to economize (optimize) the use of irrigation water. It is considered a free good. The externalities are borne by society as a whole.

Fertilizer subsidy has also been criticized for promoting export crops at the expense of food crops and for having an adverse distributive effect on small farmers, landless labourers and women. Subsidy is also a cause of distorted prices, hence the need for the "right price" through the gradual elimination of subsidies.

Reforms which target the use of subsidized inputs, temporarily, to those needing the subsidy most, are likely to promote efficiency and benefit the rural and even the urban poor, at least in the long run. Similarly, charging full cost for social services and investing the revenue for expanding rural facilities would be in the interest of the rural poor and contribute to the objective of alleviating poverty, especially in the rural sector, and achieving social justice.

Losses incurred by the poor due to the removal of subsidies could also be compensated directly or indirectly by the government in the form of cash or in kind. A food-for-work programme is one of these means. Public work programmes and expansion of non-agricultural employment generating activities are other means of compensation.

3. AGRICULTURAL PRICING POLICIES

Agricultural price policies generally have three major but sometimes inconsistent objectives. These include:

- (a) Improvement of the income of producers;
- (b) Achievement of low and stable consumer prices; and
- (c) Generation of government revenue.

In the past, low producer prices have generally prevailed. This has inhibited the adoption of improved techniques of production and the long-term development of the agricultural sector. Because of low returns to investment in agriculture, investment resources have been diverted to urban centres and industrial developments.

Stabilization and/or structural adjustment programmes include measures to raise producer prices substantially (often neglecting food crops) with a view to providing incentives to farmers to increase production and marketed surplus. Stabilization and/or structural adjustment programmes also include measures to liberalize administered prices by granting power to public enterprises to raise prices with the aim of enhancing their efficiency, improving resource allocation and reducing the burden on the treasury.

In such a situation, the rural poor (the landless labourers, women and others who do not produce enough food to cover their consumption needs) will suffer at least in the short run unless they are compensated by other measures. But in the long-run it is expected to benefit the rural poor by improving resource allocation and expanding the opportunity for employment.

4. EXPORT TAXES

In many African countries, major shares of the export prices of agricultural commodities are appropriated by governments in the form of tax revenue to the treasury, for stabilization funds, and/or to cover the high cost of running marketing boards. For instance, available studies indicate that tobacco farmers in Malawi and the United Republic of Tanzania were paid less than 50 per cent of the border price during the latter part of the 1970s and early 1980s. Similarly, coffee growers in Ethiopia received only 29 per cent of the export price. The Cocoa Marketing Board of Ghana is a classic case of exploitative pricing which led that country to near collapse. Export taxes or so-called stabilization funds extracted a massive proportion of the export prices of cocoa. For example, the terms of trade index for cocoa growers declined steadily from 1956, when it stood at 170 to 123 in 1960, 57 in 1970 and 47 in 1976, 39 in 1987. In Nigeria also, until the petroleum boom, primary product exports were subject to heavy taxes and deductions.²⁹ In Côte d'Ivoire, the ratio of producer's prices to export prices for coffee and cocoa averaged 54 per cent between 1960 and 1975. Between 1965-1966 and 1974-1975, export and stabilization funds accounted for 38 and 31 per cent of total export proceeds for cocoa and coffee respectively and in Kenya it was indicated that between 1964 and 1977 the surplus generated from the agricultural sector

was equivalent to 75 per cent of the country's entire capital formation; similarly, the Malawi marketing board generated large surpluses from sale of crops grown by smallholders.³⁰ To make matters worse, the revenue obtained through export taxes and duties was rarely used for the development of agriculture.

In general, export taxes have a depressing effect on productivity and expansion of the commodity in question. The incidence of export duties actually depends on the nature of the elasticities of demand and supply. Those countries whose exports have high elasticities of demand and low elasticities of supply typically find a higher percentage of the overall incidence of the export duties tend to be borne by the domestic producers in the short run. If the demand for a country's export is inelastic, in the short run, the burden could be shifted to the consumer. More commonly, however, the exporting country is a price taker in international markets and its producers must bear any such tax.³¹

High export taxes may also totally discourage the export of commodities that have a large domestic market and if domestic consumption of an export commodity is low, farmers could totally abandon its production.³²

IV. Theoretical Framework for Measurement of Impact of Stabilization and/or Structural Adjustment on the Poor

Analyzing the effect of a stabilization and/or structural adjustment programme involves comparing what happened under the programme with what would have happened if the programme had not been implemented. The social cost of an adjustment programme could be clearly assessed in principle, if it were possible to compare the outcome of the programme in terms of social trends with the tendency that would have prevailed without the implementation of the programme. This approach has, unfortunately, not proven feasible. It is difficult to simply extrapolate from past trends especially in the social field, as some kind of adjustment was needed anyway because the pre-adjustment situation could not be sustained for too long. In addition, the available analytical tools cannot in practice help establish what the trends would have been. Measures of output and employment aggregated by productive sector (agriculture-service-industry) are not useful for analysing socio-economic groups, especially those in the informal sector of the economy.

Another difficulty in analyzing the impact of these policies on the poor comes from the fact that it involves the assessment of such impact on the disposable incomes of the group and the prices and quantities of the goods and services the group consumes. Disposable income depends on what happens to labour and capital, wages and profits, taxes and subsidies. The actions and interactions of several major economic variables and the numerous assumptions involved make it difficult to conclude with solid accuracy.

It is true that the distributional impacts of a stabilization and/or structural adjustment programme can be analysed using a fully specified model which considers all of the general equilibrium actions and interactions of the programme.

The quantitative analysis of the impact of stabilization and/or structural adjustment on poverty requires an index of poverty which is useful, convenient and has appropriate normative properties.

We should be guided in this context by any aspect of stabilization and/or structural adjustment policy which is directed towards the rural sector of the economy or towards the marginal segment of the urban population. Those policies would comprise:

- (a) Devaluation, which favours the traded sector against the non-traded sector;
- (b) Subsidies that favour the urban population against rural poor;
- (c) Agricultural price reform which may favour rural export producers against urban marginal consumers and rural food producers;
- (d) Trade reform that favours the export sector against the competing import sector;
- (e) Government budgetary deficit cuts that reduce rural investments, food production subsidies and rural recurrent expenditures.

We need a poverty index that can capture easily such sectoral shifts and aggregate them into the impact on overall poverty, or which is decomposable across sectors. Trade liberalization in the short run normally increases formal sector unemployment in previously protected industries and alters the returns to labour and capital. Unfortunately, standard analysis is not desegregated enough to indicate which specific socio-economic groups have gained or lost. In addition, the fact that many policies are being introduced simultaneously would lead to non-linear shifts which present models do not accommodate.

At present, the literature on adjustment, income distribution and poverty remains limited. Nevertheless, one can discern two approaches to the analysis:

(a) There is a qualitative approach which, in essence, follows through the effects of relative price changes on relative factor rewards. This qualitative approach uses the Samuelson-Stolper theorem. Other authors have used this theorem to analyse the effects of devaluation on income distribution. The theorem states the following: with a two-good economy and a change in the relative price of the two goods, entrepreneurs in the sector whose price has increased will, in the short run, benefit while entrepreneurs in the other sector will lose. In the short to medium term, with factor prices within each sector increasing, factors in the sector whose output price has increased will gain. Finally, in the medium to long run, as there is movement of factors between sectors in response to factor reward differentials, the factor which is used more in the price-gaining sector will benefit.

The theorem per se is useful to assess the qualitative approach. However, it does not provide a framework for the quantitative analysis and forecasts of changes of poverty level at each step of the policy, especially in the case of expenditure reduction.

(b) Another alternative is to use an explicit model for the economy at large to assess in detail the repercussions of a given policy change. This methodology underlies the currently available computable general equilibrium models (CGE). This type of model is as valid and good as the basic assumptions and the quality of data used.

While waiting for more desegregated data from African countries on household income structure, there seems to be a possibility of having a second-best methodology, half way between the qualitative and the fully specified quantitative model approach, relying on existing household income and expenditure data. This type of model can only be possible through a certain number of simplifying assumptions (see annex).

For example, we assume that the existing pattern of income distribution within each of a number of broad macro-economic sectors remains unchanged as the result of aggregative changes. We know that adjustment effects a redistribution in the sectoral composition of national output and expenditure, and a reduction in the latter. We can use decomposable poverty indices to identify poverty changes and to aggregate these changes up to national level, only if we accept stylized accounts of how these sectoral shifts feed through to individual incomes at the micro level. In this approach, the sectoral disaggregation available in the data should correspond to the sectoral

divides implied by the macro policy. We also assume data on income distribution by source of income. Unfortunately, such disaggregation is not always a characteristic of household income and expenditure surveys in African countries.

V. *Safeguarding the Interest of the Poor During Stabilization and/or Structural Adjustment Transition*

As indicated in earlier sections, a stabilization and/or structural adjustment entails certain unavoidable costs. Sacrifices have to be made to put the economy on the correct path of development. However, a well-conceived and well-designed stabilization and/or structural adjustment programme can minimize such costs to the individual and society at large. Secondly, the design of the programme should include measures to protect the poor as much as possible from welfare losses.

For many countries, stabilization and/or structural adjustment is a must to reorient the economies, as early as possible, from decline towards sustained development with transformation. In the long run, there is no better protection to the poor than a viable and rapidly developing economy with expanding opportunities for gainful employment and based on a genuine democratization process.

The World Bank report proposed the following approaches to protect the poor from unnecessary reduction in their current, often already inadequate living standards:³³

- (a) Oriented stabilization and/or structural adjustment programmes towards a rapid reversal of growth;
- (b) Designing the package of stabilization and/or structural adjustment policies so that they have a good and credible chance of success;
- (c) Securing the external resources needed to carry out the stabilization and/or structural adjustment;
- (d) Ensuring that social expenditures are cost-effective and well-targeted;
- (e) Compensating the poor directly through carefully targeted transfers in cash or kind.

As far as the rural poor are concerned, past policies have done very little to help them escape the

vicious circle of poverty. Inappropriate policies have perpetuated their poverty. In fact, rural poverty-related programmes have only a short history in Africa. In 1979 FAO sponsored the World Conference on Agrarian Reform and Rural Development (WCARRD). WCARRD articulated the seriousness of rural poverty and drew up specific programmes to overcome it. Since then, poverty-related programmes have been attracting the attention of both governments and donors alike.

Similarly, African Governments adopted the Lagos Plan of Action (LPA) in 1980 which formulated the general framework of development up to the year 2000. In 1986, the African Governments adopted yet another declaration known as Africa's Priority Programme for Economic Recovery (APPER) which dealt exclusively with agriculture and its supporting sectors, and the United Nations adopted the United Nations Programme of Action for African Economic Recovery and Development (UN-PAAERD) with a focus on the agricultural sector. In July 1989, by resolution 1222(L), the summit of African Heads of State and Government adopted the African Alternative Framework to Structural Programmes for Socio-economic Recovery and Transformation (AAF-SAP) which put emphasis on agriculture as the engine of growth. With resolution 44/411 adopted by 137 votes to 1, the United Nations General Assembly endorsed AAF-SAP and, inter alia, inviting "the international community including the multilateral financial and development institutions, to consider the Framework as a basis for constructive dialogue and fruitful consultations". And finally, in February 1990, the "African Charter for Popular Participation" was adopted in Arusha, United Republic of Tanzania, by a Conference bringing together African Governments, non-governmental organizations (national and international) and the United Nations system. These declarations will no doubt provide the Framework for future development in Africa. However, if the past is a good indicator, actions have always been short of pronouncements. Let us hope this will not be the case in future although APPER and UN-PAAERD after four years are falling short of expectations.

While stabilization and/or structural adjustment programmes can provide the stage for long-term development, in the short run there is every justification (social, economic and political) for protecting the poor from experiencing a deterioration in their already poor standard of living. AAF-SAP is a convincing move in that direction although it remains to be operationalized.

It is true that "open and ad vita-eternam consumer subsidy" is not defensible. So temporary subsidies should be targeted properly so that only the

really poor benefit from them and the welfare of the poor is not hurt during the transition. This would lessen the burden on the treasury and reduce possible market distortion.

The familiar components of stabilization and/or structural adjustment measures such as devaluation, raising producer prices, trade liberalization, cutting government deficits, etc., alone will not develop agriculture. To have a lasting impact stabilization and/or structural adjustment programmes should be accompanied by fundamental changes in institutions. With respect to agriculture, the programme should include measures of reform directed at research policies, extension programmes, marketing and marketing boards, credit, training, supply of inputs, marketing infrastructures such as storage and processing plants as well as the mechanism for setting and revising pricing policies, etc.

A State affects the development process through its public policies. For example, the most efficient methods of promoting agricultural production in Africa today must involve righting distorted pricing systems, devaluing inflated currencies, reducing and/or eliminating the detrimental monopoly powers of parastatal agencies (especially parastatal marketing agencies) and generally, decreasing or reversing the extent to which the State is extracting resources from the farming sector of the economy. Consequently, emphasis should not be so much upon improving the operations of the state but upon finding ways to decrease its role altogether. These public management issues are among the most critical variables affecting macro-economic adjustment and sustainability.

Institutions established to facilitate the implementation of development strategies have been themselves plagued by myriads of management and financial problems and have thus become burdens on the government treasury. This is particularly true of public enterprises and parastatal organizations.

In this area, we know that Western social science does have methods for approaching problems of policy-making and internal administration. We have had a tendency in Africa to ignore the limits to their application by not trying to identify the basic value premises that underline them, such as the assumption of commitment to collective, formal, organizational goals; the assumption that economics is the fundamental social process and that all other human transactions can be understood in terms of it. It is obvious that these assumptions cannot be considered as universally valid in every society; certainly not for the African State, which is a fragile institution, and is very sensitive to the political implications of its economic policies and administrative decisions.

Contrary to what exists in the West or even in other developing continents, African decision-makers are tied to a particularly large network of social obligations. The great egalitarianism of pre-colonial African society and the relatively meritocratic character of upward mobility in the late colonial and independence periods have engendered African decision-makers and managers who have large numbers of poor relatives and strong social and political links to disadvantaged rural communities. The values of the social exchange systems that peasant communities employed to ensure themselves against risk are still very strong. Consequently, the patronage obligations of African decision-makers and managers to poorer strata of their societies and the moral pressures which they feel to fulfil them make the African elites very special. In fact, for these reasons and others (which may be selfish and this is more universal), States and State organizations are extensively used in Africa to pursue informal, personal objectives of the decision-makers and managers rather than the collective ones that are formally proclaimed.

These fundamental dissimilarities in the value priorities of the societies and not managerial failures explain the differences in organizational behaviour between Africa on the one hand and the West and the other continents on the other. Therefore, we should not attempt to treat management science as suitable for a mechanical transfer of technology; it is bound to fail. There is a serious need to understand the socio-political realities affecting various levels of managerial behaviour in government policy settings in African countries.

Some economists hold the view that the theoretical principles underlying and explaining organizational and managerial behaviour are universal, others state that African administration is distinctive in the degree to which it is penetrated by its politicized and patronage-prone environment and that it therefore is not amenable to management methods that are based on a conception of purposive rationality. Although one can agree with the environmentalists that African administrative behaviour is distinctive and is rooted in political and social features, one can still argue that these features do not need new a theoretical structure to understand them. African elites do not have to become isolated from the rest of society (as did European Calvinists and aristocrats) in order to have the autonomy to institute purposive rationality although one does recognize that the only economic rationality that can be imposed on Africa is that of the market, since it is the only one that does not require widespread acceptance of purposive rationality.

Managers are heavily influenced by the policies followed in appointing them. Political autonomy is not a formal attribute that can be simply bestowed on an organization. In Africa, such autonomy is granted only to those managers in whom the politicians have personal confidence.

There is no doubt that, in normal times, it will be difficult to get the necessary support for changes that are disruptive, that require the removal of entrenched senior staff, that might cause labour disputes, or that entail political costs unless they are necessary to accomplishing some valued objective or to averting something that is politically worse.

Real reform is likely to occur only in circumstances of threats from a credible donor to terminate support and sever financial stringency for the State.

The analysis here sounds like a statement of despair or a concession to mounting pessimism. In our view, one should see it as a confession of ignorance. We certainly have no knowledge of what reforms should be used to improve the performance of common macro-economic adjustment in Africa.

It is also clear that the governmentally imposed internal and external terms of trade have been disadvantageous for African agriculture and that the sector has been burdened by an overgrown and over-extended State apparatus. A reduction in the role of inefficient marketing boards and the freeing of the market have been recommended as solutions. Such measures derive from the application of neo-classical economic theory. The question is how do they fit with an environment in which economic rationality is not dominant in public policy-making and would none have to adapt them if they were to be applied? Should we not start first by introducing a genuine democratization process?

We know that African Governments spend large amounts of money on ineffective programmes of direct support to agricultural producers (credit and subsidized inputs), but at the same time, they are not willing to correct their far more damaging disincentives to production (poor marketing systems and lack of storage facilities, for example). There is political rationality underlying the economic irrationality of government's detrimental activities.³⁴ Positive acts of support for farmers, such as credit and subsidized inputs, both bring gratitude and can be directed to the clients of a politician or civil servant. They therefore bolster the legitimacy of the regime and strengthen the patronage networks of those who work with it. For the government, the economic and political costs of creating marketing boards, for example, which

effectively tax agriculture are more than offset by the political benefits of the jobs and free goods which they indirectly finance³⁵

Escaping the unproductive growth of the State will require something more subtle than "laissez-faire" economics. We seem to have a situation where the performance of public organizations is poor because few of their participants are committed to purposive rationality or the pursuit of formal organizational or societal goals. Most actors in the State economic process expect to use governmental agencies to achieve personal and extra-organizational goals first and formal goals second. Proposing market discipline to cure this problem amounts to the imposition of a new form of purposive rationality which market discipline can achieve with a smaller number of consenting actors than can hierarchically imposed rationality. In other words, to succeed, a very strong government may be the sine qua non condition. African Governments need to produce visible and distributable benefits for their survival. The priority should not be to dismantle the State enterprises once and for all, instead of gradual privatization, but to gradually redirect State activities into other areas that combine some economic returns with high political payoffs. There is no doubt that the African economic development process would be better served if the size of government were smaller or if market-like mechanisms for creating purposive rationality could guide government operations. For macro-economic adjustment to be successful, in many African countries, measures have to fit the political rationality that is currently dominating decisions unless the democratization process is set up and now!

We would not go so far as to say that "when a machine runs amok it requires not adjustment but dismantling" or that "the incomes of poor farmers were better left to fructify in the pockets of the people."³⁶

We need innovative thinking about how vital rural services can be provided in ways that will make them politically productive, self-managing, and not a permanent drain on the treasury. A subsidy could be paid to set up a veterinarian or para-medic in a private rural practice (by providing housing, equipping the lab, or maybe giving a cash grant). Assuming that even one out of two of these practitioners succeeds, it would increase real services to rural areas and government would not be left paying for those who do not work. The same could be said about giving a grant or soft loan to an already senior agronomist to settle and ensure adapted agriculture food self-sufficiency through the use of his experience, modern technologies, available manpower and land, adapted research. Even the World Bank could finance such undertakings.

The analysis suggests that the implicit movement of some donors away from a basic needs type of approach to macro-economic adjustment may be mistaken. It is clear that bad policies are at the root of much of Africa's economic crisis. Macro-economic adjustment-cum-policy reform will only be successful if it provides a politically attractive framework as an inducement to governments to change and assistance to mute the murmur of persisting domestic criticism. Basic needs projects (such as the ones being launched by the World Bank *pari-passu* with structural adjustment programmes, e.g., in Ghana) have precisely the political appeal that policy reform lacks. But the democratization process remains a must.

A "hard" laissez-faire approach to African economic development probably needs the support of a "soft" humanitarian basic needs one if it is to be applied with an acceptable degree of success.

Stabilization and/or structural adjustment programmes should also be accompanied by a fundamental change in the philosophy of planning development. In African agriculture, millions of small farmers including women, landless labourers and the nomadic pastoralists produce the major proportion of the food and export commodities. The integration and full participation of these producing units in the planning, implementation and evaluation of their development is of paramount importance. A lot has been said about this in the past but in practice, planning activities continue to be carried out the same way (top down). Stabilization and/or structural adjustment programmes must insist on such fundamental changes. AAF-SAP has set the tune which should be followed.

The dismantling of trade restrictions and price controls accompanied by higher prices are likely to have a favourable impact in the long run; however, in the short run, an instantaneous response in production cannot be expected. Therefore, the dismantling of restrictions should be gradual and synchronized with the expected supply response of agricultural production. This will ensure that food prices do not increase unduly and fuel inflation when food supply is tight or the farmer prices are unduly low. Similarly, export supplies do not respond immediately to trade liberalization and price increases. It takes time for resources to be shifted from other activities to export production. Thus the timing and sequencing of adjustment measures must be given considerable thought. The fact that African countries are price takers on international markets and that their total agricultural production is price inelastic should be taken into account in designing the programmes. No adjustment programmes will succeed without external assistance. Unless this is available at the right time the cost to the poor and to the economy at large will be

great. Finally, the time dimension is of crucial importance. "Rome was not built in a day".

Let us conclude by saying that all these suggested measures to alleviate the burden of adjustment programmes on the poor segment of the African population (including smallholders) during the transition should not distract African policy-makers from a very simple but crucial fact: the gradual awakening of the population's consciousness to the reality that "the welfare State is dead and forever". Only an adjustment with transformation and based on a genuine democratization process can help the continent achieve a sustained economic and social development.

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Table 3: Average food self-sufficiency ratios in Africa, 1979-1989

Countries	1979- 1981 %	1983- 1985 %	% changes	1982- 1984	1987- 1989	Percen. changes 1982/84- 1987/89
Algeria	44.0	40.7	-7.5	41.8	42.4	1.4
Angola	78.3	74.5	-4.9	72.9	74.7	2.5
Benin	94.9	97.3	2.5	93.6	94.1	0.5
Botswana	106.4	98.5	-7.4	108.8	104.7	-3.8
Burkina Faso	100.8	101.2	0.4	93.0	93.5	0.5
Burundi	105.9	104.9	-0.9	97.3	97.3	0.0
Cameroon	121.1	118.9	-1.8	94.9	94.4	-0.5
Central African Republic	103.5	102.0	-1.4	92.6	91.2	-1.5
Chad	121.2	120.5	-0.6	107.5	106.5	-0.9
Congo	81.1	73.8	-9.0	74.1	74.1	0
Côte d'Ivoire	153.2	155.0	1.2	85.2	86.1	1.1
Egypt	79.5	74.1	-6.8	72.5	72.2	-0.4
Ethiopia	102.7	95.7	-6.8	98.2	97.2	-1.0
Gabon	62.4	52.9	-15.2	52.8	54.7	3.6
Gambia	108.9	90.4	-17.0	108.2	114.1	5.5
Ghana	129.5	112.2	-13.4	89.9	89.5	-0.4
Guinea	96.5	94.1	-2.5	95.3	94.4	-0.9
Kenya	104.1	103.2	-0.9	93.1	90.9	-2.4
Lesotho	60.5	56.9	-6.0	58.7	60.8	3.6
Liberia	104.3	109.2	4.7	75.4	75.4	0
Libyan Arab Jamahiriya	39.6	43.6	10.1	43.3	51.1	18.0
Madagascar	101.3	99.4	-1.9	93.7	94.1	0.4
Malawi	123.9	123.1	-0.6	104.4	103.4	-1.0
Mali	121.0	114.6	-5.3	107.6	106.6	-0.9
Mauritania	86.9	70.1	-19.3	73.7	73.4	-0.4
Mauritius	109.8	108.1	-1.5	109.7	103.4	-5.7
Morocco	74.6	76.9	3.1	79.5	79.1	-0.5
Mozambique	98.8	88.3	-10.6	87.3	87.3	0
Niger	106.8	92.7	-13.2	96.4	98.3	2.0
Nigeria	104.0	102.2	-1.7	86.9	86.5	-0.5
Rwanda	81.2	72.9	-1.7	97.3	96.4	-0.9
Senegal	81.2	72.9	-10.2	80.7	83.5	3.5
Sierra Leone	88.6	94.4	6.5	88.9	88.1	-0.9
Somalia	88.0	86.5	-1.7	89.7	88.4	-1.4
Sudan	104.4	105.6	1.1	98.8	99.3	0.5
Swaziland	156.7	153.2	-2.2	159.0	152.2	-4.3
Tanzania	106.6	102.2	-4.1	96.3	97.2	0.9
Togo	105.8	98.1	-7.3	82.0	82.0	0
Tunisia	78.7	80.7	2.5	74.1	73.4	-0.9
Uganda	103.8	107.8	3.9	98.7	98.2	-0.5
Zaire	100.9	99.4	-1.5	95.8	94.8	-1.0
Zambia	83.2	85.8	3.1	82.5	83.7	1.5
Zimbabwe	147.2	140.0	-4.9	104.4	104.9	0.5
Sub-Saharan Africa	102.9	100.8	-2.0	92.0	91.8	-0.2
AFRICA				84.7	84.7	0

Source: FAO.

Table 4. Agricultural share of total government expenditure in Africa (percentage)

	1978	1979	1980	1981	1982	1983	1984	1985	1978-80 Average	1981-84 Average
Botswana	10.53	9.24	9.71	8.71	8.65	7.90	9.27	-	9.83	8.63
Burkina Faso	4.22	3.88	5.47	5.20	4.53	5.03	4.31	-	4.52	4.77
Cameroon	4.42	4.32	2.22	1.35	-	8.33	6.79	8.02	3.55	6.12
Gambia	22.01	17.27	17.97	13.79	10.92	-	-	-	19.08	12.35
Ghana	12.20	10.38	12.23	12.20	10.70	-	4.95	6.19	11.60	8.51
Kenya	8.46	8.43	8.28	11.16	8.99	10.14	7.63	-	8.39	9.48
Liberia	8.98	5.58	5.02	5.01	7.33	5.76	5.63	6.12	6.53	5.93
Malawi	11.50	11.44	10.15	13.55	15.08	16.05	11.91	-	11.03	14.14
Mauritius	9.35	7.19	6.87	6.57	6.47	5.82	6.15	7.03	7.80	6.25
Morocco	6.57	7.20	6.46	7.00	5.66	5.42	5.62	-	6.74	5.92
Senegal	-	-	4.35	5.09	7.94	7.45	-	-	4.35	6.83
Sierra Leone	3.82	3.50	-	-	-	10.08	6.03	-	3.66	8.06
Sudan	9.00	11.31	9.44	-	8.50	-	-	-	9.92	8.50
Swaziland	8.59	13.06	12.98	10.67	12.32	9.70	7.96	6.22	11.54	10.16
Tanzania	9.33	7.40	10.90	11.07	6.96	6.39	7.36	6.17	9.21	7.95
Togo	6.48	8.90	-	5.07	7.52	5.95	9.14	8.09	7.69	6.92
Tunisia	9.76	12.68	14.52	17.03	16.45	14.24	18.10	-	12.32	16.45
Uganda	10.62	8.40	6.99	10.41	5.75	3.87	3.10	4.31	8.67	5.78
Zaire	2.12	0.78	1.06	1.92	3.00	-	0.92	-	1.32	1.95
Zambia	12.19	17.84	22.97	12.51	16.49	-	-	-	17.67	14.50
Zimbabwe	11.40	6.97	7.03	8.46	10.37	6.09	10.91	-	8.47	8.96

Source: Government Finance Statistics Yearbook 1986, the International Monetary Fund.

Table 5: African countries with structural adjustment programmes: Mid-1976 - mid 1987

Country	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
CAR	C				S	S		S	S	A	S	
Cote d'Ivoire	C					E	A		S,A	S	A	
Eq. Guinea					S,C	C						
Gabon			S		E							
Gambia		C,S	C	S			S		S		A	
Ghana	L			S				C,S,L	C,S,L	L	A	A
Guinea							S				A	
Kenya	C		S	C,S	S,A		S,A	S,A		L		
Liberia	S			C,S	S	S	C,S	S				
Madagascar		S			C,S	S	C,S		S,C	L	L	L
Malawi				C,S	S	A	S	L,E,A	A	A		
Mali					C		S	S				
Mauritania	C,S	S			C,S	S				L		
Mauritius		C	S	S	S	C,S,A		S,A	A			L
Morocco					E	E	S	S	L	L	L	L
Niger								C,S	S		A	L
Senegal			C	S	E,A	C,S,A	S	S			A	A
Sierra Leone	C	S		S		E		C	S		L	
Somalia					S	S	S				L	
Sudan	C		C	C,E	C,L	C	S	C,S,L	S			
Tanzania	C			C	S,C	L					L	
Togo	C			S		S		S,A	S			
Uganda	C			C	S	S	S	S,L				
Zaire	C,S	C,S		S		E	C	C,S			L	A
Zambia	C,S	C	C,S			C,E	C	C,S	S,L	L	L	
Zimbabwe						S		C,S,L				

C = Compensatory Financing Facility.

S = Stand-by Arrangements or Stabilization Programmes.

E = Extended Fund Facility.

L = Structural Adjustment Loan.

A = Adjustment Lending.

Sources: IMF Survey (various issues), IMF Annual Report (various issues), World Bank Directory of Structural Adjustment Loans (FY 1980-1985), January 1986.

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Notes

1. This is a revised version of a paper presented at the SID World Conference in New Delhi, India, March 1988.
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31. IMF, Fund-Supported Programmes, Fiscal Policy and Income Distribution, Washington D.C., September, 1986. p.20.
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Approaches for the Development of the Forestry Sector in Africa

by Dr. J.L. de Pedro¹

Introduction

Without exception, African forests have for decades witnessed heavy and abusive depletion, illegal felling and poor control of the amount and type of timber harvested. All these factors have had a serious impact on the rational conservation of forests and obviously on Africa's environment. Besides, and partly due to these events there has been a parallel degradation of the social and economic conditions of the inhabitants of the continent in general and those living in arid and semi-arid areas in particular. It is estimated that the rate of forest clearing runs over 3.8 million ha per year, including the evergreen forests, open woodlands, bamboo and mangrove formations. Afforestation and reforestation, on the other hand, represents only 0.25 million hectares per year, or 6.6 per cent of the forest area annually lost. By zones, the evergreen humid tropical forests of the coastal West African countries are the most seriously affected by disappearance. In North Africa in spite of the great efforts exerted to conserve natural forests and promote afforestation to ensure soil conservation and help regeneration, important areas of valuable species are lost every year as a consequence of forest fires, wood energy gathering and over-exploitation. The Central African forests, are so far, less threatened by clearing. The Eastern and Southern Africa forest resources, basically composed of open woodlands, are also facing serious difficulties of conservation and regeneration, chiefly because of the pressure the population is making on them. But despite this gloomy image, there is still ample room to ensure the conservation of such valuable heritage. The reinforcement of the Institutional framework, particularly that linked to strengthening of forestry planning, and monitoring capacity is an urgent need of most Forestry Administration. The paper, through its five sections, makes a selective analysis of the forestry sector and its contribution to the development of the continent.

The contribution of the section to development is analyzed in section II, with emphasis on round wood production and utilization. There is special attention in the section dealing with fuelwood and charcoal consumption, as well as on the state of industrial round wood production and processing. Constraints preventing the rational utilization and development of

the sector are discussed in section III, which make emphasis on the state of forests management and development, and forest fires. The main challenges include reinforcement of forestry investment budgets, the improvement of the planning and monitoring capacity of the forestry institutions, are analyzed in section IV. The paper concludes by suggesting policies that, if implemented, could dynamize the sector and make it stable and productive under sustainable management criteria.

Abstract

The document highlights the significance of the forestry sector as crucial in the development of the continent and stresses the urgency for its conservation under silvicultural methods. The need for a massive investment in forest management, forest industries development and wood energy production is also pointed out as a requisite to restore its equilibrium and promote employment.

I. Review of the Main Forestry Ecosystems

Although a large part of Africa is covered by different kinds of savannah, which occupy over 500 million ha, the dense tropical forests constitute the cream of Africa's forest formations. Their peculiar flora and fauna as well as their climatological characteristics make both formations quite different both formations in terms of production, forms of exploitation and even in the rates of depletion and degradation. Thus, the area of the dense tropical forests, which covers about 230 million ha, is rapidly decreasing due to the high speed of timber harvesting and conversion to agriculture. In fact, it is estimated that about 600,000 ha of dense humid forests are cleared each year for agriculture and other related uses. The most common form of agriculture practiced in the dense humid forest of the continent for centuries is shifting cultivation.

Nevertheless, due to the progressively worsening fertility of fallow areas and population pressure, there has been a substantial reduction in exploitation period and consequently in rotation.

The result is a need for new areas on which to practise shifting cultivation. Unfortunately, in Africa most of these areas can only be obtained from forested areas. For example, agricultural land has increased in Africa by 15.8 million ha during the period 1970-1985, whereas forest and woodland area decreased by about 46 million ha during the same period.

With regard to the role played by savannah formations, there is no doubt about their importance, since they are the main source of fuelwood, shade for the cattle, poles for building construction, charcoal, gums and tannin as well as dozens of other indispensable products either for the African farmers and/or their cattle. One of the largest type of African savannah formation is the Miombo woodland which surrounds part of the dense humid forests and which presently occupies more than 200 million ha in the continent. Other well-known formations are those in which acacia is the dominant species. In the sea borders of some tropical countries the Mangrove ecosystem, which is adversely affected by over-exploitation and transformation into agriculture, constitutes a first-class example of vegetal and fisheries production, and regulator of the climatological conditions between land and marine zones. Finally the bamboo forests, which occupy an area of 1.1 million ha in the continent, play a vital role for thousands of African farmers, while at the same time protecting soils against erosion and degradation.

On a zonal basis, the dense evergreen tropical forests of the coastal West African countries are most seriously threatened by disappearance. Table 1 gives estimates of the evolution of the growing stock² up to the year 2000.

Therefore an important area of productive dense forests will be lost within the coming 12 years unless realistic measures are taken for their conservation and exploitation. From the above table, Liberia and Guinea-Bissau will have, relatively speaking, the highest rates of forest depletion (214 and 212 per cent respectively between 1980 and the year 2000). Assuming therefore a mean forestry stock of 250 m³ per ha it is estimated that over 7.8 million ha of such forests will be exhausted in the nine countries by the year 2000. Moreover due to the relative infertility of the tropical soils it is expected that natural regeneration will be insufficient to restore the normal crown and tree density of Africa's hardwood forests. Therefore applied research in order to select appropriate indigenous or exotic species to be introduced in areas previously occupied by natural stands is a task that deserves particular attention in the form of human and financial resources.

The Eastern African countries on the other hand, although poorly endowed with dense evergreen forests, are very rich in savannah formations. Therefore, while the closed hardwood forests occupied an area of about 21.0 million ha in 1985, the area of savannah woodland was over 190 million ha in the same year. It is believed that part of these areas were covered by semi-deciduous tropical forests during the last decades. Nowadays these forests are disappearing at an alarming rate mainly due to the high pressure of the rural populations. In order to halt such depletion, many Eastern and Southern African countries undertook about three decades ago vast afforestation projects aimed basically at alleviating the problem of industrial roundwood supply. Paradoxically, some of these countries have a surplus of that timber today.³ One of the causes for surplus is the limited industrial processing capacity, specially of small-diameter logs. Another cause is the meager resources allocated by the governments to carry out sylvicultural programmes in plantations. It is estimated that about 2.2 million m³ of industrial roundwood from the existing plantations remain unexploited each year in Kenya, Mozambique, United Republic of Tanzania and Zambia as a whole. The breakdown of such surplus is given in table 2.

Conversely Central African countries have the lowest rates of tropical hardwood clearing and degradation in the continent.

The North African forests, as elsewhere in the continent, have largely been depleted because no realistic approaches have, inter alia, been developed so far to implement joint sylvopastoral programmes in most forested areas. It is estimated that more than 100,000 ha of natural forests disappear in this zone each year. In the Sudan for example, the figure is quite alarming, since it is estimated that about 20 million ha will be depleted between now and the year 2000. Recent floods and desert encroachment will continue unless governments try to rationalize the use of forests, reduce the grazing pressure and intensify plantations for fuelwood and soil conservation. Although legislation has been reviewed and updated in some of these countries a visible gap still remains between the spirit of the law and its practical application. Momentum for an integrated agro-sylviculture, water and soil conservation practices will be generated only when there is a genuine participation on the part of all those concerned in forest conservation and management.

Table 1: Estimated growing stock in the closed productive forests of some African countries
(million cubic metres)

	1980	1990	2000	Variation 1980-2000 (million m ³)
Angola	270	222	173	(97)
Ghana	198	165	132	(66)
Guinea-Bissau	25	16	8	(17)
Côte d'Ivoire	766	99	0	(766)
Liberia	220	145	70	(150)
Nigeria	492	44	0	(492)
Senegal	1.7	0	0	(1.7)
Cameroon	4645	4434	4223	(422)
Central African Republic	1102	1086	1070	(32)
Total	7719.7	6211	5776	1943.7

Source: Outlook for the Forestry Sector in Africa, FAO, 1984.

Table 2: Roundwood surplus from established plantations (million cubic metres under bark)

Country	Potential production	Actual production	As % of potential	Surplus roundwood
Kenya	2 100	1 300	62	800
Mozambique	500	25	5	475
Tanzania	1 200	700	58	500
Zambia	750	300	40	450
Total	4 500	2 325	51	2 225

Source: ECA Pre-investment forestry projects, Addis Ababa, March 1987.

Table 3: Production of fuelwood and charcoal in Africa (million cubic metres)

Year	Production	Percentage base year 1975	Per caput consumption m ³ /year
1975	294	100	0.72
1980	346	117	0.73
1985	377	128	0.72
1986	389	132	0.72
1987	401	136	0.72

Source: Yearbook of Forest Products, FAO, Rome, 1988 and ECA computation.

II. The Contribution of the Sector to Development

Although many attempts have been made to assess the contribution of the sector to the GDP of the continent, no accurate figure has been obtained to explain such contribution so far. Nevertheless, it is generally accepted that it ranges at least between 3 and 5 per cent. In the Sudan for example, the figure is estimated at 1 per cent. The bulk of Africa's forest wood supply is used as fuelwood, which constitutes the major source of energy supply for about 80 per cent of its population. Roundwood production in Africa was over 442 million m³ in 1987, with per capita production being 0.79 m³. It is estimated that about 90 per cent of the total roundwood production was used in the form of fuelwood and charcoal. In rural Africa, fuelwood represents almost 98 per cent of the energy requirements whereas in urban areas, charcoal is the main source of energy for cooking. Table 3 provides some relevant information on fuelwood and charcoal production and consumption in the continent.

The two following aspects deserve special comments: first, the consumption of fuelwood and charcoal rose by over 80 million m³ between 1975 and 1985 (during the same period the population increased to 136 million in the continent). The second point is the stabilization of the per caput fuelwood and charcoal consumption in 1985 and 1987, which is partly due to the increasing consumption of petrol derivatives, such as natural gas, methane, butane and other fuel products. For both reasons and assuming that Africa's trend in preparing food with fuelwood continues, it is estimated that over 580 million m³ of that commodity will be required to satisfy the bioenergy demand of the continent by the year 2000. In this connection, FAO estimates that about 2.5 million ha should be planted in the near future to satisfy the total fuelwood demand by the end of this century.

Apart from fuelwood which represents an average of 90 per cent of Africa's roundwood production, industrial roundwood has considerable importance since it is the source of the main forest industry supply. The breakdown of industrial roundwood was as follows:

Sawlogs and veneer logs production have been a traditional source of timber trade, particularly between countries with abundance of forests and the European markets. Nevertheless this activity has considerably declined during the period 1980-1985. Thus, Africa's broadleaved exports declined by over 1.5 million m³ during the above period, due basically to the recession which affected the developed markets and

also the progressively increasing log processing by the local industry. This is in line with the Lagos Plan of Action proposals on the reduction of export of raw logs by 50 per cent to their level of 1980 for the period 1980-1985.

With regard to sawnwood production, Africa's output of 6.3 million m³ in 1985 was insufficient to meet its demand of 9.4 million m³. Therefore about 3.1 million m³ had to be imported mostly by North African countries to offset the sawnwood consumption of the continent in that year. The largest exporter countries were Côte d'Ivoire, Cameroon and Ghana which together exported 75 per cent of Africa's 600 000 m³ of sawnwood exports in 1985. In this context, it is necessary to point out the timber agreements signed between Egypt-Cameroon and Ghana-Algeria with a view to ensuring the supply of industrial timber to the North African countries. Such kind of co-operation among timber-surplus and deficit countries can make a partial contribution to foster intra- and inter-subregional timber trade and to stabilize prices.

The wood-based market panel sector, though relatively new in the continent, performed well during the last decade. Plywood and veneer sheets jointly with particle board products constitute the bulk of the industry. Consumption in 1985 was two times higher than in 1975. However, per capita panel consumption remains very low mainly to the lack of tradition in the use of such commodities. Generally speaking, due to the obsolescence of and the restrictions on imports of spare parts, the wood-based factories have a low yield and consequently the cost of the final product in most cases is higher than the imported ones. For this reason and due to the fact that local demand will continue to rise, particularly to satisfy the needs of the building sector, modernization and rehabilitation are urgent tasks for many of the continent's factories.

Africa's pulp and paper sector, although important in the value added of its products and manpower required for its management and exploitation, has nevertheless performed poorly during the last decade. Thus, wood pulp production, excluding South Africa, only reached 341,000 m in 1985. Exports and imports of that type of pulp were almost balanced, reaching 230,000 m during the same year. It is estimated that, in 1985, 2.9 million m³ of pulpwood was required for producing the 0.7 million m of paper the continent produced. The importance of this industry as a source of employment is evident, since no less than 3,000 field workers directly or indirectly would have participated in the logging activities in 1985 to obtain the pulp logs required by the pulp industry.

Table 4: Africa's industrial roundwood production 1985/1986 (million m³)

	1986 production	1986 %	1987 production	1987 %	Production variation 1986/1987
Sawlogs and veneer	18.2	43.2	17.6	42.1	(0.6)
Pulp and particle logs	2.2	5.2	2.2	5.3	
Other industrial roundwood	21.5	51.4	22.0	52.6	+0.5
Total	41.9	100.0	41.8	100.0	(0.1)

Source: *Ibid.*

Consumption of paper and paperboard was only 0.6 kg per caput in 1985. In most of the EEC countries, paper consumption rates are over 100 kg per caput annually. It is, therefore, quite evident that if Africa's population continues to grow at the present rates, the need for paper and paperboard might be 2.4 million m at the end of the century. In order to meet such requirements, governments should adopt a realistic policy of rehabilitation and modernization of the existing industries, particularly those of chemical wood pulp. Furthermore, in an effort to supply the industry with the required pulpwood, feasible industrial afforestation and silvicultural projects should be developed, particularly in the countries in which pulp factories are operating. Similarly, advantage had to be taken from the fast-growing clone *Eucalyptus* plantations to make the pulp industry more competitive in the continent.

III. Main African Forestry Constraints

Fuel energy supply problems

The most important forestry problem the continent is facing is the high rate of fuelwood and charcoal consumption. Currently the scarcity is particularly high in North African and Sahelian countries. According to recent FAO studies, the gap between fuelwood production and consumption will widen by the year 2010. It is estimated that a minimum fuelwood and charcoal deficit of 310 million m³ is to be expected by 2010. Nigeria, the United Republic of Tanzania, Kenya and Uganda will account for 90 per cent of Africa's total fuel energy deficit. In Kenya, the United Republic of Tanzania and Zambia,

the fuelwood deficit is in part due to its heavy utilization by tea and tobacco curing industries. In the North Africa subregion, where forest resources are scarce despite policies oriented towards planting more trees for fuel energy and to promote the utilization of other sources of energy, particularly in the wealthier countries, there is no doubt that the gap between fuelwood production and demand will continue at least up to the year 2010. Many countries, such as Morocco and the Sudan, which are concerned with the seriousness of the problem, have recently embarked on assessment of energy studies. The aim is to assess the real trend of energy demand so that a whole energy policy can be defined on the basis of the renewable and non-renewable resources of each country. The dimension of the problem is so wide that solutions have to be found as early as possible. In this connection, governments should encourage private initiative to enable entrepreneurs to plant trees either for industrial supply or even for processing into charcoal if demand exists. To implement this policy legislation should establish credit lines including grants to carry out economical fuel energy plantations in areas where scarcity might be expected. In addition, support to the activities aimed at promoting the use of other sources of energy should receive high priority. Development of high-yield stoves and energy-efficient charcoal production and utilization are areas in which research should be reinforced.

Forest management and development

One of the indicators of the state of forest conservation in the continent is the area of forests under sustained yield systems. It is estimated that only 1.67 million ha of productive closed forests had management plans at the end of 1985.⁴ Table 5 illustrates the situation:

Table 5: Areas of closed broadleaved forests (thousand ha in 1985)

	Productive forests			Managed as % of total
	Managed	Unmanaged	Total	
Northern Savannah	0	518	518	0
West Africa	1 167	6 713	7 880	14.80
Central Africa	0	135 850	135 850	0
East Africa and Madagascar	505	10 722	11 227	4.49
Tropical Africa	1 672	152 803	155 475	1.07

Source: Forest Resources of Tropical Africa. FAO, Rome, 1981.

In West Africa, Ghana accounted for the highest rates of managed forests, particularly in productive hardwood forests. In East Africa, Uganda and Kenya recorded the highest managed forests at the end of 1985. The area under harvesting regulations could be much more extensive in most of the English-speaking countries because experience in silvicultural plans, including regeneration of natural stands, started in these countries about 30 years ago. Sometimes it happens that although forest management plans are available they can not be implemented due to lack of resources. In some North African countries, although written plans for Cork oak forests management are available, their production per ha is very low due to the poor rate of investment combined with overgrazing and poor level of regeneration. It is estimated at 100 kg of cork per ha per year compared with its potential 200 kg per ha if silvicultural plans were applied.⁵ Similarly in the Sudan, implementation of management plans, especially in areas occupied by Acacia Senegal (gum tree) could contribute not only to the increase in gum production but also in the provision of employment especially during the drier months of the year. Similarly, Ethiopia which is well endowed with myrrh, arabic gum and opponex gum stands has a production that presently revolves around 35 000 m. This production could be augmented significantly if selective management plans and silvicultural treatments were applied to those formations. Technical reasons and lack of skilled workers, especially in harvesting and exploitation, are the most important constraints hindering the development of such resources. In Kenya, production of tannin from the wattle tree⁶ could largely increase if management and silvicultural plans including the correct maturity time for extracting the bark, crown density and spacing among other variables were considered.

In general and due to the complexity and variability of species composition in the moist tropical ecosystems, there has been a clear tendency to establish fast-growing plantations rather than to test and develop specific silvicultural and management systems adapted to the general characteristics of each type of forest.⁷ Furthermore, it can be said that the main silvicultural approach applied to tropical forests has been largely oriented to assist the reproduction of desirable species to the detriment of the lesser-known ones. At the same time, plantations of exotic species have been established in areas previously occupied by natural moist forests mostly because regeneration of over-exploited forests has become technically and economically difficult. In general, the main difficulty in implementing appropriate management plans in rain forests stems from the lack of financial and human resources. Moreover, at a time when the social and other new components have to be carefully analysed to harmonize forestry production and exploitation with conservation schemes, it seems quite evident that integrated forestry management plans will become not only more complex but also more expensive to implement in the future.

Forest fires

Forest fires represent an important means of conversion of natural forests and bushed areas into less rich ecosystems. It is estimated that shifting cultivators have depleted more than 120 million ha of Africa's tropical moist forests during the last 30 years. Having removed the original tree vegetation, and after two or three years of rudimentary agriculture with generally poor crops yield, shifting cultivators have to leave the areas in search of new locations. As a result of soil degradation new types of trees and shrubs appear. Secondary forests have their origin partly in such kind of practices. The moist savannah of West Africa,

known as Guinea Savannah, and its equivalent, the Sudan Savannah, are equally largely burnt, particularly during the dry season due to the high population pressure. It is estimated that about 40 per cent of perennial West African vegetation is affected by bushfires each year. According to an FAO report, no less than 150,000 m of standing crops and stored cereals were destroyed by bushfires in Ghana in 1983. Furthermore, about 50 per cent of Ghana's vegetal cover was damaged by bushfires during the same year.⁸ In dry climate, the indiscriminate use of fires has favoured the invasion of useless grass species like *Imperata cylindrica*. In general, woody plants with a low capacity of sprouts production have higher levels of tolerance to fires than those with an abundance of root suckers. The *Butyrospermum parkii*, shea butter tree, well spread in West African countries can be mentioned as an example of trees tolerant to fire. Both its root system and bark area are quite resistant to the effects and characteristics of burning in those countries.

In East Africa *Miombo* forests which are open formations with abundant *Brachystegia* and *Julbernardia* spp are set afire every year, particularly during the dry season from May to October. In Mozambique, which accounts for large areas of *Miombo* forests, about 50 per cent of forest area is burned each year. In the United Republic of Tanzania, for example, about 4,000 ha of forests are burnt per year.⁹ It is estimated that 30 per cent of fires take place in forest plantations. In Kenya, areas burned in ungazetted forests are much more important than in gazetted ones.

Among the main causes of fire, most Eastern African countries have quoted practice burning to encourage growth forage grasses, hunt wildlife and extract honey. In *Miombo* forests, fires also occurred as a measure to control the expansion of the tsetse fly (*Glossina* spp.) when livestock is grazing in infected *Miombo* areas. Charcoal making has been reported to be another important cause of forest fires, in Zambia, especially when earth kilns are used.

Table 6 provides information on the characteristics of forest fires in Kenya.

Although at present forest fires do not constitute a serious problem in the North African subregion, they might become a serious bottle-neck if appropriate measures are not taken to protect both natural and man-made stands. The estimated area burnt in all North African countries was about 7,000 ha in 1985. In Morocco, for example, over 1,000 ha of *cork* forests were burnt in 1987. Destruction of flora, fauna and organic matter are, among others, effects caused by fires. Nevertheless, beyond such destruction

the rural people are mostly affected because basic sources of their daily subsistence are usually destroyed or degraded.

Soil erosion

With the exception of areas occupied by moist forests, almost all African countries are affected by soil erosion. The first effect of erosion is the loss of soil fertility which requires investment in fertilizer and machinery to restore the initial capacity of agriculture production.¹⁰ Another negative effect, particularly for irrigation purposes, is the diminution of the water table holding capacity of previously forested areas. In Africa desertification, basically caused by the rapid disappearance of trees and shrubs cover, is advancing very fast. About one-third of the continent suffers from desertification whereas natural desert area is over 6 million km. Even food security is threatened in many African countries. Thus the Sudan, Somalia and Mauritania are particularly affected by desert encroachment. In the Sudan, it is estimated that the desert is shifting southwards at the rate of 7 km per year and the loss caused by drought was estimated at \$US 1 billion in 1980. In Morocco for example, the area of productive *cork-oak* forests declined from 400,000 ha in 1960 to 273,000 ha in 1987. If this rate of destruction continues, these peculiar forests could disappear in the next 60 years. Similarly in the High Atlas cedar forests (1,800-2,000 m), forest degradation is also causing serious problems of sheet and gully erosion, preventing at the same time natural forest regeneration and grass production. In Tunisia, about 50 million m³ of fertile soils or 10,000 ha of agricultural land are lost each year by water erosion. Despite great efforts oriented towards sand dune fixation in Mauritania, there is a long way to go before the problems can adequately be tackled.

Concerned with the seriousness of the problem most governments have launched programmes aimed at restoring Africa's tree cover and protecting and rehabilitating eroded soils. In Kenya, the annual national week for soil conservation tries to underline the importance of this activity since about 80 per cent of its land is considered semi-arid, receiving less than 800 mm of precipitation per year. After 10 years of the HADD project in the United Republic of Tanzania, more than 11,000 ha have been reclaimed from agriculture and forestry activities. The North Africa green belt, embracing Morocco, Algeria, Tunisia and the Libyan Arab Jamahiriya, constitutes an integrated approach to combating soil erosion and desert encroachment.

Table 6: Areas burnt forest reserves in Kenya (ha)

Year	Plantation	Natural vegetation
1980	498	19 885
1981	456	1 003
1982	459	10 903
1983	239	27 887
1984	424	21 308
1985	370	423
Average per year	408	13 568
Standard deviation	84.9	10 349

Source: ECA Pre-investment forestry project, Addis Ababa, March 1987.

Mauritania, Mozambique and Somalia have implemented some important projects to combat wind erosion. In 1985, Mozambique had fixed no less than 3,000 ha of dunes, mainly by planting *Casuarina equisetifolia* and *Azalia quanzensis*. Somalia, which accounts for a large sand littoral and inland dune range, has more than 15 sites of sand dune fixation-trials for controlling and fixing such movements. Furthermore, over 12,000 ha of coastal sand dunes were successfully fixed in 1985 in Shalambot and Merca areas of Soamla.¹¹ Sand dune stabilization is an urgent problem to be tackled if the general environment is to be preserved in the continent. Since the area is vast and manpower requirements for such project implementation are high, it is quite evident that the benefits to be derived from such activities are immense in preserving the environment and sustaining the livelihood of the rural people in sandy areas.

Forest industries management

With some exceptions, the size of Africa's forest industries is quite small. The exception usually occurs in the well-endowed forested countries, in which multinational companies have set up modern and efficient forest processing industrial networks. Due to the heavy rate of forest depletion and exploitation, the capacity of timber processing in many former timber-rich countries like Nigeria and Côte d'Ivoire is rapidly decreasing. Yet, in view of the evidence of raw material scarcity there is a rapid displacement of the previous West African forest industries by more wealthy timber countries, particularly to Central African countries. Conversely other countries, e.g., the United Republic of Tanzania, Zambia, Madagascar and Malawi, which years ago implemented important afforestation

plans, are currently facing large timber surplus and at the same time insufficient timber processing capacity. Financial, technical and managerial deficiencies are some of the obstacles hampering development of the sector. As result of the low timber processing capacity, imports of timber products continue in the continent, while timber trade among African countries is very weak. Lack of training, particularly at managerial level, low productivity as well as obsolescence of factory and transport facilities, are barriers that should be removed if forest industries are to be more efficient and their products exported throughout the continent and developed countries.

IV. Main Challenges

The first obstacle to forest conservation and development is the meagre budgetary resource allocation to the sector. Moreover, since conservation and regeneration of Africa's natural forests is a policy that should be largely reinforced in most African countries, it is quite evident that investment policy should be consistent with these requirements. In this context, Morocco's policy of putting entirely in the hands of local municipalities levies collected from forest products is a realistic approach that other African countries should imitate. In Tunisia, a policy addressed at improving the management of the *cork-oak* forests based on economic and financial considerations is rapidly gaining ground. Nowadays, due to the low rates of investment these forests are yielding only 50 per cent of their potential productivity. Similarly, Eastern African plantations are in urgent need of investment both in silviculture and construction of new forest tracks. These approaches would allow the

utilization of timber products at lower prices thus making forest industries more competitive. Countries traditionally depending on fuelwood from forests should invest at least half of the amount saved from petrol input substitution either in regenerating natural forests or establishing new fuel energy plantations. Similarly, a substantial part of earnings from timber exports ought to be invested in forest conservation and regeneration, notably in the Central and West African countries.

In general, Africa's institutional forestry framework is at present inadequate to cope with the severe rates of forest clearing and degradation from which the continent is suffering. Special attention should therefore be given to the strengthening of forestry planning capacity at service level, so that policy-makers can integrate realistic forestry programmes into broad social, environmental and economical development approaches. In most African countries, forestry department personnel and budget should be reinforced, particularly to enable them to efficiently carry out field programmes. This weakness is particularly evident in the field of forest fire prevention and logging activities. Similarly, more attention should be paid to the control and eradication of forest insects and diseases, particularly in the new plantations and natural forests affected by drought. Government forestry staff should in many cases be retrained to cope with the specific problems of each area.

With regard to forest research and training, the most practical suggestion would consist in carrying out research programmes and activities directly connected with the most urgent needs of the countries. Since most of the countries have financial problems, subregional co-operation particularly through international organizations should be promoted to support these activities. In some arid areas trials to find out the most adequate nitrogen-fixing, drought-resistant and multipurpose species should be intensified. Likewise, programmes for conservation of gene-resources particularly in areas prone to soil and wind erosion should also receive the highest research priority. In the evergreen forests, where usually a handful of timber species are exploited, research should be intensified to find new uses and technological properties of lesser-known ones. In this regard, particular attention should be given to research new species for the pulp and paper industry. Eucalyptus clone research, due to the potential biological and pathological risks, should be pursued in close co-operation with the experienced research centres of the continent. At both the northern and southern borders of the Sahara, windbreak and shelterbelt areas ought to be expanded, especially by using well-tested natural drought-resistant species. The performance of some

Pinus halepensis varieties, like those found in southern Tunisia (about 300 mm of rain) should be more systematically investigated. Similarly, high priority should be given to research programmes to favour regeneration of natural shrubs in Sahelian areas.

Most African forest policies and legislations do not recognize the interdependence and mutual complementarity between agriculture and forestry activities. In many cases, the traditional legal arrangements in vogue during colonial times have resisted change.¹² Some countries nevertheless have made great efforts to update their forestry legislations. For example, in the Sudan, a project was recently carried out to revise and update its forestry policy and legislation. In the Libyan Arab Jamahiriya, a new forestry law was issued in 1982 embracing forests and range protection. The Tunisian case is particularly advanced as exemplary and the old 1966 forestry law was under revision in January 1988. Its aim is to integrate silviculture and forest conservation into social and rural development. Notwithstanding this, the continent as a whole continues to be affected by large natural forest clearing and shrub depletion and destruction. It is quite obvious that the efforts of the forestry administration to halt forest depletion are not proportional to the size of the problem. More emphasis has to be put on translating the forestry law into reality. Probably no substantial law amendments would be required to maintain forests in conformity with the silvic principles if the forestry laws were strictly observed.

V. Conclusions

In most African countries, the main obstacle to the conservation of forests is the lack of a long-term forestry policy. If forest clearing and degradation, have occurred over hundreds of years, at least an equivalent period of regeneration should be assigned to cope with the problem forests are facing today. One of the consequences of such weakness is the irregular allocation of financial resources in most African countries. So far, the forestry investment policy is clearly inadequate to fulfil the objectives of forestry stock conservation in the continent. It is estimated that the budget required to get Africa's forests under correct standards of conservation should be at least twice as high as the present one. Forest research and extension are two areas that deserve urgent attention if the main forestry problems of the continent are to be minimized. In both areas the role of subregional co-operation, as reflected in the ECA mandate, can be considered a useful and efficient tool for strengthening the forest sector in the continent. Research into

drought-resistant multipurpose and nitrogen-fixing species are also areas deserving special attention. Likewise, training in agrosilviculture and livestock has to be fostered for the optimal utilization of the resources of the agricultural sector.

Furthermore, the modernization and rehabilitation of forest industries as well as the systems of logging and transport would contribute to the increase in the competitiveness of these industries. Research into lesser-known timber species growing in humid tropical forests should also receive greater support if the whole production capacity of that ecosystem is to be utilized. In short, the development and reinforcement of this sector cannot be contemplated under a simple and single approach and under short-term plans of development.

Governments have to realize the interdependence between the development objectives characteristic of the sector and other related ones like energy, environment and rural development, among other sectors. The same forestry policy has, therefore, to contemplate long periods of forest regeneration and conservation which include the availability of adequate financial and human resources in space and time. The case of fuelwood consumption and petrol savings derived from such exploitation could serve as a base for the establishment of new forest financing and development policy.

Notes

1. Dr. J.L. de Pedro is a Forestry Officer, United Nations Economic Commission for Africa (ECA).
2. Growing stock: Living part of the standing volumes of a forest
3. Economic Commission for Africa. Study on Identification of Pre-Investment Projects for the Development of Forest Resources in East Africa with emphasis on dry areas. (Preparatory assistance to Kenya, Mozambique, Tanzania and Zambia). ECA, Addis Ababa, 1987, p. 22.
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Framework for interventions in the livestock sector: The case of the West African subregion¹

by Abdulaye Niang, Ph.D.²

Abstract

The present paper addresses the issue of livestock development policies and programmes for livestock development planners in the West African subregion. It concentrates on the need to developing a framework for interventions to ensure smooth structural changes and policy reforms which would create a propitious environment for sustained growth and development of the livestock economy.

1. Introduction

In 1986, the livestock population in the West African subregion was estimated at 47.3 million Tropical Livestock Units (TLU). In monetary terms, the total assets held by the livestock community for the same year were valued at more than \$US 11.8 billion which represented about 195 per cent of the annual financial requirements of the subregion under Africa's Priority Programme for Economic Recovery, 1986-1990 (APPER). In contrast, the total resources committed annually to the whole livestock sector of the continent (\$124 million) over the period 1974-1983 represented barely 1 per cent of the estimated assets held by West Africa alone in 1986.

Since investments and farm debts in the pastoral areas are nearly nil, the assets represented almost a net worth that was potentially and readily convertible into cash. Other assets, particularly real estate (land and buildings), are simply non-existent on pastoral farms while they constitute the largest proportion in developed countries. This is so in West Africa because pastoral lands are communally owned and exploited; nomadism and transhumance are still widely practised and pastoralists are operating at near zero-level of input use. As for debt, the banks including those specialized in agricultural lending discriminate against livestock production.

The contribution of cattle to the changes in farm wealth or capital gains estimated at \$396 million in 1986 was more than 69 per cent of the annual external resource requirements for the whole

agriculture sector of the subregion under APPER. For the same category and in 1986, farm income was about \$1.1 billion and it was estimated that the subregion had lost about the same amount through the combination of several factors including diseases, inadequate nutrition and shortcomings in policies and management.

In addition to large under-utilized and misused range land, especially in the Sahelian and tse-tse belts, the available vast livestock resources have been sorely neglected and severely impacted by calamities. For instance, the cattle herds have been dwindling for years because of drought and rinderpest. The subregion has become increasingly unable to preserve what it had already produced in terms of animal and animal food products. As a consequence, the overall increase in total indigenous meat production of 3.3 per cent over the period 1977-1987, although keeping pace with that of human population (2.8 per cent), was insufficient to offset the impact of rising income. Therefore, the dependency of the subregion on outside suppliers of frozen meat increased over the same period by about 3.7 per cent.

A rational exploitation of livestock and range resources can not only make the subregion totally self-sufficient in animal food products but also can give an impetus to its industrial sector particularly through the transformation of by-products. This can make also the livestock sector a valuable source of employment especially in the industrial sector. More importantly, it will help to strengthen subregional co-operation and to further the integration of the economies of the Sahel with those of the rest of the subregion.

Governments have been intervening in all aspects of development admittedly to arrive at an optimal exploitation of livestock and range resources for an increased contribution of the sector to overall socio-economic growth and development. In this process, governments, however, made themselves fully responsible for the basic investments and the "free" supply of livestock inputs and services especially to the livestock producers. This path of development was taken with the collaboration of the international

community. The flow of resources was not, however, commensurate with the needs for sustained development of the sector and the request for international assistance of the governments.

This approach, however, has shown increasing signs of instability and its inability to overcome the problem of development especially in the livestock sector has become obvious in recent years. The highest authority of the Organization of African Unity (OAU), with the adoption of the Lagos Plan of Action (LPA), the Final Act of Lagos (FAL) (1980) and APPER (1985), thanks to the joint efforts of the OAU and ECA secretariats, had recognized the weakness of the overall developmental approach and committed itself to another alternative.

Indeed, in these documents, the Heads of State and Government of the member States of the OAU solemnly committed themselves to the cultivation of the virtue of self-reliance at both individual and collective levels. This should enable Africans to take their destiny into their own hands and pull the continent up by its bootstraps for self-sustained and balanced growth and development especially in the agriculture sector.

Cultivating the virtue of self-reliance means educating and motivating the population to primarily adapt its needs to its own resources and means, making optimum use of the indigenous resources and ideas and developing a taste for and pride in what it produces within the continent. This should lead to the internalization of development process, integration of national and subregional economies, adjustment of consumption patterns, harnessing of African solidarity and development of new subregional, regional and international economic orders.

With the crisis in foreign aid and investment exacerbated by the reverse flow of resources and the conditionalities imposed by the international financial institutions for access to new financing, it has become imperative to develop urgently the principle of self-reliance and self-sustainment, to interpret and apply it to all sectors of development, especially that of agriculture. As for the livestock sector, which has the potential to develop from its inner strength and the main resources (animal and labour) of which have been totally in the hands of private nationals, it suffices to re-cultivate the virtue of self-reliance and self-help and to restore the self-confidence and determination among the members of the livestock community.

It is to be noted that over the last 100 years or so of the colonial and post-independence era, public interventions tended to hamper the self-reliant, self-help and independent capability of the members of

the livestock community. In most instances, they have been denied the responsibility of their own development and the management of water and pasture essential for controlled production.

During this period that can be considered as for restoration, governmental interventions for creating an internal dynamism or linkages in the economy and for providing adequate incentives and protection or support to the livestock community were not only recognized but also required. This requirement, however, must be phased out gradually to make the sector basically independent from governmental assistance across the board on a permanent basis.

II. Framework for interventions: The concepts

The framework is to be designed in such a way as to enable the livestock community to solve its development problem and to become the master of its own destiny. Public policy (government action) that would help to induce the members of the livestock community to overcome their dependence on charity or welfare programmes should be vigorously pursued.

Such policy will entail giving back to the livestock community the economic and political powers of their own development, the reconversion of the mentality of civil servants and a change of attitudes towards development, especially as it relates to the division of responsibility. To ensure smooth transition from over-reliance to self-reliance the responsibility, the role and actions of the main partners of development were defined bearing in mind the overall goal of achieving greater collective animal food self-sufficiency and animal food security. The framework should therefore be developed in such a way as to have a solid base for decision and actions for all the parties concerned.

The framework is conceived as a system which includes a collection of subprogrammes that should provide an environment in which to develop ideas and their application. It allows and encourages work with small units without destroying or damaging the masterpiece centred around policy reforms that would make the members of the livestock community responsible for their individual and collective development. Thinking small and avoiding confusion are therefore essential for success at the level of the farms. The need to build in monitoring and evaluation mechanisms and control structures to undertake speedily corrective measures cannot be overemphasized.

These interventions should be with growth and development and not with contraction and deterioration of the performance of the livestock sector as currently experienced. The interventions in the sector should notably enable the livestock community through self-help and self-reliant initiatives to produce and supply qualitative and quantitative products at competitive prices across national boundaries and thereby contribute effectively to the overall socio-economic development of the subregion.

To this end, the development should come from within and not from outside, and within a dynamic framework. Also the interventions should be geared towards multiplying and constantly increasing the productivity of the members of the livestock community, the professionals, the managers and other workers by applying the principle of self-reliance and self-sustainment to the sector.

Greater integration at subregional level and more dynamism in the livestock sector through broad-based diversification and complementary programmes are all essential for success. This would require in particular the utilization of all relevant mechanisms, institutions, national endowments and natural and human resources in a spirit of collective self-reliance and solidarity.

Solidarity, in actual fact, has been part of African traditions and it should not be difficult to revitalize it around common objectives within the framework of the main subregional economic groupings. In 1988, solidarity was the main theme for discussion at the thirtieth anniversary and silver jubilee ceremonies of ECA and the OAU respectively.

The framework is designed bearing in mind that development should be based on internal strategies, primarily on technologies already existing or developed on the spot as technical changes need to come from within to be meaningful, relevant and widely adopted. Therefore, the proposals and recommendations contained in this paper are subject to modification and adaptation by users.

Because of lack of confidence and even suspicion vis-à-vis governmental interventions by the members of the livestock community, progress within the framework might be slow. This should not, however, constitute a deterrent or be a cause for concern from going ahead and persisting with the required transformation and structural changes. To this end, the interlocutors of the livestock community should be chosen bearing in mind its possible resistance.

III. Framework for interventions: The main subprogrammes

In this section, concentration shall be on some of the key conditions and trends that could affect or influence positively the decisions of the members of the livestock community, notably the pastoralists taken individually and collectively, to adopt alternative livestock agriculture and to co-operate with the representatives of government. These were identified for further discussion, development and adaptation bearing in mind that changes should be gradual. Also, these changes should put emphasis on self-reliance, conservation of quality of environment, feed security, human health and food security, and above all, on their impacts on the economic viability of rural areas. These changes should, in particular, lead to the promotion of non-farm economic rural activities, through the creation of enterprises other than livestock.

A. Development, conservation and rational exploitation of natural resources and preservation of environment

In practically all the pastoral areas and the tse-tse belts pasture lands are publicly owned and communally exploited. These policies of natural resources (land and water) have severely affected the performance of the livestock sector. Free access to lands and water, in particular, have been the causes for considerable socio-economic losses and wastage incurred by the livestock community and the society at large.

As for the livestock community, especially the pastoralists, the unintended impacts of these policies have been tremendous. They have been largely responsible for the low adoption of technologies and use of production inputs and services including those for animal health and marketing. Consequently, their animals could not attain their full potential. More importantly, the pastoralists were forced to live a primitive life and to be confined in a hostile environment relying on nomadism. Though it was a way of life in the past, nomadism is today an obsolete and outmoded technique to prevent and control losses and waste. It constitutes a serious threat to the survival of the pastoral population which has been in constant diminution.

These policies have affected the behaviour of the household producer who tends to minimize the off-take of animals for meat production, subject to satisfying the subsistence requirements of his household in meat, milk and in other goods and services; the reconstitution of herds after catastrophic

droughts and killer diseases; institutional constraints, and coping with the availability of scarce resources and services. The demand for other goods and services in pastoral areas has been negligible because of either unavailability or simple ignorance of their existence. At times, drought and animal diseases have become widespread and uncontrolled; the producer has no other alternative than to reinforce the reconstitution drive. This behaviour, individually considered, is rational but leads in aggregate to suboptimal exploitation of range and animal resources. In fact, it constitutes a constraint to the objective of the society as for the contribution of the sector to socio-economic development.

In recent years, the cost to society as a whole has been increasing due to rapid and widespread degradation of the environment including the quality of ground and surface water and soil. Even the population of the capital cities of the coastal countries of the subregion have suffered from the adverse effects of environmental degradation due to sand dust crossing the Sahelian belt. This has caused, *inter alia*, health hazards and considerable economic losses especially to the airline companies in the subregion. Also, the current practice of nomadism and transhumance has created considerable tensions among the populations and governments of the subregion leading sometimes to bloody fights and even deaths.

Overall, these policies have been affecting the animal food security programme at both national and subregional levels, the level and distribution of farm income and the contribution of the sector to the formation of the gross domestic product (GDP). They are largely responsible for the opening of the subregional markets to the suppliers of frozen meat. Finally, they have seriously hampered the ability of the governments, individually and collectively, to develop a viable livestock industry for the production and transformation of animal food and by-products. Clearly, these policies have seriously affected the profitability, structure and long-term sustainability of livestock farming in the subregion and something must be done to reverse the situation.

If appropriate solutions were found to the land tenure system, by which an individual or group of individuals would be responsible and accountable for a specified piece of land, the development process would be controlled and fully internalized. The members of the livestock community would be in a better position to develop a self-reliant and self-sustained industry that is less sensitive to production risks and less dependent on government assistance, foreign aid and investment, but more responsive to policies and technological changes. The land tenure system should aim at

improving access to commercial loans and reducing development and social costs.

Reforms in the land tenure should, therefore, evolve in the following directions:

(a) Possession of communal land by small groups that would share livestock, financial and marketing services so as to benefit from economies of scale. The size of the groups should be such that the cost of reaching agreement among its members is low and that the risk of over-exploitation of land and water resources is minimal. The individual members of the groups should have exclusive rights of use over their land while ownership rights would remain with the group as a legal entity (co-operative);

(b) Individual tenure for production units that have large numbers of livestock to warrant having an individual piece of land. Pastoral land could be given even to those who do not possess livestock providing they use it mainly for forage production and thereafter enter into contract grazing arrangements with livestock owners;

(c) The creation of reserve areas as well as testing and public grazing of land at strategic sites. As in forestry, reserve grazing land (RGL) is required to ensure the protection and conservation of the environment and to assist producers when, due to localized drought, there are failures on individual holdings. Testing grazing lands (TGL) should serve the research and extension institutions and universities as a means of testing under field conditions. Both publicly and privately funded institutions should undertake in these areas activities to develop new technologies and to disseminate them to the producers. Public grazing lands (PGL) may play the role of regulating the markets of roughage, feeder and slaughter animals to maintain their prices within a satisfactory range. The PGL may be used for integrating on a large scale indigenous and new technologies to help close the gap between them. Joint ventures between the private and public organizations, particularly in intensive production of beef, milk and feeds, should be encouraged on PGL;

(e) Careful planning and maintenance of cattle-trekking routes to markets based on the levy of charges. These routes could lead to grazing lands in the south where contract grazing could be undertaken against payment. This should still permit the use of the transhumance technique between the areas with comparative advantage in livestock breeding and in crop production and thereby integrate activities in the two areas; and

(f) Supplying, when necessary and feasible, water to producers at a cost.

In addition, there will be a need to develop environmental protection measures through appropriate regulations and laws; develop training programmes for improvement of livestock farming and soil conservation methods and for an early warning system (EWS). Programmes such as livestock insurance, disaster payment, on-farm storage facilities and feed security managed by private corporations and private practice of veterinary medicine including the distribution of drugs and other essential inputs and services could enhance greatly the chance of success of the proposed land reforms. Also, regulations and laws should be developed and enforced to achieve equity, especially in the income redistribution objective resulting from the privatization of pastoral lands.

It is fully recognized that these reforms are politically, socially and culturally sensitive. However, they constitute the pre-conditions for laying the foundations for long-term growth and development of the livestock sector. On these reforms depend the recovery, rehabilitation and revitalization of the livestock sector. It is agreed that these reforms should be gradual but they have to be pursued vigorously with discipline and persistence.

There is no doubt that the international community will be critical of such reforms since they involve the settlement of the nomads. These criticisms will bear fruit only when they are translated into conditionalities for providing "free" assistance. Since the main thrust of the framework is on self-reliance, it is hoped that they will not constitute a major constraint.

B. Joint ventures in the production and distribution of major livestock products, by-products and inputs

It has been documented notably by ECA that animal products are potential sources of mutually profitable co-operation among relatively low- and high-income nations in Africa. Indeed, the former group has a great potential for the production of animal products and the latter for demand. As for producing countries, it has been shown that livestock development efforts in one country may affect or be affected by what is done in adjacent countries or by the attitude of neighbouring governments. This is particularly true in the Sahel where the nomads, animals, tse-tse, ticks and diseases as well as drought do not need any visas to cross national boundaries.

In addition, entrepreneurs that operate in the livestock sector at both production and trade levels

satisfy most of the clauses ingrained in the protocols of "free movement" of goods and persons within and between economic groupings. Furthermore, animal products meet the basic principles of the protocols of the rule of origin, since they are entirely produced and processed in the subregion and, except in a few cases, traded by Africans. In practice, trading of these products is less constrained by the availability of different national currencies among partners.

To some extent, the interdependence between the Sahel and the rest of the subregion is through the livestock sector. Indeed, livestock exporters in the Sahel are also importers of merchandise. In so doing, the sector contributes to the growth of the market for industrial products in the rest of the subregion thereby integrating the subregional economies.

The potentials for integrating livestock economies at both production and trade levels are tremendous. In actual fact, no country individually in the subregion seems to have the means to rationally exploit and protect its livestock and range resources without threatening the very fabric of subregional co-operation. Attempts in this direction invariably led all the countries individually and collectively to turn to the international community and the developed countries for assistance. The effects of such an approach on livestock development are now clear to all.

The legitimate question should be what is then the alternative? The best alternative is definitely to increase individual and collective self-reliance at both production and trade levels.

To this end, it is strongly recommended to harmonize livestock development policies and integrate livestock development programmes so as to create the enabling environment for joint investment ventures across national boundaries. Integration of the livestock economies should be mainly through production to increase the chance of success on the trade side. In particular, it is essential to encourage joint ventures involving the private and/or public enterprises of the subregion for increased collective animal food self-sufficiency and food security.

The formation of multinational (private) corporations in the production and distribution of livestock inputs, especially drugs, vaccines, day-old chicks and feed and the practice of veterinary medicine is imperative for sustained growth and development of the industry. Particular attention should be paid to the formation of multinationals for the valorization of by-products, which are potential sources of cost-reduction, especially of meat, and of employment in the processing industry. Feedlotting, ranching and dairying are all potentially profitable activities and

attractive for joint ventures. All these potentials should be fully exploited for the benefit of the majority of the population of the subregion.

C. Subregional co-operation in the development of manpower and the managerial capacity

Considerable efforts have been made in building training institutions all over the subregion, often at the expense of the subregional ones. The tendency for national self-sufficiency based on over-reliance on foreign assistance (human and financial) is unfortunate and detrimental to the efforts of forming the unity and the economic community in the subregion and the continent at large. The new generation of professionals has not had the opportunity to meet on campus and the dialogue between nationals of the subregion is being adversely affected.

In addition, there are shortcomings in the training programmes which need to be addressed individually and collectively. For instance, veterinarians know little about economics and management and they are surprised to cope with these alien fields when self-employed, since opportunities in the public sector are drying up. Also, one finds that few policy planners know little about livestock development economics and policy and even the role and importance of the sector in the economies and society.

These knowledge/experience gaps should be filled as urgently as possible, preferably through subregional co-operation and the involvement of both public and private institutions. Courses and seminars on livestock economics and policy management should be developed in veterinary schools and made available to the agricultural economists. Specialization in livestock economics would be highly desirable.

Seminars on campus and for policy analysts and decision-makers at both national and subregional levels on how best the principle of self-reliance can be translated in the livestock sector for greater collective self-sufficiency in livestock production and supply should be organized with the collaboration of the OAU, ECA and the main subregional groupings. Also the linkage between training, research and development should be strengthened for increased productivity on farms. In particular, the sharing of experience and information through informal networks, publications and field days at the level of farmers should be encouraged.

D. Master plan for the reduction and elimination of losses and waste in the livestock sector

A recent ECA study showed that the livestock sector in the subregion as a whole was subject to considerable losses and waste. It was noted, in particular, that, for numerous reasons, the subregion had been increasingly unable to preserve what it had already produced. These include calamities such as drought and killer diseases, inadequacy of livestock development policies and actions and shortcomings in co-operation among producing countries and between these and those in deficit.

For instance, it was estimated that in the cattle subsector of the subregion the society lost a minimum of \$600 million in 1986. These losses were about double of the total livestock sector trade deficit of that year. The subregion as a whole could save an equivalent amount in foreign exchange to cover the expenses incurred for needed equipment, while, at the same time, fostering the integration of its economies.

By reducing these losses and waste in the cattle subsector, about 16 million more people could be fed at the current 11 kg per capita consumption or alternatively the per caput consumption could be increased by 1 kg for the projected population of the subregion. In addition to these estimated losses and waste, which were actually the net losses, the society has to bear greater externalities such as those resulting from overgrazing, overstocking and bad odour around the urban slaughterhouses.

The governments in the subregion are faced with decisions about losses and wastage that involve not only economic consequences but also social and moral responsibilities. Collectively, they should act urgently to reduce these losses and waste. The legitimate question should be: What is the reasonable and attainable target in terms of reduction of losses and waste sufficient to lay the foundations for self-sustained development of the sector and to have measurable and notable impacts on overall socio-economic emancipation in the subregion?

With improved management of public policy, it is firmly believed that, by the turn of this century, the subregion will be able to reduce the losses and waste in the cattle subsector by at least 25 per cent. The measures and actions to be taken in order to reduce these losses and waste are spelled out in a Master Plan for the Prevention, Reduction and Elimination of Losses and Waste in the Cattle Subsector of West Africa prepared by ECA at the request of the 1988 meeting in Ouagadougou, Burkina Faso.

E. Harmonization of policies related to pricing, marketing and trade of livestock products and by-products and inputs: promotion and strengthening of intra-subregional trade of livestock products and by-products and inputs

Although decreasing at an annual average rate of 4.5 per cent, the livestock trade deficit was still high (\$340 million) in 1986 for a subregion that had the potential of being collectively self-sufficient in animal food products. In actual fact there has been an increase in the balance of trade of meat (frozen), but it was insufficient to offset the decrease in that of milk. The increase in the import of frozen meat has been at the expense of intra-subregional trade and of domestic production in some countries.

The impact of the frozen meat on the economy of the subregion is tremendous. In looking at its multiplier effects one can understand easily its negative impacts. In fact, proceeds from the export of livestock products and by-products to non-Sahelian countries are often used to buy products that are manufactured there. This means that the export of livestock products is conducive to the creation of employment in non-Sahelian countries in both the industrial and business sectors. However, the substitution of frozen meat to that produced from animals from the Sahel will obviously lead to the reduction in demand for industrial products by the Sahelian countries and a reduction of activity in the slaughterhouses of importers. Since consumers in the non-Sahelian countries will not fill the demand gap, there will be a reduction in employment and hence, in purchasing power especially for commodities such as meat.

This shows that, despite its subsidized price, the import of frozen meat is not in the interest of the poor consumers of the non-Sahelian countries. Importing frozen meat increases the dependency of the subregion on the outside world, worsens the debt situation of the subregion and threatens its programmes for animal food security. It has to be controlled and gradually phased out, *pari passu*, with the integrated development of the livestock economies.

In examining closely the origin of surpluses of developed economies for livestock products, one finds easily that they are due to high programme incentives. For example, the dairy economy of the United States has been protected over the last 40 years against downward adjustment in market prices and producer's gross cash income. Also, because of the interventions of governments, individually and collectively as in the case of the European Community (EC) in trade through distortions in the world economy, the developed countries were in a position to dump their livestock products in the subregion. It is to be noted that these

interventions, which prevent the transmission of an international pricing mechanism, would not last forever. In any case, the future of the livestock industry in the subregion should not be jeopardized because of short-term gains of a handful of national traders who are collaborating with their counterparts in the developed countries in an effort to dump frozen meat.

In this era of trade confrontation among developed countries, especially aimed at disposing of their excess supply of meat and dairy products, solidarity is required among the West African importing and exporting countries to minimize the effects of these distortions on subregional production and supply. There is an urgent need for the policy-makers of the subregion to unite and co-operate for the protection of the market and in the long-term interest of the consumers including those of animal products and by-products.

If need be, they should use incentive packages to induce producers to build up animal food security in the subregion. They should, in particular, take measures against implicit taxes at both production and trade levels that tend to increase shortages, hamper the movement of livestock within national boundaries and across countries and thereby make the subregion more dependent on the outside world. Also, price controls should be applied equitably for both producers and consumers, even if the latter should be subsidized temporarily, but not through depressed producers' prices.

To facilitate and increase intra-subregional trade especially for slaughter animals and preferably for meat, it is suggested to:

- (a) Develop and protect common preferential trade areas for animal products;
- (b) Assess the protocols and accords related to the promotion of trade and marketing of live animals and meat and to harmonize them;
- (c) Review the collection of statistics and systems for the dissemination of information on commodities especially meat and live animals and inputs and to harmonize them;
- (d) Prepare a directory of major livestock and meat markets in the subregion and identify two to five livestock markets per country to be fully equipped and to be part of subregional livestock markets;
- (e) Prepare a directory of livestock and meat marketing institutions in the subregion and undertake

actions for better co-ordination and integration of their activities; and

(f) Encourage joint undertakings between the private and/or public enterprises, especially in the areas of transport for live animals and meat, feedlotting, processing and marketing.

F. International solidarity and livestock development

As indicated above, the governments individually and collectively made themselves responsible for the investments and the provision of services and inputs to the members of the livestock community often without charge to the users. However, in many cases, governmental resources, especially financial, were not sufficient to fulfil such responsibility and appeal was then made to the international community for assistance. Accordingly, the African livestock sector received greater attention especially in the 1970s following the outbreaks of rinderpest and the occurrence of drought in the Sahel. A series of internationally funded projects covering virtually all aspects of livestock research and development have been initiated at national, subregional, regional and international levels.

Owing to the magnitude of the livestock problems, the intervention of a multitude of donor and lending agencies was required for a given country. Each major donor and lending agency designed its own framework and strategies for its interventions in the African livestock sector, often with minimal consultations among themselves and with the host countries. Consequently, the recipient governments were burdened by a wide range of differing and often conflicting livestock development policies and of projects implemented on a piecemeal basis. Pre-conditions for funds to be released often included major administrative and policy reforms. More importantly, the lead role in project preparation, even identification, implementation and evaluation was played by the personnel of the donors and lending agencies with little consideration for the views of the local experts and the so-called beneficiaries.

As for the lead role given to the foreign experts, supposedly to ensure better management of the funds, it should be recognized that their contribution to finding lasting solutions to the complex problems of livestock development in the continent can only be limited. The underlying reasons include:

(a) The difficulty for foreign experts to get the feeling of pastoralists and understand their problems owing, *inter alia*, to different cultural background, short duration of their contracts for a specific project

and the use of interpreters to communicate with the members of the pastoral community; and

(b) The difference in the level of development which is another major obstacle. Indeed, these experts have been exposed in their countries to livestock development problems that are completely different from those prevailing in Africa and therefore they can only act by trial and error.

Based on the above two points, foreign experts are in a disadvantageous position compared to their national counterparts with response to the lead role in livestock development in the environment of Africa. They are in the same position when it comes to interpreting, adapting and applying Western literature to real conditions in Africa for a lasting solution and at a least cost.

The competition for the rather limited development assistance was keen among countries with or without comparative advantage in livestock production. As a result, it was difficult to take maximum advantage of development assistance and to develop any meaningful subregional and regional co-operation. In particular, the financing of over-sized slaughterhouses in the major consuming countries led to considerable losses of by-products for the subregion. Also, the spread of non-economically viable investments notably laboratories in virtually all countries has adversely affected the ability to integrate the livestock economies at the subregional level and to develop a self-sustained industry. The need to have a framework for interventions designed and implemented by African Governments and that can provide guidelines for a better use of international assistance cannot be overemphasized.

The high dependency on foreign resources including human, financial and technological, compounded by the misallocation of scarce resources made the livestock sector vulnerable and sensitive to political moods in both recipient and donor countries. This has partly undermined the efforts and policies and chosen paths of development especially at the subregional level through diversion and weakening of solidarity and unity of action among the member States of the subregion. Above all, the flow of resources even in the 1970s was far below expectations and grossly inadequate to meet the requirements of the sector.

As currently witnessed the international co-operation is entering a phase of serious crisis: The situation is even worse for the livestock sector. For instance, the International Livestock Centre for Africa (ILCA) has decided to withdraw its activity from areas

with comparative advantage in livestock production (pastoral areas).

Another example is the limited success in mobilizing the required financial assistance for the execution of the Pan-African Rinderpest Campaign (PARC) after more than eight years of negotiations and appeals to the international community including one made by the Assembly of Heads of State and Government of the OAU. This is another reason for taking urgent actions to tackle the problems of overall livestock economic development based on increased measures of national and collective self-reliance.

More importantly the North has its own problem in the livestock sector and the African continent has been taken for granted as a market even at the expense of domestic production. Vaccines that can be produced locally in national laboratories (funded thanks to international co-operation) are subject to severe competition with those manufactured in the West. The opening of the subregion to foreign meat, milk and inputs markets often because of subsidies policies has hampered the efforts to develop any meaningful animal food security programmes at national level. The paradox is that Africa still relies on these surplus countries to finance its livestock development.

True, it has been argued throughout the paper that over-reliance and even simple reliance on foreign assistance including financial and human (aid and investment) would not develop the livestock sector for the benefit of the great majority of the livestock community. However, there is no doubt that genuine collaboration between developers and analysts of the livestock sector in Africa and the rest of the world could and should be beneficial to all parties involved. Exchange of information and experience should be the main thrust of such collaboration. Assistance provided, especially at the multinational level, within the defined policies and programmes adopted by the member States individually and collectively could help to lay solid foundation for self-reliant and self-sustained growth and development of the industry. This will bear fruit provided that those in charge of their implementation are conscious and responsible enough to honour their commitment.

G. Social welfare, equity and the distribution of income

Efforts should be directed towards achieving social welfare objectives at both national and subregional levels with special reference to equity in the distribution of income. Equity regarding the setting of prices at consumer level for both producers and consumers should be observed. The preservation of the comparative advantage of the Sahel including its

specialization should be pursued collectively for greater integration of the economies of the subregion. The institution of a disaster-payment programme should be seen in the context of equity and income distribution.

The need to devise appropriate regulations and laws to protect the health of consumers, especially through the control of the quality of products and the level of additives in animal food and feed cannot be overemphasized. Similar measures should be taken at the levels of the slaughterhouse and the markets for meat and dairy products to ensure that animal food is suitable for human consumption.

H. Livestock development fund at subregional level

Every effort should be made to create the appropriate environment to take livestock production as a business enterprise and thereby to facilitate its access to commercial loans. However, to help finance public programmes based on increased measures of individual and collective self-reliance, there is a need to create a livestock development fund (LDF). The livestock community as well as the consumers should contribute towards this fund. Similarly, a tax should be levied on those industries involved in the transformation of livestock products and by-products for the benefit of the fund.

At the subregional level, taxes similar to those instituted by the Communauté économique de l'Afrique de l'Ouest (Tax on Subregional Co-operation - TCR) could be levied (taxes per head of animal or kg of meat exported) for the fund to help finance public integration programmes and/or provide soft loans to multinational corporations. Programmes on research, extension, range improvement and protection, control of major epizooties, enforcement of laws and regulations such as on food safety, protection of environment and heavy investments in infrastructures could be financed out of the fund.

I. Public policy research, monitoring and evaluation

The aim of effective public livestock policy research should be to evaluate the impacts of policy options on the performance of animal, agriculture and allied industries in meeting the objectives of production and consumption; environmental and other societal goals such as resource efficiency, distribution and equity of income. The use of powerful tools of analysis including mathematical programming for optimal allocation of resources and informed decision cannot be overemphasized.

IV. Conclusions

The paper discussed the major structural transformation and adjustments to help lay solid foundations for long-term livestock economic growth and development based on increased measures of individual, national and collective self-reliance and genuine international solidarity. The framework provides an orientation for achieving greater collective self-sufficiency in animal food and products through the harmonization and integration of livestock development policies and programmes, development of joint ventures in the production and distribution of major inputs and products and the harnessing of African solidarity.

At the level of farms, government intervention should be oriented towards making the members of the livestock community the masters of their own development. Proposals are then made to create the enabling environment for the livestock community to produce high-quality products at competitive prices and to make these available to consumers across national boundaries. Particular emphasis is put on land reforms, on accountability and responsibility of an individual or a group of individuals on a specified piece of land and on the promotion and development of the distribution of inputs and services by private multinationals at production level.

It is recognized that the proposed reforms and changes have both socio-economic and political costs but failure to undertake them on time will have higher costs.

Notes

1. This paper was originally presented to the Council of Ministers of the MULPOC of West Africa in February 1989.
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Increasing food supply and availability in Africa through efficient marketing and distribution

By Dr. Don Oben¹

Abstract

The Lagos Plan of Action (LPA) and the African Regional Food Plan (AFPLAN) had, since the early 1980s, called on African countries to establish and develop efficient marketing and distribution systems as an essential means of increasing food production supply and availability in Africa. Underlying the importance of such systems is the fact that marketing is not only regarded as a precursor, but also as an extension of the agricultural production process. It is through the market that inputs used in production are procured. Likewise, the market provides the medium whereby commodities so produced are exchanged and farmers earn cash returns for their labour. The degree of efficiency of the marketing system is therefore a major determinant of the availability, structure and profitability of input use and the costs, returns, opportunities and income levels in food and agricultural production and marketing.

I. Introduction

Marketing plays the role which Abbot has succinctly summarized as that of stimulating and maintaining development.

This notwithstanding, development policies, strategies and programmes adopted by many African States to increase food production and supply have mainly focused on improvements in science and agricultural technology, manpower development, research and extension and the conservation of the natural resource base.

Very little attention has been given to the mechanism whereby various utilities are added to the increased outputs of production and subsequently distributed. Apparently the assumption among most policy-makers has been that an efficient food marketing and distribution system automatically puts itself in place once production has occurred. Unfortunately, African and other experiences have shown that this has not been the case.

As a result, there exists in many African countries a wide and unbridged gap between food producers and consumers and most of what is produced oftentimes does not reach consumers. The result is lack of access by consumers to food supplies and loss of income to producers. In some countries where rudimentary, traditional or inefficient marketing systems exist, a large proportion of the food produced is lost through poor handling, storage, processing and transportation. In fact, food losses in some African countries have been estimated at 30 per cent for cereal grains, 40 per cent for fruits and vegetables and 50 per cent for fishery products.

Inadequate market and distribution infrastructure and market information in many African countries also give rise to high food prices and to situations where regions of food scarcities co-exist with areas of food surpluses within the same countries. Similarly, because of inefficient market structures and poor distribution systems, farmers are often unable to procure essential inputs as and when needed. Neither are they often able to dispose of their additional production on attractive terms and at the time they choose.

It is within this context that Africa's Priority Programme for Economic Recovery (APPER) and the United Nations Programme of Action for African Economic Recovery and Development (UN-PAAERD) have again called on African States to establish efficient marketing institutions, services and facilities which would not only encourage increased production but also ensure that all commodities produced as well as essential production inputs are efficiently merchandized and distributed.

For these and other reasons, policies, strategies and programmes aimed at improving the precarious food situation in many African countries are now attempting to address not only the issue of low land and labour productivity as in the past, but also that of inefficient marketing and distribution of food commodities and inputs.

This paper examines the case of food marketing and distribution in the Yaounde-based MULPOC countries² with a view to identifying areas where improvements are needed as called for in the LPA, AFPLAN, APPER and UN-PAAERD. It is also hoped that policies and other adjustments that may be called for in this paper could, to a large extent, be applicable to many countries of sub-Saharan Africa. Data presented in this paper were collected during a survey of selected countries of the subregion supplemented with relevant information collected from reports on those countries which were not surveyed.

After the introduction in section I, section II reviews food production, consumption and trade focusing on the extent to which trade represents a major constraint to increased food production and consumption in the subregion. Given profound public interest in food marketing and distribution especially for some essential staple food commodities, section III assesses the nature, extent and impact of government intervention in food marketing while section IV examines, on the other hand, private sector initiatives in this regard. Finally section V concludes the paper by proposing a marketing framework, policies, institutions and infrastructures necessary for improving efficiency in the marketing and distribution systems in the subregion.

II. Production and consumption of as well as trade in food commodities

With the exception of a few areas, the ecological and climatic conditions in the Central African subregion in general allow the countries to produce a wide variety of food crops and other agricultural commodities. These include roots and tubers (cassava, cocoyams, yams, potatoes), cereals (maize, millet, sorghum, rice), fruits (plantain, banana, citrus), pulses (beans, groundnuts) and vegetables. The non-forested and trypanosomiasis-free areas are also conducive to large-scale raising of livestock (cattle, sheep and goats) while a significant potential exists in fisheries along the Atlantic coast, in rivers and Lake Chad.

Despite this great potential in food crop, livestock and fisheries production and the fact that government agricultural policy in all the countries of the subregion aims at guaranteeing national food self-sufficiency, production of the major food commodities, except maize, remained stagnant or even declined over the last decade.

The data in table 1 show that over the four-year period, 1979/81 to 1983/85, production of the main staples - maize, cassava, plantain and rice in the whole

MULPOC subregion grew at an annual rate of 4.4, 0.3, -1.2 and 1.2 per cent respectively. Cereals production as a whole increased annually by 1.5 per cent (chiefly due to increases in maize production) while meat (beef, mutton and pigmeat) declined by 0.1 per cent annually during the period. When compared to the average population growth rate of between 2.3 and 2.7 per cent for the subregion, it is clearly evident that food production growth has lagged far behind population growth.

As in other regions of the continent, agricultural production is predominantly based on small-holder farming which relies overwhelmingly on unimproved technology (the hoe and machet and little use of modern inputs) and traditional cultivation practices such as alternating fallows and slash and burn. Most importantly, production of food crops and livestock in the traditional small-holder sector is hardly motivated by a basic desire to produce for the market and earn cash incomes.

This mode of production which is based on the over-riding desire to produce to meet family consumption needs has adverse implications for food commodity marketing and distribution. Farm sizes are small (usually 1-2 ha), very little if any investment is made in improved technology and marketable surplus is usually small. Similarly, the wide distribution of production units sometimes in inaccessible hinterland areas also has implications for the cost of marketing and distribution and the orientation of national marketing channels. Also noteworthy is the fact that countries of the subregion produce similar commodities and livestock. As would be seen in later sections, this has implications for subregional trade in food commodities.

A. Consumption

The staple food crops of the region are predominantly roots and tubers but also cereals (millet, sorghum and rice), plantains and meat. As with production, several aspects of consumption patterns and structure in these countries have wide implications for marketing and trade in the subregion:

First, consumption patterns generally differ markedly between urban centres and the rural areas. A larger per capita intake of meat and higher quality carbohydrate foodstuffs such as rice and wheat characterizes diets in urban towns and cities while the rural areas consume a higher proportion of starchy foods and especially roots and tubers (cassava and cocoyams).

Secondly, as the data in table 1 indicate, the growth in consumption of some basic commodities in

the region as a whole exceeded growth in production levels. For instance, the consumption of cereals, meat, fruits and vegetables grew at an average annual rate of 1.8, 1.2, 3.3 and 2.6 per cent against respective annual production rates of 1.5, -1.2, 1.7 and 0.6 per cent.

Thirdly, the consumption patterns appear to be rapidly changing in favor of imported food commodities such as wheat flour, rice, potatoes, meat and dairy products. The consumption of wheat, rice, milk and meat in the subregion as a whole increased annually at 6.3, 5.8, 4.3 and 1.2 per cent. Other data³ shows that while the increase in wheat consumption is most pronounced in the Central African Republic, Chad and the Congo, rice consumption increased sharply in the Congo, Cameroon and Gabon. Milk consumption increased mainly in Chad and the Congo while meat consumption witnessed a rise in the Congo and Gabon. On the other hand, the consumption of the lower quality carbohydrate foodstuffs such as cassava, sweet potatoes, plantains either declined or increased only marginally. In the Central African Republic, Cameroon and the Congo, the consumption of cassava declined. Plantain consumption also declined in Cameroon, but remained stable in the Central African Republic and Gabon while the rate of consumption of sweet potatoes declined in Cameroon but remained stable in the Central African Republic.

The implications of the level and structure of domestic consumption for intra-regional marketing and trade may also be viewed within the context of national food self-sufficiency.⁴ Unfortunately, however, more recent data on food consumption are scanty in many countries of the subregion especially Equatorial Guinea and Sao Tome and Principe.

The information presented in table 2 based on FAO data indicate that with the exception of Equatorial Guinea and Sao Tome and Principe where data are not available, the remaining countries were mainly self-sufficient in roots and tubers, plantain, pulses and eggs (except Chad) in 1983/85. With the exception of Chad, none of the countries was self-sufficient in cereals and meat production while all had large deficits of wheat and to a limited extent rice. But even countries which are supposedly self-sufficient in some major food commodities often experience acute shortages in these commodities in many parts of the countries concerned.

As would be seen in later sections, even in these countries, certain regions are often in deficit while others enjoy a surplus. In Chad, for instance, the regions of the Sahelian zone are largely cereal deficit while those of the Sudanian zone are self-sufficient or

in surplus. Similarly in the Congo, only the Niari, Kouillon and Rikouala regions are self-sufficient in cassava production. It is important to bear this in mind in order to understand some of the interesting features and patterns of intra-regional trade in the subregion.

B. Trade in food commodities

1. Domestic marketing and trade

Given that in many countries of the subregion areas of food deficits do often co-exist with areas of food surpluses and also that producing units are widely dispersed and are mostly distant from the urban consuming centres, the need for a well-organized and efficient domestic marketing system must be underscored. Unfortunately, the dominant domestic marketing and distribution systems for foodstuffs are, in general, poorly organized, little developed and hardly documented.

Except in Equatorial Guinea, Gabon and Sao Tome and Principe, the State actually participates, to varying degrees, in the marketing and distribution of selected staple food commodities and/or livestock products in the other countries of the sub-region. In these other countries, a dual marketing system exists in food commodity marketing, viz.: an organized, modern, marketing system involving mostly State institutions and parastatals and which handles a limited volume of trade (less than 5 per cent) and a more dominant and more important traditional marketing system. This section focuses on the traditional marketing system while public sector activities in marketing are taken up in the next section.

The traditional system relies entirely on small independent operators and a few cooperatives and handles over 95 per cent of the food marketed in these countries. In Equatorial Guinea, Sao Tome and Principe and Gabon, foodstuff marketing and distribution is undertaken entirely by the traditional marketing system.

Certain characteristics of production in the dominant smallholder sector which have important implications for domestic food marketing and distribution were underscored earlier in this paper. These characteristics include the rurally based, small and widely dispersed units of production, the subsistence nature of production and the small marketable surplus resulting therefrom. These underline certain major features of domestic food commodity marketing.

First, marketing channels are mainly rural-to-urban oriented except in the distribution of imported commodities where the flow of such products is from

urban to rural. Similarly, inter-regional commodity flows⁵ are not as large as rural-urban flows except in the marketing and distribution of certain foodstuffs produced by specialized regional development authorities established by the State. Second, private sector food retailing (mostly by women) and wholesaling (by men) involves a high degree of single proprietorships with little product differentiation. Third, the volume of trade handled at any one time by each proprietorship is relatively small; and fourth, the costs of collection, assembly, storage, transportation, merchandizing and distribution of commodities from distant and widely scattered producing areas are substantial as already pointed out.

Marketing of foodstuffs is also mostly done in open rural markets and in town market places. In most cases, these market places have very limited or no facilities such as stalls, shelters, electricity, water supply, refrigeration, or good sanitation to permit the proper operation of marketing functions.

Given the large number of market participants, the uniformity of such staple foodstuffs as cassava, plantain, cocoyams, etc., and the ease of entry into and exit out of the foodstuff market, the traditional marketing system may, to a large extent, be regarded as competitive. However, several factors tend to limit the extent of this competition. These include certain laws and regulations adopted by some governments which determine, control and regulate food crop prices and restrict the movement of food supplies or distribution of certain commodities within and between national boundaries. Lack of market information and the absence of standard weights and measures also reduce the efficiency and competitiveness of the traditional marketing system.

The traditional foodstuff marketing system is also constrained by the narrowness of some national markets as in the island of Bioko (in Equatorial Guinea), Sao Tome and the Central African Republic and inadequate transportation infrastructure, particularly rural and feeder roads in producing areas and the roads linking production areas with consumption centres. Apart from the deplorable state of most road networks, vehicles and trucks suitable for foodstuffs distribution are usually in short supply and in poor state, giving rise to excessive transportation costs, estimated to be in excess of 50 per cent of marketing costs (Gabon, Equatorial Guinea, Chad and Cameroon).

Post-harvest food losses for roots and tubers, fruits and vegetables and fish are also much higher than the 20-30 per cent average estimated for the African region due to inadequate and poor storage and preservation facilities. Of significant importance also is the lack of basic market information on the

commodities which are available, where, when and for how much they can be purchased or sold.

Livestock marketing is carried out primarily by the traditional marketing system except in such countries as the Congo where most cattle production is in State ranches. Livestock marketing is generally better organized than food crop marketing. Herders sell their animals especially cattle through an organized network of rural and urban wealthy merchant middlemen who transport the animals mainly on-the-hoof but sometimes in trucks and trains (where available, as in Cameroon) through their agents to consuming urban centres where they are retailed to merchant/butchers.

The marketing of meat is predominantly in the hands of these private butchers who slaughter and convey the meat in open trucks or by head-carry to market places where it is sold under generally unhygienic conditions there being hardly any refrigeration or cold storage facilities. Refrigerated fishery products (fish, shrimps, lobsters) are generally distributed by large, mostly expatriate fishing companies through a chain of small cold stores which retail to small traders (mainly women) for sale in the markets. Unrefrigerated sea and fresh-water fish is distributed by traditional fishermen at sea shores and river banks to market women who sell it fresh or smoked in town markets.

2. Subregional trade

Data on intra-regional trade⁶ flows and especially on cross-border trade among the countries of the subregion are very scanty. There is, however, some evidence of a growing amount of this trade within the subregion but it is difficult to ascertain the exact quantities of commodities being traded annually between countries as only part of the trade is registered. In this section, however, importance is placed on relevant aspects of production and consumption that condition the structure and conduct of intra-regional trade with a view to identifying the important strands for promoting trade within the subregion.

As already indicated, the countries of the subregion bear certain similarities in production and consumption. For many crops, production had remained stagnant or even declined. Shortfalls in production occur especially in cereals (notably rice and wheat), meat (except in Chad) and in milk and fruits. Furthermore, small farmers tend to sell too much of their crops at low prices in the immediate post-harvest period probably to meet urgent cash needs or to pay debts. Consumption patterns are observed to be changing away from traditional home-grown food

crops in favour of imported food commodities with wheat and rice rapidly replacing cocoyams and cassava especially in the urban centres.

Given these features, intra-regional trade in food commodities and livestock products is not based on specialization in production but on the need to meet short-term shortfalls in domestic supply.

Also, because of the occasional urgent need and for cash mostly in response to higher border prices, small farmers sell even some of the crop reserved for consumption only to make up for the shortfall in subsistence requirements a while later through purchases from the market. This and other inefficiencies in the marketing systems give rise to the situation observed in intra-regional trade where some countries still import those commodities while they are supposed to be self-sufficient in their production. More importantly, however, this export-import syndrome also reflects the inability of these countries to assess, monitor and place their supplies within the context of their consumption requirements.

It is estimated, for instance, that 40 per cent of the Central African Republic's offtake of livestock is exported to Cameroon and Nigeria and approximately the same number of slaughtered cattle is imported each year from the Sudan into the Central African Republic. Cameroon imports cocoyams from Equatorial Guinea. Yet Gabon receives imports of cocoyams, plantains, cassava, etc., from Cameroon, Equatorial Guinea and the Congo.

However, in some countries, such as in Equatorial Guinea, the small size of the domestic market relative to production has given rise to the need to explore and establish external outlets for some of their surpluses.

The data in table 1 show a net trade deficit for the entire MULPOC in cereals (especially wheat and rice), meat (except in Chad) and milk and fruits indicating an increasing reliance by these countries on imports to supplement domestic production. This is due to the increased demand for these commodities due to the noticeable shift to the consumption of higher value carbohydrate foodstuffs and proteins in urban centres.

Another feature of intra-regional trade is the increasing use of unofficial channels in inter-State marketing. A sizeable quantity of Chad's livestock, mainly cattle, for instance, is exported to the Central African Republic and Nigeria through these channels although the Chadian Government has taken certain measures to stop cattle exports through these channels. A significant proportion of foodstuffs traded

between Cameroon and Gabon and between the Congo and Zaire passes through these channels.

As with domestic marketing, certain government intervention measures pose limitations to the free flow of trade between countries of the region. These include the numerous permits, licenses, certificates, fees and taxes required not only for export but also for domestic marketing. This makes marketing through official channels prohibitive and attractive through informal channels especially for livestock thus depriving the State of tax revenues. Also, some controls on agricultural marketing have in most cases tended to restrict intra-regional trade in foodstuffs.

The transportation problem experienced at the domestic level is also seriously reflected at the subregional level. In fact, the lack of road and especially marine transportation is a major factor preventing Bioko from exploiting fully its potential as a major exporter of cocoyams to neighbouring Gabon. Similarly, Gabon's fundamental problem of an inadequate transportation infrastructure and the high cost of labour due to the high wages and salaries structure (*Salaire minimum interprofessionnel garantié* - SMIG) are two major factors which are responsible for the relative non-competitiveness of Gabon's agricultural products.

On the other hand, the adoption of a common monetary unit, the CFA Franc and especially its convertibility into other major world currencies is an important motive force in the promotion of trade and particularly cross-border trade in the subregion. At the same time, however, it facilitates cross-border trade through unofficial private sector channels.

C. Food Aid

Food aid to countries of the subregion is relatively less significant than that to other subregions in Africa - both in terms of quantity and disaster relief. This is because the subregion has been less affected by natural disasters. The exception was Chad during the 1984/85 drought, the northern parts of Cameroon during the same 1984/85 drought and the Lake Nyos disaster in 1986 in the North-West province of Cameroon. Thus, aid to the subregion has been mainly in the form of powdered milk, vegetable oil, tinned fish and cereals to support school and hospital feeding programmes for children and women who constitute the most vulnerable groups in society.

Data presented in table 3 show that cereals food aid to the subregion was highest in 1984/85 (due to the drought), amounting to 205,900 mt (with Chad receiving 79 per cent, followed by Cameroon with 6.5 per cent of this aid). This amount, however,

represented only 2.7 per cent of total cereals food aid to Africa. Given this situation, food aid has probably not played a significant role in local food production and marketing in the subregion compared to the role it has played in other subregional such as the Sahel.

III. Government policies and intervention in food commodity marketing

A. Government objectives and policies in food marketing

Agricultural marketing comprises a vast array of functions, operations and services requiring an appropriate policy framework to guide and regulate these activities and provide the relevant infrastructure necessary to encourage the efficient production and distribution of commodities required by the various segments of society.

A survey of marketing policies adopted by many countries of the subregion in recent years shows that they aim at providing incentives for increased production especially of export crops and avoiding excessive price fluctuations and localized food shortages. Most of the policies are also designed to provide better marketing infrastructure of roads, transport, communications and marketing facilities which enhance the efficiency of marketing while other policies emphasize the need to keep commodity prices within the reach of urban consumers and at the same time, ensure a fair return to the small-holder farmer.

For some countries, however, there is no clearly defined marketing policy in their agricultural plans although passing reference may be made to the importance of a good marketing system in the development of the agricultural sector.

B. The role of the public sector in food marketing

Government interest and intervention in food commodity marketing stems from several factors. First is the perceived need to safeguard the interest of urban consumers by ensuring that essential food commodities are available at all times in consuming centres and in sufficient quantities and at reasonable prices. Second is the belief that the private sector may not be well equipped technically, managerially and financially to organize the marketing of certain commodities (e.g., large-scale food and meat processing) and third is the preference in some countries, e.g., the Congo in the past, for public rather than private enterprises in keeping with the country's political philosophy and ideology.

The degree of public sector intervention varies from almost complete government involvement in production and marketing as in the Congo some years ago (where such control was exercised through state farms and marketing parastatals), to almost complete *laissez-faire* as in Equatorial Guinea. Government intervention structures consist of development authorities and State marketing enterprises established and funded by public law or decree, with direct government participation in the management.⁷

In the Congo prior to 1986, the Government intervened by taking over the marketing of much of the cash crops - cocoa, coffee, maize, rice, tobacco, palm oil processing and sugar refining through the establishment of a vast parastatal network of collective farms, ranches, agro-industries and marketing institutions. At that time, the State sector was estimated to produce about a quarter of the marketed rice, three-quarters of the marketed corn and had a dominant share in meat production. Party farms also produced cassava, corn, rice and groundnuts.

In Cameroon, a few development authorities have been established to promote the production and marketing of selected cereals by organizing small farmers and providing technical inputs and marketing outlets for the increased crop. However, the State marketing parastatals operate in competition with private traders and have a market share of less than 5 per cent. Government policy has mostly emphasized price control, provision of inputs and credit and improvement of marketing infrastructure such as feeder and rural-to-urban roads.

State participation in food marketing is almost minimal in the Central African Republic. Except for the establishment of the State-owned slaughter house corporation (*Société d'Etat de gestion des abattoirs* - SEGA) which controls all official slaughter of animals, Government intervention in food marketing is mainly limited to setting official prices for the major food crops and licencing traders.

The Chadian Government generally supports a liberal pricing policy for food crops. However, in response to the inadequacy of inter-regional marketing and the resulting price instability and sometimes localized food shortages, the government has attempted to intervene through the *Office national des céréales* to regulate prices for both consumers and producers and improve cereal distribution throughout the country. In livestock marketing, although a mixed enterprise company (SOTERA) has official monopoly over the export of livestock and meat and meat products, in practice it only controls exports of live animals by allocating export permits.

In Gabon, State intervention is mainly at the production level through agro-industrial units such as those producing palm oil, meat, sugar, fruits and vegetables. Government participation in foodstuffs marketing is rare.

In contrast, Equatorial Guinea and Sao Tome and Principe have no State food marketing institutions. No restrictions are placed on food exports and imports, but certain taxes levied on cocoyams in Equatorial Guinea (Bioko) were hindering the export of this commodity in 1988. There are no well-defined and organized food marketing channels although the Equatorial Guinean Government is putting in place various measures for encouraging increased food production.

C. The performance of the State sector in food marketing

An assessment of the performance of the State sector in terms of prices, marketing costs and market shares in the actual marketing of food commodities reveals a less than satisfactory record throughout the subregion.

Most of the State institutions have been characterized by high production and/or high collection and marketing costs and most have been prevented from eminent collapse only through substantial public support by way of huge subsidies. High operating costs, low fixed product prices and management inefficiencies have greatly hampered the competitiveness of these institutions. Similarly, their market shares have not been commensurate with their use of resources (financial and human), neither have they usually achieved their programmed targets. For instance, available data show that MIDEVIV⁸ in Cameroon collects only 2.5 per cent of marketed production against a planned objective of 20 per cent while the Office céréalière also in Cameroon collects only 5-10 per cent of marketed production. The State sector in the Congo also produces only a quarter of the marketed rice despite the large investments made in this sector.

Furthermore, the objectives of providing incentives (to increase production), reducing price fluctuations, controlling inflation and preventing food shortages have remained largely unaccomplished in many countries. Rather, food price and subsidy policies pursued in many countries have encouraged misallocation and inefficient use of resources (especially on State farms) and favoured food imports at the expense of domestic food production. It must be admitted, however, that policies on infrastructural development involving the construction and/or improvement Africa have failed to match the needs,

and have become characterized by increasing and tougher conditionalities and cross-conditionalities of adherence to structural adjustment programmes.

I must add here that all these findings are consistent with the Bank's own conclusions resulting from its own global assessment of the success of structural adjustment programmes. On sustainability, the Bank's study concluded that "improvements in several countries have not been sustained ... budget defemployment and the production of goods and services for which the institutions are not well equipped to undertake. The operational implications of their social responsibility is the little regard given to stringent economic efficiency and good financial management considerations resulting in excessive marketing costs and heavy financial losses. These operating and marketing costs specifically arise from the cost (or loss of income) due to fixed, low and par-territorial prices which generally have failed to reflect actual costs especially for imported foodstuffs, higher staff costs, the indirect costs of cumbersome bureaucratic administrations, high transportation cost and the costs of maintenance of security stocks and strategic food reserves.

Burdened with these expenditures most parastatals suffer heavy financial losses annually and are kept in operation by governments either by directly subsidizing them or having their losses made up or simply carrying them forward on their books and obtaining new finance with government guarantee. In the present financial and economic crisis in which most governments find themselves increasingly unable to subsidize these institutions, many countries are reassessing their role in food commodity marketing.

D. Changing trends towards liberalization and privatization of food marketing and distribution

Given the drastic reduction in financial resources as a result of the economic and financial crisis in many countries of the subregion, many governments are under pressure to release their hold on food production and marketing. A greater role in food marketing and distribution is now being accorded to the private sector while a programme of reform of State enterprises is being put in place. In this programme, enterprises considered essential and economically promising are being operationally, administratively and financially restructured and rehabilitated to increase their efficiency while the non-essential and non-viable ones are being dismantled and liquidated. Notable examples where this exercise is taking place are Cameroon and the Congo.

In Cameroon, a recent decree has cut down subsidies and streamlined the remunerations of

employees in existing parastatals which are now required to operate along competitive lines. Partly due to measures taken in line with this decree, SEMRY⁹ for example, which promotes rice production and marketing in the North Province of Cameroon was able, between 1986 and 1988, to reduce the cost of its rice by CFAF 30 per kg through cuts in personnel, salaries and allowances, and reorganization of work.

In the Congo, where an intricate and extensive network of public sector enterprises had been set up, a programme of reform begun some years ago identified four categories of establishments: those for rehabilitation, those for restructuring to make them more competitive, those to be privatized and those to be liquidated.

Significant among these institutions is the Office des cultures vivrières (OCV) whose monopoly in the marketing of food crops was lifted in 1986 under the Government's stand-by programme with the IMF. Also of significance is the fact that OCV has been relieved of all non-marketing activities (e.g., organization and training of farmers, provision of extension services, free distribution of seeds and inputs, etc.) and restricted to the marketing of five staple food commodities.

These and similar developments in other countries represent promising directions in food commodity marketing in the subregion. However, public sector intervention in and control of food marketing and distribution is still evident in the continued operation of policies which regulate and control producer prices, support cheap food imports for urban workers through government subsidies and which also control food exports and allow for a complex system of market taxes and licenses.

IV. Private sector food marketing and distribution

A. Private enterprises in food marketing

Private sector marketing and distribution of foodstuffs is carried out mainly in competitive market channels and the private entrepreneur's survival in the market depends, to a large extent, on his ability to allocate, channel and manage his resources as efficiently and optimally as possible. The desire for efficiency and for capital accumulation for re-investment and expansion mainly underpins private sector initiatives in marketing.

Private marketing enterprises encountered in food commodity marketing in the subregion fall mainly

into two categories, namely the independent private enterprise and the marketing co-operative.

1. Independent private enterprise

Independent private marketing enterprises encountered in the subregion ranged in size and complexity from single proprietorships to large multinational supermarkets such as Score and Monoprix. The latter provide a range of ready packaged foods, meats, dairy products and exotic fruits and vegetables. Most of these are imported and appeal mostly to the indigenous urban middle and upper classes and especially to the white expatriate community who are able to pay for the higher quality services provided by these large marketing chains.

The thrust of this section is, however, on traditional private foodstuffs marketing because firstly, the traditional food marketing system is the more important and more dominant system handling, as it does, over 95 per cent of the staple foodstuffs marketed in many countries of the subregion. Secondly, it caters for the needs of the lower income consumers who are in the majority and who depend mainly on traditional foods, buying small quantities at a time.

The traditional food marketing system which is dominated by small private independent merchants/producers has already been presented in section II. In this section, it is therefore only necessary to recall the salient features of the system. These features include the large number of single proprietorships consisting mainly of female producers/retailers and male wholesalers; the relatively small volume of trade handled by each of these small entrepreneurs and their relatively little specialization especially at the retail level. Also noteworthy is the little investment made, if any, in the ownership of the means of transportation, storage and preservation.

Despite their enterprising character, there is a general feeling among the consuming public in countries of the subregion, as elsewhere in the continent, that food traders are exploitative and manipulate prices in order to reap excessive profits. There are real difficulties in verifying this belief especially in countries such as Equatorial Guinea, Sao Tome and Principe and a few other countries where relevant studies have hardly ever been undertaken on domestic food stuff marketing. In Cameroon, a recent study (2) on the food marketing and transportation system reveals that gross margins are relatively high in terms of services rendered and that transportation costs account for more than 50 per cent of gross margins.

2. Marketing co-operatives

These enterprises consist of groups of merchants or producer/merchants founded on the principle of equal participation by their members in both their capitalization and policy. The distinguishing feature of the co-operative which also gives it a wide appeal is its democratic structure and user participation in its profits. By joining together to assemble, pack, store and sell produce, co-operatives not only also introduce new competition in food marketing but they stand a better chance of reaping cost economies in the use of facilities and providing more efficient services to consumers.

Single-purpose food marketing cooperatives are not a common feature of the private marketing system in the sub-region. The more common types are dual- or multipurpose co-operatives which combine produce marketing with production and input distribution especially in the export crop sector. These include many co-operatives which serve as Licenced Buying Agents (LBAs) to State marketing parastatals.

Data on the co-operatives are quite scanty. However, in Cameroon, co-operatives play an important role mainly in export crop marketing in the coffee and cocoa growing areas of the western, southern and eastern parts of the country. A few co-operatives, however, market fruits, vegetables and potatoes.

In the Central African Republic, co-operative groups are involved in the production and marketing of both food and cash crops, provision of tools and other inputs and in the distribution and sale of consumer goods in rural areas especially where regular commercial channels are lacking.

There are some production co-operatives also in Gabon and the Congo. In the latter, the production of the co-operative sector is small compared to that of small farmers and State farms except in the production of groundnuts, vegetables and potatoes in which their market share is estimated at 30, 31 and 79 per cent respectively.

The co-operatives in the subregion as elsewhere in the continent have a few common problems. These include lack of basic training in co-operative principles, bookkeeping and management, insufficient marketing facilities, exploitation by local chairmen, managers and employees of their monopoly position and, for those co-operatives which are promoted by governments, excessive interference in their activities by the State.

V. *Proposals for improving food marketing and distribution in the subregion*

Given the similarities in the major constraints identified in this paper as affecting food marketing in countries of the subregion, proposals for improving food marketing and distribution while taking account of local conditions in each country can be formulated and implemented along certain common guidelines. Also given that many countries of sub-Saharan Africa pursue similar policies, have similar marketing and distribution arrangements and face similar marketing problems, these proposals, to a large extent, apply to other sub-Saharan African countries.

A. At the national level

1. Policies to guide and regulate food marketing

There is a dire need in all countries of the subregion to formulate, harmonize and implement policy guidelines which effectively promote increased food production and guide, regulate and facilitate food marketing and distribution by marketing institutions, farmers and entrepreneurs. Within this framework, member countries should formulate and implement policies which:

(a) Provide the right incentives to farmers to encourage the production of local food crops instead of promoting the importation of foodstuffs such as rice and wheat for urban consumers. These incentives should be offered as a package and should include (i) producer and consumer prices which reflect the costs of production and marketing respectively, (ii) availability of farm inputs especially fertilizer, chemicals and vaccines which should be provided at the right time, place and in the amounts required, (iii) credit, if, as and when required, (iv) selective subsidies, and (v) production/marketing extension services;

(b) Emphasize the importance and the need to provide relevant infrastructure and support institutions to promote and facilitate efficient marketing especially of locally produced commodities;

(c) Clearly identify and define the role of the State in marketing and distribution especially as concerns State intervention in direct food marketing and distribution, giving due regard to local marketing needs.

2. The role of the State in marketing and distribution

The role of the State should be to guide and regulate the food marketing and distribution system to ensure efficiency and effectiveness. In this regard, the State should:

- (a) Provide the legal, regulatory framework needed for greater efficiency in the marketing system by legislating the relevant laws for this purpose;
- (b) Plan, co-ordinate and monitor the marketing and distribution of food commodities through creating a special unit in the Ministry of Trade to undertake these functions;
- (c) Develop effective instruments for reducing price fluctuations or containing extreme price swings to ensure that the burden of such swings in the economy is not borne entirely by farmers. In the case of cereals, State institutions could play the role of buyer and seller of last resort in order to reduce price fluctuations;
- (d) Consolidate the domestic market for local foodstuffs by taxing cereals imports and making locally produced cereals less expensive than imported cereals, establishing subsidy schemes which favour the production of local food or using counterpart funds generated through the sale of food aid, with donor agreement, to support domestic food production (e.g., cereal food aid to Chad);
- (e) Collect and disseminate reliable information on prices and market conditions so that farmers, traders and marketing institutions can be informed. This responsibility could be handled by the marketing unit in the Ministry of Agriculture in many countries or by a similar unit in the Ministry of Commerce;
- (f) Provide a system of incentives, transport and marketing infrastructure and support institutions called for in (a) and (b) above. (This is further elaborated below). The dissemination of market information and provision of incentives should focus not only on increasing food production but essentially also on changing the social mentality of producers whose general tendency in all countries of the subregion is to provide food, first for family consumption. In other words, market information should be used to educate farmers to produce for the market and incentives provided to enable them achieve this objective;
- (g) Intervene rationally and efficiently, where necessary, and depending on local marketing conditions, in direct marketing and distribution of selected food commodities through the activities of effective and efficient relevant State institutions. State

participation in direct marketing activities may be necessary for instance to provide a counter-balancing force as a means of protecting consumers and producers against possible excesses of the private sector.

3. Enhancing the performance of public marketing institutions

Given past experiences with public marketing institutions in countries of the subregion, the following measures are proposed for improving their performance:

- (a) Review their mandate with a view to confining their responsibilities to purely marketing functions and limiting the activities of each institution to a few crops in a manner similar to what the Congo has done with the OCV;
- (b) Abolish their monopoly and special privileged positions and allow them to function alongside the private sector so that their survival depends on their ability to compete in the market;
- (c) Improve their structure and functioning as a means of reducing their excessive costs and financial losses through:
 - (i) administrative and structural reforms, decentralization of decision-making and simplification of procedures to allow for quicker and efficient decision-making and accountability;
 - (ii) review the staff situation, salaries and benefits with a view to making wage rates and other staff benefits more realistically reflect the marginal productivity of labour;
 - (iii) adopt pricing policies which reflect actual market conditions;
 - (iv) explore various possibilities of minimizing the cost of collection, transportation and storage such as arranging for collection vehicles to distribute inputs for a fee for other institutions on their inward journey; subcontracting the collection, transportation and storage of produce to co-operatives, licensed buying agents, private transporters, etc., where these activities can be performed at lower costs.

4. Improving the co-operatives

- (a) Co-operatives should be allowed to function as autonomous, independent, democratic institutions without unnecessary government interference;

(b) They should be provided with assistance in two crucial areas, i.e., in credit and training. They require credit to enable them to acquire essential marketing infrastructure such as transportation, storage and preservation facilities. Co-operatives are also especially weak in management and organization, bookkeeping, accounting, marketing, sales and distribution. They should be assisted with training either by the State or relevant international institutions in these areas through the organization of short courses, workshops and seminars.

5. Promoting private enterprises

What are needed most to stimulate private enterprises are the right incentives, infrastructures and institutional support. This, of course, applies to varying degrees, to co-operatives and public marketing institutions. Proposals on incentives have already been made above.

(a) **Credit:** In view of present difficulties of access to sources of conventional credit, member countries are urged to establish dual credit systems consisting of "commercial" credit and "small farmer/trader" credit with the small farmer/trader benefiting from specific conditions. In addition, small enterprise promotion schemes existing in many countries should be urged to give priority to the capital and credit needs of marketing enterprises;

(b) **Transportation and marketing infrastructure:**

(i) **Rural feeder roads and transportation infrastructure:** There is an urgent need to expand the urban-to-rural road network and improve existing rural-to-rural feeder roads especially in Chad, Equatorial Guinea, Gabon and Sao Tome and Principe. Stock routes require improvements and provision of watering points and control of grazing along routes. Rural communities should be involved in the construction, repair and maintenance of road networks either through food-for-work programmes (in Chad where food aid is important) or as a community responsibility.

Concerning improvement in transportation facilities, governments should give priority to the allocation of foreign exchange for the importation of vehicle spare parts, tyres and fuel and where necessary, also to the importation of suitable trucks (where foreign exchange constraints are not too severe). Countries are also urged to examine alternative sources of supply so as to identify those offering on more favourable and attractive terms.

(ii) **Storage, preservation and processing facilities:** The provision of credit along the guidelines proposed above would enable small private entrepreneurs to acquire or improve these facilities. Larger-scale storage, preservation and processing facilities especially for livestock products (e.g., meat, dairy and fish) can be more easily financed through groups which also stand to gain some economies of scale from the use of such facilities. The formation of traders' groups (not cartels) and co-operatives should, therefore, be encouraged.

(iii) **Marketing extension and training:** Governments are urged to establish a marketing extension service alongside existing agricultural extension programmes to assist farmers and traders with such activities as grading, quality control, use of weights and measures and provide market information. The organization of rural workshops based on success stories provides effective ways of also upgrading skills in management and other aspects of food marketing.

(iv) **Market information and communications:** Governments are urged to set up effective communications network (e.g., telephones) and mechanisms for collecting and disseminating information on market conditions on a regular basis. Such information should include prices of major commodities in major markets, transportation facilities and costs, marketing channels, supply and demand forecasts, marketing series available, etc., and should assist producers, traders and marketing institutions in assessing and taking advantage of market opportunities.

There is an urgent need also for well-conceived and implemented studies on the food marketing and distribution systems especially in Equatorial Guinea, Sao Tome and Principe, Gabon and Chad. These studies could provide a fuller understanding of the food marketing and distribution systems and guide policy in the countries concerned.

(v) **Improvement of market places:** Most urban wholesale and retail markets in countries of the subregion are in dire need of improvements in the quality and number of stalls, shelters and display stands, standard of hygiene, water supply, quality control, weight and measures, storage and preservation facilities and other sales infrastructures. Fencing and security are also important. In many important villages, the marketing of foodstuffs is done by the road

side, under large trees or in open fields. These villages also need improved market places. Local authorities can finance these improvements from markets taxes. The collection of market taxes is already an old practice in many countries but these taxes are seldom used to improve the conditions of the market places.

B. At the subregional, regional and international level

Actions at the subregional and international level should aim primarily at fostering subregional trade through co-operation between and among countries of the subregion and supporting and improving relevant institutions. Areas in which this co-operation should focus on include:

1. Improvement in international transport and communications network

Member countries are urged to construct and improve major highways and establish communications network linking their countries to other member countries so as to ease the flow of food commodities and the performance of marketing activities. In this respect, ECA and member countries are urged to speed up the implementation of the trans-African highways programme.

2. Harmonization of trade and marketing policies

Member countries are urged to use the opportunities offered through ECCAS and UDEAC to harmonize their trade and marketing policies (e.g., custom duties, export and import policies, permits and licenses, standards and measures, etc.) such as sub-regional trade in food commodities complements instead of jeopardizing local food promotion.

3. Training in food marketing and sharing of information and experiences

Member countries should co-operate in training by putting their training facilities at the disposal of those countries without relevant or excellent marketing training infrastructure. In this respect, member countries should be assisted by regional and international organizations such as ECA and FAO in identifying training institutions (universities, co-operative colleges, schools of management and accountancy) with excellent facilities that can serve as regional and subregional training centres. The organization of subregional workshops and seminars also provides a forum for exchange of experiences among countries. In particular, a subregional seminar is recommended for officials of State and private food

marketing concerns on the management of food marketing institutions as a means of exchanging experiences among countries in the subregion with similar management and other constraints.

4. Support to, and improvement of, relevant subregional and regional institutions

Member countries are urged to support (especially financially), subregional and regional institutions which promote trade in food and agricultural commodities among African countries. A good example of these institutions is the Association of African Trade Promotion Organizations (AATPO) based in Tangier which promotes exchange of information on food and agricultural trade among African countries and which nearly collapsed in 1985 due to lack of financial support.

5. Donor countries, international and United Nations aid agencies (e.g., the World Food Programme) are urged, to the extent possible, to purchase their food supplies for distribution to food-deficit African countries from countries within the subregion and region with surpluses.

Table 1: Production, consumption and net trade in food commodities in Central Africa Sub-region: 1980-85 (1000 MT)

Country/Commodity	Production			Consumption			Net trade		
	1979/81	1982/84	1983/85	1979/81	1982/84	1983/84	1979/81	1982/84	1983/85
ROOTS AND TUBERS									
MULPOC Total	4764.00	4684.00	4772.00						
CASSAVA									
MULPOC Total	2628.20	2614.60	2661.70	2234.10	2214.60	2243.80			
POTATOES									
MULPOC Total	64.60	173.80	185.80	25.80	63.70	71.00	2.20	-2.90	-3.20
SWEET POTATOES									
MULPOC Total	1045.50	1037.00	1053.40	769.00	772.50	783.40	0.00	0.00	0.00
OTHER ROOTS & TUBERS									
MULPOC Total	925.80	885.50	937.00	569.90	583.10	580.40	0.00	0.00	0.00
PULSES									
MULPOC Total	174.50	185.00	188.60	136.50	145.60	148.70	0.00	-0.10	-0.40
CEREALS									
MULPOC Total	1492.90	1455.90	1587.60	1727.00	1719.40	1851.80	-352.80	485.20	-532.20
MAIZE									
MULPOC Total	504.80	587.90	600.80	448.00	486.00	517.80	-1.90	-3.80	-9.20
RICE									
MULPOC Total	113.40	120.60	118.90	175.90	205.40	220.40	-55.00	-94.50	-129.80
WHEAT									
MULPOC Total	7.40	6.00	6.00	214.00	259.00	273.60	-216.20	-272.60	-273.40
FRUITS									
MULPOC Total	388.60	409.20	416.20	383.10	425.80	436.20	-59.40	-87.20	-91.70
PLANTAINS									
MULPOC Total	1299.90	1267.30	1282.00	920.30	909.90	887.70	0.00	0.00	0.00
VEGETALES									
MULPOC Total	233.50	235.60	238.90	165.30	175.20	182.00	1.00	-2.30	-4.90
MEATS*									
MULPOC Total	213.40	206.20	203.00	216.10	222.90	226.90	-3.90	-18.70	-25.90
BEEF									
MULPOC Total	121.00	124.50	121.10	119.10	128.30	130.80	0.90	-5.50	-11.60
MILK									
MULPOC Total	202.30	209.20	205.00	265.90	289.70	314.70	-84.20	-101.80	-129.80

* Refers to beef mutton and pigmeat

Source: FAO, 1987 at 2000 Computer Print-Outs, 13 July, 1987, FAO, Rome.
FAO, 1987 Production Computer print-outs, Dec. 1987, FAO, Rome (for Equatorial Guinea and Sao Tome & Principe)

Table 2: Degree of Self-Sufficiency in the Production of Basic Staple Food Commodities in Countries of the Yaounde MULPOC Subregion: 1983/85

Country	Cassava	Irish Potatoes	Other Roots & tubers	Plantains	Cereals (Total)	Maize	Rice	Wheat	Pulses	Meat	Eggs	Milk	Fruits
Cameroon	*	*	*	*	x	*	x	x	*	x	*	x	x
CAR	*	*	*	*	x	*	x	x	*	x	*	x	x
Chad	*	*	*	*	*	x	x	x	*	*	x	*	x
Congo	*	x	x	*	x	x	x	x	*	x	*	x	*
Equatorial Guinea	-	-	-	-	-	-	-	-	-	-	-	-	-
Sao Tome & Principe	-	-	-	-	-	-	-	-	-	-	-	-	-
Gabon	*	x	*	*	x	*	x	x	*	x	*	-	x

Key: * Self-Sufficiency
 X not self-sufficiency
 - Data not available

Source: FAO, 1987, at 2000 computer print-outs, FAO, Rome, 13 July 1987
 FAO, 1987, Production computer print-outs, Dec. 1987
 FAO, Rome (for Equatorial Guinea and Sao Tome)

Table 3: Cereals Food Aid to Central Africa, 1980-1986 (1000MT)

Country	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
Cameroon	3.6	10.2	10.5	5.6	1.1	13.3	11.8
Congo	4.2	1.7	0.4	8.8	0.7	0.5	1.9
Gabon	-	-	-	-	-	-	-
Equatorial Guinea	0.3	2.1	7.9	11.8	7.9	7.0	3.9
Sao Tome & Principe	1.6	1.5	3.1	1.6	9.4	10.2	5.8
Chad	16.2	14.1	28.6	36.0	68.8	163.3	73.5
CAR	3.0	2.5	2.0	4.5	7.6	11.6	10.7
Total	28.9	27.1	52.5	68.3	95.5	205.9	107.6
Africa	3662.2	4511.9	4937.6	4638.3	5133.2	7640.2	5801.7
Share of CA in Africa's Aid(%)	0.8	0.6	1.6	1.5	1.9	2.7	1.9

Source: FAO, 1988. Food Aid Bulletin, No. 5, 1987, FAO, Rome, pp. 42-44.

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6. IBRD, Staff Appraisal Report: Sao Tome and Principe, Cocoa rehabilitation project, Report No. 6146-STP, May 29, 1987.
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8. IBRD, Chad Economic Situation and Priorities, Report No. 6785-CD, Oct. 26, 1987.

Notes

1. Dr. Don Oben is a Marketing Economist, United Nations Economic Commission for Africa (ECA).
2. Cameroon, Congo, Gabon, Equatorial Guinea, Sao Tome-et-Principe, Chad and Centrafrican Republic.
3. Not provided here.
4. Food self-sufficiency in this context refers to the proportion of consumption covered by domestic production.
5. Flows of commodities from one part of a country to another part of the same country.
6. Trade between countries of the MULPOC sub-region.
7. During 1984/1986 it is estimated that there were at least six, three, eleven and seven such institutions respectively in Cameroon, Chad, Congo and Gabon.
8. MIDEVIV: Mission de développement des cultures vivrières.
9. Société d'expansion et de modernisation de la riziculture.

MACROECONOMIC, STABILIZATION AND/OR STRUCTURAL ADJUSTMENT POLICIES AND POVERTY

Theoretical Framework for Measurement

As stated in first section of this document, there is a need to specify an index of poverty if we intend to make a quantitative analysis of the impact of macro-economic, stabilization and/or structural adjustment policies on poverty. Such index has to be convenient and useful, not only in an operational context, but has to have appropriate normative properties. The type of policies mentioned above, are directed towards broad sectors of the economy. Under such economic policy framework, a devaluation will favor the traded sector against the non-traded sector; a reform of the agricultural price may favor rural producers against city consumers and trade reform will favor the export sector against the import competing sector. A poverty index is therefore needed that can be decomposable across sectors and can easily capture sectoral shifts and aggregate them into the impact on overall poverty.

1. Poverty Index: An estimation

Already in 1984, Foster, Greer and Thorbecke had suggested an index which covers many of the properties indicated above. Let us present a similar index. If income is denoted by y , the frequency of density of income $f(y)$ and the poverty line by s , then the poverty index could be expressed as follows:

$$P_a = \int_0^s \left(\frac{s-y}{s}\right)^a f(y) dy; a \geq 0 \quad (1)$$

where $b = s - y$.

In fact what we have here is a family of indices parametrized by a . Essentially the measure takes the "poverty gap" (b) for each poor person as a fraction of the poverty line $\left(\frac{s-y}{s}\right)$ raises this income gap ratio to a power a to reflect "poverty aversion," and sums over the poor units. For $a = 0$ it is easy to see that the measure collapses to

$$P_0 = \int_0^s f(y) dy = R(s) = A \quad (2)$$

where $R(\cdot)$ is the cumulative distribution corresponding to $r(\cdot)$ and $A = R(s)$ is simply the "head count ratio," the fraction of units below the poverty line.

Some authors have criticized the head count ratio for not paying attention at all to how poor are - only to their total number¹. Unless this is taken into account by setting $a = 1$, this could be particularly important in the context of macro-economic and structural adjustment, as expenditure reduction policies for example will affect both the numbers of the poor and the extent to which they fall below the poverty line.

$$P_1 = \int_0^s \left(\frac{s-y}{s}\right) f(y) dy = AB \quad (3)$$

where $B = \frac{s-\bar{y}_p}{s}$ is the income gap ratio at the average poor person's income \bar{y}_p .

P_1 is sometimes referred to as the "per capita aggregate gap." In fact by choosing higher values of a , we could generate even more sensitivity towards incomes of the poorest of the poor.

¹ A.K. Sen. Poverty and Famine: An essay on Entitlement and Deprivation. Oxford University Press 1981.

Apart from its flexibility and its normative properties, the P_a class of indices has one other extremely important feature - it is sub-group decomposable. If the overall population were to be divided into n mutually exclusive and exhaustive groups, indexed $i = 1, 2, \dots, n$, and if $P_{i,a}$ were the value of the poverty measure in group i , then

$$P_a = \sum_{i=1}^n x_i P_{i,a} \quad (4)$$

where x_i is the proportion of population to be found in group i , $\sum_{i=1}^n x_i = 1$.

This additive decomposability follows from the linear structure of the P_a measure, and will prove to be extremely useful in analyzing stabilization and/or structural adjustment programmes. Let us assume a policy change increasing the income of group i and reducing that of group j , we can work out the effect on poverty in each sector and then aggregate up to national poverty using (4). Moreover, if the policy change causes a reallocation of population across the groups (because of rural-urban migration, for example), then (4) can still be used to follow through the effects on national poverty.

In (4), we assume that each of the groups $i = 1, 2, \dots, n$ is mutually exclusive of the others. This is useful for cases where policy affects sectors which are not simultaneously the source of income for a single individual. In developing countries in general and African countries in particular, policy characterization will be in terms of effects on different income sources which are significant components of a single individual's income. For this there is a need to go beyond sub-group decomposition and consider decomposition by income source. Let us write:

$$y = y_1 + y_2$$

where y_1 and y_2 are incomes from the sources for the same individual; and:

$$j(y_1, y_2) = c(y_1 | y_2) p(y_2)$$

where j is the bivariate density of y_1 and y_2 in the population, c is the conditional density of y_1 given y_2 and p is the marginal density of y_2 . The density of y is:

$$r(y) = \int_0^{\infty} c(y - y_2 | y_2) p(y_2) dy_2 \quad (5)$$

The poverty index becomes:

$$\begin{aligned} p_a &= \int_0^s \left(\frac{b}{s}\right)^a r(y) dy \\ &= \int_0^s \left(\frac{b}{s}\right)^a \left[\int_0^{\infty} c(y - y_2 | y_2) p(y_2) dy_2 \right] dy \\ &= \int_0^{\infty} \left[\int_0^s \left(\frac{b}{s}\right)^a c(y - y_2 | y_2) dy \right] p(y_2) dy_2 \\ &= \int_0^{\infty} P_{y_2, a} p(y_2) dy_2 \end{aligned} \quad (6)$$

where

$$P_{y_2^a} = \int_0^s \left(\frac{b}{s}\right)^a c(y-y_2|y_2) dy \quad (7)$$

is the poverty index for those whose source 2 income is y_2 . As we will see later, we can apply this decomposition by income source to the analysis of poverty with expenditure switching measures.

2. Expenditure Reduction and Poverty

Expenditure reduction should be targeted perfectly so that those below the poverty line are insulated, if not, a programme of aggregate demand contraction will inevitably increase poverty. The question is: by how much? The answer of course depends on a detailed specification of each item of expenditure reduction and on how each item feeds into the incomes of the poor. Until now, no attempt to analyze these effects has gone beyond the obvious statement that, as long as the poor bear more of the burden, poverty will increase by more. However, we can derive some benchmark quantifications of the likely impact on poverty, provided, we accept stylized representations of how an economy wide programme of expenditure reduction feeds through to individual incomes.

Let us consider two such stylized representations: the first is that every income is reduced by an amount e (the "additive" model) while the second is that every income is reduced by a factor g (the "multiplicative" model). Then

$$P_a(e) = \int_y^{y+e} \left(\frac{b+e}{s}\right)^a f(y) dy \quad (8)$$

$$P_a(g) = \int_y^{y \cdot g} \left(\frac{b(1-g)}{s}\right)^a f(y) dy \quad (9)$$

The marginal response of poverty to a change in e or g is given by

$$\frac{dP_a(e)}{de} = \frac{a}{s} P_{a-1}(e) \quad (10)$$

$$\frac{dP_a(g)}{dg} = \frac{a}{1-g} [P_{a-1}(g) - P_a(g)] \quad (11)$$

Using the fact that $P_{a-1} > P_a$ it follows that (11) is positive, as is (10). Consequently expenditure reduction increases poverty. This is not surprising, but what (10) and (11) give us are particularly simple expressions of the exact response of poverty, and these can be calculated from income distribution data actually available in many African countries.

Let us try to develop the analysis a little further by assuming a case where expenditure is required to be reduced by ku , where u is the national mean income and k is the expenditure reduction parameter. Then, for the two models of how this macro change feeds through to the micro level, we have

$$e = ku \quad (12)$$

$$g = k \quad (13)$$

Hence

$$\frac{dP_a(e)}{dk} = \frac{dP_a(e)}{de} \frac{de}{dk} = \frac{au}{s} P_{a-1}(e) \quad (14)$$

$$\frac{dP_a(g)}{dk} = \frac{dP_a(g)}{dg} = \frac{a}{1-g} [P_{a-1}(g) - P_a(g)] \quad (15)$$

Assume $a = 1$ i.e. the measure is the poverty gap P_1 . Then

$$\frac{dP_1(e)}{dk} = \frac{u}{s} P_0(e) = \frac{u}{s} A \quad (16)$$

Using (16) to approximate the effect of a small change in k we get that

$$a'P_1(e) = \frac{u}{s} A_0 k \quad (17)$$

a' = an approximation coefficient d'

To illustrate, let the proposed expenditure reduction be of the order of 15% i.e. $a'k = 0.15$.

Then if $\frac{u}{s} = 4$ (i.e. the poverty line is around 1/4 of mean income) and if A is 0.4 (i.e. the headcount ratio is 40%),

we get that $a'P_1(e) = 0.24$ i.e. the poverty gap per head of population as a fraction of the poverty line, will change by 0.24 which means that the per capita poverty gap will increase by 0.24 x s dollars.

To find the percentage change in $P_1(e)$ what we need is

$$\frac{1}{P_1(e)} \frac{dP_1(e)}{dk} = \frac{u}{s} \frac{A}{P_1} = \frac{u}{s} \frac{A}{sAB} = \frac{u}{sB} \quad (18)$$

Assume the income gap ratio B is 1/2 (i.e. the average poor person's income is half the poverty line), then we have $\frac{u}{s} \frac{1}{B} = 4 \cdot \frac{1}{2} = 8$

so that $\frac{a'P_1(e)}{P_1(e)} = 8 \cdot a'k$ and if $a'k = 0.15$, $\frac{a'P_1(e)}{P_1(e)} = 1.2$ i.e. $P_1(e)$ will increase by 120 per cent when an expenditure reduction of 15 per cent takes place.

For the multiplicative case, when $a = 1$,

$$\begin{aligned} \frac{dP_1(g)}{dg} &= \frac{1}{1-g} [A - P_1] \\ &= \frac{A}{1-g} [1 - B] \end{aligned} \quad (19)$$

where the last step uses the fact that $P_1 = AB$. To obtain the percentage change in P_1 , simply divide by P_1 to give

$$\frac{1}{P_1(g)} \frac{dP_1(g)}{dg} = \frac{A}{(1-g)P_1} [1-B]$$

$$= \frac{1}{1-g} \frac{(1-B)}{B} \quad (20)$$

Let us start with $g = 0$, and consider $a'g = 0.15$ i.e. a 15 % expenditure reduction as before. Now

$\frac{a'P_1(g)}{P_1(g)} = \frac{(1-B)}{B} a'k$. If B is 1/2, then $\frac{1-B}{B}$ is unity. Hence a 15 per cent expenditure reduction gives rise to a 15 % increase in P_1 .

This shows that additive reductions in income increase poverty by much more than multiplicative reductions in income. In the multiplicative case the rich lose much more and the poor lose much less in absolute terms (for a given total reduction requirement) and, since we are interested in absolute poverty, the result follows. In any case, the above discussion tells us that $\frac{\mu}{sB}$ and $\frac{1-B}{B}$ are the "sensitivity coefficients" needed to translate macro expenditure reductions into micro poverty increases - the former for the additive case, the latter for the multiplicative case. These can be calculated reasonably easily from the sort of household survey data that are currently available in many African countries.

In concluding the analysis of this model, (a) although we have focused on $a = 1$, it should be clear that higher values of a can be analyzed equally easily, although the data requirements would be much more severe; (b) while the stylized "additive" and "multiplicative" representations of expenditure reduction are useful and analytically convenient, they are also close approximations to the effects of actual policies. For example, consider a cut in food subsidy expenditure which is common in most stabilization and/or structural adjustment packages. If the food subsidy is given by a rationed amount of food sold through government ration shops at below market prices to all households (socialist African countries), and the ration can effectively be resold on the open market - then the effect of the subsidy is to increase every household's income by the same, additive, amount. Hence e is the subsidy times the rationed quantity, and whether the subsidy or the quantity is cut, the effect on poverty is through the change in e . On the other hand, let assume that the subsidy is in the nature of a negative indirect tax i.e. the subsidy is given on every unit consumed and not just on the rationed quantity. Then in this case, a cut in the subsidy rate will approximately cut income in proportion to quantity consumed. However, if quantity consumed is itself in proportion to income, then we are essentially in the multiplicative income transfer case¹.

It is quite clear that what holds for reduction in national absorption holds, with opposite sign, for increases in national income. What we have here, therefore, is a method of assessing how "trickle down" will affect poverty in the long run. Suppose, for example, that the macro-stabilization, which reduces absorption at a stroke by 15 per cent, increases the annual growth rate by 2 percentage points. If the growth trickles down to the micro level in multiplicative manner, then for multiplicative case of expenditure reduction it would take approximately 7.5 years for the poor to regain the ground they lose. If the expenditure reduction is additive in nature, it would take much longer (given the numbers we have used before). Such orders of magnitude constitute enough reason to concentrate on **targeting** the cuts so that the poor are protected².

¹ The Impact of Stabilization and/or Structural Adjustment Programmes on the Rural Sector of African Countries up coming study by the Joint ECA/FAO Agriculture Division (May 1988). This study analyses different aspects of food subsidies and the poor segment of the population.

² The World Bank is tackling these issues within the framework of their Structural Adjustment Programmes. ILO, UNESCO and FAO are working in the same direction. Let us hope for better coordination in these different useful efforts.

3. Expenditure Switching, Stabilization and/or Structural Adjustment Policies and Poverty

The second approach to traditional macro-economic adjustment packages, and the "getting prices right" aspects of structural adjustment packages, involve changing the composition of national output by means of changes in relative price. It is called the expenditure switching approach. Many authors have discussed different aspects of this approach¹. The sectoral analysis of these authors, could serve as basis to derive more detailed results on the behavior of poverty as the result of a relative price change.

Let us consider a simple assumption: two sector models of the economy, two goods, with constant returns to scale production functions employing two factors:

$$R_1(K_1, D_1); R_2(K_2, D_2) \quad (21)$$

The prices of the two goods are p_1 and p_2 and the returns to the two factors a_1, a_2 and s_1, s_2 in each of the two sectors. In the short to medium run, where factors are immobile across the sectors, factor returns are given by

$$p_1 \frac{a'R_1}{a'K_1} = s_1; p_1 \frac{a'R_1}{a'D_1} = a_1 \quad p_2 \frac{a'R_2}{a'K_2} = s_2; p_2 \frac{a'R_2}{a'D_2} = a_2 \quad (22)$$

The first assumption is that the population is divided into four mutually exclusive and exhaustive groups composed of units which get their income solely from a factor in a particular sector. The total incomes of each of these four groups are thus

$$Y_{K_1} = s_1 K_1; Y_{K_2} = s_2 K_2 \quad Y_{D_1} = a_1 D_1; Y_{D_2} = a_2 D_2 \quad (23)$$

In this setting it is easily seen that a 1 % change in P_1 will cause a 1 per cent change in s_1 and a_1 , and that a 1 % change in p_2 will cause a 1 % change in s_2 and a_2 . If we suppose that individual incomes in the four groups differ because of a fixed distribution of factor endowments, a 1 % change in s_1, a_1, s_2 or a_2 , will lead to a 1 % change in individual incomes. Thus if we denote individual incomes and factor endowments by lower case letters, we have

$$y_{k_1} = s_1 k_1; y_{k_2} = s_2 k_2 \quad y_{d_1} = a_1 d_1; y_{d_2} = a_2 d_2 \quad (24)$$

and poverty in each of the four sectors can be written

$$P_{k_1, s} = \int_0^1 \left(\frac{s - y_{k_1}}{s} \right) ar_{k_1}(y_{k_1}) \quad P_{k_2, s} = \int_0^1 \left(\frac{s - y_{k_2}}{s} \right) ar_{k_2}(y_{k_2})$$

$$P_{d_1, a} = \int_0^1 \left(\frac{s - y_{d_1}}{s} \right) ar_{d_1}(y_{d_1}) \quad P_{d_2, a} = \int_0^1 \left(\frac{s - y_{d_2}}{s} \right) ar_{d_2}(y_{d_2}) \quad (25)$$

Assuming the proportions of population in each of the four groups are given by

$$C_1, C_2, C_3, C_4 \quad ; \quad C_1 + C_2 + C_3 + C_4 = 1$$

Furthermore, we know from the properties of the P_a measure that overall poverty is

¹ J.B. Knight: "Devaluation and Income Distribution in Less Developed Economies" Oxford Economic Papers 1976; Johnson O. and J. Salop Distributional Aspects of Stabilization Programmes in Developing Countries IMF Staff Papers 1980.; S.C. Nana-Sinkam "Devaluation et Substituts fiscaux" Bulletin de la BEAC 1980.; Collings, S. "Stabilization Policy, Poverty and the Distribution of Income" Mimeographed CPD. World Bank 1986.

$$P_a = CP_{k_1} a + C_2 P_{k_2} a + C_3 P_{d_1} a + C_4 P_{d_2} a \quad (26)$$

Now, we can assess the total effects on poverty of an increase in the price of good 1 and a decrease in the price of good 2. When P_2 changes by a factor or proportionality g_2 , so do y_{k_1} and y_{d_1} . When P_2 changes by a factor of proportionality g_2 , so do y_{k_2} and y_{d_2} .

Consequently,

$$\begin{aligned} \frac{dP_{k_1 a}}{dg_1} \Big|_{g_1=0} &= -a[P_{k_1 a-1} - P_{k_1 a}] & \frac{dP_{d_1 a}}{dg_1} \Big|_{g_1=0} &= -a[P_{d_1 a-1} - P_{d_1 a}] \\ \frac{dP_{k_2 a}}{dg_2} \Big|_{g_2=0} &= -a[P_{k_2 a-1} - P_{k_2 a}] & \frac{dP_{d_2 a}}{dg_2} \Big|_{g_2=0} &= -a[P_{d_2 a-1} - P_{d_2 a}] \end{aligned} \quad (27)$$

Let us make a reasonable assumption, namely that no owners of capital are below the poverty line in either sector, then a policy change N which increases P_1 and decreases P_2 leads to:

$$\frac{dp_2}{dN} = -x_{d_1} a [P_{d_1 a-1} - P_{d_1 a}] \frac{dg_1}{dN} - x_{d_2} a [P_{d_2 a-1} - P_{d_2 a}] \frac{dg_2}{dN} \quad (28)$$

if $a = 1$ and $\frac{dg_1}{dN} = -\frac{dg_2}{dN}$ we obtain:

$$\frac{dP_2}{dN} = \frac{dg_1}{dN} (C_4 A_{d_2} (1 - B_{d_2}) - C_3 A_{d_1} (1 - B_{d_1})) \quad (29)$$

where A and B are, as usual, head count ratio and income gap ratio.

Equation (29) gives a precise method for assessing the (marginal) effect of relative price changes in the short to medium run, when factor mobility across sectors is low. It also shows that the information required is the head count ratio and income gap ratio in each of the two population groups. In fact, given the assumption that no one in the k_1 and k_2 groups is below the poverty line, we only need to know C_3 , C_4 and the sectoral distributions of income to allow the construction of A_{d_1} , A_{d_2} , B_{d_1} and B_{d_2} . This should be possible using existing household income and expenditure surveys in many African countries.

The second assumption relates to the medium to long term scenario where factors move so as to equalize factor returns. Then we know that (22) has to be replaced by

$$w = a_1 = a_2 \quad ; \quad r' = s_1 = s_2 \quad (30)$$

and D_1 , D_2 , K_1 , K_2 become endogenous, subject to the overall constraint

$$D_1 + D_2 = D \quad (31)$$

$$K_1 + K_2 = K \quad (32)$$

where K and D are economy wide disponibilities of the two factors. By using the Stolper-Samuelson theorem, we know that

$$\frac{a'w}{a'p_1} = \frac{1}{b_{1D} \frac{b'_{1K} b'_{2D}}{b'_{2K}}} \quad (33)$$

where b'_{ij} is factor input j per unit of sector i 's output. Thus if sector 1 is relatively more labor intensive, an increase in P_1 will cause an increase in w . Similarly, depending on relative factor intensities, we can say whether or not, the returns to the factors increase or decrease as the result of a change in the other price. This is the Stolper-Samuelson theorem, which has been used so often in the "qualitative" approach to the analysis of adjustment and income distribution.

The next step is how to proceed from this basic result in trade theory to a quantification of the effects on poverty.

Keeping the assumption that no owners of capital are in poverty, and focusing on the earnings of labor, with

$$y_{d_1} = w_{d_1}; y_{d_2} = w_{d_2} \quad (34)$$

a change in w by a factor g_w will change y_{d_1} and y_{d_2} also by a factor g_w .

If the distribution of factor endowments within the d_1 and d_2 sectors remain unchanged then, as before, we can write:

$$\frac{dP_{d_{1a}}}{dg_w} \Big|_{g_w=0} = -a[P_{d_{1a-1}} - P_{d_{1a}}] \quad (35)$$

$$\frac{dP_{d_{2a}}}{dg_w} \Big|_{g_w=0} = -a[P_{d_{2a-1}} - P_{d_{2a}}] \quad (36)$$

We know that, along with this change there will be a reallocation of labor across the two sectors. The exact pattern of reallocation will affect the overall distribution of income. Let us further assume that population is withdrawn representatively from the sector 1 distribution and when it moves into sector 2 it takes up the sector 2 distribution. This, although a strong assumption, simplifies the characterization of the effects on poverty.

We can now write the overall effect on poverty of policy change N as follow:

$$\frac{dP_a}{dN} = x_{d_1} \frac{dP_{d_{1a}}}{dg_w} \frac{dg_w}{dN} + x_{d_2} \frac{dP_{d_{2a}}}{dg_w} \frac{dg_w}{dN} + P_{d_{1a}} \frac{dC_3}{dN} + P_{d_{2a}} \frac{dC_4}{dN} \quad (37)$$

$$= -\frac{dg_w}{dN} \{C_3 a [P_{d_{1a-1}} - P_{d_{1a}}] + C_4 a [P_{d_{2a-1}} - P_{d_{2a}}]\} + \frac{dC_3}{dN} (P_{d_{1a}} - P_{d_{2a}}) \quad (38)$$

where we have used the identity $dc_3 = -dC_4$. For $a = 1$, the extra information needed is the head count ratio and the income gap ratio in each of the sectors:

$$\frac{dP_1}{dN} = -\frac{dg_w}{dN} (C_3 A_{d_1} (1 - B_{d_1}) + C_4 A_{d_2} (1 - B_{d_2})) \quad (39)$$

$$+ \frac{dC_3}{dN} (A_{d_1} B_{d_1} - A_{d_2} B_{d_2}) \quad (40)$$

There is no doubt that the above analysis is applicable to any relative price change, including a change in the relative price of traded and non-traded goods i.e. a devaluation. However, it should be noted that the sectoral division between traded and non-traded goods is not necessarily reflected in the sectoral divisions available in household income and expenditure surveys.

The above analysis is based on the assumption of mutual exclusivity of income sources - no individual unit has income from more than one source. However, some African countries have cases where this assumption is inappropriate and needs to be relaxed.

Consider a farmer producing an export crop and a locally sold food crop. Shifting the terms of trade between traded and non-traded goods will affect both income sources for the farmer. The question is whether this methodology could be adapted to such cases.

$$y = y_1 + y_2$$

where y_1 and y_2 are incomes from the two sources, then it should be immediately obvious that an additive transfer from source 1 to source 2 will not affect the income distribution at all. If we are considering a balanced budget re-targeting of food subsidy from one rationed commodity to another rationed commodity, the effect on poverty will be zero. However, a multiplicative transfer from source 1 to source 2 will indeed affect income distribution and poverty, and it is that case we are taking up below.

Let us designate the mean of source 1 income by u_1 and by u_2 the mean of source 2 income. If each source 1 income decreases by a factor g and each source 2 income increases by a factor v . Then

$$y = (1 - g)y_1 + (1 + v)y_2 \quad (41)$$

We are interested in changes which preserve overall means income (pure compositional changes). We need

$$v = \frac{gu_1}{u_2} \quad (42)$$

With this, we use the source of decomposition of P_a , developed previously to write

$$\begin{aligned} P_a &= \int_0^s \int_0^i \left(\frac{s-y}{s}\right)^a C\left(\frac{y - (1+gu_1/u_2)y_2}{1-g} | y_2\right) dy_2 p(y) dy \\ &= (1-g)^{1-a} \int_0^s \int_0^i \left[\frac{s-y_1}{s}\right]^a C(y_1 | y_2) dy_1 p(y_2) dy_2 \end{aligned} \quad (43)$$

where

$$s = \frac{s - (1+gu_1/u_2)y_2}{1-g} \quad (44)$$

Consequently,

$$\frac{dP_a}{dg} = \left(\frac{1-a}{1-g}\right) P_a + \left(\frac{1-g}{s}\right)^{1-a} \int_0^s \int_0^i \left[\frac{s-y_1}{s}\right]^{a-1} \left[\frac{s-y_2(1+u_1/u_2)}{(1-g)^2}\right] C(y_1 | y_2) dy_1 p(y_2) dy_2 \quad (45)$$

This seems to be a fairly complicated expression, which becomes considerably simple if we set $g = 0$ (i.e. consider marginal changes), and if we restrict attention to $a = 1$ (i.e. the poverty gap measure p_1), then

$$\begin{aligned} \frac{dP_1}{dg} \Big|_{g=0} &= \int_0^s \int_0^i \left[\frac{s-y_2(1+u_1/u_2)}{s}\right] a(y_1 | y_2) dy_1 p(y_2) dy_2 \\ &= A - \left(\frac{a+u_1/u_2}{s}\right) \int_0^s y_2 A_1 p(y_2) dy_2 \end{aligned} \quad (46)$$

where A is the overall head count ratio and A_{y_2} is the head count ratio at the condition that source 2 income be y_2 :

$$A_{y_2} = \int_0^s c(y_1 | y_2) dy_1$$

We can further simplify the expression to:

$$\frac{dP_1}{dg} \Big|_{g=0} = \frac{A_{y_2}^p}{s} \left[\frac{s}{y_2^p} - \frac{u_1}{u_2} - 1 \right] \quad (47)$$

where $\frac{\int_0^s y_2 A_{y_2}^p(y_2) dy_2}{A}$ is the mean of source 2 income for those below the poverty line. Consequently, the

information required to gauge whether poverty would increase when stabilization and/or structural adjustment or expenditure switching policy leads to a multiplicative shift of income from source 1 to source 2 is fairly straightforward. The only new element we have introduced here, is the need to know the mean income from each source for those below the poverty line.