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LABOR FORCE PLANNING, DEVELOPMENT  
AND  
UTILIZATION PROJECT  
SUB-SAHARAN HUMAN RESOURCES

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The Sub-Saharan Region

## PREFACE

Nations of Sub-Saharan Africa have lagged behind other Third World countries in terms of economic growth, physical infrastructural expansion, and human resource and social overhead development. Excluding oil-development rich Nigeria, they share problems common to all oil importing developing countries; those of unprecedented current account deficits caused by considerable increases in petroleum import prices, periodic but precipitous declines in terms of trade for their primary commodities, and a general inflation combined with recession in the industrial world. Consequently, they labor under continuing severe shortages of foreign and domestic income to finance development.

Recently, the Sub-Saharan crisis has attracted the analytic attention of the international development community (O.E.C.D., 1980). It has also prompted member states of the Organization for African Unity to issue a statement of shared intent concerning economic growth recovery and integration and to appeal to the international community for assistance (O.A.U., 1980).

Analysts of the crisis have focused primarily on the policies and external aid needed to bring about a macroeconomic adjustment aimed at recovering and sustaining economic expansion. Human resource problems related to the attainment of this goal have not received thorough analytic treatment. Yet, it is commonly acknowledged that an economic recovery of sufficient magnitude to

generate resources for attacking mass poverty would require surpassing previous progress in the amelioration of key human resources. Human resource development is a prerequisite not only for recovery from the current crisis but also for long term growth and meeting basic needs.

The Agency for International Development (AID) intends to review human resource development problems in the Sub-Sahara Region in order to evaluate its strategy and programs. The following paper has been prepared to assist AID in initiating such a review. This paper addresses four questions:

1. What are the major human resource development constraints on the modern sector's capacity to alleviate mass poverty?
2. How have these constraints been addressed?
3. What are the implications for bilateral donor aid policies? (The significance of this question stems from the fact that up to one-third of all public investment in most Sub-Saharan countries is financed by "official development assistance" from aid donors.)
4. What steps should AID take, and how should AID proceed with its review?

The Appendix contains an Annex listing countries which comprise the Sub-Sahara Region in Africa. The term "human resource development" as used in this paper goes beyond the neo-classical concept of "human capital investment" to encompass institutional development and dynamics. In the Sub-Saharan context, institutional development is equally as important as the production and utilization of manpower skills in response to quantitative and qualitative needs of economic growth and mass poverty alleviation. The term "modern sector" refers to that area in the dualistic Sub-Saharan economies

which is monetized. The term "traditional sector" refers to the largely subsistence segment of the economy which is not fully monetized; that is, economic exchange often occurs in this sector through barter rather than through the use of monetary units as a means of payment.

The "meeting of basic human needs" in employment , health, nutrition, education, training, shelter, clothing, etc., is assumed to be an objective of development policy. There are no development strategies that can be applied universally in pursuit of the basic needs objective. However, it is assumed that basic needs of the poor cannot be met, nor their poverty conditions ameliorated, unless their economic productivity is first improved and they experience quantum improvements in their social consumption. Productivity and consumption are reinforcing and mutually dependent.

## INTRODUCTION

This paper is governed by a working hypothesis concerning the relationship of human resource development in the modern sector to a country's capacity for meeting basic needs of the majority of its population. The hypothesis may be stated as follows:

In the dualistic and quasi-dualistic economies of the Sub-Sahara, the relationship in question is both direct and indirect. In a direct sense, the quantity and quality of the stocks and flows of manpower skills available to the modern sector, together with the institutional viability of that sector's delivery mechanisms, directly affect the delivery and technological content of economic and social services, planning, and management. In an indirect sense, the modern sector is a main source of the economic growth needed to generate resources and current income for meeting basic needs.

Human resource formation, manpower utilization, and institutional development in the modern sector influence:

national policy planning and the degree to which technical analysis and considerations guide decisions on the allocation of the resources;

the productivity of economic, revenue producing activities; and

the technical operation and managerial efficiency of the public administration including parastatal agencies.

In economic terms the gestation period of investment in institutional and human resource development can be a lengthy one compared to that of other investments. However, in most Sub-Saharan countries the productive and effective utilization of appropriately qualified manpower and the operational viability of institutions are vital

to both the long and short-term development process.

The Sub-Saharan Region stands out in the developing world as home for 20 of the 30 countries listed by the United Nations as "least developed." It also contains 22 nations out of the 36 classified by the World Bank as "low income" nations having an annual per capita income of less than U.S. \$370.

In the 1960s and 1970s the Sub-Sahara averaged an annual growth in per capita income of only 1.2 percent per annum compared with 3.5 percent per annum growth in the developing world as a whole. The current Sub-Sahara crisis emerged during the past decade and, since 1970, per capita income growth has averaged 0.8 percent per annum. Fifteen Sub-Saharan African countries have experienced negative per capita income growth since the start of the past decade with an average of 0.3 percent per year. (World Bank, World Development Report, 1981, pp. 134-137) Furthermore, in most of these countries the bulk of the labor force works in agriculture which contributes 30 to 60 percent of aggregate economic output. During the 1960s agricultural production increased in the Sub-Sahara by 20 percent. Since 1970 agricultural output per capita has registered a decline of 0.9 percent per annum for the region as a whole, while population has grown by an average of 2.7 percent per annum, the highest rate of any region in the Third World. (World Bank, World Development Report, 1981, pp. 134-137) In Senegal, for example, agriculture contributes 30 percent of the GDP and 60 percent of export earnings. At the same time, more than one-third of Senegal's total imports are food products for domestic consumption which are paid for with the help of export earnings. Little foreign exchange is left with which to

finance development. (McEvers, 1980, p. 4)

Current account deficits for the Sub-Sahara as a whole increased from \$1.5 billion in 1970 to \$8 billion by 1980, and foreign indebtedness of these countries mounted concomitantly. (World Bank Accelerated Development in Sub-Saharan Africa, 1981, p. 159). Reserves of foreign exchange have fallen off sharply. For example, in Senegal net foreign exchange reserves fell to a low of minus 34 billion CFA by the start of 1979, causing the government to resort more heavily to external borrowing to finance public investments. Senegal's external debt service obligations rose from 5 to 20 percent of its annual revenues between 1975 and 1979, thereby almost eliminating the investible surplus in its public budget. The Ivory Coast has recorded a better economic growth performance over the last twenty years than most other countries of the region. Yet, despite occasionally favorable trends in world prices for its major exports -- coffee, palm oil, and cocoa, that country's current account deficit rose over 205 times between 1970 and 1978, i.e., from \$26 to \$533 million. (McEvers, 1980, p. 7)

The current Sub-Saharan crisis, even under the most optimistic of prognoses, is expected to last until the mid to late 1980s, carrying with it alarming implications for human resource and institutional development programs. These programs, including development activities in small farmer agriculture and rural industries, require recurrent subsidization and adequate lead time for investment cost-recovery. Moreover, education and training are not only non-revenue producing for the most part but also have high recurrent-to-investment cost ratios. Decision makers are now placed in the unenviable position of having to emphasize the most productive

activities in allocating available meager resources, often to the detriment of manpower and other social programs.

Implications of the current crisis may be illustrated in the cases of Senegal and the Ivory Coast. In Senegal the government has had to readjust its investment budget downwards to 75 percent of the total it had programmed under the Fifth Development Plan. Senegal's Sixth Development Plan will further emphasize the priority already accorded under the Fifth Plan to direct revenue producing investments. (58 percent of the total Fifth Plan investment up from 52 percent under the Fourth Plan.) Accordingly, the Senegalese government has decided to put aside many of its social targets. For example, in education it has abandoned target years for achieving universal primary schooling in favor of upgrading educational quality at that level. Last year the government decided to indefinitely freeze formal education's share of the total national budget (recurrent plus investment) at the 25 percent level which had been obtained in previous years. Consequently, it adopted a policy of restricting enrollment growth at all levels of the formal educational system. Similarly, in the Ivory Coast the government has decided to concentrate its public resources on the economic sectors and announced that the 1985 target for universal primary education will not be achieved due to lack of resources. (McEvers, 1980, p. 5)

Since 1960 formal education enrollments have grown faster in Sub-Saharan Africa than in other Third World Regions. In addition, life expectancy at birth has risen on the average from 39 to 47 years (21 percent) and infrastructural facilities such as public utilities, communications, and transportation have been created, which has

opened up remote areas formerly closed off and isolated. Notwithstanding the progress, regional comparisons demonstrate that the Sub-Sahara still falls considerably behind the rest of the Third World in terms of all the standard indicators of economic and social development. (See Appendix, Tables 1 and 2 for additional information.) Figures for the 1960 baseline year suggest that, in comparison with the other regions of the Third World, the Sub-Sahara's development process started from a much lower base. That this region started from a lower base, but has nonetheless progressed at a slower pace than the rest of the developing world, is due to the relatively unique character of the development problems confronted by Sub-Saharan countries. To understand these problems, it is essential to examine their environmental and historical etiologies.

## I. SUB-SAHARAN DEVELOPMENT

Sub-Saharan nations differ somewhat in respect to their territorial, demographic, and economic sizes and nature resource endowments, but they share a history of colonialism and the arbitrary establishment of their national boundaries by those colonial nations. Thus, within a given nation-state there may coexist many different ethnic groups or tribes each with its own culture and language. In many cases a tribal group spans one or more national borders. A rich cultural diversity is also provided by the colonial heritages which embrace languages, institutions, and other cultural intrusions from France, England, Portugal, Italy, Holland, Spain, and Germany. (The Francophone-Anglophone difference has been a particular barrier to communication and intercourse.)

In most of the Sub-Saharan countries 50 percent or more of the agricultural output is generated by subsistence-type production. Less than one-third of Sub-Saharan populations live in the urban sector and only ten percent or less of the national workforce can be found in modern sector wage activities.

There are also many common features of cultural heritage and development experience. This paper endeavors to delineate commonalities of national problems and experience in order to advance some valid generalizations.

## 1. The Etiology of Development Problems and Styles

### A. Environmental and Physical Resource Factors

Sub-Saharan countries have tropical climates and environments which are hostile to most forms of concentrated, intensive human effort. Intense tropical heat and high humidity not only engender human lethargy but also provide a hospitable environment for many bacteria, parasites, and insects. This environment provides ideal conditions for the breeding, recrudescence, transmission, and spread of infectious parasitic, bacterial, and viral diseases. These diseases, which include malaria, yellow fever, cholera, trachoma, filariasis, onchocerciosis, schistosomiasis, African trypanosomiasis, and leprosy, exact an enormous toll in terms of morbidity, debility, and incapacitation, and mortality. Moreover, housing and clothing appropriate to these climates offer little protection against injuries or insects. Food preservation and hygiene are more difficult because of high temperatures, crowding, inadequate drainage and high water tables. (McEvers, 1980) Consequently, as Karmack has argued, the obstacles to the alleviate of Sub-Saharan poverty are more difficult to overcome than the problems formerly experienced by nations that today rank as "developed." (Karmack, 1976)

Natural resource endowments vary among these nations. Generally speaking, at independence most countries had favorable arable land-to-population ratios. However, much of the soil tends to be poor due to synergistic interaction of topography and climate and

scanty rainfall in much of the region. Where rain is plentiful, annual fluctuations make for unpredictable inter-seasonal patterns. Thus, rain fed cultivation is limited. Although some of the highlands and coastal plains of the Sub-Sahara have rich volcanic soils, most of the region's soils lack nutrients. Furthermore, tropical heat and continuous reproduction of bacteria, insects, and plants throughout the year render the task of pest control intractable.

Sub-Saharan resource endowments include mineral deposits; however, they tend to be concentrated in Zambia, Zaire, Angola, Gabon, and Niger. Their exploitation has been associated with massive distortions in the modern sector's wage structure, which has, in turn, thwarted development of the non-mineral economic sectors. (Acharya, 1981)

## B. Historical Determinants and Contemporary Circumstances

Historical record shows that subsistence agriculture in the Sub-Sahara was always characterized by shifting cultivation based on slash and burn. Other farming modes such as those practiced by herdsmen existed to a lesser degree. Village communities were delineated by the boundaries of kinship. Their governance by tribal chieftains was a governance over people rather than land. European-type land tenancy never took hold except in Ethiopia. Commercial activities consisted of long-distance trade in gold, ivory, and slaves from West Africa across the Sahara to the Megreb and was carried out by the great tribal empires of the Ashanti, Mali, Dahomey, and Benin. This tract was motivated by kinship and tribal affiliations and by market forces of supply and demand. Pre-colonial Sub-Sahara did not experience any of the nascent technological development found in Europe and Asia. Thus, for example, animal traction was not employed for farming purposes. (Acharya, 1981)

Colonial conquest, spurred by mercantilist imperatives, began in the fifteenth century and led to the total replacement of over-land inter-African trade by African-European commerce. This pattern was altered in the seventeenth and eighteenth centuries by the massive slave trade which sent upwards of 15 million people across the Atlantic Ocean. The slave trade generated widespread intertribal conflict and anarchy. (Rodnay, 1972)

In the late eighteenth century mercantilist interests led the European powers to extend their imperial domination over the whole of Sub-Saharan African and to compete with one another in the "scramble"

to carve up the African continent. Territorial expansion ensued for the purpose of exploiting agricultural, commercial, and mineral opportunities based on the use of cheap African labor. The colonial powers found themselves required to install some physical communication infrastructure and to establish governmental administrations. They also had to introduce public health measures against communicable and infectious diseases. Christian missionaries established some elementary schools. In East and Central Africa the colonial powers encouraged settlements by their own citizens, who then took the best land. The African populous was largely excluded from agricultural development through discriminatory regulations and practices such as extension of agricultural credit, government research, and manipulation of prices and markets. In some colonies Africans were excluded by law from cash farming opportunities. (Duignan and Gann, 1975)

In Central and East Africa white settlers and their colonial administrations also excluded Africans from opportunities in industry (set up on an import substitution basis) and from commerce and service activities. Legal restrictions excluding Africans were applied to maintain colonial monopolies over export crops and to protect "infant" industries. Thus, the precedence of statist intervention and regulations of the economy was implanted. In West Africa production of food and export crops was left largely to local African peasantries. Owing to their commercial farming backgrounds, some West African farmers were able to make a transition into commercial activities including wholesale and retail, rural artisan activities, etc. However, West African colonies also

experienced pervasive state intervention by colonial administrations in the form of marketing boards and export monopolies which were used by colonial authorities for purposes of agricultural taxation. (Duignon and Gann, 1975)

In both sub-regions of the Sub-Sahara agriculture remained predominant and independent industrial structures never became established. For example, the share of manufacturing output in aggregate economic production seldom rose to more than seven or eight percent. Furthermore, export-import trade was dominated by some large trading concerns from the metropolitan countries. They had networks of interlocking relationships with transport companies and banking houses that easily monopolized the Sub-Sahara's external trade. This monopolization discouraged African initiative from going into local manufacturing to cater for domestic markets. It was only in the mid to late 1950s that these trading monopolies turned to local industrial investment in order to preserve their local markets against the competition of foreign imports from other sources.

Economic and social responsibilities of the colonial administrations expanded during World War II and the postwar period up to the advent of independence. Colonial governments introduced economic planning and their metropolitan capitals began to provide some financial and economic aid, mostly on commercial lending terms. Investment in physical infrastructure was designed to favor the expansion of European-owned and dominated economic interests. A nascent concern for African welfare did lead to some investment in education and training, using funds raised through local taxation, as well as some

expenditure on African agriculture and support services. New trading arrangements were established to increase the export of manufactured goods from the metropole to the colonies and, in turn, to benefit expatriate-owned agriculture and mining enterprises with trade preferences and other forms of market protection. (Acharya, 1981)

In the late 1950s and early 1960s movements of national liberation finally managed to secure independence and constitutional nation-statehood in most of the Sub-Sahara. This formal independence was usually preceded by a period of "internal self rule" through which the colonial powers sought to introduce and establish their own governmental forms. However, neither the Napoleonic-Republican nor the Westminster-Whitehall models of governance took hold in the traditional societies and cultures of the region. Since tribalism remained the dominant influence in political life, the colonially imposed forms of government soon broke down. Leaders of these new nation-states also became engulfed in conflicts generated by massive demands from their people for material and social betterment, by inter-tribal conflict, and by irredentism. These interrelated, overlapping forces have usually resulted in what could be characterized as pervasive and continuing social revolution and concomitant instability and turmoil. Irredentism, for example, has led to violent upheavals, interstate conflict, and civil wars in Nigeria, Chad, Ethiopia, Somalia, and Angola. The mode of governance emerging from this experience has been that of one-man rule based either on military or single-party civilian dictatorship.

Since the Sub-Saharan nations lack national institutions that possess widespread legitimacy, it is unlikely that conflicts

generated by the social revolution can be mediated peacefully. Until such institutions take root, it may be expected that these countries will continue to experience political instability and upheaval, with the transference of power often taking place by violent means. Civil strife, interstate warfare, and their human consequences -- such as the massive population displacement which gives the region more than half of the world's refugees -- will re-occur. On the average, defense expenditures now stand second to education in their claims on national budgets. Amounting to almost three percent of the GNP, they draw sorely needed resources from development and basic human needs programs. (See Appendix, Table 1.)

Conventional wisdom holds that social and economic development can take up where national liberation movements have left off in welding disparate ethnic groups into a cohesive nation-state within the arbitrarily demarcated boundaries of the Sub-Saharan countries. Responsibility for acquiring the economic and political substance of autonomous nation-statehood rests with the government. In their role as prime agents for promoting socio-economic advancement the Sub-Saharan governments seek to mobilize internal as well as foreign resources. They have also fostered Africanization at the upper levels of the manpower ladder. Most Sub-Saharan governments have been handicapped in pursuing these aims, however, by the paucity of available resources, weak and corrupt administrations, and by a lack of effective policy mechanisms.

Dependence on the export of a few primary products subjects the economic health of Sub-Saharan countries to prevailing trends in world market prices and terms of trade. The poverty of these Sub-Saharan countries puts them into a position where they lack "market

power" in world commercial and capital markets and, consequently, their economies are very vulnerable to international commercial, financial, and monetary trends over which their governments have no influence. Therefore, Sub-Saharan countries seek through the "Group of 77" and in the various forums of the United Nations and global deliberations to bring about a more equitable world economic structure through which they could influence decisions over the ground rules of trade and commerce and the creation and allocation of internal liquidity and, thereby, reduce their economic vulnerability.

Colonial rule left these countries with educated elites who were not only miniscule in number relative to national populations but also inclined to the views and postures of the colonial and metropolitan institutions where they had studied. After independence these people acquired the levers of political power and social privilege and, to the extent their surviving numbers, tend to staff the various echelons of public service. As the inheritors of political, economic, and social power, they have assiduously built up their countries' modern sectors at the expense of the rest of the economy. In so doing they have managed to increase the concentration of economic wealth and income in their own hands.

Sub-Saharan elites have elaborated, on an informal basis, their own "stages of growth" theory. This theory calls for expanding the modern sector to embrace the entire economic society ("modernization") in order to "catch up" with the industrialized world. Their intent is to bridge the gap in economic wealth and income between the Sub-Saharan countries and the O.E.C.D. community. They have received capital intensive industrialization and the transfer from the west of sophisticated technology as the vehicles through which

to achieve this objective. In their policy decisions, including those concerning pricing policy, and in their allocation of national resources these urban-based elites have consistently favored the urban, modern sector over the rural, traditional one. Owing to the limited reach of their fiscal systems, mounting military outlays, and other internal and external constraints previously mentioned, Sub-Saharan governments have usually been unable to mobilize more than about 20 percent of GDP for public sector economic and social investment. Given the recurrent needs of past public investments, governments of even the richest countries (Nigeria, Gabon, and Ivory Coast) often find themselves unable to meet recurrent financial needs of ongoing activities. External aid sources, particularly the bilateral donors, have encouraged this focus on capital investment projects to the detriment of the recurrent needs of existing programs. (Davies, 1980)

Institutions. With the formation of nation-states the apparatus of modern government administration was introduced into traditional societies and cultures in which loyalties were limited to kinship groups and tribes. Even today, kinship and tribal allegiances supersede loyalties to institutions and to the bureaucratic or institutional modes of behavior. Consequently, decisions on important matters are seldom made through the formalized institutional process, but instead, through informal political and tribal channels.

A tradition of paternalism between government and people is also part of the colonial legacy to the Sub-Sahara. Public intervention in the economy was always perceived by Sub-Saharan peoples as intended to solve their social and material problems. This led to

a psychology of dependency where people assumed that the state would automatically provide all education, health, water, sewage, roads, lighting, and housing. While these public services were limited during the colonial period to the urban areas where colonial administrators resided, following independence expectations of access to these services spread to the bulk of the population. This attitude led to tremendous popular pressures for an expansion of services. Attempts to satisfy these mounting demands combined with the tendency to overdesign facilities in the name of "modernization" have cut into public savings. (Acharya, 1981)

Colonial administrations granted high salaries to the upper and middle level manpower they retained in order to facilitate recruitment from their metropolitan capitals. These wage scales bore no relation to average standards of living in the Sub-Saharan colonies. It was hardly uncommon for the ratio between top salaries of the public service and those of unskilled labor to be on the order to 30:1 or 50:1 (contrasted with 4:1 or 5:1 in England and the United States). This structure of wages was "topped off" by generous provisions of housing, car subsidies, and other "perquisites." After independence such practices spilled over into high design standards for public services in the modern sector, reflecting the tendency to transplant colonial standards. The new elites of Sub-Saharan countries have diligently sought to preserve these colonial traditions and the same wage structure still remains. Furthermore, this structure permeates the private sector where multinational corporations have also attempted to preserve the colonial standards. (Davis, 1980)

The main purpose of colonial administration was to preserve "law and order." At the advent of independence the new governments were too ill-equipped and understaffed to fulfill the demands of their populations for social and economic services. Like their colonial predecessors, the new governments have relied heavily upon public enterprises, parastatal agencies, administered prices, and other directed economic controls in the absence of efficient product and factor markets. These economic incentives have been ineffective. (Acharya, 1981)

These new governments desperately need technically qualified manpower rather than generalists to plan and manage the services demanded by their constituencies. However, many install a top cadre of "permanent secretaries" who are generalist administrators trained in colonial bureaucratic bookkeeping. Moreover, many of their functionaries were expatriates and former members of the British Colonial Service.

Finally, elites in both Francophone and Anglophone states inherited an ingrained aversion to change or innovation. Although the new challenges of economic and social development and of meeting basic needs have demanded new solutions --including new institutional forms compatible with local circumstances and traditions, the new elites have tended to rely on their inherited colonial traditions. Thus, while it is extremely important to encourage human talent in order to solve practical problems, the new elites insist upon formal educational certification. This creates a situation where certification is more important than natural ability. Furthermore, in Anglophone areas primary and

junior secondary school students study British constitutional history and many subjects irrelevant to African environments often through the medium of English. In Francophone countries secondary school students master French, study Latin, and learn the history of the Napoleonic Wars.

Entrepreneurship. In East and Central Africa private enterprise had been the exclusive preserve of Europeans and of some Asian, Levantine, Arab, and Greek minorities. These minorities tended to dominate the distributive trades. They had been discriminated against by the colonial administrations, particularly in British colonies. After independence the new African elites considered them to be undesirable elements because of their past associations with the colonial power structures and for owning commercial and other economic assets from which African participation was precluded. Indeed, at independence African participation in this enterprise was virtually nonexistent, especially in the manufacturing sector. In Kenya, Uganda, and Zambia not a single African-owned and operated enterprise with more than 10 employees existed. (World Bank World Development Report, 1981, p. 9) Nationalistic sentiments prompted the new elites to discriminate against these local commercial classes. In Uganda and Tanzania their assets were expropriated and they were expelled.

In West Africa the newly independent countries had small coteries of African enterprise in craft and artisan activities such as tailoring, woodworking, goldsmithing, metalworking, baking, candlestick-making, saw milling, and soap making. African entrepreneurship in West Africa emerged largely as a result of previous

familiar experiences in non-farm cash activities located in different trading centers. This African enterprise was mostly small-scaled, as medium-to-large scale enterprise remained predominantly in the hands of European corporations. (Bauer, 1954)

In both the east-central and western areas of the Sub-Sahara the long history of limited African participation in the private sector meant that after independence, the public sector would become the most Africanized portion of the national economy. For obvious political reasons the new governing elites sought to establish an expanded role for the public sector in the economy. The foreign observer should appreciate the fact that the new elites faced rather narrow policy options. Given their deep commitment to achieving social and economic progress as quickly as possible, the elites could hardly have been expected to embrace enthusiastically the theology of neo-classical capitalism. In their perceptions the "magic of the market place" had been used deliberately to exclude the colonial-ized peoples from meaningful access to material and social betterment.

Human Resources. Most surveys of Sub-Saharan development usually begin by underscoring the region's acute paucity of educated and trained manpower at virtually all levels. A World Bank Report notes the following situation at independence. Zaire had no doctors, lawyers, dentists, or engineers. Out of a total of 3,000 posts, Nigeria had only 700 Africans in senior public service jobs. All senior technical positions in Senegal and over 80 percent of high-level public service positions in Kenya and Tanzania were staffed by expatriates. (World Bank, 1981, p.9) Since they had to attempt to provide the full range of social and economic services to their

citizenries, many governments of the newly independent countries were forced to rely upon qualified expatriates. The policy choice they faced was a difficult one -- rapid Africanization at the cost of inevitable losses in efficiency due to inexperience versus heavy reliance on expatriate manpower which entailed political risks. Furthermore, the economic costs of reliance on expatriate personnel have been substantial, since expatriates must be recruited at internationally competitive salaries. Finally, because national education and training systems were undeveloped, some degree of dependence on expatriates was unavoidable.

Early manpower surveys show that by the mid 1960s expatriates still accounted for 20 to 62 percent of total employment in positions from those requiring the highest qualifications down to those requiring a minimum of primary education plus one year of post-primary training. (See Appendix, Table 4.) The shortage of trained African manpower increased acutely the higher the qualifications required. Thus, in five of the countries surveyed, over two-thirds of all positions requiring university education were filled by expatriates. At the middle manpower level expatriates filled up to 50 percent of all jobs requiring secondary schooling and two years of post-secondary training. By occupation, the severest shortages of trained Africans were found in such technical, financial, and administrative positions as agronomists, engineers, managers, accountants, foresters, doctors, dentists, economists, and secondary school teachers. At the middle manpower level the most acute shortages were for mechanics, carpenters, bookkeepers, primary school teachers, and specialized technicians in transport, communications, and agriculture. Even at the levels of semiskilled personnel

the numbers of expatriates occupying jobs were large relative to total employment. (Davies, 1980)

It was noted above that the colonial powers had systematically promoted the creation of a small African elite educated in the colonial tradition of the select, philosopher-king caste. They raised local revenue to finance primary school facilities and some priveleged secondary schools modeled on the highly selective, meritocratic, and classically oriented systems that were rooted in nineteenth century France and England. A handful of brilliant African students were educated at these schools and sought further training at tertiary levels. Thus, at independence government administrations included only one embryonic component of an educational infrastructure, a primary school system.

Health Services. The health services system inherited by Sub-Saharan governments had been structured along European lines in order to provide curative medical care to the colonial administrators. It was largely urban-based with technological medicine suited to the pathology of the European enclaves. It has since been retained by African elites to cater to their own needs. The content of this system is largely irrelevant both to the pathology and the etiology of health problems of the majority of Sub-Saharan people who are predominantly rural-based. In many countries the system does not even reach more than 20 percent of the non-urban populous. Since independence very little, if any progress has been made in most countries towards restructuring the system and revising its content in order to bring about some basic health improvement for the vast majority of national populations. The only exception to this circum-

stance is that the epidemic diseases were combatted by colonial administrations in order to protect their enclaves against transmission and infection. That most Sub-Saharan governments still retain the inherited colonial structure and content of health services is reflected both in the patterns of resource allocation and the health status of their populations.

## 2. Development Styles and Experiences

### A. Styles

The development style of most Sub-Saharan countries might be termed "total statism." It became the predominant style as an outgrowth of the past and of the political philosophies of leaders such as Nkrumah, Kaunda, and Nyerere. The style which characterizes the remaining countries could be called "mixed neo-classical statism." The distinction between the two is important since strategy and priorities for human resource development are determined to some degree as a function of these styles.

Total Statism. Countries associated with this style include Ghana, Sudan, Mozambique, Tanzania, Zambia, Guinea, Senegal, Guinea-Bissau, and Angola. Its salient features might include some or all of the following:

Rhetorical commitment to improving human welfare through distribution reform (redistributing wealth and income from the wealthier regions to the most impoverished ones) and through organized self-help endeavors ("self-reliance");

Extensive public ownership of modern sector agriculture, transport, commerce and industry, combined with public control over resource allocation in all sectors;

Pursuit of rapid Africanization at all manpower levels;

Priority emphasis on rapid industrialization (to catch up with the West) at the expense of appropriate and effective incentives for agriculture; and

An ambiguous posture vis-a-vis foreign trade (on the grounds that it is a structure discriminator) and a bias towards foreign investment, both positions complimenting an inward looking ("self-reliant") emphasis on domestic effort and output. (Acharya, 1981)

Mixed Neo-Classical Statist. Countries that have followed this type include the Ivory Coast, Gabon, Kenya, Zaire, and Malawi.

Salient features might include the following:

A "market orientation" -- guiding resource allocation to international market forces and confining parastatal enterprises to infrastructural services designed to support productive sectors and an openness to the external economic environment (e.g., promoting exports, encouraging foreign investment, etc.);

An overriding concern with the goal of maximizing GNP growth;

An assumption that economic growth would provide benefits that could "trickle down" to the poor masses, making it unnecessary to sacrifice increments of economic expansion for purposes of social equity;

Slower Africanization of the labor force at mid and high levels and a greater willingness to depend on expatriates resulting in educational investment favoring secondary, and tertiary formal schooling and technical/vocational programs supporting urban-based economic activities and commercial agriculture. (Acharya, 1981)

## B. Experiences

Following independence the Sub-Saharan countries faced the policy issue of whether to deepen their existing agricultural export specializations or to diversify away from agricultural export products. Most of the total statist countries favored the latter option, believing that it offered reduced vulnerability to the vicissitudes in the world economic environment. It was assumed that, through vigorous domestic efforts based on "self-reliance," this policy preference would lower national dependence on an international economy that was inequitably structured against Africa and the Third World. On the other hand, the mixed neo-

classical countries tended to cast their lot with the former option, advocating further specialization in agricultural export products. In both cases the policy choice at hand carried implications respecting priorities for resource allocation to agriculture and/or industry and hence for human resource development. (Acharya, 1981)

In conformity with their policy preference total statist countries have pursued a structuralist strategy in agricultural development by pouring public resources into a few large-scale schemes or into institutional reorganizations of the entire rural sector such as Ujamma Villages. Examples of this approach are the mechanized state farms in Ghana which were favored with the bulk of investment by government throughout the 1960s and early 1970s to the detriment of the needs of small holder peasants. In the Sudan investment and other resources have been concentrated on a few massive state run irrigation schemes, such as the Managil, and extension of the Gezira, Khasm-el-Girba, and Rahad projects. The millions of Sudanese peasants who earn their livelihood from traditional, rain fed cultivation have languished in a morass of low productivity and poverty. In Senegal the bulk of public investment for agriculture has been lavished on massive damming and irrigation schemes in the Senegal River Basin. These regional development schemes are all enthusiastically supported by bilateral donors whose compatriate suppliers and consulting, engineering, and agricultural firms are realizing substantial profit through participation. Meanwhile, Senegal rural peasantry barely subsist from extreme malnutrition and periodic starvation during the drought seasons. (McEvers, 1980)

Some of the mixed neo-classical countries, e.g., Kenya, Malawi, Ivory Coast, have managed to exploit the potential of their small holder agriculture to some extent. Their governments have invested public resources in credit facilities, technical aid services, marketing and research, and other key elements of agrarian infrastructure in order to assist peasant farmers. Moreover, they have managed to sustain and develop schemes of adaptive research in some cash crops. For example, the Ivory Coast now has well established research institutes for coffee, oil crops, cocoa, and cotton, which have collaborated closely with the parastatal agencies that cover production and marketing of these crops. In Kenya the government further developed inherited research programs in coffee, wheat, and pyrethrum. The adaption of hybrid corn for small holder cultivation in soil rich areas of that country illustrates a successful example of scientific and technical research for peasant production. Small farmers also have been helped in Malawi, where the Achikumbe Project has enabled them to improve their animal husbandry practices. (DeWilde, 1967)

Finally, in countries with developed mineral sectors most governments have consistently abstained from instituting appropriate structural incentive policies for agricultural development.

All Sub-Saharan countries, irrespective of their development styles and policies, have suffered over the last 20 years from a constant secular decline in the terms of trade of their primary commodities and, periodically, from wild fluctuations in those terms of trade. (See Appendix, Table 4.)

However, in the simplistic terms of economic growth accounting

the last two decades of development experience suggest that the neo-classical has been the better option. By pursuing this option, Ivory Coast, Kenya, and Malawi have increased export receipts five-fold, four-fold and three-fold during the periods of 1954-1956, 1973-1975, and 1978-1980. Comparatively, export receipts have barely doubled during these periods in Ghana, have grown by less than 50 percent in Tanzania, and have stagnated in the Sudan. Purchasing power has stagnated in Ghana and the Sudan and risen only by one-third in Tanzania, whereas it has tripled in the Ivory Coast and doubled in Kenya and Malawi. (Acharya, 1981, p. 125)

This record prompts some observers to argue that the increases in export earnings and purchasing power of the mixed neo-classical countries have outweighed their adverse terms of trade due to policies of agricultural export diversification. Advocates of this position contend that the total statist presumption, i.e., strong diversified export policies are not required because of pursuits such as self-reliance, has not been verified by empirical experience. Their point is justified. Following the 1967 Arusha Declaration in Tanzania, "self-reliance" contributed to a growth in import value terms by over 60 percent between 1968 and 1975 compared with 14 percent in Kenya and 54 percent in Malawi. As a percentage of GNP, Tanzania's imports averaged 12 percent during 1963 through 1975 compared with 4.4 percent in Kenya, 12 percent in Malawi, and an export surplus of 1.5 percent in the Ivory Coast. (Acharya, 1981, p. 127) In total statist countries reliance upon imports in the absence of strong export performance necessitated greater, rather than less, external aid.

Indeed, in Tanzania bilateral donors made offers year after year of more aid to this Sub-Saharan country because of its "self-reliance" mode of development.

Rural-urban terms of trade (net effect of policies respecting producer and consumer pricing, foreign exchange rates, and controls by indirect and consumption taxes) in all countries have consistently discriminated against peasant production in favor of urban-based activities. Consequently, peasant farmers have been denied benefits of economic growth which they might have otherwise received. Most parastatal marketing boards, combined with administered agricultural pricing, have been used by governments to extract a surplus from farmers to finance public sector investments which rarely benefited rural inhabitants. This pattern of resource allocation is particularly striking in the health sector. There, it is not uncommon to find public resources being invested in urban hospitals using high technology such as cardiac units (imported from industrial countries) to cater to the health needs of urban-based elites. In contrast, the same resources could have been invested in rural water supplies, sewerage, and sanitation to prevent the deaths of millions of children and infants from gastroenteric infections.

The modern, urban sector bias persists in Sub-Saharan countries for several reasons. First the need for cheap food in urban centers requires the state to hold down producer prices it sets for food crops. Second, concern with the pace of economic expansion has tended to preempt attention away from the content of GNP, i.e., from what is produced and from the structure of its distribution.

The content of production and consumption are determined more by the effective demands and consumption preference of urban-based elites than by the needs of the economy as a whole. While no Sub-Saharan country has yet managed to establish an independent industrial structure and the manufacturing sector still contributes a minor portion of GNP, the promotion of manufacturing has been pursued on the basis of capital-intensive, import substitution (the "infant industry formula"). Protective tariffs have raised the cost of these locally produced goods to rural inhabitants and goods which are often irrelevant to the basic needs and welfare of the rural poor. Finally, most governments have raised wages of unskilled labor in the modern urban sector where the bases of their political support are largely found. This rise in wage costs has been compounded by a tendency to overstaff government and parastatal agencies for reasons of political expediency. Higher wage costs, in turn, have required still higher levels of protection for commerce and industry and the escalating cost burdens have been passed on to domestic consumers, most of whom are rural dwellers. (Acharya, 1981)

All countries, irrespective of development style, have experienced certain consequences of this bias. In the first place, modern sector growth in the urban context has brought about a continuing rural-to-urban migration. This has resulted in the social, economic, and physical carrying capacities of urban centers becoming overburdened, many to the point where they are unable to provide basic services to the populations they support. In the second place, food production for domestic consumption has lagged

increasingly behind population growth in virtually all of the countries of the Sub-Sahara, with concomitant increases in dependence on food imports to meet consumption needs. Since per capita food production in Sub-Sahara Africa has dropped and continues to fall, it is behind that of all the other regions in the developing world. (See Appendix, Table 1.)

A third consequence common to both development styles is that economic life has become structured to the disadvantaged or the poor. For example, in societies where large segments of the population subsist in absolute poverty, scarce foreign exchange is expended on the purchase of luxury automobiles when the same resources could be used to provide public transport for the people. Visitors to Abidjan are struck by the sight of sumptuous hotels, gambling casinos, and tropical Africa's only indoor ice-skating rink in the suburb of Cacody. Side-to-side with this conspicuous consumption, masses of poor people are begging for handouts and thousands of children with extended bellies and obvious malnutrition die a slow death. The consumption behavior of the elites naturally has its demonstration effects for the millions of desperately poor who stream in from rural areas to teeming slums around the urban centers. They and their progeny inevitably seek after the material artifacts of the high mass consumption which they see.

Finally, in countries with the best records of economic growth increases in GNP have been accompanied by increases in open employment and underemployment together with expanding inequality in the distribution of income as well as increasing rural pauperization. While growth performance indicators have improved, the social

consumption, material conditions (nutrition, health, infant and child mortality, etc.) and per capita income of the masses of rural people would seem to have deteriorated.

### 3. Human Outcomes and the Outlook for the Future

#### A. Outcomes

According to the Brandt Commission, some of the world's lowest per capita incomes have been recorded in the Sub-Sahara. These countries represent a large portion of the belt of "absolute poverty," extending through South Asia to the Far East. Furthermore, per capita income appears to have declined since 1960 in real terms in a number of countries and to have stagnated in others. (World Bank, 1981, p. 134) An indicator of this decline is the deterioration in the real wages of agricultural labor recorded in many countries for the period 1962 through 1975. (See Appendix, Table 5.)

The World Bank has estimated that in the Third World, when 50 percent or more of disposable income from all sources is expended on food, a household subsists in a state of "poverty." If 70 percent is used for food, the household is suffering from extreme deprivation ("absolute poverty"). Studies of household consumption in selected countries shows that 70 to 90 percent of all rural families expend well in excess of 50 percent of their household incomes on food. (Davies, 1980, p. 63) Another study based on minimum "baskets" of goods and services considered essential to sustain human life, covered both urban and rural areas and confirmed previous findings that absolute poverty in the Sub-Sahara tends to be concentrated in rural areas. (Davies, 1980, p. 65)

Considering a minimum food intake standard of 1,500 calories

per capita per day, the FAO calculated that in 16 countries of the Sub-Sahara at least 30 percent of the national populations were undernourished during 1972 through 1976. Moreover, the incidence of undernourishment increased between those two dates in 13 of the 24 countries, remained unchanged in five, and declined in only six. (Davies, 1980, p. 69) The increased incidence of undernourishment was particularly pronounced in countries of the Sahalian sub-region and was attributed to the worst droughts suffered by that area in recent history.

Estimates of income distribution indicate that inequality has been increasing in the Sub-Sahara Region and is greater in the region than in other parts of the Third World. Income inequality in Botswana, Gabon, Kenya, Swaziland, and Zambia would appear to be the highest in the world. In Zambia (1974) the wealthiest 2 percent and the poorest 50 percent of the national population both received 20 percent each of the total national income. In Swaziland in 1974, one quarter of the total modern sector wage bill was remunerated to expatriate workers who comprised only 5 percent of the employed labor force. (Davies, 1980, p. 72) Studies of distributive equity in Tanzania suggest that the government's attempts to distribute public investment equitably have done little more than compensate marginally for a growing discrepancy between rural and urban living standards. Urban wage earners at the middle through higher levels enjoyed substantial increases in their real incomes together with improvements in their social consumption, while rural dwellers have experienced a deterioration in real income since 1967. Studies of income distribution in Kenya indicate that rural households at the lowest 40 percent level of the income scale have experienced no

improvement in their real per capita incomes. (Acharya, 1981, p. 121.) Another distributive indicator - non-agricultural income as compared to agricultural - shows that the former is 4 to 9 times that of the latter in the Sub-Sahara. The ratios for the rest of the world are lower: 2:1 and 2.5:1. (Davies, 1980, p.68)

An important consequence of the demographic explosion is the inability of Sub-Saharan governments to cater to the elementary human needs of their populations. (See Appendix, Table 2). Compared to other regions of the Third World, the Sub-Saharan countries have lower rates of life expectancy at birth, higher rates per annum of child and infant mortality, higher total fertility rates, lower percentages of population with access to safe water, lower per capita supplies of calories per day (an average for the region as a whole is 80 percent of requirements), and lower rates of functional adult literacy. This human outcome may be illustrated in the case of Senegal, whose population grows at the average regional rate (2.7 percent per year) of the 1970s and whose dependency ratio of 89.9 (comparable to an average 80.8 for all Third World countries) is expected to rise in the future. In 1978, assuming the present pattern of resources allocation as constant, the Senegalese Ministry of Planning estimated that an infant born in 1978 had only a 50% chance of reaching the primary school age. Because of the inferior health and nutritional conditions, the odds for survival are even lower in the rural areas than in the city. Even among survivors, 7 out of 10 children will experience malnutrition and under nutrition because of inadequate health care in the rural areas. The child born in 1978 will have a one-in-three chance of entering

primary school in 1984, and it will take 8 to 9 years to finish the 6 year primary school cycle.

In the few countries that have practiced egalitarian development policies, decisions on the allocation of resources between investment and consumption have carried implications of life and death given their scarce resources. A decision to emphasize investment in productive assets in the present necessarily entails the sacrifice of investment in social consumption for the present generation. This decision is based on the hope that expanded productivity in the future could benefit the basic human needs, i.e., social consumption, of future generations.

## B. Outlook

Continuing its current growth rate during the 1980s of 3.0 percent per annum, the Sub-Saharan population is expected to increase from 353 million in 1980 to 639 million people by the year 2000 (World Bank, 1981, pp. 166-167). This projection is based on several assumptions including that the average total fertility rate of 6.6 will remain constant. This assumption appears reasonable in light of experience over the last 20 years.

Under its "high case" projection of economic growth, which is based on the assumptions of growth recovery in the industrialized world and the renewal of expansion in the world economy as a whole,

the World Bank forecasts no increase in per capita income for the Sub-Sahara region during the next decade. Its "low case" projection would envisage a decline of one percent per annum in per capita income for the region over the next 10 years. (World Bank, 1981, p. 15)

According to recent estimates, in 1980 approximately 35 percent (125 million people) of the total Sub-Saharan population lives in "absolute poverty" conditions. Under the most optimistic projections of economic growth, by the year 2000 the proportion of the Sub-Sahara's population living in absolute poverty would at least be the same as it was in 1980, that is, 35 percent, or 224 out of 639 million people. (World Bank, 1981, pp. 15-18)

This outlook is dismal, but it appears quite improbable that a better human outcome will be achieved by the year 2000 without stabilization and recovery of growth in the world economy as a whole, combined with favorable trends in the terms of trade for the primary commodities of Sub-Saharan countries. At the same time, Sub-Saharan governments must pursue priorities in trade, price, exchange rate, and agricultural tax policies that are favorable to peasant agricultural production. However, most countries will be unable to pursue these development priorities successfully or exploit their untapped natural resource endowments until they make substantial progress in overcoming one structural obstacle -- that of low levels of human resource development combined with weak and limited institutional capacities for planning and managing development. Both are closely related to the phenomenon of mass poverty.

Thus, quantum improvements would be needed in the capacity of the modern sector to meet the basic human needs of the population

at large. These improvements must consist of:

strengthening the public administration including its manpower utilization policies and practices at both central and local levels;

accelerating manpower development to improve the absorptive capacity of the modern sector and hence its capacity to generate economic growth and resources for meeting basic needs; and

undertaking manpower and institutional development to improve the delivery of economic and social services for meeting basic needs in order to transform rural populations into economically productive people who are capable of acting upon opportunities for greater productivity that could be provided by modern science and technology.

## II. INSTITUTIONAL AND HUMAN RESOURCE DEVELOPMENT ISSUES

### 4. Planning and Decision Making

Sub-Saharan governments have established elaborate machinery for development planning and public investment programming. Periodically, these arrangements have yielded short and medium-term national development plans and, in some cases, long-term "perspectives." Most of the plans have amounted to little more than elegant statements of social, economic, and political philosophy, combined with shopping lists of prospective projects in each sector. Although the purpose of development planning is to inject technical analysis and rationale into the political decision making process for resource allocation, such decision-making in the Sub-Sahara takes place largely without reference to the products of planning. Since the political assets of ruling elites are largely tribal-based, these decisions are governed by considerations of kinship and tribal affiliation, by deal or payoffs that entail the most politically advantageous distribution of benefits, and by the perennial necessity to balance off regional and tribal interests in order to avoid inter-tribal conflict.

As a result, the manpower surveys and plans that have been carried out in virtually every country have either been ignored, or used by governments to support what they had intended before the plans were made. (Davies, 1980)

Outside assessments of Sub-Saharan planning usually attribute the divorce of planning from decision making to deficiencies in the

machinery and procedure for development planning. Typically, planning machinery consists of a central agency or ministry charged with drafting medium and long-term development plans and public investments programming. That ministry may be divided along functional and sectoral lines, the former usually including a unit responsible for manpower survey, analysis, and planning. Functional units charged with programming and plan monitoring receive investment proposals prepared by the technical ministries responsible for each sector and by parastatal agencies. Recently, it has become fashionable, except in Nigeria which is federalized, to delegate some planning authority to regional agencies in order to create a semblance of local participation in the planning process. The monitoring units follow the financial and physical execution of development programs and projects. Project identification and preparation are usually done by the planning units of the technical ministries.

After it is drafted, the national plan is usually submitted to the finance ministry before being passed up to a national commission, cabinet, or the legislature in order to be rubber-stamped. The central planning agency ought to have control of the capital budget if the planning process were to be at all meaningful. But the finance ministry is nominally in control of the capital budgeting function. Its role is usually to attempt to limit the proposed budget to conform to projected available finance from domestic and foreign sources. The actual selection of investment proposals and the setting of priorities for public investment as a whole takes place through the informal political process mentioned above. This system affords little room either

for technical evaluation of potential public investments or for policy analysis to have much impact on investment programming.

Donor aid agencies, faced with a dearth of well evaluated investment proposals, have insisted over the years that local capacity for generating and preparing good projects be reinforced. Consequently, many governments have modified their sectoral or technical ministry planning units, usually with the addition of technical assistance personnel. While the shortage of qualified economists, engineers, and other technical staff at both the sectoral and central levels have undermined the planning capacities of Sub-Saharan governments, it should be mentioned the bilateral donor agencies themselves have tended to overburden local planning resources. Aid agencies make insistent demands for detailed statistical and other information in order to meet their own requirements for formulating and processing their projects. It is not uncommon for the limited planning staffs of Sub-Saharan governments to spend inordinate amounts of time and attention catering to the demands of external aid donors. Nor is it uncommon to find that the limited data bases for planning and project formulation have been developed largely in response to these demands.

Planning also tends to be divorced from implementation. This weakness is particularly severe given the already limited execution capabilities of most public administrations. Consequently, it has led to a neglect of project and program execution and inordinately low percentages of funds budgeted for investment are actually expended. For example, in Senegal under the Four Year Economic and Social Development Plan, only 36 percent of the

investment scheduled was spent. (Dakar, 1977, p. 60)

The low emphasis on implementation is reflected in the lack of arrangements for program and project evaluation beyond the simplistic monitoring of financial performance. No provision has been made to investigate and appraise project performance or evaluate the impact of a given development project. Yet, continuing evaluation of this kind is certainly needed given public sector expansion through parastatal enterprises that cover a panapoly of productive activities (fishing, small industry, agriculture, trade, etc.). In a number of countries parastatal efficiency has deteriorated to a point where it has become both an obstacle to further external financing and a mounting burden on public resources. The application of evaluation techniques drawn from management and administration sciences to investigate and measure the performance of these institutions would be equally as important as the mounting of in-service training for high and middle-level executives. (McEvers, 1981)

Available evidence also suggests that bilateral donors have more often than not exacerbated the divorce between planning and implementation. Disappointing project execution performances have prompted donors to rely increasingly on more detailed program and project planning. Whether this solution has led to improved project execution is questionable. There are basic limits to rational planning. It is impossible to forecast future events in such detail that a complete blueprint can be produced to guide implementation. This is especially true in the basic needs sectors, where the nature of the process inevitably multiplies planning and implementation problems. Donors agencies who are

heavily involved in the public sector development programs of Sub-Saharan Africa persist in undertaking very detailed planning, years in advance, using experts and consultants who are not responsible for project and program implementation and are seldom, if ever, consulted during the project/planning phase. This approach tends to emphasize prior planning to the detriment of the needs of implementing managers, thereby encouraging Sub-Saharan administrations to continue neglecting implementation. (McEvers, 1980)

## 5. Development Management and Administration and Manpower Utilization

Managerial and institutional incapacities vary from country to country. Kenya began with a comparatively large stock of people with appropriate skills and consequently its public administration and infrastructural services have functioned at slightly higher levels of efficiency than has been evident elsewhere in the region. Similarly, at independence Ghana had a larger core of trained African cadres than Tanzania, Zambia or Senegal. However, the explosion of public sector coverage of the Ghanaian economy overwhelmed Ghana's small civil service. After independence all countries experienced this same phenomenon to varying degrees. Owing to the enormity of the functions and burdens suddenly imposed upon a fragile system, public administration performance capability was badly eroded.

Available documentation substantiates our argument that the modern sector has been thwarted by institutional and managerial deficiencies from carrying out its dual role in meeting basic needs, that is, from accelerating and spreading balanced economic expansion in order to generate the necessary resources and from effectively delivering economic and social services. With respect to the former function, the World Bank has assembled macroeconomic evidence covering 1970-1979 for two groups of Sub-Saharan countries, as a basis for attributing the lower average incremental capital output ratios (ICOR's) and better export performances of the higher economic growth group to better public institutional and resource management. (World Bank, 1981, p. 36)

As for the delivery of basic needs services, a growing body of evidence suggests that Sub-Saharan governments have so far failed to improve the access of their rural and urban poor to economic and social services through conventional delivery mechanisms. (McEvers, 1980, p. 32) It has become clear that the cost-effective delivery of services in response to the needs, preferences, and capabilities of the poor does not in itself guarantee improved access to these services on the part of their intended beneficiaries. Very often, service inputs and their benefits are appropriated by local elites. The responsiveness of intended beneficiaries is also a key variable. Basic needs services often require behavioral changes on the part of users, imposing costs as well as conferring benefits on them. Some facilities have to be maintained by local communities and villages if they are to continue to be useful. But, positive responses are all too often vitiated or even precluded by the conventional command type of administrative stance of the public administration which leaves no room for local initiative and participation. It is generally agreed that new institutional structures and methods are needed for the effective delivery of these services. (McEvers, 1980)

A. Management and Administration: Key Areas and Development Approaches

Since independence the public administration has grown to account for up to 70 percent or more of the total wage employment in the modern sector of many countries. Expansion of employment in the private enterprise segment of the modern sector has tended to lag considerably behind. Financial outlays of the public administration sector have, in consequence, increased very rapidly at double the average rate of growth in GDP for the Sub-Sahara as a whole. (McEvers, 1980, p. 32) This expansion preempts resources away from productive activities in the economic sectors of agriculture, manufacturing, and commerce in favor of non-revenue producing activities. The present and continuing economic crisis, marked as it is by stagnation in overall economic growth, thus present Sub-Saharan governments with very difficult problems of curtailing public sector administration expansion and of finding new sources to generate revenues for supporting public services. A partial way out of this predicament lies in improving the operational viability and efficiency of public sector institutions.

The weakness of Sub-Saharan public administration has been documented copiously in development literature and in case history accounts. Ministries of education lack essential data for decision making or else the data which they do have is out-dated. They tend to be understaffed, especially at the top

managerial levels, and often encounter shortages of necessary operating finances. Their staffs are characterized by poor work discipline and low morale, yet they must cope with the tremendous management and developmental tasks of expanding and running large school systems. Due to their weaknesses, education ministries experience considerable difficulties in preparing and implementing development projects. (Davies, 1980)

One reason education ministries lack managerial expertise is that most of their top administrators were trained as teachers, not as managers. Ministries also encounter key manpower shortages in such units as school inspectorates. Program execution is also hamstrung by the dearth of coordination between all public sector agencies responsible for education and training programs. For example, a ministry of rural development responsible for agricultural training might pursue its own programs without even minimal consultation with the education ministry responsible for operating and developing the formal system. Thus, there is no cohesive policy for teaching agricultural science and elaborating related didactic materials. This absence of coordination often results in a lack of policy to link manpower needs of the economy to the development of both public and private education and training systems. There is also an absence of vertical coordination between central headquarters of the education ministries and their outlying district or regional offices. In many countries this leads to the lack of any mechanisms for coordinating education administration/development with village/community groups.

At the specific level of project operations, administrative and managerial shortcomings are similar to those found at the

central level:

Information procedures do not yield sufficient data either on operations or impacts;

Supplies do not arrive on time nor in the quantities called for;

Coordination is lacking;

Insufficient discretion or authority is granted to local personnel to enable them to adjust services in response to shifting circumstances or contingencies, with the result that resources are wasted;

Personnel are hired, posted, and promoted on the basis of patronage, thus discouraging performance; and

Rapid staff turnover disrupts the conduct of staff activities. (Esman and Montgomery, 1980)

Most observers would agree that in Sub-Saharan circumstances managerial tasks involved in the pursuit of developmental targets and objectives are particularly complicated and generally require a good deal of ingenuity, dedication, and experience to supplement higher education. Since the development of these elements may be a lengthy process, there should be a clear cut policy trade-off between manpower development and interim improvements in the structural, procedural, and personnel practice areas of public administration. While most Sub-Saharan public administrations suffer from insufficient managerial capabilities at both local and control levels, they also tend to be ill-equipped and must contend with inappropriate structures, methods, procedures, and personnel practices.

Staff potential which may exist tends to be misused with the result that Sub-Saharan administrations fail to tap latent

personnel talents and abilities which clear and simple procedures, competent supervision, and short-term training programs could activate and reinforce. The absence of adequate career structures which would provide normal periods of on-the-job training is exacerbated by rapid staff rotation that precludes any opportunity for supervised, on-the-job training. With regard to the middle-manpower levels in particular, employing institutions have little input into the design of curricula or the conduct of studies undertaken by education/training institutions to ensure that students and trainees are prepared to meet the skill requirements of available jobs. Novices entering public service very often have little to do and little opportunity to perform the skills in which they were trained due to mismanagement and inefficiency. Private as well as public institutions have not yet established either career incentive systems, or procedures to instill and foster work discipline. Sub-Saharan governments have rarely paid much attention in practice to strategies for improving manpower utilization, although they have occasionally devoted lip service to the subject. (Esman and Montgomery, 1980)

Case history accounts suggest that substantial reform and restructuring of the public administration tends to be perceived in the Sub-Sahara as politically sensitive and controversial, as well as having slow and uncertain payoffs. (McEvers, 1980) Local elites tend to regard their vested interests as being subject to threat from changes in behavior, skills, technologies, and structures that such reform would bring about. It would hardly seem surprising that, apart from changes confined to specific

small development efforts, the main emphasis on administrative improvements has been support system procedures such as accounting, supply and procurement, "organization and methods," and central coordinative procedures. This limited focus has been encouraged by bilateral donor agencies, but it has seldom led either to more efficient operations as a whole or to other improvements anticipated from installing such techniques as job classification, performance budgeting, and central procurement control. (Esman and Montgomery, 1981)

In most countries accelerated institutional development would presuppose very basic and thoroughgoing overhaul and reforms in the public administration. Such reforms could not be undertaken, except rhetorically, without political commitment from the highest authorities of the country. However, even where such high-level political backing for reform might be forthcoming, investment in reform would be wasted unless the reform strategy were to focus upon:

developing structures, techniques, and practices tailored to the unique national setting and not requiring the introduction of sophisticated computer and other high technologies favored by some bilateral aid donors; and

actual institutional performances in the field, rather than central control or the "modernization" of administrative procedures as an end in itself.

This latter prerequisite is especially germane to change in the parastatal enterprises, which tend to operate as political barrel appendages of the central government. Frequently used as employers of last resort, the parastatals have been rendered immune from criteria of business profitability by public subsidies.

In rare cases where parastatals have been profitable, surpluses have been used in ways that do not benefit the rural masses. Their operations have been characterized by the absence of firm-level incentives for workers and management, by a dearth of managerial expertise, by a multiplicity and ambiguity of purposes, and by transference of the culture of bureaucratic procedure from the colonial civil service. (Acharya, 1981) Western "experts" who advise Sub-Saharan governments to reduce radically the scope of the state's sector of the economy, i.e., to dismantle the parastatals altogether, usually ignore the Sub-Sahara's unique socio-cultural setting and background. However, parastatal reform would certainly entail issues much more basic than those of simply increasing local managerial staff trained in Western institutions, or following western advice to introduce clear formulation of objectives, clear agreements on financial and production targets, staff incentive systems, independence in daily management matters, proper accounting, non-politicization, etc.

Reform of the parastatals presupposes a commitment from the highest political/governmental authority to their systematic transformation at least into quasi-independent, self-sustaining enterprises whose existence is governed by criteria of profitability and the balance sheet. One modality for such a transformation, which has been experimented with successfully in some countries according to the World Bank, is that of contractual arrangements between the parastatals and private enterprises. (World Bank, 1981, p. 39) Since the parastatals own or otherwise control major productive activities that generate modern sector economic growth

in many countries, their reform becomes a necessity under present economic circumstances.

Institutes and schemes for administrative and managerial training have proliferated both on a national and regional basis throughout the Sub-Sahara mainly at the instigation of bilateral aid donors. Recent years have also seen an increase in the amount of training provided at universities in the developed countries for Sub-Saharan officials. Local training and educational programs have been modeled on those of the developed countries (e.g., L'Ecole Nationale d'Administration). Many of the operational and analytical techniques from the management and administrative sciences are free of cultural values and need to be transmitted to Sub-Saharan administrations. However, the underlying problems of institutional development in the region are of a socio-cultural and political nature, deriving as they do from the factors which were discussed previously. Institutional models transferred from the West to the Sub-Sahara have proven unsuited to local environments and, consequently, have had little practical effect on the workings of the public administration. After all, the very essence of "management" entails the motivating of people to attain certain standards of job performance. How this can be done in the Sub-Saharan countries differs from how it is accomplished in western nations.

Bilateral aid donors are particularly guilty of neglecting the development of managerial structures, techniques, and practices tailored to the unique Sub-Saharan setting. Rather, donor agencies have fallen back on the convenient pretext that,



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by establishing project implementation units outside normal structures of the public administration and free from administrative practices in financial control, practices and standards applied to program performance through these special units could eventually be defused to other parts of the administration. This strategy has proven unsuccessful.

Foreign analyses of institutional problems in the Sub-Sahara all conclude with the recommendation that management training must be expanded. Given the scarcity of managerial and administrative expertise, it is difficult to argue with this advice. On the other hand donors, particularly bilateral donors, and governments should be wary of repeating past mistakes. Expanded training should be accompanied by vigorous support efforts by donors in social science research aimed at fashioning institutional structures and managerial techniques functional in local socio-cultural and political settings. As a complement to this applied research endeavor, governments and donors ought to examine ways of converting some existing formal programs into more practical on-the-job types of training. On-the-job schemes do carry certain problems arising from personnel scarcities and financial limitations and new approaches need to be explored which respond to such constraints. The conventional donor practice of sending Sub-Saharan executive personnel for on-the-job training in General Motors or in the donor aid agencies themselves has not proven appropriate. Indeed, there is mounting evidence that training abroad, either on-the-job or in universities, contributes to "brain drain." Lastly, research and training ought to be combined. For example, as part of their on-the-job training, African professionals and

managers should take the lead in developing new approaches to local circumstances.

## B. Basic Needs Delivery Systems

How to deliver effective economic and social services which raise the productivity and improve the physical well-being of the poor in the Sub-Sahara entails complex questions. All such programs encounter novel problems of execution, for they operate under conditions of considerable uncertainty. Among these uncertainties are the needs, capabilities, and receptivity of their intended beneficiaries and the kinds of administrative methods that will work in practice. There are few standard rules for the effective conduct of activities that attack mass poverty. (Esman and Montgomery, 1980)

Barriers to the efficient delivery of basic needs services derive, in the first instance, from the physical and social environments of the Sub-Sahara. Inadequate communications leave rural settlements in a state of physical isolation. Even where communications infrastructure may exist, governments encounter obstacles to effective intercourse between regions and sub-regions arising from different tribal cultures and languages. Nigeria, for example, has over 300 indigenous languages. Isolation of peasant communities has served to reinforce traditional rural organizations. In most rural areas the village structure still exerts a predominant influence over people's lives, an influence often at variance with behavioral and logistical requirements of delivering basic needs services. (McEvers, 1980)

Public administration doctrine has so far shed little light on how to best deal with the problems encountered in delivering economic and social services to the poor in Sub-Saharan countries. One reason for this lacuna is that systematic investigation of these problems requires an inter-disciplinary approach. A second reason lies in the fact that fully utilizing existing theory and knowledge in action programs inevitably involves intersectoral institutional arrangements at the local level. Governments are organized sectorally into compartmentalized vertical hierarchies. Many of these may have their own political and professional constituencies, the latter sometimes transcending national boundaries to the international and even global level. Public administrations, therefore, are structurally ill-suited to attacking problems of mass poverty directly. The science of "developmental administration" has yet to assay the complex organizational, political, and other issues encompassed by this problem of inter-sectorality. Notwithstanding these deficiencies of formalized knowledge, understanding of difficulties experienced "on the ground" has grown as Sub-Saharan governments have pursued one of two approaches to the delivery of basic needs services: nominal decentralization of their public administrations or the fashioning on an experimental basis of new delivery modes (e.g., Tanzania). Both approaches have been analyzed and evaluated. (McEvers, 1980)

Decentralization. Modalities of decentralization differ among those countries that have supposedly adopted it. But some generally applicable conclusions can be drawn from what has been

a commonly disappointing experience with this approach.

Theoretically, decentralization was supposed to reduce direct control from the capital city over the quality and cost of basic needs services and, thereby, reduce disparities in those inputs and outcomes, i.e., levels of living, between different regions. But in practice the devolution of responsibility and authority to regional, provincial, district, and communal agencies, or outreach stations of the central administration has been more nominal than real and has rarely involved either the delegation of financial authority or the granting of subsidies sufficient to finance (in combination with local revenue) local development activities. The underlying problem has been that meaningful delegation of control to the local level would necessarily entail a redistribution of power within government bureaucracies and this possibility would threaten the entrenched interests of the urban-based elites in the capital and other center. (McEvers, 1975)

Experience has also demonstrated that legally accountable units of local administration entrusted with delivery functions tend to be weak, inefficient, corrupt, and dominated by local elites. In consequence, as we have already noted, inputs for basic need delivery services and their benefits are appropriated by local village and community elites who make up a minority of better-off inhabitants, leaving the poor with no enhanced possibilities for improving their productivity and social consumption. A few exceptions to this tendency have been observed in the rural development programs in the Kigoma and Tabora regions of Tanzania. (McEvers, 1975)

Governments have found that "decentralization" schemes often incur costs which more than offset the increased quantity of services supposedly rendered to local communities. A basic problem is that officers to whom responsibility is given are not equipped in terms of skills or expertise to discharge these additional tasks. Central authorities have failed to provide adequate policy and operational guidance to local levels. Supervisors in different provincial jurisdictions have not been provided with standard performance norms for their field staffs. Neither central nor field level management has been able to introduce reliable reporting systems and inspection procedures. Cost-effective realization of program targets, which depends on local site-specific knowledge, sometimes requires quick action to adjust program activities to changing circumstances. Local agencies have not been granted discretionary authority to make the decisions and take the action called for (Esman and Montgomery, 1981).

New Delivery Systems. An increasing number of countries have begun to experiment on a pilot basis with new delivery modes. These include Kenya (rural development schemes), the Ivory Coast (the "Promovillage" program), Senegal (regional development councils), Nigeria (self-help agricultural projects), and Benin and Ethiopia, (international rural development programs). It is too early to assess the results of these endeavors. The common feature they share with the more established schemes of Tanzania and Mali is that they consist essentially of the installation of new institutions and administrative systems at the local level to ensure that service inputs have a direct impact on the productivity and welfare of the rural poor. Tanzania's Ujamma Village Scheme has been

documented extensively. The Malian Government has instituted new development agencies under the authority of local village councils. Evaluations of the Tanzanian and Malian schemes show that neither has succeeded in raising the productivity or social consumption of peasant communities. (McEvers, 1975).

A few of these experimental systems have relied upon intermediate agencies or organizations and/or specialized user associations for delivering services. Case history accounts indicate relatively successful and promising involvement of user associations in Ethiopia (the Peasants Associations' operation of an agricultural credit and extension scheme) and in Upper Volta (village parent groups operating non-formal schemes). User groups (credit unions, womens clubs, irrigation societies, parent/teacher groups, marketing cooperatives, etc.) are accountable to and tend to reflect the interests of their members. Consequently, they can better mobilize the participation of intended beneficiaries than a government agency. Through organized self-help efforts, user groups can supplement publicly provided services with labor, funds, skills, and information. They can also articulate the perceived needs of the community for inputs and benefits. (Esman and Montgomery, 1980)

Future Requirements. Limited experience in the Sub-Sahara with attempts to assault absolute poverty through direct interventions has yielded a few lessons. These point up requirements for the design of delivery systems in the future. First, previous schemes have faulted or failed altogether for lack of management skills. The scarcity of managerial experience at all levels of administration but particularly at the local level would appear to

be the most serious constraint on the development of new delivery systems. To date, virtually no attention has been given to devising profiles of the managerial and technical manpower skills that are required by new organizational formats for delivering basic needs services at the village level. Training in management also should be built into the design of future pilot projects. Second, it has become clear that there are many other potential participants and societal dimensions requiring attention in efforts to meet basic needs in the Sub-Saharan Region that lie outside the traditional parameters of concern of "development administration" as a discipline. The design and management of delivery systems should involve the identification and use of regional, provincial, local, and voluntary agencies that previously were ignored. (McEvers, 1975)

Third, it is not formally acknowledged that at the final end of the delivery pipeline there are complex socio-behavioral problems which require attention. The tasks of improving institutional systems for the delivery of basic needs services tend to be substantially different from those involved at the central level. For institutional systems to reach special target groups of the poor, they should be formulated on the basis of a deep understanding of the culture and socio-political structures of local communities. The success of new institutions for meeting basic needs depends upon close attention to socio-cultural and political factors, as well as the economic incentives needed to engender acceptance of change. So far, in only a few countries such as Kenya and Tanzania have the incentives and motives of poor communities exposed to "modernizing opportunities" been investigated and most of these have been done in connection with programs in population,

education, health, and nutrition. If the risk of failure in delivering basic needs services is to be reduced, program design and management must be guided by accurate information concerning socio-cultural environments, which details the conditions, preferences, and capabilities of potential beneficiaries. (McEvers, 1981)

Fourth, the task of fashioning and implementing new organizational formats will require arrangements that allow for the cost recovery of inputs. This would suggest renewed efforts to promote community involvement in service delivery. In practice, "community participation" has translated into the attempt to mobilize voluntary personnel from villages to serve as para-professional staff in the various outreach services. These "village community workers" are trained, guided, and supported by the central technical and professional staffs. Often, they are selected from the very community they are supposed to serve. Even if they have limited formal education, such "helpers" can be trained in the specific skills required to provide services that would otherwise be unavailable to the village at costs that the village people could afford. According to conventional wisdom, village community workers can reach a wider public and are able to empathize with people in need. It is reasoned that use of such workers can evoke more responsiveness from targeted clientele and can convey more reliable feedback to project administrators than would otherwise become available.

The reality of recorded experience in Sub-Saharan Africa is that "community participation" has so far failed in practice in most countries where it has been attempted, for we have yet to learn the mechanics of applying this concept. While participation

in general terms may be considered highly desirable, some forms of it might be more reliably sustained in the Sub-Saharan context than others. Since it is important to know which, a systematic examination of the few past experiences in Sub-Saharan countries with village community workers should focus on organization and performance. Therefore, it should ask questions of the following nature: When such attempts have failed, what accounts for this failure? What incentives and mechanisms would support sustained contributions by the village worker? What devices would insure his accountability to the community and legitimize and maintain his authority? In what ways could his/her and the community's commitment to minimal standards of performance be preserved? What community structures and organizations are appropriate for the delivery of basic needs services? What patterns of cooperation and conflict exist within the village and bear on motivation for a collective effort to undertake basic needs services? (McEvers, 1980)

Fifth, the record of antipoverty programs in virtually every basic needs sector of the Sub-Sahara is replete with instances of project performance deteriorating after starting up. Causes can be found in the insensitivity and, hence, lack of flexible response on the part of government field staffs to the changing needs and performances of their rural target groups. (McEvers, 1975, pp. 18-31) As they often come from urban settings, government field workers tend to perceive reality differently from the poor people whom they are supposed to serve and are seldom motivated to break the cognitive and social barriers which separate them from their

clientele. Field staffs not only lack motivation in the absence of formal incentive structures, but also are demoralized by the gross inefficiencies of the overall program administration. For example, supply lines to them for goods and services continually break down. (Esman and Montgomery, 1980)

System design and implementation should allow for incentives that encourage field workers to render services in ways responsive to the needs of intended beneficiaries. Motivating civil servants to perform functions that benefit the absolute poor might require that special rewards be given for the performance of tasks that involve uncertainties or demand inordinant amounts of time and the sacrifice of personal convenience. Special pay supplements and other forms of recognition for outstanding performance ought to be considered. Special logistical arrangements should be devised to assure the timely supply of inputs needed for the performance of field tasks in inaccessible locations. Field workers should be given stable assignments and posting and hence the opportunity to develop and reinforce personal relationships and knowledge of the local area in which their clientele are located. Finally, training schemes should be mounted to upgrade the managerial and technical skills of field workers and their supervisors. (McEvers, 1975; Esman and Montgomery, 1980)

Sixth, donor agencies and Sub-Saharan governments would be well advised to step up applied research aimed at producing methodology to evaluate the effects of policy and programmatic interventions. Behavioral dimensions of mass poverty in the Sub-Sahara do not lend themselves easily to quantification. More importantly,

cultural, socio-economic, ecological, and even physiological factors which determine physical well-being are highly specific to the particular milieu at national, regional, and local levels. "Well-being," indeed may be defined differently from one milieu to another. For example, there is one physiological basis to calorie consumption as an indicator of nutritional status. Calorie consumption, however, must not exclude protein and other nutrient intakes such as vitamins that are used by the human organism for other purposes besides energy. Since physiological needs may differ from one environment to another, a uniform standard of calorie consumption although useful as a global indicator is not appropriate for planning and evaluating specific antipoverty programs. (McEvers, 1980)

## 6. Science and Technology

### A. Existing Conditions

Discussions of this subject requires at the outset that we clarify terms. As it is used in the ensuing commentary, the term "scientific and technical research" refers to systematic effort based on the scientific method of inquiry for producing new methods and techniques that raise technical efficiency and also, in the economic sectors (particularly agriculture), productivity. Scientific inquiry yields information that is either pure basic knowledge or applicable to differing degrees to actual problems. Technological development is based upon scientific knowledge and produces mechanical, biological, or institutional innovations; it can also fit under the label of "applied technical research." Both effects are hereafter referred to as "R&D." Although basic and applied research as defined above might appear to be situated at two extremes of the spectrum of the research process, in practice they must be integral parts of a continuum if investment in them is to be worthwhile. Those who are familiar with the unique ecology, soil, topography, and climactic conditions of tropical Sub-Saharan countries concur in the judgement that new technological applications are needed to help surmount these problems. (Rao, K.N., et. al, 1974, pp. 21-51) R&D is seen as having a vital developmental role to play in most economic and social sectors and particularly in agriculture, public health, and medicine, climate variability, water resources, and energy. We focus below partly on R&D in relation to agriculture because the immediate and long-term development priority for most

Sub-Saharan countries should lie in achieving a quantum increase in their levels of peasant agricultural output. Furthermore, a number of countries particularly in the Sahel are beginning to exhaust their cultivated lands. If malnutrition is to be reduced and economic growth restored, agricultural research must be stepped up in order to generate new technologies that would permit higher yielding crops and livestock production. However, we treat issues that are generic to technological development in all economic and social structures, thus our comments below transcend all sectoral boundaries.

Prior to examining commonalities between national R&D experiences in the Sub-Sahara-which far outweigh national differences, it is useful to note some variations between existing national R&D capacities and infrastructures. These variations may be delineated, again, along the East-West axis. East African countries tend to have relatively weak, national research organizations characterized by ineffectual or nonexistent linkages to feedback mechanisms such as agricultural extension services and health services systems. The scarcity of qualified scientific and technical researchers as well as technicians in East Africa has been exacerbated by "brain drain" to the developed countries and by the pull of highly remunerative employment in the Arab Gulf States. Since development of R&D capacities in this sub-region is a relatively recent phenomenon, the practice of allocating domestic funds to R&D continues to largely be supported by grant aid and technical assistance from external donors.

In West Africa, by contrast, the predominant colonial power, France, left in place an infrastructure of research institutes and

capacities both in the agricultural as well as the health-medical sectors. A network of tropical crop research institutes was established which also rendered valuable services to the newly independent countries. Similarly, medical research endeavors such as those of the "Institute Pasteur" and other institutes established in Francophone West Africa have conducted valuable research, although with the exception of Dakar-Yellow Fever Vaccine, their products might have been more directly related to the major health problems of rural people. Generally speaking, West African research infrastructures also suffer from periodic shortages of sufficient financing to carry out their programs, as well as scarcities of qualified national research personnel. In many cases their research efforts are fragmented and uncoordinated. The high costs of employing expatriate scientists and technicians has tended to further prohibit coherent development of research infrastructures. In West Africa financial and manpower shortages have been overcome to some extent by technical assistance and grant aid by external donors.

The interest in "modern" technology, with the idea of a technological "fix," combined with an awareness of the importance of R&D in relation to their development problems. has led Sub-Saharan governments to establish some of the institutional instruments needed for planning and developing R&D capacities. Most countries now have national scientific and technical research councils, usually located at the sub-cabinet level and comprehending all sectors and disciplines. The councils are intended to formulate overall policy directions for the national

R&D effort. While across the Sub-Sahara the performance of these councils has been checkered, they have yet to play effective roles in policy planning in terms of delineating choices of technology and setting national goals and strategies for R&D. Further institutional development is marked by the establishment in Francophone countries of ministries that are responsible for promoting, guiding, and financing national R&D programs. Also, a number of universities have developed scientific and technical research capabilities. (McEvers, 1979)

Key Policy Issues. The paramount policy issue regarding Sub-Saharan technological advancement is that of the choice of technology. Decisions of choice should guide the entire R&D process. Experience in the region suggests several criteria against which these decisions should be made, i.e., solutions researched and technologies developed should be both cheap and widely applicable, minimally resource demanding, and so tailored to local conditions as to function fairly continuously without breaking down.

Decisions on the subjects of research and planning and execution of research programs should conform with national development policies. Research activities that are devised and carried out without reference to the overall economic and social policies of a country absorb resources that in the end may be wasted. For example, in agriculture, investment in R&D aimed at raising the productivity of small-holder peasants would be wasted in the absence of policies which promote economic incentives that induce peasant farmers to employ the new products of R&D.

New technologies cannot be applied successfully in the Sub-Saharan milieu unless they are appropriate to the societal socio-cultural and behavioral circumstances in which they are to be used. This criterion tends to be overlooked or else under-emphasized in most R&D schemes. Even internationally sponsored programs (.e.g, the Cooperative Group for International Agricultural Research - CGIAR and the Tropical Disease Research Program sponsored jointly by WHO/World Bank/UNDP) have failed to devote either attention or resources to this consideration which is commensurate with its significance. In consequence, R&D programs afford little or no scope for the applied social science research activities without which cost-effective applications of the products of scientific and technical investigation cannot be attained. Admittedly, difficult problems of inter-disciplinary intergration and coordination emerge when R&D endeavors exceed parameters of the purely scientific and technical disciplines. Renewed efforts are needed to explore ways of addressing these problems. (McEvers, 1979)

A second issue is that of whether to emphasize indigenous R&D or the importation of technologies. Empirical evidence clearly indicates that R&D should be carried out within the Sub-Saharan countries themselves, if they are to be geared to produce technologies applicable to the unique problems confronting them. The alternatives of importing technologies from the developed world, elaborated under temperate climactic conditions, different ecologies, and substantially different socio-cultural circumstances has not proven to be successful in dealing with

development problems. Sub-Saharan experience is littered with disillusioning failures in applying imported technologies. Suffice it to note here only one example, that of educational television (ETC) in the Ivory Coast. Some years ago a multi-million dollar program was mounted with very substantial bilateral donor support to enable the Ivorian Government to accelerate primary education expansion throughout rural areas by substituting educational television for teachers in primary schools. UNESCO's feasibility studies argued that the ETC scheme would lower the unit costs and increase the internal efficiency of primary schooling and stem the tide of migration from village to city by young people as a result of including in school lessons a rural, agriculturally-oriented message. Evaluations of the operation and results of the scheme have revealed that since the establishment of the ETC program, the real unit costs of rural primary schooling have skyrocketed, the internal efficiency and external productivity have declined markedly, and the proportion of primary and post-primary school leavers and graduates in the total migratory flow from rural areas to urban centers has increased. Reasons established for this performance include, inter alia, the constant breakdown of the technology for lack of maintenance and repair, the inappropriateness of this technology in the Ivorian rural setting as the major pedagogical method of primary school instruction, and the introduction of a modern apparatus from the city which merely stimulates further curiosity about city life and the attractiveness of modern diversions found only in the city. (McEvers, 1980, pp. 43-51)

Governments that have opted for emphasizing indigenous, national R&D have faced the issue of "directed" versus "free" research.

Western scientists tend to assume a rather adamant stand on this question in favor of the freest possible environment for R&D. But in the Sub-Sahara we must recall that what is at stake is human life or death from malnutrition due to insufficient food supplies and/or from other diseases. Sub-Saharan governments cannot afford the luxury of debating scientific freedom versus accelerated development for achieving radical increases in agricultural productivity, so that their populations can feed themselves. and quantum reductions in infant, child, and maternal mortality and morbidity, which are so essential to raising the productivity of the rural poor. As measured by western standards, the design of institutional models and of research programs by authorities in Sub-Saharan countries should come down on the side of "directed" research. This does negate the necessity, in fashioning and conducting R&D programs, of reconciling deliberate directions towards meeting development and basic needs with undisturbed, autonomous environments in which scientists can pursue their investigations. (McEvers, 1979)

Finally, governments must face the perennial issue of allocating adequate resources to R&D. A review of national development plans reveals that virtually every country now allocates resources to R&D, albeit in miniscule proportions and absolute amounts. These resources, by and large, derive from external aid sources. It has been observed in respect of the Sub-Saharan region as a whole, that, despite recognition of the importance of R&D to public health and agricultural development, governments have not as yet allocated budgetary and manpower resources in amounts that are commensurate with the importance of R&D in these two sectors. (McEvers, 1979)

B. Prerequisites for Developing R&D Capacity

Shortcomings in the efforts to date made by Sub-Saharan countries to develop their R&D capacities point up, implicitly, prerequisites for future development. Apart from the failure to formulate unambiguous national research goals, Sub-Saharan efforts have been characterized by an absence of continuity in research directions, management policies, and program supervision. Corrupt practices of government in most countries have compromised the necessary autonomy that research institutions require if scientists are to get on with the job. Insufficiencies of African scientists, technologists, technicians, and tradesmen constitute a continuing impediment. Infrastructural services also tend to be inadequate or else unreliable. Laboratories, in particular, require reliable supplies, water, electricity, air conditioning, and in some cases, telecommunications. Another deficiency has been that of the flow of information to research staffs regarding, for example, production problems confronted by peasant farmers and epidemiological evidence of the etiology and natural histories of major health problems. Such data is absolutely essential not only to establish research priorities, but also to translate priorities into programmatic activity and to test research results. (McEvers, 1979)

In most national settings research and the application/diffusion of technologies have been separated both in terms of time and organization. Mechanisms which permit research results to flow to farmers in order to effect on-farm testing or to health posts in rural areas in order to carry out field trials have been lacking. Future institutional development must be focused on resolving

this very fundamental issue. In the agricultural sector it has been very rare indeed that the views of peasant farmers themselves have been taken into consideration in the design and implementation of R&D programs. Very little of the total agricultural research effort has been carried out in fields removed or remote from experimental stations. On-farm testing of new techniques requires an agricultural extension service that is relatively effective and efficient. Unless that basic needs delivery system can be developed, Sub-Saharan countries will proceed without arrangements for feedback mechanisms in agricultural research. (McEvers, 1979)

The separation of research from application has not come about solely because of the absence of institutionalized feedback linkages for the testing, application, and diffusion of technologies. Sub-Saharan scientists have a built-in aversion to the real world of application. Thus, in many countries some African medical scientists prefer to work on problems of the developed world for which they might earn Nobel Prizes if they achieve breakthroughs. Their claims on available resources have generally left the vital area of public health operations research bereft of finance and staff. In agriculture it is not uncommon to find agricultural scientists and agronomists who refuse to dirty their hands in the field with on-farm testing and their function is limited to basic research in the laboratory. Perhaps one approach in addressing this problem would be to link research and application together in a pilot project in order to demonstrate results. In any event, some very original thinking is needed as to how this built-in, psychological divorce between research and application can be dealt with effectively. (McEvers, 1979)

As in all sectors, in the agricultural sector where national research programs have tended to be structured on the basis of major commodities (crop and animal) or special problems (soil, water, engineering, natural resources, processing), socio-economic research has not been made an integral part of the R&D process. Subject matter specialists working at research stations have not been encouraged to link up with local extension services, parastatal agencies or commodity production programs. In most countries governments have as yet to develop networks of research stations designed to meet the specific needs of principal agro-ecological zones.

Given differing agro-ecological and other circumstances between nations, it is difficult to specify one model or research infrastructure for all countries of the region. Each country must develop its own set of institutions or, in the case of the smaller and poorer countries, regional infrastructures that exploit economies of scale. Whatever the model adopted, it must allow for scientific intercourse that transcends national boundaries. Interchange of scientific and technological knowledge/ideas has been precluded by language barriers. Scientists in Francophone countries disseminate their research findings in Parisian scientific journals that cannot be read by and often are not even available to Anglophone African scientists and vice versa. (McEvers, 1979)

As regards the training of Sub-Saharan research scientists, the practice has been to send prospective scientists abroad, usually on scholarship aid from bilateral donors, in lieu of developing graduate studies programs at local universities. Two consequences

have flowed from this tradition. First, research scientists have tended to acquire their training in, and to do their preliminary work on, problems indigenous to the developed countries. Secondly, these people have all too often failed to resist the attractiveness of remaining in the developed countries rather than returning home. The brain drain of scientists equipped to conduct research is particularly notable in the medical and public health sciences. (McEvers, 1979)

A particularly serious problem has to do with manpower utilization. Research institutions in the Sub-Sahara suffer from the same weaknesses in terms of incentive structures and personnel policy as other branches of the public administration. It would not be reasonable to assert that in virtually no Sub-Saharan country has the public administration established a career structure that offers promotions and rewards sufficient to provide incentives for scientists to remain at home and dedicate their professional lives to R&D. Owing to the network of international contacts among research scientists in all disciplines, the absence of domestic career structure and incentives has encouraged immigration of the few African research scientists willing to remain at home. Many of them, in consequence, are found not only in medical research institutes and multinational agri-industrial corporations in the metropolitan countries, but also in public international organizations, (McEvers, 1979)

That, as yet, no national or international authority has even made an inventory of manpower resources in Sub-Sahara Africa for scientific and technical research indicates how neglected this area has been by manpower planners. There are methodological lacunae

encountered in estimating the types and numbers of scientific researchers required in future years as techniques of analysis and forecast have not yet been refined to the point where they can be applied reliably to the quantitatively autonomous demand and supply of researchers.

Development of R&D capacity requires several levels of skills and disciplines including senior managers and planners, scientists in various fields, intermediate level technicians, managers of experimental stations and medical research institutes, as well as social scientists to link research with application. In the agricultural disciplines spot reviews of available manpower indicate severe shortages of trained personnel in soil microbiology, tropical pastures and forestry, agricultural engineering, and agricultural economics. Substantial increases also appear to be needed in training opportunities for research planners, administrators, and managers. Ad hoc studies in the health sector suggest that major requirements for scientific researchers lie in the disciplines of parasitology, tropical pathology, epidemiology, public health operations research, microbiology, biostatistics, medical sociology, and tropical hematology. Needless to say, senior managerial and planning staff are also lacking in the medical/public health sector (McEvers, 1979).

Towards the end of reducing the built-in bias for laboratory limited research in favor of generating technologies that are of direct benefit to farmers or to people afflicted by disease, governments could certainly establish monetary and other incentives to reward competent scientists for their efforts in the generation of applicable technologies. At the same time, some reorientation in

the content of graduate level training of research scientists would be useful. At this level most Sub-Saharan universities (e.g., Dakar, Nairobi, and Makere) concentrate overwhelmingly on theoretical principles in the particular disciplines pursued. However, a sound program of study requires that prospective scientists learn, in addition to theoretical knowledge, practical research skills that will enable them to apply their specialized knowledge as members of multi-disciplinary teams whose primary function is to generate applicable technologies. The aim of graduate training ought to be that of producing a mass of scientists capable not only of discovering new plant strains or vaccines, but also of conducting effective crop improvement programs or field trails of new drugs.

Internationally and bilaterally funded networks of R&D centers that have made important technological contributions and currently spearhead much of the R&D work in the Sub-Sahara include the CGIAR network, the Rockefeller Foundation's international agricultural development service, the World Bank, and the UNDP Tropical Disease Research Program. To some extent, however, these international and bilateral programs have tended to substitute themselves for the development of national research capacities, owing to the weakness of indigenous research systems. But, in the final analysis, institution building in this field can only be carried forward by the national governments of the Sub-Saharan countries. Indeed, a Sub-Saharan country that lacks sufficient capacity to carry out R&D on its own can hardly benefit from research done in other countries, since the former's ability to screen, borrow, and adapt scientific knowledge and technology produced elsewhere requires the same R&D capabilities that were needed to generate the new

technology. If national research systems are to become stronger and to take over many of the tasks of producing, adapting, and verifying new technologies the modus operandi of the international programs must be changed. (McEvers, 1979)

Lastly, whether R&D capability is developed at a national or a regional level in the Sub-Sahara, it is important to give due consideration to the forward linkage of R&D to human resource development as a whole. Poor people in Sub-Saharan countries must possess sufficient cognitive and practical skills to apply new technologies. Indeed, it is the very absence of such skills (i.e., extraordinary low educational and literacy levels) that has thwarted the diffusion and application of appropriate technology. It would be rather absurd to advocate the development of a "science-based" small-holder agriculture in the Sub-Sahara, unless peasant farmers could acquire sufficient literacy/numeracy, basic education, and rudimentary skills to apply new agricultural techniques. Therefore, R&D capabilities must be developed in tandem with the other vital areas of human resource formation and manpower development.

## 7. Manpower Development

### A. Education and Training

Figures in Table 2 of the Appendix indicate the substantial progress Sub-Saharan countries have made in raising their national enrollment ratios at all three levels of the formal education pyramid and, by implication, the educational attainment levels of their populations. Indeed, during the period 1960 through 1976, in the Sub-Sahara as a whole the average rates of enrollment expansion at all three levels amounted to 6.2 percent per annum, compared with 5.9 percent for Latin America, 4.2 percent for Asia, and 5.4 percent for North Africa and the Middle East. (Davies, p. 79) Yet, at the end of the 1970s, Sub-Saharan enrollment ratios were still substantially below those of the rest of the Third World. (See Appendix, Table 2.) Moreover, roughly 80 percent of Sub-Saharan populations over the age of 21 were estimated to be functionally illiterate, while in the rest of the Third World only Pakistan, Nepal, Yemen, and Bangladesh recorded comparable rates of illiteracy.

Such strides were made in expanding the provision of primary schooling (enrollment ratios rose from 38 percent in 1960 to 60 percent by 1976) that, before the current economic crisis emerged with full force, it was widely anticipated that by 1990 countries such as Zambia, Tanzania, Swaziland, Togo, Botswana, and Kenya would succeed in universalizing primary education. Only Nigeria is now expected to do so. Growth of formal school enrollments at secondary and higher education levels was even more explosive, owing to

favorable policies of resource allocation. On the other hand, change in the structure of enrollments shows that throughout the region, the proportion of pupils enrolled in technical and vocational training both formal and non-formal has declined. (Davies, p. 83)

In contrast to the record of quantitative progress, unbalanced though it may have been, the content of the education and training systems has changed very little since the advent of independence. At the primary level content is controlled by the demands of an academic and classically-oriented secondary education which, in turn, is designed for progression to university. For example, in Francophone countries it was a cardinal rule of secondary schooling for many years that passage from the lower cycle to the upper cycle required students to pass an examination in Latin. (McEvers, 1981)

The general outline of education policy described above practiced by most Sub-Saharan countries (except to some degree by Tanzania) has favored the urban, modern sector and secondary through higher education over the development of basic education and skills training in the traditional rural economy. Senegal affords a snapshot illustration of this policy practice. There, the primary school enrollment ratio currently stands at about 47 percent. The language of instruction is French, but lip-service is given to introducing local languages in primary schools. The curriculum contains few practical subjects, as it is largely controlled by requirements of the secondary school entrance examination. The system is oriented toward urban life/modern sector employment. Rural areas are at a disadvantage; buildings

are poor, furniture scarce, didactic materials lacking, and the best teachers are found in the cities. About 20 percent of primary school graduates are admitted to a four-year "middle school" program. The government is experimenting with a new form of practical, middle-level education for the other 80 percent; however, this experiment, intended to provide practical training and cognitive skills to primary school dropouts and adolescent illiterates, has stagnated for lack of resources and attention. Senegal allocates 60 percent of the national education budget to secondary and higher education. In 1971, at the World Bank's urging, the government planned an educational reform designed to provide scientific and practical-technical subjects in the curriculum of lower cycle programs of secondary schooling. However, despite an official decree for this reform, it still remains to be carried out in practice. (McEvers, pp. 6-8)

On the average all the Sub-Saharan countries devote a larger percentage of their national budgets to education than all other Third World countries. (See Appendix, Table 1.) Some countries such as Benin, Mali, Ivory Coast, and Nigeria devote over 30 percent of their total governmental budgets to the sector. Moreover, over half the countries of this region dedicate in excess of 3.5 percent of their GDP to education. Zambia, Zaire, Benin, Congo, Botswana, Kenya, Senegal, and the Ivory Coast spend over 5 percent of their GDP on education, while Lesotho expends upwards of 12 percent, (Davies, p. 86)

Throughout the Sub-Sahara the extraordinarily high unit cost of education and training relative to resources available in the public sector has tended to impede efforts to improve access to

education and training opportunities and to increase the quality of opportunity offered. Unit costs as a percentage of GDP per capita are higher than elsewhere in the developing world, ranging from 24 percent at the primary to 142 percent at secondary and 1,405 percent and tertiary. By comparison, the compared figures for other regions of the world are 27 percent and 205 percent in Asia; 15 percent, 47 percent, and 306 percent in the Middle East and North Africa; and 11 percent, 22 percent and 121 percent in Latin America. (Davies, loc. cit.) Unit costs, both in absolute and relative terms and in capital as well as recurrent outlays per student, have driven Sub-Saharan governments to spend more on education than governments of other Third World countries whose per capita incomes are higher by as much as eight times. This may be attributed to the following factors: (a) heavy dependence on the employment of expatriate teachers, with the result that teachers' salaries absorb between 70 and 90 percent of total recurrent outlays for education; (b) high costs of imported didactic materials and educational technologies that governments endeavor to apply across the board irrespective of their resource demands; (c) unusually high capital costs, compared to those evidence elsewhere in the Third World, resulting from persistent efforts to achieve European standards in school-building and equipment provisions and also from inefficient and badly organized construction industries; (d) the almost universal regional practice of installing boarding facilities at most levels of the system, even the primary; (e) dispensing scholarship assistance to all students who can qualify for it academically regardless of the financial support available from

family; and (f) logistical difficulties that result in high transportation and communication costs. (McEvers, 1981)

The quality of teaching staffs may vary from one country to another. The majority of Sub-Saharan countries, however, register over 50 percent of their primary school teachers as being unqualified. The extent of qualified teaching staff appears to be significantly better at the secondary level owing to heavy reliance upon expatriates. It is not uncommon to find in many countries that almost the entire teaching staff of secondary schools is composed of expatriates.

The quality of inputs into the schooling process, such as teaching staffs, are considered to be independent variables that determine internal efficiency. However, out-of-school factors are also important determinants of in-school performance and hence on internal efficiency. A growing body of evidence demonstrates that ill health and undernutrition in the Sub-Sahara constitute important contributors to inefficiency in primary education. (Heyneman, 1980) Conventionally, internal efficiency is measured by attrition and repetition rates. In the Sub-Sahara, owing to those factors, it is estimated that an average of ten student years are needed to produce a graduate of a six-year primary school course. At the primary level much of the repetition is found in the last year of the course, due to the colonial heritage of requiring an examination for final year students. Also the competition for limited places in secondary schools encourages students to repeat their final year in order to improve their chances on secondary school entry examinations. The record of internal efficiency at the secondary level is equally poor. At the tertiary level efficiency varies considerably. In

Nigeria and Kenya university repetition and drop-out rates are low; while in the Ivory Coast, they are extraordinarily high. At the University of Abidjan there are faculties in which students can spend ten years completing a three-year program. (McEvers, 1981)

Cost-effectiveness in the deployment and uses of resources invested in education and training systems is manifested not only by the systems' internal inefficiency, but also by their external productivity. We have already mentioned the pervasive problem of quantitative and qualitative disequilibria between outputs of the education and training system and manpower needs of the modern sector. In consequence, many countries have begun to experience increasing unemployment among school leavers. The Ivory Coast and Malawi, by way of example, have rapidly expanded their educational systems without due regard to manpower needs and their systems have begun to turn out many graduates for whom there are not enough jobs in the modern sector. Partly because education and training imitate the elitist biases and content of the French and British systems, school leaver's expectations and training tend to be mismatched relative to available jobs. These two countries, moreover, have opted for continuing reliance upon expatriation in the modern sector. In the Ivory Coast, for example, the population of European expatriates grew from 30,000 in 1965 to 50,000 by 1975 and they can be found as owner-operators of even minor distributive activities such as newspaper distribution. Slow rates of job creation in the modern sector in the Ivory Coast relative to output of secondary school graduates and the continued presence of European expatriates in middle-level positions creates frustration

and resentment among unemployed school leavers, (McEvers, 1980, p. 23)

In Senegal the educational system has also begun to produce graduates for whom there are insufficient jobs in the modern sector. It is estimated that in the coming years the annual output of post-primary education will be about 10,000 graduates per annum for whom only 6,500 modern sector jobs will become available. On the other hand, the public administration experiences severe shortages of people qualified for technical and managerial occupations. (McEvers, Ibid, p.9)

According to calculations made by the ILO for the period 1973 through 1980, jobs in the Sub-Saharan modern sector grew at 5 percent per annum, but could absorb only 50 percent of all school leavers from all educational levels, (Davies, p. 85)

#### B. Employment, the Incentive Structure, and Education and Training Systems: Interactions

Studies of the modern sector wage structure and policy in Sub-Saharan countries indicate that a divergence inherited from colonial days has persisted. That is, in the private sector the difference in wage scales between top salaried executives and unskilled wage earners has been five to ten times the equivalent European differential. Moreover, political expediency has required the perpetuation of colonial standards for senior public servants. Thus, governments have responded to popular pressure to reduce differentials between the topmost and lowest pay scales by raising the scales at the bottom and then making upward adjustments in

the entire structure. This pattern has been observed to varying degrees in all countries. (Acharya, 1981)

We have already noted the widening disparity between urban and rural incomes as one consequence of modern sector wage structure and policy. This disparity has generated mounting demands for employment in the urban modern sector that have far exceeded the pace of job creation brought about by economic growth. Furthermore, modern sector economic expansion has been outstripped virtually everywhere by the increase in the eligible labor force. Finally, even where modern sector economic growth has accelerated at fairly high rates (as in Kenya and the Ivory Coast), it has been characterized by increasing capital intensity.

As the surfeit of demand for modern sector employment among school leavers increases, minimum educational credential requirements for employment are elevated. That, in turn, generates greater social demands for additional years of formal schooling. Governments are then driven to allocate ever larger proportions of their available educational resources both to the spread of basic education among rural masses and to non-formal types of training which could bring about some qualitative balance between skills produced by the education and training system and job needs of the modern sector. The absence of incentives for acquiring vocational and craft skills perpetuates neglect of non-formal and other training activities in this area on the part of the government. (Acharya, 1981)

Since there is no market discipline within the public sector, there are no inherent restraints on wage increases. In the small

private sectors increases in wage costs are accommodated by increased protection, which leads in turn to a loss of efficiency and to an increase in relative prices of goods for rural purchasers.

Wage increases for unskilled urban labor fosters ever greater recourse to more capital-intensive techniques. (Acharya, 1981)

Owing to political considerations, the issue of modern sector incentive structures may not be amenable to direct and deliberate policy action. Yet its role is so central in the inter-relationship described above, that unless this issue is resolved favorably, i.e., distortions in the incentive structure are redressed, efforts to realign the educational system to manpower development needs will fall far short of the mark and investment in such will be partially wasted. Manpower constraints on the modern sector's capacity to recover or sustain economic growth and to meet basic human needs, especially those of the rural masses, would not be ameliorated. This issue should be addressed as a function of a larger macroeconomic and social development policy that is centered around rectifying the urban-based modern sector bias on which policy practice is anchored.

Governments of the poorer and smaller countries in the region may well find they have few alternatives to such a re-orientation in macroeconomic policy. They may be pushed towards attempting precisely such a change in their policy practices by the impact of the current economic crisis on modern sector economic performance and on further expansion of public sector institutions.

Finally, the poor countries of the Sub-Sahara will not be able to deal effectively with the budgetary constraints they face

in education and training without increased external donor support. In the past both bilateral and multilateral donors have shown a preference for financing "hardware," i.e., school buildings, facilities, and equipment. Under the priority emphasis we have suggested above, there is a correlative change.

### C. Manpower Supply and Demand

To continue in our analysis, let us use a fictitious case, the Republic of Saharia which can represent an area in the Sub-Saharan region. The impact of the current economic crisis, its implications for modern sector manpower supply, and the demands of education, economy, and disequilibrium directly affect Saharia. The Republic of Saharia is one of Sub-Saharan Africa's poorer nations with a population that is fairly large but still within the medium range of national population sizes in the region. Its government has adhered to the mixed, neo-classical style of development.

The Republic's estimated labor force's participation rate is 36 percent. Of these people, roughly 91.3 percent are engaged in traditional agriculture and animal husbandry and 3.5 percent work in various and sundry pursuits in the "informal" sector. Of those estimated to be employed in the modern sector, about two-thirds are engaged in private sector activities. Wage employment in the modern sector accounts for roughly 5.2 percent of the employed labor force and is dominated by the public administration and parastatal enterprises. The Government of Saharia offers employment in the public service to all graduates of secondary and tertiary education. Public service employment is geared in terms of wage

scales to educational certifications. Scholarship assistance is available to all eligible secondary school graduates. As a result, private returns to higher, i.e., post-secondary and tertiary education, are understandably high and social demand for education at those levels increases concomitantly. Public service employment has grown rapidly over the last ten years, especially at the higher levels of manpower qualification. It has increased by an average annual rate of 25 percent among professional and managerial personnel, 17.5 percent among middle-level or technician personnel, 9 percent among skilled workers, and 7 percent among unskilled labor.

After years of vigorous expansion Saharia's modern sector economy has been battered into intractable stagnation by economic crisis. Prospects for future economic growth are dim. Lack of resources has brought public sector growth to almost a standstill. The present and continuing economic slowdown has, accordingly, cut down rates of job creation in the modern sector as a whole, with the greatest decline found in the public sector. Retrenchment in the public sector and cutbacks in government spending have affected private sector interests in an adverse fashion since many private enterprises, such as those in the construction industry, are heavily dependent upon public business. This, in turn, translates into lower rates of job creation in the private sector. On the other hand, because they are less affected by changes in public spending, agricultural and informal sector employment could, given the right set of policy measures and the creation of appropriate conditions, absorb new entrants into the labor force who heretofore have sought employment in the modern, urban-based sector.

A straight line extrapolation of the past trends in modern sector employment in the Republic of Saharia would envisage government spending approximately 19 percent of the country's GNP on public service salaries by the year 1990 (against 7.0 percent in 1975). This would be the inevitable consequence of continuing existing scholarship and public service employment practices regarding post-secondary and higher education graduates. However, another more disturbing outcome would emerge from extrapolation of past trends. Estimating balances of supply and demand for trained manpower for the modern sector during the period of 1980 through 1990 would indicate an overall deficit in the supply of trained personnel from the education and training system against the number required by the modern sector. While there would be a substantial surplus of qualified workers at the middle through highest manpower levels, substantial deficits would exist in the supply of trained manpower for jobs at the levels of semi-skilled labor through skilled tradesmen.

If we assume that retrenchment of the public administration and its agencies includes the largely public education and training system and involves commensurate cutbacks on the growth of enrollments, the structural disequilibrium would be less severe in terms of absolute numbers. Policy implications of this quantitative conjecture are clear. In order to begin the lengthy process of ameliorating this mismatch between modern sector needs and education and training system outputs, the Saharian government would have to revise quite drastically its education development policy. That revision would have to embrace:

- (a) a reallocation of resources from the higher to the lower and middle level tiers of the educational pyramid;
- (b) reallocation of resources from academic to vocational and trade training and from the formal system to non-formal types of skill formation;
- (c) imposition of formal restrictions on public sector employment; and
- (d) sharp reductions in the volume of scholarship assistance.

#### D. Policy Issues and Priorities for Educational Development

Issues. Faced, as they already are, with an average gross rate of population increase on the order of 3 percent per annum, Sub-Saharan governments will find themselves entrapped in yet another development dilemma, perhaps more severe in political terms. While there will be even greater social pressures and demands for educational and training opportunities, the governments will have relatively fewer resources with which to respond. Most Sub-Saharan countries, we estimate, would have to double their present total education enrollments by the end of the century simply to maintain their current enrollment ratios at all levels of education and training.

Further expansion of education would obviously require radical reforms in the financing of formal schooling and a greater spread in the sharing of education costs. Furthermore, expansion heretofore has been achieved at the cost of declining quality, especially in primary schooling where a large number of unqualified teachers have been employed. Upgrading teaching staffs and

providing better didactic materials and logistical support to schools have emerged as targets for major emphasis in education strategies. In the poorer countries further advances in increasing access to educational opportunity will depend on the capacity of governments to reduce the unit costs of education, to find alternative means of financing schooling, to increase student-teacher ratios, and, most likely, to devise lower cost and alternative systems for the delivery of primary schooling. Already experiments have been carried out in some countries. For example, Chad, Benin, and Botswana have experimented with financing education by joining school facilities to productive, revenue producing enterprises. Mauritania, Mali, Upper Volta, Benin, and Senegal have attempted to find alternative forms of delivering basic education via the reform of Koranic schools, (Davies, 1980)

In sum, future improvements in the modern sector's capacity to generate economic growth and meet basic needs will include a realignment of education and training systems with the economy's needs and resources. In pursuing that goal governments will have to address several interrelated policy issues. Among them are the following:

What should be the overall priority that governs allocation of resources for investment in education?

How can resources be stretched further to produce more effective and suitable products from investment in education and training?

How can needed expansions be reconciled with qualitative improvements that raise the internal efficiency and external productivity of education and training systems?

Priorities. Investigations of the economic value of returns on investment in education and training in the Sub-Sahara have yielded an important finding. Notwithstanding low external productivity, both private and social rates of return on such investments are well above the customary 10 percent opportunity cost of capital that is used as a standard benchmark in the Sub-Saharan countries. (See Appendix, Tables 7 and 8.) This suggests that the structural resource allocation in the education/training sector contributes diverse opportunity benefits on the resources of the national economy as a whole and could have a significant net effect. The importance of affecting decision-makers on allocating education resources then becomes paramount.

In our preceding commentary we began to argue the case for assigning overall priority to primary and basic education, i.e., to formal and non-formal and vocational/trade skill training. Our contention that the structure of resource allocation ought to be revised downward to provide more resources for investment at the lower levels of the education system is further supported by rate of return studies carried out in a number of Sub-Saharan countries. These have shown consistently that the higher rates of return to investment are, with few exceptions, found in primary education. (See Appendix, Table 7) Moreover, the social rates in the Sub-Sahara are also higher than the same rates recorded in other Third World countries. (See Appendix, Table 8)

Rate-of-return methodology provokes controversy in the development community and, indeed, its shortcomings limit its utility. Moreover, the economic structures of Sub-Saharan countries naturally introduce a bias into rate-of-return findings.

Labor markets in Sub-Saharan countries are considerably "imperfect" (compared to those in the OECD countries) and those imperfections or rigidities together with prevalent wage structures of the modern sector further restrict the usefulness of this methodology as an instrument for actual educational planning. Further to the point, the state of the art together with a lack of detailed data makes it impossible to adjust private and social rates of return for unemployment. If that were possible, then rates of return on secondary and tertiary education would be lower than the findings depicted in Table 7 of the Appendix since unemployment tends to be higher among leavers and graduates of secondary and tertiary schooling than among those with primary school certification and/or attainment. But such an adjustment would still leave primary schooling with the highest rates of return on education investments. (Psacharopoulos, 1973) It is beyond the scope of this paper to explore the shortcomings of this methodology. The essential point is that, even with respect to the modern sector, whatever guidance we glean from investigations of this kind does point to the necessity of reordering priorities in favor of primary and basic education.

Investment in primary and basic education also has exogenous benefits which can be quite important over the longer term. Four years of completed basic schooling are considered sufficient for endowing people with retainable functional literacy. The first step towards laying technological and managerial foundations for sustained development in these countries is that of spreading functional literacy throughout society. Furthermore, empirical

research in the Third World has revealed that primary and basic education contribute to fertility decline. These cross-sectional, time-series correlations suggest that over the long term the spread of primary and basic education has a positive impact towards helping to reduce rates of demographic increase. (World Bank, 1979, pp. 31-56) It should also be noted that in the Sub-Sahara region investment in primary education constitutes, in effect, a redistribution of national income. Of all the measures for distributive reform that might be available to Sub-Saharan elites, the development of primary education as a means for enhancing social equity is the most politically palatable. Finally, the process of human resource formation requires continual building up of the formal education and training system. This is not intended to underplay the importance of nonformal and informal education and training experiences. However, given the crucial role of formal education, it is important that the formal system be built upon a sound foundation of primary and basic schooling.

Having established what would appear to be the broad priority which Sub-Saharan governments ought to consider, we now turn to the question of what types of basic education and training should be emphasized and for whom. Again, we can review the results of empirical research on the impact of primary education on peasant farmer productivity conducted in Kenya as well as in twelve other developing countries (outside the Sub-Saharan region). These inquiries sought to measure the extent to which levels of educational attainment on the part of such people affect their production efficiency. The inquiries included analysis of 37 data sets

collected over the last twelve years to allow for statistical appraisal of the effects of educational investment with all other variables controlled. The results showed an overwhelmingly positive correlation between levels of educational attainment (years spent in school) and agricultural output per peasant farmer. Indeed, the findings estimate that on the average four years of primary schooling led to an increased output per head of roughly 8 percent. (Lockheed, pp. 37-61)

The findings cited above contained one vital caveat. Extra-sectoral inputs into the agrarian environment constituted the independent variable. The positive correlation obtained was only where the environment was propitious to higher productivity owing to appropriate pricing and other policy measures, technological innovations such as new crop varieties, access to farm credit and technical assistance. Conversely, where extra-sectoral inputs of resources and policy measures were made but where educational levels were very low and cognitive skills were lacking, productivity per head did not improve to any measurable extent. (Lockheed, loc. cit.)

Investment in the deepening and spread of basic education, literacy, and skill training for the peasantry in traditional sector is called for. Additionally, the current and continuing slowdown in job creation in the urban-based modern sector should logically encourage increasing numbers of primary school leavers to remain in their rural areas to gain their livelihoods. Certainly government policy ought to be structured to promote such an outcome by emphasizing quantitative and qualitative improvements in rural primary schooling. In regard to the informal sector, the limited

evidence available would suggest that productivity gains to investment in primary and adult education could be quite substantial. It would appear, also, that in the Sub-Sahara such educational investments tend to increase the rates of participation in remunerative employment in the informal sector, especially among women. (World Bank, April 1980, pp. 29-33)

To be more specific attribution of priority to primary and basic education does not imply that development of the secondary and tertiary levels or of other types of education should be neglected. Rather, it pre-supposes a more balanced strategy than previously pursued. Thus, most Sub-Saharan countries should pay greater attention than in the past to development of post-primary formal and nonformal (including on-the-job) vocational training schemes in order to produce the skilled tradesmen and intermediate level manpower that are needed so desperately in all sectors of the economy. Infrastructural facilities, by way of illustration, have been expanded at a very rapid pace in many countries, but these facilities, especially in transportation and communication, continually break down for lack of maintenance due to perennial shortages of skilled tradesmen.

Resources. Obviously, strategies that respond to the resource issue can only be determined as a specific function of a national situation. As a general rule, however, it may be observed that the structural reallocation suggested above would free resources for allocation to the primary and basic education level. On the cost side, an expansion of primary and basic education in rural areas might be achieved in some countries within the parameters of

existing resources. Other considerations could contribute to cost reduction such as efficient introduction of local languages, more intensive use of rural teachers and buildings, reduction in the length of courses, use of a core curriculum, and change in pedagogical methods. For the first time in the Sub-Saharan curricular reforms would have to be carried out under careful operational criteria of efficient use of resource inputs. Also, the use of school fees, a standard practice in Sub-Saharan countries, could be structured to achieve cross-subsidization. Greater private expenditures for secondary and higher education in urban areas could help to finance the public provision of primary schooling, literacy, basic education, and skills training in both urban and rural areas. This is simply one measure which could be taken to expand the domestic financial base of education and training systems. In a number of African countries such measures are already used in another basic needs sector, that of water supply and sanitation. Another measure which has hardly been experimented with as yet in the Sub-Saharan would be arrangements for parastatal as well as private enterprises to finance a large portion of the costs of nonformal training of craftsmen and skilled workers, both on and off the job.

Unquestionably, a major challenge encompassed by this policy issue is that of reducing the unit costs of education and training. Although these reductions could best be realized through raising the levels of internal efficiency of school operations, there still remains a tradeoff which varies from one country to the other. This tradeoff is related to the cost of higher quantities and

quality inputs needed to raise internal efficiency. For example, additional expenditure would be required to raise the qualifications of teaching staffs, produce adequate supplies of textbooks and facilities, etc. Nevertheless, available evidence demonstrates, persuasively, that vigorous efforts are needed in many countries to consolidate the quantitative expansions already achieved by improving the quality of the schooling process and the outcomes of that process. Studies carried out in Uganda, Kenya, Senegal, and the Ivory Coast have demonstrated that, in contrast to the importance of out-of-school determinants of in-school performance found in OECD countries, in-school factors are most determinant, (Heyneman, S.P., 1976, p. 22) A study carried out in Malawi found, additionally, that the amount learned in school exerts a predominant influence on the later economic productivity of the individual, (World Bank, October 1980, p. 43) What we need to ask is, is our recommended priority consonant with our recommended response to resource capacity? It could be argued that even with resources that otherwise would have been invested in secondary/tertiary education, extension of basic schooling would still impose a burden beyond limits on available resources. An observed peculiarity of conventional primary schooling is that its average recurrent costs rise with expansion because the proportion of finance needed to pay teachers' salaries increases.

The priority we advocate would base education policy not on the attainment of universal primary education or other coverage targets, but on measured expansions in rural areas that do not compromise efforts to improve quality and internal efficiency.

Major emphasis would be placed on:

revision in the content of existing primary and basic education particularly in rural areas with the aim of equipping young people to earn livelihoods,

parallel changes in the content of urban-based primary education towards preparing young people for post-primary training in vocational trades rather than progression to academic secondary schooling, and

the spread of literacy and basic agricultural and other vocational skills to the adult peasant populations.

Such reforms, of course, could not be realized unless they were accompanied by strictly adhered to controls on the expansion of academic secondary education. In addition, new and cheaper delivery modes would be required which allow for lower unit costs.

Finally, poor countries of the Sub-Sahara will not be able to deal effectively with the budgetary constraints they face in respect to education and training without increased external donor support. In the past, both bilateral and multi-lateral donors have shown a preference for financing "hardware," i.e., school buildings, facilities, and equipment. Under the priority emphasis we have suggested above there is a correlative change implied respecting donor agency policy. That change includes from school buildings per se to financing "software" requirements related to curriculum reform, didactic materials, accelerated teacher training, and, last but not least, recurrent expenditures to pay teacher salaries. Donor financing of teacher salaries is a particular priority, since vigorous efforts to raise the qualification levels of primary school teaching staffs will be needed.

## 8. The Informal Sector

Unquestionably, Sub-Saharan economies could benefit from an appropriate policy mix and set of incentives that exploit untapped possibilities for private entrepreneurship on a small scale. The latter might include rural industries, agricultural marketing, transport, and construction contracting. However, Sub-Sahara people and their leaders must themselves develop private entrepreneurial forms most appropriate to their own traditions and circumstances. For example, building upon the tradition of communalism might offer appropriate forms for collective entrepreneurship such as cooperatives. Also, as we have already noted, there may be forms for combining private with parastatal activity. The organizational models and practices most appropriate for stimulating entrepreneurial initiative cannot simply be lifted from the environment of Western economies and be pursued successfully in Sub-Saharan countries, as some Western economists insist.

For example, some argue that the frontiers of the public sector should be rolled back in favor of private initiative. Unfortunately, this prescription may not adequately take the local context into account. In the health field Sub-Saharan leaders need to provide a policy practice that affects the well-being of the rural masses. The private sector does not have this goal as a basic motivation. This does not mean that this could not be possible. However, private and public sector leaders will need to clarify ultimate goals. Also, poor people whose incomes often add up to less than \$200 per capita per annum cannot depend on the free market for meeting all of their basic human needs.

One area that has never received the attention it merits given its potential for both private entrepreneurial development and economic improvement is the "informal sector." The informal sector is largely peri-urban-based, (i.e., slum dwellers who ring the urban centers), and is growing fairly rapidly as a result of rural-to-urban migration. It may be defined by its predominant characteristics. These include the absence of formally organized, registered employment and economic institutions, and formal wage structures and the pre-eminence of self-employment and very small scale, labor intensive activities which are marginal to the modern sector economy. These slum dwellers struggle to survive and support their families who move in from the bush. They live by whatever they manage to beg, borrow, and steal. Western economists have regarded the informal sector as one of "transition" between the traditional and the "modernizing" economy. What is remarkable, however, about the informal sector's supposed "lumpen proletariat" is that they are propelled by sheer necessity to create their own employment. That employment creation offers potentiality for the future.

The throngs of urchins and poor people who crawl the streets of Sub-Saharan cities selling wares of all kinds from pencils to real or phony artifacts as well as services may hardly appear to be people offering entrepreneurial potentiality. But, in fact, the informal sector encompasses a wide range of remunerative activities from commercial and financial services to urban transport and the marketing of surplus farm produce sent by families from the bush. Within the slum districts themselves, these people have established rather elaborate networks of services for their fellow slum dwellers. The sector also includes artisan activities in which

individuals and families produce wares and artifacts employing the traditional technologies and manual skills they have brought with them. In many countries one finds servicing and repair activities that utilize simple hand tools and some power machinery in wood-working and carpentry, metal work, masonry, automotive, maintenance, and electricity.

Most Sub-Saharan governments either ignored the potential of the informal sector or an effort exists to destroy it through slum clearance and similar projects. In consequence, little is known about the intricate patterns of socio-economic life which exists in the informal sector. Spot surveys demonstrate the economic and employment potential of the informal sector as well as the difficulties for effective policy intervention.

Governments, of course, would have to reverse their traditional policy postures vis-a-vis the informal sector, if they were to tap its entrepreneurial possibilities. Prerequisites to effective policy and programmatic action could include the following:

- Base interventions on systematic analysis which takes into account traditional, cultural, and social values and socio-psychological problems;

- Seek policy instruments that build upon traditional factors rather than impose "modern" organizations and solutions; and

- Reduce the predominant role of middlemen and money lenders who charge usurious fees for service and interest rates.

Survey and analysis work would also be needed in order to design delivery mechanisms and content for education and training. In particular, household income surveys would be needed to specify relationships between training and skill needs on the one hand and

family income on the other. Literacy training and basic education would certainly constitute important activities. In addition, any manpower strategy ought to comprehend skill formation through on-the-job training closely relating them to the productive skills that are required. This presupposes an analysis of those skills in order to learn the content and translate it into efficient training modules.

9. Conclusion

Selected Issues and Implications for Bilateral Donor Policy

How can the Sub-Saharan governments embark on a course of sustained accelerated human resource and institution development during the next two decades given the continuing resource constraints they will experience under the best of economic scenarios? Therein, it would appear, lies an inherent contradiction, a vicious cycle of constraints. One part of the answer lies in changes in development policy which the governments would have to undertake. A second part consists in higher than previous volumes of concessional, external donor aid. Since Sub-Sahara Africa is already so heavily reliant on such external resources, changes need to be made in the aid policies of the donor agencies, particularly bilateral donors to break this dependency.

Given such changes of policy, it is important for us to indicate that we are aware that these changes are a function of what might be achieved in the field and the policy frameworks allowable as a result of donor governments and their own domestic political and legislative considerations. We approach this subject, therefore, by examining selected issues of human resource and institutional development, by delineating some possible areas of change amenable to policy intervention, and by setting forth some implications for change in donor policies. Following are some recommendations in our summary.

APPENDIX

Table 1

Regional Comparisons: Selected Economic Indicators<sup>1</sup>

	<u>Sub-Saharan Countries</u>		<u>All Developing Countries</u>	
	<u>Low Income</u> <sup>2</sup>	<u>All Countries</u>	<u>Low Income</u>	<u>Middle Income</u> <sup>3</sup>
a. Population, 1979 (Millions)	187.1	343.9	2,260.2	985.0
b. GNP Per Capita U.S.\$, 1979	239.0	411.0	230.0	1,420.0
% Annual Growth Per Annum 1960-1979	0.9	1.6	1.6	3.8
c. Food Production 1977-1979: Index of Average Per Cap- ita (1969-71=100)	91.0	91.0	105.0	107.0
% Groth Per Annum In Per Capita Agri- cultural Production	- 1.1	- 0.9	0.1	0.6
d. % Average Annual Growth in GDP				
1960-70	3.7	3.9	4.5	6.1
1970-79	1.7	2.9	4.7	5.5
e. Gross Domestic Investment: \$ Av- erage Annual Growth				
1960-70	5.4	5.7	5.2	7.4
1970-79	3.1	3.2	6.4	7.0
f. % Gross Domestic Investment of GDP				
1960	11.0	15.0	18.0	21.0
1979	15.0	23.0	26.0	26.0
g. External Debt Service Obligations: % of GNP				
1970	1.1	1.4	1.1	1.5
1979	2.7	2.0	1.8	3.2
% of Export Receipts				
1970	6.0	5.0	12.6	10.8
1979	12.7	6.9	9.0	14.2
h. Foreign Exchange Reserves: Months of Coverage of Imports				
1979	1.7	3.3	4.2	5.2

Table 1, cont.

	<u>Sub-Saharan Countries</u>		<u>All Developing Countries</u>	
	<u>Low Income</u> <sup>2</sup>	<u>All Countries</u>	<u>Low Income</u>	<u>Middle Income</u> <sup>3</sup>
i. % Share of Central Governmental Outlays (1978)				
Agriculture	10.3	9.0	10.3	4.0
Health	5.8	6.0	5.4	5.6
Education	15.2	15.6	14.0	14.1
Defense	11.2	10.5	11.3	11.5
j. Defense Outlays as % of GNP				
1968	1.9	2.9	3.5	2.9
1978	2.4	2.9	3.2	2.9

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<sup>1</sup> Source: World Bank. World Development Report, 1981, Washington, D.C., August 1981, pp. 134-62. and p. 1980.

<sup>2</sup> Per capita income of U.S.\$370 per annum and less

<sup>3</sup> Per capita income of more than U.S.\$370 per annum

Table 2  
Regional Comparison:  
Human Resource Indicators<sup>1</sup>

	<u>Sub-Saharan Countries</u>		<u>All Developing Countries</u>	
	<u>Low Income</u>	<u>All Countries</u>	<u>Low Income</u>	<u>Middle Income</u>
a. Population: % Average Increase Per Annum				
1960-70	2.4	2.5	2.2	2.5
1970-79	2.6	2.7	2.1	2.4
b. Population Forecast (Millions)				
1980	189	353	2,300	1,008
2000	334	639	3,275	1,569
c. Crude Birth Rate (per thousand population)				
1960	48	49	40	41
1979	47	48	29	34
d. Crude Death Rate (per thousand population)				
1960	26	25	18	15
1979	19	18	11	10
e. Total Fertility Rate, 1979	6.4	6.6	4.5	4.9
f. Number of years, life expactancy at birth				
1960	38	39	42	53
1979	46	47	57	61
g. Child Death Rate 1-4 yrs. of age (no. per thousand of children)				
1960	40	38	23	19
1979	27	25	11	10

	<u>Sub-Saharan Countries</u>		<u>All Developing Countries</u>	
	<u>Low Income</u>	<u>All Countries</u>	<u>Low Income</u>	<u>Middle Income</u>
h. Urban population as % of total				
1960	9.0	11.0	15.0	37.0
1980	18.0	18.0	21.0	50.0
i. No. of people per Medical Doctor				
1960	50,788	50,096	11,680	14,430
1977	32,241	23,904	6,150	4,380
j. % Population with access to sage water, 1975	24.0	25.0	29.5	58.0
k. Per Capita supply of calories per day, 1977				
Average Total	2,072	2,065	2,231	2,581
As % of total needed	90.0	89.0	98.0	109.0
l. % Distribution of Labour force, 1960				
Agriculture	87.0	81.0	76.0	59.0
Services	7.0	12.0	14.0	25.0
Manufacturing	5.0	7.0	10.0	16.0
1970				
Agriculture	79.0	71.0	71.0	43.0
Services	11.0	17.0	15.0	34.0
Manufacturing	9.0	12.0	14.0	23.0
m. % Average Increase Per Annum of Work force				
1960-1970	2.0	2.0	1.6	1.9
1970-1980	2.1	2.1	1.9	2.3
1980-2000 Forecast	2.8	3.0	1.6	2.6
n. % Adult Literacy				
1960	15.0	16.0	28.0	53.0
1976	26.0	28.0	51.0	72.0

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	<u>Sub-Saharan Countries</u>		<u>All Developing Countries</u>	
	<u>Low Income</u>	<u>All Countries</u>	<u>Low Income</u>	<u>Middle Income</u>
o. Primary Education Enrollment Ratio				
1960	30.0	36.0	76.0	79.0
1978	56.0	63.0	83.0	95.0
p. Secondary Education Enrollment Ratio				
1960	2.0	3.0	14.0	16.0
1978	10.0	13.0	36.0	41.0
q. Higher Education Enrollment Ratio				
1960	-1.0	-1.0	2.0	4.0
1978	1.0	1.0	3.0	11.0

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<sup>1</sup> Source: World Bank, World Development Report, 1981, Washington, D.C., August, 1981, pp. 166-178

Table 3

Percentage of Expatriates of  
Total Trained Manpower Employed<sup>1</sup>

<u>Country</u>	<u>Year</u>	<u>Percent</u>
Botswana	1967	42
Ivory Coast	1962	45
Kenya	1964	48
Malawi	1966	18
Nigeria	1964	13
Somalia	1970	2
Sudan	1967-8	3
Swaziland	1970	35
Tanzania	1965	31
Uganda	1967	21
Zambia	1965	62

<sup>1</sup> Source: Jully, R., and Colclough, C., "African Manpower Plans: An Evaluation," International Labour Review, 106, August/September, 1972, p. 210.

Table 4

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Senegal and Ivory Coast:  
Selected Economic and Social Indicators<sup>1</sup>

	<u>Senegal</u>	<u>Ivory Coast</u>
a. Population (millions, mid-1978)	5.4	7.8
b. GNP per capita (dollars, 1978)	340	840
% growth P.A. 1960-1978	-0.4	2.5
c. Balance of Payments: Current account balance before external public debt payments (millions of dollars)		
1970	-14	-26
1978	-114	-533
d. % Adult literacy, 1975	10	20
e. Life expectancy at birth, 1978 (years)	42	46
f. Population Growth (% P.A. 1970-78)	2.6	3.6
Est. population year 2000 (millions)	9.8	14
g. Crude birth rate per thousand population		
1960	48	50
1978	49	50
h. Total fertility rate, 1978	6.5	6.7
i. % population urban, rural, 1980	25, 75	38, 62
j. Infant mortality rate (per thousand population aged 0-1) 1975	200	250
k. Child mortality rate (per thousand population aged 1-4) 1978	32	27
l. % population with access to safe water, 1975	37	19
m. Education enrollments as % of age group, 1977		
Primary School	47	92
Secondary School	11	17
Higher Education	2	2
n. % population malnourished, 1974	25	8

<sup>1</sup> Source: World Bank, World Development Report, 1980, Washington, D.C., August 1980, pp. 110-157.

Table 5  
Index of Real Wages of Agricultural Workers (1970 = 100)<sup>1</sup>

<u>Country</u>	<u>Category of Wages</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Cameroon	Hourly wage rate for male and female workers	--	--	--	--	101.5	106	100	96	88.9	98.6	86.1	--
Ghana	Monthly earnings of male workers	112.7	92.3	86.4	90.9	98.6	104.5	100	104.9	98.9	93.4	--	--
Kenya	Monthly earning of male and female workers	--	--	--	--	93.8	97.3	100	106	100	92.7	86.7	87.8
Malawi	Monthly earnings of male and female workers	--	--	--	--	101.3	101.2	100	96.6	96.2	92.3	90.9	77.6
Tanzania	Earnings per month of male workers	--	--	--	--	--	93.7	100	94.9	92.6	--	--	--
Zambia	Earnings per month of male and female workers	--	--	--	--	--	132.1	100	113.8	126.7	125.3	116.3	--

<sup>1</sup> Source: World Bank, Poverty and the Development of Human Resources: Regional Perspectives, Staff Working Paper No. 406, Washington, D.C., July 1980, p. 70.

Table 6  
Modern and Public Sector Employment<sup>1</sup>

<u>Country</u>	<u>Year</u>	<u>Modern Sector Employment As % of Eligible Labor Force</u>	<u>Public Sector Employment As % Of Total Modern Sector Employment</u>	<u>% Growth Per Annum in Modern Sector Employment</u>		
				<u>Public</u>	<u>Private</u>	<u>Total</u>
Ghana	1957		51.4			
	1972	10.1	73.9	4.9	-2.2	2.3
Tanzania	1962		27.0			
	1974	6.3	66.4	10.7	-4.8	2.3
Zambia	1976	14.2	71.5			
Ivory Coast	1970	10.2				
Kenya	1963		29.6			
	1977	12.4	41.7	6.0	2.4	3.7
Malawi	1968		33.4			
	1976	9.6	39.2	9.0	8.0	8.6
Uganda	1962		41.8			
	1970	5.9	42.2	4.0	4.8	4.5

<sup>1</sup> Source: World Bank, Accelerated Development in Sub-Saharan Africa: An Agenda for Action, Washington, D.C., 1981, p. 41.

Table 7.

Estimated Rates of Return in Percentages  
To Investment in Education  
by Level:  
Selected Countries<sup>1</sup>

<u>Country</u>	<u>Survey Year</u>	<u>Private Rates</u>			<u>Social Rates</u>		
		<u>Primary</u>	<u>Secondary</u>	<u>Higher</u>	<u>Primary</u>	<u>Secondary</u>	<u>Higher</u>
Ethiopia	1972	35.0	22.8	27.4	20.3	18.7	9.7
Ghana	1967	24.5	17.0	37.0	18.0	13.0	16.5
Kenya	1971	28.0	33.0	31.0	21.7	19.2	8.8
Nigeria	1966	30.0	14.0	34.0	23.0	12.8	17.0
Sierra Leone	1971				20.0	22.0	9.5
Uganda	1965				66.0	28.6	12.0

<sup>1</sup> Source: World Bank, Education and Income, Staff Working Paper No. 402, Washington, D.C., July 1980, p. 84.

Table 8

Estimated Average Rates of Return  
to Investment in Education in Africa and Asia<sup>1</sup>  
(In Percentages)

	<u>Private Rates</u>			<u>Social Rates</u>		
	<u>Primary</u>	<u>Secondary</u>	<u>Higher</u>	<u>Primary</u>	<u>Secondary</u>	<u>Higher</u>
Africa	29.0	22.0	32.0	29.0	17.0	12.0
Asia	32.0	17.0	19.0	16.0	12.0	11.0

<sup>1</sup> Source: World Bank, Education and Income, Staff Working Paper No. 402, Washington, D.C., July 1980, p. 87.

ANNEX

The Sub-Sahara Region

1. Angola
2. Benin
3. Botswana
4. Burundi
5. Cameroon
6. Cape Verde Islands
7. Central African Republic
8. Comores
9. Chad
10. Djibouti
11. Congo (B)
12. Equatorial Guinea
13. Ethiopia
14. Gabon
15. Gambia
16. Ghana
17. Guinea
18. Guinea-Bissau
19. Ivory Coast
20. Kenya
21. Lesotho
22. Liberia
23. Madagascar
24. Malawi
25. Mali
26. Mauritania
27. Mauritius
28. Mozambique
29. Niger
30. Nigeria
31. Rwanda
32. San Tome Principe
33. Senegal
34. Seychelles
35. Sierra Leone
36. Somalia
37. Sudan
38. Swaziland
39. Tanzania
40. Togo
41. Uganda
42. Upper Volta
43. Zaire
44. Zambia
45. Zimbabwe