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# AGRICULTURAL EDUCATION AND UNIVERSITY BUILDING IN AFRICA

A Concept Paper

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Madame President, Mr. Secretary General, Representatives of the Republic of Algeria, Distinguished AAU delegates and observors, Ladies and Gentlemen:

I am very pleased to respond to the request of the Secretary General for an encouraging message from the Agency for International Development (USAID), and to bring to the AAU Conference sincere greetings from our Administrator, Mr. Peter McPherson and Assistant Administrator for Africa Bureau, Mark Edelman. I consider it a personal privilege and honor to speak to you today. I am a daughter of Africa, many generations removed, American by birth and orientation, and I wish to assure you that for me, African development is more than a mere preoccupation.

As most of you know, AID was very involved in the early formation of AAU, providing core support to the Secretariat as well as scholarship support through the INTERAF program. This level of cooperation regretfully was lost due to cutbacks in aid to education world-wide. The Agency is now reconsidering its priorities in light of Africa's great need for trained human resources, especially with respect to food production and food self-sufficiency. As stated by my colleague from UN University yesterday, the drought, famine and deaths from starvation in Africa have piqued the conscience and consciousness of the developed world, and have served to mobilize efforts around the world to resolve the problem and to prevent its recurrence.

For several senior officers within AID, this situation of extreme and prolonged famine brings to mind the Indian experience in the 50's and the resulting Green Revolution which ultimately enabled India to meet the food needs of her people. I have been authorized by the Agency to explore with you some of our thinking in this regard, and to gain from you your advise and insights as we draw what we feel may be viable comparisons.

# AGRICULTURAL EDUCATION AND UNIVERSITY BUILDING IN AFRICA

The agricultural situation in Africa today to some degree parallels conditions in India just after Independence, particularly if one considers the limited increase in production of food grains and the tremendous rate of population growth. Whatever the causes, the famine in India, in which millions of lives were lost, emphasized the gravity of agricultural problems and spurred both the Indian government and donors alike to find solutions.

Similarly, the current food crisis in Africa has become the focus of many efforts to assist the Region in obtaining a balance between food production and self-reliance, and to achieve this goal in the least amount of time possible. African governments are beginning to objectively assess their current manpower and agricultural policies and to reformulate those policies to close the identifiable gaps in the nation's development needs of the future.

The similarities in conditions of drought and famine in Africa today have led to questions regarding the possible relevance of the Indian experience to Africa's problems; e.g., can a Green Revolution be replicated in Africa to increase production of food grains and ultimately to achieve food self-sufficiency? The success potential of the concept merits an examination of both the similarities and the vast differences which exist in the two cases.

The greatest dissimilarity is the most obvious: India was and is yet a monolithic, geopolitical entity, which had at that time centralized powers of decision-making and administrative planning. She had a well-established civil service and revenue-raising capability sufficient to mobilize the necessary resources and the power to redirect policies and development priorities. Her high density population of over 500 million people inhabiting 400 million acres of potentially productive land made possible the delivery of research information and services necessary to increase production.

In contrast, Sub-Saharan Africa is comprised of more than 40 independent nations with separate governments and policy-making bodies, with several different colonial histories and languages, with extremely low population density (except for Nigeria which alone constitutes nearly 1/4 of the total population) of little more than 461 million people on nearly 151 million hectares of potentially productive land.

As in Africa today, Indian farmers were not at that time familiar with methods and techniques which might have increased output, because of rural illiteracy. Data indicate that a lack of knowledge of agricultural affairs at almost all levels of the population was one of the principle causes of India's low agricultural output. In the early '50's, little more than 17% of the total population knew how to read and write. Primary education was compulsory in less than 4% of the 550,000 villages in India. Only 30% of rural children from ages 6-11 were enrolled in school, and less than 40% of those enrolled completed four years of schooling. In other words, the great majority of rural children were as illiterate as their parents.

School attendance suffered from the low standard of rural life of the peasant classes; children were badly nourished and badly clothed. Parents could scarcely afford textbooks or exercise books and at certain periods of the year, pulled children out of school for farm chores. Not only were the peasant or farming class left without the most rudimentary of educational and intellectual tools, they were hardly ever induced by example or demonstration to adopt better methods of production. Practical agricultural technology was virtually non-existent. These conditions are virtually paralleled in African nations today, almost without exception.

The agricultural development strategy employed in the Indian experience centered around agricultural research in the development of high-yielding crop varieties, irrigation, the increased use of fertilizers, and extension to large and relatively well-informed landholders. An agricultural strategy of this type did not necessitate dramatic inputs of formal education to the farm community, except through extension programs to farmers to encourage adoption of major research breakthroughs like the High-Yielding Varieties of cereals.

In other words, universal literacy was not required. For the most part, Indian farmers were more highly educated than the majority of the populace; many had access to capital and credit and they more or less understood the profitability of utilizing new technologies to increase productivity. It should be noted, however, that the 17% literacy rate in the '50's has even today increased by no more than 3% in rural India, and utilization rates of new technologies have never been more than 70%, a major factor being farmers' ignorance of the optimal uses of new technologies. Recent evidence suggests that education of farmers is a factor in increased agricultural production.

Similarly, literacy rates in African nations range between 16% and 28%; over 70% of the African labor force is employed in the agricultural sector and most are illiterate. In the 70s, only eight out of thirty-nine African countries experienced positive growth of agricultural production per capita, and those eight had a total population of only 45 million people, 13% of Sub-Saharan Africa. Could it be argued that in the absence of trained resources, a massive research and extension program would serve the purpose? Could a dramatically improved research and extension program designed to continually supply new and economically useful information to farmers provide all that would be required to dramatically increase production in Africa? Current information suggests that support to basic education must be provided simultaneously with higher education as short-term and long-term investments in African development.

In India, a number of basic infrastructural supports were already in place and functional at the time of the U.S. agreements, some of which required varying degrees of capital support to increase outputs and quality; e.g., India had fertilizer plants, steel mills, a literary history of 150 years or more and a large cadre of trained manpower, a large corps of experienced artisans: blacksmiths, wood and metal workers who fabricated and maintained animal and man-powered tools and equipment. India had a highly functional railway system which transversed the country, a water control system and an irrigation system already in place. There was substantial regional variation in rainfall, but substantial supplies of surface and subterranean water.

In contrast, African governments are relatively new and came to independence with profound scarcities of educated manpower and basic infrastructural supports. A number of factors make development more difficult in Sub-Saharan Africa than in North Africa, for example, or other parts of the developing world. The following characteristics seem idiosyncratic to Sub-Saharan Africa:

- Population density is extremely low in most countries, which means that infrastructure and services, such as health and education, are much more expensive on a per capita basis than they are in Asia.

- Most African economies are very small, both in population and in purchasing power, resulting in few manufacturing sectors which can be supported by the domestic market.

- African economies are fundamentally agrarian, and with some exceptions, agricultural production is in the hands of smallholders.

- African countries are multicultural with vast linguistic differences, and their political consensus is more fragile than that of most other developing countries of the world. There is little regional consensus or cooperation.

- Most countries exhibit a general lack of political will and commitment to agriculture and the policy environment is not generally supportive to food production or the farm family.

These concerns, among many others, were discussed at length in two very recent conferences on agricultural education in Africa: one in Yaounde supported by AID and the other in Harare conducted by FAO--interestingly, during the same time period--July, 1984. Both conferences included significant numbers of African policy-makers, educators, researchers and agriculturalists. These persons interacted with donors and experts to come up with essentially the same conclusions and recommendations for action.

The major conclusion might be summarized as the need for governments and donors alike to focus efforts upon developing a literate farm population, upon reaching farmers large and small, male and female, with sound agricultural advice and services, and to provide in all countries increased numbers of well-trained and strategically placed groups of technical and field personnel.

Recommendations stressed by both conferences for immediate government and donor attention were:

- to strengthen national training institutions and universities and to upgrade the skills of faculty and staff through inservice training;

- to strengthen existing national training institutions which have capacity to conduct training for other African nationals in specialized fields of study;

- to assist governments in increasing their manpower planning capacity to identify training needs and priorities and to improve utilization of trained manpower;

A major recommendation stemming from the Yaounde workshop, to which AID agreed, was that a follow-up conference be held with leading bilateral and multilateral donors, Pan-African organizations and institutions, to agree upon a plan of action for donors and governments related to the recommendations stated above. This follow-up conference is tentatively scheduled for March, 1985. A draft strategy has been prepared and circulated to all African field missions. The strategy is reflective of African concerns raised at the Workshop and takes into consideration the need for linkages between higher education, teacher training and the instruction of children and uneducated farmers in the process of increased food production.

It can be argued that historically, AID assistance to Sub-Saharan Africa has been limited in terms of institutional supports which might have developed the levels of human resources required to reverse negative development trends. In fact, the level of U.S. investment generally in Sub-Saharan Africa is minimal in comparison to investments in Latin America and Asia. Our assistance to agricultural education has not been provided in most countries on the sustained basis required to stabilize institutional response to development needs.

In considering the many problems faced by African countries, we should not lose sight of the fact that the current international economy also has limited Africa's growth possibilities. Most donors would agree, however, that a great part of economic stagnation has resulted from government policies which are at variance with the most plausible development strategies. An appropriate question is whether nations and universities in Africa are prepared to accept the level and types of intervention in policy-making and policy-guidance provided to India by AID, Ford and Rockefeller Foundations?

Both donors and African governments would also agree that solutions to food production and security problems lie in the hands of African policy-makers, scholars, researchers, teachers and managers. Thousands have received external training by AID and other donors, and countless others have been trained within Africa. What additional numbers and categories of human resources must be trained to replicate the Green Revolution if it were feasible, and how relevent is current training to development needs? We are concerned to what degree has U.S. based participant training in higher education and research contributed to Africa's brain drain?

The existence today of more than 20,000 Nigerian students in the United States begs the question of the quality and capacity of 27 existing institutions of higher education in Nigeria. The percentage of students returning home at completion of study is reportedly less than 60%. Although Nigeria's investment in human capital will not be totally lost to the nation's growth, a great percentage of the return from that investment will certainly be delayed by this appreciable loss factor.

Our earlier experience in India suggests that in addition to increasing the numbers of participants enrolled annually in U.S. institutions, we should begin to focus greater attention on incountry and third-country training to prepare greater numbers of qualified Africans to deal with development problems at their source. This will require focused and sustained efforts to build the capacities of selected African universities and training institutions in the areas of research, teaching and outreach to the smallholders.

The draft agricultural education strategy and the FAO study both recommend that Centers of Excellence or Centers of Advanced Studies be established in national institutions to service regional needs for research and training. The strategy recognizes the political reality of national universities A number of institutions exist which might be strengthened on a focused, sustained basis to serve both national and regional needs. Strengthening is defined as assistance to curriculum development, development of teaching materials, provision of classrooms, laboratories, equipment, technical assistance and training--with a priority on inservice training.

Selected universities may be deficient in a number of areas; e.g., basic sciences, medicine, agriculture, health, communications, natural resources, etc. To facilitate immediate action, the Yaounde Workshop recommended that agricultural education be targeted as an interdisciplinary development problem around which institutions and human resources might be developed. Recommended criteria for selection of institutions for support include:

1. Institutions which have a demonstrated commitment to accepting students from other African countries and which will encourage research relevant to regional development as well as the development of outreach efforts with a regional impact.

2. Institutions which are willing to make the commitment to the multiple roles of teaching, research and extension or outreach and the multiple clientele that such a commitment implies, with the ultimate goal of increasing food production and enhancing the quality of life of the farm family.

3. Governments who are committed to development of a systemic agricultural development program to include

higher education and research, numeracy and literacy for farm families, basic education and policies conducive to increasing the quality of life in rural areas.

4. Comprehensive universities in which "colleges of agriculture" are integral elements of the university structure, in which case support should be provided to the college of agriculture and related disciplines within the university.

Some institutions which are full-fledged degree granting universities with agricultural colleges should be considered for strengthening; some also represent significant prior investment by AID; e.g.:

Makerere University in Uganda
Fourah Bay (coupled with Njala) in Sierra Leone
The University of Cameroon (including Dschang)
The University of Nairobi in Kenya
The University of Zimbabwe
The University of Benin in Togo,
The University of Swaziland, and
The University of Nigeria (Nsukka)
The University of Zambia
among others.

Agricultural schools also exist in most countries offering diplomas and certificates; e.g., Egerton College in Kenya, KOLO in Niger, and the Rural Polytechnic Institute in Mali, among others.

Food crop research resides primarily with IRAT, IITA, ICRISAT and WARDA. Existing international research centers include ISNAR, CGIAR (Consultative Group for International Agricultural Research), CIRES in Abidjan among others. The centers have had varying degrees of successful breakthroughs; a major criticism is that their affiliation with national research centers and universities has been extremely limited, thus seriously affecting their outreach and subsequent adaptation of new technologies by farmers in Africa.

While "cloning" of the Indian land grant model may not be the most appropriate approach to achieving food self-sufficiency in Africa, a "hybrid" agricultural development model which is responsive to the African environment should be considered. Proceedings of the Yaounde Workshop suggest that a successful African model would necessarily pull together in each country the several different, independent agricultural research, teaching or extension institutions into a single, integrated institution--or to effect by other means the necessary linkages between these institutions and appropriate funding relationships with the central government.

Increased private sector involvement in agricultural education and development is also recommended for inclusion in the African model, especially in terms of inputs and marketing

functions. The private sector would also serve as a placement option for graduates, thus increasing the absorptive capacity of the countries involved.

Such a model could be applied to the types of institutions listed above, thus taking advantage of existing assets in African institutions. From a donor perspective, if this approach is taken, required additive funding for several countries of Africa would be less than dramatic, building rather upon agricultural and educational capabilities already in place. The ultimate model will be one felt most appropriate by African governments in the interest of food production and future food self-sufficiency.

Madame President, it is not clear what role the African universities play or wish to play in the determination of the character and content of basic education, so important to Africa's future. What is AAU's perceived role in the quest for solutions to famine, drought, the encroachment of the desert, disease? Perhaps AID is grappling with issues for which you already hold the answers.

As USAID pursues discussion of this renewed interest in support to higher education for Sub-Saharan Africa, we solicit your assistance and direction in making the best and most efficient uses of our aid.

May I offer in behalf of USAID my sincere gratitude to the Algerian Republic for its gracious welcome and generosity in hosting this conference. I can appreciate the hard work done by the AAU Secretariat in arranging the conference. I will follow your proceeedings with great interest. Again, thank you for inviting me. You have my very best wishes for success. Thank you, Madame President.

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Talking Points with EEC

I. University Building Concept

-- the current food crisis in Africa is not a short-term phenomenon but is part of long-term structural problems which will require a combination of domestic reform and coordinated donor support to resolve.

-- Enormous current and projected needs for trained human resources indicate urgent need for increasing and strengthening capabilities of African institutions to conduct in-country and regional training similar to Indian experience, supplemented by external training as required.

-- University building is defined as strengthening capacities of existing national universities and supporting institutions in Africa to function more effectively as Centers of Excellence or Centers of Advanced Studies in scarce skills development and research areas required for regional development.

-- Strengthening may include provision of classrooms, equipment, laboratories, assistance to development of curriculum and instructional materials, in-service training of professional staff, technical assistance and consultative support, long-term advisors, etc., and will require long-term, sustained government and donor support to ensure successful intervention.

II. Agriculture Education Concept

Agricultural education as an interdisciplinary development medium should serve as initial focus and vehicle for university building, participant training and strengthening of related institutions.

-- Agricultural education is defined as a balanced continuum of learning through scientific and practical inputs to schooling from primary education through tertiary education, as well as nonformal approaches to adult education.

-- The systemic approach to agricultural education in Africa requires the forging of strong linkages and networks between research and higher education, teacher training, secondary and technical education, and basic education defined as 1) formal primary schooling of children for long-term impact on agricultural development and food

production and 2) nonformal programs in literacy and numeracy, targetting farm families for immediate impact on agriculture production and industry.

-- agricultural education for Africa will require more effective use of existing regional food crop research centers, to network with national research centers and universities for improved dissemination and management of research information, and to orient agriculture research toward the African smallholder.

-- Yaounde workshop and FAO Conference in Harare recommended that priority consideration be given to comprehensive national universities which have integrated colleges of agriculture and which are committed to the multiple roles of research, teaching and outreach.

-- Such national institutions should reside in countries whose governments are committed to development of a systemic agricultural development program ranging from higher education to basic education, and are committed to promotion of policies conducive to agricultural development and to improving the quality of rural life.

-- Sub-Saharan Africa has more than 200 four-year degree granting universities of varying quality and size (FAO Report); almost all accept students from other African countries; most have agricultural faculties or institutes.

-- The university-building effort could begin with four to five well-established African universities who meet the above criteria for AID-strengthening, perhaps selected from among following:

- Makerere University, Uganda
- Fourah Bay & Njala Universities, Sierra Leone
- University of Cameroon (including Dschang)
- University of Zambia, Lusaka and Ndola campuses
- University of Zimbabwe
- University of Nairobi (including Egerton)
- University of Ivory Coast and others

## III. Where We Are: A Summary of Events

As a follow-up to Africa Bureau's Agricultural Education Workshop in Yaounde and the related FAO Conference in Harare, the following activities are being planned or are underway:

AGRICULTURAL EDUCATION

-- a Steering Committee has been formed, comprised of five highly qualified U.S. academics with African experience, a representative each from the World Bank, FAO, and the Economic Commission for Africa and a private consultant in agricultural education (see attached list).

-- The Agricultural Education Steering Committee met with AID/W staff from Africa Bureau, S&T and PPC, on Thursday, November 8, at USDA Graduate School for full discussion of the following topics:

- Basic Education and Higher Education
  Agricultural Edducation in the African Development Context
  University Building in Africa

--Resulting Recommendations:

- endorsement of plan to hold donor conference on agricultural education and university building

- recommendation to commission state-of-the-art papers for distribution to participants prior to conference, and to conduct survey of donor community on level and focus of current or planned support to agricultural education in Africa.

-- a Donor Conference (hosted by AID) consisting of major bilateral and multilateral donors in African agriculture education together with Pan African organizations and African and American scholars scheduled for March 1985 at Tuskegee Institute, Tuskegee, Alabama.

-- Major purposes:

-- to examine the components of agricultural education on a continuum and to determine individual donor assistance priorities.

- to explore a systemic approach to agriculture education for Africa covering the related components of university building, government planning and management supports, sector assessment and analysis, and required levels and areas of participant training.

- to develop a plan of action for donor coordination, organizational networks and university linkages in agricultural education for Africa.

-- A sub-regional Africa workshop is being planned for May 1985 jointly sponsored by World Bank, AID, Ford, Rockefeller and UNDP on "Agriculture in Schools Program" to be conducted in Swaziland, Malawi and Kenya; purpose to examine closely existing agricultural content in basic education curriculum.

UNIVERSITY BUILDING

-- A briefing paper on University Building for Africa and appropriate background papers were prepared for the RAC meeting on December 10 and 11; a preliminary meeting was held by Ray Love with RAC Chairman Aldrich, John Ericksson (S&T), Erv Long (S&T), and other AID staff for discussion of the December presentation; materials were sent to S&T/RUR for RAC committee review.

-- Cynthia Perry attended General Conference of Association of African Universities (AAU) which met in Algiers, November 16-23. She explored ag educ/university building concepts with more than 150 Rectors/Vice Chancellors of African Universities with favorable results.

-- African universities are significantly involved in "South/South" dialogue and inter-regional cooperation with exchange of students and faculties, collaboration in research, establishing degree equivalencies and credentialling procedures, establishing scholarship programs for student exchange; AAU has developed directories detailing university programs, staffing, student hostel capacities, etc., to facilitate collaborative efforts.

-- participants were receptive to prospects of renewed AID support, willing to explore Indian experience as feasible model for African agricultural development, eager for continued dialogue on university building/policy reform initiatives.

-- EEC Representative Charles J. Van der Vauren, Head, Human Resources Services, and Director General for Development, Brussels, met separately with C. Perry for broader discussion of agricultural and university building concepts. Van der Vauren plans to attend AID donor conference at Tuskegee for further discussion of donor coordination.

  -- Van der Vauren mentioned that as result of a recent EEC study, EEC is seriously considering phasing out their support to international research centers, because of

limited breakthroughs in food crop research as opposed to cash crop research, and limited transfer of technical information to African smallholders. Similar concerns were raised by AAU participants.

research proposed or being conducted by separate universities and/or regional groupings cover desertification, conservation of natural resources (in cooperation with UN University) including water and land management and reforestation and drought/famine related issues, as well as other areas of interest to both EEC and AID.

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