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REPORT TO THE CONFERENCE OF MINISTERS ON
HUMAN RESOURCES REQUIREMENTS FOR AGRICULTURAL
DEVELOPMENT IN AFRICA

November 1989

I. Introduction

The overall performance of the agriculture sector over the last decade or so has not been impressive nor responsive to the wishes of African governments. To better understand the root of this aggregate poor performance level, one has to study the performance level of individual and specific areas within the sector and the special bottle-necks that could have influenced the performance. The most critical of these areas are: agricultural project planning and preparation; food security and storage; live stock production and processing; soil, forest, wild-life and water management; farm management; and marketing of agricultural products.

For the most part, preliminary investigation indicates that performance level in each of the above-listed critical areas leaves much to be desired despite the many efforts respective governments have made to bring about improvement. As it were, many of the agricultural improvement or rehabilitation projects have suffered from faulty designs, usually originating the planning stage. Apart, the implementation and monitoring of agricultural projects have not been as effective nor efficient as should have been. Inadequate extension services, shortages of extension kits and at times poor transport facilities do play major roles in this regard. Crop storage efforts and programmes are yet to provide the minimum storage capacity in terms of space, quality and management. The necessary disease control and support services for the livestock industry, i.e. veterinary services, improved pasture, livestock extension services, dips and spray races, acaricides, insecticides and drugs, are yet to be put at their minimum desirable levels. Agricultural production and marketing managerial skills are not adequately developed and the bit available, not efficiently utilized.

The aggregate impact of these have not only contributed substantially to the food crisis in Africa, but also to the lopsided development process now taking place within the region. No doubt, there are a variety of factors which could have given rise to these inadequacies. Outstanding among them is the shortage and/or inappropriate utilization of trained manpower to organize and execute activities within and between each of the critical areas as identified above. In this connection, two issues are of great importance: agricultural manpower development, and the development of institutional capabilities for managing agricultural manpower.

The objective of this report is to take a closer look at the first of these two important issues underlying the human resources problem within the agriculture sector, and to suggest a strategy that would lead to a programme of action for guiding member states in their individual and collective efforts to achieving food self-sufficiency in the years ahead.

The report begins with an over-view of the manpower situation and requirements within the sector by mid 1980 and what that picture could

look like by the year 2000. It then focuses on the human resources implication for agricultural development paying particular attention to the required tasks to be performed and the critical issues concerning the development of the requisite knowledge, skills and attitudes to carry out the required tasks. The report concludes with an outline of suggestions as to what action is needed to ensure the balance between manpower requirements and availability as African governments worked towards the achievement of a balance between the production of agricultural export commodities and food crops as called for in AAF-SAP.

II. Overview of the Manpower Situation in the Agriculture Sector

(a) Structure and Pattern

A large proportion of the African labour force continues to be engaged in activities in the rural subsistence sector of the economy. The average figure is put as high as 73 per cent with national statistics ranging from 60 to 85 per cent of total labour force. The proportion of the total population that is engaged in agricultural activities is equally high averaging well over 60 per cent between 1975 and 1988 as illustrated in the following table.

Table 1: The Share of Agricultural Population and Economically Active Population in Agriculture

Year	Population			Economically Active Population		
	Total Population (000)	Agriculture Population (000)	%	Total (000)	Population in Agriculture (000)	%
1975	415108	284447	68.5	167075	119503	71.5
1980	418033	315010	75.4	190211	130629	68.7
1985	557440	351447	63.0	214412	141436	66.0
1986	574342	359243	62.5	219822	143793	65.4
1987	591846	367182	62.0	225496	146249	64.9
1988	609922	375261	61.5	231415	148791	64.3

Source: FAO Yearbook, Vol. 42, 1988

The share of population engaged in agriculture dropped by 10 per cent in the thirteen years between 1975 and 1988. The share of economically active population that were engaged in agriculture also declined by 10 per cent during the same period. In absolute terms, the drop was from 68.5 per cent of total share in 1975 to 61.5 per cent in 1988, and from 71.5 per cent in 1975 to 64.3 per cent in 1988 respectively. Against these declines however, is an increasing trend in the total population base. For example, between 1975 and 1988, total population increased by 47 per cent while the total economically active population increased by 39 per cent.

Development economists, taking a glance at these figures, could welcome such declining trends in the total share of agriculture population, and more so, the declining trend of the percentage share of the economically active population engaged in agriculture. A plausible rationale would focus on the alternative use of the released labour from agriculture which, all things being equal, should be fully engaged in other non-agriculture sectors. Part of the rationale for welcoming the decline would be related to the argument that a trade-off exist between surplus labour and marginal returns from labour. The argument is that labour in the agriculture sector was in surplus, and hence, its marginal productivity was correspondingly low. Therefore, with the release in labour, efficiency would result on the part of the remaining few to sustain output and thus create an increase in unit and aggregate productivity.

But all things are not equal in African economies. Furthermore, there are evidences of high unemployment in urban areas where the majority of the released workers roamed the streets in search of non-existing jobs. Available statistics put the rate of urban unemployment in most African cities as high as 20-25 per cent with no sign in sight for bringing this down to manageable levels. At the other end, under-employment in the rural subsistence agricultural areas exist. This is mainly characterized by low labour productivity and a small and unorganized production base. Besides, draining the young and more energetic labour out of agriculture, those remaining more often lack the know-how, the know-why and agricultural and financial inputs to take advantage of the surplus labour argument.

Consequently, what would have seemed initially as a welcoming development trend, is indeed a disturbing picture for most of Africa. As it turn out, the impact of this shifting pattern and structure of the manpower profile in agriculture would need to be carefully considered against a number of factors. Among these are training and the utilization of agricultural manpower. Secondly, consideration would need to be given to the diversification of agricultural manpower in terms of knowledge and skills and the distribution of that manpower among the various subsector of agriculture. Thirdly, the creation of agro-industrial related jobs would have to be taken into account.

(b) Trained Agricultural Manpower Distribution by Mid 1980

The FAO trained manpower assessment survey conducted in 46 African countries in 1983 estimated the number of trained agricultural personnel at 425,922 by mid 1980. Of this amount, 77 per cent were engaged in the agriculture sub-sector, 11 per cent in the livestock sub-sector, and 7 per cent in forestry and fisheries respectively. Less than one-fourth of those trained in the agricultural sub-sector has professional qualifications. About 53 per cent of these were trained at the technical level, while 25 per cent were trained at the vocational level. The same pattern prevailed in the live-stock sub-sector. The distribution of the educational background of the trained manpower by occupational level that were available by mid 1980 is shown in the following table:

Table 2: Trained Personnel Reported by Occupational levels and Educational Background; 1984

Occupational level/ Educational Background	Percentage	Occupational level totals
Professional level	<u>21</u>	88 745
Post-graduate	21	
Graduate	75	
Less than graduate	<u>4</u>	
Senior Technician	<u>26</u>	112 434
Graduate	25	
diploma	71	
less than diploma	<u>4</u>	
Junior Technician	<u>25</u>	107 513
Diploma	16	
certificate	75	
less than certificate	<u>9</u>	
Vocational	<u>28</u>	117 230
Certificate or higher	4	
vocational or lower	<u>96</u>	
Total	100	425 922

Source: Training of manpower for Agricultural and Rural Development in Africa, 1984

As can be seen from the table, about 75 per cent of those at the professional level were holders of the first degree with a fourth having post-graduate level education. Holders of technical diplomas and certificates were in the majority accounting for over 70 per cent of the senior and junior technical personnel. About 25 per cent of the senior technicians were holders of the first degree.

On the aggregate, non-African trained manpower accounted for not more than 1 per cent of the total number reported. However, it is worth noting that 88 per cent of these had at least the first degree and 56 per cent at least post graduate degrees.

The tremendous requirements of the agricultural sector by the year 2000 suggest that the above picture is far from being desirable to meet the minimum needs. The picture as projected by the FAO is reflected in Table 3 below:

Table 3: Estimates of Minimum Trained Personnel Requirements for Agriculture and Livestock

Country	Agricultural Family Units in Year 2000 (000)	Minimum Estimated Requirements for Trained Agricultural Manpower for the Year 2000	
		Professional Level	Technical Level
Algeria	2 265	1 526	7 632
Angola	1 645	909	4 546
Benin	365	196	978
Botswana	175	93	466
Burundi	975	481	2 404
Cameroon	1 852	978	4 890
Cape Verde	40	51	104
C.A.R.	563	286	1 428
Chad	789	478	2 392
Comoros	97	54	268
Congo	104	79	396
Djibouti	47	24	120
Egypt	4 500	4 486	22 428
Equatorial Guinea	91	48	240
Ethiopia	7 361	4 030	20 152
Gabon	102	87	434
Gambia	86	50	250
Ghana	1 443	804	4 020
Guinea	1 076	591	2 956
Guinea-Bissau	140	73	364
Cote d'Ivoire	1 468	867	4 336
Kenya	4 390	3 064	15 318
Lesotho	333	190	952
Liberia	324	105	974

Country	Agricultural Family Units in Year 2000 (000)	Minimum Estimated Requirements for Trained Agricultural Manpower for the Year 2000
Liberia	324	195
Libya	135	84
Madagascar	1 827	1 227
Malawi	1 752	1 038
Mali	1 957	1 039
Mauritania	467	270
Mauritius	44	28
Morocco	2 690	1 689
Mozambique	1 538	920
Namibia	133	66
Niger	1 592	803
Nigeria	7 966	4 335
Rwanda	1 150	595
Sao Tome/Principe	21	11
Senegal	1 070	600
Sierra Leone	468	283
Seychelles	12	6
Somalia	884	577
Sudan	3 327	2 294
Swaziland	112	62
Tanzania	5 221	3 218
Togo	441	264
Tunisia	458	268
Uganda	3 610	1 845
Upper Volta	1 508	772
Zaire	5 000	2 697
Zambia	1 289	795
Zimbabwe	1 278	677

Source: Training of Manpower for Agricultural and Rural Development in Africa; FAO; ARC/84/3; 1984

III. Human Resources Implications for Agricultural Development

The African Alternative Framework to Structural Adjustment for Socio-economic Transformation in Africa (AAF-SAP) calls for a proper balance between the food subsector and the production of agricultural export commodities. The implication of this call has to a large extent redefined the human resources requirements for the development of the agricultural sector. Responding to the call would mean that in the final analysis, the present trend favouring the production of export commodities will have to be reversed drastically. Accordingly, activities and hence, skills and knowledge, as well as policies would need to be re-oriented towards bringing about this balance.

This raises among many others, two fundamental issues which would need to be considered at both national subregional and regional levels as part of initial efforts towards achieving food self-sufficiency. The first relates to the identification of the major tasks to be performed by agricultural personnel during the next decade. And the second issue relates to the provision of the types of education and training required to ensure that the available manpower is capable of performing the required tasks. An empirical study of both issues would be required in order to determine the type of strategy to be used in meeting the human resources requirements to the development of the agricultural sector.

A preliminary desk analysis of both issues have been made by the ECA and what follows is a summary of the general nature of the findings.

(a) Review of Major Task to be Performed for the Development of the Agriculture Sector

For a comprehensive development of the Agriculture sector, various tasks will have to be performed by a pool of manpower. As it were, specific tasks and hence the need for specific skills and knowledge will have to be carried out in relation to project design and implementation; research and technological development; agricultural production and marketing; farm, soil and water management; food processing and food security; and agricultural extension and manpower development. Getting a clear understanding of the nature of these major tasks is a prerequisite in determining the level and structure of manpower required to sustain a self-generating productive agriculture sector. Unless the tasks to be performed are related to the development and deployment of agricultural manpower, very little results could emerge from the many efforts made towards the development of agriculture in Africa.

Though the task may differ from country to country, or from project to project or from subregion to subregion, there are common features in their nature. The ECA has made a preliminary identification of these common features in an attempt to provide guidelines for the design of agricultural manpower development programmes.

Project design and implementation are indispensable tasks to be performed in the development of the agriculture sector. One conclusion that is now becoming clear is that poor project planning has made its contribution to the poor performance of the agriculture sector. The manpower and institutional capabilities to ensure proper agricultural project planning, project preparation, project monitoring and project evaluation have not been adequately developed in most of the African countries. These will have to be created to perform the required task which involves basically the identification of national agricultural development objectives, selecting priority areas for investment, designing effective price policies, and mobilizing resources.

Studies have shown that not much time and support have been given to ensure the preparation of suitable projects. More often than not, planners pay so much attention to policy formulation and planning of much broader scope overlooking specific projects that could make the difference. Perhaps, what needs to be emphasized at this point is the importance of research in the process of project identification and preparation. Regarding project identification, the research task involves both desk and field work which could be formal or informal, depending on the size and complexity of the project. Project preparation on the other hand, involves technical, financial and economic studies leading towards the attainment of the most socially feasible project. The monitoring task includes measuring, recording, collecting, processing and communicating information to assist project management in its decision making process. Within this project management framework, skills will have to be available to undertake the task of assessing project performance and impact and make appropriate suggestions for greater efficiency.

As Africa moves into the next decade, agricultural research would have to be closely correlated with the dynamics of technological development. It is now fully recognized that technological change is one of the prime movers of modernizing agriculture. It is also known that agricultural production in Africa, few exceptions apart, is suffering from lack of sufficient adequate level of technological research. The development of local capacity (manpower) to identify basic research areas, conduct basic applied research and screen imported technologies for adaptation had not been given its due attention.

The development of agriculture through the 1990s and beyond would no doubt require applied and basic researchers skilled appropriately to focus their research on adoption trial of crops, livestock, fodder, silviculture, fertilizers, insecticides and weed control chemicals. Research relating to farming systems, soil fertility, farm implements production, storage facilities and rural sociology, would need to be conducted. The task to be performed in this regard would include undertaking farming system studies in order to deeply and properly understand the relationship of the different farming practices, organizational forms, and agro-ecological impacts. It would also involve

undertaking studies on the relation of inputs and management practices, the dissemination of findings to farmers and the government, and the development of practical training in organization and production systems.

Another major task to be performed which is often left unorganized, is agricultural marketing. This task centres on the process of providing agriculture goods and services at the right place, price and time. In this context, the task involves delivering agricultural producers inputs and disposing of agricultural products. Though agricultural marketing in Africa has been constrained by factors such as the subsistence nature of production, non-standardization of products, poor storage and packing facilities, lack of adequately marketing credit schemes, the shortage of agriculture marketing manpower and poor policies, do play a significant role. Accordingly, skills and knowledge will have to be developed to specifically promote and operate service co-operatives mainly for rural farmers, classify products on marketing quality standards, prepare and operate marketing credit schemes and conduct continuous market and pricing studies. Advertizing and trade negotiation skills and knowledge will have to be developed not only at the level of national economies, but also in the subregional, regional and inter-regional economies.

Regarding livestock production and processing, appropriate animal husbandary practices would have to be employed and fostered. Range managers will have to be developed to provide the type of services that would enhance livestock production and processing. The task would also involve the introduction of artificial insemination to cross local breed with recommended breeds if necessary to improve productivity. Animal health and abattoir services would need to be provided as well.

One task which has been for the most part ignored, but whose importance became vivid by the wide spread famine that hit many African countries in recent years, is one related to agricultural meteorology and food security. Adequate manpower will have to be developed to study and give out signals that could prepare both governments and farmers to absorb the calamities of nature without the great human loss and suffering which came along with the recent drought. Agricultural meteorology study would need to be an integral part of early warning systems. Skills and knowledge would be required to collect, analyse and interpret information from weather stations concentrating on temperature, precipitation, humidity, atmospheric pressure, wind, solar radiation transpiration infiltration and surface detention.

Soil and water management is equally critical to improving the agriculture sector. Appropriate knowledge of soil characteristics including fertility, texture and depth of top soil for specific geographical territories in each country is necessary. At the same time, knowledge of the sources and amount of surface and ground water is needed to facilitate irrigation projects which must be designed, installed, operated and maintained by appropriate skills and knowledge. Specific task to be carried out in these respects includes the collection and analysis

of different representative soil samples from different geographical territories bearing in mind the various aspects pertinent to agricultural production. It also includes the collection of hydrological information and if required, potential for small-scale irrigation should be investigated and projects established. Findings and management practices should be disseminated for use by extension agents who are expected to bridge the gap between farmers, researchers and policy makers.

(b) Type of Middle and High-level Knowledge and Skills Required

As indicated in the last section, to enhance African agriculture, several interrelated tasks would have to be performed. Man would have to play a leading role in the organization and execution of those tasks, and should therefore be adequately trained and encouraged to provide the desired services. A starting point is the identification of the type and level of knowledge and skills required. In other words, the broad profile of the middle and high-level manpower that would be needed must be determined. Once this is done, a stock is taken and if required, the necessary training and recruitment exercises embarked upon to fill existing gaps.

The hierarchy of agricultural manpower can be stratified into two categories. The top hierarchy which consists of decision makers, planners and researchers. Subjectmatter specialists constitute the middle-level manpower. This second category of manpower forms the bridge between the extension agents and the high-level manpower. These extension agents generally disseminate technologies, transmit policy decisions and are responsible for grass root activities. Consequently, they must also be trained and diversified in knowledge and skills. The stratification notwithstanding, an inter-disciplinary team of workers would be required within each category to perform the various tasks for the development of agriculture.

Attempt is made in this section to show the broad profile of the type of high and middle-level manpower required to develop each of the critical agricultural activity areas. The intent is to show the nature of the inter-relationship of knowledge and skills and to highlight the importance of a team approach. It is also aimed at pointing out elements of the bench mark to be used when assessing agricultural manpower and/or designing training programmes and curricula for the development of agricultural manpower.

(i) Agricultural project preparation, appraisal and monitoring

Project identification can be carried out by middle level manpower. This includes graduates in agricultural sciences with adequate local experience. The field of specialization should not be restrictive but it would be beneficial to choose specialists that have relevant qualification to the envisaged major component of the project. The team for project preparation and analysis should include an agricultural

economist, probably as the team leader, and as many specialists as the project component calls for. These include often agronomists, livestock specialists, and agricultural engineers. Team members should however have sufficient experience in their respective areas. Project appraisal is the role of a team of decision makers. Like project preparation and analysis, the team should include as many specialists as the project component calls for.

Monitoring consists of (i) preparation of formats to be used in collecting and compiling of data and other information and (ii) analyzing the data. This can be undertaken by middle-level manpower which should mainly consist of graduate(s) in agricultural economics. Evaluation is more taxing than monitoring. It requires impact analysis among other serious analysis. A team of project evaluators should include high-level manpower involving agricultural economists and other specialists as the major project components may demand.

(ii) Agricultural research and technology development

Agricultural research requires high-level manpower in all areas of agricultural sciences i.e. agricultural economics, plant sciences, soil sciences, animal sciences, veterinary medicine and agricultural engineering. It should also include specialists in such areas as rural development, home economics, food technology and rural sociology. The minimum academic level should be a post-graduate education or its equivalent.

(iii) Agricultural marketing

A team of high and middle-level agricultural economists and marketing experts would be required. Members should be particularly specialized in co-operative movement, marketing and specialized commodities i.e. soft commodities, animal products and by-products, marketing credit, project preparation, standardizing of commodities, packing and storing of commodities and gathering, compiling and analyzing market intelligent information.

(iv) Livestock production and processing

A team of specialized high and middle-level manpower would be required. At the moment, the major problem in this area for most African countries is poor production mainly due to inadequate research and technological development. Members of the team should be graduates in animal science with specialization in animal husbandry and dairy production. Graduates in plant science with specialization in fodder production would also be required. The team should have graduate agricultural engineers with specialization in range management. Also animal health graduates with various specialization such as veterinary medicine, meat inspection etc. would be required as well.

(v) Farm management

The farming system, farm organization and resource allocation are all related to farm management and should be seen in relation to agricultural research and technological development. In addition, however, subject matter specialists in farm management would be required to give support to extension agents. The expert required should basically be an agricultural economics graduate who has specialized in farm management.

(vi) Agricultural meteorology and food security

In the case of agricultural meteorology, it would be preferable to select from among meteorology technicians and provide them with training at the university level preferably in agricultural meteorology. Such training in addition to improving their knowledge in meteorology, can acquaint them with agricultural sciences. They can therefore improve their interpretation capacity of the elements of meteorology as related to agricultural production process and food security.

(vii) Soil and water management and irrigation

The expertise required for the tasks identified under this area should be able to analyze the physical and chemical properties of soils. Personnel should be able to collect, compile and analyze data on ground and surface waters, and design small irrigation and drainage scheme. The experts should therefore be qualified in soil and plant nutrition, soil chemistry, soil morphology and soil genesis. The team should also include hydrologists and agricultural engineers.

(viii) Forest and wildlife management

For the tasks identified in this area, the required manpower should be qualified in forest agronomy, forest management, wildlife management and ecology.

IV. Common Issues in the Process of Agricultural Manpower Development

(a) The nature of the process

Agricultural manpower development can be done at various levels. It could be formal or informal. But as with the case of practical oriented subjects, the human resources development process is a non-stop day-to-day process. When planning the process, be it formal or informal, a few tips would need to be kept in mind. First, by its very nature, agricultural manpower development should be discussed with respect to measures in the short and in the medium to long-term time perspectives. Secondly, any approach adopted for developing agricultural manpower cannot be pursued without the required resources being mobilized mainly from national allocations and international sources. In this regard however it is

important to emphasize that manpower development in agriculture be cost-effective, particularly given the present stagnation in the flow of external and internal resources for long-term development in Africa. Thirdly, in searching for a manpower development strategy and programme of action, activities must be viewed against the limitation of time, resource scarcity and geographical and socio-political considerations.

(b) Agriculture Education for Adjustment and Development

At the University level, agriculture education for the future would need to be concentrated on technical areas of study on the one hand, and socio-economic subjects on the other. From the technical view point, a graduate in agriculture should have a sound understanding of plant physiology, husbandary, storage and processing of harvested crops. The graduate should also have knowledge of soil science, soil and water management, engineering and climatology. In countries where farm animals are of particular national importance, graduates should be trained in the broad area of animal production, physiology, livestock management and feeding, breeding, animal health and animal products processing and use.

The introduction of socio-economic subjects to university agriculture graduates is of importance for several reasons. H.K.F. Hoffmann has identified three of such reasons.^{1/} Firstly, increasingly sophisticated management in the physical as well as economic sense, of both crop and animal production and the interrelationships between them require a through study of farm management and of farm economics. Secondly, since production at the micro-level must fit into a country's over-all strategy for agricultural and rural development, areas such as agricultural and food policy, macro-economics, marketing (including pricing) (mobilization of) resources for the process of development are likely to be more prominent in the curricula. Thirdly, social structures, dynamics, potentials and constraints, as related to rural sociology, extension, communications and population education, will need to find a place in the course curricula.

The critical point is that the approach in developing agricultural manpower would have to take on a broader dimension given the wide range of tasks to be performed. In addition, a need exist for offering a set of inter-disciplinary subjects such as rural development, post-harvest loss prevention, energy management, range management, irrigation and hydrology, weed management, food hygiene, veterinary sciences, project planning food technology, accounting, marketing etc. An FAO study shows that much work needs to be done to provide this broader based agricultural

^{1/} Hoffmann, H.K.F.; "University-Level Education in Agriculture: a Perspective for the Year 2000". printed in Training for Agriculture and Rural Development, FAO/UNESCO/ILOR: Rome; 1976. p.45.

education in most African countries and to improve the quality of those few programmes that are in existence. In this regard the study notes that in the sub-sector of agriculture, excluding the Egyptian institutions which offer almost half of all post-graduate programmes available in Africa, major subject areas such as horticulture, plant protection, food science and technology, marketing and farm management, rural sociology and agricultural extension, agricultural management and planning so far have not been adequately covered.^{1/}

What seems to be of immediate demand is to maximize the usage of existing institutions. Limitation of facilities is one of the main causes of capacity under-utilization. Lack of greater inter-country and inter-subregional co-operation in human resources development is also among the main causes of capacity under-utilization in countries where institutions are located. In addition, drastic measures should be undertaken with regard to the improvement of science subjects target in secondary and primary schools.

(b) Training for Improving Effectiveness of Agricultural Manpower

Specialized practical training in forms such as pre and in-service, on-the-job and short courses, seminars and workshops have been regarded as necessary part for improving the level of effectiveness of agricultural manpower. To begin with the exact purpose of the training should be clearly stated when one is planning a training programme. In this regard, five possible intentions which would then determine the structure of the training programme, come to mind: (i) training for specialized professionals; (ii) training of trainers, researchers and extension workers; (iii) refresher and upgrading courses for field staff; (iv) on-the-job training for lower cadre of staff and (v) farmers training with specific purpose and target group. In Africa, these types of training are all being contemplated and to some limited degree implemented. However, on the whole, little attention is given to them by way of structuring and resource allocation. As a result, there are for the most part, practically fewer opportunities for one to get trained in a number of specialized areas at least up to a certificate or diploma level.

In terms of substance, training approach should be aimed at different target groups and the interrelation between the various groups from the top to the lower hierarchy of agricultural personnel. The programme would need to be build on participant's theoretical foundation and at the same time concentrating on their specific skills, knowledge and job requirements. In-service and on-the-job-training should be accorded a special place in the development of high- and middle-level agricultural manpower. Such training should involve the development of technical, managerial and decision-making capabilities placing emphasis on methods and results.

Training of extension workers and field-level functionaries is also important and one which takes on a different dimension. The programme

^{1/} FAO: Training of Manpower for Agricultural and Rural Development in Africa, ARC/84/3; Rome; May 1984; p.17

should result in the understanding of new agricultural production and distribution techniques and strategies. Trainees, especially extension workers, should be familiar with methods of creating greater understanding as to the reasons why certain new approaches such as the introduction of improved seed and the use of fertilizers and pesticides are being introduced. The importance of doing field work correctly and on time in order to maximize production should emerge from within the training programme and transmitted into the attitudes of field functionnaires.

The required training structurally takes on two forms. The first is the short-term training which could be in the form of short-courses, seminars, workshops etc. This type of training should be given top priority for several genuine reasons among them are (i) to increase the specialist confidence in his/her field of specialization, (ii) most generalists lack both farming and experience and normally get very little practical orientation while taking the courses at higher institutions, (iii) time required for the specialist to master the subject in schools is normally too short and (iv) short courses are valuable tools of increasing agents field capabilities.

For short-term training to play its role in training agricultural manpower there are several steps which need to be taken. Firstly, resource persons for specific specializations need to be identified and trained for the job. Research staff could be mobilized and used as resource persons for short-term training. Secondly, venues where the training should take place need to be identified and prepared to cater adequately for the services. Thirdly, funds for running the programmes would need to be mobilized and allocated. Fourthly, the management and administration of the programmes as well as the monitoring of the utilization of experts coming out of the course programmes have to be set and be given full mandate to effect changes as desired.

The second general form of training approach is on-the-job training (OJT). This form of training depends very much on the relationship between the trainer (expert) and the trainee (counterpart) and the officer in-charge of the area or station. Under normal circumstances knowledge gained through the on-the-job training is more specific, very useful, lasts long and is not easy to get through the formal training system. The rate of understanding under OJT depends greatly on the level of education the trainee has as a foundation. OJT can be enhanced in a country by the government adopting a general policy of having counterparts for every specialization.

Be it formal or informal training or that of providing agricultural education in institutions of learning, identification and selection of the target group is very important. For example, short-term training is needed for all levels of professionals beginning with the farmer at the lower end followed by the extension agents at the village, district, region and ministerial level on one side, and the professionals of non-governmental organisations, cooperatives, training and research institutions

on the other side. All of these groups do not necessarily need the same type of short courses. Consequently, short courses must be tailored to suit different needs as demanded by the users of these professionals in the field. This means that in order to have an effective short term training programme a proper management/administration has to be established to design, develop and run them smoothly. In other words, institutional and staffing capabilities should be developed to design the training programmes, develop and programme the courses and to monitor the effectiveness of the programmes.

V. Proposals for the Formulation of Action Programmes on Agricultural Manpower Development in Africa

One of the critical measures that should be taken by African governments in the 1990s within the context of achieving a structural transformation of the African economies is the development and implementation of a realistic action programme on training agricultural manpower. The primary aim should be to bring about a well balanced developed agricultural sector. Short, medium and long-term national, subregional and regional action programmes, harmonized and supportive of each other, would need to be developed.

Development of an operational framework for the action programme is a necessity. Within this context, policies aimed at adequately fulfilling the trained manpower requirements of the national agricultural development plans, would need to be formulated and improved upon. In addition, the action programme should have an institutional framework. Adequate agricultural human resources planning and programming units will have to be established and made functional. At the other end, new training institutions, where necessary, would have to be established and existing ones strengthened by way of expansion, quality improvement, reorientation of emphasis and relevancy. Subregional co-operation, preferably through an organized network of training and research institutions and existing international/regional centres, would need to be encouraged and promoted.

For effectiveness, the formulation of such an action programme would involve three major activities. First, the nation's agricultural development programmes and plans will have to be clearly articulated. Secondly, a comprehensive assessment study will have to be undertaken to obtain the necessary data and information that would form the basis of the action programme. As was indicated earlier, among the critical issues related to the assessment exercise is the specification of the critical tasks performed and/or those to be performed to sustain activities in the various agricultural sub-sectors. Next, the requisite knowledge and skills required to perform the specified tasks to bring about the desired results, would need to be determined. With such information, assessment of present and future manpower availability for the assignment would need to be made. If required, an assessment of the physical and contextual aspects of training (both formal and informal) institutions would need to be carried out to complete the information gathering process.

The need for a comprehensive assessment study on the availability of agricultural manpower within the African region along the lines discussed above, cannot be over-emphasized. This is so because of the critical importance of the human factor in the rehabilitation and development of the sectors as was illustrated in the last section. The need for a study is also crucial to the formulation of action programmes on the development and utilization of agricultural manpower. This leaves little or no choice but for African governments to individually or collectively undertake empirical studies and to develop and execute action programmes that would bring about the desired balance between the food sector and the production of agricultural export commodities. To this end, the following proposals are made for consideration:

- (a) That an inter-governmental agricultural human resources development task force, should be established by the ECA Conference of Ministers. Members of the force to be drawn from member States and international agencies, should include agricultural economists and statisticians; manpower economists and statisticians; training and education planners and agriculturists. The force should be expected to:
 - (i) discuss and specify the subject-matter and lay down broad guidelines for the preparation and conduct of national and subregional agricultural manpower and training assessment surveys;
 - (ii) harmonize, co-ordinate and report on the various surveys;
 - (iii) assist member States in the preparation of national action programmes and consolidate these into regional and subregional programmes; and
 - (iv) mobilize resources for the conduct of assessment studies.
- (b) That an inter-agency working group comprising members from the FAO, ECA, UNDP, World Bank, ILO, and OAU be formed to discuss and report on the feasibility of the study, the form and level of support to be given to the preparation of national and sub-regional action programmes on training of agricultural manpower.
- (c) That the Executive Secretary of the ECA be requested to co-ordinate the tasks of both the inter-governmental task force and the inter-agency working group and report progress made to the next Conference of Ministers in 1991.