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INDICATORS FOR AGRICULTURAL DEVELOPMENT

Addis Ababa

THE DEFINITION AND SELECTION OF INDICATORS FOR AGRICULTURAL DEVELOPMENT

INTRODUCTION

1. This paper does not attempt to provide a comprehensive definition of indicators but rather points to certain basic considerations in their construction. Much has been written and discussed already in connection with the basic ideas relating to the definition that it is unlikely that new fundamental ideas will emerge. 1/ Within the past two decades, the re-evaluation of development strategies in the countries of the region has in point of fact led to the conceptualization of development as being the more broad based and complex improvement in living standards and human welfare through the satisfaction of basic human needs in addition to the rather exclusively economic notion of increase in production and income as reflected in the GNP.

2. This in fact has led to planners defining goals to include both an increase in GNP of a country with greater emphasis on more equitable distribution of income and more attention to agriculture and rural development and at the same time with more concern for social benefits for the improvement of the quality of life, employment, adaptive non formal education, housing, health, nutrition, etc. The issue is socio cultural change in the course of which more and more members of a society actively contribute to this change and share in its benefits. As is evident from the blueprint for African development that has been accepted by the OAU member States, the famous Lagos Plan of Action (LPA) the central issue is agricultural development and the emphasis is on growth such that self-sufficiency in food production is attained, in equity and people's participation in the overall development effort. This is also the outstanding theme of the declarations adopted by the World Conference of Agrarian Reform and Rural Development (WCARRD).

3. In past approaches to agricultural development, as far as Africa was concerned, the basic aim centered on increased production and innovations were for the improvement in production methods of agricultural goods and tools. The goal of development was in the pursuit of GNP growth and interest focussed not so much on the people but in the development of commodities for trade and export. However, it became evident that in the real sense of the word, development was not taking place since although growth may have been attained, the benefits of growth often failed to "trickle down" to the majority of the population, they being in the agricultural sector. The awareness now is that for political, social and economic reasons, development efforts have to encompass all sectors of the population and that no sector, particularly the rural sector, could be left by itself in isolation. Development must take into consideration other factors such as poverty, unemployment, inequality, and thus it stands to reason that in planning, indicators must be developed that assess development directly in these terms.

4. It is not to belabour the point here to re-emphasize that in Africa, due to the dominant role of agriculture as the leading sector of the economy, development has the

1/ See paper presented to the Second Session of the Joint Conference of African Planners, Statisticians and Demographers held in Addis Ababa from 2-17 March, 1983, paper No. UST/ECA/PSD.2/9 "THE DESIGN AND APPLICABILITY OF SOCIO-ECONOMIC INDICATORS IN THE AFRICAN CONTEXT".

exceptional interpretation of being basically agricultural development, with rural development (as compared to urban development) having exceptional importance. With over 80 per cent of the population in the region living in rural areas and making their living essentially from the agricultural sector, practically all the governments of the region devote an increasing amount of the resources of their development budgets to improving the agricultural production base and the life of the rural poor.

5. The inevitable consideration of social, political, cultural as well as economic factors makes it imperative that the planning approach encompasses the most important agricultural development problems: these being increasing the productivity and production of the agricultural sector, more employment of labour in this sector, the improvement of the standard of living, including income distribution, and the welfare of the small-scale farmers, they constituting the poorest section of the society as well as the majority of the population. In view of this, agricultural plans and planners take cognizance of the interaction of economic, physical, social and environmental variables and how they influence each other mutually within one inter-related system. This inevitably calls for detailed and concrete analyses for which process suitable indicators must be developed.

6. In order not to overstretch the scope of this paper, what follows concentrates more on the indicators that deal more or less directly with the increase of agricultural productivity and production. Agricultural production is conditioned by the biological and seasonal nature of agriculture and also, the demand that stimulates agricultural growth depends on urban and foreign requirements, which are more or less exogenous to agriculture. There is the fundamental constraint then that because of the imprecise nature of some of the factors to be measured, the indicators themselves may not in fact be measuring what they were meant to measure. There is also the fact that the sensitiveness of the situation, or the socio-economic context prevailing at the time may have an adverse effect on the accuracy or reliability of what should be indicated. However, this does not relieve the user or constructor of indicators from the obligation to offer a hypothesis as a start and then work to the final 'theorem' for that is what all indicators at the start are: Hypothesis. It is through constant use and refinements that they can be made to achieve their primary objective.

INDICATORS IN PLANNING FOR AGRICULTURAL DEVELOPMENT

7. The various objectives in regard to the economy is set within an overall National Development Plan which provides a sense of direction and purpose, and the objectives for the agricultural sector is co-ordinated in an Agricultural Plan, this being part of the overall plan. From the outset, in determining the broad policies and defining the objectives for the agricultural sector, it is of primary importance to select indicators which reveal essentially the role of agriculture in the economy. It is essential to know the purposes for which they will be used at this stage, whether for a general description of the structure of society; for a review of agriculture's share of national investment, population, national income, and foreign trade, or for stocktaking of current food and agricultural situation and problems being encountered in development.

8. In order to increase national income, improve the per capita farm income and the per capita food situation such that food self-sufficiency is attained, the main purpose of agricultural planning has been to improve agricultural productivity and the rural set-up so as to obtain the benefits expected from the changes that are implemented. Because of the fact that agriculture provides the basic ingredients for industrialization, namely, raw materials, manpower and funds, the basic nature of agricultural planning has been geared towards increasing production and productivity as quickly as possible, thus providing greater

surplus for industrial investment, towards increasing agricultural exports and thus providing the foreign exchange needed for the import of development goods and towards the replacement of imports by domestic production as a means of saving on foreign exchange.

9. In this regard, the selection of indicators should relate to the more technical aspect including policy analyses and to ascertaining how development programmes relate or should relate to development policies. That is, the indicators should assist in the process of translating these objectives into quantitative terms, to the choosing of appropriate deterministic policies, programmes and projects and to the judicious use of capital investment and labour in providing or improving infrastructure, inputs, technology, institutional improvements, inducements and incentives. Indicators are also necessary for prediction and thus should relate to the various policy objectives as well as to the programme areas: to projections for estimation of demand for food for domestic consumption, of demand for domestic industrial requirements of agricultural raw materials, of demand for external requirements for agricultural commodities, to the assessment of both long term and short term perspectives for agricultural development and to the projection of production and production levels.

10. It has been mentioned earlier on in this paper that the emphasis is regard to indicators will be made on those which indicate increase in agricultural production and productivity. It has also been mentioned that development efforts must embrace the welfare of the people in the rural sector, the alleviation of poverty, an equitable distribution of the benefits of growth, that is, growth with equity. There is no denial of the fact that increases in productivity is intimately linked with the welfare of the people primarily concerned in the production process and their involvement in the decision making processes that affect their work and capabilities. Indicators which measure progress in reducing poverty, in the attainment of growth with equity, in enhancing the people's participation in the decision-making process are thus as important as any.

11. Indicators also come in to play at the implementation stage: for determining the consistency between the commodity production levels set and the requirements of other sectors and between the agricultural requirements and their availability; in determining the efficiency of administrative machinery and of the implementing agency. In monitoring attitudinal and social values. Finally, indicators play a vital role in the evaluation process which is necessary for checking on the efficiency of the adopted methods and the feasibility of achieving planned targets; for showing what had been achieved and what is still left to be done, and this involves both financial and physical aspects.

12. Indicators provide the tools used in preparing, analysing, predicting, evaluating and monitoring the extent of implementation of objectives in relation to identified targets and, in terms of these targets, they are used for the clarification and description of the goals as well as for the construction of development models. Thus targets must be identified in such a way that the various factors that influence them are easily identifiable and that the impact of these factors can be measured. In order to achieve the targets, planning involves priorities. The basic consideration is whether policy measures and projects are such as to give those basically involved in the production process the necessary incentives to improve productivity and production according to the paths laid out in the plan. In this connection, it is important when selecting indicators to involve those which reflect the interest and perspectives of farmers.

13. Here it is perhaps relevant to indicate two broad and general perspectives from which indicators may be viewed when they are to be selected and used as measures of development. The first relate to their being seen from the point of view of the national planner, that is,

in the context in which they measure or indicate the extent to which the national plan objectives are being achieved. If the aim is the satisfaction of basic needs improvement of agricultural production, a reduction of the income gap, etc., this will involve the identification of indicators that measure progress towards attaining these objectives directly together with measures that give a general description of the existing economic and social situation factors affecting progress towards these national objectives and targets.

14. Another perspective from which they can be considered is in terms of the subjective considerations of individuals in any locality as to what constitutes development. An appreciation of the point of view of the individuals involved may lead to a change of strategy from what originally envisaged. Those subjective considerations may completely conflict with national goals. For instance, under a development scheme, farmers were provided with credit facilities for the purchase of specially bred oxen to be used as draught animals for improving the production of certain crops. The surplus would have provided ~~more~~ food for the rest of the population and profits were to be used to repay the capital outlay involved in the project. However, the farmers found it more expeditious to feed the animals for a short period of time and sell them at a profit, thus making extra income in a relatively short time from which they incurred instant personal benefits. Thus development may mean different things to different people.

15. In planning for agricultural development, targets are set for operationalising the broad goals and objectives of development; for measuring progress towards these objectives, for assessing the performance of programmes needed to achieve these targets and for evaluating the achievements attained. It is not very difficult to set a target; the problem however lies in ensuring that the target is translated into concrete action programmes that will be executed by the producer, especially when as was pointed out earlier, the interests of the producer may not necessarily coincide with the interest of those who fix the targets. It is therefore necessary in establishing targets to have an indication of how well the innovation will work in an area or region and on the pay-off to the producer.

16. It is in this regard that targets should be set in terms such that they can be measured by indicators either at the national level, sub-national level, sectoral level or project level, broadly corresponding to the various levels of planning. Nowadays, in the countries of the region planning in general and agricultural planning in particular is not confined to the national level but is rather dissipated to the regional and local levels as well. Having reviewed the role of agriculture in the country's economic development and identified the major constraints, the next stage of assessing agricultural development priorities is needed to pave the way for specific investment opportunities and the setting of targets in the various **sub-sectors** of agriculture and in the different areas and regions of the country.

17. Such assessments and the setting of targets is made much less difficult with the availability of relevant indicators: indicators that aid the translation the various agricultural priorities and targets into specific development programmes and projects such as indicators relating to agricultural commodities that are in demand or in deficit and to regions where at minimum cost, output can be effected in the shortest possible time; indicators which lead to the identification of areas where expansion in productive capacity is most urgently needed e.g. irrigation; to those which enable the identification of sub-sectors and regions in which production can be increased through the use of inputs or more efficient use of existing farm capital and labour, and where inducements, incentives and such like economic measures could lead to an increase in production and productivity in the shortest possible time.

18. Continuing the list of such indicators are those which enable the selection of agriculturally deficit regions - regions suffering from low income, greater unemployment or underemployment - as well as to remedies for improvement and indicators which enable the selection of crops and livestock products with encouraging prospects for processing and exports.

ESTABLISHING THE CONTEXT FOR THE IDENTIFICATION AND SELECTION OF INDICATORS

19. In planning for development, agricultural development included, the indicators to be used for pre-planning, for analyses, for prediction, for implementation, for monitoring and for evaluation must relate essentially to the various policy objectives and targets as well as to the programme areas. However, to conceive of an indicator is not to imply that it will be easy to construct, especially as is the case in the countries of the region that there is a dearth of appropriate and relevant data at all levels. In the construction of indicators, it is the clues which they give or are to give as measures of development that is pivotal. Thus it may be essential for the identification and, surely, for the interpretation of indicators, that the advice of someone familiar with the conditions operating in any one country at the time be sought.

20. In the rest of this chapter an attempt will be made to identify in broad terms, the indicators that relate to the various planning topics. There exists conceptual difficulties that must be overcome and it may be necessary to undertake more in-depth studies to clarify conceptual issues in their local context in order to obtain a guide and innovations and improvisations may have to be developed. For example, in assessing poverty standards, or even minimum nutritional standards, there are the well known measures of poverty: infant mortality rates - which reflect the effectiveness of health services; the diet status; the housing situation; etc., protein consumption; incidence of diseases of undernourishment including height and weight status of children.

21. It may be necessary to bring together a whole set of such various data sets in order to arrive at certain conclusions - thus implying the development of 'composite indicators'. Unemployment is another difficult concept to define in our societies and one for which a set of composite indicators is needed. For a meaningful assessment, it is required to know what jobs people would be prepared to take (and at what income) and what hours they work. Disguised rural under-employment because of seasonal variations in farming activities complicates the problem.

22. In selecting indicators, caution must be exercised such that the amount of indicators selected are within manageable limits and in this regard it is advisable to identify only a few indicators that are appropriate to the area of concern. The availability of voluminous information can lead to confusion and suspicion and how such information can effectively be used for planning can be problematic. It should be emphasized that ordinarily, economic and social analyses require not the raw data as such but derived data such as distributions, averages, ratios and percentages of the different small areas and socio-economic groups in a country. What really needs to be known is how to use these data in order to formulate targets based on the optimum use of scarce available resources as well as on the requirements of each farms in the country.

23. Although the laying down of objectives is done at the beginning of the planning process, how these objectives are translated into quantitative terms will evolve as the requirements of data and information are discussed in the different stages of the planning process. In assessing the role of agriculture in the economy, indicators of the orthodox and structural type such as the agricultural population structure and growth will suffice; indicators such as those which refer to the agricultural population structure and growth to the proportion of the population depending on agriculture for livelihood; to the con

tribution to the gross domestic product and to the importance of agriculture as a source of food and raw materials for domestic consumption and use and as a foreign exchange earner.

24. Similarly, in assessing the agricultural resources available and in identifying the real obstacles to changing the use of these resources, it is not the raw data but the derived aggregated data from related farm management studies, on the composition and management of farms and farmers that is utilized. One of the early stages in the planning process involves the estimation of demand for various agricultural commodities. Here, in projecting the demand for food, the rate of population growth and the rate of growth of per caput income are important as well as the distribution of the population between urban and rural areas since this affects the level of overall demand.

25. In estimating demand for agricultural raw materials for the domestic industry, what is essential is the variety of end uses to which the commodity will be put, since the demand depends directly on the demand for the end products and the input of that commodity in each end-use. Thus there is need for indicators which relate to the demand for the end-product such as population growth, per caput income level, income elasticity of demand, etc. In establishing production targets it is the projected domestic and external demand for agricultural commodities that give the first indications as to what these targets should be. These targets are modified and adjusted based on resources available to the producers and the national requirements and resources available to government for investment in agriculture.

26. Production targets are fixed on the basis of increase in the supply of inputs and on simple input output ratios relating the increase in output to a given input. To assess the likely impact on production of proposed policies and incentives regarding credit, prices, marketing reform and agrarian and rural reform, it will be necessary to conduct studies to obtain the necessary indicators relating to credit needs, how, and to what extent, they are met and to what extent they relate to existing policies in respect of prices, marketing and land tenure.

27. In regard to investment, another topic in the planning process, since resources are limited in relation to needs, the main criteria used for resource allocation are the well known capital output ratio, benefit cost ratio, the balance of payment effect and the employment effect. For the capital output ratio, indicators of the amount of investment corresponding to a unit of output are required. For the benefit cost ratio, indicators are needed of the value of input and output of goods and services. For the balance of payment effect, foreign exchange invested and realized are required. For the employment effect, indicators of the amount of employment created relative to the capital invested are required.

28. At the implementation stage of the planning process, it is important to have indicators relating to the efficiency of the administrative machinery connected with the various projects and programmes and on the response of the farmers. In general, at the level at which agricultural programmes are implemented, it is necessary to establish suitable machinery for contact at the local level. Finally, when an agricultural development plan is being implemented, indicators relating to periodic evaluation of results in order to check the efficiency of the methods and the attainment of planned targets are vital.

29. Focussing on indicators which measure progress towards reduction in poverty, mention has already been made on using income distribution for measuring the extent of the distribution of the have and have-nots in the population and for monitoring progress towards attaining equity. There is already much in the literature on the subject, that cash income is not the over-riding determinant of levels of living and poverty in the

countries in the region. However, with the usual care and understanding in its construction, it does give an indication of the situation and relate to an output of the development process. Also in this connection are health indicators such as mortality rates and death rates which refer to the overall level of health of the population or target group. Nutritional indicators, such as per calorie consumption, percentage of under nourished and percentage below standard weight and height, which measure respectively, food consumption levels, under nourishment and nutritional status can be considered input in the determination of health status.

30. Similarly, aggregate indicators which measure literacy and those referring to the educational structure such as 'primary school enrolment' are indicators which can be considered factors in the measurement of progress in the alleviation of poverty. So also are indicators which refer to housing status and access to community services. In the determination of growth with equity or the extent of an equitable distribution of income amongst the population, the income indicator already discussed provides a measure, especially if disaggregated by the target groups or by geographical areas. Disaggregation of the GDP by geographical areas or by target groups also gives an indication in this regard. In the case of measuring people's participation, an assessment can be made through special investigation as to how various organizations at the local level cater to the needs and requirements of farmers and as to how they themselves participate. Local co-operatives are examples of these organizations.

SOCIO-ECONOMIC INDICATORS IN PLANNING FOR AGRICULTURAL DEVELOPMENT

31. It is difficult to exhaust such a wide field concerning indicators for agricultural development planning in a few pages and what is being done here is to highlight some of the requirements in order to enhance the use of indicators. Moreover, as was mentioned earlier, it is only by going through the actual exercise of planning that the many requirements for indicators become evident. Specific country needs require specific indicators peculiar to the prevailing situation and it must be emphasized that improvement in planning techniques develop as more and more indicators become available.

32. Having established the context within which indicators for agricultural development planning are selected and used, it is logical to tabulate some of these indicators relative to certain key areas of concern in the agricultural planning process. A list of such indicators, which is by no means exhaustive, is given in Annex 1. Reference is made at this point to the fine line of distinction between indicators and statistics. Indicators are considered by definition, to refer to measures that indicate or identify variables different from those of which they are direct measures; this attribute of a direct measuring variable being relegated to statistics. However, since the acquisition of statistical information is the only requisite for the construction of indicators, the line of distinction between the two must of necessity be very thin.

33. In the summary list in annex 1, it can be seen that relative to targets which concern objectives, programme goals, review and analyses, policy formulation, prediction, implementation, etc., the indicators can relate to aggregate characteristics, to structural characteristics, to distributive characteristics, to inputs, to outputs and to the determination of impact of programmes and policies on specific targets groups. It is worthwhile to note that in some instances, the national goals set in the plans may have no concrete meaning for the masses of the people for whose upliftment they are supposed to cater, until they are spelt out in more manageable terms at the local or comparative level. Thus in order to assess the success of national plan objectives at the local level, more specific quantitative and/or qualitative indicators may have to be constructed.

34. The significance, indeed the *raison d'être*, in going through a process of selecting and constructing indicators for agricultural development planning is to use them and the justification lies in the use to which they are put. There is no point in identifying indicators if they are not going to be used and it is important that they are used in a systematic manner. The use of indicators is inevitable in the formulation of policy goals and objectives. However, they must be used as the logical basis for setting targets and for the choice of programmes and projects. Designing programmes and projects in expenditure terms does not suffice.

35. The objectives of overall development provide the guidelines for the development of the agricultural sector, thus leading to the setting of goals for agricultural development. In setting these goals however, there must be some understanding of the overall agricultural situation at the national level and some broad understanding of the most pressing problems. Thus in the setting of goals such as self-reliance in food production, increase in agricultural production, elimination of poverty, there must have been understanding of the deficits and constraints and even human suffering

and damage to the population as a whole in regard to the inability to provide enough food for consumption, falling trends in the GDP and deterioration in standards of living.

36. The data for analysing the role of agriculture in the economy, size and distribution of population, etc., are fairly straightforward. It is also useful to appraise previous plans in order to improve on the formulation of the new plan. The future demand for food is dependent principally on the rate of population growth and the rate of growth of per capita income. Data in respect thereof are obtained from population surveys, and, for rate of growth of per capita income; from projections of GNP or GDP and the projection for population growth. Income elasticity (relationship between income and consumption) is derived from household expenditure surveys. Demand projections are normally based on the assumption of constant prices. Price elasticity of demand is estimated from time series data on prices and the quantities purchased at these prices.

37. In connection with nutritional levels, the pattern of projected demand for various foods can be converted into calorie and protein requirements and compared with the nutritional requirements, which would have been obtained from special research studies. In projecting the domestic demand for agricultural raw materials, the various end-uses of the commodity must be identified and the demand for each end-product calculated as usual, that is, on the basis of population growth and per capita income level, income elasticity of demand, etc. End-uses are identified through special studies. In the case of external demand, the stage has been reached where use should be made of commodity projections prepared by international agencies such as the FAO studies on commodity projections.

38. For indicators establishing production targets, studies have to be made for the various regions to establish the input-output ratios relating output to the supply of conventional inputs such as land, water fertilizer, etc. In connection with the use of resources by farmers, and indeed, in establishing production functions, farm management studies in farming regions play an important role. Assigning priority to projects is made on the basis of the capital-output ratio. Similarly, a project is economically justified when the total benefits are greater than the total costs. In the evaluation of benefits, it is necessary to have a reasonable estimate of future price levels. For this analysis also, farm management studies are very useful. The indicators in regard to poverty alleviation are calculated on the basis of data in the form of a distribution in the area of concern and a cut-off point is established. Such data are usually classified by households rather than by individuals and thus cut off points are established and expressed on a household basis.

39. Of relevance here are actions already taken in relation to requirements for the World Conference on Agrarian Reform and Rural Development, (WCARRD). The FAO, in consultation with other United Nations agencies and other international organizations, has compiled a list of 52 socio-economic indicators for monitoring progress in attending policy goals and programme objectives as required in the WCARRD Programme of Action. ^{2/}The FAO objective is to implement the part of the WCARRD Programme of Action relating to monitoring and evaluation at the national and international levels. The set of indicators which have been tested at the country level and found to be satisfactory are particularly helpful in providing measures of progress in rural develop-

^{2/} FAO: Programme of Socio-Economic Indicators for Monitoring of Agrarian Reform and Rural Development As Follow-up of WCARRD, Doc.ESS:ACS/AF/9/81/7, August 1981.

ment and in the formulation of social policies. In particular, areas of concern for which the set of indicators provide information relate to poverty reduction and improvement in the quality of life of rural populations; self sufficiency in food production; increased people's participation in rural development and access to land, water and other resources, services and amenities.

40. It is also pertinent here to refer to some new developments. From discussions at various International fora, and from recent ECA exercises it has become increasingly clear that for a true assessment and monitoring of development, in all sectors, for the countries of the region, reliable indicators are also urgently needed for the monitoring of some non-conventional phenomena such as "Leakages" in the economies of African countries; distortion of development priorities; equitable sharing of the burden of development between various target groups (the rural and urban sectors); political will; state of well-being, etc.

41. At the recent ECA Workshop on Leakages in African Economies during which losses incurred by African countries, and they were significant, on agricultural commodities due to smuggling and underindexing were discussed at length, it was stated that:

"In addition to the conceptual difficulties, one should also point out the statistical shortcomings of both the basic data and the coefficients and other parameters which have to be used in any attempt at quantifying financial leakages. If, as far as is known, no rough systematic attempt has been made up to now to quantify financial leakages in Africa, it is simply because the magnitude of the task is not commensurate with the conceptual and statistical books available to the student of this topic.

42. One of the clichés of modern times in this connexion is the phrase "Political Will". To quote from the Lagos Plan of Action, "for an improvement of the food situation in Africa, the fundamental requisite is a strong political will to channel a greatly increased volume of resources to agriculture, to carry through essential reorientation of social systems, to apply policies that will induce small farmers and members of agricultural co-operatives to achieve higher levels of productivity, and to set up effective machineries for the formulation of relevant programmes and for their execution". ^{3/} In certain instances, "lack of political will" has been interpreted to mean "bureaucratic constraints"; in others, shortcomings; or punitive measures for not falling in line with certain political affiliation.

43. Whatever the interpretation, there is no gainsaying of the fact that there is a problem due to increasing difficulties to translate professed developmental policies and declarations in some sectors, including agriculture, into concrete action programmes. The success of planning for agricultural development, or any other development for that matter, depends, in the situation of the countries of

^{3/} Lagos Plan of Action for the Economic Development for Africa, 1980-2000, Organization of African Unity, 1981, p.11.

the region as it is today, to an extent upon the sustained interest, active support and vigorous backing of the government at all levels. This fact must be borne in mind at all times in planning for agriculture development. An informed and enlightened citizenry, a public-spirited community and a sagacious political leadership are pre-requisites to success in national, regional and local area planning. Experience has shown that whenever sustained political commitment and support to the idea and practice of planning at all levels is forthcoming, plans have been successful. For the time being, it is necessary to evolve a clear understanding of what all these new concepts entail in order to be able to facilitate their translation into quantitative terms and thus enable the construction of relevant and suitable indicators.

MECHANISM FOR OBTAINING DATA

44. There are many conceptual and methodological problems associated with the selection, construction and use of indicators in planning for agricultural development. In reviewing the present situation in many African countries, it will be found that the information necessary is sometimes lacking and where available, it is often limited in scope, coverage and accuracy. However, the aim here is not to add to the jeremiads on the shortcomings of agricultural statistical systems in African countries: that they still do not have a sound basis for collecting reliable statistical information. Indeed, though this may have been true in the past, there exists "at present in many countries data available from censuses and surveys or from both of those sources and some (a significant number) African nationals have been trained in data collection and analysis." ^{4/} Indeed, there is no one country in the region that cannot boast of an agricultural survey or census and/or special studies in determining agricultural functions and relationships.

45. Thus the aim here is to harp on the fact that part of what is needed is an improvement in the organization of existing agricultural statistical service responsible for collecting information; an improvement in the co-ordination of the activities of such services; and more adequate use of existing statistical information and personnel. As is pointed out in the document referred to earlier, "Although some population data were available, such data were not systematically used in the over-all development planning process.....among the reasons for that situation was the lack of appreciation.....of the importance of (Indicators) variables in development planning." ^{4/} Also, ".....scant use has been made of indicators in African planning. Although this situation is justified in large measure by the poor data base and the limited resources at the disposal of planners, much more can be done with existing data "1/".

46. In a survey of systems of agricultural statistical Institutions in four countries of Eastern and Central Africa, Burundi, Rwanda, Tanzania and Zambia,

^{4/} The Second Session of the Joint Conference of African Planners. Statisticians and Demographers: Report of the Conference, Addis Ababa, Doc.E/ECA/MM.8/22, March 1982, p.11.

Zambia, ^{5/} it was found out that "in general, the results of (agricultural statistical work done have either not been exploited or have only been partially utilized." All this is not to minimize the importance of strengthening national systems for collecting agricultural statistical information in the countries of the region; far from it; it is simply to call attention to the fact that it is possible to utilize more fully, existing sources of data in the countries of the region, and this will obviously result in the more scientific selection and construction of indicators and thus enhance their use in agricultural development planning.

47. To complete a discussion on indicators for agricultural development planning, it is important to at least make references to sources of data. This will underscore not only the need for undertaking censuses and surveys, but for paying special attention to agricultural planning requirements when such investigations are undertaken. Agricultural censuses and surveys aside, population censuses have the advantage that they can provide data disaggregated at the levels of localities and regions of concern. Normally they provide information on population size and structure and are not suitable for the collection of information on changing social and economic conditions. However, with the addition of one or two additional items, they can be made to provide important information, relevant to the agricultural sector, on levels of living or some basic information that can enhance the collection of agricultural statistical information.

48. References have already been made on the relevance and importance of farm management surveys and studies as well as household surveys. The use of common concepts, definitions and, to the extent possible, of common reporting units, is necessary in order to relate data from various surveys for integrated analysis. Also worthy of mention here are specialized in-depth studies and surveys, undertaken or to be undertaken by specialized services and agencies. They provide information on certain key areas and topics, vital in the construction of indicators. Some of these are on the attitudes and social values of the rural population, on people's participation and on access to inputs, markets and services. In this connection the National Household Survey Capability Programme, whose purpose is to set up capabilities for the conduct of successive and multi-purpose surveys for the provision of integrated statistics on social, demographic and economic characteristics of households, is an invaluable instrument for the provision of the type of indicators referred to in this paper.

49. Data from administrative records are a major source of insufficiently investigated and underutilized set of information existing in the countries. They can be very helpful in providing some of the type of indicators already discussed, or proxies for them. Such records are generally the least costly sources of data and may refer to health and educational data, tax data and records of government population counts, sales and operational receipts for agricultural inputs, registration of land, land use and tenure, and even agricultural output on land. In some countries, counts of the population for tax purposes and land registration by

^{5/} ECA, Joint ECA/FAO Agriculture Division, System of Agricultural Statistical Institutions in Four Countries of East and Central Africa (Zambia, Tanzania, Burundi, Rwanda): Consultant's Report, Addis Ababa, June 1980. P.1.

tenure and use have been conducted for decades but such information has not, for the most part, been systematically exploited. However, it must be said that such data more often than not require considerable improvement in terms of coverage, accuracy and relevance.

. CONCLUSION

50. Evidently for the construction and selection of indicators for agricultural development planning, there is great variety in the type of data and information needed; cutting across different agencies responsible for their collection and analyses. Thus close co-operation and co-ordination of work between the various national agencies dealing with different fields of statistics and economic research are called for. The collection, timely processing, compilation and use of statistical data as well as the organization of research for agricultural development planning depend, inter alia, on the available supporting services and in this regard, agricultural and other surveys and field operations are needed.

51. Obviously, there are constraints inhibiting the effective use of indicators in agricultural development planning and there is need for communication with governments of member countries in the region to increase their awareness and interest in developing programmes for the construction and use of the relevant indicators. ECA can play a catalytic role in increasing this awareness and thereby enhance the use of indicators by providing assistance in the development of standards, guidelines on aspects of compilation, analysis, monitoring and evaluation suitable to conditions in the region; in the collection and exchange of information on country practices; in the conduct of in-depth methodological studies; in the collaborative work of international and such like agencies as the FAO and in the process of improving and developing systems of agricultural statistical institutions in the countries of the region. The co-operation of the countries is, of course, paramount and is hereby suggested as a basis for discussion.

LIST OF INDICATORS RELATIVE TO ASPECTS OF THE VARIOUS STAGES OF AGRICULTURAL
DEVELOPMENT PLANNING

Area of concern	Suggested indicator
(a) Goals of agricultural development:	
Self-sufficiency in food production	Self-sufficiency ratios in food commodities: domestic production of food items as a proportion of consumption. National food reserves as a proportion of food production.
Rapid growth of agricultural production	Trends in agricultural production and agricultural GDP.
Elimination of rural poverty and growth with equity	Proportion of population, by sectors that are below a given poverty level. Per capita income. Percentage of income accruing to the lower segments of the population.
(b) Assessing the role of agriculture in the economy	
	The size of the population and its distribution between rural and urban and by economic activity.
	The distribution of the labour force by sectors.
	Gross Domestic Product and its components: seacreage and production of principal crops, livestock, and other raw materials.
	Volume and value of foreign trade, showing import and export of agricultural commodities.

Area of concern	Suggested indicator
(c) Estimating demand for and requirements of agricultural commodities	<p>Population growth rate.</p> <p>Rate of growth of per capita income.</p> <p>Urban and rural per caput food consumption levels.</p> <p>Income elasticity of demand (relating income and consumption).</p> <p>Price elasticity of demand (relating time series on prices and quantities purchased).</p> <p>Nutritional levels and requirements (per caloric consumption, percentage of under-nourished population and percentage of children below standard height and weight).</p>
(i) for food	
(ii) for fuel and wood	Food consumption.
(iii) for raw materials	Value and quantity of raw materials and value and quantity of output.
(iv) for export	<p>Projection of world demand, supply and trade in agricultural commodities.</p> <p>National commodity situation.</p>
(d) Projection of production and the establishment of production targets	<p>Land utilization and land tenure.</p> <p>Crop acreage and yield.</p> <p>Livestock population.</p> <p>Relative increase in output to a given supply of unit input (such as land, water, fertilizers, improved seeds, etc. that is, simple input-output relationships).</p> <p>Use of farm resources by farmers and the resultant output.</p> <p>Farm credit needs, marketing, price incentives and inducements.</p>

Area of concern	Suggested indicator
(e) Investment in programmes and projects	Productivity potential of agricultural resources. Capital--output ratios. Cost-benefit ratios. Balance of payment effect. Employment effect.
(f) Plan implementation	Information on the efficiency of general administration. Assessment of the use of technical and administrative personnel.
(g) Plan evaluation	Project and programmes evaluation.
(h) Progress in the alleviation of poverty	
Levels of living	Percentage of population with per capital income below a certain level
Nutritional status	Nutritional levels and requirements
Health status	Life expectancy at birth Infant mortality rate. Child death rate.
Literacy status	Adult literates as per cent of total population.
Educational status	Primary school enrolment ratio.
Housing	Percentage of households in dwellings below an acceptable norm.
Access to community services	Percentage of population in communities within easy reach of potable water supply, primary schools, primary medical facility, metalled roads, marketing and credit institutions.
(i) Growth with equity	Per capita income. Percentage of income accruing to the lower segment of the population.
(j) People's participation	Membership of village promotion organizations.