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LINKAGE BETWEEN INDUSTRY, AGRICULTURE AND FOOD PRODUCTION*/

Analysis and proposals for action

Prepared by
the UNIDO secretariat

Vienna
28 May 1985

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FOREWORD BY THE EXECUTIVE DIRECTOR OF UNIDO

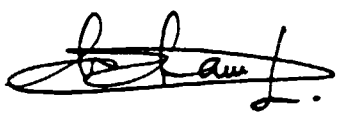
The pervasive socio-economic crisis in Africa which has been aggravated by persistent drought, growing famine, encroaching desertification and other natural disasters, has been the subject of concerted action by African countries and the international community in recent years. It is gratifying to note that all concerned increasingly recognise that emergency measures, including food aid, need to be accompanied by even greater development programmes, if a lasting solution to this crisis is to be achieved. The improvement of the agricultural sector is essential to economic development in most African countries, but it has now been accepted that the most effective solution lies in an integrated approach to development, particularly the agricultural/industry linkage, the cornerstone of the Lagos Plan of Action and the Final Act of Lagos. In fact, despite the enormous efforts on the part of the African countries and the international community in the agricultural sector, the food situation in the region is deteriorating.

The main difference between developed and developing countries is to be found in their degree of industrialization. While Africa is endowed with abundant mineral, agricultural and other resources, and has a great potential for human resource development, its severe economic problems are largely due to weak feeble industrial base. This shortcoming also imposes a major constraint upon the region's agricultural and food sectors. Most of the industrial inputs required are imported and a significant amount of its agricultural and food products wasted owing to inadequate local processing, storage and preservation facilities. The relationship between food, agricultural production and industry therefore takes on a particular dimension in the economic revival of the continent. This relationship also implies the enlargement of domestic markets with a view to increasing domestic consumption of both agricultural and industrial products as well as domestic production, from local resources, of the factor inputs required for both agricultural and industrial development.

The request by the Organization of African Unity (OAU) that UNIDO undertake an analysis of the relationship between agriculture, food production and the industry sector marks an important step forward in refining the

concepts and instruments for the implementation of the Lagos Plan of Action and the Industrial Development Decade for Africa. It also represents an important step towards improving the current approach to general macro-economic planning in Africa in that it considers both financial flows and local production of real factor inputs.

The paper, which I have the honour to submit for consideration in the preparations for the OAU Summit, first examines the subject in normative terms and indicates some of the policy instruments which need to be taken to bring agricultural and food production into a mutually interactive and supportive relationship with industry. It further examines current trends and factors in Africa and focuses on proposals for short-, medium- and long-term actions to be taken by African countries and the international community, especially UNIDO, to accelerate the local production of primary and secondary industrial inputs to agricultural and food production. In this regard, the rapid implementation of the Lagos Plan of Action, the Final Act of Lagos and the Programme for the Industrial Development Decade for Africa (IDDA) are considered particularly relevant. I hope that the OAU will find this paper, particularly the proposals contained therein, a useful contribution to the preparations for the Summit.



Abd-El Rahman Khane

INTRODUCTION

1. In recent years concerted action has been taken, not only within Africa but also at the international level, to draw attention to the critical economic situation in the region. The pervasive socio-economic crisis has been aggravated by persistent drought, growing famine, encroaching desertification and other natural disasters. In the local and international efforts to assist the most deeply affected African countries, particular emphasis has been given to providing emergency relief, mainly in the form of food aid.

2. Although the rapid development of the food and agricultural sectors is essential to the economic development of the region, it is now increasingly recognized that the most effective solution to the economic crisis besetting the region lies in an integrated approach. Regional economic integration was the approach advocated by the African Heads of State and Government when they adopted the Lagos Plan of Action and the Final Act of Lagos. Current and past experience reveals that the difference between developed and developing countries lies in their degree of industrialization. Despite abundant mineral, agricultural, human and other natural resources, Africa's severe economic problems are largely due to its weak industrial base. Through industrialization, countries such as Hong Kong, Japan and Singapore, with limited land area and practically no natural resources, have advanced economically, while the United States of America, with the same land area as Africa and possibly fewer natural resources, has achieved the status of a superpower through the promotion of its industries. Whereas Alaska and other remote areas in the United States are being transformed into economic assets, the Sahara desert in Africa is considered an economic liability.

3. In the preparations for the forthcoming OAU Summit, priority has been accorded to food availibility and the rehabilitation of agriculture, in line with the Lagos Plan of Action. The question of attaining this objective will have to be faced by the Summit. Despite the enormous efforts on the part of the African countries and the international community, the food situation in Africa is deteriorating. This underscores the need to re-examine the policy and operational measures adopted hitherto. An important aspect aspect of that re-examination will be the linkage between industry, agriculture and food production In due recognition of this essential relationship, the OAU

Council of Ministers, at its fortieth session, requested UNIDO to prepare a contribution on this subject for consideration by the OAU in its preparations for the Summit's economic agenda.

4. This paper has been prepared in response to that request. It analyses the relationship between agriculture, food supply and industry in Africa. First, it treats the subject in normative terms, indicating some of the policy instruments which will have to be taken to bring agriculture and food supply into a mutually interactive and supportive relationship with industry. Secondly, it examines and illustrates actual trends and factors operating in Africa and their possible impact on policies and strategies. The main portion of the paper proposes short-, medium- and long-term actions to be taken by African countries and the international community in order to accelerate the local development of primary and secondary industrial inputs to agriculture and food production.

I. ANALYSIS

5. Any breakthrough in the agricultural development of a country depends largely on its level of industrialization. Economic data show that an efficient agricultural sector and the production of food on the scale required to feed hundreds of millions of people, as is the case in Africa, hinge on the availability of a well developed industrial economy. It has been estimated that industry provides at least 50 per cent of all direct inputs to agricultural development. The relationship between agricultural and industrial productivity is shown in Figure I. $1,000 productivity in the agricultural sector, for example, requires some $2,700 of corresponding productivity in the industrial sector. Countries with a low level of industrial development are comparably low on the agricultural development scale. By way of contrast, countries that are self-sufficient in food production and have become net exporters of food, such as the United States of America, are high up on the industrialization scale. The difference can be demonstrated in other terms. In most developing countries only a minor share, about 10-20 per cent, of the raw materials produced by local agriculture undergoes industrial processing. In the developed market economies, the share is around 80 per cent.

RELATIONSHIP BETWEEN AGRICULTURAL AND INDUSTRIAL PRODUCTIVITY

Based on data from
United Nations Research Institute for Social Development,
Research Data Bank of Development Indicators,
Volume II Compilation of Indicators for 1970
with Adjustments for Age Structure,
prepared by the Statistical Unit of the Institute, Geneva 1976,
Report No. 76.2, pages 64 and 52.

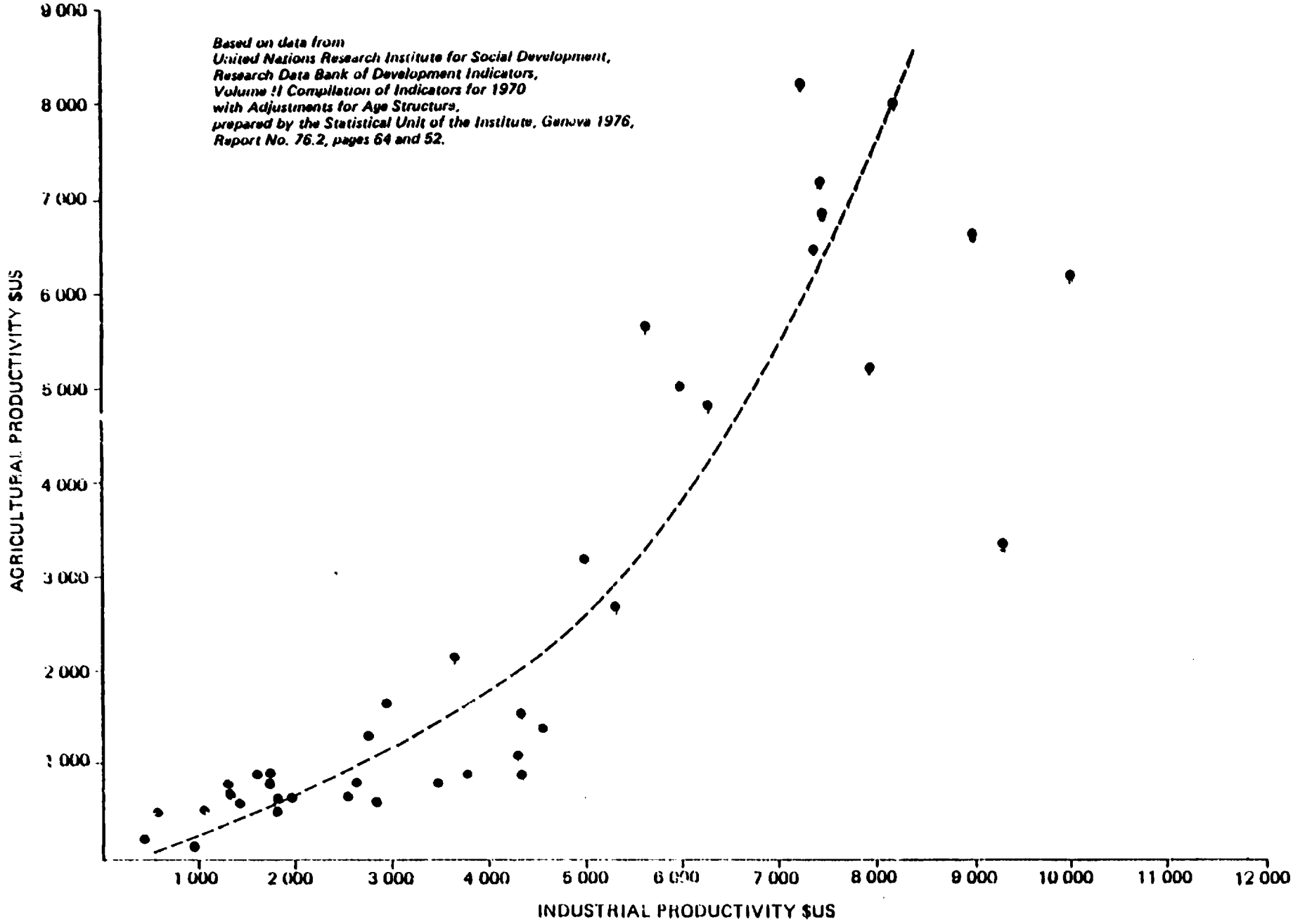


Figure 1

6. Table I shows the types of industrial inputs required at each stage in the agricultural and food production process. In broad terms these stages are: soil preparation and maintenance; crop planting, growing and cultivation; harvesting, distribution and storage; and food preservation and processing. The primary industrial inputs include:

(a) Agricultural machinery, implements and tools for soil preparation, crop planting, cultivation, growing and harvesting;
(b) Fertilizers, pH controllers and water retention devices for maintaining and improving soil quality;
(c) Pesticides, insecticides and other means to protect crops, grains and other agricultural produce against insects, pests, disease and improve poor soil conditions;
(d) Irrigation equipment, pumps, pipes and valves (including spare parts) for the extraction and distribution of water required for soil preparation and maintenance, crop planting and cultivation;
(e) Silos, warehouses, packaging material and refrigeration equipment for the transportation, storage and distribution of agricultural produce and food supplies;
(f) Fermentors, digestors, chemicals, grinders/milling machines, agitators, canning equipment, packaging equipment and material and natural/artificial preservatives required for food processing and preservation.

7. Industry also provides secondary indirect inputs to agricultural and food production through the development of transport and communications, health, housing and social services, manpower development and energy. These secondary inputs include:

(a) Surface, sea and air transport and communications equipment and spare parts, including repair, maintenance and standardization facilities, such as buses, trucks, trains, aircrafts, boats, telephone, radio transmitters and receivers, video equipment and television sets;
(b) Building and construction materials for infrastructure, schools, housing, hospitals and other social services;
(c) Pharmaceutical products (especially drugs, hospital equipment and supplies), textile, leather and other products, recreational facilities for health-care and social programmes set up for the farming population;
(d) Educational and training/learning facilities including books, audio-visual aids, demonstration units, school furniture and supplies for the development of the wide range of skills essential to rural agricultural and industrial development;
(e) Energy generation, transportation and utilization equipment and appliances such as mini hydro-power plants, wind, solar and biomass energy production equipment, high and low tension power transmission cables, transformers and household appliances (e.g. electric, coal, wooden and gas cookers and heating devices).

Given the extent of these primary and secondary inputs, the essentiality of industrialization to agricultural and food production is apparent. It has

Table I

Primary Support Industries related to
Agricultural Development and Food Processing

	Activity	Input Needs	Primary Support Industries
1.	Soil preparation and maintenance	implements/equipment	foundries/forges engineering industries
		soil modifiers (water retention, pH controllers)	chemical industries (perlite, inorganic chemicals, fertilizers)
2.	Planting	seed implements/equipment	foundries/forges engineering industries
3.	Growing and cultivating	water/irrigation implements/equipment fertilizers pesticides	foundries/forges engineering industries fertilizer industries chemical industries
4.	Harvesting	implements/equipment transportation	foundries/forges engineering industries
5a.	Storage and preservation	packaging materials storage depots chemicals	chemical/plastics industries engineering industries steel/aluminium industries building materials industries
5b.	Processing	food processing materials chemicals	capital goods industries packaging industries chemical industries
6.	Distribution	warehouses transportation equipment	building materials industries capital goods industries engineering industries foundries/forges

been estimated that in general industry supplies up to 75 per cent of all inputs to agricultural and food production.

8. The development of the primary and secondary industrial inputs to agriculture requires the development of a wide range of feeder industries and services. Table II outlines the various vertical and horizontal inputs required for the complete range of industrial inputs to agricultural and food production and their impact on the economy as a whole. The horizontal inputs include: the availability of energy; a well-functioning maintenance system; adequate infrastructure; and an efficient distribution system, including storage and related packaging systems. The vertical inputs relate largely to the processing of indigenous raw materials, such as metallurgical industries, engineering industries and chemical industries. Since all those inputs require highly qualified and experienced specialists and technologists, the most important prerequisite becomes manpower development at all levels and in all technological fields.

9. At the same time, the necessary institutional machinery has to be established at the national, regional and subregional levels. This machinery will have to include institutions for: planning and monitoring the industrialization process; carrying out pre-investment studies; research and development; testing, quality control and consultancy services; industrial and investment promotion; regulating technology flows; industrial information; and industrial and technological manpower development.

10. Another aspect of the linkage between industry and agriculture relates to the local transformation of agricultural resources. Economic history shows that development of the industrial sector greatly stimulates that of the agricultural sector not only by providing the necessary inputs but also by absorbing its outputs. The development of agro- and agro-related industries provides scope for the domestic processing of the agriculture produce, some of which are exported in large volumes and at marginal cost, thus increasing their local manufacturing value added and foreign exchange earnings. A recent study by UNIDO on the foreign debt in Africa revealed that in 1982 Africa spent as much as $11.6 billion on the importation of food and industrial raw materials of agricultural origin. Although this figure is grossly underestimated for want of complete data, it represents 19 per cent of Africa's total foreign exchange expenditures in that year. This figure is all

TABLE II

NATIONAL INDUSTRIAL SECTORS AND THE CORRESPONDING INSTITUTIONAL INFRASTRUCTURE

A SCHEMATIC OUTLINE

EXISTING INDUSTRIES

A. AGRO-BASED INDUSTRIES

1. Food Industry
   (a) cereals (b) meat (c) fish
   (d) dairy (e) fruits/vegetables
   (f) fats/oils (g) beverages
   (h) tobacco/coffee/tea/cocoa/spices
2. Animal Feed
3. Textiles
   (a) basic processing (b) garments
4. Leather
   (a) tanning (b) shoes/leather goods
5. Wood Processing
   (a) sawmilling/veneer/plywood/particle board
   (b) furniture (c) prefab hse./bridges
6. Packaging

B. ENGINEERING INDUSTRIES

1. Agricultural Machinery
2. Capital Goods/Industrial Machinery
3. Electrical Machinery
4. Electronics/Computers
5. Transportation Equipment
   (a) automotive (b) railroad (c) marine
6. Printing Machinery
7. Maintenance

C. METALLURGICAL INDUSTRIES

1. Ore Dressing/Preparation
2. Basic Industries
   (a) iron/steel (b) aluminium/light metals
   (c) heavy non-ferrous metals
3. Secondary Metal Processing
   (a) steel rolling
   (b) non-ferrous rolling/extrusion
4. Foundries/Forging

D. CHEMICAL INDUSTRIES

1. Basic Chemicals
   (a) acids (b) alkali/chlorine
   (c) salts
2. Petrochemicals
   (a) basic chemicals/monomers
   (b) synthetic resins/polymers/latices/rubber (c) fibres
   (d) tyres (e) detergents (f) other
3. Plastics Processing/Fabricating
4. Fertilizers
5. Pesticides/Herbicides
6. Pharmaceuticals
7. Alcohol/Fermentation/Waste Treatment
8. Pulp and Paper
9. Glass
10. Ceramics
11. Building Materials
    (a) cement (b) clay/brick (c) gypsum
    (d) prefabricated housing

SUPPORT FUNCTIONS/ACTIVITIES/INSTITUTIONS

A. INDUSTRIAL INSTITUTIONS

1. Research and Development/Industrial Services
2. Industrial Information
3. Standardization/Metrology/Quality Control/Quality Certification
4. Other Institutions Supporting Industry/Industrialization:
   (a) Investment
   (b) Chambers of Commerce/Industrial Associations
   (c) Trade Fairs/Missions
   (d) Industrial Fairs
   (e) Transfer of Technology/Licensing
   (f) Industrial Legislation

B. SMALL-SCALE INDUSTRIES

1. Extension Services
2. Entrepreneurship Development
3. Industrial Estates
4. Industrial Co-operatives

C. MANPOWER DEVELOPMENT

1. Development of Industrial Training Capacities/Institutions
2. Group Training/In-plant Training
3. Individual Fellowship Training

D. ENERGY UTILIZATION IN INDUSTRY

1. Industrial Energy Strategies/Policies/Planning
2. Integrated Industrial Energy Systems
3. Energy Management/Rationalization/Alternatives
4. Energy Information/Consultancy
5. Solar Energy Applications

E. ENVIRONMENTAL ASPECTS OF INDUSTRIALIZATION

F. INDUSTRIAL MANAGEMENT

1. Direct Assistance to (Public Sector) Enterprises
   (a) productivity improvement/strengthening management capacities
   (b) finance/accounting
   (c) management information systems
   (d) marketing/industrial distribution systems
2. Industrial Management Consultancy
   (a) diagnostic consultancy/problem identification
   (b) establishing/strengthening management consultancy capacity
   (c) application of small computers in industrial management
3. Strengthening Government Bodies Responsible for the Establishment and Operation of Industrial Enterprises

DEVELOPMENT OF NEW AND ADDITIONAL INDUSTRIAL CAPACITIES

A. PLANNING AND PROGRAMMING

1. Industrial Surveys
2. Industrial Strategies/Policies
3. Regional Planning
4. Sectoral Planning

B. FEASIBILITY STUDIES

1. Preparation/Evaluation of Pre-Investment Studies
2. Export-Oriented Feasibility Studies
3. Export Processing Zones

C. INVESTMENT PROMOTION

1. Formulation/Preparation/Promotion of Investment Projects
2. Identification/Appraisal of Projects for World Bank Financing
3. Mobilization of Investment Resources in Developing Countries
4. Mobilization of Investment Resources in Industrialized Countries

D. FACTORY ESTABLISHMENT

1. Economic Design of Manufacturing Plants
2. Management of Factory Erection and Start-up

Note: The "existing industries" listed in the column on the left side are typical examples of industrial subsectors of relevance to developing countries; but it must be understood that this list needs to be prepared for each country to reflect the real situation. - The "support functions/activities/institutions" listed under the column in the middle are "horizontal" in nature and are, therefore, relevant to:
(a) all industrial sectors and branches listed in the column on the left and
(b) the various activities related to the establishment of new industries, listed in the column on the right.

the more disturbing since most of the imports could have been locally produced had there been only a minimal development of the industrial capacity (activities) of the country. The absence of that development has only contributed still further to the current external debt crisis facing Africa.

11. Most African countries have not paid sufficient attention to the fact that the agricultural sector supplies raw materials to the industrial sector for processing. Indeed, in most African countries agriculture is the largest component in the industrial sector. In developed countries as well as in more advanced developing countries, the size and growth of both the agricultural and industrial sectors are determined by the size and growth of the domestic market which absorbs the bulk of production and provides the bulk of factor inputs (entrepreneurship, management, manpower for procurement, production and distribution, raw and intermediate materials, equipment and spare parts, implements and tools, technology, physical institutional infrastructure and services, especially consultancy). In order to be able to achieve a similar situation in Africa where domestic markets could absorb increasing volumes of processed agricultural products, specific measures would have to be taken to develop those domestic markets which would also have to be enlarged through economic co-operation.

12. It is also well known that the agricultural and rural sectors provide the manpower, hence the reservoir for the training of skills for the industrial or the services sector. The work force derived from the agricultural sector is best suited to the informal and services sectors. Special measures are therefore needed to improve various skills within that work force, equipping its members with industrial "know-why" and "know-how" capabilities through extensive and determined application of modern education, training and learning methods and techniques.

13. The agricultural sector also provides the most important component in the domestic market for industrial products and a substantial area for the services sector. This implies, at least, an expansion of employment and a widespread availability and use of money. This raises questions related to the rate of growth of industry, its degree of import content and the maintenance of an appropriate mix between labour-intensive and capital-intensive technologies. The concept of the agricultural sector as a

market for the industrial sector also bears other implications. About 60 -80 per cent of the population of Africa live in rural areas and are dependent on subsistence production. Industry, agriculture and services are closely integrated and highly localized in hamlets and villages. The very low density of population in Africa makes distance an important obstacle to the development of mass markets: careful planning is therefore needed.

14. The linkage between industry, agriculture and food production should not be oversimplified. It implies major policy considerations, economic structural adjustments, institutional development and significant investments. African policy-makers and planners will have to take major decisions in such areas as: small-scale and large-scale agricultural production schemes and related investments; development of domestic markets; standardization of the various equipment and spare parts required in the entire agricultural and food production process; intra-African co-operation, especially in respect of trade in industrial raw materials and products, as well as agricultural and food products; and institutional mechanisms, e.g. for R & D, repair and maintenance, trade, consultancy, co-operatives and manpower development.

II. PROPOSALS FOR ACTION

15. The above analysis reaffirms the assertion made by the OAU Heads of State and Government in the Lagos Plan of Action that "the industrialization of Africa in general and of each individual Member State in particular, constitutes a fundamental option in the total range of actions aimed at freeing Africa from underdevelopment and economic dependence".

16. Emergency measures such as food aid, though very important, will not bring about a lasting solution to the African economic crisis: in fact, they will only heighten the region's dependence on external aid. The sole viable approach to the economic problems of Africa lies in a fundamental restructuring of the region's economies.

17. That restructuring process can only be achieved through accelerated industrialization. Difficult and cumbersome as that process may be, African countries have no alternative. The Lagos Plan of Action provides a broad framework for the industrialization of the continent. This framework has been

translated into operational terms in the Programme for the Industrial Development Decade for Africa (IDDA). The Programme for the IDDA and the guidelines for initiating priority actions during the preparatory phase of the Programme provide a broad framework for the short-, medium- and long-term measures to be taken by the African countries, regional and subregional organizations as well as by the international community to develop the industrial sector in Africa with the aim of supporting the development of food and agricultural production.

Measures to be taken by African Governments

Short-term measures

18. While the contribution of the industrial sector to an emergency programme for overcoming the economic crisis facing the African countries may not be readily apparent, a number of short-term programmes should be undertaken, over a five year period, which could make an important contribution to alleviating the emergency situation.

Food production, distribution and conservation, including processing

19. The most important of these measures, to which the African countries should accord high priority when developing their national and subregional programmes, relate to the production, distribution and conservation (including food processing). This calls for the development of programmes and projects in various areas, in particular:

(a) Bulk purchase, blending, packaging and distribution of fertilizers;
(b) Development of simple packaging materials from local raw materials;
(c) Construction of simple storage facilities, such as silos, especially for village communities;
(d) Development of mobile food-processing units, particularly those suited to rural areas.

Combating the effects of drought

20. The experience accquired in the use of plastics in agriculture, irrigation and water management (exploitation, distribution and conservation) as well as soil improvement, through the use of locally available volcanic materials such as bentonite, takes on particular relevance.

Health-care industries

21. Another special short-term measure, which could also contribute significantly to the emergency programme, relates to the development of health-care industries. Activities in this area would include the following:

(a) Mass production of hospital beds, blankets, linen, dressings, etc;
(b) Local production of intravenous fluids, oral rehydration salts (ORS) and vaccines;
(c) Bulk importation, packaging and distribution of drugs.

Repair and maintenance of equipment

22. Various constraints have been encountered in the distribution of relief supplies, a particularly sensitive area being poor maintenance services for transport equipment. Thus, special attention should be given in the short term to industrial activities supporting local transport systems, including:

(a) Strengthening or establishing national repair and maintenance workshops and services;
(b) Upgrading capabilities of local technicians;
(c) Supplying repair and maintenance equipment, including mobile units.

Industrial rehabilitation

23. While it is recognized that in order to accelerate the industrial development of Africa new industrial capacities have to be established, one short-term measure that should be pursued with the utmost urgency relates to the rehabilitation of and improved efficiency in existing (economically viable) factories. In approaching the problem of industrial rehabilitation, a sequence of steps is recommended: first, all identified factories and industrial enterprises should be assessed in terms of their economic viability. On the basis of that assessment, a decision should be taken as to the factories and industries which qualify for rehabilitation. A programme and schedule of inputs required for their rehabilitation should then be drawn up and steps taken to secure the necessary financing.

Reduction of external debt

24. Another short-term measure, which bears implications for the current heavy debt burden and serious foreign exchange problems confronting the

African countries, relates to the repayment of the extensive loans taken on certain large-scale investment projects. In this case, African decision-makers should examine critically the situation in each of the projects concerned and re-negotiate the contracts covering the original loans in order to reach a mutual arrangement for relieving the debt accumulating on such investments.

Training of critical skills

25. The most critical short-term measure and one fundamental to all the areas identified above relates to the massive training of critical skills. The availability of skilled personnel would help to ensure effective management of the industrial sector in general, and industrial enterprises and factories in particular. African countries and organizations should place particular emphasis on acquiring critical skills related, in particular, to policy-making in both Government and industry. Other specialized skills should include those needed for project identification, design, evaluation, negotiation, implementation and monitoring. In addition, selected centres of excellence should be strengthened so as to provide training at the national, regional or subregional levels. A programme for the training of trainers should also receive special attention.

Medium- and long-term measures

26. The medium- and long-term measures to be taken by African countries and organizations for the industrialization of Africa are identified and elaborated in the Programme for the Industrial Development Decade for Africa. Without undue prejudice to any of the measures contained in that Programme, certain areas of critical importance are emphasized below.

Industrialization strategies, policies and planning

27. Faced with the various alternative and sometimes contradictory strategies and policy measures being proposed to African countries by external sources, it is essential for each African country to define clearly its industrial development perspective prior to developing a truly indigenous industrialization strategy, policy and plan. This would enable each country

to define clearly its needs and be in a better position to absorb foreign investment and assistance.

Industrial intitutional machinery

28. In order to ensure effective co-ordination, development, implementation and monitoring of industrialization programmes, it is necessary for each African country and subregional organization to implement fully the recommendations contained in the Programme for the Decade relating to the strengthening or establishment of Co-ordinating Committees and Operational Focal Points at the national and subregional levels.

29. In addition, similar steps will have to be taken in respect of other critical industrial institutions, especially those concerned with industrial training; development, acquisition, adaptation and regulation of technology; standardization and quality control; extension services to small-scale industries; industrial consultancy and information; and industrial financing and investment promotion.

Industrial manpower and technological capabilities

30. Given the magnitude of industrial skills required in Africa in both urban and rural areas, a comprehensive programme will be needed for the accelerated development of industrial manpower and technological capabilities, including the use of modern micro-electronic technologies (e.g. computers) for human resources development. In this regard, special programmes should be developed for the training, on a continuous basis, of critical skills such as those identified under short-term measures. In addition, local capabilities should be developed for the selection and application of new technologies, especially in the area of genetic engineering/biotechnology, to improve food production, preservation and processing.

Development of core industries

31. A crucial medium-/long-term measure relates to the development of core industries in the priority core industrial branches specified in the Programme for the Industrial Development Decade for Africa. The following industries warrant special emphasis:

(a) Metallurgical industries to provide the wide range of materials required in the engineering industry;
(b) Engineering industries (including foundries/forges) to enable the region to manufacture the equipment, machinery and spare parts needed for industry and agriculture;
(c) Chemical industries to provide fertilizers, pesticides, process chemicals and packaging materials particularly relevant to agricultural and food production;
(d) Building materials industries to provide the inputs needed for housing as well as building the continent's infrastructure;
(e) Capital goods industries to produce equipment for transportation, energy generation and communications;
(f) Pharmaceutical industries to provide the entire region with medical supplies and vaccines at the lowest possible cost;
(g) Industries processing local raw materials and energy resources to earn foreign exchange through both import substitution and exports as well as meet, at low cost, local energy needs.

Small-scale industries

32. In connection with the above, particular consideration also has to be given to the role of small-scale industries. In addition to those small-scale industries producing consumer goods (e.g. textiles and garments, shoes and leather goods, furniture, processed fruits and vegetables, etc.), special efforts should be made to promote those feeding and supporting medium- and large-scale industries (e.g. foundries, manufacture of nuts and bolts, springs, special electrical motors, specialized chemical compounds, etc.).

Mobilization of financial resources

33. African Governments should take special measures to mobilize and utilize more effectively both local and external financial resources for the implementation of their industrialization programmes. The allocation of resources in national budgets should be reassessed with a view to increasing industrial programme allocations to a minimum of 15 per cent. Furthermore, in negotiating external resources, especially for agricultural programmes and projects, the Government should ensure that the financial resources also cover the local production of industrial inputs to those programmes and projects. Special mechanisms also need to be set up and appropriate human and financial resources allocated to promote intra-African industrial co-operation, especially in the establishment of multinational industrial enterprises and subregional projects. In this connection, industrial projects and programmes should be included among the priorities for the African Fund for Famine and Drought.

Intra-African industrial co-operation

34. The preparation of initial integrated industrial promotion programmes at the subregional level, within the framework of the Industrial Development Decade for Africa and on the basis of the meetings convened by ECA, OAU and UNIDO during the preparatory phase of the programme, provides a basic framework for the promotion of intra-African industrial co-operation. It is therefore essential for Member States to take all necessary steps towards the effective implementation of those programmes in harmony with similar initiatives being taken by a number of subregional organizations. A critical action in this respect relates to the need for Member States to enter into serious negotiations on well-defined and prepared inter-country or subregional projects.

Measures to be taken by the international community

35. In view of the necessity and importance of international co-operation, the international community as a whole and the international organizations in particular should intensify their co-operation with the African countries and organizations in the implementation of the Lagos Plan of Action, the Final Act of Lagos and the Programme for the IDDA. These constitute the priority programmes to be undertaken by the African countries in their economic development, especially in the attainment of self-sufficiency in food production. To this end, the present structure and pattern of capital and development assistance flows to Africa should be re-examined and adjusted in accordance with the priorities accorded in the Lagos Plan of Action in general and to ensure the financing of industrial programmes and projects in particular.

Actions by UNIDO

36. As lead agency within the United Nations system responsible for the industrialization of the developing countries in general, and for the Programme for the Industrial Development Decade for Africa in particular, UNIDO should intensify its assistance to the African countries and organizations in the formulation and implementation of their Decade-related industrial programmes and projects. Such assistance should encompass the

entire industrialization process including, in particular: industrial policy and strategy formulation and planning; strengthening or establishing new industrial institutions; development of industrial manpower and technological capabilities; development and utilization of natural resources, including energy technologies and equipment; industrial and investment promotion; and project identification, preparation, evaluation and negotiation, especially in respect to turnkey, investment or technology contracts. The UNIDO secetariat's technical co-operation programme for the implementation phase of the Industrial Development Decade for Africa presented to its Fourth General Conference in Vienna in August 1984 provides a useful framework for such assistance.

37. UNIDO should also intensify its other activities in Africa related, in particular, to: the organization of Solidarity Meetings within the framework of industrial co-operation among developing countries; the mobilization and utilization of the vast experience available in non-governmental organizations; the conduct of industrial studies especially at the regional or country levels, leading towards the eventual production of the Industrial Map of Africa; investment promotion, including the organization of investment forums and promotional meetings; the System of Consultations; and technological advisory services and information exchange systems.

38. Since the volume, scope and magnitude of the assistance provided by UNIDO to the African countries depends upon the resources available to the organization, the African countries should reiterate their call to the international community, especially the donor countries, to increase the resources of UNIDO. At the same time, the African countries and organizations should ensure that industrial projects are accorded high priority in their multilateral (especially the UNDP), bilateral and other technical co-operation programmes. The World Bank, the African Development Bank, Arab Bank for Economic Development in Africa (BADEA) and other international and subregional development finance institutions should also intensify their joint programmes with UNIDO in favour of the African countries. Finally, the special fund established by the World Bank for sub-Saharan Africa should accord high priority to industrial projects in Africa, and special arrangements should be made to utilize the experience of UNIDO accordingly.