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Follow-up Subregional Meeting on the
Promotion of Intra-African Industrial Co-operation
within the Framework of the Industrial
Development Decade for Africa (IDDA)*

Dakar, Senegal, 30 October - 3 November 1989

SUBREGIONAL CO-OPERATION
IN THE FIELDS OF
INDUSTRIAL TRAINING, CONSULTANCY AND ENTREPRENEURSHIP**

Prepared by
the UNIDO Secretariat

* Organized by UNIDO, in co-operation with the Economic Community of West African States (ECOWAS), the Economic Commission for Africa (ECA) and the Government of Senegal.

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INTRODUCTION

1. This paper was prepared in connection with the follow-up subregional meeting on the promotion of intra-African industrial co-operation within the framework of the Industrial Development Decade for Africa (IDDA) to be held at Dakar (Senegal) from 30 October to 3 November 1989. It represents an effort to reflect the priorities and significance of the industrial support services and institutions necessary for the sustainment and acceleration of industrial development in the subregion. Due consideration was given to the particular stage of development attained by the subregion and the infrastructure developed in the respective countries for such services during the process of industrialization over the past decades.

2. The first chapter gives a brief rationale for the need to support industrial services in the subregion. The second chapter presents an overview of the state of industrial support services in the subregion in respect of industrial training, industrial consultancy and engineering services and industrial entrepreneurship. The third chapter puts forward proposals for the promotion of subregional co-operation in furthering the development and utilization of the above industrial support services.

3. The proposals were advanced with a view to generating discussion at the meeting, taking into account both the need for co-operation among the countries of the subregion and the potential contribution that some countries of the subregion can make to the industrialization efforts of the other subregions in Africa. Discussion at the meeting led to recommendations for intensifying co-operation among the countries of the subregion in the areas of industrial training, consultancy and engineering services, exchange of information and industrial entrepreneurship, as well as to recommendations for appropriate follow-up action by UNIDO and other organizations. Those recommendations and amendments proposed during the meeting are reflected in this paper.

I. BACKGROUND

Industrial training, consultancy and engineering services

4. It is now recognized that the pace and direction of industrial growth and innovation as well as of economic and social development are determined by the availability of the right kind of trained manpower - in the right numbers, at the right time, in the right place and with the right balance of technical knowledge and practical skills. The broad range of occupational categories that are essential to industrial development includes managers, scientists, technologists and professional engineers; supervisors, technicians, craftsmen, skilled, semi-skilled and unskilled workers; and support-service personnel trained in a variety of skills (e.g. engineering design, production technology, testing and quality control, materials management and value engineering, research and development, feasibility studies and consultancy).

5. Similarly, there is need for a core of personnel trained in the surveying, exploration, extraction, development and processing of natural raw materials. Equally essential are skills in such fields as economics, accountancy, information science, sociology, marketing and finance. These are the necessary requirements for undertaking industrial consultancy work and for carrying out such functions as financial management, marketing, inventory

control and other related services which complement the engineering and technological services necessary for industrial operations.

6. In order to develop the capabilities required to cover this broad range of occupational categories, effective institutional structures are needed to provide educational, training and research as well as consultancy engineering and other services. In addition, appropriate mechanisms are required to co-ordinate, implement and monitor the development of those capabilities, as are effective consultations and co-operation between Government, industry and educational and training institutions. Financial, material and other support systems will be needed to back up all these steps.

Industrial entrepreneurship

7. Although the development of indigenous entrepreneurial capabilities for the promotion of small- and medium-scale enterprises has long been recognized as an essential ingredient in the acceleration of economic development of the African countries, it has not been accorded the importance that it deserves within the various national plans of the African countries. In most African countries, the activities of local entrepreneurs span a wide range of areas such as commerce and trade, construction, transportation, agriculture and services. It therefore becomes desirable to focus attention on the accelerated development of local entrepreneurial capabilities for small- and medium-scale industries.

8. Indeed, sustained industrial development cannot be successfully sustained without a very large number of entrepreneurs, be they in large-scale basic industries or medium- and small-scale industries, or in private or public enterprises. The effective development of these groups is a sine qua non for any meaningful industrial development in Africa. The development of small- and medium-scale industrial entrepreneurship, however, has suffered from the lack of local capacity to collect and disseminate information on the type of goods that can be produced locally, raw material sources, the technology involved, marketing and distribution systems. This may also be attributed to the absence of suitable financial and incentive schemes and infrastructure, specifically designed to assist small- and medium-scale entrepreneurs and so enable them to take full advantage of new flows of capital, technology and skills that have emerged in the developing countries during recent years.

II. OVERVIEW OF THE STATE OF INDUSTRIAL SUPPORT SERVICES IN THE SURREGION

9. Industrial support services play a crucially important role in the identification, preparation, design, implementation, and efficient operation of industrial projects throughout the industrialization process. The development of local capabilities and capacities and industrial institutions for accelerating industrial development has been underscored in the Lagos Plan of Action and in the programme for the Industrial Development Decade for Africa (IDDA).

10. The lack of adequate capabilities and capacities at all levels from project inception to the operation of industrial plants, ranging from project identification, preparation, design, appraisal, promotion, procurement of equipment, plant and other materials, contract negotiations, to operation and

maintenance of industrial plants, has caused considerable wastage and led to the misdirection of scarce financial resources in some countries of the subregion. This has resulted in a high level of dependence on expensive expatriate services and know-how, consuming over half of the annual assistance to Africa estimated at \$7 - 8 billion. Moreover, the lack of information on and knowledge of the natural resources available within the countries themselves, as well as lapses in decision-making in respect of physical and institutional infrastructure, policy framework and associated legal, fiscal, trade, monetary and financial instruments have been among the most serious constraints on industrial development identified in the programme for the Decade and the Lagos Plan of Action.

11. Chapter I of this document has already pointed to the need to develop the adjunct industrial support services in respect of industrial training, consultancy and engineering services, which encompass a wide spectrum of activities. There is a need to consolidate the diverse programmes already initiated in the subregion in order to improve, expand and diversify the capabilities required for effectively and efficiently undertaking the many highly sophisticated, professional and specialized tasks related to the pre-investment, investment, implementation and operational phases of industrial projects, enterprises and programmes. Similar capabilities are needed to carry out such tasks as project planning, design and execution, including technology selection and acquisition; contract preparation and negotiation; plant design, construction, erection and management; and cost, material, quality and production control.

12. With regard to industrial entrepreneurship that provides the real thrust to dynamic industrial development, it is essential to fill any gaps in the industrial structure of the countries of the subregion related to small- and medium-scale industries. Considering its unique contribution to the industrialization process in particular and socio-economic development in general, the promotion of industrial entrepreneurship deserves special attention in the subregion.

13. It is generally understood that industrial consultancy and engineering services usually account for some 3-5 per cent of the overall cost of a project. Their real significance lies in the fact that they ensure accuracy throughout all stages of a project, in addition to securing major foreign exchange savings. Furthermore, properly trained manpower is the determining factor in the proper design and implementation of projects and the efficient operation of industrial enterprises. It is also an important element in the capital as well as operational costs of industrial enterprises, but any generalization as to its proportion is difficult. The situation in respect of support services in the subregion is briefly described below.

Industrial training

14. In Ghana, industrial training is co-ordinated by the Ministry of Industries, Science and Technology. It has under its jurisdiction other training centres or institutions such as:

- National Board for Small-Scale Industries (NBSSI)
- Management Development and Productivity Institute (MDPI)
- National Vocational Training Institute (NVTI)
- Opportunity Industrialization Centre (OIC)

- Ghana Regional Appropriate Technology Industrial Service (GRATIS)
- Ghana Institute of Management and Public Administration (GIMPA)

These institutions offer training in skill development and management.

15. In addition to the polytechnics, technical institutes and trade training centres, other major institutions providing industrial training in Ghana include:

- Universities at Legon, Kumasi and Cape Coast
- Technology Consultancy Centre (TCC), Kumasi
- Technology Transfer Centre (TTC)
- Project for the Development and Application of Intermediate Technology (DAPIT)

The main objective of TTC is to promote the transfer of technology and to make it available to the people that need it. In so doing, it lends support to small-scale operators.

16. In the Gambia, industrial training is provided by the following institutions:

- Gambia Technical Training Institute (GTII)
- Management Development Institute (MDI)

The Gambia Technical Training Institute offers general industrial training. GTII focuses on the areas of mechanical engineering, welding and fabrication, electrical installation, motor vehicle mechanics, carpentry, micro-computer and industrial management. MDI, on the other hand, deals with training in public administration, the purpose for which it was established in 1984, and it is now putting emphasis on the development of small-scale industries.

17. In Liberia, a World Bank study in 1979 indicated that the small enterprise sector had not been properly organized, in addition to having no access to credit facilities. The three institutions established by the Government to promote industrial training are:

- Agricultural and Industrial Training Bureau (AITB)
- Liberia Institute of Public Administration (LIPA)
- Don Bosco Polytechnic

AITB offers technical training, LIPA trains civil servants and Don Bosco Polytechnic, formed in 1988, concentrates its activities on the area of technology. Of the country's five colleges, the College of Technology conducts research into low-cost housing materials.

18. Guinea Bissau has very limited facilities for industrial management training. Training is provided by the Instituto Nacional de Formacao (INAFOR) and its two subsidiaries: Centro de Formacao Industrial (CENFI) and Centro de Formacao Administrativa (CENFA). At present the Ecole Nationale offers training in fishing technology. The country has a vast natural resource potential, yet it lacks the skilled manpower to undertake feasibility or pre-feasibility studies needed in order to tap that potential. The immediate solution is co-operation with other countries while long-term infrastructure is being put in place.

19. In Cape Verde, the Cabinet d'études et de planification of the Ministry of Industry and Energy contributed to the training of entrepreneurs and plant technicians. Other bodies included: the Institut de formation et de perfectionnement professionnel (IFAP) and the Centre de formation et de perfectionnement administratif (CENFA) which provided training in various fields, primarily management, administration, accounting and secretarial skills. Training related to mechanical, civil and electrical engineering as well as commerce was also provided by a technical school and a training centre at St. Jorghinho which trained carpenters, builders and electricians. The Ecole de formation nautique had subregional potential. The Government had also drawn up a human resource development programme for the industrial sector that had not been implemented for want of funds.

20. In Sierra Leone the Directorate of the Institute of Public Administration and Management (IPAM) under the Ministry of Education is responsible for providing general training in administration and management in the general public administration sector. In addition, it offers courses in accountancy, inventory control and store management. With regard to industrial development, the Institute organizes training in project development and management, credit (agriculture) management, computing and statistics, as well as data-processing.

21. The other major institutions providing industrial training in Sierra Leone are:

- Department of Mechanical and Electrical Engineering of the Sierra Leone University
- Opportunity Investment Centre (OIC)
- Commercial Training Centre for the Food Industry
- National Industrial Development and Finance Organization (NIDFO)
- Management and Business Development Technical Institute
- Technical Institute in Kenema

NIDFO trains in the development of entrepreneurial managerial and labour skills.

22. In the Côte d'Ivoire, in addition to the University of Abidjan that offers training in engineering, other institutions are active such as the Centre Ivoirien de Gestion des Entreprises (CIGE) which is a subregional training institution for French-speaking African countries that provides training in the management of small-scale industrial enterprises. It aims at strengthening the management capacity in the small-scale industry sector. Another institution is the Association des Institutions de Formation et du Perfectionnement en Management d'Afrique Francophone (l'AIMAF) for the whole of Africa. Set up in July 1986, it promotes co-operation among its members through the exchange of information and experience with a view to increasing training and management capacities, and enhancing technical knowledge in the field of training of trainers. These institutions are under the supervision of the Ministère de L'Enseignement Technique et de la Formation Professionnelle.

23. In Nigeria a large number of institutions and universities that offer training in the industrial field. Furthermore, more than 20 research institutes are engaged in the promotion of industrial development in one way or another. Some of these institutions are:

- Centre for Management Development (CMD)
- Nigeria Institute of Management (NIM)
- Nigeria Institute for Social Economic Research (NISER)
- Industrial Development Centres at Oshogbo, Zaria and Owerri
- National Centre for Economic Management and Administration
- Raw Materials Research and Development Centre

24. These institutions work under the Ministry of Industry, which is responsible for formulating industrial policy, while the Ministry of Science and Technology formulates and monitors national policy on science and technology, promotes and co-ordinates technology transfer programmes, as well as scientific and technological research and development. 19 Industrial Development Centres throughout the country provide technical advice and training as well as on-the-job training of artisans in the handling of mechanical tools and machines. They also advise on operational problems as well as offer training in product design and quality improvement.

25. The Raw Materials Research and Development Council (RMRDC) was set up to: create awareness of the important local industrial raw materials; stimulate interest in the use of those raw materials; focus attention on research into utilizing local raw materials and enhancing their commercialization; and promote research and development activities that improve the quality and efficiency of the productive capacity of local artisans and indigenous technologists. This institution offers an excellent opportunity for all countries in Africa in general, and those in West Africa in particular, to learn about the processing and sourcing of the local raw materials for effective industrialization in Africa.

26. Another regional centre in Nigeria is the African Regional Centre for Engineering Design and Manufacturing (ARCEDEM), whose primary objective is to help African countries build up the capacity to design machinery and equipment in areas essential to the economic development of Member States. It also assists Member States to improve their ability to design and adapt machinery and equipment in selected sectors of industry. Since 1982, ARCEDEM has offered training courses and study tours to 211 trainees. The centre should be strongly supported so that it can expand its training activities to cover such additional areas as:

- Design adaptation techniques;
- Product development, drawings, designs and specifications;
- Preparation of manufacturing process sheets and selection of industrial raw materials;
- Production methods and selection of appropriate machinery and equipment;
- Production techniques control, material control and inspection;
- Technological and engineering information.

Lack of capabilities in these areas imposes major constraints on small- and medium-scale industries, and were the problems to be overcome, it would greatly enhance the efficiency of industrial consultancy services.

27. In Senegal, the institutions involved in the promotion of industrial development are numerous. They include:

- Centre Expérimental de Recherches et Etudes pour l'Équipement (CEREEQ)

- Consortium de Recherches et d'Etudes pour l'Information et la Formation (CERTIF)
- Société de Gestion du Domaine Industriel de Dakar (SCDIDA)
- Société de Gestion du Domaine Industriel de Kaolack (SODIKA)
- Société de Gestion du Domaine Industriel de Saint-Louis (SODISA)
- Société Nationale d'Etudes et de Promotion Industrielle (SONEPI)
- Société de gestion du domaine industriel de Thiès (SODITH)
- Société de gestion du domaine industriel de Ziguinchor (SODIZI)
- Zone franche industrielle de Dakar (ZPID)

All these institutions deal with training in the small-scale industry sector and upgrading technical skills for those working in that sector. ZPID, which was open to other countries in the subregion, actively promoted industrial development.

28. In addition to the University of Dakar which offers training in engineering, another regional institution, the African Regional Centre for Technology (ARCT), had been set up. It provides demonstrations, on-the-job training and information related to a broad range of technologies, with particular emphasis on renewable energy and food processing. Another institution with subregional potential was the Centre africain d'études supérieures en gestion (CESAG) at Dakar, while two other institutions also provided training: Centre industriel de formation et de perfectionnement de Dakar - Marine (a body with regional potential) and Centre national de qualification professionnelle (CNQP).

29. In Mali the Chamber of Commerce undertakes activities related to improving the skills of industrial workers. In so doing, it co-operates with the Government of the Federal Republic of Germany. In addition, the Centre d'Etudes et de Promotion Industrielle provides training in the preparation, evaluation and monitoring of projects, offers enterprises technical and management advice and assists artisans. Another centre, l'Institut de Productivité et de Gestion Prévisionnelle (IPGP) offers training in improving the management of public enterprises. Two other centres had subregional potential: Centre régional d'énergie (CRES) at Bamako and Ecole supérieure des industries textiles (ESITEX) at Segou. The latter institute was scheduled to take up its activities in December 1989. In addition, the following training institutions operated in the country:

- Ecole centrale pour l'industrie, le commerce et l'administration (ECICA)
- Centre de formation professionnelle (CFP)
- Ecole nationale d'ingénieurs (ENI)
- Société nationale d'étude et de développement (SNED)

30. In Niger the institutions that deal with industrial training include:

- Société Nigérienne de l'Electricité (NIGEELEC)
- Société Nationale de Transport (SNTN)
- Centre de Formation de la Société de Mines de l'Air (SOMAIR)
- Centre technique Kalmaharo.
- CET Issa Béri
- Lycée technique de Maradi
- Centre de formation professionnelle aux techniques (CFPT)
- Ecole des mines et de géologie (EMIG) (starting November 1989)

All these centres offer training in electrical and mechanical engineering.

31. In Guinea the only centre offering training related to industrial development is the Centre Pilote de Guinée. It provides training in spare parts manufacture, design and industrial security. The centre also manufactures prototypes for the use by a limited number of people with limited professional resources. A second institute, the Centre national de perfectionnement en gestion des entreprises (CNPG) provides training in the management of enterprises as well as in the preparation and evaluation of projects. Furthermore, the driving force constituted by pilot centres, such as the centre in Guinea, should not be underestimated.

32. In Togo the Cacavelli Centre, a regional centre that needs to be supported, deals with training in the production of low-cost building materials.

33. In Burkina Faso, industrial training is provided under the auspices of the Chambre de commerce, d'industrie et d'artisanat (CCIA), the University of Ouagadougou and the Institut burkinabé d'énergie (IBE).

Industrial consultancy and engineering services

34. The African consultancy companies, which have come into existence relatively recently, are either the outcome of initiative of former civil servants who after a number of years of experience have gone into private business or the result of a gradual takeover by national management staff of former affiliates of foreign firms, most of which have maintained ties with their parent companies. Although African consultancy companies started by undertaking such assignments as architectural studies and civil engineering works over the past Decade, they have made increasing inroads into the area of industrial consultancy and engineering services. Some of the companies are building up expertise in such branches as food, sugar, cement, iron and steel, metallurgy and building materials and other manufacturing industries. However, these consultancy enterprises still face a number of problems, some of which derive from Government policies and those of financial institutions. The preconceived idea that foreign expertise is inherently superior still prevails, and some of these firms have a very weak financial base. Greater efforts should be made to use the services of African consulting firms.

35. In the West African subregion, some of the most important consulting firms include the following:

- Public Finance and Management Consultancy Group (Nigeria)
- Centre d'Etude et de Promotion Industrielle (CEPI) (Benin)
- Société Nationale d'Etudes pour le Développement (SNED) (Mali)
- Société Africaine d'Etudes Techniques (ORGATEC) (Senegal)
- Société Africaine de Management (SAMAG) (Senegal)
- Africonsult (Senegal)
- Société nationale d'études et de promotion industrielle (SONEPI) (Senegal)
- Société Nouvelle des Etudes de Développement en Afrique (SONED-APRIQUE) (Senegal)
- Organisme de Réalisations Economiques et Techniques (ORETEC) (Senegal)
- UNEFICO Senegal Promotion (US?) (Senegal)

- J.S. Addo Consultants (Ghana)
- Massata Cisse Consultants (Senegal)
- Ali Sow Consultants (Senegal)
- Mamadou Seck Consultants (Senegal)
- Latsoucabé Meïssa Fall Consultants (Senegal)
- Institut of Public Administration and Management (Sierra Leone)
- Société Togolaise d'Etudes et de Développement (SOTED) (Togo)
- ONERCIT (Niger)
- Djibo et Associés (Niger)
- Cabinet EFIC (Niger)
- SOCOTEC (Niger)
- Sambo Abdoulaye (Niger)
- Technology Consultancy Centre (TCC), University of Science and Technology (Ghana)
- Ghana Regional Appropriate Technology Industrial Services (Ghana)
- Ghana Investment Centre (Ghana)
- Sahel Consult (Burkina Faso)
- Federal Institute of Industrial Research (FIIRO) (Nigeria)
- Project Development Agency (PRODA) (Nigeria)
- National Metallurgical Development Centre (Nigeria)
- Omory Limited - Food processing and preservation (Nigeria)
- Oakfirm Management Consultants (Nigeria)
- Ujama Associate - Small-Scale Industries Management (Nigeria)
- Omolayole & Associates Management (Nigeria)
- Peat Marwick Ani Ogunde and Company - Financial Management (Nigeria)
- Akintola Williams - Financial (Nigeria)
- Dele Olowoyo and Associate Engineering Consultants (Nigeria)
- Wintech Nigeria Ltd. Engineering Consultants (Nigeria)
- Nukom Engineering Consultants - Electrical and Mechanical (Nigeria)
- Centre Point Securities Ltd., Investment Services (Nigeria)

Industrial entrepreneurship

36. Although priority has been accorded to the development of small- and medium-scale industrial entrepreneurship by the countries of the region, the results achieved so far are not commensurate with the efforts deployed. Even though credit facilities are available to small entrepreneurs in most of the countries, they are not easily accessible because of the security required of the enterprises which the banking sector considers to be high-risk and low-return undertakings. In Ghana, however, Ghana Enterprise Development Commission (GEDC) offers loans to small-scale industries, while the Bank of Ghana has established a Fund for Small and Medium Enterprises development. In existing enterprises there has been stagnation and some failures because the policies, incentives and administrative requirements have not always encouraged small entrepreneurs.

37. Manufacturing has never been a tradition in most of the countries in the subregion. Many indigenous industrial entrepreneurs therefore do not have the required management skills to set up manufacturing enterprises, nor the technological skills to operate them properly. It is also difficult for small- and medium-scale industrial enterprises to penetrate the local markets which, for years, have been dominated by large units. Further, there is no vertical integration between large and small-scale enterprises. Such a linkage could, through subcontracting, build confidence between them, improve the product quality of small units and create a climate favourable to skill development and technology transfer.

38. Industrial entrepreneurship might also be enhanced by the activities of the Federation of Associations of West African Industrialists (FAIAO) established in 1988 at the instigation of ECOWAS and the Association of Nigerian Industrialists. It is committed to promoting co-operation between industrial enterprises in the subregion and it could constitute an important source of information related to industrial development.

39. The main problems affecting the development of the sector in the subregion include: limited authorized capital; lack of trained skills and training facilities; shortage of raw materials (both domestic and imported); spare parts; limited domestic market owing to the low purchasing power of the population; fiscal and monetary policies which are highly discriminatory against private entrepreneurs and inadequate credit facilities; and shortcomings in the institutional framework which could otherwise provide encouragement to private entrepreneurs. The measures taken by some of the countries of the subregion to promote the development of small-scale industrial entrepreneurship are presented below.

40. Of late, most countries in the subregion have shown great interest in the development of small-scale enterprises and have accorded them priority in their development national plans. For example, Liberia has created the Small Enterprises Financing Organization (SEFO) to assist in organizing credit facilities for small-scale entrepreneurs. The Business Advisory Services (BAS) and Small Enterprises Development Bureau have been set up to strengthen the capability of the National Investment Commission to assist to small-scale entrepreneurs.

41. Given the pronounced trend towards privatization in the subregion, due emphasis has been placed on the promotion of small-scale enterprises. In Ghana, the National Board for Small-Scale Industries (NBSSI) has been set up to co-ordinate the activities of institutions dealing with the promotion of small-scale industries, while the Intermediate Technology Transfer Unit (ITTU) under GRATIS and the Management Development and Productivity Institute (MDPI) not only conducts feasibility studies, but also provides technical and business advisory services to small-scale entrepreneurs.

42. In Nigeria, the Nigerian Industrial Development Bank and the Nigerian Bank for Commerce and Industry have been assigned the role of financing industrial enterprises especially those in the small-scale industry sector. The Industrial Development Centres (IDCs) have also been established in order to improve technological capacity of the small- and medium-scale enterprises.

43. In Guinea the Government is launching a new promotional policy for the private sector, especially in the agro-based industries which will provide the basis for agricultural development. Entrepreneurship development has also been accorded high priority. A number of national institutions are concerned with promoting and establishing industrial enterprises:

- Office national de promotion des petites et moyennes entreprises (ONPPME)
- Chambre de commerce, d'industrie et d'agriculture (CCIAG)
- Centre national de promotion des investissements privés (CNPIP)
- Bureau d'aide à la reconversion des agents de la fonction publique (BARAF)

The Government has undertaken a study on rationalizing and harmonizing the activities of these four institutes.

44. Cape Verde has an Industrial Promotion Unit (UPI) at the Ministry of Industry and Energy. Established in 1985, its general mandate is to promote industrial investment and assist industrial enterprises in all areas of activity. Hitherto, UPI has been a department of the General Directorate of Industry rendering useful services to promoters and enterprises. However, given the lack of human and material resources and other constraints, the Government has decided to upgrade the unit into an agency enjoying administrative and financial autonomy, and to strengthen its capacity in the following areas: providing national and foreign promoters with general information on investment information and legislation, procedures and formalities, products, technologies, markets, technical assistance and financial institutions; guiding promoters through procedures, ensuring quick feedback and helping to settle any problems that might arise; encouraging contacts between local promoters and technical partners and/or foreign financial partners, and providing technical and legal assistance in negotiating and drawing up contracts; assisting promoters and entrepreneurs in the preparation of preinvestment studies and in solving specific problems related to initiating or implementing projects; participating in joint studies on industrial policy and environmental economies, export promotion programmes and training schemes; and ensuring implementation of the small-scale industry support programme and participating in industrial promotion endeavours such as the industrial development fund and industrial zones. Based on conditions set down in the small-scale industry support programme, the fund is used to finance: pre-investment studies; programmes for the acquisition, development or adaptation of technologies; technical assistance in setting up and launching projects and in handling operational problems; professional training and improvement programmes for entrepreneurs, personnel and skilled workers; and programmes promoting products abroad.

45. In Guinea Bissau, it appears that adequate attention has been paid to the development of small-scale industries. Yet it would seem that were attention given to the small-scale industry sector, it would greatly improve the country's long-term prospects of building up an entrepreneurial base.

46. In both Burkina Faso and the Gambia, where small-scale entrepreneurs still face some financial problems for want of their inability to prepare bankable projects, the Governments have taken positive steps by creating the appropriate institutions: in the case of the Gambia, the Management Development Institute (MDI).

47. In Niger, the Government has introduced a policy promoting the private sector. Measures are thus being adopted that will lead to the creation of an environment favoring investment, primarily a support programme for private initiative, revision of the investment code and other steps. The Government thus no longer intervenes in the establishment or management of enterprises, but merely in the promotion of private enterprises. In order to facilitate diversification of production, the Government has intensified training programmes so as to provide people with the basic skills necessary to establish their own businesses. The Government also offers financial support through a fund that is drawn on to finance studies, and it offers low-interest loans in an unbureaucratic manner.

48. In Togo, a study was carried out during 1986, on the support system for the small-scale industries, in the course of which 97 small-scale enterprises with investment of less than 300 million CFA were studied. The survey

categorized those enterprises on a subsectoral basis, with the majority featuring in the production of food, beverage and paper. The problems identified in the survey related to: smallness of market; ensuring the viability of the domestic market; consumer preference for imported rather than locally produced goods; and difficulty in obtaining bank credit for want of suitable feasibility studies. The Government has since created a bureau that provides legal and financial advice to would-be entrepreneurs, and it has launched training programmes to combat the lack of skills. It has also established a Togolese centre for investors to assist local small-scale entrepreneurs.

III. PROPOSALS FOR THE PROMOTION OF SUBREGIONAL CO-OPERATION IN THE DEVELOPMENT AND UTILIZATION OF INDUSTRIAL SUPPORT SERVICES

49. Proposals outlined in this chapter have been motivated by the fact that the industrial support services need to be improved in order to: (i) execute the projects currently under negotiation or implementation; (ii) create the specialized support services required in some countries; and (iii) improve a selected number of existing institutions (in addition to those agreed upon at the subregional meeting in Lomé in 1985).

50. A review of the projects proposed in the revised programme reveals the need for support services either at the national or subregional level to cater for such activities as:

- Design of processes and products/components as well as production of tools (e.g. dies, jigs, fixtures and common services such as electroplating and heat treatment);
- Identification, planning and development of a series of support and feeder industries to supply products, components and sub-assemblies;
- Laboratory facilities for testing and analysing various industrial products;
- Setting up pilot units to test new technological processes;
- Plant maintenance and engineering facilities to support the efficient and smooth operation of the existing industrial enterprises; and
- Dissemination of technological information.

51. The experience and expertise in the development of human resources and industrial consultancy and engineering services for industrial development acquired by some countries in the subregion could be usefully shared with others. Selected national institutions could become training centres or centres of excellence within the region or subregion. Consideration should be given to the establishment of appropriate machinery, at the subregional level, for initiating and co-ordinating co-operative activities and taking advantage of intergovernmental organizations already established in the fields of industrial and economic development.

52. A review of the state of industrial support services indicates that most countries of the subregion have developed a number of institutions for

industrial training, consultancy and engineering services with respect to heavy industries such as food-processing, iron and steel, engineering, metallurgy, metal industry, electric and electronic industries. Those institutions can provide services to the other countries in the subregion and support the development of similar facilities in those countries, if so needed.

53. Nigeria, Ghana, Senegal and Côte d'Ivoire appear to have highly developed and advanced institutions for the development and promotion of small- and medium-scale industries. Here again, some of these institutions could provide services to other countries in the subregion in respect of related projects, or in support of the development of similar institutions, if so needed.

54. In the light of the above, it is considered desirable to formulate a programme promoting greater co-operation between the countries of the subregion in the development and utilization of industrial support services. This will contribute significantly to enhancing subregional self-sufficiency and independence in industrial support services. In this connection, it may be deemed desirable to select some outstanding centres/institutions within the subregion and augment their technical capabilities so as to be able to meet the needs of other countries in the subregion.

Industrial training

55. The following institutions may be considered and adopted, within the framework of the subregional programme, as regional training centres or centres of excellence in the respective fields. The list does not purport to be exhaustive and could be reviewed from time to time.

(a) Agro- and agro-related industries subsector

Federal Institute of Industrial Research, Oshodi (FIIRO) (Nigeria)
Food Research Institute (Ghana)
Institut supérieur des sciences et techniques halieutiques (ISSTH)
Nouadhibou (Mauritania)
Centre Régional pour le Développement de la Pêche Continentale
(CRDP) (Mauritania)
Institut de technologie alimentaire (ITA) (Senegal)
Ecole supérieure des industries textiles (ESIEX), Segou (Mali)
Leather Research Institute (LERI), Zaria (Nigeria)

(b) Metallurgical industries subsector

National Metallurgical Development Centre, Jos (Nigeria)

(c) Engineering industries subsector

African Regional Centre for Engineering Design and Manufacturing
(ARCEDEM) (Nigeria)
African Regional Centre for Technology (ARCT) (Senegal)
Ghana Regional Appropriate Technology Industrial Services (GRATIS)
(Ghana)
Société Industrielle Sahélienne de Mécaniques de Matériels Agricoles
et de Représentations (SISMAR) (Senegal)

(d) Energy-related industries

Centre régional d'énergie solaire (GRES), Bamako (Mali)
Ecole des mines et de géologie (EMIG), Niamey (Niger)

(e) Management training

Le Centre Ivoirien de Gestion des Entreprises (CIGE)
Management Development and Productivity Institute (MDPI) (Ghana)
Centre for Management Development (CMD) (Nigeria)
Centre africain d'études supérieures en gestion (CESAG), Dakar
(Senegal)
Institute for Economic Development and Planning (IDEP), Dakar
(Senegal)

56. An information system on training needs and training facilities should be established as an integral part of the centres of excellence programme so as to provide, on a continuous basis, timely and relevant information on training needs and training opportunities in the countries in the subregion.

Subregional networks should be developed, inter alia, to provide channels of communication for professional exchanges, and to establish possibilities for mutual assistance between training institutions and research centres in countries in the subregion.

57. The education and training of middle-management and specialized staff can be organized on a co-operative basis. For example, consideration could be given to joint institutions or teaching and training companies, joint production of teaching/learning materials and equipment, and joint research in industrial teaching and learning processes. A most effective form of co-operation lies in the provision of teachers, instructors, facilities or technical opportunities for training trainers. In this regard, directors of the training centres in the subregion should meet at periodic intervals to exchange experience and harmonize their programmes.

58. The training strategy that UNIDO has drawn up for the subregion provides a good basis on which UNIDO, ECOWAS, CEAO and MRU can develop specific training programmes. In those programmes, it would be particularly important to provide training in the evaluation of industrial projects and the preparation of feasibility studies; engineering design; standardization, quality control and maintenance. In this connection, if quality control laboratories and product analysis facilities, together with the standardization of specifications, were to be more widely introduced in the subregion, the competitiveness of subregional goods and commodities would be greatly increased.

59. More comprehensive proposals for accelerating the development of industrial and technological capabilities are contained in two UNIDO documents entitled: "Strengthening the scientific and technological capabilities in African countries for industrial development" (document ODG.3(SPEC.)); and "Development of human resources for industrialization in Africa" (document ODG.4(SPEC.)). Those proposals include the need to select a number of national training centres which could be transformed, with the assistance of UNIDO, into subregional centres.

Industrial consultancy and engineering services

60. The low level of industrialization in most of the countries in the subregion calls for significant efforts to be made to increase and diversify industrial consultancy and engineering services throughout the subregion. The promotion of local consultancy services deserves particular attention as they are an essential element in the synergy that marks co-operation between the various agents of development. Similarly, it is important to take account of local research findings as they too can make a major contribution to the industrialization process. The design of industrial products, the application of production technology, production and quality control, materials management and value engineering are among the many facets of industrial engineering that are needed in any manufacturing industry. Furthermore, technologies acquired from abroad need to be adapted and improved and traditional technologies generated in local laboratories need to be commercialized. The emergence of new technologies (for example, micro-electronics, genetic engineering and biotechnology and remote sensing), and their possible implications for scientific and technological development in the countries in the subregion need to be exploited.

61. A further critical area relates to the extraction, evaluation and transportation of, as well as trade in, industrial raw materials. These activities may not be regarded as major parts of the process of industrialization. They are nevertheless of fundamental importance, since the range of industrial production depends primarily on the variety of local industrial raw materials available for conversion into industrial products and the degree of mutual complementarity. In addition to engineering capabilities, the above activities also call for competence in such areas as systems analysis, operations research, design and development, socio-economic cost/benefit analysis, feasibility studies and project reporting.

62. As indicated in chapter II of this paper, some countries of the subregion have developed highly competent industrial consultancy and engineering organizations. Much stands to be gained from producing and widely circulating a document giving full details of all the companies and institutions mentioned therein. Similarly, it would be most advantageous to issue a directory of all consulting companies in the subregion, thereby increasing their exposure. It is now necessary to enhance their capabilities so as to enable them to extend their services to other countries in the subregion. This could be achieved through the establishment of a network, a subregional arm of the Federation of African Consultants (FECA), in order to promote greater complementarity among the services they provide. Similar to its practice with ADB, FECA might draw up a list of current invitations to tender issued by the United Nations agencies so that its members might avail themselves of the opportunity to secure a contact with an international agency. The following industrial consultancy and engineering institutions could constitute the nucleus of that subregional network or arm of FECA, if so desired:

- Public Finance and Management Consultancy Group (Nigeria)
- Centre d'Etude et de Promotion Industrielle (CEPI)
- Société Nationale d'Etudes pour le Développement (SNED) (Mali)
- Société Africaine d'Etudes Techniques (ORGATEC) (Senegal)
- Africonsult (Senegal)
- Société Nouvelle des Etudes de Développement en Afrique (SONED-AFRIQUE) (Senegal)

- Organisme de Réalisations Economiques et Techniques (ORETEC) (Senegal)
- UNEFICO Senegal Promotion (USP) (Senegal)
- Institut of Public Administration and Management (Sierra Leone)
- Société Togolaise d'Etudes et de Développement (SOTED) (Togo)
- ONERCIT (Niger)
- Djibo et Associés (Niger)
- Cabinet EFIC (Niger)
- SOCOTEC (Niger)
- Sambo Abdoulaye (Niger)
- Technology Consultancy Centre (TCC), University of Science and Technology (Ghana)
- Ghana Regional Appropriate Technology Industrial Services (Ghana)
- Ghana Investment Centre (Ghana)
- Sahel Consult (Burkina Faso)
- Société nationale d'études et de promotion industrielle (SONEPI) (Senegal)
- Société africaine d'études et de developpement (SAED)
- Federal Institute of Industrial Research, Oshodi (FIIRO) (Nigeria)
- Project Development Institute (PRODA) (Nigeria)
- National Metallurgical Development Centre (Nigeria)
- J.S. Addo Consultants (Ghana)
- Massata Cisse Consultants (Senegal)
- Ali Sow Consultants (Senegal)
- Mamadou Seck Consultants (Senegal)
- Latsoucabé Meïssa Fall Consultants (Senegal)
- Omory Limited - Food processing and preservation (Nigeria)
- Oakfirm Management Consultants (Nigeria)
- Ujama Associate - Small-scale Industries Management (Nigeria)
- Omolayole & Associates Management (Nigeria)
- Peat Marwick Ani Ogunde and Company - Financial Management (Nigeria)
- Akintola Williams - Financial (Nigeria)
- Dele Olowoyo and Associate Engineering Consultants (Nigeria)
- Wintech Nigeria Ltd. Engineering Consultants (Nigeria)
- Nukom Engineering Consultants - Electrical and Mechanical (Nigeria)
- Centre Point Securities Ltd. - Investment Services (Nigeria)

63. In order to support the engineering and consultancy services of the subregion, the agencies in the United Nations system as well as subregional organizations and financial institutions are urged to make greater use of those local services. For example, when issuing tenders, BOAD always includes two African consultancy companies in their short list. Furthermore, when bidding, foreign consulting companies are encouraged to enter into association with their local counterparts. Similarly, international organizations as well as countries in the subregion should accord preference to consultancy and engineering companies from the subregion. It has been suggested that any country sponsoring a project should, in the first instance, exhaust all possibilities of using local resources. If it so happened that the sponsor had to draw on the services of a consultancy company from abroad, that company should be obliged to use a certain proportion of local services in the country sponsoring the project. The potential of such services in the subregion could be further enhanced by supporting subregional organizations. Local consultancy companies should provide full details of their skills and expertise so as to facilitate their selection. The Federation of African Consultants was one source of information, while in collaboration with ECOWAS

national association of consultants could be requested to prepare a subregional directory of consultants.

64. The work being carried out by UNIDO in linking national data banks should be expanded, and steps need to be taken to set up subcontracting arrangements in the subregion. Furthermore, there is a need for more support in the development of managerial consultancy capabilities of some of the institutions listed in the preceding paragraph. The type of projects currently proposed for inclusion in the revised programme for West Africa will certainly require an integrated and interdisciplinary approach to industrial consultancy. Therefore, assistance will be needed to increase the awareness of modern management methods which in turn would bring about the output and productivity required in each project. Besides establishing a network, efforts should also be made to encourage co-operation in specific subject areas such as training, research and joint ventures.

Industrial entrepreneurship

65. Governments in the subregion need to take action to strengthen existing institutions or establish new institutions for the accelerated development of and support to small- and medium-scale industrial entrepreneurs. The performance of some of the organizations in the region had been evaluated by the World Bank. The existing institutions include the following:

- Small Enterprises Financing Organization (SEFO) (Liberia)
- Ghana Enterprises Development Commission (Ghana)
- Fund for Small and Medium Enterprise Development (Ghana)
- Nigerian Industrial Development Bank (Nigeria)
- Nigerian Bank for Commerce and Industry (Nigeria)
- Manufacturers Association of Nigeria (Nigeria)
- Fund for Industrial Development (Cape Verde)

66. The functions and activities of these institutions could include training, extension services, information, repair and maintenance, production and marketing, consultancy services, project identification and preparation, product and engineering design, technological acquisition and procurement.

67. Strengthening or establishing support institutions to local small- and medium-scale industrial entrepreneurs is an area that lends itself to international co-operation. A most pertinent approach is "institutional linkage" or "twinning arrangements". International organizations such as the UNDP and UNIDO, as well as bilateral programmes, could provide valuable assistance to countries in the subregion, within the framework of Technical Co-operation among Developing Countries (TCDC) and Industrial Co-operation among Developing Countries (ICDC), by identifying reputable institutions within the subregion that could be twinned with institutions in other interested countries.

68. In order to enhance the subregional efforts to develop and promote local small- and medium-scale industrial entrepreneurship, those efforts should be consolidated both at the national and subregional levels. Detailed proposals in this regard are contained in the UNIDO document entitled "Accelerated development of indigenous entrepreneurial capabilities for small- and medium-scale industries in Africa" (document ODC.5(SPEC.)). In addition to the proposals outlined above, benefit could be gained by following up the

support projects retained in the revised integrated industrial promotion programme for the subregion (document ID/WG.477/3/Rev.1(SPEC.)) some of which have a direct bearing on industrial entrepreneurship.

69. The area of industrial support services is one in which UNIDO could be of useful assistance to the countries of the subregion, drawing possibly on the short-term technical advisory services that the Organization could provide within the framework of the programme for the IDDA. Such assistance might focus on the following priority activities:

- (a) Review of training needs, programmes and facilities;
- (b) Developing comprehensive and fully integrated programmes directed towards the training of technological capabilities, local entrepreneurial capacities and industrial trainers;
- (c) Strengthening and/or establishing multi-purpose training institutions, specialized institutions or centres of excellence, to provide training in specific core industrial subsectors and branches;
- (d) Strengthening training links between universities and industry;
- (e) Establishing "teaching companies", as well as facilities for the local production of textbooks, educational and training videos, kits and manuals;
- (f) Introducing special training programmes for industrial maintenance and rehabilitation, the integration of women in industrialization, and the development and promotion of small-scale industries, especially in rural areas;
- (g) Mobilizing financial resources for industrial training;
- (h) Promoting intra-African co-operation, TCDC and international co-operation in industrial training.

IV. CONCLUSION

70. The most important factor input for industrialization in Africa is industrial manpower. The achievement of self-reliant and self-sustaining industrial development as outlined in the programme for the Decade as well as in the various programmes adopted by the United Nations and the OAU depends, to a large extent, on the development of the requisite local industrial capabilities. This, in turn, is contingent upon the pattern of industrial production which determines the number and type of industrial skills required.

71. In view of the present situation in which Governments in the subregion are already allocating large proportions of their budgets to education and training, it is necessary to explore better ways of utilizing those resources so as to produce the right types of skilled personnel needed for the countries' industrialization. Industry also needs to be involved more actively in all forms of training and steps taken to resolve the problems of manpower shortages and imbalances.

72. The analysis undertaken in this paper reveals a firm basis for co-operation that is essential to achieving mutual self-sufficiency and sustainment of growth. This is particularly important, given the complementarity of resources, industrial capacities and capabilities available in the subregion.

73. The basis for co-operation appears to extend beyond this resource and capacity complementarity. It also pertains to the contiguity of the subregion which permits full access to goods and services. Other factors, such as linguistic and cultural similarities, also contribute to a fundamental basis for strengthening and enhancing industrial co-operation, while establishing an independent and autonomous economic subregion.

74. The establishment of special institutions such as centres of excellence, on a multi- or mono-sectoral basis, might be considered in some countries in the subregion. Such institutions could be developed to provide services to other countries in the subregion, and to Africa as a whole.

75. In view of the paramount importance of mobilizing indigenous industrial entrepreneurs, concerted efforts must be made to institutionalize in each country systematic programmes for entrepreneurship development. These should focus on the entrepreneur, the person who catalyses resources and manages risk in the course of establishing a viable, sustainable and employment-generating industrial enterprise.

76. The previous chapters identified specific areas of co-operation that could optimize the utilization of the existing industrial services and promote the development of new institutions where needed. Due account was also taken of the state of industrial support services in the subregion and the thrust required to sustain the dynamics of development. The meeting considered and discussed those ideas at length, whereafter it put forward recommendations for follow-up action to be taken by the subregional, regional and international organizations/institutions concerned, as well as by the countries themselves.