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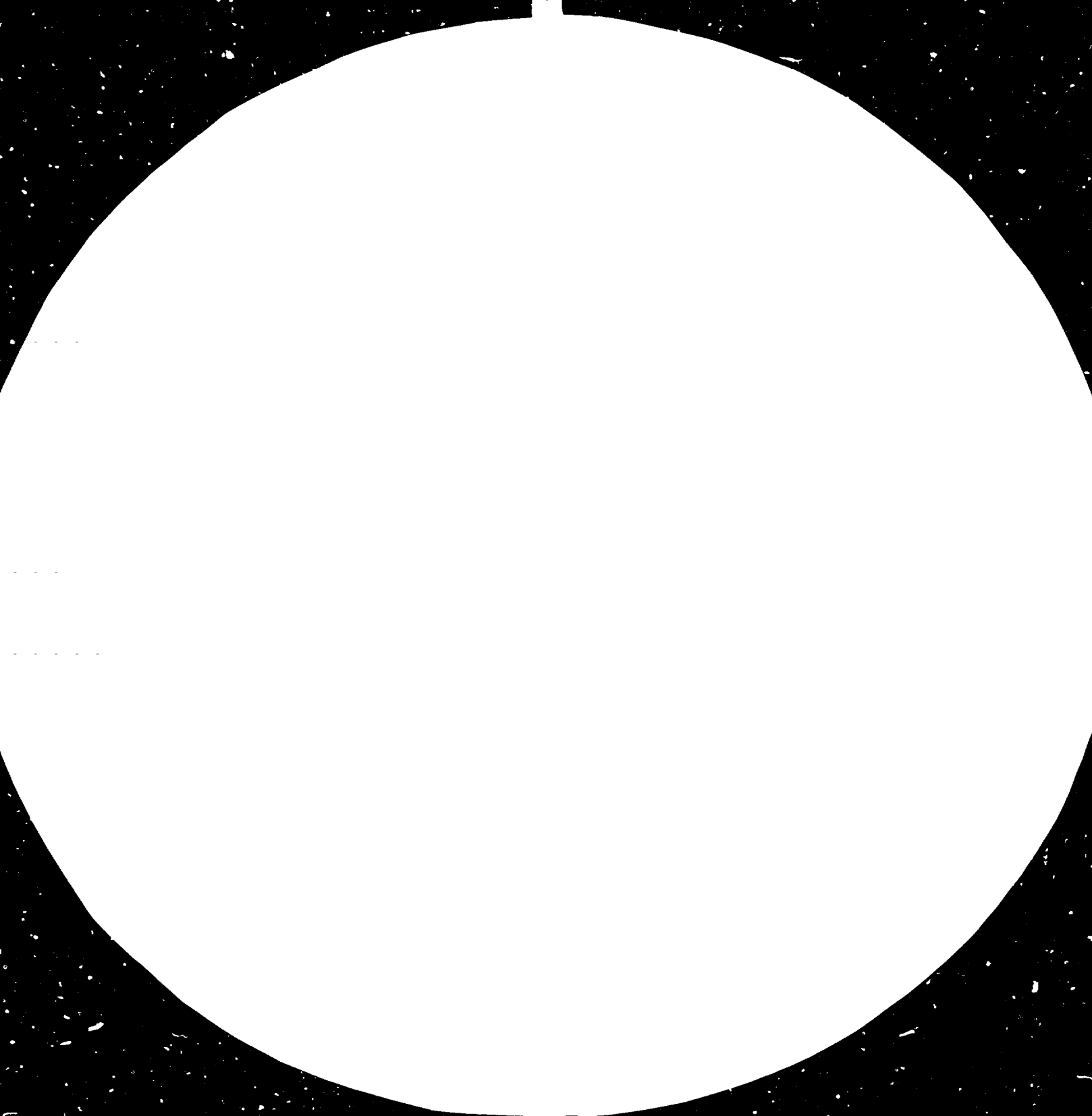
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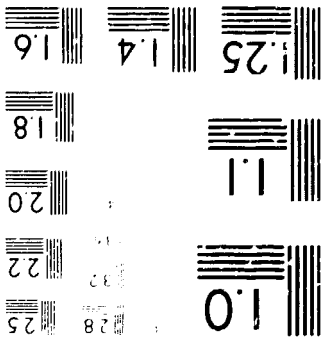
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PROMOTION OF CO-OPERATION BETWEEN LATIN AMERICA AND AFRICA
FOR THE IMPLEMENTATION OF THE INDUSTRIAL DEVELOPMENT DECADE FOR AFRICA

Proposed Framework for a Programme of Action *

prepared by
the UNIDO secretariat

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I. INTRODUCTION

1. The global economic recession and, in particular, its profound negative consequences for developing countries has brought into sharp relief the need to take effective measures to restore and accelerate the pace of development. While action is required in many areas, economic and technical co-operation among developing countries has a significant role to play in this process. The international development strategy for the third UN Decade recognizes that "Economic and technical co-operation among developing countries based on the principle of collective self-reliance constitutes a dynamic and vital component of an effective restructuring of international economic relations". The importance of economic and technical co-operation among developing countries has been reaffirmed in the last few months at the Summit Conference of the non-aligned movement in New Delhi, at the ministerial meeting of the Group of 77 in Buenos Aires as well as in other intergovernmental meetings such as the third high level meeting of experts on the review of technical co-operation among developing countries.

2. The Lima, Mexico, Arusha and Caracas programmes of action provide a clear conceptual framework as well as a set of specific measures and policies to promote economic and technical co-operation among developing countries. It might be useful, to emphasize here certain salient aspects of the definition of economic and technical co-operation among developing countries:

Firstly, co-operation among developing countries is not a substitute for north-south co-operation, nor a strategy for confrontation. Rather, by taking full advantage of complementarities, between developing countries and promoting horizontal linkages among them, it aims at enabling these countries to move towards collective self-reliance and thereby strengthen their role in the international economy. Co-operation among developing countries is both a means and an end, a means for achieving a new international economic order based on equity, sovereign equality, interdependence, common interest and co-operation among all states, and an end towards an integral feature of that order.

Secondly, it is the developing countries themselves who have primary responsibility for initiating and implementing programmes for co-operation among developing countries. Their commitment in this regard is clear, but they face serious problems in transforming general agreement on principles into practical programmes and projects. To do so it requires major efforts on the part of the developing countries, but equally, it requires that the international community support developing countries in their efforts.

3. Self-sustained and self-reliant industrialization in Africa would require the co-operation of the entire international community, especially of other developing countries, for the mutual advantage of all parties. Owing to their strategic importance to African industrialization, co-operation arrangements between Latin American and African countries and institutions in this field could take the form of participation in the preparation and financing of industrial investment projects, development of human resources, technological capabilities, energy, strategic core industries and institutional mechanisms for industrial development.

4. In formulating this proposed framework for a programme of action for the promotion of co-operation between Latin America and Africa for the implementation of the Industrial Development Decade for Africa within the framework of the Lagos Plan of Action, the following priority areas have therefore been identified: Industrial policies and strategies, mobilisation of financial resources, technology, self-sufficiency in food production, industrial training, energy and telecommunication.

5. It is expected that the Symposium will examine the proposed framework, adjust it, as need be, and adopt it as a basis for more elaborate future action by the Latin American and African countries and institutions not only on a bilateral but also on a multilateral level with the assistance of UNIDO and other relevant international organizations and agencies. It is also expected that the experience to be obtained in this Symposium will contribute to the initiation of similar arrangements between African countries and institutions and their counterparts in other developing regions of the world.

II. INDUSTRIAL STRATEGIES AND POLICIES

6. For a mutual and complementary industrial development, it is necessary to promote and identify the exchange of experiences between Latin American and African countries and institutions in their process of industrialization, including in particular, the formulation of industrialization policies which includes strategies for the development of industrial manpower, development and acquisition of financial resources and elaboration of industrial development plans and programmes including sectoral programmes.

7. The Lagos Plan of Action and the Programme for the Industrial Development Decade for Africa clearly outline the industrial policies and strategies to be adopted by the African countries up to the year 2 000. These complex industrial strategies and policies being perceived by national policy-makers in the African countries for the 1980s and 1990s are characterized by multifaceted approaches. They aim at: -

- establishing a socially and economically viable industrial base and structure of production;
- adjusting previously established production capacities and structures to the new demands of the current and emerging African economy;
- increasing economic co-operation with other developing countries, on the principle that particularly for small countries co-operation is imperative;
- designing an industrial policy for those countries facing an acute financial constraint that reduces the propensity to import while enhancing external liquidity to the extent possible;
- creating flexible production systems better able to be adapted to changing internal and external conditions;
- introducing a fundamentally long-term approach to industrialization that emphasizes the role of transferred high, adapted, upgraded traditional and newly generated indigenous technology, and
- allocating a greater priority than heretofore to investments in human resources.

8. To this end, industrial strategies are being conceived which can no longer be categorized in the traditional manner (.e.g. export-orientation, import-substitution). Instead they will encompass for instance both low and high technology, both domestic and foreign inputs, both external and internal market orientation, both North-South and South-South trade and financial co-operation and assistance, and both industrial and agricultural priorities.

9. Whereas these strategies may be characterized as overall integrated approaches, it seems likely that a differentiation of their application needs to be pursued which could lead to the emergence of two kinds of industrial activities: one more employment-, domestic market-, and domestic input-oriented traditional segment of industry and one modern, high technology and internationally oriented segment. A fundamental consideration in formulating these strategies is the creation of a harmonious co-existence and interaction in reinforcing a dynamic relationship between these two segments both in terms of international trade and financial relations and national development objectives.

10. The present symposium gives an opportunity to the participants to generate ideas and examine the ways and means by which the Latin American countries and institutions could contribute to the efforts of the African countries in the implementation of the above mentioned declared industrial strategies and policies. Consideration should be given to the following points:

- what lessons for the future could be drawn from the experience of Latin American countries in the formulation and implementation of industrial strategies and policies and from the pattern of industries they have established during the last two decades;
- what strategy options emerge for industrial development in the Latin American countries in the 1980s and 1990s in light of current crisis and changing global conditions?
- what new possible approaches could be conceived in the region to support national endeavours of African countries and to respond to emerging challenges.

11. In general Latin American and African countries have already established programmes of co-operation. The experiences so far acquired show that efforts at government levels, expressed in the many integration schemes now existing in both regions, have produced few concrete results on matters related to their industrial co-operation. During the last 15-20 years however, significant and rapidly increasing co-operation has taken place at the enterprise level, ranging from technical advice to the installation of complete turnkey plants. This phenomenon has been made possible principally by local technological development through learning, adaptive work and enterprise research and development on the basis of technology originally obtained from industrial countries. These experiences could make a valuable contribution in developing any programme of co-operation between the Latin American and African countries and institutions in the area of industrial strategies and policies.

12. The points to be considered in the formulation of such a programme of co-operation should include:

a. The co-operation of Latin American experts with counterparts in Africa in reviewing African national and subregional industrial development strategies and policies, thus ensuring that the problems encountered by Latin American Countries are not repeated in Africa.

b. Visits by African policy makers and experts to their counterparts in Latin America in order to exchange and benefit from the experience of Latin America in the development and implementation of their industrial policies and strategies.

c. Co-operation and assistance of Latin American experts with counterparts in Africa in conducting sectorial and sub-sectorial surveys and in the preparation of industrial macro and sectoral masterplans.

III. MOBILISATION OF FINANCIAL RESOURCES

13. Within the framework of its activities, the Investment Co-operative Programme of UNIDO organizes a series of Investment Forums, jointly with host countries. The main objective of these Forums is to promote investment and industrial co-operation by attracting an inflow of foreign financial resources and other inputs needed for the implementation of specific industrial projects. These Forums thus provide opportunities for contacts and individual discussions between investment project sponsors from the public or private sector of the host countries, and executives of industrial firms and financial institutions from developed and more advanced developing countries.

14. These meetings are very different in form from other types of meetings sponsored by international organizations. It is the projects themselves that form the substance of the bilateral discussions. These face-to-face discussions concentrate on the particulars of the project and the forms of collaboration needed to bring them to the stage of realization.

15. In this connexion, the main areas for collaboration between project proponents and foreign partners are the following:

- establishment of joint ventures through equity participation
- industrial financing through medium and long-term loans
- acquisition of know-how and technology
- access to foreign markets
- supply of equipment with compensation trade.

The investment promotion meetings so far held include:

- a) An Investors Forum held in Santiago, Chile, in October 1982.
- b) An Industrial Forum for West Africa held in Senegal in November 1982.
- c) A video teleconference via satellite held in April 1982, sponsored jointly by UNDP, UNIDO and the United States Overseas Investment Corporation (OPIC) and in co-operation with large US banks.

16. The quantifiable and unquantifiable success of the investment promotion meetings has led to many requests for more such meetings. Preparations are on the way for meetings to cover, inter alia:

- a) A Regional Investment Promotion Forum for the 9 South-East African countries, to be held in October 1983 in Lusaka, Zambia;
- b) an Investment Promotion Meeting for Peru to be held in November 1983 in Lima;
- c) an Investment Promotion Meeting for Panama to be held in March or April 1984;
- d) a Regional Investment Promotion Meeting for the Caribbean to be held in April 1984 in Barbados;
- e) an Investment Promotion Meeting for Colombia to be held in October or November 1984 in Bogota;
- f) a Regional Investment Promotion Meeting for West Africa to be held in November or December 1984 in Dakar, Senegal;
- g) a Regional Investment Promotion Meeting for Central African countries (UDEAC) tentatively planned for early 1985 in Libreville, Gabon.

17. In addition to the investment promotion meeting other promotional tools are also being utilized by the UNIDO Investment Co-operative Programme. These include a computerized roster of resources; a computerized portfolio of investment projects and a "Directory of Financial Resources for Industrial Projects in Developing Countries".

18. In accordance with the high priority which UNIDO is assigning to the mobilization of financial resources, the First Consultation on Industrial Financing, held in Madrid (Spain) in October 1982, devoted considerable attention to project identification, formulation and evaluation and recommended that UNIDO assist developing countries to improve the quality of feasibility studies. The Consultation recommended, inter alia, that UNIDO should (a) encourage the flow of information on industrial investment opportunities by such means as organizing periodic

investment promotion meetings, making available information on developing countries, and (b) strengthen its existing activities to promote direct foreign investment in developing countries especially by small and medium-sized enterprises. The increased provision of pre-investment funds for financing studies on pre-feasibility, marketing, finance, planning, etc., particularly for the least developed countries was also recommended.

19. UNIDO is also directly involved in the mobilization and channelling of technological, human and financial resources available to the non-governmental organizations and business and industrial institutions from both developing and developed countries into the industrialization streams of the lesser developed countries. The efforts which are being made in this direction are expected to result in the mobilization of non-traditional resources to supplement the relatively scarce resources of UNIDO which are being mainly used for the technical assistance.

20. Finally, with respect to UNIDO efforts to mobilize financial resources for the industrialization of developing countries, it is worth mentioning the United Nations Industrial Development Fund (UNIDF). The purpose of the Fund, as set forth in General Assembly resolution 31/202 in 1976, is to increase the resources of UNIDO and its ability to meet, promptly and flexibly, the needs of the developing countries. The resolution adds that UNIDF "shall supplement the assistance provided by means of the resources of the United Nations Development Programme (UNDP) directed towards the achievement of accelerated and self-sustained growth of the developing countries in the industrial field".

21. Since 1976, when UNIDF was established, the Fund had an increasing share of UNIDO total resource, amounting to 12.6% (US\$ 11.6 mio) of the total technical co-operation budget (US\$ 91.9 mio) in 1982, thus it became the second source of financing after UNDP. One of the greatest advantages of the Fund is its considerable flexibility:

- a) Contribution to UNIDF are voluntary and may be accepted from governments, intergovernmental and non-governmental sources (such as industrial R + D institutions, professional associations, and industrial enterprises);
- b) donors may choose the currencies in which they contribute;

c) donors may make contributions for special purposes, provided that these are consistent with those of the Fund.

22. As to special purpose contributions, their use may be limited to a particular industrial sector, institution or country, or may be even more narrowly restricted. However, the task of drawing up a coherent programme of activities is made easier if donors define the special purpose they have in mind as broadly as possible, leaving the secretariat to make specific project proposals.

23. One of the main problems confronting the African countries and institutions in the implementation of the programme for the Industrial Development Decade for Africa is the lack of adequate financial resources. One of the greatest contributions which the Latin American countries and institutions could make to the efforts of the African countries in the implementation of the Decade Programme therefore relates to the mobilization of financial resources. In formulating proposals on this matter for the framework of action for co-operation between Latin America and African countries it is recommended that the following points be taken into consideration.

- a. Latin American countries and institutions should share with the African countries and institutions their experiences in the mobilization of both domestic and external financial resources for industrial development.
- b. Latin American countries should make available to the African countries experts to assist in the preparation of investment projects.
- c. Latin American countries should increase their contributions to the United Nations Industrial Development Fund by making special purpose contributions for the programme for the Industrial Development Decade for Africa and industrial projects in Africa.
- d. Potential industrial and financial partners from the public and private sectors in the Latin American countries should attend the three African Investment Promotion Meetings to be held respectively in Lusaka in October 1983, in Dakar in November 1984 (ECOWAS) and in 1985 (UDEAC), as well as other future ones and be given the opportunity to establish long-term industrial partnership agreements with projects

proponents, development financing institutions and the public authorities of the participating African countries.

- e. The Latin American countries, which are members of the Governing Boards of the World Bank, UNDP, UN and other multilateral financial institutions should lend strong support to African industrial development programmes and projects especially those related to the programme for the Industrial Development Decade for Africa.
- f. The use of special UNDP allocations in national or regional indicative planning figures in Latin America for ECDC to finance cooperative programmes between Latin America and African countries and institutions.

IV. DEVELOPMENT AND TRANSFER OF TECHNOLOGY

24. The promotion of co-operation between Latin America and Africa should include exchange of information and experiences in the development, acquisition and transfer of technology, particularly of Latin American traditional technologies relevant to Africa, as well as in negotiations of technology transfer contracts and the development of technological capabilities, as a whole.

Technological Information Exchange System (TIES)

25. UNIDO operates a technological information exchange system among technology transfer registries. So far 32 developing countries belong to this system. The total number of contracts registered is over 7,000. Detailed information on contracts for specific technologies is provided to member institutions. A coding manual for exchange of information on service agreements is in operation. Through the system of TIES significant co-operation has been established among the registries to facilitate exchange of economic and technological information contained in approved and registered contracts. The information is exchanged on a confidential reciprocal, equal and mutually beneficial basis.

26. A further strengthening of TIES would undoubtedly increase the national technological capabilities in negotiating for acquisition of technology and strengthen the collective bargaining position of the developing countries in the technology market, thus bringing about greater co-operation.

27. During the relatively short span of its existence, TIES has proved to be an extremely useful co-operative mechanism for developing countries to learn from each others experiences in acquisition and application of technology transfer contracts. This has led to improved bargaining and negotiating capability on the part of developing countries in the technology market, where they are still largely dependent on the multi-national and other enterprises of industrialized countries.

Technological Services Delivery System (TCDS)

28. UNIDO has developed an approach to mobilize the research work of industrial research and service institutions (IRSI) for application to industrial enterprises, the so called the "Technological Services Delivery System". The system provides for linkages between industrial enterprises and research institutes. It has also been developed on a regional basis in the Caribbean - the Caribbean Technological Consultancy Service (CTCS) where it is conceived as a network mechanism by which the knowledge and skills already accumulated at different institutions on the national level are mobilized to the needs of Caribbean industry and, where appropriate, adopted and transferred to productive enterprises, to make them better adjusted to local circumstances and more self-reliant.

Project Development Facility for Developing Countries

29. A project development facility for developing countries would assist in the proper formulation and preparation of projects, including pre-feasibility studies, feasibility studies and bankable projects. The Asian network of consultancy organizations could promote the use of existing project formulation consultancy capabilities in the Asian developing countries. The UNIDO Manual for the Preparation of Feasibility Studies and the recently introduced Computer Model for Feasibility Analysis and Reporting (COMPAR) may be suitable tools when such a facility is established.

Co-operation Among Testing Laboratories

30. There is a scope for co-operation between Latin American and African countries to design and implement an inter-laboratory correlation programme. The purpose would be to assist participating member institutions by providing a practical means for local testing laboratories to earn and maintain international accreditation for their quality assurance measures, and thereby strengthening the international competitiveness of local manufacturing industry. The programme could begin with a small number of very important industrial sub-sectors and gradually increase the number according to the absorptive capacity of the system and the prospective marginal gain of adding further sub-sectors. Membership could also include national standards, testing and quality control institutions.

31. In connexion with the above, an important on-going co-operative venture between Africa and Latin America relates to the Development and Transfer of Appropriate Technology for Small-scale Power Alcohol Distillery. The co-operating agencies in the project are: Kenya Industrial Research Development Institute, Nairobi (KIRDI); National Council of Science and Technology, Nairobi (NCST) and Instituto de Pesquisas Tecnologicas do Estado de Sao Paulo (IPT). In this project, IPT/Brazil provides laboratory facility, testing materials and staff time at IPT cost. The general objective of the project is to assist Kenya in the development and application of new sources of energy, utilization of local natural resources and raw materials and strengthen the technological capability in Kenya on basis of TCDC on an interregional basis, through the transfer of technology and know-how of producing power alcohol by a small-distillery, suitable for application in rural areas of the country and utilizing raw materials available in the country.

32. While co-operation between Latin America and Africa in the field of technology is "deep-seated" and is now a reality, the Symposium provides a unique opportunity to consider ways and measures to strengthen the co-operation among Latin America and Africa in this field. Consideration should be given to:

a) Compilation and dissemination to African countries and institutions of information on technology, existing capabilities and expertise available in Latin America;

- b) formulation of co-operative agreements between Latin America and African countries and institutions through creation and strengthening of network of institutions in science and technology including research and development institutions and through intensification of exchanges involving experts;
- c) greater access to technological information on contracts and licence in Latin American countries by African countries through, inter-alia, the system of TIES; and
- d) assistance by Latin American countries and institutions to their counterparts in Africa in the development of technological capabilities.

V. SELF-SUFFICIENCY IN FOOD PRODUCTION

33. In the programme for the Industrial Development Decade for Africa, emphasis is placed on the need for self-sufficiency in food production, the development of industry and the training of human resources, all of which are basic priorities in the Lagos Plan of Action and closely related to the development of viable food processing industries. The food situation in Africa, and particularly the self-sufficiency ratio in food, continues to deteriorate.
34. The first International Latin America/Africa Symposium on the promotion of co-operation between Latin America and Africa for the Implementation of the Programme for the Industrial Development Decade for Africa will focus on an examination of the ways and means of putting into operation the areas of co-operation contained in the Programme for the Decade. The food industry development strategy and programme seen as an integral part of the national policy for socio-economic development based on self-sustainment can, substantially, reduce food losses, increase food production and supply through improved marketing and distribution, and enhance income distribution.
35. The Symposium provides a forum whereby the participants could exchange experiences and ideas on the best approaches to implementing the programme for the Decade, as it relates to self-sufficiency in food production. It could in particular, focus on target or key areas identified

as being related to the self-sufficiency in food production. These areas include:

- Policy, planning and organization in regard to technology generation and transfer and utilization and related economic, industrial and social development in food production.
- Feasibility studies and consultancy services related to agro-based and agro-supporting industries.
- Exchange of information and expertise in regard to scientific, technological and industrial development in areas of food processing sector.
- Training of technical personnel from African countries in selected areas in Latin American countries.
- Standardisation and quality control.
- Setting up of joint Industrial Research Centres, Technical Training Centres, Industrial Estates and ancillary Units for agro-industries.
- Co-operation in setting up of agro-based and agro-supporting industries such as manufacture of capital goods for the food processing industry, Foundry, forge, chemical and food testing laboratory industry.
- Assistance in specific areas such as coffee, cocoa, banana, soya, cassava, vegetable oils, cereal processing industries and group training in the field of organization and management of agro-industrial enterprises.
- Supplementary list of areas of competence in Latin America will be established in collaboration with the participating countries, inter-governmental and non-governmental organizations attending the Symposium.

36. In this connexion, the Symposium thus provides an opportunity for the initiation of a programme of co-operation between Latin America and African countries and institutions in this area, with UNIDO playing a catalytic role. Consequently, means and mechanisms for co-ordination, which are both as simple and practical as possible, should be identified. Given the number of intergovernmental organizations and non-governmental organizations in Africa and Latin America, co-operative arrangements could be initiated among these institutions to reinforce co-operation at the country-level in this priority sector, in which strategy should be directed towards the establishment of a co-operative programme, based on co-operation between African and Latin American countries and institutions.

37. In the formulation of the co-operative programme consideration should be given to:

- Promoting the exchange of information between Latin American and African countries, intergovernmental organizations and non-governmental organizations on activities in those areas related to self-sufficiency in food production.
- Setting-up working groups with representatives from the intergovernmental and non-governmental organizations to tackle specific technoeconomic problems and recommending joint action.
- Elaborating co-operation schemes in respect of specific areas or subjects related to self-sufficiency in food production.
- Developing joint training programmes in co-operation with UNIDO and/or national institutions.
- Promoting research and development programmes in support of priority areas identified in the food processing sector.
- Involvement of Chambers of Commerce and Industry and officials of Government departments, planning and industry officials on the organization in study tours to industrial plants, research and development institutions, public sector enterprises, etc., and to the initiation of a programme for directors and senior executives in industry and research and development institutes in the agro-industrial sector in Africa to exchange of experiences with their counterparts in Latin America in that field. The programme could also examine appropriate product groups management problems, technology, marketing and finance; and a plan for the achievement of self-sufficiency in food production should be elaborated.

VI. INDUSTRIAL TRAINING

38. Although the UNIDO project of "centres of excellence" is still in progress, UNIDO has already identified some Latin American centres where it has launched programmes involving African countries. Of all the countries in Latin America, Brazil possesses one of the most developed industrial training infra-structure - particularly SENAI :

39. The area of industrial training is one that provides great scope for the intensification of co-operation between Latin America and Africa. Within the framework of UNIDO, several programmes have been initiated and carried out in Latin America involving participants from several African countries. In 1982, for example, an International Seminar on Industrial Training was organized by UNIDO with the co-operation of a Brazilian institute, SENAI (Servicio Nacional de Aprendizaje Industrial/ National Service of Industrial Apprenticeship). The Brazilian training facilities and opportunities are presently available to other developing countries but today are significantly under-utilized (e.g. in 1979, less than 10 per cent of the places available for non-Brazilians were occupied). SENAI provided industrial training for only about one hundred, although its potential is in the thousands. The vast majority of foreign students/ trainees in Brazil have come traditionally from the Latin American states, although African states have consistently been represented.

40. UNIDO also carried out an In-Plant Group Training Programme in the field of plastic material technology in Argentina, in co-operation with the Technological Research Centre for the Plastic Industry (Centro de Investigación Tecnológica para la Industria Plástica - CITIP). CITIP is a leading research/training institute part of the technological system created by INTI-Argentina (National Institute of Industrial Technology) and sponsored by more than 60 industrial enterprises related to the plastic industry, where the biggest industries of Argentina are associated and some of the neighbouring countries such as Uruguay and Brazil.

41. The above examples portray the potential for co-operation between Latin America and Africa in the area of industrial training. It, however, seems that the African countries are largely not aware of existing opportunities in Latin America. What is needed, therefore, is a major and continuing effort on behalf of the Latin American countries to publicise their training opportunities and contact points. In the preparations for the Fourth General Conference of UNIDO, a number of areas have been identified for co-operation between the developing countries in the area of industrial manpower development. The most relevant of these which should be taken into consideration when developing co-operation Latin American and African centres and institutes in this area include the following:

- a. the identification and publicity of suitable national and regional training institutes and centres of excellence in Latin America suitable and willing to accept trainees from Africa;
- b. the collection and dissemination in Africa of information on the experiences of Latin American centres and institutes in the development of industrial manpower;
- c. the establishment of links between industrial training institutions in Latin America and Africa, thus helping to ensure the effective exploitation of educational facilities in university, polytechnic and specialized institutions of training and R and D;
- d. the establishment of teaching/learning companies in African countries;
- e. the multi-national production of teaching/learning materials, and equipment including radios, television sets, video cassettes and video discs. Critical for the use of most of this equipment is the availability of electric power. Thus the manufacture of electric batteries or small scale electric power generators becomes an important part of the production programme;

- f. the training of trainers and instructors, and
- g. the carrying out and application of the results of recent research into teaching/learning processes as distinct from R and D in support of adaptation or production of materials and equipment.

VII. ENERGY

Energy Sources

42. An attractive energy path for any developing country is the development of indigenous resources. Until recently it was cheaper for most countries to import oil rather than exploit domestic resources, but higher prices now encourage the development additionally to petroleum, gas and coal, of other indigenous sources of energy, particularly, hydropower, biomass and solar energy.
43. Hydropower has for long been recognized as the most promising energy supply option. The technology for hydro-electric power is well established, the operation of hydrostations are very reliable, there is a minimum of environmental impact, and the energy and the electricity produced is ideal for both industrial and social purposes. Only 9% of the hydro-electric power potential in the developing countries has been developed; in Africa the figure is 1,5%. Latin America, on the other hand has, during the past decade, made remarkable strides in hydro-electric development and hence this area is one that provide excellent opportunity for co-operation with the African countries.
44. The use of bio-mass for energy is also an extremely promising supply option. Bio-mass is usually thought of as the principle energy source for millions of rural people, but it also has the potential for industrial application. Some bio-energy conversion processes are well known and practiced commercially such as the production of alcohol from sugar cane, the preparation of charcoal from wood, and the generation of

methane from animal wastes. In addition, more advanced processes are the subject of research and may well make significant contributions to energy supply. Many African countries are well endowed with a bio-mass resource base, and, therefore, can give serious consideration to this supply option.

45. Solar energy may have some industrial applications such as solar distillation, solar drying of agricultural products, pre-heating of fuel oil for an industrial plant, heating of water for washing and sanitation and solar refrigeration for the storage of perishables in remote areas. There are some countries that use photovoltaic energy units to provide power water pumps in remote locations where the high cost may be justified. Experience in all these modes exist in both Latin America and Africa and should, therefore, be considered for possible co-operative activities.

Industrial Energy Management

46. Industrial Energy Management is increasingly receiving closer attention than in the recent past. The subject can be thought of in terms of 3 main areas:-

- a. National industrial planning aim at optimizing national energy supplies and consumption according to the priorities, endowments, and objectives of the country;
- b. energy planning at the plant level to optimize views of energy through conservation, substitution, preventive maintenance and optimization of operating schedules and
- c. means of facilitating industrial energy management which includes scientific and technological activities, educational and training, the creation of appropriate financial machinery, and the physical and promotional framework to stimulate and support an expansion of energy production, consumption, and industrialization.

47. It is now widely recognized that human resources constitute one of the most significant aspects of industrial development and there is a clear need for planners, managers and operating personnel at all levels capable of handling the issues associated with energy development and industrialization. It is equally clear that the initiative must be taken in a form of training and education programmes to foster the growth of individuals in these areas and many such programmes are needed. The manpower needs might be summed up as follows:-

- a) energy planners and managers (specializing in broad energy planning, programming and management);
- b) energy economists (specializing in the economics of energy trade, pricing, costing, etc.);
- c) energy engineers (specially trained individuals at the university level for this profession);
- d) energy technicians (trained at the intermediate level for a diversity of specialized tasks);
- e) skilled operators and workers (to produce, handle and operate specialized equipment such as bio-gas generators etc.).

48. Another industrial energy policy direction is a commitment to energy conservation and substitution. As a group, the developing countries import about 60 per cent of their commercial energy with a significant effect on their international balance of payments (for comparison, the industrialized nations import 30 per cent of their commercial energy). The developing countries, therefore, have a strong economic incentive to reduce their dependance on imported oil and to improve the efficiency of their energy use. Conservation is no longer seen as the matter of hardship and denial, but rather as a means to producing more goods and

services with a given amount of energy thus contributing to economic growth. In some instances energy conservation can generate employment; for example the increased use of thermal insulation in industrial equipment leads to more work for the insulation manufacturers.

49. The methodologies for conducting plant energy audits, the means for comparing one plant with another with regard to energy efficiency in a given industrial sector, and the energy efficiency of various industrial unit operations, are now well known and documented. This also includes the industrial production of capital goods, energy appliances and the supply of services in support of the energy industry. It is believed that this area also represents an opportunity for Latin American-African co-operation.

Recommendations

50. In the formulation of any programme of co-operation between Latin America and Africa in the area of energy, the following suggestions should be taken into consideration:-

a) Activities for strengthening the methodologies for developing and implementing energy - industry policies are needed. The most relevant experience is within other developing countries and through workshops, seminars, and similar activities, there could be a beneficial sharing of the knowledge and experience acquired by Latin American countries and institutes regarding the integration of development, industrial and energy policies with African countries. This activity is intended to focus on the process of formulating energy - industry policies including the identification of the major options, the criteria and the priorities in making selections among alternative path, factors involved in gaining national understanding and acceptance of new policies, and techniques for modifying policies in the face of significant changes in conditions.

b) The African nations with the assistance of Latin American countries should initiate an aggressive, major new programme to undertake activities which would lead to successful new investments for hydro-electric power development. It is recommended that those developing countries in Africa which are endowed with hydro-resource potential take the well defined steps necessary for successful applications for capital investment. These activities should be of an integrated nature including: hydrological resource assessments, manuals for the design, manufacture, operation, and maintenance of small hydroplants, technological requirements, engineering, training and linkage with industrialization. As part of this programme new institutional structures should be considered for the development and demonstration of hydro-power, the training of personnel and setting standards on design and equipment.

c) Bio-mass energy sources are large and widely distributed in many Latin American and African countries and through the development of the necessary technologies could become a significant industrial energy source in these countries. It is, therefore, suggested that joint concerted action be taken by Latin American and African countries and institutes, initially at the following two levels:-

i. to intensify the research, development and demonstration programmes on bio-mass energy and its industrial implications, and

ii. to exchange information and experience on bio-mass energy development and use through regional networks consisting of appropriate national institutions which would facilitate the sharing of information and experience on bio-mass energy policy issues, resource surveys and new technologies.

d) The expected expansion in small hydro-power and bio-mass energy generation will require extensive new equipment. In the case of hydro-power this consists principally of electro and mechanical equipment and in the case of bio-mass the opportunity includes various gasifiers,

converters, and other equipment which can be used at rural locations or in large industrial plants. The opportunity for domestic manufacture is clear but at the same time it would be unrealistic for each and every country to produce all of its own the equipment requirements. This market situation lends itself to co-operation between the Latin American and African countries whereby each country would gain an equitable share of the others market for specialized goods and services for the energy sector.

e) Industrial energy conservation represents an opportunity to make significant energy savings at low cost and as such is an ideal area for co-operative effort between Latin America and African countries and institutes. An essential feature of such a programme would be an initial selection of those industrial sectors which account for the largest use of energy. The second aspect of the programme is a decision concerning the number of elements that would be integrated into the programme such as education and training, the preparation of manuals, methodologies for performing energy audits and assessments, the use of workshops, seminars and plant visits, the creation of information centres, and linkages between organizations and institutions in the participating countries.

VIII. TELECOMMUNICATIONS INDUSTRY

51. In 1977 the African countries imported over 27,412 tons of telephone equipment. By 1990, these figures are expected to run over 86,000 tons and by the year 2,000 to more than 210,000 tons. By the year 1990, Africa will be able to support more than 10 telephone equipment manufacturing units. The total investment for telecommunication equipment will be in the order of US\$ 500 million. The labour requirements will be 20,000 to 30,000. Promotion of the electrical and electronic industries is thus not only of importance to the assembly of telephones,

but it also serves as a supplier of essential spare parts to other sectors. Its products, such as simple switches, cables, fuses, wire insulators and meters ranging to generators and switch gear, which have a significant role to play in the development of a country.

52. Some African States have undertaken major efforts to establish telecommunications systems designed to support economic and social development activities in each of the countries. Nevertheless, enormous difficulties, not the least of which is the limited available funds, have slowed the rate of growth in these systems. When one considers all the development targets simultaneously set by the Governments in such varied priority areas as health, education and agriculture, the low national product does not permit the allocation of enough money to meet the increasing requirements for telecommunication facilities. In these circumstances, recourse from multilateral technical assistance or foreign aid affords the only possibility for financing the purchases of the equipment and other items needed for the building of telecommunication infrastructure facilities in Africa.

53. With the acceleration of industrialization on the African continent the need for better and more comprehensive telecommunication networks, both internally and internationally, has become urgent, and with it, the planning for improvements and expansion of such networks and the realization of reliable and continuous sources of supply of telecommunication equipment. The African continent is so far lagging behind the fast expanding technological development process, taking place in the telecommunications industry. There is now complete agreement between the needs and the merits to set up telecommunication manufacturing facilities in the African countries.

54. In the light of the above, there is a need to develop and promote co-operation between Latin America and Africa in the area of telecommunications. Such co-operation could, initially, include:-

- a. the exchange of information and experiences between Latin American and African countries and institutions;

- b. the development of joint research and development programmes particularly related to the adaptation of available telecommunication technologies and the application of new technological advances;
- c. the development and implementation of joint training programmes;
- d. the promotion of African multi-national telecommunications industries; and
- e. the promotion of trade between Latin America and Africa in this sector. In this regard, special attention should be given to standardization which is essential in ensuring harmonization and compatibility of telecommunications equipment, components, replacement parts and appliances.

IX. CONCLUSION

55. The information and suggestions contained in this document provide inputs to be considered by the Symposium in the formulation of a framework for a programme of co-operation between Latin American and African countries and institutions. They cover certain areas and fields of activities which have been accorded high priority in the Programme for the Industrial Development Decade for Africa. They do not pretend to be exhaustive but do provide a starting point for discussions on this important subject to which this Symposium should address itself when adopting any framework for a programme of co-operation between Latin American and African countries and institutions and in formulating the mechanisms for its implementation and follow-up action.

56. In this connexion, consideration may be given to the following:

- a. Existing bilateral contacts should be intensified and new ones established between Latin American and African countries and institutions in order to develop appropriate arrangements for the implementation of this framework of the programme of co-operation between Latin American and African countries and institutions.

b. Within the framework of multilateral assistance UNIDO and other relevant United Nations and International Organizations should provide the necessary support to both African and Latin American countries and institutions in the implementation of this proposed programme of co-operation which should be incorporated as an integral component of their programmes for promoting ECDC and TCDC.

c. UNIDO should be responsible for monitoring the implementation of the programme and should prepare and submit progress reports, at least, on an annual basis, to the national focal points for ECDC/TCDC, national agencies responsible for the Industrial Development Decade for Africa and other interested parties. To this effect and to assist UNIDO in the preparation of the progress reports, it would be desirable for African and Latin American countries and institutions to keep UNIDO regularly informed of the progress made and the significant results achieved in the implementation of the proposed programme of co-operation.

d. In view of the paramount importance of mobilizing financial resources for the implementation of the programme, the African and Latin American countries, especially the latter, are urged to allocate financial resources for this purpose. They should also consider increasing their contribution to the United Nations Industrial Development Fund (UNIDF) by making special purpose contributions for the programme of the Industrial Development Decade for Africa (IDDA) which could be utilized for the implementation of specific programmes and projects of the programme of co-operation between Latin American and African countries and institutions.

