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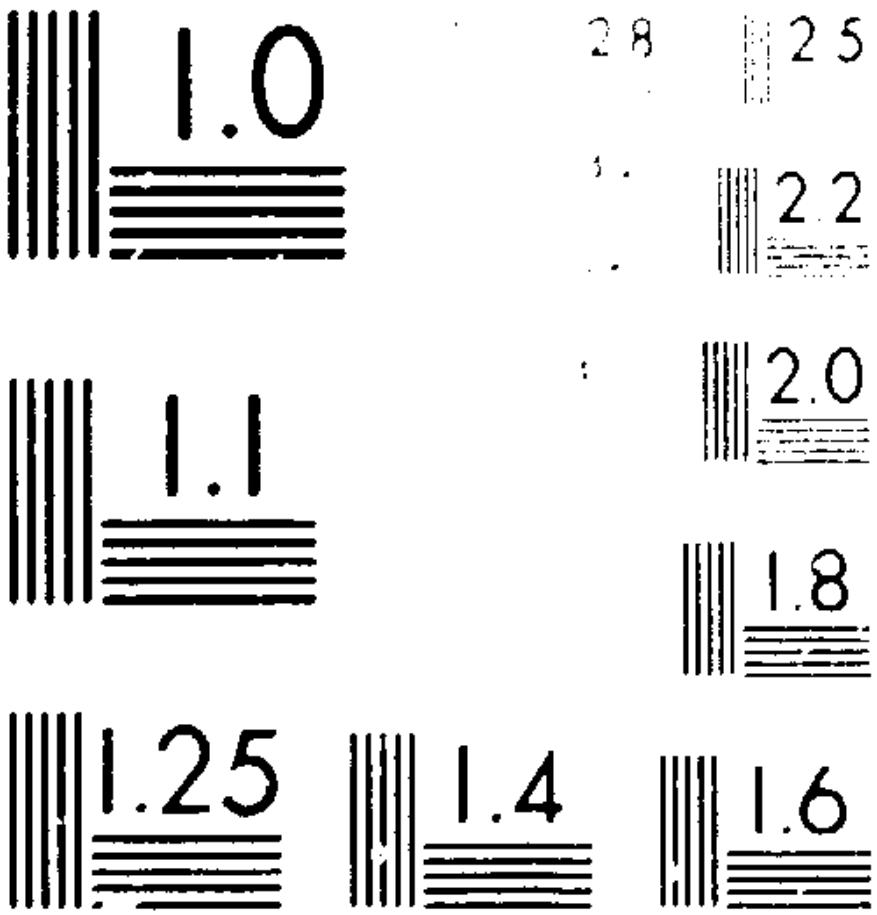
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INTRA-AFRICAN CO-OPERATION IN INDUSTRIAL TECHNOLOGY *

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CONTENTS

ANTECEDENTS AND PRESENT SITUATION IN INTRA-AFRICAN CO-OPERATION IN INDUSTRIAL TECHNOLOGY

1. Although arrangements for co-operation among African countries are by no means new, technical co-operation between African countries took longer to come about and is relatively new. The establishment of the Economic Commission for Africa (ECA) and the Organization of African Unity (OAU) in the late fifties and early sixties resulted in a marked increase in intra-African technical co-operation. It received further impetus from the attention manifested at the international level to the importance of co-operation among developing countries, initiated by the action programme adopted by the Heads of States and Governments of the Non-aligned Countries in Algiers in 1973 and the consequent United Nations General Assembly Resolution 2974 (XXVII) which provided the operational content to the concept of collective self-reliance and mutual help among developing countries in their development efforts. The Lima Declaration and Plan of Action on Industrial Development, adopted in 1975, attached particular importance to co-operation among developing countries and indicated a number of specific measures for establishing appropriate machinery for co-operation and co-ordination of efforts of developing countries particularly in the acquisition and utilization of technology.

2. The basic objectives of technical co-operation between developing countries, recognized as the furthering of the national and collective self-reliance of these countries and the enhancement of their creative capacity in solving development problems were also supported by the Fifth Conference of Heads of State or Government of Non-Aligned Countries in Colombo in 1976. The Kuwait Declaration on Technical Co-operation among Developing Countries states that "TCDC is a historical imperative brought about by the need for a new international order. It is a conscious, systematic and politically motivated process developed to create a framework of multiple links between developing countries". [1] This Declaration was

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1/ A/CONF.79/PC/18.

recognized in resolution CM/Res.560 (XXIX) of the Council of Ministers of OAU, endorsed by the Assembly of African Heads and Government in Libreville in 1977. In December 1977, the United Nations General Assembly endorsed recommendations for Technical Co-operation among Developing Countries adopted by the Governing Council of UNDP.

3. Thus technical co-operation among developing countries emerged as a new dimension of international co-operation for development. The United Nations Conference on Technical Co-operation among Developing Countries was held in Buenos Aires in 1978. Among the activities stated in the Buenos Aires Plan of Action adopted by the Conference, two relate specifically to technology: -

(i) "To strengthen existing technological capacities in the developing countries, including the traditional sector, to improve the effectiveness with which such capacities are used and to create new capacities and capabilities and in this context to promote the transfer of technology and skills appropriate to their resource endowments and the development potential of the developing countries so as to strengthen their individual and collective self-reliance.

(ii) To improve the capacity of developing countries for the absorption and adaptation of technology and skill to meet their specific developmental needs."[2/]

4. Several recommendations address themselves to issues closely related to technological development as discussed by the Symposium: -[3/]

- Recommendation 6: Promotion of national research and training centres with multinational scope
- Recommendation 7: The promotion of greater technological self-reliance
- Recommendation 8: The formulation, orientation and sharing of policy experiences with respect to science and technology
- Recommendation 18: The creation of new links for technical co-operation among developing countries in important substantive areas (specifying research and development (R and D) and the adaptation of technology)

2/ A/CONF.79/13/Rev.1, p.6

3/ ibid., pp. 8-19

- Recommendation 26: <u>The Improvement of information flows</u>
- Recommendation 36: <u>The harmonization of development assistance with technical co-operation among developing countries</u>.

5. The fundamental principle which underlies technical co-operation among developing countries is that technical co-operation among these countries is to be conceived neither as a substitute for nor a competitor to present bilateral and multilateral programmes. The overall objective, therefore, is to find means to expand the total resource flows, not simply change their proportions. Furthermore, the effort of the international community is being dedicated to the much needed improvement of information flow among developing countries and the tapping of unused resources for development activities. The resolutions adopted in the international fora, both inside and outside of the United Nations, as well as discussions in regional and international meetings, have brought out a number of points of consensus. The concept of self-reliance is not an expression of a desire for isolation or autarchy, but an essential dimension of a new interrelated system of global relationships. Firstly, it provides greater opportunities for progress through co-operative efforts rather than through individual endeavours. Secondly, in view of the fact that the third world countries today are at different levels of development, are endowed with different natural and human resources, and have different productive capacities, opportunities for meaningful and mutually beneficial co-operation are vast. Thirdly, the United Nations system has been urged to promote such co-operation and provide effective assistance in strengthening co-operation at subregional and interregional levels. Fourthly, every effort has to be made to provide an operational content to the subject of co-operation among developing countries. Fifthly, specific programmes of action need to be developed towards this end and, more particularly, a mechanism established to foster and facilitate such co-operation.

6. The need for co-operation among the developing countries in the field of industrial technology is particularly essential in view of the similarity of the problems of technological development they face, and in view of the various constraints and limitations often posed by the acquisition of technologies from the developed countries. Furthermore, the technological

needs and experiences in developing countries have a close affinity and follow a similar pattern. Technological development in several developing countries has achieved a level, both in terms of indigenous processes and techniques and in the absorption and adaptation of foreign technology, where it can be effectively transferred to other developing countries. The capability to provide technological services, including engineering and consultancy services, also has grown considerably in many of these countries, and could be extended to other developing countries. Such co-operation would, on the one hand, enable the developing countries to learn from each others' successes, pitfalls and mistakes, and on the other hand, permit them to pool their resources for mutually beneficial programmes and projects, thereby avoiding wasteful duplication. It would, however, be necessary that the commercial transfer of technology between developing countries at the enterprise level, should be effected on terms and conditions which are suitable and appropriate for both parties.

7. The Round-Table Ministerial Meeting on Industrial and Technological Co-operation held at New Delhi, India, in January 1977, the Meeting of Senior Officials and Heads of National Technology Registries in Developing Countries held at Vienna, Austria, in March 1978, and the International Forum on Appropriate Industrial Technology held at New Delhi, in 1978, have all stressed the need for such co-operative action, and have defined and identified areas and specific action programmes for promoting technological co-operation among the developing countries. These include:

(a) Harmonization of policies and action to achieve the target set by Lima following redeployment of productive capacities from developed to developing countries and the creation of additional capacities;

(b) Co-operation in the field of industrial technology with a view to improving the identification and use of technologies already available in the developing countries, including technical know-how and skills, machinery and equipment, design, consulting and construction capabilities etc.;

(c) The creation of co-operative programmes concerning applied R and D activities in specific sectors, drawing heavily upon machinery and capabilities already available in the developing countries;

(d) The development of concrete plans for encouraging the use of engineering and consultancy capabilities available within the countries as viable alternatives to those offered by industrialized nations;

(e) Establishment and strengthening of the institutional framework at the national and regional levels to sustain industrial and technological development, and to promote joint investment projects;

(f) To promote collective action for negotiating and bargaining for technology acquisition by the developing countries;

(g) The development of joint programmes and projects for R and D in specific industrial sectors or products, including the exchange of expert personnel for training etc.

(h) Collection and dissemination of information among R and D institutions and production enterprises in developing countries regarding the development and/or existence of alternative technologies, techniques and processes which may be useful to other countries;

(i) Enhancement and development of national capabilities in the identification, evaluation and selection of foreign technologies, including the regulatory and promotional functions necessary in this regard;

(j) The promotion and development of indigenous technological capability, including appropriate indigenous processes and techniques, technological service capability and the development of technological institutions engaged in industrial and technological R and D activities.

8. The objectives outlined above will have to rely on the political will and appropriate support from all governments concerned and on the introduction of adequate mechanisms for their implementation. UNIDO could play a central role in fostering and promoting such a programme and could provide as well analytical and direct assistance as needed. Moreover, it should be envisaged that the work and activities to be undertaken under this programme would have to rely upon adequate information and experience which is already available within the countries, but so far not properly utilized.

9. In an increasingly complex and inter-dependent economic society no group of countries can afford to cut itself off from the mainstream of international technological progress; however, developing countries cannot continue to be the recipients of production techniques that are often unsuitable, supplied at inflated prices and under restrictive conditions.

10. The Conference of Governmental Experts on Technical Co-operation Among African Countries held in Nairobi in May 1980 provided a good opportunity for the first systematic review and analysis of African experience in this field.4/ It notes two encouraging signs. First that "the need for economic co-operation became imperative for the African countries as they reached independence", even though this "proved difficult only where the political will was lacking". It notes further that "progress has been made as regards political will ..... ideological differences are no longer an obstacle to the development of economic co-operation, which has thus moved ..... to more specialized sectors (meteorology, aridity, food, industry) or to operations in a specific field (training of rural engineers, solar energy research etc.)".

11. One of the particularly striking features of intra-African co-operation in fields related to technological development is the exchange of students for university education within Africa (see table).

4/ UNDP: African Experiences In Technical Co-operation Among Developing Countries, Conference of Governmental Experts on Technical Co-operation among African Countries, Nairobi, Kenya, 12-20 May 1980 (TCDC/AF/4).

Table - African students studying in African countries by field of study and host country in 1971 */

Field of study / Host country	Humanities, Education, Fine Arts	Law, Social Sciences	Natural Sciences	Engineering	Medical Sciences	Agriculture	Not Specified	TOTAL
Congo	117	61	16	-	-	-	-	194
Ethiopia	10	-	6	4	4	21	13	58
Ghana	45	35	16	7	9	11	-	123
Ivory Coast	131	375	62	-	89	-	10	667
Lesotho	99	67	47	-	-	-	-	213
Libya	240	86	46	78	13	38	-	501
Malawi	2	4	4	-	-	1	-	11
Senegal	275	437	143	11	507	45	-	1 418
Sudan	153	553	15	2	7	4	-	734
Togo	163	266	68	-	-	-	-	497
Uganda	79	157	31	-	157	71	2	497
United Rep. of Cameroon	38	45	16	-	4	12	-	115
TOTAL	1 352	2 086	470	102	790	203	25	5 028

*/ Source: UNDP, African Experiences in Technical Co-operation among Developing Countries, Annex 3 (TCDC/AF/4).

However, one cannot help noting that the majority of these students are in the humanities, education, fine arts, law and social sciences and that some ten times the number studying in Africa are studying outside the continent.

12. Of twenty-one projects which could be analysed by UNDP[5/] only five could be said to relate to technological development. UNIDO has been active in promoting intra-African co-operation within its field of competence, with a number of ongoing programmes. Some five African countries are involved in UNIDO's Technological Information Exchange System (TIES) programme. In-plant training courses for participants from several African nations have been organized in a number of industrial technology fields.

A FRAMEWORK FOR ACTION

13. Co-operation in science and technology has been identified as one of the three priority areas of technical co-operation among developing countries in Africa.[6/] It has been noted that technical co-operation between developing countries is more advanced at the conceptual, philosophical and political levels than it is in operational terms. The challenge is to translate the concept into meaningful action. It must be remembered, however, that experience in this area is very limited and there is as yet not much data on the problems facing the operationalization of the concept. However, certain general principles seem to be clear. Joint action between countries is no substitute for determined action at the national level. In fact, unless national effort has reached a minimum threshold in its scope and intensity in some of the countries involved, together with a realization and a will to benefit from it in some others, such co-operation would be of little value, if not an outright dispersal of effort. One particularly important aspect of intra-Africa co-operation is the crucial importance

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5/ UNDP: African Experiences in Technical Co-operation among Developing Countries, Annex 1 (TCDC/AF/4).

6/ Ibid., para. 2

it has for the least developed, landlocked and island countries of Africa. It is difficult to exaggerate the value of co-operative measures in keeping these countries within the mainstream of technological development and saving them from lagging behind other countries in Africa. The identification of complementarities is almost the only basis of sound development planning and would make them less dependent on other countries.

14. The importance of political will has been cited on more than one occasion as a prerequisite for such co-operation. Without in any way belittling its importance, it should also be remembered that there is a whole spectrum of modes and activities in operationalizing co-operation in technological development. These range from the less committed exchange of personnel as students and trainees or as experts and consultants, through jointly organized meetings, symposia or conferences; multinational training courses; joint action in the processes of technology acquisition; co-operative research programmes or field studies; all the way up to jointly-owned production facilities.

15. Intra-African co-operaton in the functions of industrial technology should be viewed as the means to achieving collective technological self-reliance. It should be viewed as a dynamic approach to turning self-reliant concepts in technology fields into reality through actions that could start in a very modest way; but continue to develop in intensity and in quality as progress is achieved and new challenges and opportunities emerge in a continually changing world and African political climate.

16. Again, actions will be based on the three parameters: the functions of industrial technology; the sectors of industry in which these functions are to be exercised, and the instruments of exercising these functions. The functions and instruments have been dealt with in the other documents presented to the symposium, while the priority sectors have already been identified and approved by the African states.

17. In formulating a framework of action for technological co-operation in Africa, a number of specific issues will have to be considered. They reflect various degrees of co-operation as outlined in paragraph 14.

Amongst these are:7/

(a) The measures needed to collect and disseminate information on technology and product choices in other African countries. These would cover national and continental action and possibly by UNIDO as part of its functions in the Technological Information Exchange System and the Industrial and Technological Information Bank (INTIB). The problem here is partly caused by lack of knowledge regarding alternatives and partly by a continuing preference for more sophisticated technologies used in highly-industrialized countries. Closer contacts and greater sharing of knowledge and experience between African countries could help overcome this problem.

(b) The specific programmes that need to be carried out for the transfer of technology and know-how in the priority sectors, whether from the "flow" or "stock" streams. Unless positive measures are taken to encourage the flow of technology and know-how between African countries, enterprises will continue to seek technology from industrialized countries even where adapted technology has proved its appropriateness in another country.

(c) Measures for promoting greater utilization of technological services (for example, consultancy engineering, design offices, testing, calibration and standardization facilities) available in other countries. In an African context, such measures would guarantee a minimum workload for such nascent services that would make them economically viable and ensure their continuity, and the expansion and accumulation of experience and knowledge. The problem is also related to scarcity of information on the indigenous capabilities and the preference given to such services from abroad.

(d) Harmonized policy guidelines governing foreign technology inflow in the priority sectors. Such guidelines have been formulated by the Andean Pact countries in Latin America and their experience merits careful analysis.

7/ UNIDO: Technological Co-operation Between Developing Countries ID/WG.275/5.

(e) Joint acquisition of technology and know-how through collective bargaining, particularly for some of the priority sectors involving complicated and costly technologies which are likely to be used by more than one country.

(f) Jointly-owned production units meeting the demand in more than one country. This presumes perhaps the most advanced stage of co-operation. It is of particular importance in some strategic industries or where there is complementarity of endowments.

(g) Co-operative R and D programmes. Apart from the obvious advantages of linking existing manpower and institutions in joint research programmes in the priority sectors; of the exercise of the technology functions; the encouragement of indigenous creativity and the development of the stock stream of technology, joint effort is the only way for meaningful work in some of the fields of advanced and non-conventional technology. Thus a very wide range extending from agro-industry or leather to electronics, chemical industry and pharmaceuticals would be covered in the most effective manner.

18. The starting point for dealing with these issues and devising feasible programmes is a thorough survey of the supply side and an in-depth investigation, revealing the full potentialities and complementarities of existing institutions and resources. Various indicative actions in this connection have been presented at the end of each of the Symposium documents which could lead beyond the mere compilation of data on what is in existence to the identification of possibilities and enhancement of existing facilities in relatively short periods of time and without unduly large expenditures through careful consideration of some of the issues raised and discussed in the previous paragraph. 8/ Having identified the available base for co-operative activities the endeavour should be to strengthen and enlarge the base itself by specific well-directed actions. Thus, collective technological self-reliance would become an African reality in the acquisition of foreign

8/ UNIDO has compiled a directory of industrial information centres and is carrying out surveys of R and D, as well as training institutions in Africa. These activities will provide a valuable data base for planning and implementating co-operative activites.

technology and in developing endogenous technologies through a dynamic approach that anticipates challenges and exploits opportunities as they arise.