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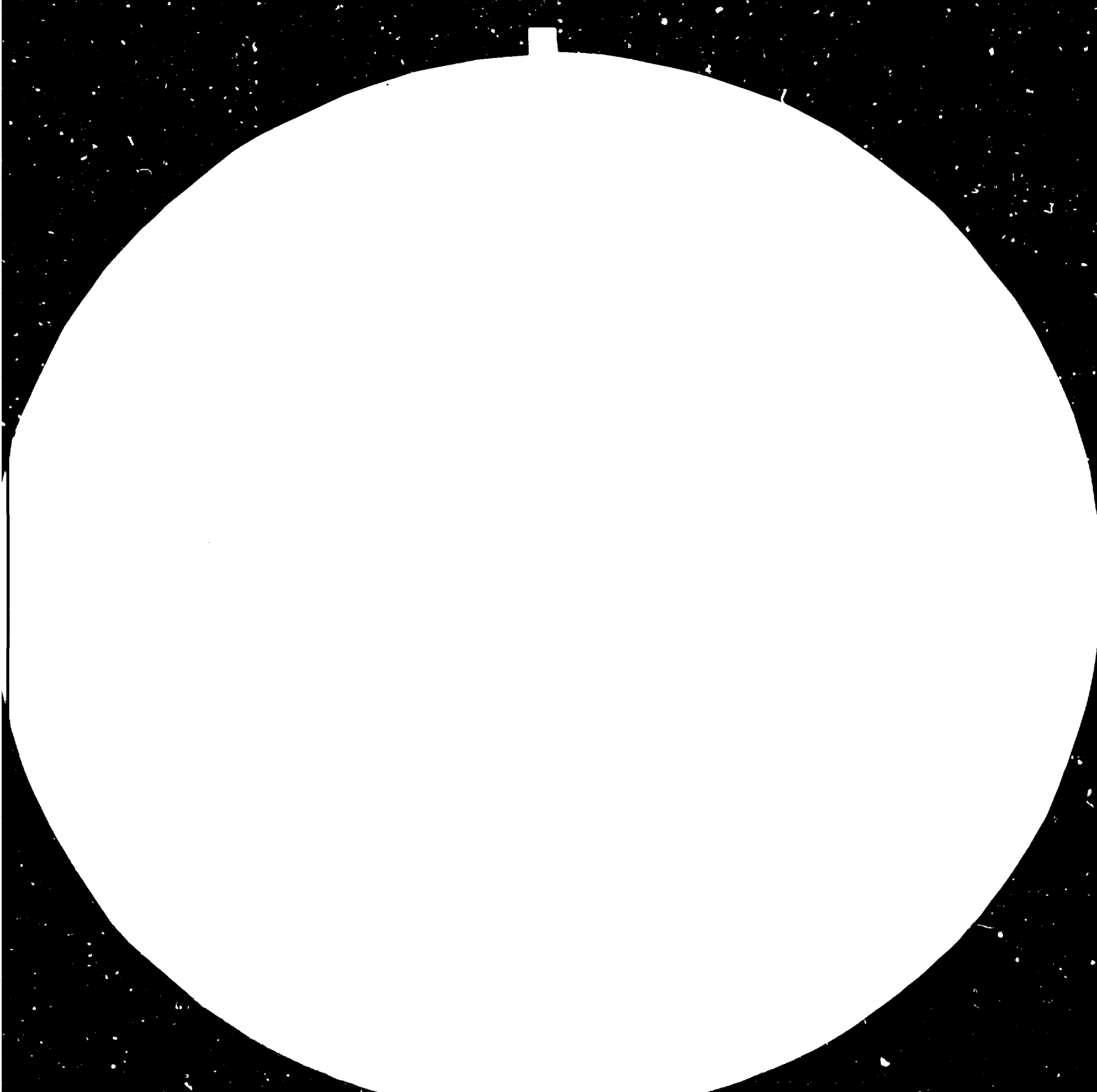
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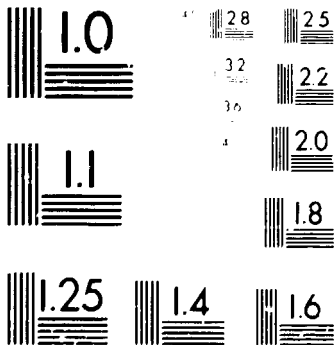
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item 5(a)

**ACCELERATED DEVELOPMENT
OF HUMAN RESOURCES
FOR INDUSTRIAL DEVELOPMENT**

ISSUE PAPER

Item 5(a) of the provisional agenda

INTERNATIONAL CO-OPERATION, RELEVANT NATIONAL ACTIONS
INCLUDING INDUSTRIAL POLICIES, AND UNIDO'S CONTRIBUTION
IN CRITICAL AREAS OF INDUSTRIAL DEVELOPMENT 1985-2000:

Accelerated development of human resources
for industrial development

Issue paper prepared by the UNIDO secretariat

INTRODUCTION

1. It has been argued that in the development effort of a country quite often its material resources and physical assets have been overvalued and its human resources comparatively undervalued. The central role of human resources development has now been universally acknowledged. The background paper on the accelerated development of human resources for industrial development (ID/CONF.5/9) cites a number of international forums that have stressed the importance of human-resource-led development strategies based on the recognition that human beings are both the instruments and the beneficiaries of development. The experience of many developing countries in their industrialization efforts has clearly shown that the inadequate, inappropriate or belated development of needed human resources is a serious constraint to dynamic, self-sustaining and accelerating growth of industrial development.

2. This paper presents a number of major issues that the Fourth General Conference of the United Nations Industrial Development Organization (UNIDO) may wish to examine, bearing in mind the information and analysis in the background paper on this subject. The background paper is to some extent a synthesis of recent UNIDO papers for, and the conclusions of, the First Consultation on the Training of Industrial Manpower (ID/WG.381/3), studies on human resources development put forward in preparation for the High-Level Expert Group Meeting Preparatory to the Fourth General Conference of UNIDO, held from 30 May to 3 June 1983 at Yaoundé, and the recommendations of that Meeting (ID/WG.394/8). The issues discussed here are selective and are included because they are considered priority areas in the accelerated development of human resources for development.

3. The principal constraints faced by developing countries have been analysed, and some practical action-oriented measures are suggested for examination and for possible action. These are grouped as general conclusions and possible actions at the national, regional or global level. Since the subject is of interest to many organizations - or perhaps all organizations of the United Nations system, the training component being a part of their sectoral responsibilities - some measures are also suggested for co-ordination and joint action where required.

I. ISSUES FOR DISCUSSION

4. The unsatisfactory results of traditional approaches to human resources development have led to a need for formulating new approaches based on the concept of human-resource-led development and assimilating past experiences and addressing new challenges posed by techno-scientific developments - their unprecedented speed, their rapid diffusion on a global scale and the drastic social changes they bring about.

5. Putting a strategy of human-resource-led development into operation calls for practical action covering programmes, methods and institutions, spread over a wide spectrum of disciplines. A reorientation of traditional approaches to acquiring knowledge and skills has to have two main targets: to

bridge the gap that traditional methods have created between learning and doing and to take note of the necessity for continuous education, mainly through self-instruction or "learning to learn". The youth of today will have to acquire new capabilities and master new knowledge and skills throughout their working lives. The main aim of a new approach should be to help create an enlightened and socially-committed individual, hence the need for what has come to be called "development education", which alerts the citizens to the needs of national development and their role in the process. In linking education to development, a whole range of methods, mechanisms and institutions, extending from formal and non-formal education to the mass media and cultural activities, has to be brought together in a synergistic manner to relate education to real life experiences, especially in rural areas. Particular emphasis is needed on the acquisition by youth of value systems that respect work, cherish perfection and productivity and take pride in personal achievements for the common good. Training and retraining come at a later stage and should be related to the acquisition of skills for particular tasks.

6. While, on the one hand, a new approach has to bear in mind the expected social changes and needs that technological developments are likely to bring about (e.g. increasing share of intellectual effort, more productivity and creativity and growing emphasis on interdisciplinarity), it should, on the other hand, carefully adapt itself to customary work-sharing patterns. Where appropriate, those elements of the prevailing value system that need modification should be modified.

7. Many emerging innovations in educational technology, as well as developments in the scope and contents of the "knowledge industry", provide new and exciting vistas for human resources development, ranging from the eradication of illiteracy and the provision of a wide range of possibilities for individual and group self-education to the acquisition of sophisticated knowledge and skills on a massive scale and at lower costs. The question arises as to how developing countries could best assess and adopt such modern systems in harmony with their traditional ways and what the optimum mix of the traditional and the new would be in typical conditions of groups of developing countries. The question also arises as to what industry itself in the developing countries can and should contribute to an indigenous knowledge industry. A third question that may also be addressed is the need for an awareness of the chain of reactions and implications, good and bad, social and financial, that some of these novel techniques involve, particularly for rural areas and for countries still at early stages of development.

8. It is now generally recognized that the development of human resources is a multi-faceted endeavour that is costly and cannot be hurried beyond certain limits. While it is not restricted to fulfilling the needs of industrialization, which is the engine of consolidated development and growth, it has to address these needs in a timely and effective manner. The synchronization of supply and demand of human resources for industrial development presents some very specific problems in the prevailing situations in most developing countries. These relate to two aspects. First, there are the difficulties encountered in formulating sharply defined industrialization strategies and plans which determine, in the final analysis, the volume and diversity of skills needed and the timing for their availability. Second, there is a time lag between identifying the needs, qualitatively and quantitatively, and training the human resources to meet these needs.

9. The mismatch between supply and demand has often resulted in undesirable effects, such as shortages in some specializations, combined with surpluses and unemployment in others. This mismatch between supply and demand in industrial manpower, which is evident in many developing countries, means that the absence of certain critical capabilities delays the industrialization process and may force countries to rely unduly on expatriate manpower. The scope and urgency of the problem will, of course, vary from one country to another, depending on the industrialization strategy and the status of the educational and training systems. While the numbers needed in a capability depend on the specific requirements for each industry, the critical capabilities seem to cover a wide range, e.g. socio-economic and scientific research, national information, competence in the assessment of options for policy and planning purposes, as well as the technical skills of workers, technicians and specialists.

10. Furthermore, if the absence of certain technical and managerial skills is easy to identify, it is the other critical capabilities, starting at the policy, decision-making and planning levels and covering a variety of essential industrial needs such as the entrepreneurial, engineering, technological and scientific capabilities (discussed in some detail in the background paper (ID/CONF.5/9)) that do not receive adequate attention. In particular, it is important to develop entrepreneurial capabilities that are essential for the spread of efficient small-scale industries, which are the necessary support base and potential upstream and downstream clients of large-scale industries, whether in the public or private sectors or in the rural or urban areas. The comparative advantages of the rural and urban areas can be effectively mobilized so as to utilize the traditional skills and crafts and integrate women, youth and the elderly in a manner conducive to greater productivity, better livelihood, stability of the rural population and concern for social relationships in rural and urban areas.

11. Most developing countries still rely heavily on foreign sources for the provision of industrial consultancy and design services, whose recommendations can be decisive in shaping industrial development in a country. Experience has often shown that such recommendations do not always reflect a deep understanding of national aspirations and conditions. The success achieved in some countries in setting up national consultancy and design services in architecture, engineering and construction points up the need to extend services to cover the variety of other requirements of the industrial sector.

II. SUGGESTIONS FOR ACTION

A. National level

12. If a country is to respond to the challenges of technological advances, availing itself of the benefits of such advances while safeguarding society against their disruptive impacts, it will have to introduce special measures on the human resources development front. The Conference may wish to consider measures that relate to the specific needs of the industrial sector, e.g.: reorientation in curricula and techniques, as well as modernization of

teaching aids in educational establishments; the retraining of teachers, workers and managers through closer links between schools, training establishments and higher institutes of learning; and enlightening the public at large and preparing it psychologically for change.

13. Measures for the closer integration of human resources development for industrialization in overall national manpower planning call for effective working relations between the triad of government, industry (which includes both management and labour) and education. The Conference may wish to discuss, and suggest for the consideration of Governments, mechanisms for establishing close interaction, perhaps through a central co-ordinating body. Consideration needs to be given to the mandate of such a body and the manner in which it could effectively fulfil its co-ordinating role (legislative power, disbursement of financial resources, consultations, research, study and dissemination of information etc.).

14. Difficult as it may be, manpower planning is a must for overall development. But, as has already been stated, it should be flexible. Industrial manpower policy and plans must be an integral part of industrial development policies and plans. This involves short- and long-term measures that cover: assessing manpower needs (particularly in regard to critical capabilities); providing adequate infrastructure and funds and optimally utilizing existing facilities and skills; reducing mismatch between industry needs and university products; improving working relations and linkages between government, education, professional institutes and industry, both management and labour; redesigning the content, form and method of education; setting up teaching and training companies, open universities, vocational training schools; making education development-oriented; introducing "learning by doing" and "learning to learn" in upgrading skills; measures to reduce the brain drain or at least convert it into a "brain bank"; special emphasis on training of trainers, women and youth; and mobility of personnel within industry and between industry and academy.

15. A suitable environment should be created to change when necessary, social values and attitudes towards the type of work in the organized industrial sector and to stimulate creative, innovative abilities, entrepreneurship, self-employment etc. by direct and indirect subsidies, tax and other incentives, awards and rewards to ensure that every person becomes productive and an asset to society. The urge for excellence, quality, productivity, higher standards and resourcefulness is an important attribute that needs to be brought into clear focus.

16. Policies should be appropriately adjusted for rural and non-rural areas. There should be clear policies relating to human and industrial development in rural areas, e.g. setting up rural industries, vocational courses in agro-, animal-, fish-, forest-based and similar industries, rural extension services, better utilization of age-long experience and traditional skills and native genius. Priority is required for those industries that are an input and output of agriculture, as food needs are the most important in the 1980s. Fertilizer and pesticide production, agricultural tools and machines, rural electrification, the processing, storage and transport of food, water supplies and irrigation and maintenance and repair of equipment would all contribute to increased food production with the assistance of industry.

17. Each country may consider establishing a single agency, a focal point or a central co-ordinating body to co-ordinate educational and training programmes and establish a national fund for industrial training. Such an agency may prepare an inventory of the existing infrastructure and suggest ways of making better use of universities, engineering and technical education establishments, research organizations, training centres and extension services, secondary and vocational schools, polytechnical schools, centres of excellence and specialized institutes to provide formal and non-formal education and training courses, as well as institutional support to local entrepreneurs and small-scale industry. The agency may also suggest ways of mobilizing financial resources for such activities and identify or develop the concept of teaching companies.

18. There should be a greater allocation of financial resources to the development of the scientific and technical capabilities required by industry. A figure of 2 per cent of the gross national product (GNP) has been proposed for this purpose. Industry also needs to play a greater role in developing the manpower capabilities that it needs. In-company resources need to be mobilized - in some countries, 1 per cent of the wage bill is set aside for training and retraining of workers and staff of the industry. Arrangements for economic and technical co-operation between developing countries and other bilateral arrangements should accord priority to the development of industrial capabilities.

19. In mobilizing financial resources for training, the issue is the division of responsibility between the State and the industrial establishments for providing funds for educating and training industrial manpower. Suggestions have been made for allocating certain percentages of the GNP or the national wage bill for the purpose. It has also been suggested that tax incentives be provided to finance training programmes and facilities and that part of the savings brought about by technological developments be used to finance the retraining of redundant labour. Development assistance funds, and even bank loans, can be well-spent financial resources for the development of missing critical capabilities. The Conference may wish to consider appropriate action in the critical area of mobilizing financial resources for the accelerated development of human resources for industrialization.

20. Recourse to legislative or administrative action may even be taken so that the approval of new investments and joint ventures is subject to the availability of trained and qualified nationals to work alongside any expatriates. The inclusion of a training component in the project design is a must, and the provision of funds for training, retraining or enterprise-specific training linked to the equipment purchase contracts must be a standard procedure in all developing countries. Financing institutions should recognize the need for this and should request this provision in the contracts for projects they finance.

21. At the national level, the implementation of the preceding suggestions would accelerate human resource development. Full government commitment and national budgetary allocations are required consistently to maintain a continuous and unfaltering dedication to the optimal development of indigenous human resources. National expertise has to be utilized whenever possible, and training must be geared to this objective. Existing training activities must be optimized, and there must be a concentrated effort to obtain bilateral or

multilateral funding, in addition to national funding, for this purpose. Expenditure of vast sums on the best possible capital equipment is not useful unless skilled manpower to operate and manage the equipment is available - this can only be achieved through anticipated and calculated national planning and training of human resources.

B. Regional level

22. Even if a total government commitment to national human resources development were given first priority, there would be many occasions when the help and assistance of others - developing and developed countries, institutions and international organizations - would be required if this development was to take place at an accelerated pace. The kind of infrastructure and the programmes needed cannot be developed solely on a national basis, particularly in smaller and less developed or least developed countries. There is an obvious need for regional action at the very least. Such ideas as setting up teaching and training companies and Government-to-Government and enterprise-to-enterprise co-operation elaborated in the background paper may be relevant in this context.

23. In many cases today, there is little national experience in pinpointing critical areas in which to develop crash retraining programmes before the need in these critical areas becomes urgent. Anticipatory adjustment measures are extremely difficult to implement for many developing countries, particularly the least developed. There are at present not enough effective methods of acquiring information on the experiences of other developing countries that may be relevant to particular national situations. This can be solved to some extent through the identification of regional centres that could provide specific and accurate information and also then facilitate training arrangements that are not only relevant in this context but are also comparatively cheaper than similar training in industrialized countries and their training centres.

24. There is ample scope for industrial manpower training through programmes for technical co-operation among developing countries (TDC) and economic co-operation among developing countries (ECDC), and hence information on training needs and training facilities available regionally or in adjacent countries should be disseminated. The institutions themselves should take steps to make countries in the neighbourhood know of their existence, their capabilities and their capacities. Ways and means should be found to finance such activities through interregional UNDP programmes and other bilateral or multilateral funding as might be available.

25. Some developing countries are informed of the possibilities for human resources development in other developing countries, but the absence of working agreements, arrangements or other appropriate mechanisms at the regional level inhibits the wider use of co-operation between developing countries. There is perhaps also an attitudinal barrier against the use of developing country expertise, although it would be more relevant to the circumstances of the country seeking expertise. The developing of greater confidence in each other's technical capabilities is an important prerequisite for co-operation between developing countries.

26. Following on the recommendation of the New Delhi Declaration and Plan of Action on Industrialization of Developing Countries and International Co-operation for their Industrial Development (ID/CONF.4/22, chap. VI), a programme of strengthening national and interregional centres of excellence is underway. These centres are defined as existing institutions in developing countries which could be used as a technical co-operation instrument, inter alia, to help other developing countries through technical training in fields related to industrial development. The evaluation of technologies appropriate for transfer, research and development in areas of technical or scientific interest and useful for the production of goods and services are activities envisaged for action by these centres, which are now being identified. Such centres could include industrial training centres, that are capable of upgrading skills and that could establish training or similar relationships with complementary institutions in other regions.

27. Regional co-operation should extend to the following areas: exchange of information and expertise in the production of educational kits, techniques and technologies; development of curricula and syllabuses for training programmes; identification of, and matching education and training programmes to, sectoral and functional needs; methodologies for industrial manpower planning and policy; setting up multinationally owned teaching and training companies; joint industrial consultancy services and engineering firms and joint repair and maintenance services and facilities and other such activities where economies of scale would be advantageous and economical.

28. Since the monitoring and financing of small-scale industry by means of regional development banks is difficult owing to a lack of trained personnel who might simplify loan procedures, solvency surveys, management of markets, economic evaluations and ensure follow-up, a crash programme of training is required. One possibility is to strengthen existing co-operation with development finance institutions, such as the Association of Development Finance Institutions in Asia and the Pacific (ADFIAP), the Asociación Latinoamericana de Instituciones Financieras de Desarrollo (ALIDE) and the Association of African Development Finance Institutions (AADFI).

C. Global level

29. The industrialized countries, in providing funds through their aid and development agencies for the promotion of industrial ventures, should include in their bilateral assistance programmes clauses for specific training and preparatory activities for the industrial venture, including pre-investment and feasibility studies, design, production, maintenance and repair. Other technical and economic co-operation programmes may include: on-the-job training by companies; training of personnel during construction and start-up of industrial plants; organization and financing of training and research centres in developing countries; exchange of information, students, instructors, educational kits, books and audio-visual programmes; twinning and networking of centres and institutes; and joint research and development programmes.

30. Industrialized countries may increase their voluntary contributions to the United Nations Industrial Development Fund and designate them especially or earmark a specific subvention exclusively for human resources development.

Consortia of educational institutes in industrialized countries may help developing countries to set up their own institutions with twinning, partner, adoption, and other arrangements that will strengthen the new institutions.

31. Co-operation between enterprises and between financial institutes should include the training of nationals of developing countries. These institutes should ensure that all capital projects and all contractual arrangements contain a training clause for industrial manpower development.

32. The year 1985 has been designated by the United Nations General Assembly as International Youth Year. Since education and training are primarily directed to the youth, they should receive special attention in the national and international activities related to that year.

33. The possibility of holding a world conference on training in 1986 or 1987 is being discussed by the International Labour Organisation (ILO). The conference, it is stated, "would be on 'training in a changing world' and would deal with developments in training systems in relation to countries' needs on the one hand and the aspirations of the potential work force, the young, women, and the disadvantaged on the other. It would also discuss issues related to retraining for structural change and technological development" (GB.224/PFA/10/1, 224th session, Geneva, November 1983). Since the objectives of this conference are along the lines of issues raised in this paper, the closest possible collaboration of ILO and UNIDO in the preparations for and the holding of the world conference is called for.

D. The role of UNIDO and system-wide co-ordination

34. The need for assistance in the Industrial Development Decade for Africa has been amplified in the background paper. The least developed countries should also have a special place in the programme of activities relating to human resources development that has been discussed in the preceding chapters and that may be launched by UNIDO on the recommendation of the Fourth General Conference.

35. UNIDO in co-operation, where possible, with relevant international organizations, particularly ILO and the United Nations Educational, Scientific and Cultural Organization (UNESCO), should produce a handbook or manual on the identification of sectoral manpower needs, manpower planning and policies and guidelines and programmes for accelerated human resources development. This handbook would set out a methodology to determine industrial manpower and training needs in relation to the different levels of technological complexity.

36. UNIDO, ILO and UNESCO should assist in the review of educational and training arrangements in developing countries; develop appropriate training material and systems; identify the national institutes that may become centres of excellence for training industrial personnel of other countries; support such centres; and assist in the establishment of information channels between developing countries.

37. UNIDO may look for newer forms of international co-operation in setting up international centres for emerging technologies (such as the International Centre for Genetic Engineering and Biotechnology); necessary pilot plants,

consultancy, negotiation, productivity, marketing, financial management and other systems; prepare guidelines and set up teaching and training companies at the national and regional levels; and help in setting up training institutes, jointly owned by developing countries, and companies to produce textbooks, educational and training video discs and educational kits and manuals.

38. In dealing with the fundamental issue of providing training funds as an essential part of the capital cost of an industrial project, UNIDO may examine the possibilities and modalities of introducing programmes and mechanisms for training in the financing of industrial projects, including borrowing in international markets and the utilization of mixed credits for this purpose. UNIDO should also assist the development finance institutes in training the requisite and appropriate cadres in development banking related particularly to small-scale industries, as mentioned above.

39. Initiatives are being taken elsewhere in the United Nations system to study the feasibility of establishing an international training fund, including assessing the need for such a fund, the necessary preconditions for its establishment and operation and the administrative organizational and financial requirements. UNIDO could contribute to the study, drawing on its own experience of the constraints and problems faced in the training of industrial manpower and indicating possible approaches to solving this problem through such a fund.

40. Many conferences have underscored the need for proper energy management and energy conservation action aimed at ensuring the availability and supply of energy in all its forms and lessening dependence on high-cost imported fossil fuels. Training in energy management and conservation is therefore a very important programme of work for UNIDO and should, where possible, be done in collaboration with other agencies of the system.

41. Bearing in mind the need to encourage enterprise-to-enterprise co-operation and hence the need to improve contractual relations, UNIDO should elaborate programmes for the training of contract negotiators and also prepare a check-list of clauses relating to training for inclusion in contracts for industrial projects, as already decided at the First Consultation on Training of Industrial Manpower and endorsed by the High-Level Expert Group Meeting held at Yaoundé.

42. The informal sector of industry is a rapidly growing area, capable of absorbing a number of people who cannot be gainfully employed in the formal sector of industry. Because the informal sector also has the capacity to feed small industry, a training programme for this sector should be devised by UNIDO in collaboration with other agencies of the system, particularly ILO.

43. Consideration may also be given to the adoption of some of the other activities suggested in the background paper for implementation by UNIDO. Many of these activities would involve much closer and greater co-operation with many other agencies of the United Nations system, including the United Nations Development Programme (UNDP), ILO, the Food and Agriculture Organization of the United Nations (FAO), UNESCO, the World Health Organization (WHO) and the World Bank. Memoranda of understanding exist with many of these agencies, and the collaboration and co-operation in a

cross-organizational programme should be in accordance with the competencies elaborated in the memoranda. When these need to be reviewed in the light of the further activities recommended, the revision of these memoranda of understanding in so far as they relate to human resources development could be taken up. It is also expected that close co-ordination would continue under the aegis of the Administrative Committee on Co-ordination and its subsidiary mechanisms.

44. A greatly increased programme of work for UNIDO would result from the adoption of many of the recommendations following on the issues posed for discussion in this paper. Human resources development is, however, a critical and priority area for developing countries as they have indicated at Non Aligned, Group of 77, ECDC and TCDC conferences and in many other forums. The development of concepts and methodologies, the subsequent publication of manuals, guides and handbooks and the holding of seminars and workshops to disseminate this thinking and elicit the views of countries would be a major activity in UNIDO. Accelerating human resources for industrial development would be a much wider and more important task than the mere placement of fellows in training programmes of technical co-operation. A greater involvement with other agencies that are also increasing their activities in this regard would also ensue. In order to implement a number of possible recommendations of the Fourth General Conference of UNIDO and in view of the great importance of the subject for the acceleration of the process of industrialization, it is suggested that institutional arrangements in UNIDO be strengthened, perhaps through a division for human resource development, to provide a focal point for all the activities of UNIDO in this area.

