



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

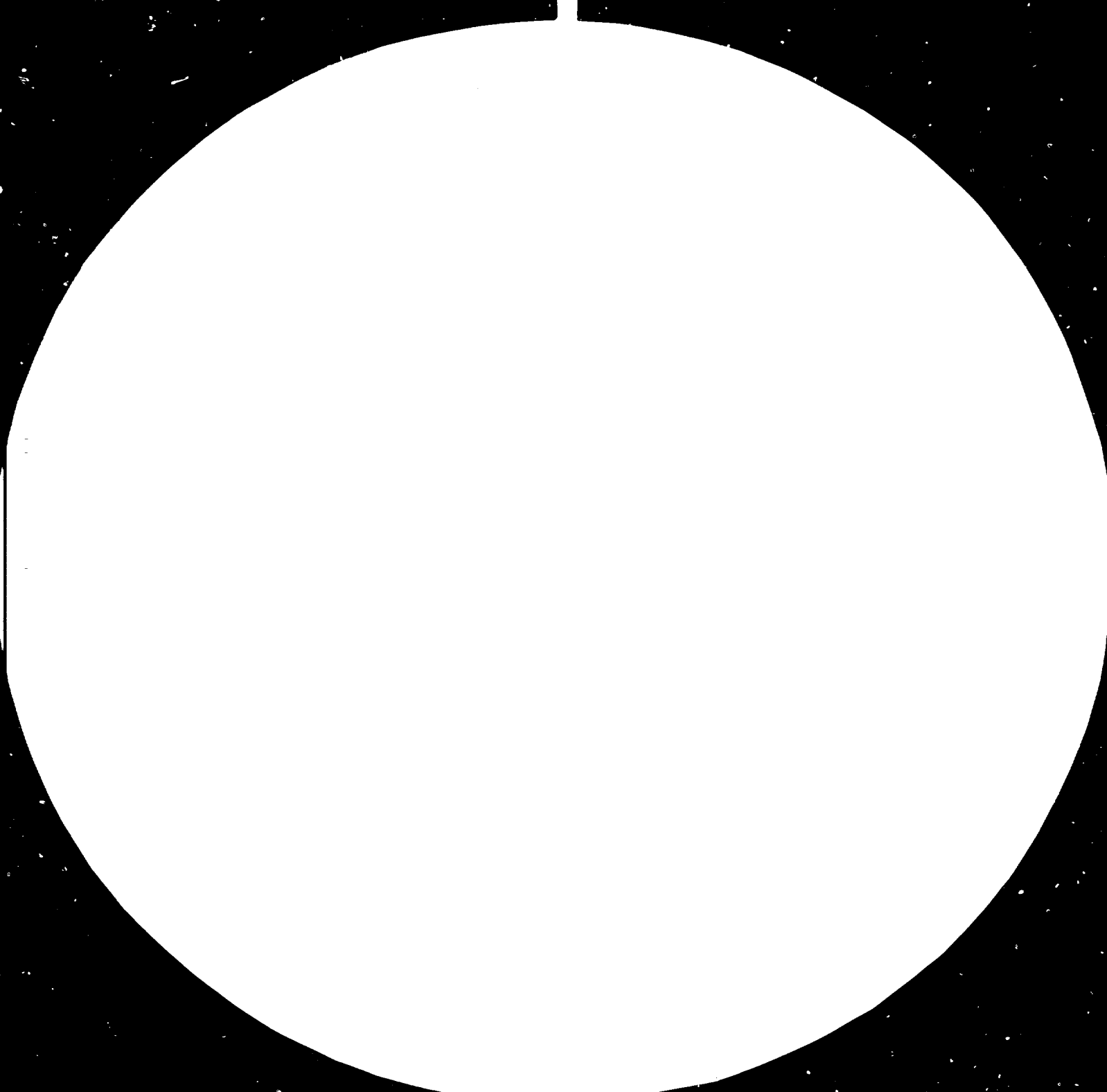
FAIR USE POLICY

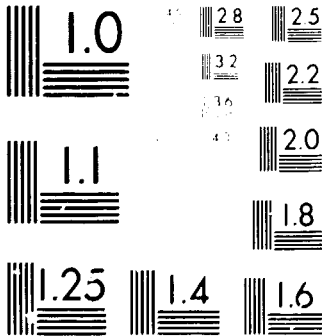
Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org





MEYER ROYER RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

10967-E

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

Distr.
LIMITED

UNIDO/IS.92/Rev.1/Add.1
8 December 1981

Original: ENGLISH

Ministerial Consultation on Industrial
Co-operation among Islamic Countries
Islamabad, Pakistan, 14-17 February 1982

[CO-OPERATION AMONG ISLAMIC COUNTRIES,] IN
TECHNOLOGICAL DEVELOPMENT AND TRANSFER OF TECHNOLOGY AND
IN INDUSTRIAL TRAINING

Addendum

[PART II

Industrial Training *]

Prepared by
the secretariat of UNIDO

002002

~~002000~~

* The text of this document, originally prepared in 1978, has been brought up to date by additions in the Annex.

This document has been reproduced without formal editing.

The designations employed and the presentation of material do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country or its authorities, or concerning the delimitation of its frontiers.

CONTENTS

	<u>Page</u>
I. Introduction	2
II. Planning of training for industrial development	6
III. Recommendations for action	13
IV. Possibilities of future training activities . .	17
V. Suggestions for long-term industrial training strategies	21
Annex	24

I. Introduction

A number of General Assembly resolutions dealt with the training of national personnel from developing countries for accelerated industrialization. ^{1/} ECOSOC adopted a resolution on the development and utilization of human resources, ^{2/} and the Secretary-General submitted a report on this subject. ^{3/} Emphasis has been placed on the contributions to industrialization of formal and non-formal education, vocational training and management development. ^{4/}

The attention of the United Nations has focused upon the subject of training national personnel for industrialization of developing countries since the beginning of the First United Nations Development Decade. A comprehensive report on this subject was prepared by the Secretary General in response to General Assembly resolution 1824 (XVII) and was presented to the Economic and Social Council at its thirty-seventh session in 1964. ^{5/}

-
- ^{1/} General Assembly resolution 1824 (XVII), 2090 (XX) and 2259 (XXII);
 - ^{2/} ECOSOC resolution 1274 (XLIII);
 - ^{3/} Official Records of the Economic and Social Council, Forty-third Session, Annexes, agenda item B, document E/4353 and Add. 1;
 - ^{4/} Document E/5024 and Corr. 1 and Add. 1 and 2, chapters II and III;
 - ^{5/} Official Records of the Economic and Social Council, Thirty-seventh Session, Annexes, agenda item 12, documents E/3901/Rev.1 and Add.1 and 2.

The problems of training national technical personnel for the industrialization of developing countries were also taken into account in General Assembly resolution 2626 (XXV) dealing with an International Development Strategy for the Second United Nations Development Decade. This resolution is considered a fundamental guide to the activities of all United Nations bodies dealing with development.

The resolution emphasizes the need of providing adequate facilities for educational and training programmes, especially technical and vocational training and retraining, as well as the need of improving the literacy and technical competence of groups already engaged in production work. It further states that curricula should be revised and new approaches initiated to keep abreast of technological progress. More use should be made of new teaching methods, mass media and modern teaching equipment. Developing countries should also make vigorous efforts to improve statistics on the labour force - actual and projected - as a basis for establishing sound quantitative employment and training targets.

The International Symposium on Industrial Development, convened by UNIDO in Athens in 1967, emphasized the need of giving greater attention to manpower for industry and made a number of recommendations on the subject to international organizations as well as to the industrialized and the developing countries. ^{6/}

In 1972, the Industrial Development Board took note of document ID/B/101 "Report on the training of national personnel for industrial development". A number of aspects expressed in this document form part of the present paper.

The Lima Declaration and Plan of Action, adopted at the Second General Conference of UNIDO in 1975, emphasizes the subject in a number of paragraphs, where it, for instance, reads: "That the educational system be adapted in order to give young people an appreciation of industrial work and that policies and programmes should be adopted to training the qualified personnel needed for new sources of employment created in the developing countries, at the regional and subregional levels. The training activities linked with the industrial development must be conceived in such a way

^{6/} Manpower for Industry, UNIDO Monographs on Industrial Development No. 14, United Nations publication (Sales No.: 69.II.3.39).

that they make possible the processing of natural resources and other raw materials in the country of origin and the establishment of permanent structures for specialized, rapid, large-scale and high-quality training of national labour at all levels and for all professional specializations, whether technical or managerial without discrimination with regard to sex." ^{7/}

Industrial development calls for more than the investment of capital, the erection of factories and the creation of an industrial infrastructure. It also requires the transformation of people and a fundamental revolution of values, motivations, behaviours, attitudes, work habits and skills. Manpower will have to be developed to design and build the plants, to operate and maintain the machinery, to introduce modern industrial techniques, and to provide the manifold ancillary services that a modern industrialized society demands.

Many developing countries, among them Islamic countries, are faced with unemployment and underemployment problems while there is at the same time a concurrent demand in these countries for skilled personnel in almost all categories and levels of work. It is easy to identify industrial projects and plants that are either inoperative or operating at low production capacity owing to, among other factors, a lack of adequately trained personnel.

The development of appropriate industrial skills can indeed be crucial to the development process of a country. A relatively longer period of time is required to transform the unskilled into skilled workers, technicians, engineers and managers, than to negotiate a loan for building a plant. While enterprises can be established, and capital and technology imported, the importation of a sufficient number of qualified individuals to utilize and maintain such facilities and equipment effectively is not only unfeasible but uneconomic and socially undesirable. The problem is intensified in the case of highly competitive export-oriented industries that have a greater need of employing modern technologies and of re-adapting skills to rapidly changing processes.

^{7/} Doc. UNIDO PI/38, para. 53; see also paras. 55, 58(k).

It should be kept in mind that even wealthy countries are not yet self-supporting as long as they have to rely on foreign experts. This applies in particular to the secondary, the industrial sector. Hence it becomes obvious that training of national personnel is a paramount factor in the process of industrial development and can simply not be overestimated.

Industrial development is no end in itself. It should aim ultimately to enabling countries to improve the quality of life of all their citizens. Industrial training, therefore, has to be conceived in a way that it is embedded and integrated in a society's socio-cultural structure. In doing so, one has to be aware that properly trained industrial personnel have a tendency towards innovative thinking which can lead to most fruitful dialogues within existing societies.

When discussing industrial training it must be understood that this is a most complex process. It is not limited to acquiring theoretical knowledge and practical experience- as important these factors may be; it also comprises factors such as motivation, work morale, capability to team work, problem orientation, self-consciousness. Its strongest element, however, should be its applicability in practice, be it in factories, laboratories, research institutes, standardization bureaus, industrial associations, or development authorities; be it in the chairs of managers or in the shop floor. Therefore, training by its very nature is complementary to formal education on whatever level from elementary schools through post-graduate studies. It has to be designed and organized so as to really meet the actual requirements in practice. The individual to be trained should in the most realistic way be exposed to the job situations he or she is supposed to master once being trained.

Training is a life-long process. Both the individual and industry are in a constant process of development. Therefore, apart from the initial training to qualify an individual for a certain function in or related to industry, provision must be made for continual training. When training discontinues development will cease.

II. Planning of Training for Industrial Development

All 43 members of the Group of Islamic States belong also to the group of the Developing Countries. It seems therefore to be meaningful to approach the complex of planning in this context from the broader viewpoint of development, while particular aspects of the Group of Islamic States will be dealt with later.

The national supply of skilled industrial personnel cannot suddenly be increased. The increasing demand for skilled services in a developing economy cannot be met solely by short- and medium-term planning, but requires particularly long-term planning as a basis for all further projection and implementation. In the absence of long-term planning, there is a serious risk that the pace of industrial development will be impeded at some point for want of sufficient numbers of qualified industrial personnel. Solutions to the numerous problems of training national personnel for industrial development can be found only in well formulated long-term plans and programmes.

Two major tasks confronting planners of industrial training activities are to define the targets and to identify the resources necessary to attain them. Since the resources for industrial training in developing countries are relatively limited, plans and programmes for industrial training in such countries must be based upon rationally determined national priorities that take into consideration socio-economic goals. Moreover, the financial resources needed to transform these priorities into action programmes should be clearly identified and costed under industrial skill development as part of over-all national development plans.

The training of national personnel should not be carried out haphazardly but must be planned systematically if it is to contribute to the success of national policies. The integration of plans for industrial training and for national economic development involves a considerable co-ordination effort on the part of those responsible for national development planning and for planning industrial training activities. Factors such as the skill generating capacity of particular industrial and projects as well as the employment generating capacity of certain production techniques should be of major interest to both groups of planners.

A basic element of industrial training plans is skill demand analysis. In many developing countries, however, there is a lack of statistical data needed to undertake such analyses. Moreover, in many cases there is a lack of reliable techniques for working out the relevant data, and statistical systems are often insufficiently co-ordinated. Development of such data requires maximum co-operation from employers and support from Government and involves long-term studies of potential value. Measures are therefore needed that would allow data to be collected and analyses to be made of specific industrial skill requirements on a country-by-country and on an industry-by-industry basis, taking into consideration the criteria of branch or sector, function, level of qualification, quantity and time. With regard to international co-operation, consideration will have to be given to the development stage of the respective developing country. The results from such analysis should also distinguish between skill demands that could be covered in a given period of planning by domestic training facilities, both in-plant and in institutions, and skill demands that would have to be covered by training facilities abroad.

The educational and training systems in many developing countries are insufficiently co-ordinated. Many of the educational systems in these countries are still traditionally based, with too little interest in imparting to students knowledge of, and desire for, employment in a field like industry.

Basically, there are three major schemes of education and training: (a) formal general, vocational and technical education including elementary education, secondary education and university studies; (b) pre-employment or initial job training, including all types of practical and theoretical skill development outside the formal education system, such as in-plant, in-service or on-the-job training or training in special institutions; and (c) continuing education and training both inside and outside the formal education system including upgrading and updating of skills, specialization, generalization and retraining. Since general education is the first step in the process of developing industrial skills, the educational systems must be strongly oriented towards the scientific and technological content of education and should foster a scientific approach to socio-economic problems.

As already stressed in the introduction, modern industrial training should be practical, responsive to the clear and specific needs of industry

and closely geared to the actual and envisaged technology and working practices in industry. Specific facilities are needed to carry out such a programme. At present, there is a lack of adequate training facilities in most of the developing countries. Further, the training potential in, and by, industry is not being utilized to the best advantage by the Governments of either developing or industrialized countries. In-plant and in-service industrial training programmes are being carried out in industrialized countries, but the capacity of the existing training facilities in these countries is being reached. Means are therefore needed to provide substantial increases in the number of suitable training facilities in the developing countries and to encourage industry in both the developing and the industrialized countries to realize potentials for providing such facilities. For example, it may be advisable to encourage international corporations and firms that supply equipment to intensify their efforts to provide industrial training facilities, domestically and abroad, for nationals of developing countries. Governments of industrialized countries could consider granting a remission of taxes to enterprises that provide industrial training facilities for nationals of developing countries.

An important consideration in the planning of industrial training programmes for nationals of developing countries is whether the training should be conducted in the home country or abroad in either an industrialized country or in another developing country more advanced in the specific industrial field. In answering this question, there are several determining factors: the type and level of the training required; the adequacy of the existing domestic training facilities to provide the required training; and the level of qualifications required for candidates' acceptance in training programmes. Wherever possible, priority should be given to training in the home country. Training abroad in more advanced developing countries may be a second consideration since, in general, the industrial scene in these countries normally corresponds more to conditions in the home country than is the case in highly developed countries. Training abroad in industrialized countries should be considered only for key personnel from priority areas, and only if this type of training is not available in the home country or in another developing country. All types of training abroad should be planned and implemented within the framework of the national training plan as a whole.

A careful selection and thorough preparation of candidates, especially with regard to group training programmes and to training abroad, are prerequisites for industrial training. In the selection of candidates, attention should be given to professional experience and theoretical knowledge so that the trainees can obtain the optimum benefits from training programmes. Account should also be taken of the trainees' previous training experience, which may have been too highly specialized or too generalized for application to the training programmes being carried out. The setting up of selection boards and the employing of counsellors to examine candidate files and to interview candidates would enhance the selection process.

If the goals of a country's industrial training programmes are to be realized, there is a need for energetic persons who are committed to what has been called the industrial order. In order to motivate persons to acquire industrial skills, to work where their skills are needed, to perform their tasks in a satisfactory manner, and, when the need arises, to undergo additional training to meet changing conditions, measures will have to be created in respect of remuneration, job satisfaction and status, and such measures will have to be adapted to local conditions, attitude and social values.

Planning is a prerequisite for all training action; research, in turn, is a prerequisite for planning. Research, therefore, is essential to all aspects of training. Training methods and policies that have been successful in industrialized countries may be dysfunctional in developing countries. Thus there is a need for long-term research efforts in such areas as: the techniques of determining education and training needs; the categories of personnel and the branches of industry to be given priority in training; the adaptation of industrial technologies to local conditions; the patterns and techniques of training; the determination of training costs; and the techniques of evaluating training results. With regard to the industrial training supplied through international co-operation, there is also need for advanced study of local conditions.

Continuous evaluations of all training programmes and the feedback of this evaluation to those planning the programmes are necessary for improving both the planning and the implementation of industrial training

programmes. Such evaluation is particularly important in training national personnel from developing countries for industrialization since broad experience is generally lacking in this area, and rapidly changing conditions brought on by industrialization may demand constant readjustments to the programmes being carried out.

The expansion of training facilities is not enough. What is also needed is adequate national organizational machinery to: co-ordinate the activities and promote the co-operation of various bodies involved in training; encourage forward planning by each of these bodies within its particular area of interest; raise the qualitative standard of training and ensure that those providing training are assisted in doing so; carry out skill demand assessments on a continuing basis; relate industrial training programmes to planning in other areas; construct and periodically revise a master strategy; and promote, review and evaluate implementation of strategies.

Solutions to the problems of fragmentation and lack of co-ordination in the field of industrial training vary according to the size and the level of development of each country. Initially, it will be necessary to establish a solid legislative base on which effective organizational and administrative measures can be set up. This may require the adoption of new industrial training acts or the modification of existing regulations. National industrial training organizations established on a public or semi-public basis and composed of representatives of Government, industry and concerned institutions may be of optimum benefit. It was been suggested that substructures of training boards be set up in these institutions; such boards could be established according to the geographical areas of a country or to specific industrial branches. The appointment of national and regional industrial training advisers could serve to assist Governments of developing countries in determining training needs and in planning programmes to meet those needs.

As previously stated, the establishment of national priorities is essential in planning effective industrial training programmes. Once priorities have been established, there must be adequate funds to carry them out, and this implies a long-term commitment on the part of the Government and others concerned with industrial training.

Industrial training must be viewed as a long-term input requiring financing over a protracted investment period. Despite the fact that the costs of training are increasing in practically all fields of industrial activities, ways and means will have to be found to ensure continuity of training. As the main benefactor of industrial training, industry should be willing to bear a large part of these costs. Unfortunately, a number of employers in developing countries fail to appreciate the short- and long-term gains in increased benefits resulting from industrial training, and are thus reluctant to assume their part of the costs of training. Governments of developing countries may therefore wish to consider adopting measures to encourage the long-term support by industry of industrial training by, inter alia, providing technical assistance and other facilities to industry, granting financial incentives, and establishing a system of training levies combined with grants to individual enterprises, a practice that is concurrently being carried out in some countries. In other cases, Governments will have to subsidize training systems until the community is willing and able to accept the principle of long-term financing. Financial assistance from abroad may be required to assist national industrial training efforts. In many cases, it may be advisable to set up a separate consolidated industrial training budget. In other cases, it may be advisable to consider training as a part of the initial capital investment, rather than as an operating expense of an enterprise, and correspondingly include training costs as part of the capital costs, financing them if possible through long-term low interest loans - earmarked for training - granted by development banking institutions.

In planning long-term industrial training programmes, Governments of developing countries should give particular attention to the various sources of technical assistance in the field of industrial training available from the relevant agencies and institutions of the United Nations and through bilateral and multilateral agreements. It might be worth considering to establish within the Group of Islamic States a special fund earmarked for industrial training.

The major categories of skilled personnel required to carry out the essential industrial activities of an industrializing economy are listed below:

- Innovative organizers or entrepreneurs, in both public and private sector enterprises, responsible for decisions on major resource allocations;
- Organizers, managers and technical specialists who play leading roles in negotiations with foreign sources for the transfer of technology and finance;
- Managers of independent small- and medium-sized industrial enterprises;
- Senior administrators and decision-makers, from government agencies and institutions, who undertake planning and programming and provide resources and services for industry;
- Key organizers of various types of associations as well as chambers of industry that mobilize resources and personnel services for accelerated industrialization;
- Key research personnel in the technological, economic and social sciences who are in a position to develop and introduce appropriate innovations into the industrial sector;
- Senior-level training staff including university professors, training administrators, training organizers and personnel managers;
- Key technical, economic, social and multidisciplinary personnel, such as engineers, designers, economists and development technologists, in enterprises and consulting services as well as in government agencies and institutions concerned with industrial development;
- Teaching and training staff qualified in the technological, economic and social fields and experienced in practice as well as in theory;
- Intermediate-level technical and administrative personnel such as technicians, supervisors, foremen and senior accounting staff;
- Broadlyskilled shop-floor and office workers such as craftsmen in production and maintenance work and senior clerical and sales staff;
- Specialized shop-floor and office workers such as operatives in production and maintenance work and junior clerical and sales staff;
- Semi-skilled workers with certain minimum qualifications.

III. Recommendations for Action

Before offering suggestions for possible field of co-operation certain facts of Islamic States are reviewed, because these form the context within which the recommendations which follow are offered.

Of the 43 member countries 23 are located in Africa, 13 in Western Asia, 6 in Asia and the Far East and 1 in Europe and as such are members of four different United Nations Regional Commissions (ECA, ECWA, ESCAP and ECE). Nineteen member states belong to the Arab League which also, inter alia, include membership of the Industrial Development Corporation of Arab States (IDCAS), the Arab League Educational, Cultural and Social Organization (ALECSO). Three member states (Turkey, Iran and Pakistan) have concluded an agreement of co-operation (RCD), while most or all the members are also represented in several regional and sub-regional groupings, which are not exclusively Islamic (e. g. ASEAN, OCAM).

Arabic is the official language or is spoken or understood in approximately half of the member countries; English is the official or common language in about 25 % of the member countries; the French speaking group of countries is of the same order of magnitude, while some of the member countries have as official language an indigenous language outside these three larger groupings. With only a few exceptions member states have been either a colony or have been governed under a trusteeship and as a consequence the educational system - at least in its original set-up - is tailored after that of the former colonial power, inter alia, in the majority of the cases either follows the French or the British set-up.

In terms of resources and industrial development the discrepancy is equally as great: 15 of the member countries belong to the group of Least Developed among the Developing Countries, while others are that with the highest GNP of the world. UNIDO's analysis on the level of industrialization of 27 Islamic countries showed a range of per capita GDP from US\$ 55 (Mali) to US\$ 725 (Gabon) and a manufacturing share of GDP from 2.3 % (Arab Republic of Yemen) to 36.1 % (Arab Republic of Egypt).

Population ranges from 89,000 (Qatar) to 127 million (Indonesia), territories range from 300 km² (Maldives Islands) to 2,500,000 km² (Sudan), population density from 1 person/km² (Libyan Arab Jamahiriya, Mauritania)

to 521 persons/km² (Bangladesh). Climatic conditions vary from arid to mediterranean to tropical.

The foregoing shows most the differences that exist between the member states of the Conference and which form an equal number of obstacles in co-operation in the field of industrial training. Regional and sub-regional approaches may be feasible and as an example the activities of IDCAS can be mentioned. IDCAS training activities concentrate on three activities:

- i) publication of a Guide to Training Opportunities in the Arab World; 8/
- ii) a series of conferences, seminars and workshops;
- iii) a fellowship programme,

while also a number of studies have been or are being undertaken in the field of manpower and training needs.

There appears, however, a significant potential for co-operation between member states, as the following classification can be made:

- a) countries with a relatively developed industrial infrastructure but with inadequate resources;
- b) countries with a relatively developed industrial infrastructure and financial resources;
- c) countries without a sufficient industrial infrastructure and also inadequate financial resources;
- d) countries without a sufficient industrial infrastructure but with financial resources.

Industrial training can only be carried out in an existing and sufficiently developed industrial infrastructure, together with the institutional set-up required for training. It will, therefore, be possible (and required) that industrial training for countries with a relatively developed industrial infrastructure (category a) and b)) will have to concentrate on developing its own training capabilities and build-up its own training institutions. In both cases these will primarily be for nationals from the country itself, but since the potentiality exists to have the training carried out, the countries in this category would be in a position to arrive at co-operation arrangements to accept trainees from countries

8/ UNIDO publishes on an annual basis the Guide to Training Opportunities for Industrial Development (in 1979 doc. FI/63).

of category c) and d) which have not (yet) the industrial infrastructure which would enable them to organize to a sufficient extent their own training activities.

It goes without saying that countries with their own financial resources and a developed industrial infrastructure (category b)) would be in a position to finance themselves the training of their nationals in their own countries and after financial assistance for training in their countries of nationals from countries without financial resources and industrial infrastructure (category c). Other combinations are given in the diagram below.

Offer to Availability	a) Industrial infrastruct. no financial resources	b) Industrial infrastruct. and financial resources	c) -	d) Financial resources only
a) Industrial infrastruct. no financial resources	Exchange pro- grammes (possibly with some financial assistance)	Supplementary Training faci- lities against payment - from own resources	Training faci- lities against payment by category b) and d)	Training faci- lities against payment by own resources
b) Industrial infrastruct. and financial resources	Exchange pro- grammes and financial assistance	Exchange pro- grammes	Training faci- lities against payment	Training faci- lities against payment
c) -	-	-	-	-
d) Financial resources only	Financial assistance	-	Financial assistance	-

Finally, there could be added a fifth category of countries, namely

- e) small countries where the number of persons to be trained in certain disciplines does not justify to set-up training facilities in the country itself.

This category of countries will have to rely on training carried out abroad and co-operation could take the format of either financial assistance, technical assistance or both.

The above does not presuppose that the training facilities are already developed to the extent that a scheme as given above could become operational now. The training facilities will have in many instances to be developed further, for which technical assistance is required. Also for the development of these, an identical scheme could be worked out, and where even possible, the co-operation of member countries may take the form of a mutual assistance of providing

- a) transferring experience of countries in which already the level of industrial training has reached a relatively developed stage and
- b) financial assistance in order to have this transfer as well as transfer from industrialized countries.

In order to develop a meaningful scheme, it would be required to make further studies with respect to the training needs on the one hand and the available and potential training facilities on the other of individual member countries. This would require in-depth studies of the training needs and resources of individual member countries. Such studies should not only utilize existing information, but specifically concentrate on:

- i) analyse the existing training needs of industry and related institutions in the country;
- ii) analyse industrial development plans to identify short- and medium-term critical manpower needs that are required for an effective realization of those plans;
- iii) identify and evaluate existing education and training facilities in terms of (a) their capacity, (b) ways and means of improving their effectiveness, and (c) their potential for expansion in light of the country's needs and/or to serve other Islamic countries.

IV. Possibilities of future training activities

1. Improvement of the industrial training infrastructure of advanced developing countries with a view to provide training for nationals from other developing countries

Existing training institutes and related facilities such as suitable enterprises could be identified in advanced developing countries. In accordance with the respective government authorities these institutes could be improved (if necessary) so as to become enabled to carry out training programmes for industrial personnel from other, may be less developed countries. This training could be carried out in forms such as seminars, in-plant or in-service group training programmes, individual or group fellowships. For an initial period, particularly for the period of improvement of the respective facilities and for that of first pilot training programmes, UNIDO assistance as well as the participation of donor countries could be provided. The training activities could be made available on sub-regional, regional or even interregional basis.

2. Regional or subregional production management schemes

One means to increase the industrial production capacity in developing countries is the better utilization of existing production capacities. The result would be a contribution to the "25-% target" of the Lima Declaration without additional investment. The key would be systematic subregional or regional training programmes in the field of production management for specific industrial sectors. Existing training institutions plus existing industrial enterprises in developing countries could form the basis for such training programmes. UNIDO could contribute with regard to specific training needs assessments, curriculum design, establishing the organizational and administrative framework, making available expert services including trainers, training of trainers, evaluation. The participation of donor countries at least during the initial period could be sought.

3. Preventive maintenance training schemes

Another approach to increasing industrial production by better utilization of existing capacities is preventive maintenance. Subregional or regional training schemes could be introduced providing practice-oriented maintenance

training programmes for specific industrial sectors. The programmes should be organized in developing countries by making use of existing suitable enterprises and institutions. Emphasis could be placed on fields such as corrosion prevention or increase of the actual capacity of existing power plants. UNIDO could assist in a similar way as shown in number 2 above. The initial participation of donor countries could be sought.

4. Industrial quality improvement campaigns

Systematic quality assurance plays a key role with regard to such vital economic and social factors as employment security and improvement of balances of payment. In co-operation between developing countries industrial quality improvement campaigns could be organized including elements such as: on-the-spot assessments of the needs for quality improvement; national or subregional seminars for engineers being or to be in charge of quality control in their respective enterprises; interregional group training programmes for upper-level quality control engineers and directors; regional or subregional quality control symposia for decision makers from industries and governments. In addition, a network of communication between those concerned and interested could be established in order to exchange views and experiences and to disseminate information on new achievements, major break-throughs, pertinent findings etc. UNIDO could assist with regard to assessing needs for quality improvement, curriculum design, the organizational and administrative framework of such training programmes, the selection of suitable enterprises for training, expert services including teaching staff, training of teaching staff, evaluation, information, public relations. The initial participation of donor countries could be sought.

5. Industrial development banking

The role development banks play with regard to the process of industrial development increases continuously. Many of these development banks are severely handicapped, if not endangered, by the lack of highly skilled personnel at all levels. The consequences of this can be fatal for both the banks and their clients. It is proposed to establish regional development banking centres in co-operation between regional development banks, national development banks, international organizations including the World Bank. Such regional centres

should dispose of specialized departments for the different fields of activity for these banks. One of these departments could provide specialized training in the field of industrial development banking. In this connection UNIDO could provide its services. The initial participation of donor countries could be sought.

6. Small- and medium-scale industries

The development of small- and medium-scale industries depends largely on the availability of know-how, skills and motivation. Developing countries could co-operate on a subregional basis by pooling their capacities in this regard along the following lines: one country maintains a centre for small-scale industry management training; a second country maintains a centre for the training of extension workers; a third country maintains a centre for the training of government and other officials in charge of the development of small- and medium-scale industries; a fourth country maintains a centre for specific training of pertinent staff of development banks. Other neighbouring areas could be covered similarly. The subregional co-operation consists of pooling these specialized capacities so that the respective centres are open for participants from each of the co-operating countries. UNIDO could assist in establishing or improving such centres and in launching such comprehensive training schemes. The participation of donor countries and donor institutions could be sought.

7. Project evaluation or feasibility studies

More often than not industrial projects in developing countries fail because of insufficient project evaluation or feasibility studies. There is a great demand of highly skilled and experienced staff in industries and governments of developing countries in this regard. Subregional training programmes could be organized whereby existing industrial projects could serve as case studies. UNIDO could assist by making available its Manual for the Preparation of Industrial Feasibility Studies and by providing expert services for such training programmes.

8. Initial training of newly graduated engineers

In many developing countries newly graduated engineers suffer from lack of experience in industry. Very often this is due to the fact that many of these countries dispose of technical universities, but not of industries

suitable for and agreeable to the practical training of engineers. On the other hand, a number of developing countries have reached a stage of industrial development that would allow for making available such practice-oriented industrial training facilities. In a number of cases, such advanced developing countries might be interested in employing specialized industrial personnel from abroad. In connection with proposals aiming at setting up a pool of qualified manpower, regional or even interregional co-operation could lead to high-level industrial training schemes by which newly graduated engineers from developing countries receive initial practical training in industries of other developing countries. UNIDO could assist with regard to developing pertinent training programmes, expert services, selection of training firms, industry-university co-operation schemes, evaluation.

9. Training with regard to transfer and development of technologies

Transfer and development of technologies is one of the focal aspects of industrial development. In a number of cases experiences made in developing countries in this connection are not known in other developing countries faced with the same or similar problems. An example could be the utilization of unconventional energy forms (such as solar energy, wind energy). Training schemes could be developed on a regional or subregional basis for specific technological sectors. UNIDO could assist with regard to technology research, feasibility studies, expert services including teaching staff, curriculum design, organization and administration of training programmes, evaluation and follow-up, information. Initial participation of donor countries could be sought.

10. Energy saving programmes

In numerous industrial enterprises in developing countries, with the possible exception of very large units, energy consumption as a decisive cost factor is widely underestimated. This applies both to electrical and heat energy. Typical examples for this type of problem may be textile mills, paper mills, breweries etc. On the basis of careful problem analyses regional or subregional training programmes could be organized according to specific industrial sectors aiming at improving the energy balance of the respective enterprises. This type of training includes both technological and economic aspects. UNIDO in co-operation with the ILO Turin Centre could assist in this regard by expert services for the assessments to be made, teaching staff, curriculum design, organization and administration of training programmes, training of trainers, evaluation and follow-up, information. During the initial period the participation of donor countries could be sought.

V. Suggestions for long-term industrial training strategies

(a) Policy making

- (i) Assign adequate priority to industrial training through national legislation;
- (ii) Increase the interest of national authorities concerned in industrial training;
- (iii) Establish closer links among members of the business community, concerned government officials, personnel engaged directly in education and training and members of professional associations, with a view to co-ordinating the various policies for industrial training;
- (iv) Co-ordinate national systems of education and occupational training in accordance with changing skill requirements of industry, and accordingly, balance education and occupational training output with employment opportunities;
- (v) Promote and make optimal use of the benefits of bilateral and multilateral agreements for co-operation and co-ordination in the field of industrial training;
- (vi) Participate actively in programmes of exchange of experience carried out in the field of industrial training by governmental, non-governmental and international organizations, agencies and institutions.

(b) Planning and programming

- (i) Determine the role that industrial training will play in the overall long-term economic development plan;
- (ii) Establish priorities, with respect to key functions in major industries and in institutions and agencies involved with industrial development, for training personnel;
- (iii) Establish new and strengthen existing systems for analysing skill demands of specific industries according to branches, functions, levels of qualification, quantity and time;
- (iv) Improve national machinery for planning and programming industrial training within the general framework of action in order to improve the national training infrastructure, taking into account changing skill demands of industry for qualified personnel;
- (v) Intensify and expand national efforts in the field of research, evaluation and syllabus design, particularly with regard to planning and implementation of industrial training programmes.

(c) Financing

- (i) Plan with regard to the nature and scope of training programmes needed over the long-term, taking into account the assessments of both national training requirements and available financial and other physical resources;
- (ii) Carry out cost-benefit analyses of industrial training in institutions and enterprises and establish appropriate financing systems, which should adapt to changing circumstances, for industrial training;
- (iii) Mobilize and allocate domestic and external financial resources to back up the commitments for industrial training by setting up, where feasible, separate consolidated industrial training budgets;
- (iv) Provide ample amounts for industrial training purposes in the framework of the Indicative Planning Figures;
- (v) Assist and encourage industry to take greater responsibility for the training of industrial personnel.

(d) Programme implementation

- (i) Establish, where appropriate, national industrial training organizations and, accordingly, assign corresponding authority;
- (ii) Assign, where appropriate, national industrial training advisers to assist government authorities involved in industrial training;
- (iii) Adopt an interdisciplinary approach to industrial training so as to develop in key industrial personnel a thorough understanding of the relationship of socio-economic and technological factors in the industrialization process;
- (iv) Employ modern training methods and techniques to industrial training programmes;
- (v) Encourage and promote practices of continual training by means of industrial training systems and suitable incentive and motivational factors;
- (vi) Promote and increase the number of domestic in-plant training facilities and co-ordinate these, as necessary, with institutional facilities providing industrial training;

- (vii) Establish new, or expand existing, industrial training institutions only if this is the best way to meet an unsatisfied training demand;
- (viii) Make optimum use, in accordance with national training plans and domestic training facilities, of industrial training facilities abroad, both in industrialized and more advanced developing countries and, where feasible, offer domestic industrial training facilities for trainees from other developing countries.

ANNEX

Updating additions

I. Introduction (pages 2-5)

At the Third General Conference of UNIDO, convened at New Delhi, India, from 21 January to 9 February 1980, it was agreed that "when skills were not developed, many investments remain underutilized. Capital investment projects must therefore be accompanied by larger technical assistance inputs to improve local skills and administrative structures." ^{1/}

The Conference voiced widely "the willingness (of member countries) to co-operate in human resources development, through the provision of technical and financial aid, or a combination of the two, (while) regional co-operation in the introduction of labour resources, it was stated, would be of benefit to all concerned.

Consequently, as one of the general recommendations for Industrialization Policies, the need to focus on human resources and industrial skills was stressed, by stating i.e. (that) training was seen to be essential to the industrial development of developing countries. It provided the most effective vehicle for technology transfer and the creation of indigenous technological capability". ^{2/}

The Conference adopted the New Delhi Declaration and Plan of Action on Industrialization of Developing Countries and International Co-operation for their Industrial Development; in the Plan of Action, Development of Human Resources is one of the areas for special action. ^{3/}

In the session of the Industrial Development Board after the Third General Conference of UNIDO, the Board agreed that Human Resources Development will constitute one of UNIDO's areas of priority.

The Plan of Action also recommends special measures in the field of training for least developed countries, land locked developing countries and developing island countries. For both the least developed and the land locked developing countries it recommends "the promotion of cottage, small and medium-scale industry,

^{1/} Report of the Third General Conference of the United Nations Industrial Development Organization. ID/CONF.4/22 paragraph 119.

^{2/} Op.cit. ID/CONF.4/22 paragraph 127.

^{3/} Op.cit. ID/CONF.4/22 paragraphs 252-274.

with particular emphasis on training, agro based industry and integration of agriculture and industry" ^{4/} while as one of the special measures in favour of developing island countries is "the establishment of appropriate technical education and training programmes including the areas of marketing and management". ^{5/}

II. Planning of Training for Industrial Development (pages 6-12)

The part of the New Delhi Declaration and Plan of Action relevant to training is the request of activities to be carried out by developing countries themselves:

"Formulate and implement medium and long term national development strategies to train and upgrade human resources necessary for industrialization as a major element of national economic planning" ^{6/}

and

"Emphasise in national plans and programmes the extensive and intensive training of personnel at all levels to foster development of rural and small-scale industries". ^{7/}

The text of chapter II on Planning and Training is a further elaboration of actions to be taken in this respect. It should, however, be mentioned that the New Delhi Plan of Action also requests UNIDO to

"Improve identification as an ongoing process of priority topics and sectors for industrial training on the basis of the needs of developing countries, and structure its training programmes accordingly" ^{8/}

and

"Keep under constant review implementation of the measures relating to development of human resources for industrialization of the Vienna Programme of Action on Science and Technology for Development, the decisions of the United Nations Conference on Technical Co-operation among Developing Countries, the First Conference of Ministers of Labour of Non-Aligned and other Developing Countries, and other fora, and submit to the competent UNIDO organs concrete proposals and projects for their full implementation." ^{9/}

^{4/} Op.cit. ID/CONF.4/22 paragraphs 297 and 320.

^{5/} Op.cit. ID/CONF.4/22 paragraph 323.

^{6/} Op.cit. ID/CONF.4/22 paragraph 252.

^{7/} Op.cit. ID/CONF.4/22 paragraph 253.

^{8/} Op.cit. ID/CONF.4/22 paragraph 250.

^{9/} Op.cit. ID/CONF.4/22 paragraph 251.

It is in the context of these two articles of the New Delhi Declaration, as well as of its overall mandate that UNIDO is prepared to assist the individual member countries or grouping of countries of the Islamic Conference in planning its training activities and to follow-up the decision made by the Conference.

III. Recommendations for Action (pages 13-16)

In this chapter a broad outline for co-operation between member states of the Islamic Conference is given, which is summarized in the diagram on page 15. 10/

The New Delhi Plan of Action stipulates the following actions (to be taken) by the developing countries:

"Establish and improve industrial training facilities on regional, inter-regional and sectoral levels, to complement and upgrade skills learnt through formal education"

"Finalize long-term programmes of co-operation for the exchange of experience and skills between developing countries"

"Improve and co-ordinate existing national "centres of excellence" for industrial training and management"

"Make available and improve existing training facilities to meet the special needs of trainees from other developing countries".

The concept of "centres of excellence" referred to above may be further explained by the following excerpts, presented to the Permanent Committee of the Industrial Development Board during its 14th session: 11/

"In a number of member countries already national centres or institutions exist that provide services to industry. These institutions - which include standard institutes, quality certification centres, industrial information centres, industrial design centres, extension services for small scale industries as well as specialized institutions for specific sectors of industry - have been established after the need for these services have been determined at a national level.

10/ Reference to existing regional organizations in the original paper relates to the position prevailing at the time of writing the original paper, i.e. November 1979. For instance the reference to IDCAS is prior to its conversion to the Arab Industrial Development Organization AIDO.

11/ ID/B/C.3/100/Add.4 Excerpts from paragraphs 5-13.

"While these institutions are not established with the primary objective of performing a training function, experience has shown that after an institution has acquired the technical capacity to perform its duties, there are advantages to expanding its activities to include training. The introduction of training activities means, on the one hand, the institution's becoming more aware of the actual needs of industry, and, on the other, its being in a better position to render services to, and have them introduced by, industry. In most instances, it costs less to add training capabilities to an existing capacity than to develop technical know-how and experience in a separate training institution.

"It is expected that in this way certain institutions will become not only "centres of excellence" per se for specific industrial sectors or functions but also "centres of excellence" for industrial training and skills of those sectors.

"A number of these national centres may start to make its services including those in the field of training, available to nationals from other countries - particularly for those countries, that will not be in a position to organise such a training on a national level, either because of an insufficiently developed infrastructure or because the demand for specific skills is so limited that it is not justifiable to initiate training on a national basis.

"Since training of nationals from other countries may require additional input, primarily from a logistical point of view, but also with regard to curriculum development (training for non-nationals may have to be on a somewhat different level and of another - shorter - duration than that of nationals). Prior to embarking on training of non-nationals it may be required to provide national centres with additional support, which may take the form of service on curriculum development - adopting the curriculum to conditions prevailing in the participants' countries - and on training methodology, and the provision of audio visual and other training material. Through this, existing institutions having the capabilities for training of nationals from other countries, may become sub-regional "centres of excellence" for industrial training."

In this respect one could envisage that a number of existing centres in the larger member countries of the Islamic Conference, with a relatively developed industrial infrastructure will endeavour that some of them become national centre of excellence. With the objective, with assistance of and in agreement with other member countries these will further develop into regional centres. Whereas

the existence of a local centre is mostly a conditio sine qua non for the establishment of a regional centre the proximity of other countries and the similarity of training needs of these countries, plus an identical language of instruction are further prerequisites.

One may envisage, regional centres of excellence for training: in specific fields for Arab, English and/or French speaking countries; utilizing existing economic groupings or arrive at specific agreements for co-operation. This may entail relatively simple bilateral agreements if it concerns the training of nationals from least developed or island developing countries in institutions in larger relatively developed countries up to the conclusion of a specific new agreement for the purpose of the creation of a training centre serving a larger group of countries.

The Islamic Conference may in this respect wish to consider to establish a Secretariat Working Group that would be requested to prepare guidelines and to supervise studies to be carried out on a national level as proposed under sub i-iii, page 38 and consequently will develop gradually a scheme of co-operation between the member countries.

UNIDO by virtue of its mandate and taking into consideration the New Delhi Plan of Action, requesting UNIDO to "support the strengthening of national, regional and interregional "centres of excellence" of industrial training and skills in developing countries and serve as a platform facilitating their co-operation" ^{12/} will be in a position to provide the required assistance.

IV. Possibilities of future training activities (pages 17-20) and suggestions for long term industrial training strategies (pages 21-23)

These chapters do not require further elaboration or amendments. It is only in this respect that the attention of the Conference is drawn to the forthcoming Global Consultation on the training of industrial manpower that is scheduled to be convened in the United States of America in the third quarter of 1981. In preparation for this first Consultation a UNIDO/ILO/UNESCO Working Group suggested it examine the potential for:

- (a) Greater use of existing training facilities in the developed countries for the benefit of developing countries;

^{12/} Op.cit. ID/CONF.4/22 paragraph 272.

(b) Greater use of existing training facilities in the developing countries and the need for their expansion to allow, inter alia, for increased co-operation among developing countries;

(c) Improving contractual arrangements for the acquisition of industrial skills. 13/

The Islamic Conference may wish to take note of this and advise the member countries to take an active interest in this Consultation through participation.



13/

