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D04293



United Nations Industrial Development Organization

Distr.
GENERAL

ID/B/101
18 January 1972

ORIGINAL: ENGLISH

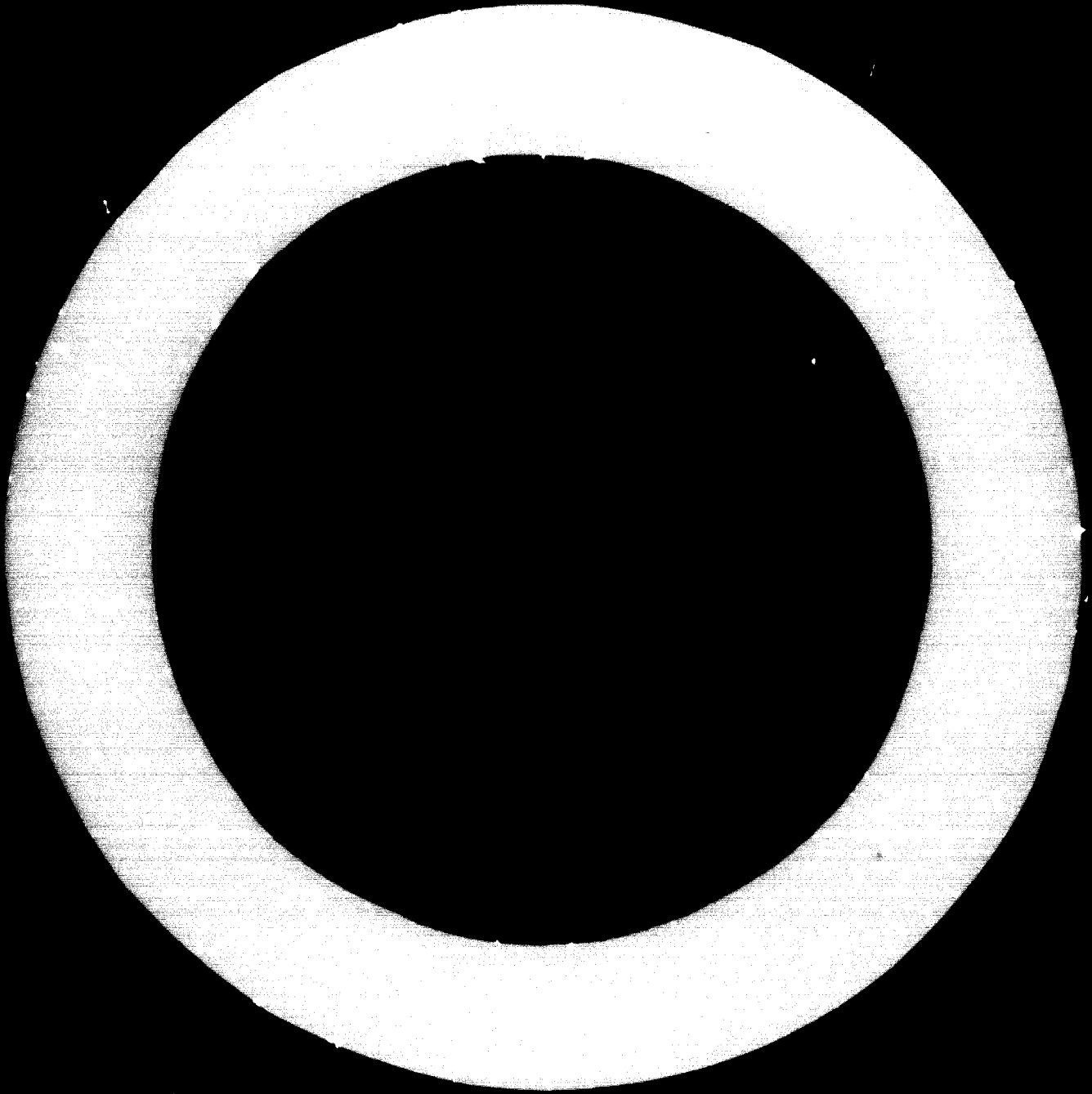
Industrial Development Board

Sixth session

Vienna, 23 May - 2 June 1972

Agenda item 5a

REPORT ON THE TRAINING OF NATIONAL PERSONNEL FOR INDUSTRIAL DEVELOPMENT



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FOREWORD

1. In 1961, the Industrial Development Board, at its second session, gave consideration to the training of national personnel of developing countries in the light of the decisive role played by such training in the industrial development of the developing countries. The Board recalled a number of General Assembly resolutions concerned with the training of national technical personnel from developing countries for accelerated industrialization, the ECOSOC resolution on the development and utilization of human resources, and the report of the Secretary-General on this subject.^{1/} Account was taken of General Assembly resolution 2150 (XXI) and resolution 1 (I), paragraph 2 (f) (xi), of the Industrial Development Board regarding the role of UNIDO in assisting in the training of technical and other appropriate categories of personnel of developing countries. In resolution 8 (II), the Industrial Development Board requested the Executive Director of UNIDO, *inter alia*, "to prepare, after consulting with the International Labour Organisation and other specialized agencies, the regional economic commissions and the United Nations Economic and Social Office in Beirut, an outline for a detailed long-term programme for the various kinds of technical training in industrial development and circulate it to the respective Governments for comments prior to its submission, as soon as possible, to the Board for consideration."^{2/}

2. The present report has been prepared by UNIDO in compliance with the above cited resolution. It should be noted that in preparing this report, UNIDO has taken into consideration the contributions to industrialization of formal and non-formal education, vocational training and management development.^{3/}

3. 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.^{4/} In this report, "Training of National Technical Personnel for the Accelerated Industrialization of the Developing Countries" (hereafter referred to as the 1964 Report of the Secretary-General), a number of recommendations were made to Governments as a basis for future action. This 1964 Report was transmitted by the Economic and Social Council to the twentieth session of the General Assembly in 1965. The General Assembly noted the 1964 Report with appreciation and requested Governments to consider the recommendations contained in it and to transmit their comments and suggestions to the Secretary-General.

^{1/} General Assembly resolutions 1824 (XVII), 2090 (XX) and 2259 (XXII); ECOSOC resolution 1974 (XLIII); Official Records of the Economic and Social Council, Forty-third Session, Annexes, agenda item B, document E/4353 and Add.1.

^{2/} Official Records of the General Assembly, Twenty-third Session, Supplement No.15, document A/7215, p.142.

^{3/} See document E/5024 and Corr.1 and Add.1 and 2, chapters II and III.

^{4/} See 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.

4. At its twenty-fourth session, the General Assembly reviewed the sixteen replies submitted by Governments^{5/} and adopted resolution 2528 (XXIV) in which the Secretary-General was requested to prepare, in close co-operation with the relevant organs and organizations in the United Nations system, a report containing specific recommendations on the training of national technical personnel for accelerated industrialization of the developing countries, taking into account the results achieved during the First United Nations Development Decade and the aims established for the Second Development Decade. The Secretary-General entrusted the main responsibility for this report to UNIDO, and the report was submitted to, and noted by, the Economic and Social Council at its fifty-first session in July 1971.^{6/}

5. 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 average annual growth rate envisaged in the gross national product (GNP) of developing countries during the Decade implies, *inter alia*, an average annual expansion of 8 per cent in manufacturing output. 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 productive 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.

6. The 1964 Report of the Secretary-General dealt with most of the problems involved in training for industrialization and indicated the extent of the efforts required as well as other forms of action needed to narrow the gap between the demand for, and the supply of, industrial skills. It also defined a terminology for the major concepts in this field, a terminology that has been essentially adopted in the present report. 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.^{7/}

7. In spite of the substantial educational and training achievements of many of the developing countries during the past decade, most of the problems discussed in the 1964 Report of the Secretary-General still exist, and most of its recommendations are still valid because, in many of the developing countries, the basic situation with regard to industrial training has not changed significantly.

^{5/} See Official Records of the General Assembly, Twenty-fourth Session, Annexes, agenda item 43, documents A/7595 and Add.1.

^{6/} See documents E/5024 and Corr.1 and Add.1 and 2.

^{7/} Manpower for Industry, UNIDO Monographs on Industrial Development No.1/, United Nations publication (Sales No.: 69.II.3.39).

INTRODUCTION

8. Economic growth calls for more than the construction of roads, the establishment of power facilities, and the building of steel mills and fertilizer plants. It also requires the transformation of people and a fundamental revolution of values, motivations, 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.

9. It is difficult to measure the contribution of human resources to economic growth. However, a significant proportion of total increase in national output has been ascribed by economists to the "residual factor". The residual factor represents that portion of growth brought about partly by such intangible factors as upgraded skills of the industrial labour force and improvements in the organization and management of industry.

10. At the beginning of the Second United Nations Development Decade, many developing countries are faced with vast unemployment and underemployment problems while there is a concurrent demand in these countries for skilled personnel in almost all categories and levels of work. This shortage is aggravated by the migration of trained personnel from less developed to more developed countries - the brain drain - and by the inefficient use of skilled workers within the developing countries.^{8/} It is easy to identify the 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.

11. 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 labourers, 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.

12. The problems of manpower in the developing countries are not related merely to quantity and allocation, and to numerical strength and its proper distribution to meet the needs of national economy; they are also related to quality and fitness for the tasks to be accomplished. The inspiration for a better and fuller life has spread more rapidly than the development of skills and the discipline and personal motivation for a more productive effort. The practice of workers picking up knowledge of a trade in the course of their work was sufficient when industry consisted of small artisan workshops, but it does not suffice for today's increasing

^{8/} See document E/4820 and Add.1 (mimeo.).

needed for skilled industrial personnel. Often the organizational basis for training is either deficient or almost non-existent. Where national training facilities do exist, they may not always be geared to the substantive requirements of a balanced economic pattern.

13. The costs of training in both the industrialized and the developing countries are increasing in practically all fields of industrial activity. In most industries, a larger proportion of the labour force requires systematic training than in the past. The equipment and techniques used in production are more sophisticated today, and those operating them need comprehensive skills requiring technical training and experience as well as theoretical knowledge. These requirements may warrant costly corresponding training inside or outside the enterprise. The provision of high-level training staff and instructors to plan and carry out the actual training, the employment of modern training techniques and the provision of special equipment in the training process further increase training costs.

14. The problems of forecasting manpower requirements of developing countries are complicated by the lack of reliable statistics in most of these countries. In many cases, occupational classifications are vague or out of date. In his 1964 Report, the Secretary-General devoted considerable attention to the various methods of estimating future requirements for technical personnel in developing countries. Since the publication of the 1964 Report, revised estimates have appeared of the labour force in major world regions.¹⁰ A global assessment of the quantitative needs for industrial training, based on these revised estimates, was made and published by the United Nations in 1971.¹¹

15. According to the figures published in the 1971 report, industry in the developing countries is expected to be able to absorb about 30 million new entrants into the labour force during the period of the Second United Nations Development Decade. This means that, on the average, about 7 million new entrants per annum should receive some form of initial industrial training. To these estimates must be added the number of workers in the existing industrial labour force in developing countries - calculated at 100 million on the basis of the 1971 publication - who will require continuing training during this period.

¹⁰ United Nations, First Inter-regional Seminar on Long-term Economic Projections: Sectoral Aspects of Projections for the World Economy, Kinsdale, Denmark, 14-21 August 1966, "World and regional estimates and projections of labour force" by James V. Ypsilantis, International Labour Organization, document ISLEP/A VII.5 and Add.I and Add.III (mimeo.). Yves Datois "Sectoral Employment Growth: the Outlook for 1960", International Labour Review, Vol.100, No.7 (November 1969).

¹¹ Document E/60/21, pp. 1-4.

CHAPTER I. FORMULATION OF LONG-TERM PLANS AND PROGRAMMES FOR THE TRAINING OF NATIONAL PERSONNEL FOR INDUSTRIAL DEVELOPMENT

16. The national supply of skilled industrial personnel cannot readily 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.

ELEMENTS OF PLAN FORMULATION

Definition

17. 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 the developing countries are relatively limited, the plans and programmes for industrial training in these 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 coded under industrial skill development as part of over-all national development plans.

Integrated planning

18. 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 industries and projects as well as the employment generating capacity of certain production techniques should be of major interest to both groups of planners.

Skill demand analysis

19. 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 a high co-operation from employers and support from Government and the community at large. Measures are therefore needed that would allow data to be collected and analysed on the basis of specific industrial skill requirements on a regular basis, preferably on an industry-by-industry basis, taking into consideration the criteria of location, level of quality, function, branch or sector 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 analyses 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.

Co-ordination of, and co-operation among, different systems of education and training

20. The educational and training systems in many of the 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 such fields as industry.

21. 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 or in-service training or training in institutions; and (c) continuing education and training both inside and outside the formal education system including upgrading, updating and specialized training as well as retraining. Since general education is the first step in the process of developing industrial skills, the system must be more strongly oriented than in the past towards the scientific and technological content of education and should foster a scientific approach to socio-economic problems.

Continual training

22. A characteristic of industrialization is rapidly changing conditions. Thus the traditional concept of two entirely separate and distinct periods in an individual's life - the learning period and the working period - is obsolete in an industrialized society. Modern industrial training means a continual learning process throughout an individual's active life.

Training facilities

23. 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 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 the developing countries. Governments of industrialized countries could consider granting a remission of taxes to enterprises that offer industrial training facilities for nationals of developing countries.

Training abroad

24. 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 candidate 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 training facilities in these countries often correspond to conditions in the home country and, moreover, the danger of the brain drain may be substantially reduced. Training abroad in industrialized countries should be considered only for key industrial personnel from priority industrial 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.

25. A characteristic of technical assistance in the field of industrial training is the fragmentation, i.e. the many sources, of financing for training programmes abroad. As a means of solving this problem, Governments of developing countries may wish to consider establishing, on a national basis, a highly professional co-ordinating body to advise on all training programmes abroad; or they may wish to incorporate this function into those of the national organizational machinery mentioned later in this chapter.

Selection of trainees

26. 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.

Motivational factors

27. 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 adapted to local conditions, attitudes and social values.

Research

28. 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.

Evaluation

29. Continuous evaluation 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.

Legislation, organization and administration

30. 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.^{11/}

31. 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 promulgation 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 has 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

^{11/} For further information see Manpower for Industry, op. cit., pp.27-29.

branches. The appointment of national and regional industrial training experts will help to assist Governments of developing countries in determining training needs and in planning programmes to meet those needs.

Financing

32. 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.

33. 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.^{12/} 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. Generally, financial assistance from abroad will 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.

Technical assistance sources

34. 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.

35. Within the United Nations system, three main bodies deal with assistance in the field of industrial training and related activities, namely, the International Labour Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Industrial Development Organization (UNIDO). Vocational training is the primary

^{12/} Manpower for Industry, *op. cit.*, p.31.

responsibility of ILO. Assistance to industrial training for personnel at the level of technicians is undertaken by both ILO and UNIDO. UNIDO is responsible for assistance in the field of formal education including facilities for industrial vocational education, universities and other institutions of higher education. UNIDO, at the request of UNCTAD, advises on the planning and curricula of such institutions in so far as they are related to industrial development.^{11/}

MAJOR CATEGORIES OF INDUSTRIAL PERSONNEL REQUIRING TRAINING

11. The major categories of personnel required to carry out the essential industrial activities as well as the related 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 finances;
- 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;
- Broadly skilled 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;
- Unskilled workers with certain minimum qualifications.

^{11/} See "Central Role of UNIDO in Co-ordinating the Activities of the United Nations System in the Field of Industrial Development", 1967, document ID/B/55 and Add.1, 2 and 3 (mimeo.); Blueprint for Industry, op. cit., p.43.

**MAJOR INDUSTRIAL AND RELATED ACTIVITIES
REQUIRING APPROPRIATELY TRAINED PERSONNEL**

37. Major sectors of production are listed below:

- Food processing
- Textiles
- Leather
- Wood and wood products
- Non-metallic minerals
- Pulp and paper
- Metal processing
- Chemical industries
- Iron and steel
- Non-ferrous metals
- Machinery and mechanical equipment
- Transport equipment
- Electrical and electronic equipment
- Construction
- Exploitation of mineral resources
- Energy

38. Major services and functions are listed below:

- Transport
- Communication
- Plant design and application of appropriate technologies
- Product design and packaging
- Installation, maintenance and repair services
- Financial management and management control
- Management information systems
- Production management
- Industrial engineering
- Marketing services
- Industrial research services
- Industrial consulting services
- Small-scale industries services
- Quality control
- Standardisation
- Industrial legislation
- Public industrial administration
- Licensing and patents
- Industrial information
- Industrial training, organization and administration
- Environmental control
- Industrial planning and programming
- Industrial policies
- Industrial project preparation and evaluation
- Industrial project implementation
- Industrial financial planning and analysis
- Industrial banking techniques
- Industrial investment promotion
- Industrial surveys
- Promotion of export-oriented industries

CHAPTER II. THE ROLE OF UNIDO IN THE FIELD OF INDUSTRIAL TRAINING

13. A number of General Assembly resolutions have been concerned with the expansion of UNIDO's activities for training national personnel for industrialization.^{14/} In this connexion, UNIDO received the following mandate: UNIDO shall undertake, inter alia, "assistance to the developing countries in the training of technical and other appropriate categories of personnel needed for their accelerated industrial development, in co-operation with the specialized agencies concerned".^{15/}

40. The present role of UNIDO in the field of industrial training is to:

- Co-ordinate the work of international and regional organizations of the United Nations family in the field of industrial training, within the framework of the responsibilities assigned to UNIDO under General Assembly resolution 2152 (XXI);
- Assist, in co-operation with ILO, UNESCO and other international organizations, developing countries in analyzing the training requirements of industry, in establishing the legal, administrative and organizational frameworks needed for industrial training, and in organizing suitable national industrial training activities;
- Implement, within its limited resources, a programme of various types of industrial training on the national, regional, interregional and global levels for certain types and classes of personnel involved in industrial development.^{16/}

41. A specific professional function in a plant, an institution or an agency involved with industrial development requires specific training. The training assistance of UNIDO is developed therefore in co-ordination with, and supplementary to, existing systems of formal education and non-formal training in order to meet the specific needs of individual industries as well as of related institutions and agencies for qualified personnel. This training assistance is organized in co-operation with relevant national authorities, agencies and institutions in both developing and industrialized countries, with concerned United Nations bodies, and with non-governmental organizations at the international level.

42. In addition to direct training assistance provided through various training mechanisms, most of the technical assistance activities of UNIDO contain an element of training. In the provision of expert technical assistance, for example, UNIDO not only provides assistance in solving the specific problem but also aids the recipient country to become more self-sufficient and better equipped to conduct its own industrialization programmes after UNIDO assistance has been rendered. Hence one of the responsibilities of all UNIDO experts is to bring assigned qualified counterparts to the position where they can operate and maintain the project and, where necessary, design future projects without further foreign expert assistance.

^{14/} General Assembly resolutions 1321 (XVII), 2090 (XX), 2259 (XXII), 2417 (XXIII).

^{15/} General Assembly resolution 2152 (XXI), paragraph 2 (a) (ix).

^{16/} Manpower for Industry, op. cit.

43. With its limited facilities, UNIDO undertakes to encourage, and to improve the qualifications of, persons who can become organizers or entrepreneurs, managers on different levels, engineers and other professionals involved with industry and its development. Training is therefore given to those having "multiplier occupations" - that is, key positions in industry and related authorities, agencies and institutions through which resources are allocated, jobs created, and training provided to overcome shortages and problems that may develop in the supply of other types of qualified industrial personnel. These individuals are trained so that their skills are not performed in isolation but are integrated within the country's industrial development and economic activities as a whole.

44. UNIDO does not carry out its training activities in isolation from other UNIDO technical assistance activities or from UNIDO's co-operation and co-ordination with outside bodies. In its training activities, UNIDO maintains close co-operation and co-ordination with Governments of developing countries requiring assistance in this field, with Governments of host countries offering training facilities or financial assistance for training programmes, and with UNDP, the major source of international funds for training activities. UNIDO is aware that its programme of industrial training is a necessarily limited contribution within the world-wide framework of national, bilateral and multilateral efforts in this field. The industrial training activities of UNIDO cover only 2 to 3 per cent of the annual industrial training demand that falls within its field of competence.

GENERAL CATEGORIES OF UNIDO TRAINING ACTIVITIES

45. In the field of industrial training, the assistance of UNIDO to the Governments of developing countries can be categorized as follows:

- (a) Basic level pre-employment training to impart practical industrial experience to newly graduated engineers, technologists and economists;
- (b) Upgrading training for specialists to bring them to the management level;
- (c) Updating training to keep specialists abreast of the latest developments in their specific industrial fields;
- (d) Specialized training for industrial personnel in the execution of a specific industrial function in a specific industrial sector, i.e., to transform them from generalists to specialists;
- (e) Highly specialized and intensive training for managerial, administrative and other decision-making personnel.

46. These categories of UNIDO's training activities apply not only to personnel already employed in, or about to enter, industry, but also to personnel in related fields such as consultancy, public industrial administration, industrial policies, industrial institutions, industrial research, industrial development banking, investment promotion and industrial information. Categories (b) to (e) demonstrate clearly the emphasis placed on skill improvement of those personnel already employed in industry, for skill improvement is the main concern of UNIDO in the field of industrial training.

TRAINING MECHANISMS EMPLOYED BY UNIDO

In-plant group training programmes

47. In response to the need to bridge the gap between the theoretical knowledge obtained at universities and colleges and the practical experience required by industry, UNIDO has initiated in-plant group training programmes on two levels:

- Basic in-plant group training programmes as pre-employment training; for newly graduated engineers, technologists and economists. These programmes are to be carried out as projects in the developing countries.
- Upgrading or updating programmes as part of continual training organized for technical personnel from the technician level onwards and for managerial personnel with several years of experience in industry or industrial institutions. These programmes are carried out in industrialized countries or in developing countries in which the specific know-how is at an appropriate stage of development.

48. The Centre for Industrial Development (CID), the predecessor of UNIDO, initiated the upgrading and the updating in-plant group training programmes in 1965. These in-plant group training programmes, which have a duration of 3 to 5 months, are designed to provide participants, within a relatively short time, with theoretical knowledge and concentrated practical experience. This is accomplished by having the participants work in an industrial atmosphere under close and continuous supervision of experienced staff. During the first years, in-plant group training programmes were directed primarily towards training engineers in specific sectors of industry, but UNIDO has subsequently extended these programmes to include other categories of higher technical and managerial personnel already employed in industry or industrial institutions, in order to upgrade and update their knowledge and experience in specific functional activities. These functional in-plant group training programmes cover subjects such as maintenance, management, standardization, quality control, industrial administration, investment promotion and project formulation.^{17/}

49. The basic criterion for the selection of facilities for the in-plant group training programmes is the suitability of the facilities from the technical point of view, but the willingness of the staff of the industry or institution to accept trainees from different socio-economic backgrounds is also taken into consideration. In selecting industrial fields for the training, UNIDO has endeavoured to avoid duplication of programmes already being carried out by training institutions inside and outside the United Nations system.^{18/}

^{17/} The original concept of "in-plant" training has been expanded to include any type of training in which the individual receives practical operational experience in organizations such as research institutes, development corporations, financial institutions and manufacturing enterprises.

^{18/} The industrial fields presently being covered by UNIDO in-plant group training programmes are listed in table 1 on page 18.

50. The organizational and administrative functions of UNIDO with respect to in-plant training programmes includes:

- Determination of the training needs of higher technical personnel in developing countries;
- Location of training facilities suitable to meet the training needs;
- Assistance in developing the programme in consultation with the authorities and/or institutions concerned in the host country;
- Advice to the host authorities on the training methodology to be applied in these programmes, based on UNIDO's accumulated experience;
- Securance of financing for the programme;
- Recruitment of candidates through the offices of the UNDP Resident Representatives in developing countries, in accordance with established United Nations procedures;
- Pre-selection of candidates, taking into account their educational and professional background, and final selection, in co-operation with the host authorities;
- Evaluation of the effectiveness of the training programme in terms of whether it meets the specific needs of the training. This is done through an evaluation questionnaire, to be completed at the end of the training programme, and through individual interviews as well as a follow-up questionnaire sent to former participants approximately one year after their return home;
- Evaluation and follow-up activities after the programmes have been carried out.

51. The in-plant group training programmes of UNIDO are financed by United Nations funds, by voluntary contributions made by member States to the UNIDO General Trust Fund, and by special contributions made to UNIDO. Most of the host countries also make contributions in kind by providing training facilities free of charge. In general, the UNDP Technical Assistance component has been used for financing international travel of participants and for miscellaneous expenses, while the board and lodging of participants and the actual training costs have been paid from the host countries' contribution to UNIDO. In some cases, the host countries have borne the total cost of the programmes.

52. Most of the in-plant group training programmes of UNIDO are presently financed on an annual basis, as regards both UNDP and host countries' contributions. Four projects in the field of industrial training were financed out of the UNDP Special Fund component, enabling UNIDO to plan in-plant group training programmes three years in advance.

53. Table 1 below shows the development of in-plant group training programmes carried out by UNIDO and its predecessor, CID, during the period 1965 to 1971. It is envisaged that the number of these programmes will continue to increase, that their quality will improve, and that they will expand along both functional and sectoral lines.

54. The lack of quantitative and qualitative data on training requirements in the developing countries, especially with regard to continuing training, does not allow the exact nature and scope of in-plant training programmes to be predicted over a long term. However, a tentative list of possible training subjects for in-plant training programmes during the Second United Nations Development Decade has been prepared on the basis of the accumulated experience of UNIDO in this field. This list is given in table 2 below. Where possible, such specialized subjects as application of appropriate technologies and environmental control will be incorporated into these programmes.

Table 1

Industrial groups and their development carried out by ITO and UNIDO (1964-1969)

Field of study	Host country	Number of participants						
		1964	1965	1967	1968	1969	1970	1971
Iron and steel	Switzerland, FRG	25	37	44	39	33	12	1
Electrical industry	Sweden	-	20	17	20	13	17	11
Non-ferrous industry	Yugoslavia	-	18	-	-	-	-	-
Textile industry	Poland	-	-	13	14	19	16	13
Textile machinery	Italy	-	-	9	-	-	-	-
Metallurgical industry	Italy	-	-	9	-	-	-	-
Cement industry	Denmark	-	-	-	17	-	-	-
Diesel engines	USSR	-	-	-	20	-	14	14
Mechanical industry	Japan	-	-	-	12	12	8	15
Pulp and paper industry	Sweden	-	-	-	-	12	12	12
Shoe industry	USSR	-	-	-	-	18	-	-
Food processing	FR	-	-	-	-	14	-	11
Metalworking industry	USSR	-	-	-	-	20	11	17
Pesticides	USSR	-	-	-	-	19	28	7
Maintenance	Sweden	-	-	-	-	-	17	20
Plastics industry	Austria	-	-	-	-	-	15	14
Maintenance	Italy	-	-	-	-	-	-	14
Standardization	USSR	-	-	-	-	-	-	20
Food processing	India	-	-	-	-	-	-	14
Railway maintenance	Fed. Rep. of Germany	-	-	-	-	-	-	14
Total number of participants		251	251	286	122	160	170	118
Total number of programmes		1	1	1	5	9	10	14

Table 2

In-plant group training programmes - tentative list of training subjects

Sectors of industry

Iron and steel
 Non-ferrous metal
 Metalworking
 Electrical
 Mechanical and electrical
 Electronics
 Basic chemical
 Fertilizer
 Pesticide and insecticide
 Plastics
 Building materials
 Leather and leather products manufacturing
 Textile
 Pulp and paper
 Woodworking
 Food processing

Functional subjects

Maintenance
 Production managements for specific broad sectors of industry
 Quality control
 Materials handling
 Industrial consultancy including small-scale industry (extension workers)
 Packaging
 Plant design
 Product design and value analysis

Specialised subjects

Investment promotion
 Financial management
 Promotion of export-oriented industries
 Marketing
 Industrial programming and planning
 Industrial research
 Appropriate technology (design capability, selection of technologies)
 Public industrial administration
 Industrial information
 Environmental control.

55. On the basis of present and projected estimates of headquarters staff and available training facilities, and subject to the availability of sufficient financial resources from UNDP funds, UNIDO plans to increase gradually the number of in-plant group training programmes. For the period 1972 to 1980, the following development has been envisaged:

<u>Year</u>	<u>No. of programmes</u>
1972	20
1973	24
1974	27
1975	30
1976	32
1977	34
1978	36
1979	38
1980	40

56. The present level of financing for in-plant group training programmes is not sufficient to meet the needs of the countries which are participating in such programmes. It is recommended that the financing be increased to meet the needs of the countries.

57. The present level of financing for in-plant group training programmes is not sufficient to meet the needs of the countries which are participating in such programmes. It is recommended that the financing be increased to meet the needs of the countries.

58. ILO feels that the best procedure for the planning and financing of in-plant group training programmes are those which enable (a) provide forecasts of developing countries in advance with detailed information on planned and approved ILO in-plant group training programmes and (b) provide ILO with advance information on the level of government interest in participating in planned in-plant group training programmes so that ILO could advise relevant commitments from host authorities and financing from ILO.

59. At present, the average ratio of ILO financing and host authority financing per programme is between 10 and 104, demonstrating the relative role that ILO plays in the financing of this type of training programme. ILO will continue with its policy of seeking to obtain the greatest part of the financing of in-plant group training programmes from host authorities.

60. Most of the ILO in-plant group training programmes are carried out as interregional projects that is, participants in a programme come from countries of more than one geographical region. In view of the nature of most of the in-plant group training programmes, ILO should prefer to continue to organize them as interregional projects. The main criterion for the selection of countries that are invited to nominate candidates is the availability of a given country to nominate and release candidates for a specific training programme rather than the particular geographical region in which the country is located. Thus, the presence of facilities, iron and steel or fertilizer industries in a country is more of a decisive factor for participation in the corresponding sectoral training programmes than the region in which the country is located. Such programmes are organized primarily for one geographical region, experience has shown that the countries in the region are generally not in a position to nominate a sufficient number of qualified candidates with a knowledge of the language in which the training programme is conducted. Regionalization of in-plant group training programmes will ensure candidates from certain regions of participation in such programmes. Within the context of the proposed inter-country programme procedures, the financing required from ILO for the in-plant group training programmes will have to come mainly from the Industrial Financing Fund (IFF) for interregional projects.

61. An estimated three-quarters of ILO's in-plant group training programmes will require financial support from ILO, mainly out of interregional funds. The remaining quarter will be financed fully by special host contributions and out of local ILO financial funds.

12. See paragraph 4 below.

The Committee on the Administration of the Government of the District of Columbia has the honor to acknowledge the receipt of your letter of the 12th instant, in which you request that the Commission on the Administration of the Government of the District of Columbia be authorized to conduct a study of the feasibility of establishing a District of Columbia State Police. The Commission is currently conducting a study of the feasibility of establishing a District of Columbia State Police, and it is anticipated that a report on this subject will be submitted to the Commission by the end of the year. It is anticipated that the report will contain a detailed analysis of the various factors which would enter into the decision as to whether or not it is feasible to establish a District of Columbia State Police, and it is anticipated that the report will also contain a recommendation as to whether or not it is feasible to establish a District of Columbia State Police.

TABLE
Summary of Proposed District of Columbia State Police
Estimated Costs

Year	Personnel	Equipment	Operating Expenses	Total	Percent of Total
1957	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1958	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1959	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1960	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1961	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1962	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1963	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1964	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1965	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1966	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1967	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1968	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1969	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1970	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1971	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1972	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1973	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1974	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1975	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1976	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1977	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1978	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1979	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1980	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1981	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1982	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1983	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1984	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1985	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1986	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1987	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1988	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1989	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1990	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1991	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1992	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1993	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1994	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1995	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1996	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1997	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1998	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
1999	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%
2000	\$1,000,000	\$500,000	\$200,000	\$1,700,000	55%

- 1. The Commission is currently conducting a study of the feasibility of establishing a District of Columbia State Police, and it is anticipated that a report on this subject will be submitted to the Commission by the end of the year.
- 2. It is anticipated that the report will contain a detailed analysis of the various factors which would enter into the decision as to whether or not it is feasible to establish a District of Columbia State Police, and it is anticipated that the report will also contain a recommendation as to whether or not it is feasible to establish a District of Columbia State Police.

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training programmes. Such a scheme would require an estimated budget of about US\$ 3 million for the five-year period 1972 to 1976 and would enable UNIDO to organize and finance 100 in-plant group training programmes during this period. The amount of US\$ 3 million corresponds to 0.2 per cent of the total UNDP budget during the period in question.

64. One of the procedures proposed by UNIDO is the publication semi-annually of a two to three-year schedule of UNIDO in-plant group training programmes. Programmes would be classified as: (a) planned programmes - programmes for which host authorities have declared, in principle, their willingness and ability to host over the next two to three-year period; and (b) approved programmes - programmes for which financing has been secured and for which detailed information on the curriculum, starting date and location has been established.

65. The UNIDO in-plant group training programme schedule would be distributed to Governments of developing countries through the respective offices of the Resident Representatives of UNDP and would also be sent directly to professional organizations, industrial associations etc. Interest on the part of government authorities, industry and institutions in planned in-plant group training programmes should be submitted to UNIDO through the Resident Representatives, with prior approval by the responsible government authorities.

66. Experience has shown that the host authorities require six to twelve months to finalize all organizational aspects of the training programme while UNIDO needs six to eight months before the starting date of a training programme in order to receive the nominations, have them evaluated and selected, and notify participants of their acceptance. If, one year before the anticipated starting date of a programme, Governments have indicated their interest to fill over 75 per cent of available places, UNIDO would secure financing from the over-all in-plant training scheme, from host authorities and from the UNIDO General Trust Fund, as the case might be. After financing is secured, the host authorities would be requested to start active preparation of the training programme and UNIDO would initiate recruitment action in the customary way. Should the interest indicated warrant the setting up of the programme over a period of more than one year, this would be done accordingly.

67. The creation of an over-all in-plant group training scheme would facilitate the organization of training programmes and allow for a certain degree of flexibility in meeting the industrial training needs of the developing countries. After a planned programme has received financial authorization and after UNIDO has obtained definite confirmation from the host countries that they will carry out the programme, it will be included in the schedule as an approved programme.

Individual fellowships

68. UNIDO has organized an individual fellowship programme for nationals of developing countries to study abroad in specific industrial fields. Nationals holding, or about to be entrusted with, functions important to the industrial development of their country are given an opportunity to upgrade their professional knowledge and skills through theoretical instruction and practical experience in their specific industrial fields. The individual fellowship programme provides training in all fields of industrial activity in line with the specific training requirements of candidates, but it is not intended to lead to an academic or comparable degree or certificate.

69. UNIDO fellowship posts are established on the requests of Governments and are granted as components of technical assistance projects or on an individual basis. Normally, Government requests arise from consultations between the Government and the UNIDO Industrial Development Field Adviser, the UNDP Resident Representative, UNIDO experts in the field and the respective headquarters staff. Candidates are nominated by their Government through the office of the Resident Representative or Regional Representative. UNIDO evaluates these applications in the light of the candidates' qualifications, the training required and the objectives of the fellowship. Specific programme recommendations are made and placement is sought in host countries that can provide the most suitable training for the candidates' training objectives.

70. The increase in the number of individual fellowships has been rapid: from 153 fellowships awarded in 1967 to 388 awarded in 1970; the estimated number of fellowships awarded for 1971 is 500. These figures represent approximately 70 per cent of the annual established fellowship posts. The discrepancy between established posts and awarded fellowships is due to the fact that nominations are not submitted for all available posts.

71. Owing to withdrawals and re-submissions of candidates, several candidates often have to be evaluated and a number of programme recommendations made before fellowship posts are awarded. Frequently there are withdrawals after awards have been made or after placements have been finalized.

72. In addition to the processing of fellowships established for a given year, a number of carry-over posts (approximately 150) from previous years are also administered. This carry-over is the result of candidate replacement, changes in training programmes or programme extensions.

73. As can be seen in table 4 below, the average cost of individual fellowships has remained fairly constant, although actual costs, especially training fees, are expected to increase. Fees are being raised in training institutions and universities, and even private firms in which placement is sought sometimes require substantial training fees. In one or two cases, UNIDO has had to reject a training programme because of excessive fees. Moreover, as a result of the rapid increases in the cost of living, a rise in stipend is likely to take place in the near future.

74. Table 4 also shows the development of awarded fellowships and their cost during the period 1968 to 1970. On the basis of these figures, UNIDO has made a forecast of the fellowship programme during the Second United Nations Development Decade, and this forecast is contained in table 4. For 1972 through 1976, the forecast is based on the present 20 per cent average annual growth rate of fellowship awards; for 1977 through 1980, on an estimated annual growth rate of 10 per cent. The average duration of a fellowship is five months. The cost calculation is based on rounded off, pro forma costs per man/month (including proportionate travel costs) at 1971 constant prices.

Table 4
Review and forecast of individual fellowship programmes (1968-1980)

<u>Year</u>	<u>Fellowships awarded (in m/m)</u>	<u>Total cost (in '000 US\$)^{a/}</u>	<u>Average cost of individual fellowship (per m/m in US\$)</u>
1968	279/1,219	766.6	629
1969	333/1,715	1,019.0	594
1970	388/1,887	1,142.8	606
1971	500/2,500 ^{b/}	1,585.0 ^{b/}	634 ^{b/}
1972	600/3,000	1,950.0	650
1973	700/3,500	2,280.0	650
1974	850/4,250	2,760.0	650
1975	1,000/5,000	3,250.0	650
1976	1,200/6,000	3,900.0	650
1977	1,300/6,500	4,230.0	650
1978	1,450/7,250	4,710.0	650
1979	1,600/8,000	5,200.0	650
1980	<u>1,750/8,750</u>	<u>5,690.0</u>	650
Total	<u>11,950/59,571</u>	<u>38,483.4</u>	
Total for the period 1972 to 1980:	<u>10,450/52,250</u>	<u>33,970</u>	

^{a/} From 1972 onwards, the calculations are rounded off to the nearest US\$ 10,000. The calculations are based on rounded off, pro forma costs per man/month (including proportional travel costs) at 1971 constant prices.

^{b/} Estimated.

Seminars and training workshops

75. UNIDO training workshops and seminars are programmed on national, regional and inter-regional levels and cover a broad range of industrial sectors as well as specific topics. A list of subjects that have been covered in UNIDO training workshops and seminars is contained in table 5 below. At these workshops and seminars, case studies are presented by participants, with the view to establishing a dialogue among individuals with similar problems associated with their enterprises, institutions or government agencies.

76. UNIDO has also organized seminars on its operations for senior government officials responsible for industrial development planning and technical assistance programming. The objective of such seminars is to better acquaint these officials with the functions and activities of UNIDO so that they can assist their Governments in making the most effective use of the resources available for industrial development and of the assistance that can be provided through UNIDO.

Table 5

Subjects covered by seminars and training workshops (1967-1971)

Food processing
Leather industry
Wood processing furniture
Clay building materials
Copper production
Tin plate production
Metallurgy
Design, operation and maintenance of chemical plants and equipment
Fertilizers
Pesticides
Plastics technology
Machine tool industry
Automotive industry
Industrial policies
Industrial planning and programming
Industrial project evaluation
Investment promotion
Promotion of export-oriented industries
Industrial surveys
Financial analysis
Auditing
Technical and financial co-operation
Financial aspects of manufacturing enterprises in the public sector
Industrial processing
Project implementation
Industrial location and regional development
Productivity promotion
Industrial services
Industrial estates
Extension services for small-scale industries
Financing of small-scale industries
Standardization
Metrology
Industrial administration
Management of chambers of industry
Industrial information
Information on UNIDO operations

77. As can be seen from table 6 below, 79 seminars and training workshops, with approximately 1,750 participants, were organized by UNIDO during the period 1967 to 1971. The average number of participants per seminar or training workshop was 22, and the average duration was two to three weeks each. For 1972, 29 seminars and training workshops with approximately 640 participants are planned.

78. Seminars and training workshops organized by the substantive sections of UNIDO will continue to be an essential part of UNIDO training activities throughout the Second United Nations Development Decade. The planning and organization of the seminars and workshops are dependent upon the specific training demands for a certain sector of industrial activity or for a certain function in, or related to, industry. These demands may be regional or world-wide. Once a certain type of skill demand has been met, the corresponding type of seminars or training workshops is phased out; newly identified types of skill demands are incorporated in the plans for future seminars and training workshops.

79. Table 6 below indicates that after a rapid increase in the number of seminars and training workshops, a level of approximately 30 seminars or training workshops per annum has been reached in 1971; it is planned to maintain this level in 1972. The estimates for advance planning from 1973 onwards are based on an assumed 10 per cent increase per annum, subject to the availability of financial resources. Accordingly, for 1972 through 1980, approximately 390 UNIDO seminars and training workshops, with a total of about 8,500 participants, are envisaged.

80. Based on the present average pro forma cost of US\$ 1,000 per participant at 1971 constant prices, the costs for seminars and training workshops for 1972 through 1980 have been estimated at approximately US\$ 8.6 million.

Table 6
Review and forecast of seminars and training workshops (1967-1980)

<u>Year</u>	<u>No. of seminars and training workshops</u>	<u>No. of participants (rounded off)</u>
1967	3	70
1968	7	200
1969	19	400
1970	21	440
1971	29	640
Sub-total	79	1,750
1972	29	640
1973	32	700
1974	35	770
1975	38	840
1976	42	950
1977	46	1,000
1978	50	1,100
1979	55	1,200
1980	60	1,350
Sub-total	387	8,500
Grand total	466	10,300

Field experts in industrial training and industrial training advisers

81. Upon government request, UNIDO assigns individual training experts to work in the field in close association with industrial training activities being carried out at an enterprise or, on a national level, within a specific branch of industry. Furthermore, UNIDO plans, with the mutual agreement of the regional economic commissions and UNESCO, to establish a system of regional industrial training advisers and, on government request, national industrial training advisers who will, inter alia: assist in the identification of training needs and of facilities for meeting these needs; advise on the establishment, improvement and adaptation of national industrial training organizations; and co-ordinate UNIDO and other training efforts being carried out in the region or country. The close association of industrial training experts

and national and regional industrial training advisers with actual conditions in the field allow more detailed information to be obtained and more realistic judgements to be made of actual training needs.

82. UNIDO considers the appointment of industrial training advisers particularly important, especially in the light of the proposed new UNDP Inter-country Programming procedures.

83. The activities of industrial training experts are expected to increase and include such areas as: the development of in-plant training schemes and the organization of in-plant training programmes in developing countries; the conducting of training programmes in achievement motivation; the strengthening of existing industrial training centres; and the organization of in-plant training in specific industrial functions such as maintenance and repair, quality control and standardization.

84. To date, the limited experience of UNIDO with regard to the provision of industrial training experts does not offer an adequate basis for making long-term forecasts. A rough estimate, however, based on headquarters planning and on approximate demand identification in comparison with corresponding development in other fields where experts are employed, is given in table 7 below.

Table 7
Estimated and forecast development of the industrial training
adviser and expert programmes (1971-1980)
(in man/months and thousands of US dollars)

Year	Programme of industrial training advisers				Programme of industrial training experts for specific branches/functions ^{a/}		Total	
	regional		national		m/m	t ^{b/}	m/m	t ^{b/}
	m/m	t ^{b/}	m/m	t ^{b/}				
1971	1/42	10	-	-	6/54 ^{c/}	140	7/58	150
1972	2/24	60	3/36	90	9/81	200	14/141	350
1973	3/36	90	5/60	150	12/108	270	20/204	510
1974	4/48	120	8/96	240	15/135	340	27/279	700
1975	4/48	120	10/120	300	20/180	450	34/348	870
1976	5/60	150	12/144	360	25/225	560	42/429	1,070
1977	6/72	180	14/168	420	30/270	680	50/510	1,280
1978	7/84	210	16/192	480	35/315	790	58/591	1,480
1979	8/96	240	18/216	540	40/360	900	66/672	1,680
1980	<u>10/120</u>	<u>300</u>	<u>20/240</u>	<u>600</u>	<u>45/405</u>	<u>1,010</u>	<u>75/765</u>	<u>1,910</u>
Total	<u>50/592</u>	<u>1,480</u>	<u>106/1,272</u>	<u>3,180</u>	<u>237/2,133</u>	<u>5,340</u>	<u>393/3,997</u>	<u>10,000</u>

a/ Figures exclude industrial training experts attached to industrial training institutions and centres.

b/ Costs have been calculated on a pro forma basis of US\$ 2,500 per expert/month at 1971 constant prices.

c/ Established posts.

Industrial training institutions and centres

85. UNIDO has developed a special type of industrial training programme in developing countries, financed through the Special Fund component of UNDP. These programmes are designed to assist in the strengthening of existing, and in the establishment of new, institutions or enterprise units related to industrial training. The first programme of this type, an in-plant training centre for engineers attached to an enterprise in Turkey, became operational in 1970. This centre specializes in the provision of practical training in the fields of foundry practices, metallurgical and hot metal processes, and machine-tools and production engineering. The goals of the centre are: to provide newly graduated engineers with practical knowledge and skills; to upgrade the skills of employed engineers; and to retrain engineers and technicians in line with changing skill demands.

86. UNIDO assistance to industrial training institutions and training centres is normally scheduled for five years, following an average two-year preparatory period. Assistance is usually given in the form of experts, fellowships and equipment. In this context, equipment refers to what is needed for direct teaching and training purposes in addition to basic equipment made available by the counterpart. UNIDO training assistance to the in-plant training centre in Turkey, begun in 1970, will continue through 1975. It is envisaged that during the Second United Nations Development Decade, UNIDO will be requested to provide similar assistance to a number of training institutions and centres (see table 8 below). By 1980, UNIDO will be assisting some 15 such institutions and centres simultaneously.

PLANS FOR FURTHER TRAINING ACTIVITIES

87. In addition to the proposals mentioned above with respect to specific training programmes, UNIDO has formulated plans for various activities to be carried out over the long term. These plans are aimed at strengthening and supporting UNIDO training programmes. For purposes of discussion, the plans will be broken down into the following three categories:

- (a) Activities under implementation or planned for immediate implementation;
- (b) Activities planned for implementation in the near future; and
- (c) Activities under consideration for implementation.

Activities under implementation or planned for immediate implementation

88. Evaluation. UNIDO is strengthening and expanding the evaluation component of its training programmes. Analyses are being made of the responses UNIDO has received in reply to its two types of evaluation questionnaires which were sent to former participants of in-plant group training programmes and to former individual fellows. A comparative evaluation of the results of both programmes is also being made. The feedback obtained from these analyses will be used to improve the suitability and effectiveness of the programmes. UNIDO is also carrying out a study on the feasibility of evaluating the present system of informal final reports written by individual fellows as opposed to a system of formalized final reports.

89. Alumni directory. UNIDO is compiling an alumni directory of former participants in its training programmes and will continually update it. The directory will be helpful to UNIDO in carrying out follow-up activities and will help the former participants to broaden their contacts and to exchange experiences with former participants and with UNIDO staff members.

90. Achievement motivation training (AMT). At government request, UNIDO is prepared to assist in the implementation of achievement motivation training programmes, either as special training components of other UNIDO projects or as development programmes being carried out by national authorities in the developing countries. Upon request, seminars, at which the nature and scope of these programmes are explained, may also be included as components of on-going UNIDO projects. Achievement motivation training is concerned with entrepreneurs, particularly those in less advanced developing countries, and with top-level managerial personnel in advanced sectors of industry, related institutions and agencies in developing countries. Through the application of this behavioural science technology to training operations, UNIDO aims to stimulate individuals to be more innovative and daring in their day-to-day functions and in their planning operations so they can take fuller advantage of present and potential indigenous opportunities for industrial growth.

91. Skill demand analysis. UNIDO is prepared to undertake pilot studies of the skill demands of specific industries in developing countries. Initially, it is planned to undertake a pilot study within a selected developing country to determine skill demands to be covered by training at the enterprise or national level. These surveys will be carried out in co-operation with the relevant national and international authorities.

92. Meetings and consultations of training programme directors. A first meeting of directors of UNIDO in-plant training programmes was convened in 1967. At this meeting, the main theme was outlining the future strategy to be followed. A similar meeting, scheduled for 1972, will provide a forum for discussion of common problems, possible new approaches and training techniques. The meeting will also provide directors of future programmes with an opportunity to acquaint themselves with all aspects of in-plant group training. UNIDO plans to hold additional meetings of training directors during the Second United Nations Development Decade. UNIDO is also initiating a programme of exchange visits among directors of UNIDO training programmes so as to allow the dialogue, which will take place at the above-mentioned meetings, to continue on a regular basis. UNIDO assistance with regard to these consultations will be of an administrative nature; financing of such consultations will be borne by either the host country or the participant's home country.

93. Promotional activities. UNIDO is strengthening and expanding its contacts with national placement authorities so as to make optimum use of available training facilities abroad. UNIDO is also utilizing its contacts with institutions, enterprises and agencies to make these parties more mindful of training so they can realize their potential for providing host training facilities for nationals of developing countries.

Activities planned for implementation in the near future

94. Associated training programmes. One of the roles of UNIDO in the field of industrial training can be that of a promoter. Recognizing the great demand for training programmes for national personnel of developing countries in the face of the limited number of training opportunities, UNIDO is planning to initiate a new form of co-operation with highly competent training institutions in both industrialized and the more advanced of the developing countries. Within the framework of the planned co-operation, the responsibility of UNIDO would be to help to design the programmes with regard to programme curricula, methods of instruction, level of training, selection of candidates etc. Similarly, UNIDO would undertake periodic evaluation of the programmes with a view to improving their effectiveness; this would be done in consultation and co-operation with the relevant institution. The host institution would be fully responsible for carrying out the actual industrial training programmes, which should be practical-oriented and designed particularly for industrial trainees from developing countries.
95. Collective placement. Many of the host enterprises willing to provide training opportunities for nationals of developing countries are overburdened by the system of individual placement of fellows. To alleviate this problem, UNIDO is planning to carry out, where possible, collective placement of small groups of fellows with similar qualifications and requests for industrial training in a specific field. Placement would be sought for the concurrent training of such groups at one enterprise. Such a collective placement of fellows would not only provide greater training opportunities but also improve the effectiveness of the training programme and reduce training costs.
96. Study tour programmes. UNIDO is planning to initiate a study tour type of fellowship training programme for key personnel in Government, institutions and industry who would benefit from short information-oriented visits to appropriate host facilities. Participants would have the opportunity to make direct observations of operations, techniques and equipment and also to establish a dialogue on common areas of interests with counterpart hosts. UNIDO feels this type of programme would be of particular value in updating the management skills of individuals from enterprises, institutions and Government.
97. Follow-up activities. As a means of updating the knowledge of former participants of UNIDO training programmes, and of keeping them abreast of the latest technological developments, UNIDO is planning to supply these individuals with relevant technical information, documentation and literature in their specific fields of interest. This service will also allow UNIDO to maintain closer contacts with its former trainees. Information will be sent to former participants on publications which might be of interest to them; distribution of the requested material will follow, within financial limits. The feasibility of levying a charge of US\$ 100 on every fellowship and other ways of financing this type of follow-up activity will have to be tested.
98. Publication of training material. UNIDO is planning to expand its publication programme with regard to material used in UNIDO training programmes. Future publications are expected to include such areas as maintenance and repair, iron and steel, food processing, plastic manufacturing and metalworking.

Industrial Training and Development

70. General Training: This is relating the possibility of providing a program of on-the-job training. Training should be given to a number of high school graduates and the amount of such training will vary according to the needs of the industry. The training will be supported over a short period of time and will be concentrated on giving at least a broad base of experience and the student in the case of the industry. The benefits of the program should be dependent on the skill level of the participants and the training required. Similar training programs might be organized as an incentive to improve the production or quality level for young personnel selected, according to requirements of industry, for their industrial functions. In the case of the amount for long training and for long term, IITD may consider existing in the organization of industrial or educational plant training as a separate or institutional to carry out such training in various sections of industrial organizations.

71. Training of industrial educational organizations: The training of industrial educational personnel requires a reliable organizational and administrative structure. Such a structure includes pre-employment training system for entry, production experience, and a system of on-the-job long training and system of on-the-job training. Accordingly, industrial training center (institute) organized in government or private industry or organization should be trained in technical aspects of foreign programs. IITD is supporting the possibility of providing this type of specific industrial educational training through educational programs in foreign industrial training institutions.

72. Industrial educational institutions: IITD is supporting the possibility of on-the-job professionally oriented study and research in industrial training functions of industrial and non-industrial training institutions. This study is concerned with the development of industrial and non-industrial training institutions. IITD will be supporting the development of training programs at various levels of IITD staff. The development will be continuously updated.

73. Industrial educational institutions: IITD is investigating the possibility of providing the development of industrial training that is not available for on-the-job training programs with a view to giving this subject to industrial training institutions as a separate program in industrial training. In this connection, the possibility of developing IITD staff members and industrial institutions in the long term.

74. General Training: Further work being required by IITD is the possibility of on-the-job long-term training in the specific areas and specialties of the industry as a separate of industrial training and in the completion of training within an institution in foreign countries. This type of training would include research, development and maintenance of such type to be carried out by other organizations with the IITD staff and other industrial organizations and institutions.

75. Industrial educational: Further work being required by IITD is a program of study that would be a part of training in industrial training institutions. The following program would be a part of the IITD staff and other industrial organizations and institutions.

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CHAPTER III. SUMMARY OF LONG-TERM STRATEGY FOR THE TRAINING OF NATIONAL PERSONNEL FOR INDUSTRIAL DEVELOPMENT

SUGGESTIONS FOR ACTION BY DEVELOPING COUNTRIES

105. The responsibility for training national personnel for industrial development rests with the Governments of the developing countries. The following suggestions may be worthy of consideration:

(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 over-all 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 inter-disciplinary 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.

SUGGESTIONS FOR ACTION BY INDUSTRIALIZED COUNTRIES

106. As a means of assisting the developing countries in establishing and implementing long-term plans for training of national personnel for industrial development, Governments and industrialists of industrialized countries may wish to consider the following suggestions:

(a) Policy making

- (i) Place more emphasis, within the framework of bilateral co-operation, on industrial training for nationals of developing countries;
- (ii) Establish a close and permanent link between the transfer of technology and the transfer of technical know-how;
- (iii) Promote bilateral and multilateral co-operation and co-ordination in the field of industrial training.

(b) Planning and programming

- (i) Assist developing countries in carrying out skill demand surveys of specific industries;
- (ii) Assist developing countries in carrying out research, evaluation and syllabus design, especially with regard to planning and organization of industrial training activities;
- (iii) Assist developing countries in their over-all development planning, with particular emphasis on industrial training.

(c) Financing

- (i) Reinforce financial commitments to industrial training for developing countries;
- (ii) Make longer-term financial commitments for industrial training programmes;
- (iii) Increase financial contributions to international organizations dealing with industrial training for developing countries.

(d) Programme implementation

- (i) Encourage the increase of host training facilities, institutional as well as in-plant and in-service, for industrial training of nationals of developing countries;
- (ii) Participate actively in the establishment, operation and co-ordination of bi-lateral institutions for industrial training and related research in developing countries;
- (iii) Provide more incentives to qualified nationals of industrialized countries to become training experts in developing countries;
- (iv) Assist developing countries in developing, identifying and applying appropriate methods and techniques to their industrial training operations;
- (v) Support actively the efforts of developing countries to minimize the brain drain of their qualified national personnel.

SUGGESTIONS FOR ACTION BY UNIDO

107. In its efforts to assist the developing countries in training their national personnel for industrialization, UNIDO could take the following measures:

(a) Policy making

- (i) Broaden its policies and programmes of technical assistance with a view to emphasizing industrial training for nationals of developing countries;
- (ii) Strengthen its efforts to co-ordinate the activities of the United Nations bodies concerned with industrial training.

(b) Planning and programming

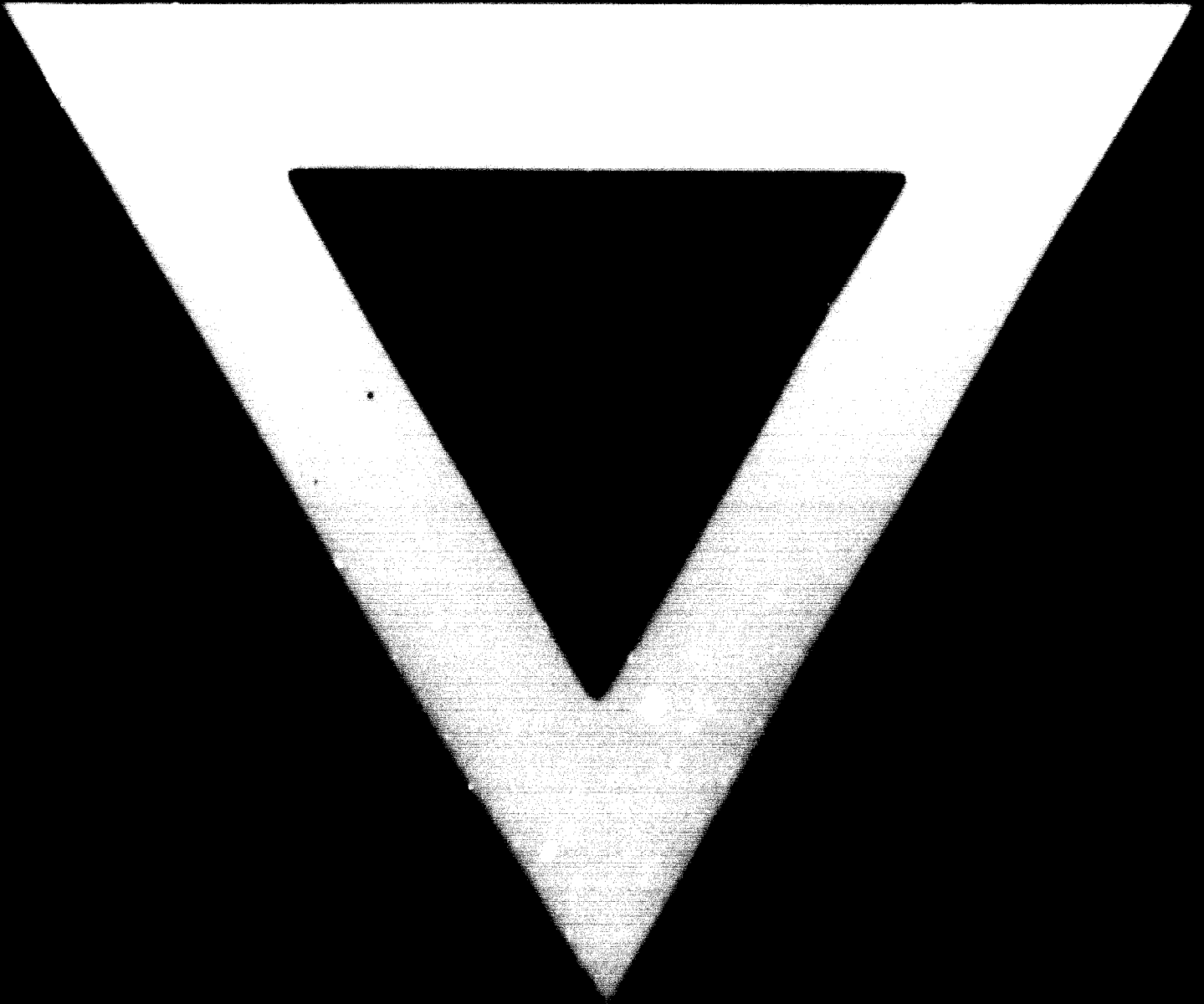
- (i) Place greater emphasis on flexible planning of industrial training programmes taking into account: plans and programmes of industrial training carried out by national authorities; the proposed new Inter-country Programming procedures for the use of UNDP funds; and changing skill requirements of industries in the developing countries;
- (ii) Give priority to assisting developing countries in carrying out skill demand surveys of specified industries;
- (iii) Encourage developing countries to establish, where feasible, new industrial training organizations on the national level and to adapt existing training organizations to suit changing conditions;
- (iv) Establish, where feasible, a system of regional industrial training advisers, in co-operation with the regional economic commissions and UNESOB, and a system of national industrial training advisers in collaboration with the Governments concerned.

(c) Financing

- (i) Make available the financial resources to implement its policy decisions in the field of industrial training;
- (ii) Assist developing countries in carrying out cost-benefit analyses of industrial training operations;
- (iii) Assist developing countries in making financial decisions with regard to industrial training.

(d) Programme implementation

- (i) Assist developing countries in: the establishment of industrial training institutions geared to specific training needs; the co-ordination of the work of these institutions within the framework of industrial training objectives; and the evaluation of training activities carried out by these institutions;
- (ii) Assist developing countries, in co-operation with host authorities, in improving systems of selecting candidates for training abroad;
- (iii) Strengthen its efforts in keeping with General Assembly resolution 2626 (XXV), to increase the number of adequate training facilities in industrialized and developing countries, with particular attention to in-plant training facilities, and to collect and disseminate information on available training facilities;
- (iv) Explore new approaches and techniques for industrial training with a view to increasing the effectiveness of UNIDO's activities in this field;
- (v) Strengthen the follow-up activities of its industrial training programmes, particularly with regard to programme evaluation and the updating of technological information for the benefit of former participants of UNIDO training programmes.



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